



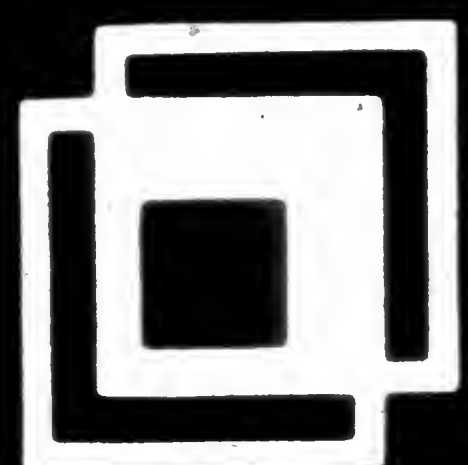


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OFFICIAL GAZETTE  
UNITED STATES  
PATENT OFFICE  
VOL NO 1020

JULY

1982

MICRO PHOTO DIVISION



BELL & HOWELL

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Vol. 1020 Number 1

# OFFICIAL GAZETTE

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PATENTS

July 6, 1982

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# OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

July 6, 1982

Volume 1020

Number 1

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## PATENT AND TRADEMARK OFFICE NOTICES

### Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	\$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,  
Commissioner of Patents  
and Trademarks.  
Jan. 19, 1982.

### REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,312,242, Re. S.N. 369,556, Filed Apr. 19, 1982, Cl. 137/601, DAMPER CONSTRUCTION, Elliot Kahn, et al., Owner of Record: Arrow United Industries, Inc., Bronx, N.Y., Attorney or Agent: Martin E. Goldstein, Ex. Gp.: 341

4,092,229, Re. S.N. 373,143, Filed Apr. 29, 1982, Cl. 204/180R, THERMAL CONVECTION COUNTER STREAMING SEDIMENTATION AND FORCED CONVECTION GALVANIZATION METHOD FOR CONTROLLING THE SEX OF MAMMALIAN OFFSPRING, Bhairad C. Bhattacharya, Owner of Record: National Patent Development Corp., New York, N.Y., Attorney or Agent: Jesse B. Grove, Jr., et al., Ex. Gp.: 116

4,186,117, Re. S.N. 343,040, Filed Jan. 27, 1982, Cl. 260/23AR, CATHODIC ELECTRODEPOSITION COATING COMPOSITIONS CONTAINING DIOLS-ALDER ADDUCTS, Ivan H. Tsou, Owner of Record: Wyandotte Paint Products Co., Birmingham, Mich., Attorney or Agent: Ralph M. Burton, et al., Ex. Gp.: 144

4,250,412, Re. S.N. 376,794, Filed May 10, 1982, Cl. 307/279, DYNAMIC OUTPUT BUFFER, Roger I. Kung, et al., Owner of Record: Motorola, Inc., Schaumburg, Ill., Attorney or Agent: Anthony J. Sarli, Jr., et al., Ex. Gp.: 254

4,250,412, Re. S.N. 376,795, Filed May 10, 1982, Cl. 307/279, DYNAMIC OUTPUT BUFFER, Roger I. Kung, et al., Owner of Record: Motorola, Inc., Schaumburg, Ill., Attorney or Agent: Anthony J. Sarli, Jr., et al., Ex. Gp.: 254

4,282,287, Re. S.N. 374,105, Filed May 3, 1982, Cl. 428/407, BIOCHEMICAL AVIDIN-BIOTIN MULTIPLE-LAYER SYSTEM, Roger W. Giese, Owner of Record: Inventor, Attorney or Agent: Richard P. Crowley, Ex. Gp.: 164

### REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,558,040, Reexam. No. 90/000,210, Requested: June 1, 1982, Cl. 229/73, TWO-WAY ENVELOPE, Lloyd H. Krueger, Owner of Record: Ira B. Kristel, Deer Park, N.Y., Attorney or Agent: Roger Bereskin & Parr, Ex. Gp.: 241, Requester: Boise Cascade Corp., c/o Lawrence E. Laubscher, Sr., Arlington, Va.

3,811,830, Reexam. No. 90/000,212, Requested: June 2, 1982, Cl. 8/405, STABLE OIL-IN-WATER EMULSION HAIR DYE COMPOSITION, Richard DeMarco, Owner of Record: Clairol, Inc., New York, N.Y., Attorney or Agent: Irving Holtzman, et al., Ex. Gp.: 125, Requester: Clairol, Inc., c/o Gabriel P. Katona, Bristol-Myers Co., New York, N.Y.

4,288,775, Reexam. No. 90/000,208, Requested: June 1, 1982, Cl. 338/35, DEVICE AND METHOD OF MANUFACTURING A RELATIVE HUMIDITY SENSOR AND TEMPERATURE SENSOR, Paul F. Bennewitz, et al., Owner of Record: Inventor, Attorney or Agent: William W. Cochran, II, Ex. Gp.: 213, Requester: John A. Lehive, Jr., Kenway & Jenney, Boston, Mass.

### Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,208,318, Peter M. Roberts, QUICK RELEASE FOR SOCKET WRENCHES, filed Nov. 7, 1980, D.C., N.D. Ill. (Chicago), Doc. 80 C 5986, Peter M. Roberts v. Sears, Roebuck & Co. Judgment entered in favor of plaintiff and against defendant. Filed Apr. 5, 1982.

3,239,514, Sandoz Ltd., PHENOTHIAZINE DERIVATIVES SUBSTITUTED BY A MONOVALENT SULFUR FUNCTION IN 3-POSITION, filed Oct. 31, 1980, D.C. District of Columbia (Wash. D.C.), Doc. 80-2809, Federal Pharmacal, Inc., et al v. Sandoz Ltd., et al. Patent No. 3,239,514 is valid and enforceable. Plaintiffs are restrained and enjoined from further infringing Defendant's patent. Filed Dec. 22, 1980.

3,257,835, Southwire Co., METHOD OF FORMING HOT METAL; 3,315,349, same, METHOD OF PRODUCING HOT-FORMED COPPER-BASE PRODUCTS; 3,317,994, same, METHOD OF CONDITIONING METAL FOR HOT FORMING, filed Nov. 24, 1980, D.C., S.D.N.Y., Doc. 80-Civ-6674, Southwire Co. v. Krupp International. Stipulation and Order of Dismissal with prejudice filed Oct. 14, 1981.

3,306,465, Francis P. Brennan, WARDROBE HANGER BAR WITH CAP LOCKING MEANS; 3,519,139, same, WARDROBE HANGER BAR; 3,613,898, same, CAP LOCKING MEANS FOR WARDROBE HANGER BAR, filed July 25, 1977, D.C., S.D.N.Y., Doc. 77-Civ-3567, Francis P. Brennan, et al v. Mr. Hanger, Inc., et al. Judgment filed Jan. 18, 1980.

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3,306,465, Francis P. Brennan, WARDROBE HANGER BAR WITH CAP LOCKING MEANS, filed Mar. 30, 1982, D.C.N.J. (Camden), Doc. 82-0983, Francis P. Brennan, et al v. Garment Bar, Inc., et al.

3,311,047, Lester L. Smith, ROOF VENTILATORS, filed Oct. 21, 1975, D.C., W.D. Mich. (Grand Rapids), Doc. 75 504 Cal, H. C. Products Co. v. Leigh Products, Inc. Defendant is entitled to judgment on the claim of infringement and plaintiff is entitled to judgment on the counterclaim of invalidity. Filed Feb. 1, 1982.

3,315,349. (See 3,257,835.)

3,317,994. (See 3,257,835.)

3,326,009, Archie R. Gagne, PLOW FOR LAYING CABLE, FLEXIBLE CONDUIT OR THE LIKE; 3,326,010, same, SLIT TRENCHING AND CABLE LAYING MACHINE, filed Mar. 25, 1982, D.C. Minn. (St. Paul), Doc. 3-82-340, Vibra-King, Inc., et al v. Archie R. Gagne.

3,326,010. (See 3,326,009.)

3,330,405, Ronald H. Taub, COLLAPSIBLE DISPLAY BIN, filed Apr. 22, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 2510, Taub Family Trust U/A Dated Sept. 1, 1967, et al v. Brown Williamson Tobacco Corp.

3,368,501, Harvey G. Kuhlman, FOOD DISTRIBUTING APPARATUS, filed Feb. 18, 1982, D.C., W.D. Wis. (Madison), Doc. 82-C-117, Harvey G. Kuhlman v. Specialties, Inc.

3,380,447, Robert M. Martin, ANKLE DEVICE FOR SUPPORTING AN INDIVIDUAL IN AN INVERTED POSITION, filed Apr. 9, 1982, D.C., E.D. Mich. (Detroit), Doc. 82-71298, Robert M. Martin v. Paul Wittmer.

3,390,906, Hi-Shear Corp., JOINT WITH INHERENTLY LIMITED TORQUE LEVEL, filed Feb. 10, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-0624, Air Industries Corp. v. Hi-Shear Corp.

3,397,928, Hughes Tool Co., SEAL MEANS FOR DRILL BIT BEARINGS, filed Mar. 26, 1982, D.C., N.D. Tex. (Fort Worth), Doc. CA4-82-152, Hughes Tool Co. v. Rock Bit Industries U.S.A., Inc.

3,404,658, Sommer and Maca Glass Machinery Co., CURTAIN COATING APPARATUS, filed Aug. 31, 1979, D.C.N.J. (Newark), Doc. 79-2656, Sommer and Maca Industries, Inc. v. Century Engineering Co., Inc. Order dismissing action, without costs, filed Apr. 20, 1982.

3,407,778, Washington Chain & Supply, Inc., MARINE TOWING PLATE, filed Feb. 12, 1982, D.C., W.D. Wash. (Seattle), Doc. 82-162V, Washington Chain & Supply, Inc. v. Panama Machinery & Equipment, Inc., et al.

3,415,374, Nils Anders Lennart Wikdahl, METHOD AND APPARATUS FOR VORTICAL SEPARATION OF SOLIDS, filed Apr. 1, 1982, D.C., N.D. Ga. (Atlanta), Doc. C82-670A, Nils Anders Lennart Wikdahl v. Cellico, Inc., et al.

3,432,985, Donald B. Halstead, STRIP PACKAGING MACHINE FOR NAILS AND OTHER SIMILAR ARTICLES, filed Sept. 24, 1973, D.C., E.D. Calif. (Fresno), Doc. F-866-CIV, Rite-Nail Packaging Corp. & Donald B. Halstead v. Berryfast, Inc., et al. Judgment in favor of Defendants and against Plaintiffs filed Mar. 30, 1982.

3,480,984, Joseph V. Kidd, PIG APPARATUS, filed Mar. 24, 1982, D.C., S.D. Tex. (Houston), Doc. H-82-841, Doris L. (Kidd) Davis, et al v. Sea Level, Inc., et al.

3,488,017, Staar S.A., STOP SYSTEM FOR A TAPE REEL DRIVE, filed Oct. 29, 1981, D.C., N.D. Ill. (Chicago), Doc. 81C6081, Staar S.A. v. Ford Motor Co. Order that Plaintiff's complaint be dismissed with prejudice filed Mar. 24, 1982.

3,506,070, Marathon Oil Co., USE OF WATER-EXTERNAL MICELLAR DISPERSIONS IN OIL RECOVERY; 3,506,071, same, filed Feb. 26, 1982, D.C., C.D. Ill. (Peoria), Doc. 2-1043, Marathon Oil Co. v. Tri Star Producing Co., Inc., et al.

3,506,071. (See 3,506,070.)

3,519,139. (See 3,306,465.)

3,574,911, Milling Specialties, Inc., CUTTER AND INSERTS THEREFOR, filed June 10, 1981, D.C., W.D. Pa. (Erie), Doc. 81-130 ERIE, Milling Specialties, Inc. v. Greenleaf Corp. Stipulation of dismissal without prejudice filed Feb. 24, 1982.

3,613,898. (See 3,306,465.)

3,644,457, Mobay Chemical Corp., PREPARATION OF STABLE LIQUID DIPHENYLMETHANE DIISOCYANATES, filed Mar. 23, 1982, D.C., S.D. Tex. (Houston), Doc. H-82-833, Mobay Chemical Corp. v. Upjohn Co.

3,719,389, Burton and Kiger, THERMO PLASTIC TUBING FURNITURE, filed Apr. 15, 1982, D.C., M.D.N.C. (Greensboro), Doc. C-82-412-G, Terra Furniture, Inc. v. Hugonet, Calfeutrex and Claude Barril.

3,751,618, Hi-Tek Corp., PUSH SWITCH WITH SPRING BIASED PLUNGER, filed Mar. 17, 1980, D.C. Del. (Wilmington), Doc. 80-126, Hi-Tek Corp. v. Stackpole Components Co. Stipulation and Order of Dismissal with prejudice filed Apr. 21, 1982.

3,756,139, John Wolens, POPCORN POPPER, filed Oct. 16, 1979, D.C., N.D. Ill. (Chicago), Doc. 79C4291, John Wolens v. F. W. Woolworth, et al. Judgment entered in favor of defendants on plaintiff's complaint. Judgment on defendants' counterclaim entered as follows: Judgment for defendants on claim of noninfringement of patent in suit and judgment for plaintiff on claim of invalidity of patent in suit. Filed Apr. 14, 1982.

3,851,972, Coulter Electronics, Inc., AUTOMATIC METHOD AND SYSTEM FOR ANALYSIS AND REVIEW OF A PLURALITY OF STORED SLIDES, filed Apr. 21, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 2462, Coulter Electronics, Inc. v. Smithkline Clinical Laboratories, Inc.

3,943,974, ACF Industries, Inc., CONTROL VALVE FOR FLUID ACTUATOR, filed Mar. 22, 1982, D.C., S.D. Tex. (Houston), Doc. H-82-821, ACF Industries, Inc. v. C.S.E. Automation Engineering & Services, Inc., doing business as Automation USA.

3,962,575, Ben W. Vandenberg, RADIAL ARM MILK HOSE SUPPORT, filed Mar. 12, 1982, D.C., W.D. Wis. (Madison), Doc. 82-C-194, Ben W. Vandenberg, et al v. Dairy Equipment Co.

4,002,243, Stanspec Co., JIB CRANE, filed June 8, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 3176, Stanspec Co. v. Abell-Howe Co. Stipulated Order without prejudice dated Sept. 1, 1982.

4,022,065, Ramin and Stearns, CALIBRATED SAMPLE DELIVERY APPARATUS ACCOMODATING OFFSET ERROR, filed Apr. 12, 1982, D.C., S.D. Tex. (Houston), Doc. H-79-1932, Stanley D. Stearns, et al v. Beckman Instruments, Inc. (This is a reopening of case originally filed Sept. 20, 1979.)

4,042,367, Aquashade, Inc., METHOD FOR CONTROLLING THE GROWTH OF AQUATIC PLANTS, filed Apr. 22, 1982, D.C., W.D. Mich. (Grand Rapids), Doc. G82-207CA5, Aquashade, Inc. v. Aquatics Unlimited, Inc., et al.

4,124,201, Robert E. Burton, KNOCKDOWN SPRING UNIT, filed Mar. 31, 1981, D.C., N.D.N.Y. (Utica), Doc. 81-Civ-292, Futorian Corp. v. Robert E. Burton. Notice of voluntary dismissal filed Mar. 2, 1982.



4,128,357, Barth and von Langsdorff, SLAB-ELEMENTS FOR COVERING THE GROUND, filed Mar. 22, 1982, D.C., S.D. Fla. (W. Palm Beach), Doc. 82-8120-CIV-JE, *F. Von Langsdorff Licensing Ltd., et al v. Paverlock, Inc., et al.*

4,135,744, Robert E. Fouts, TERMINAL FITTING FOR A TUBULAR CONDUIT, D. 251,676, same, filed Jan. 25, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-0336, *Earl's Supply Co. v. Russell Performance Productions, Inc., et al.*

4,136,125, Hooker Chemicals & Plastics Corp., PREPARATION OF BIS (PENTACHLOROCYCLOPENTADIENYL), filed Feb. 8, 1982, D.C., W.D.N.Y. (Buffalo), Doc. 82-110C, *Zoecon Corp. and Hooker Chemicals & Plastics Corp. v. Sathon, Inc., et al.* Voluntary dismissal of action without prejudice filed Apr. 19, 1982.

4,176,921, Carrera International Corp., EYE-GLASSES HAVING REMOVABLE LENSES, Reg. No. 855,063 (CARRERA), Carrera International Corp., filed Dec. 15, 1981, D.C., S.D. Fla. (Miami), Doc. 81-2801-CIV-SMA, *Carrera International Corp. v. Eye to Eye Optical, Inc., et al.*

4,176,921, Carrera International Corp., EYE-GLASSES HAVING REMOVABLE LENSES, filed Apr. 12, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2320 GLG, *Carrera International Corp. v. Riviera Trading Corp.*

4,196,699, David Christopher Leeming, POULTRY DRINKER, D. 218,831, same, DRINKING TROUGH FOR POULTRY, D. 219,778, same, VALVE ASSEMBLY FOR POULTRY DRINKING DEVICE, filed Apr. 5, 1982, D.C. District of Columbia (Wash. D.C.), Doc. 82-0930, *Monoflo International, Inc. v. Broiler Equipment Co., Ltd.*

4,201,388, Ruth Faye Cantelon, GAME APPARATUS, filed Apr. 21, 1982, D.C., W.D. Wash. (Seattle), Doc. 82-467M, *Ruth Faye Cantelon v. Standex International Corp., doing business as Standard Publishing Co., et al.*

4,227,340, Goldfarb and Dantzer, PLAY SET, filed Apr. 17, 1981, D.C., S.D.N.Y., Doc. 81-Civ-2371, *Knickerbocker Toy Co., Inc. and Adolph E. Goldfarb v. Nasta Industries, Inc.* Patent No. 4,227,340 is owned by plaintiff and is good and valid in law. Consent judgment filed Apr. 15, 1982.

4,236,498, James R. Taliaferro, SEE THROUGH FIREPLACE, filed Mar. 18, 1982, D.C., E.D. Mo. (St. Louis), Doc. 82-404C(3), *Best Metal Products, Inc. v. Pryosolar Industries, Inc.*

4,241,880, Nordson Corp., ELECTROSTATIC SPRAY GUN, filed Apr. 1, 1982, D.C., E.D. Mich. (Detroit), Doc. 82-71186, *Nordson Corp. v. Graco, Inc.*

4,266,578, Swain, Thomerson and Waldrop, DRILL PIPE PROTECTOR, filed Mar. 26, 1982, D.C., S.D. Tex. (Houston), Doc. H-82-868, *Regal International, Inc. v. Supreme Rubber Products Co., Inc.*

4,273,525, Incoe Corp., INJECTION MOLD BUSHING, filed Mar. 26, 1982, D.C., E.D. Mich. (Detroit), Doc. 82-71097, *Incoe Corp. v. D-M-E Co.*

4,280,478, Duval, Bagshaw, Kast, Masters and Whitehouse, FREEZE PROTECTION APPARATUS FOR SOLAR COLLECTORS, filed Apr. 21, 1982, D.C. Nev. (Reno), Doc. CV-R-82-156-BRT, *Sunspool Corp. v. Richdel, Inc.*

4,293,603, Hayman-Chaffey and Hayman-Chaffey, ACRYLIC SHEET-LACQUER LAMINATES AND ARTICLES OF FURNITURE MADE THEREFROM, filed Mar. 19, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1719 CES, *Hayman-Chaffey Designs, Inc. v. Directional Industries, Inc., et al.*

Re. 28,474, Nalco Chemical Co., PROCESS FOR RAPIDLY DISSOLVING WATER-SOLUBLE POLYMERS; Re. 28,576, same, PROCESS FOR RAPID DISSOLVING WATER-SOLUBLE VINYL ADDITION USING WATER-IN-OIL EMULSIONS, filed Mar. 18, 1982, D.C., M.D. Fla. (Orlando), Doc. 82-136-ORL-CIV-R, *Nalco Chemical Co. v. Callaway Chemical Co.*

Re. 28,576. (See Re. 28,474.)

D. 218,831. (See 4,196,699.)

D. 219,778. (See 4,196,699.)

D. 243,330, Optyl Corp., EYEGLASS FRAME, filed Jan. 13, 1982, D.C., N.D. Calif. (San Francisco), Doc. C82-0332, *Optyl Corp. v. Prestige Optics, Inc.* Plaintiff is the owner of D. 243,330. Defendant is permanently enjoined against further infringement of D. 243,330. Filed Mar. 17, 1982.

D. 251,676. (See 4,135,744.)

D. 258,174, Shane and Shane, THIMBLE, filed Feb. 25, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 1186, *Frank Horvath, doing business as Quality Artistic Glass v. Koeningswasser Glass Works, Ltd.*

D. 261,132, Vetter Corp., MOTORCYCLE FAIRING, filed Mar. 25, 1982, D.C., C.D. Ill. (Danville), Doc. 82-2083, *Vetter Corp. v. Hoese Corp., doing business as The Invader & Cycle Sound.*

## PATENT NOTICES

### Certificates of Correction for the Week of July 6, 1982

Re. 30,717	4,303,002	4,314,909	4,323,545
Re. 30,815	4,304,378	4,314,979	4,323,552
4,043,982	4,305,127	4,315,466	4,323,568
4,065,589	4,305,615	4,315,496	4,323,848
4,120,919	4,306,048	4,315,660	4,324,268
4,121,365	4,307,790	4,315,855	4,324,400
4,177,086	4,307,873	4,316,084	4,324,576
4,230,403	4,307,875	4,316,204	4,324,906
4,233,310	4,308,308	4,316,494	4,324,970
4,234,322	4,308,522	4,317,200	4,324,972
4,243,357	4,309,091	4,317,935	4,325,518
4,244,175	4,310,273	4,318,375	4,325,554
4,269,457	4,310,373	4,318,502	4,325,822
4,271,664	4,310,657	4,318,651	4,325,833
4,273,870	4,310,700	4,318,719	4,325,972
4,275,962	4,310,764	4,318,900	4,326,059
4,283,614	4,311,373	4,318,949	4,326,077
4,289,078	4,311,917	4,319,027	4,326,177
4,293,053	4,312,022	4,319,188	4,326,266
4,294,617	4,312,271	4,319,273	4,326,306
4,297,494	4,312,635	4,319,585	4,326,425
4,298,316	4,312,878	4,319,633	4,326,675
4,299,024	4,313,064	4,319,698	4,326,748
4,299,242	4,313,119	4,320,224	4,326,751
4,299,269	4,313,797	4,321,004	4,326,937
4,299,781	4,313,805	4,321,333	4,326,952
4,300,014	4,313,886	4,321,809	4,327,025
4,300,234	4,313,972	4,322,103	4,327,120
4,300,746	4,314,154	4,322,534	4,327,176
4,301,328	4,314,393	4,322,753	4,328,712
4,301,914	4,314,541	4,323,240	
4,302,453	4,314,665	4,323,529	
4,302,626	4,314,791	4,323,530	

### Disclaimers

4,074,004.—George F. Bateson, Roseville; Francis W. Brown, West St. Paul and Steven M. Heilmann, St. Paul, Minn. PRESSURE-SENSITIVE ADHESIVE TAPE EMPLOYING MOISTURE RESISTANT ACRYLATE-BASE COPOLYMER ADHESIVE. Patent dated Feb. 14, 1978. Disclaimer filed May 12, 1982, by the assignee, *Minnesota Mining & Mfg. Co.* Hereby enters this disclaimer to claims 1-15 of said patent.

4,178,987.—Walker H. Bowman, St. Charles and Bruce E. Sirovich, Naperville, Ill. MOVING BED HYDRIDE/DEHYDRIDE SYSTEMS. Patent dated Dec. 18, 1979. Disclaimer filed Apr. 22, 1982, by the assignee, *Standard Oil Co.*

Hereby enters this disclaimer to claims 1-15 and 40 of said patent.

### Disclaimer and Dedication

3,960,313.—Alan M. Sax, Chicago, and Walter J. Stolk, Schaumburg, Ill. AUTOMATIC SETUP CARTON CONSTRUCTIONS. Patent dated June 1, 1976. Disclaimer and Dedication filed May 14, 1982, by the assignee, *Stone Container Corp.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.



# Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the

table following, the collections are organized in patent number sequence.

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Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	Name of Library	Telephone Contact
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California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 222
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Illinois	Chicago Public Library	(312) 269-2865
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Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
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New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
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Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

\*Collection organized by subject matter.

\*\*Call only between the hours of 10:00 a.m. and 5:00 p.m.

1020 OG 6

# PATENT EXAMINING CORPS RENE D. TEGMEYER, Assistant Commissioner WILLIAM FELDMAN, Deputy Assistant Commissioner CONDITION OF PATENT APPLICATIONS AS OF May 15, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthetics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-04-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-09-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170— R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-08-81
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	4-15-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	8-29-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240— G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	6-04-80
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-11-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding; Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-02-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330— R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	1-07-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350— A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	6-26-80

Expiration of patents: The patents within the range of numbers indicated below expire during May 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.  
Patents ..... Numbers 3,181,175 to 3,186,003, inclusive  
Plant Patents ..... Numbers 2,502 to 2,521 inclusive

1020 OG 7

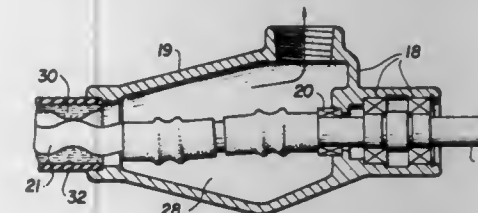
# DEFENSIVE PUBLICATIONS

PUBLISHED JULY 6, 1982

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

**T102,001**  
**DEVICE FOR EXTRACTION OF CATARACTS USING**  
**MINIATURIZED PROGRESSING CAVITY PUMP**  
 Elmer J. Ballintine, 9203 Cedarcrest St., Bethesda, Md. 20014  
 Filed Jun. 4, 1981, Ser. No. 270,657  
 Int. Cl.<sup>3</sup> A61M 1/00  
 U.S. Cl. 128-276  
 1 Sheets Drawing. 11 Pages Specification

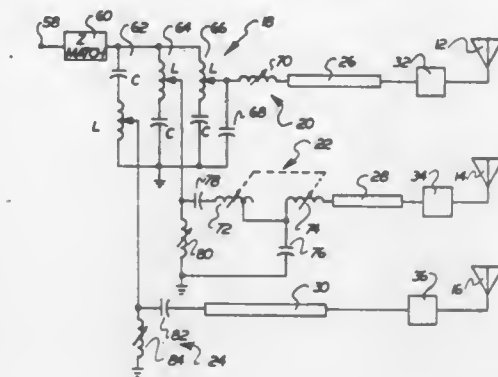


A surgical tissue macerating and removal instrument or tool having a rotating, longitudinally progressing rotor member in a miniaturized Moyno pump cavity, disposed within a hypodermic tube, which itself is coaxially disposed in an extension of a tool handle. A frusto-conical member extends into the tool handle extension and is provided with a cut-off tissue engaging edge at the end distant from the tube. The pump rotor is provided at the end distant from the tube with a cutting edge or other means suitable for drilling into the cataractous lens of an eye. Apertures are provided in the extension adjacent the frusto-conical member so that a treatment fluid may be supplied in the annular space between the tube and the extension and thus may flow to the aperture site. An aperture is provided in the frusto-conical member between the extension and the tube so that the treatment fluid may also enter into the tube where it mixes with macerated tissue being directed through an aperture in the tube to a passageway which may have suction applied thereto to help remove macerated material from the operative site. Radially-inwardly extending fins may be provided on the interior surface of the frusto-conical member to inhibit or prevent rotation of the cataractous lens tissue being macerated.

**T102,002**  
**PHASE INVARIANT, ADJUSTABLE POWER**  
**CONTROLLER**  
 Johnny D. Jubera, 3 Curved Creek Rd., Quincy, Ill. 62301  
 Continuation of Ser. No. 63,724, Aug. 6, 1979, abandoned. This application Apr. 17, 1981, Ser. No. 255,346  
 Int. Cl.<sup>3</sup> H01Q 3/26  
 U.S. Cl. 343-854  
 3 Sheets Drawing. 25 Pages Specification

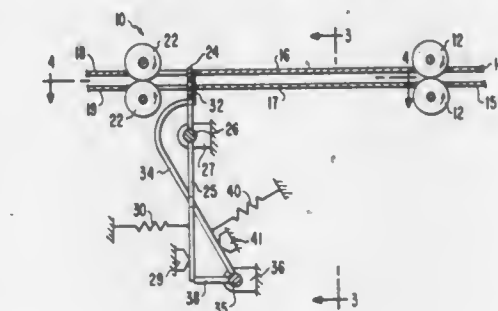
A power controller is disclosed which is adapted to be coupled between a power source and a power sink. The controller is linear, passive, and lossless, and is characterized by an input impedance of zero when the output is open-circuited, and by an adjustable voltage-input/current-output ratio. One disclosed embodiment is comprised of a series resonant LC circuit wherein the inductor has an adjustable tap location. The power sink is connected across the tap. Various circuits are also disclosed which are connectable to the output of the

power controller for adjusting the phase of the output signal. A power divider system for distributing power from a transmitter



to plural broadcasting antennas is shown which utilizes these power controllers and phase adjusters.

**T102,003**  
**METHOD AND APPARATUS FOR ALIGNING PLIABLE**  
**MATERIAL**  
 Michael K. Bullock, 1487 Kennedy Ct., Boulder, Colo. 80303  
 Continuation of Ser. No. 42,741, May 29, 1979, abandoned. This application Mar. 26, 1981, Ser. No. 248,130  
 Int. Cl.<sup>3</sup> B65H 7/02  
 U.S. Cl. 271-227  
 2 Sheets Drawing. 20 Pages Specification



The method and apparatus aligns the leading edge of pliable sheet material such as paper, transverse to its intended direction of travel. Feed means positively advances the material between guide members towards an alignment member pivotally mounted but releasably secured by a latch means in the plane of the desired leading edge orientation for the sheet material. Position sensing means adjacent the alignment member senses proper leading edge orientation. The latch means responds to the position sensing means operation to release the alignment member and sheet material for movement towards transport means adapted to positively engage the sheet material leading edge to convey the properly orientated sheet material.

In a typical configuration, the feed means is a set of feed rollers, the alignment member is a pivotally mounted mechanical gate assembly, and the leading edge alignment sensing means is a mechanical trigger member or photoelectric sensing means. Upon proper alignment, the latch means releases permitting the alignment member to rotate and deliver the leading edge of the aligned sheet material to transport means downstream from the alignment gate assembly. When the transport means is a roller set, its nip positively en-



gages the sheet material and thus maintains secure alignment as it drives the sheet material further along the intended paper path.

**T102,004**  
**ELECTROSTATOGRAPHIC CARRIER BEADS AND**  
**METHOD OF MAKING**

Donald L. Doane, 836 Wilfred Rd., Berthoud, Colo. 80513, and  
Vincent W. Ting, 7900 Grasmere Dr., Boulder, Colo. 80301

Filed Nov. 9, 1981, Ser. No. 319,814

Int. Cl.<sup>3</sup> G03G 9/10

U.S. Cl. 430-108

No Drawing. 14 Pages Specification  
Electrophotographic carrier beads, comprising steel shot as a

water-based carrier coating makes use of the water-based modified epoxy described in U.S. Pat. No. 4,212,781. core material, are coated and then cured by a single-pass manufacturing process, using a coating liquid consisting of a water-based modified epoxy whose three-dimensional, highly cross-linked cellular structure, is packed with a fluoropolymer. This For a first example, this epoxy material is converted to an aqueous dispersion by mixing with deionized water, an aminoplast cross-linking resin (hexamethoxymethylmelamine), fluorinated ethylene-propylene, and chromium oxide. This aqueous dispersion is coated onto steel shot by a single-pass fluidized bed manufacturing process. For a second example, this epoxy material is converted to an aqueous dispersion by mixing with deionized water, said aminoplast cross-linking agent, said fluorinated ethylene-propylene and a second fluoropolymer, polytetrafluoroethylene. This aqueous dispersion is coated onto steel shot in the same manner.

## REISSUES

JULY 6, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

**Re. 30,988**  
**WELL TOOL**

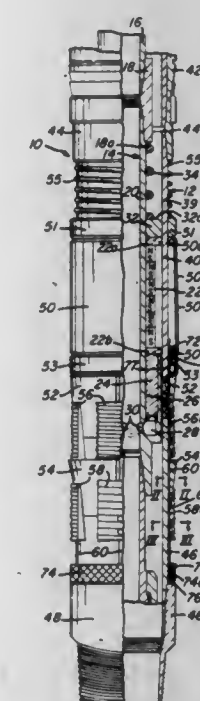
Charles D. Crickmer, Houston, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Original No. 4,047,565, dated Sep. 13, 1977, Ser. No. 671,209,  
Mar. 29, 1976. Application for reissue Sep. 29, 1980, Ser. No. 192,096

Int. Cl.<sup>3</sup> E21B 33/129

U.S. Cl. 166-217

15 Claims



1. A well tool for suspending well equipment in a well, the well tool comprising:  
an elongated hanger mandrel;  
a plurality of cones axially spaced on said mandrel;  
a plurality of sets of slips axially spaced around said mandrel, each set of slips including a plurality of slips circumferentially spaced around said mandrel and positioned with respect to a different one of said cones to engage said one cone upon relative axial movement between the set of slips and the cone;  
a plurality of elongated slip reins circumferentially spaced around said mandrel for controlling alignment of said slips during relative axial movement between the [set] sets of slips and the cones, each slip rein being secured to [a of slip from a] one slip of each set of said plurality of [said] sets of slips and each slip rein controlling the alignment of each slip to which it is secured.

**Re. 30,989**

**SEALED VALVE AND RELATED STRUCTURE**

Earl A. Bake, Pittsburgh, and William G. Lunt, Monroeville, both of Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Original No. 3,874,636, dated Apr. 1, 1975, Ser. No. 417,381, Nov. 19, 1973. Continuation of Ser. No. 770,730, Feb. 22, 1977, abandoned. Application for reissue Jul. 3, 1980, Ser. No. 165,419

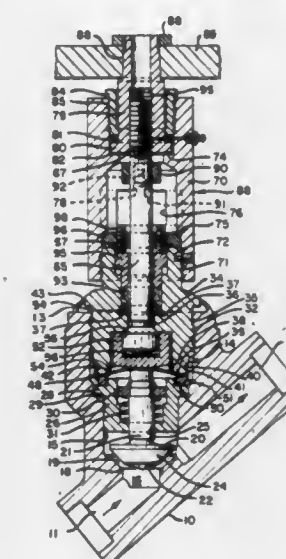
Int. Cl.<sup>3</sup> F16K 31/50

U.S. Cl. 251-335 A

23 Claims

9. A hermetically sealed valve comprising:  
a body defining inlet and outlet passages intersecting a body cavity,  
a valve seat,  
a bonnet fixedly engaged with said body to close said cavity, said bonnet having a through bore opening into a hollow

interior bounded by a *radially extending* depending annular surface,  
a valve stem mounted for axial movement in said through bore and plunger means in said hollow bonnet portion,  
a valve closure means disposed opposite said valve seat and mounted for axial movement toward and away from said seat,  
a metal diaphragm disposed across the hollow interior portion of said bonnet between said plunger means and said



closure means and circumferentially welded to said *radially extending* depending annular surface to seal the interior of said bonnet from fluid present in the body cavity, a circumferentially continuous weld between said bonnet and said body to seal against fluid leakage around said bonnet, and  
means for moving said stem and plunger means to deflect said diaphragm and move said closure means to sealingly engage said valve seat.

**Re. 30,990**

**BENZIMIDAZOLE DERIVATIVES, COMPOSITIONS THEREOF AND METHOD OF USE AS ANTHELMINTICS**  
Rudiger D. Haugwitz, and Barbara V. Maurer, both of Titusville, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Original No. 4,046,908, dated Sep. 6, 1977, Ser. No. 706,040, Jul. 16, 1976. Application for reissue Sep. 12, 1980, Ser. No. 186,823

Int. Cl.<sup>3</sup> A61K 31/415; C07D 235/32

U.S. Cl. 424-273 B

3 Claims

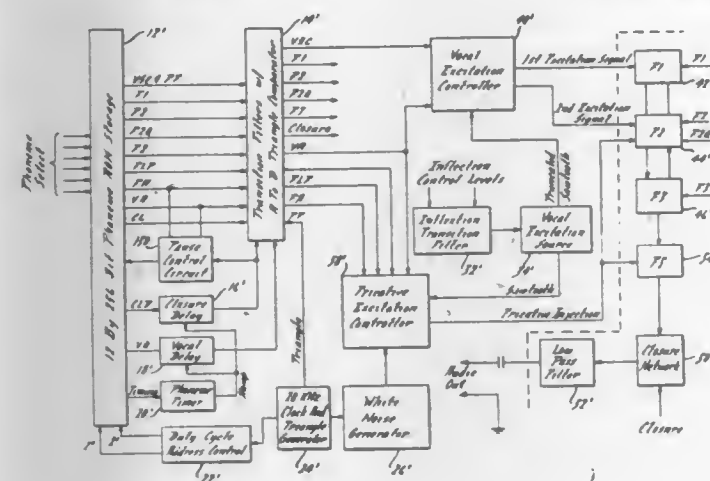
7. [The] A compound [as defined in claim 1] having the name [5-[(2,2-dichlorocyclopropylmethyl)thio]-1H-benzimidazol-2-yl]carbamic acid, methyl ester.

9. A pharmaceutical composition for use in treating helminthiasis comprising a therapeutically effective amount of a compound as defined in claim [1] 7 and a pharmaceutically acceptable carrier therefor.



Re. 30,991  
**VOICE SYNTHESIZER**  
 Carl L. Ostrowski, Mount Clemens, Mich., assignor to Federal Screw Works, Detroit, Mich.  
 Original No. 4,130,730, dated Dec. 19, 1978, Ser. No. 836,589, Sep. 26, 1977. Application for reissue Dec. 12, 1980, Ser. No. 215,681

Int. Cl.<sup>3</sup> G10L 1/00  
 U.S. Cl. 179—1 SM 20 Claims



19. In an electronic device for phonetically synthesizing human speech including input means response to input data identifying a desired sequence of phonemes for producing a plurality of control

signals that electronically define each phoneme in said desired sequence of phonemes;

vocal source means for producing a voiced excitation signal;

fricative source means for producing an unvoiced excitation signal; and

vocal tract means responsive to said voiced and unvoiced excitation signals and certain of said plurality of control signals for substantially producing the frequency spectrums of each of said desired sequence of phonemes, including a first resonant filter tunable under the control of a first of said control signals for producing the first formant in said frequency spectrums, a second resonant filter serially connected to said first resonant filter and tunable under the control of a second of said control signals for producing the second formant in said frequency spectrums, a third resonant filter serially connected to said second resonant filter for producing the third formant in said frequency spectrums and a fourth resonant filter for producing a fourth formant in said frequency spectrums;

the improvement comprising controller means for controlling the injection of said voiced and unvoiced excitation signals into said vocal tract means including fricative control means for injecting said unvoiced excitation signal into said second resonant filter under the control of a third of said control signals and for injecting said unvoiced excitation signal into said fourth resonant filter under the control of the inverse of said third control signal such that the amount of unvoiced excitation energy injected into said second resonant filter is inversely related to the amount of unvoiced excitation energy injected into said fourth resonant filter.

## PLANT PATENTS

GRANTED JULY 6, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,863

### PEACH TREE (N30-12E)

Luther D. Davis, deceased, late of Davis, Calif., and by Donald R. Brooks, executor, West Sacramento, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Oct. 20, 1980, Ser. No. 198,787

Int. Cl.<sup>3</sup> A01H 5/03

U.S. Cl. Plt.—43

1 Claim

1. A new and distinct variety of peach tree, substantially as illustrated and described, which regularly and with high productivity bears large, uniform, globose, symmetrical, clingstone fruit having fine, moderately firm, non-melting flesh; the fruit, which ripens about three days ahead of the Carolyn, is slightly similar to the Gaume but is distinctive—in comparison—by absence of blossom end breakdown, by a larger

stone less likely to split, and by a higher flavor both fresh and canned.

4,864

### RED MAPLE

Glenn C. Jeffers, 700 Susan Dr., Fostoria, Ohio 44830

Filed Jul. 23, 1980, Ser. No. 171,647

Int. Cl.<sup>3</sup> A01H 5/00

U.S. Cl. Plt.—51

1 Claim

1. A new and distinct variety of red maple tree, *Acer rubrum*, substantially as described and illustrated, characterized by its upward habit of growth and good crotch angles; rapid growth rate; tolerance to drought conditions; pleasing lettuce green summer leaf color and excellent scarlet fall leaf color that persists.

## PATENTS

GRANTED JUL. 6, 1982

### ERRATA

For CLASS	See PATENT NO.
114-039 .....	4,337,543
114-357 .....	4,337,544
464-131 .....	4,337,628
464-024 .....	4,337,629
251-090 .....	4,337,917
355-100 .....	4,338,007
420-486 .....	4,338,130
148-403 .....	4,338,131
376-228 .....	4,338,159
523-177 .....	4,338,224
525-122 .....	4,338,225
524-302 .....	4,338,226
524-143 .....	4,338,227
524-120 .....	4,338,228
524-399 .....	4,338,229
549-263 .....	4,338,230
523-214 .....	4,338,231
523-414 .....	4,338,232
523-410 .....	4,338,233
523-206 .....	4,338,234
524-504 .....	4,338,235
524-320 .....	4,338,236
524-777 .....	4,338,237
524-706 .....	4,338,238
524-549 .....	4,338,239
524-284 .....	4,338,240
523-200 .....	4,338,241
523-436 .....	4,338,242
524-287 .....	4,338,243
524-109 .....	4,338,244
524-100 .....	4,338,245
524-100 .....	4,338,246
528-307 .....	4,338,247
549-214 .....	4,338,249
525-062 .....	4,338,405
525-066 .....	4,338,406
521-157 .....	4,338,412
372-036 .....	4,338,577
372-023 .....	4,338,578

# PATENTS

GRANTED JULY 6, 1982

## GENERAL AND MECHANICAL

4,337,539

### NECKTIE KNOT SUPPORT ASSEMBLY

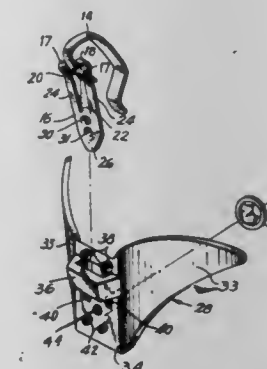
John Najarian, 257 Herbert Ave., Closter, N.J. 07624

Filed Jan. 8, 1981, Ser. No. 223,414

Int. Cl.<sup>3</sup> A41D 25/08, 25/02

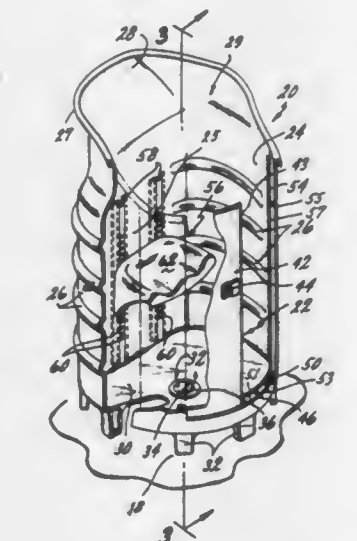
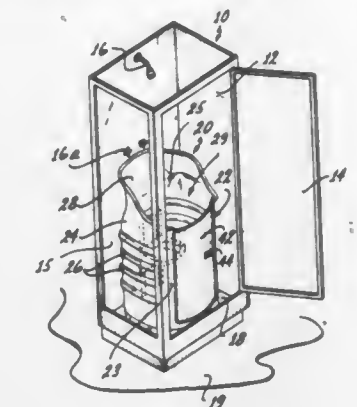
U.S. Cl. 2-153

10 Claims



1. A necktie knot support assembly for supporting a fabric pre-tied knotted necktie, said assembly comprising: a main body member shaped to determine formation of the knot of said necktie, a spring clamp adapted to inter-engage said main body member, complementary means on said body member and said spring clamp, for snappably connecting and engaging said spring clamp to said body member while preventing dis-engagement therefor, said complementary means comprising barb-like projection means on said spring clamp, and receptor means on said body member which permit the inter-engagement of said spring clamp to said body member, and which prevent said dis-engagement, said receptor means receiving said barb-like projection means.

drain means for discharging water from said tub directly onto the underlying stall floor surface;



means operable from within said tub for opening and closing said drain means;  
and, a seat provided within said tub.

4,337,541

### POLLEN TRAP FOR BEEHIVES

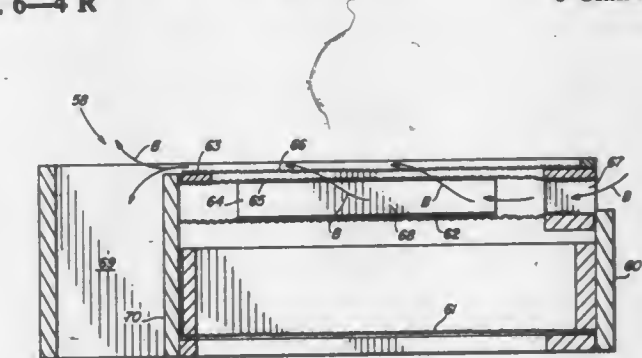
Royden Brown, 4343 E. Keim Dr., Phoenix, Ariz. 85253

Filed Jan. 9, 1981, Ser. No. 223,935

Int. Cl.<sup>3</sup> A01K 47/06

U.S. Cl. 6-4 R

6 Claims



1. A pollen trap for collecting pollen from bees as they enter a vertically arranged beehive comprising: a frame having an open top and dimensioned to fit as one of the axially positioned parts of a vertically stacked beehive, a drawer slidably arranged in said frame to assume a substantially horizontal position in the hive, said drawer having a bottom surface comprising a first screen, the mesh size of which is smaller than the pollen dropped thereon by the bees, a second screen mounted in said frame above said drawer

4,337,540

### PORTABLE BATHING TUB ACCESSORY FOR SHOWER STALL

Patricia A. Lindeman, 7803 Nagle, North Hollywood, Calif. 91605

Filed Dec. 1, 1980, Ser. No. 211,918

Int. Cl.<sup>3</sup> A61H 33/02

U.S. Cl. 4-546

14 Claims

1. A portable bathtub accessory for use in a shower stall of the type having a shower head for spraying water and a drain for draining the water from the floor of the stall comprising in combination: a free standing tub having a bottom and sidewall means defining an open top for receiving substantially all of said water spray, said tub being of sufficient width to permit a person to sit therein; an access door in said sidewall means;



and having a mesh size smaller than the size of the pollen carrying bees for prohibiting them from entering the drawer,

a pair of parallel and spacedly arranged third and fourth screens mounted in a sub-frame on said frame, but offset above said second screen and forming a space between said second screen and said pair of screens,

said third and fourth screens having mesh openings offset from each other causing bees crawling through said pair of screens to be forced to follow a circuitous path divesting their legs of a substantial portion of the pollen carried thereon,

said sub-frame having at least one rail mounted longitudinally of said drawer juxtapositioned to the lowermost screen of said pair of screens downstream of the direction of movement of the bees and forming a ladder for the bees to use in reaching said pair of screens, and

an entranceway for the pollen carrying bees into the pollen trap positioned adjacent the front of said drawer and connected with said space between said second screen and said pair of screens,

whereby the bees may move through said pair of screens at a plurality of points along their lengths.

4,337,542

# CRIMP TOOL WITH STATION FOR RIGHT ANGLE TERMINAL

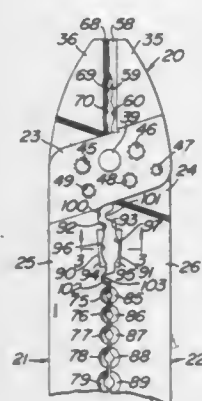
Werner C. Theiler, Sr., Dix Hills, N.Y., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 899,337, Apr. 24, 1978, Pat. No. 4,229,849. This application Jun. 6, 1980, Ser. No. 156,934. The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

U.S. Cl. 7—107

Int. Cl.<sup>3</sup> B25B 7/22

10 Claims



1. A tool for crimping a terminal having a connector and a transverse barrel at one end of the connector, said tool comprising a pair of pivotally connected levers movable toward and away from each other, a first pair of facing regions longitudinally on said levers and provided with an overall recessed configuration so as to be spaced apart to receive the connector when said levers are moved toward each other, a second pair of facing regions on said levers at one end of said first pair of facing regions, initial complementary receiver and indenter means on said second pair of facing regions for crimping a terminal barrel of one size range with its connector protectively received between said first pair of facing regions, a third pair of facing regions on said levers at the other end of said first pair of facing regions, and additional complementary receiver and indenter means on said third pair of facing regions for crimping a terminal barrel of another size range with its connector protectively received between said first pair of facing regions.

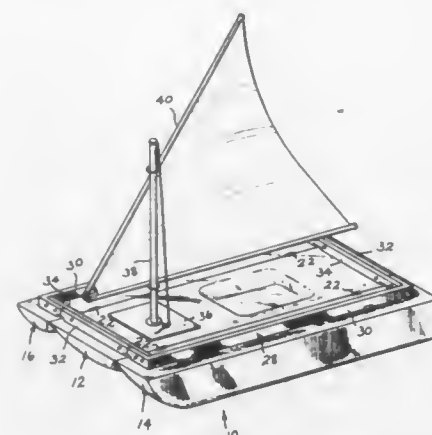
## 4,337,543 COLLAPSIBLE TRIMARAN BOAT

William R. Van Ulzen, 3155 N. U.S. Hwy. 35, La Porte, Ind. 46350

Filed Oct. 23, 1980, Ser. No. 199,971  
Int. Cl.<sup>3</sup> B63B 35/36

U.S. Cl. 114—354

5 Claims



1. A collapsible trimaran-type boat comprising three parallel individual longitudinal float sections, each float section having two tapering sides and a top surface, said float sections constituting a center section of a generally inverted isosceles triangular cross-sectional configuration and port and starboard sections each of a generally right angle triangular cross-sectional configuration, one side of each port and starboard float section being the hypotenuse of said right angle triangular cross-sectional configuration, hinge components connecting said center float section at one upper corner edge of its top surface to said starboard float section at its top surface at the intersection of said one side thereof, other hinge components connecting said center float section at the opposite upper corner edge to said port float section at its top surface at the intersection of said one side thereof, said port and starboard float sections being pivotal relative to said center float section about said hinge components between a collapsed position where the hypotenuse of each port and starboard float section is juxtaposed with said-side of said center float section resulting in said boat at its float sections having a generally rectangular configuration and an operative floating position where said float section top surfaces are generally planar and said hypotenuses of said port and starboard float sections are angularly displaced from said sides of said center float section, and means for securing said port and starboard float sections in their operative floating position.

4,337,544

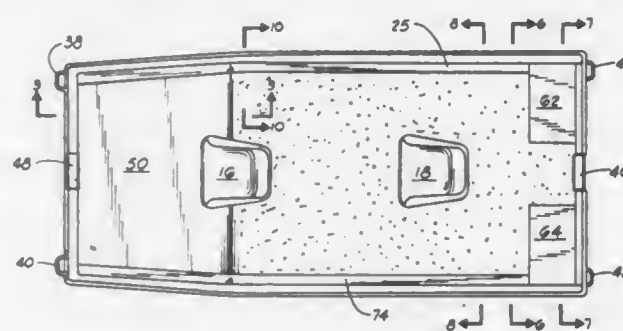
# SPORT FISHING BOAT

Nancey J. Coulter, and Lawrence Coulter, both of P.O. Box 6, Boley, Okla. 74829

Filed Sep. 22, 1980, Ser. No. 189,814  
Int. Cl.<sup>3</sup> B63B 3/20, 5/24

U.S. Cl. 114—357

12 Claims



1. A boat having a bow, a stern, a port side and a starboard side, and further including:

an outer hull having a trapezoidal transverse cross-section and having a bottom;

an inner hull spaced from the outer hull at opposite sides of the boat to define lateral spaces along each of the gunwales of the boat; said inner hull having:

a forward first portion inclined downwardly and extending rearwardly from the bow of the boat and spaced upwardly from the outer hull to define therewith a forward flotation chamber, and to also form an inclined ramp;

a pair of transversely spaced rear second portions adjacent the stern of the boat and spaced upwardly from the outer hull to define a pair of after flotation chambers, said second portions inclining downwardly and inwardly from the respective gunwales at opposite sides of the boat to a location adjacent the outer hull bottom and spaced from the fore and aft centerline of the boat; and

an inner hull bottom portion superimposed on, and contacting, the bottom of the outer hull;

flotation material disposed in said lateral spaces, forward flotation chamber and spaced, after flotation chambers to facilitate even and trimmed flotation of the boat in the water when completely swamped; and

a seat swivelly disposed in said boat immediately aft of said forward flotation chamber and facilitating resting of the feet of a fisherman seated in said seat upon said inclined ramp.

4,337,545

# BRIDGES FOR PROVIDING ACCESS FROM A WATER-BORNE CRAFT TO THE SHORE

John Rose, 22 Royal Crescent, Glasgow G3 7SL, and James S. Pearson, 8 Burnside Ave., Kirkintilloch, both of Scotland

Filed Dec. 14, 1979, Ser. No. 103,706  
Claims priority, application United Kingdom, Dec. 15, 1978, 48700/78

U.S. Cl. 14—71.1

Int. Cl.<sup>3</sup> E01D 1/00

11 Claims



11. In a ship to shore bridge of the kind comprising a bridging beam having a ship end, a shore end and two lateral sides, for providing an access track from a shore or quay at said shore end to a water-borne craft at said ship end, said beam being supported at said shore end by a pivotal connection permitting pivoting of said beam around a generally horizontal axis, to enable said ship end of said beam to rise and fall,

the improvement comprising providing means for slewing said beam about a substantially vertical axis at said shore end between a stowed position and an operative position, said beam being so dimensioned that when it is in said stowed position it is substantially received in a recess in a quay edge with a side surface of said beam being substantially flush with the side surface of said quay, wherein said ship end of said beam is displaced from said recess when said beam is in said operative position; and providing a buoyancy tank attached to said ship end of said beam to support said ship end, the buoyancy of said buoyancy tank being adjustable, wherein said recess in the quay edge extends over substantially the full height of the quay thereby to accommodate said buoyancy tank within said recess below said bridging beam when said bridging beam is in the stowed position.

4,337,546

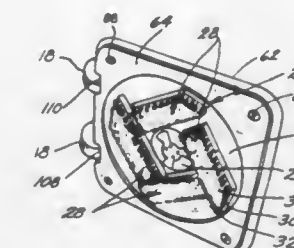
# FLOOR POLISHER SUPPORT

Paul E. Phillips, Whitehall, Mich., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Apr. 25, 1980, Ser. No. 144,192  
Int. Cl.<sup>3</sup> A47L 11/162, 11/40

U.S. Cl. 15—49 R

14 Claims



1. A support attachment for a vertical axis, rotary floor machine of the type having a housing, a vertical axis floor treating element rotatably supported by said housing and a drive for rotating the element, said support attachment comprising:

a rigid generally planar frame having a centrally located aperture dimensioned to receive the floor treating element;

a shoe having the same general configuration as said frame; means for attaching said shoe to said frame; and

a plurality of attachment means on said frame positioned around said aperture for releasably attaching said frame to the housing of the floor machine, said frame and said shoe dimensioned so that the weight of the machine will be supported on the attachment and the floor treating element will be confined within the frame and shoe.

4,337,547

# SCREEN WIPER

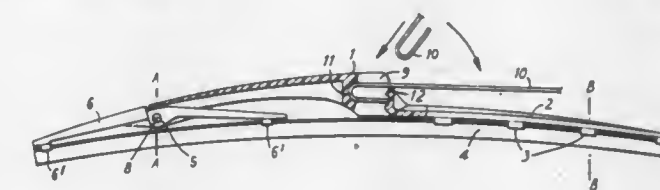
Theodore Hancou, Chene-Bougeries, Switzerland, assignor to Societe d'Exploitation de Brevets J.B., Fribourg, Switzerland

Filed Feb. 27, 1980, Ser. No. 125,059  
Claims priority, application Switzerland, Dec. 1, 1979, 2018/79

U.S. Cl. 15—250.42

Int. Cl.<sup>3</sup> B60S 1/04, 1/40

8 Claims



1. A windshield wiper assembly intended to be detachably fitted on the end of a wiper arm, comprising:

(a) an elastically deformable elongated harness,

(b) pivot means disposed between the ends of said harness by which the arm may be pivotally attached to the harness,

(c) a support surface on said harness on the side to face the windshield and extending from the region of said pivot to one end of said harness, said support surface being concave with a predetermined radius prior to application of the assembly to the windshield, which support surface becomes less concave during application due to the elastic nature of said harness,

(d) claw means disposed at intervals along the length of said support surface,

(e) a yoke pivotally attached at its center to the other end of said harness,

(f) further claw means provided at each end of said yoke, and

(g) a wiper blade unit gripped by the claw means on both the



harness and yoke, having a portion lying in contact with said support surface over the length thereof and deformed to the same curvature as that of said support surface, the remaining portion of the wiper blade unit being supported by said yoke.

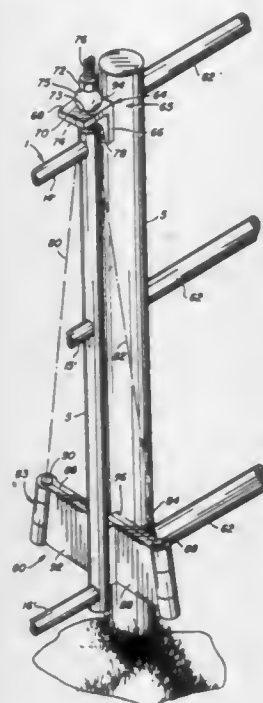
4,337,548

## SELF-CLOSING DOUBLE HINGE

Thomas G. Bonar, P.O. Box 102, Agulla, Ariz. 85320  
Continuation-in-part of Ser. No. 954,342, Oct. 25, 1978, Pat. No. 4,233,708. This application Nov. 17, 1980, Ser. No. 207,663  
Int. Cl.<sup>3</sup> E05F 1/06

U.S. Cl. 16—311

5 Claims



1. A self-closing hinging apparatus for attaching a gate to a vertical upright, said gate having a first vertical edge and an opposite second vertical edge, said hinging apparatus comprising in combination:

- an upper hinge device including swivel means having a first portion connectable in fixed relation to an upper portion of said vertical upright and a second portion connectable in fixed relation to an upper portion of said gate for swivelably supporting said upper portion of said gate relative to said vertical upright;
- a lower hinge device including first and second pivot joints and first, second and third leaves, a first end of said first leaf being attachable in fixed relation to a lower portion of said vertical upright, a second end of said first leaf being pivotally connected by said first pivot joint to a first end of said second leaf, and second end of said second leaf being pivotally connected by means of said second pivot joint to a first end of said third leaf, a second end of said third hinge being attachable in fixed relation to a lower portion of said gate, said second leaf being substantially longer than said first and third leaves, said second leaf resting against said first leaf and said third leaf resting against said second leaf when said gate is closed, said second leaf pivoting away from said first leaf about said first hinge joint and raising a free end of said gate when said gate is opened in one direction, said third leaf pivoting about said second hinge joint away from said second leaf and raising the free end of said gate when said gate is opened in another direction; and
- a reinforcing member rigidly attached to said upper hinge device and said lower hinge device for maintaining said first and second pivot joints substantially in alignment with said swivel means, said first and second pivot joints having first and second axes, respectively, said first and second axes being inclined with respect to said vertical upright, said first pivot joint resisting any lateral movement of the first end of said second leaf away from the

second end of said first leaf, said second pivot joint resisting any lateral movement of the first end of said third leaf away from the second end of said second leaf, said reinforcing member being attachable in fixed relation to said gate.

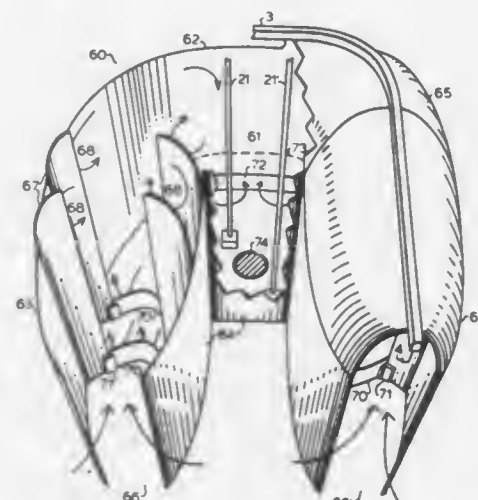
4,337,549

## CARCASS CLEANING UNIT AND CONTAINMENT CHAMBER

Maynard E. Anderson, Hallsville; Robert T. Marshall, Columbia, and William C. Stringer, Rochepport, all of Mo., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.  
Continuation-in-part of Ser. No. 94,539, Nov. 15, 1979, Pat. No. 4,279,059. This application Jul. 15, 1981, Ser. No. 283,596  
Int. Cl.<sup>3</sup> A22B 5/00

U.S. Cl. 17—1 R

7 Claims



1. An apparatus comprising a liquid spray unit and a containment chamber, wherein said containment chamber comprises: a segment for enclosing a spray zone containing said spray unit, said segment having an entrance and an exit for the passage therethrough in a predetermined path of objects to be subjected to said spray unit; an entrance vestibule segment contiguous with said spray zone segment entrance and an exit vestibule segment contiguous with said spray zone segment exit, wherein each of said vestibule segments has opposing side walls and an upper wall and is equipped with at least one pair of spaced apart baffles, wherein said baffles are attached to said opposing side walls and are symmetrically positioned with respect to one another on either side of said predetermined path at an angle oriented toward the spray zone such that they will act to reverse the direction of air currents and entrained liquid emanating from said zone.

4,337,550

## HOG SPLITTER

David R. Baylor, Belding, Mich., and Byron J. Getter, Troy, Ohio, assignors to Wolverine World Wide, Inc., Rockford, Mich.

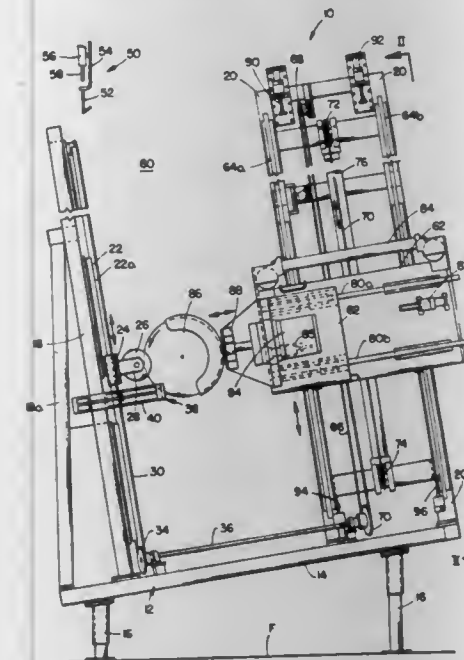
Filed Nov. 7, 1980, Ser. No. 204,939  
Int. Cl.<sup>3</sup> A22B 5/20

U.S. Cl. 17—23

15 Claims

1. A hog carcass splitter to be used in combination with suspension means for suspending hog carcasses in inverted position, comprising: an upright guide tilted at an acute angle to the vertical such that the bottom thereof extends toward a location beneath the suspension means; a configured carcass-back retainer stop movable vertically along the length of said tilted guide; carcass anchor means positioned along said guide for anchoring an inverted hog carcass in position;

an upright track spaced from said guide to be on the opposite side of the suspension means therefrom; a cutter mounting carriage movable vertically along said track; a cutter supported by said carriage; said cutter being extensible toward said guide to a predetermined



spacing from said retainer stop, and retractable away from said guide; and coordinate drive means to said retainer stop and said carriage for advancement thereof simultaneously in alignment with each other, along said guide and track respectively.

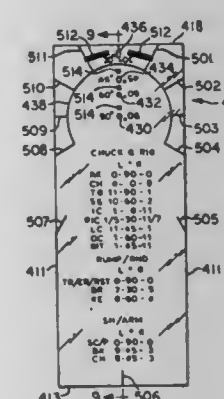
4,337,551

## MEAT GRAIN TEMPLATE

Robert S. Weinhaus, 868 Albey La., St. Louis, Mo. 63132  
Division of Ser. No. 41,492, May 22, 1979, Pat. No. 4,286,354.  
This application Aug. 3, 1981, Ser. No. 289,708  
Int. Cl.<sup>3</sup> A22C 17/00

U.S. Cl. 17—52

3 Claims



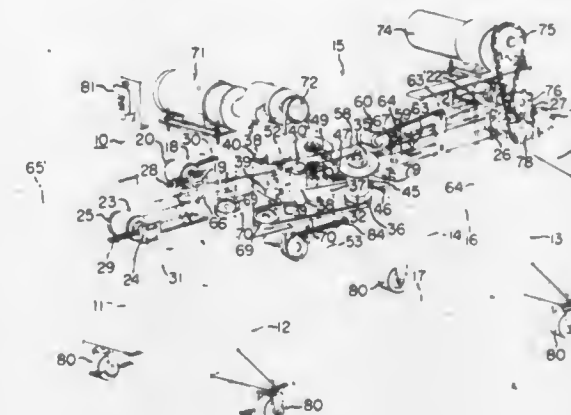
1. A method of cutting meat across the grain comprising the steps of:
  - (a) turning the meat onto a reference surface;
  - (b) identifying the section to be cut;
  - (c) applying a marker to the meat section at a predetermined angle of inclination and at a predetermined horizontal angle;
  - (d) separating the component sections from the meat, and
  - (e) cutting the meat into portions by perpendicular cuts relative to the marker.

4,337,552  
AUTOMATIC CRAB LEG SHELL CUTTING-IN MACHINE

Shigeo Iwase, Hakodate, Japan, assignor to Taiyo Seisakusho Manufacturing Co. Ltd., Hakodate, Japan  
Filed Nov. 24, 1980, Ser. No. 210,758  
Claims priority, application Japan, Nov. 22, 1979, 54-150673  
Int. Cl.<sup>3</sup> A22C 29/02

U.S. Cl. 17—71

5 Claims



1. An apparatus for automatically cutting the shell from crab-legs comprising in combination:
  - (a) a frame (10); an elongated top plate (15) supported on said frame (10), said top plate (15) defining a work zone having an input feed hopper (65) at one end for receiving crab-legs and a defined output chute (68) at the other end;
  - (b) upper and lower endless feed belts (18, 23) each rotationally supported on rear and drive pulleys (20, 22, 25, 27), said pulleys being supported on said frame (10) at said one and the other ends of said work zone;
  - (c) gear boxes (32) defining a work station with a feed side supported on said frame on both sides of said belts, said gear boxes (32) having a shaft (33) with rotary cutting-knife means (35);
  - (d) motor drive means (7, 74) operatively coupled for driving said feed belts and said cutting-knife means;
  - (e) horizontal bell crank lever means (37) extending from each of said gear boxes towards the feed side of said work station, gear teeth (39) on each of said horizontal bell crank lever means (37) in engagement toward said feed side, resilient means (46, 47) connecting said gear boxes between both sides of said belts so that the gear boxes and cutting-knife means are properly spaced from said belts to work on crab-legs passing therebetween;
  - (f) at least one depressing plate (58) at said work station engaging said upper feed belt (18), front and rear rollers (49, 69) pressing down on said depressing plate (58);
  - (g) rear upper and lower bell crank members, said upper bell crank members (48) being connected to said rear roller (49), said upper and lower bell crank members being disposed above and below the feed belts on said feed side, said bell crank lever members (48) having upward and downward extending vertical plates (50) with gear teeth in engagement at the respective lower and upper ends of said vertical plates; and,
  - (h) forward upper and lower bell crank members (59) each having a vertical plate (61) with teeth in engagement at the respective upper and lower ends of said vertical plates, spring means extending between said rear upper and lower bell crank members and said forward upper and lower bell crank members; whereby, crab-legs fed from said input feed hopper (65) are passed forward by said feed belts to said work station where the crab shells are cut and then onto said output chute (68).



4,337,553

# APPARATUS FOR GUIDING AND CLAMPING FLEXIBLE ROPES AND THE LIKE

Manfred Fischer, Berlin, Fed. Rep. of Germany, assignor to Geroh GmbH Mechanische Systeme, Waischenfeld, Fed. Rep. of Germany

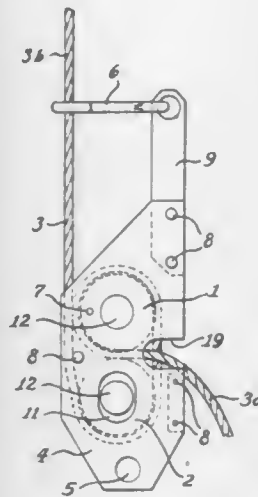
Filed Jan. 23, 1980, Ser. No. 114,633

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1979, 2906517

Int. Cl.<sup>3</sup> B66D 3/00

U.S. Cl. 24—68 R

7 Claims



1. Apparatus for guiding and firmly clamping an elongated flexible element such as a rope or cable:

said apparatus comprising a body supporting a plurality of rotatively mounted guide rollers for guiding said flexible element aligned in a plane;

a first of said guide rollers mounted on said body adjacent one end of said flexible element and selectively lockable against rotation in at least one direction relative to said body;

a second of said guide rollers mounted on said body adjacent another portion of said flexible element that is pulled to provide tension and mounted on said body for movement toward and away from said first guide roller so that said flexible element passing around both guide rollers and between adjacent portions thereof is pressed into a clamped position engaged against both rollers on opposite sides of said element when the second guide roller is moved toward said first guide roller and is released upon movement of said second roller in an opposite direction; means for securing said body in a clamping position for securely holding said flexible element; and means for securing said body to a fixed point for pivotal movement about said point between said clamping position and a release position comprising a U-shaped element extending outwardly of said body with a pair of legs adjacent opposite sides thereof, said legs being pivotally connected to said body and including means for clamping said legs in a selected rotative position relative to said body.

4,337,554

# STAMPED YOKE END AND METHOD OF MAKING SAME

Warren E. Sevrance, Adrian, Mich., assignor to Acco Industries Inc., Bridgeport, Conn.

Filed Jan. 11, 1980, Ser. No. 111,351

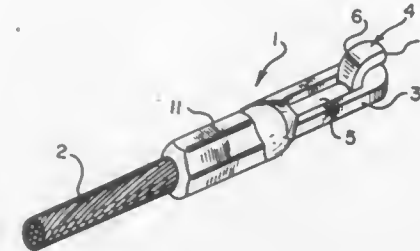
Int. Cl.<sup>3</sup> F16G 11/00; B21D 53/58

U.S. Cl. 24—115 R

4 Claims

1. A stamped yoke end adapted to engage a lever arm, said yoke end comprising a flat stamped body piece having a tab cut from the inner area of the body piece to form a longitudinally extending rectangular slot in the body piece with the tab being bent to one side of said body piece wherein the end of the tab is spaced from and substantially parallel to said body piece and

so that the surface of the tab adjacent a narrow end of the slot facing the slot forms a circular lever arm engaging surface having a section of constant radius with the longitudinal axis of the slot bisecting said tab, and a cylindrical portion adjoining



said flat stamped body piece at the end of the slot opposite said tab where the circumference of the inner surface of the cylindrical portion is greater than the width of the slot and where the cylindrical portion extends parallel to said longitudinally extending slot.

4,337,555

# WIRE GRIPPING DEVICE

Peter J. Franklin, 49 Meeanee Rd., Taradale, Hawkes Bay, New Zealand

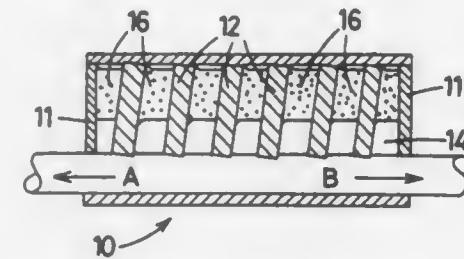
Filed Apr. 18, 1980, Ser. No. 141,637

Claims priority, application New Zealand, Apr. 19, 1979, 190226

Int. Cl.<sup>3</sup> F16G 11/04; B25G 3/20

U.S. Cl. 24—249 R

11 Claims



1. A wire gripping device comprising a body, an internal cavity within said body, an opening into said cavity whereby a portion of a wire member can locate within said cavity, a plurality of wire engaging members located within said cavity, said wire engaging members being flat elongated members having a wire engaging surface, the wire engaging members being located in a parallel spaced-apart array by a resilient spacer member located between and coupling each pair of adjacent engaging members, the engaging member at each end of the array being coupled to a wall surface of said cavity by a said resilient spacer member, the wire engaging surfaces of the engaging members being located adjacent to but spaced from a fixed surface such that a wire member can be moved longitudinally into said cavity in one direction but is prevented from being removed by said engaging members wedging the wire member between the engaging surfaces thereof and said fixed surface.

4,337,556

# BURIAL CASKET ASSEMBLY

Charles F. Winburn, and Wallace P. Blankenship, both of Batesville, Ind., assignors to Batesville Casket Company, Inc., Batesville, Ind.

Filed Oct. 30, 1980, Ser. No. 202,307

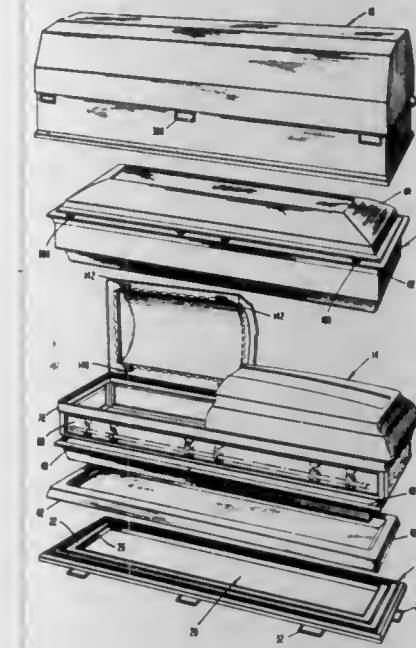
Int. Cl.<sup>3</sup> A61G 17/00

U.S. Cl. 27—2

25 Claims

1. A burial casket assembly comprising: a decorative casket comprising a decorative container and decorative cover,

said decorative container having a bottom and sides extending upwardly therefrom, an insert casket insertable within said decorative casket, said insert casket comprising an insert container and an insert cover, said insert container having a bottom and sides extending upwardly therefrom,



a base member on which said decorative casket is supported; and a vault cover placeable onto said base to encase said decorative casket, said vault cover including a lower edge portion seatable upon said base.

4,337,557

# METHOD AND APPARATUS FOR TEXTURIZING THERMOPLASTIC YARN

William J. McDonald, Belfast, and Brian Robinson, Clough, both of Northern Ireland, assignors to James Mackie & Sons Limited, Belfast, Northern Ireland

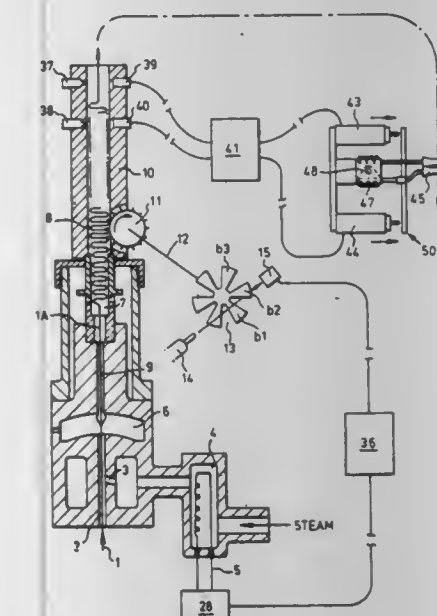
Continuation of Ser. No. 148,146, May 9, 1980, abandoned. This application May 27, 1981, Ser. No. 267,529

Claims priority, application United Kingdom, May 18, 1979, 7917326

Int. Cl.<sup>3</sup> D02G 1/12

U.S. Cl. 28—250

15 Claims



1. In a method of texturizing thermoplastic yarn by forwarding it in a heated condition to a crimping zone at the entrance of a stuffer chamber so as to form a plug of crimped yarn within the chamber and controlling the movement of the yarn at the other end of the plug at a speed which is related to the

input speed, the improvement which comprises deriving signals from the speed of said yarn plug in said stuffer chamber and employing said signals to control the temperature of said yarn passing to said crimping zone in such a way as to maintain the speed and hence the quality of the bulk yarn substantially constant.

7. In apparatus for texturizing thermoplastic yarn comprising a stuffer chamber having a crimping zone at its inlet end, means for feeding yarn at a controlled rate to the inlet end of the chamber to form a plug of crimped yarn in said chamber, which yarn exits at a controlled rate from the outlet end of the chamber, and a heater for yarn passing to the inlet end of said chamber, the improvement comprising a device for monitoring the speed of said yarn plug passing through said chamber, means for producing corresponding control signals and a control arrangement for said yarn heater for adjusting the temperature of the yarn fed to the inlet end of the chamber in response to said control signals in such a way as to maintain the speed and hence the quality of the bulk yarn substantially constant.

4,337,558

# TUBE END FINISHING DEVICE

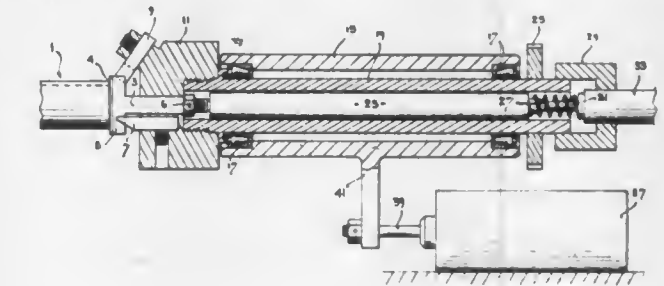
James D. Moore, 1550 "C" W. 139 St., Gardena, Calif. 90249

Filed Apr. 14, 1980, Ser. No. 140,245

Int. Cl.<sup>3</sup> B23C 3/02; B23B 51/16

U.S. Cl. 29—33 T

7 Claims



1. A method of finishing and deburring the open end faces of lengths of pipe without requiring precise lengthwise location of each length of pipe, and with minimum loss of time driving the finishing tools to the length of pipe, comprising:

in a rotating tool head capable of being laterally driven in either direction along its axis of rotation, fixedly mounting an inside bevel tool and an outside bevel tool, and slidably mounting a T-shaped facing tool,

clamping a length of pipe with the open end to be finished and deburred facing said tool head, fast feeding said tool head toward said length of pipe until said T-shaped facing tool contacts the end of said length of pipe,

allowing said T-shaped facing tool to slide inwardly in said tool head while maintaining sufficient pressure against said length of pipe to machine the end surface of said length of pipe,

sensing the magnitude of inward sliding of said T-shaped facing tool relative to said tool head,

when said T-shaped facing tool has moved a sufficient amount with respect to said tool head such that said inside bevel tool and said outside bevel tool are a predetermined finite small distance from said open end face of said length of pipe, automatically changing the drive of said tool head to a slow feed compatible with the proper cutting rate of said bevel tools,

when said T-shaped facing tool has moved a sufficient amount with respect to said tool head such that proper beveling and deburring of the inner and outer edges of said open end face of said length of pipe has been accomplished, automatically reversing the drive direction until said tool head has returned to its initial position, and automatically urging said T-shaped facing tool outwardly to its initial position with respect to said tool head.



**4,337,559**  
**ROD END AND A METHOD AND APPARATUS FOR THE MANUFACTURE THEREOF**

Edward Rangel, Aurora, Ill., assignor to Heim Universal Corporation, Fairfield, Conn.

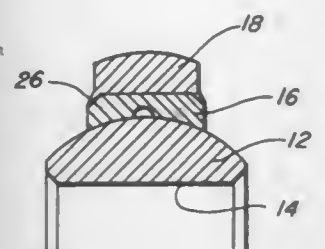
Continuation of Ser. No. 778,820, Mar. 17, 1977, abandoned, Continuation of Ser. No. 958,921, Nov. 8, 1978, abandoned, Continuation of Ser. No. 106,425, Dec. 21, 1979, abandoned.

This application Jul. 9, 1981, Ser. No. 281,741

Int. Cl.<sup>3</sup> B21D 53/10; F16C 23/04

U.S. Cl. 29—149.5 B

3 Claims



1. A method for manufacturing rod ends, each of which comprises a rod end body, a race and a ball, said ball having a cylindrical opening, the steps comprising: inserting said ball in a cylindrical sleeve having an axial length less than the axial length of said ball opening; swaging said sleeve over said ball to form a raceway for said ball, said raceway having an inner surface substantially conforming to the outer surface of at least a portion of said ball and a generally spherical outer surface; machining the outer portion of said raceway to provide an outer cylindrical surface having a diameter of a predetermined size; machining the extremities of said cylindrical outer surface of the raceway to provide chamfers at the terminal ends thereof; forming on a rod end body axial shoulders extending beyond sides of said body and providing opposite axial extensions of said rod end body about a cylindrical body opening extending through the body, the body opening having a diameter commensurate with the diameter of the outer cylindrical surface of the raceway; inserting said ball and machined raceway into the opening of a rod end body; swaging said axially extending shoulders inwardly toward said ball and raceway and into said chamfers thereby fixedly securing said ball and raceway in said body opening; using the rod end bearing until loosening of the ball in the raceway is experienced, adjusting fit of the ball in the raceway by reswaging the shoulders inwardly toward said ball and said raceway and into the chamfers by applying forces to the swaged shoulders of the raceway in a swaging die and causing movement of material of the raceway thereby adjusting and restoring fit.

**4,337,560**  
**METHOD FOR ASSEMBLING LARGE SPACE STRUCTURES**

Paul Slysh, San Diego, Calif., assignor to General Dynamics, Convair Division, San Diego, Calif.

Division of Ser. No. 930,823, Aug. 3, 1978, This application Dec. 17, 1979, Ser. No. 103,990

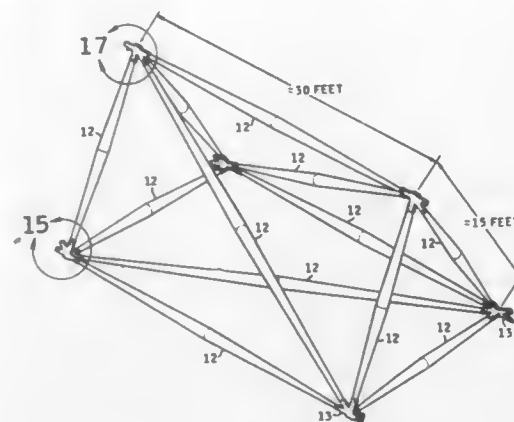
Int. Cl.<sup>3</sup> B23P 11/00; B64G 1/10

U.S. Cl. 29—155 R

4 Claims

1. A method for assembling a truss continuation constructed of struts and nodes to an existing truss structure comprising: prying into engagement the first ends of a plurality of longitudinal struts with a first plurality of nodes on said existing truss; prying into engagement the first ends of a plurality of diagonal

struts with at least some of said first plurality of nodes on said existing truss; prying into engagement the second ends of said plurality of longitudinal struts with a second plurality of nodes;



prying into engagement the second ends of said plurality of diagonal struts with at least some of said second plurality of nodes; and prying into engagement the first and second ends of a plurality of cross struts with said second plurality of nodes.

**4,337,561**  
**PLATE SEPARATOR CONSTRUCTION METHOD**

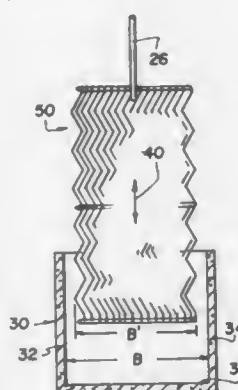
William James, 19 Mansion Pl., Greenwich, Conn. 06830

Filed Aug. 3, 1981, Ser. No. 289,152

Int. Cl.<sup>3</sup> B23P 19/04

U.S. Cl. 29—157 R

4 Claims



1. A method of inserting a stack of interconnected corrugated plates defining tortuous paths of a liquid separator therebetween and made of resilient material, the stack having a stack length and a stack width, in a housing having side walls separated from each other by substantially one of the stack length and stack widths, comprising: engaging the stack at a portion thereof so as to leave a remainder of the stack unengaged; suspending the stack from said portion so that the plates of the stack become distorted to change one of the stack widths and stack lengths; inserting the stack with distorted plates into the housing with the changed one of the stack length and stack width extending between the housing side walls; and releasing the stack after it is in the housing so that the distorted plates, by the action of their resilient material, return the stack to one of its stack lengths and stack widths and so that the stack extends fully across the housing between its side walls.

**4,337,562**  
**METHOD OF RESTORING AN INDEXABLE CUTTING INSERT FOR REUSE**

Rudolph H. Flueckiger, Rockford, Ill., assignor to Rockford Carbide Corporation, Roscoe, Ill.

Filed Apr. 7, 1980, Ser. No. 138,254

Int. Cl.<sup>3</sup> B23P 6/00

U.S. Cl. 29—402.11

1 Claim



1. A method of renewing and resizing a worn indexable cutting insert having the shape of a substantially equilateral polygon and having a central hole of predetermined diameter, said method comprising the steps of, grinding the insert to form the insert into a similarly shaped but smaller equilateral polygon, pressing a tubular bushing within said hole with a tight press fit to reduce the effective diameter of the hole, reducing the effective outer diameter of said bushing and maintaining the effective inner diameter of said bushing substantially constant as said bushing is pressed into said hole.

**4,337,563**  
**METHOD OF ASSEMBLING MULTIPLE WALL DRILL PIPE**

Floyd W. Becker, and Richard R. Regimbal, both of Calgary, Canada, assignors to Drill Systems, Inc., Calgary, Canada

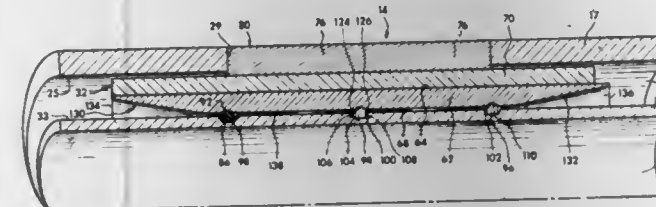
Division of Ser. No. 890,068, Mar. 27, 1978, Pat. No. 4,274,663.

This application Jul. 7, 1980, Ser. No. 166,143

Int. Cl.<sup>3</sup> B23P 11/02

U.S. Cl. 29—451

4 Claims



1. The method of mounting and assembly of an inner pipe member and an outer pipe member of a section of multiple wall drill pipe, comprising: forming and locating a series of annular inner grooves and annular outer grooves in axially spaced relationship along the outer periphery of the inner pipe member and along the inner periphery of the outer pipe member, respectively; mounting a radially innermost portion of a resilient compressible annular connecting member in each of the annular inner grooves along the inner pipe member for permanent association therewith during assembly and use of the section of multiple wall drill pipe with a radially outermost portion of the annular connecting member extending radially beyond the outer peripheral surface of the inner pipe member; inserting one end of the inner pipe member into one end of the outer pipe member and causing relative axial displacement between the inner pipe member and the outer pipe member toward the assembled position; sequentially compressing the annular connecting members during the relative axial displacement of the inner pipe

relative to the outer pipe while maintaining each annular connecting member in the associated one of said inner grooves of the inner pipe member; continuing the relative axial displacement between the inner pipe member and the outer pipe until all the inner grooves are axially aligned with all the corresponding outer grooves; and then terminating the relative axial displacement between the inner pipe member and the outer pipe member and expanding the radially outermost portions of annular connecting members into the outer grooves to permanently connect and axially locate the inner pipe member relative to the outer pipe member during use of the section of multiple wall pipe in a drilling operation.

**4,337,564**  
**MACHINE AND METHOD FOR FORMING TUBES FROM A STRIP**

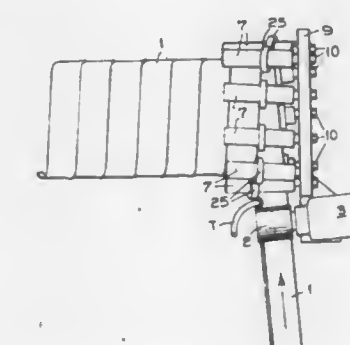
Stanley W. O. Menzel, Adelaide, Australia; David E. Mominee, Alpine, and Gilbert W. Vance, Jamul, both of Calif., assignors to Rib Loc Hong Kong Limited, Hong Kong, Hong Kong

Filed Sep. 28, 1979, Ser. No. 80,044

Int. Cl.<sup>3</sup> B23P 11/02

U.S. Cl. 29—453

26 Claims

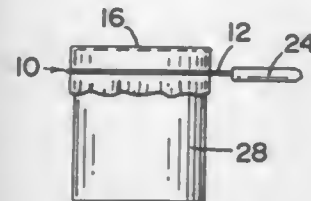


1. The method of forming tubes from strip which comprises: (a) feeding forward a strip having a complementary rib and groove spaced apart on the said strip to each extend longitudinally on the said strip and oppositely facing on the said strip; (b) guiding the said strip into a helical configuration with the said rib in register with the said groove after one revolution of the said helix to overlap edge portions of the said strip; (c) pressing together the said overlapping parts of the said strip while maintaining a differential feed pressure between that part of the said strip being fed and at least that part of said strip being guided into said helical configuration; (d) the said differential pressure is achieved by feeding the said strip to between a joining roller and a pressure roller, engaging one of the said rollers with one side of the strip to drive the strip forward longitudinally while preventing the other of said rollers from substantially opposing the driving force of said one roller, guiding the said strip beyond the said rollers into a helical convolution to bring the said rib in line with the said groove at the said rollers, also engaging a part of the helical convolution of the strip between the said rollers, and continuing to drive the said strip forward while pressing the said rib into said groove while maintaining said differential feed pressure on the part of said strip being fed and that part of the strip forming the helical convolution to cause the said strip to be joined to the said convolution, and (e) the said strip and the said part of said convolution are engaged between the said rollers but said one roller is divided to have two sections, one to engage the said part of said strip being fed, and the other to engage the said part of said convolution, and driving the sections of the



divided roller at different rates of rotation whereby to achieve the differential feed pressure.

**4,337,565**  
**DISPOSABLE COOKING UTENSILS**  
 Michael Diana, 501 Cleveland Ave., SW., Largo, Fla. 33540  
 Filed Mar. 10, 1980, Ser. No. 128,534  
 Int. Cl.<sup>3</sup> B21D 39/00; B23P 11/00  
 U.S. Cl. 29—509 2 Claims



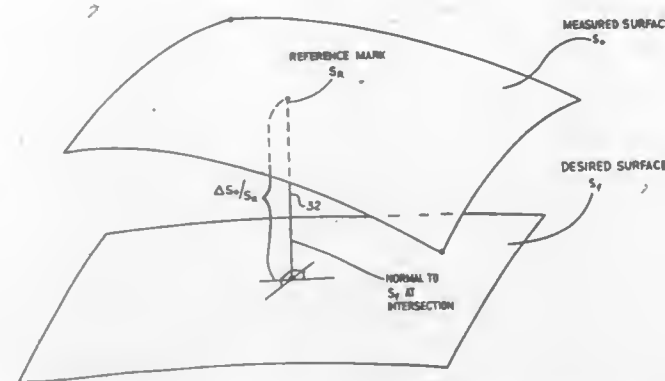
1. A method of hand-forming three dimensional cooking utensils such as frying pans, sauce pans and the like, comprising the steps of:

- procuring a substantially rigid, generally cylindrical, three dimensional object to serve as a mold, said object having the dimensions and configuration of the desired utensil, and positioning said object in upstanding configuration on a support surface,
- wrapping the medial portion of a predetermined length of a wire-like member about the cylindrical walls of said object so that said medial portion conforms to the shape of said walls,
- bending the opposed ends of said wire-like member so that said ends extend radially from said medial portion of said wire-like member and so that said ends are disposed in substantially parallel relation to one another, so that said opposed ends collectively provide a handle means for said utensil,
- procuring a predetermined quantity of aluminum-type foil means sufficient to cover the uppermost free end and the cylindrical sidewalls of said object,
- conforming said foil means to the shape of said object by manipulating said foil means by hand,
- protruding said object with the formed foil thereon through the wire-like member conformed to the shape of the object,
- reversely folding the peripheral edges of the foil means to wrapingly engage the wire-like member to said foil means, thereby forming a wire-like member/foil means assembly,
- separating said assembly from said object, and
- discarding said foil means only after sufficient use thereof and retaining said wire-like member and said object to facilitate the hand-forming of additional utensils as required.

**4,337,566**  
**GAUGING SYSTEM FOR MACHINING SURFACES**  
 Paul DiMatteo, Huntington; Robert Segnini, Stony Brook, and Paul Rademacher, Glen Head, all of N.Y., assignors to Solid Photography, Inc., Melville, N.Y.  
 Filed Jun. 9, 1980, Ser. No. 157,435  
 Int. Cl.<sup>3</sup> B23P 13/02; B23C 3/16; B23B 35/00  
 U.S. Cl. 29—558 11 Claims

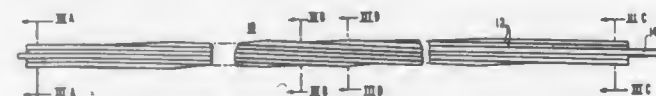
1. A method for removing material from an object to provide a desired finished surface, comprising the steps of: drilling holes into the object so that the bottoms of the holes lie on the desired finished surface, said holes having a shape so that the observed hole diameter at the prevailing surface of the object is dependent on the hole depth and thereby dependent on the amount of material remaining to be removed between the prevailing surface and the desired finished surface; observing and measuring the prevailing surface; calculating depths of material to be removed in a sequence of material removing steps dependent on measurements of the prevailing surface and

desired finished surface; controlling the depth of material removed from said calculating step during each of said material removing steps; and carrying out said material removing



steps in sequence so that after the completion of the last step the surface exposed on the object coincides with the desired finished surface.

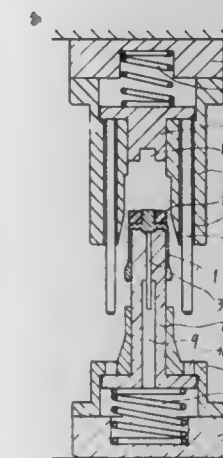
**4,337,567**  
**METHOD OF MAKING A CONDUCTOR BAR FOR DYNAMOELECTRIC MACHINES**  
 Robert Lugosi, Monroeville; George J. Fechko, Pittsburgh; Alan T. Male, Murrysville; Henry E. Haller, III, Pittsburgh, and Cecil J. Mole, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.  
 Division of Ser. No. 945,985, Sep. 27, 1978, Pat. No. 4,260,924.  
 This application May 16, 1980, Ser. No. 150,483  
 Int. Cl.<sup>3</sup> H02K 15/04  
 U.S. Cl. 29—596 4 Claims



1. A method of forming a conductor bar for a dynamoelectric machine comprising the steps of:  
 insulating strands of wire with at least two layers of insulating material,  
 utilizing a thermoplastic material as the outer layer,  
 forming said insulated strands into a cable with transposed strands,  
 combining a plurality of said cables with insulated wires of predetermined size to form a subconductor with transposed wires and cables,  
 shaping said subconductor to produce a rectangular cross-section, of an accurate predetermined size,  
 cutting said subconductor to a predetermined length,  
 placing said predetermined length of subconductor in a die and heating the subconductor so as to set the thermoplastic insulating material on the strands to form a rigid bar,  
 bending the subconductor bars at predetermined locations along its length to produce at least one Roebel transposition from one end of the subconductor bar to the other,  
 compressing the subconductor bars adjacent the bends in a plane at right angles to the angle of the bends,  
 testing the compressed subconductor bars for strand to strand shorts,  
 placing a predetermined number of subconductor bars in two separate stacks,  
 twisting the two stacks together to form a conductor with the subconductors making at least one Roebel transposition between its ends,  
 applying a resin to the conductor at the location of the bends in the subconductors,  
 placing the conductor with the resin applied in a mold which shapes the conductor to an accurate predetermined size, allowing the resin to set while the conductor is disposed in the mold,

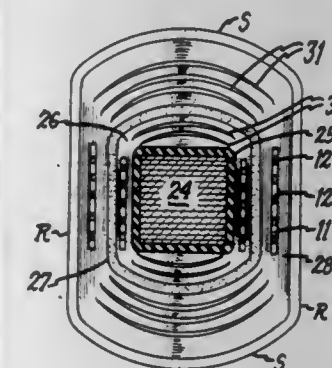
removing the conductor from the mold, and testing for subconductor to subconductor shorts.

**4,337,568**  
**PROCESS FOR FABRICATING CUP-SHAPED CORELESS ARMATURE**  
 Masanori Morisawa, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan  
 Filed Apr. 21, 1980, Ser. No. 142,120  
 Claims priority, application Japan, Apr. 24, 1979, 54-051172  
 Int. Cl.<sup>3</sup> H02K 15/02  
 U.S. Cl. 29—598 9 Claims



1. A process for molding and shaping a cup-shaped coreless armature comprising the steps of winding conductors a specified number of turns in the form of a cup to obtain an armature winding, placing the armature winding and an armature component including a commutator into a heating die assembly along with a molding resin member in the form of a solid at room temperature, the heating die assembly including relatively movable outer and inner die members formed to define the outer, inner and end dimensions of the armature, relatively moving the die members while melting the resin member to progressively shape the armature winding and cause the molten resin to flow into the space defined by the die assembly, and thereafter curing the resin to rigidly unite the armature winding and the armature component including the commutator with the resin.

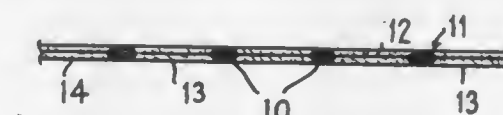
**4,337,569**  
**METHOD OF MAKING INTEGRALLY FORMED TRANSFORMER COOLING DUCTS**  
 Linden W. Pierce, Rome, Ga., assignor to General Electric Company, N.Y.  
 Continuation of Ser. No. 881,216, Feb. 27, 1978, abandoned.  
 This application Dec. 3, 1979, Ser. No. 99,450  
 Int. Cl.<sup>3</sup> H01F 41/06  
 U.S. Cl. 29—605 1 Claim



1. A method for forming a transformer winding having integral cooling ducts comprising the steps of:  
 providing a plurality of layers of transformer wires around a rectangular core opening to define a quasi-rectangular

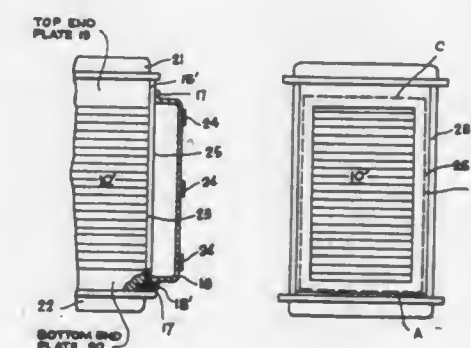
transformer winding having first and second pairs of opposing sides;  
 inserting a plurality of spacers between said wire layers on said first pair of said opposing sides of said winding to define first cooling ducts for the transport of vaporizable coolant; and  
 applying pressure to said first pair of said opposing sides to take up the stacking allowance thereat and cause said second pair of opposing sides to elongate, whereby to create separations of said wire layers proximate said second pair of sides, said separations defining second cooling ducts for the transport of vaporizable coolant through said windings, at least said second cooling ducts having a range in thickness from about 0.20 to 0.50 inches.

**4,337,570**  
**ELECTRICAL FUSELINKS**  
 Kazimierz W. Woznica, Corsley, England, assignor to Kenneth E. Beswick Limited, Frome, England  
 Filed Dec. 3, 1980, Ser. No. 212,370  
 Claims priority, application United Kingdom, Dec. 3, 1979, 7941695  
 Int. Cl.<sup>3</sup> H01H 69/02  
 U.S. Cl. 29—623 5 Claims



1. In the manufacture of electrical cartridge fuselinks wherein fuse elements are produced by mounting fusible members on insulating supports between conductive end zones of said supports, and said fuse elements are disposed within insulating barrels with said conductive end zones electrically connected to end terminals of said barrels, the improvement which facilitates the rapid and multiple production of said fuse elements comprising the steps of disposing a continuous length of said fusible member along a continuous strip of insulating material, adhering metallic layers to said continuous fusible member and strip at spaced attachment zones along said strip to attach said continuous fusible member to said strip, and severing said continuous fusible member and strip at said spaced attachment zones to produce individual ones of said fuse elements.

**4,337,571**  
**METHOD FOR PRODUCING A FUEL CELL MANIFOLD SEAL**  
 Paul E. Grevstad, West Hartford; Carl K. Johnson, Manchester, and Anthony P. Mientek, Glastonbury, all of Conn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.  
 Division of Ser. No. 27,690, Apr. 6, 1979, Pat. No. 4,212,929.  
 This application Nov. 6, 1979, Ser. No. 91,843  
 Int. Cl.<sup>3</sup> H01M 2/08, 8/00  
 U.S. Cl. 29—623.2 3 Claims



1. A method for producing a fuel cell manifold-to-stack seal



which eliminates damage to the seal by the sliding motion of the seal against the rough surface of the fuel cell stack as it undergoes compressive creep, comprising the steps of: providing a polymer seal frame which includes a sealing means between the manifold and the fuel cell stack for producing a seal therebetween, securing the polymer seal frame between the manifold and the fuel cell stack such that as the stack creeps the seal frame creeps with it, with sliding motion being between the seal frame and the manifold while maintaining a sealing effect therebetween, immovably securing one end only of the manifold to the fuel cell stack, and maintaining the manifold against the polymer seal frame and fuel cell stack to produce a desired seal loading thereon.

**4,337,572**  
**DEVICE FOR MANUFACTURE OF ASSEMBLED CAM SHAFT**

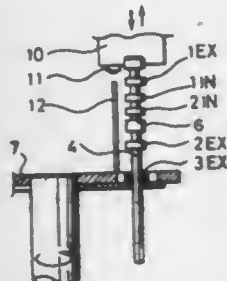
Akio Takahashi, Toyota; Chiaki Tsumuki, Aichi; Hitoshi Nakamura, and Juro Ozaki, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 939,857, Sep. 5, 1978, Pat. No. 4,265,388. This application Feb. 19, 1981, Ser. No. 236,212

Claims priority, application Japan, Sep. 8, 1977, 52-108174 Int. Cl.<sup>3</sup> B23P 19/02, 19/04

U.S. Cl. 29—792

4 Claims



1. Camshaft assembling apparatus comprising, means for supporting a camshaft in a predetermined circumferentially oriented position for axial movement, a rotary table having a plurality of cam supporting stations, each moveable into axial alignment with said shaft, means at each cam supporting station for supporting a cam with its lobe in a predetermined angular position so that each cam is properly angularly oriented relative to the cam shaft upon movement of its station on the table into axial alignment with the shaft, and drive means for moving said cam shaft axially into said cam elements in succession to press the respective cam elements onto the shaft in a predetermined angular orientation with respect to the shaft and with respect to each other.

**4,337,573**  
**METHOD FOR CONSTRUCTING AN ELECTRICAL INTERCONNECTION CIRCUIT AND APPARATUS FOR REALIZING THE METHOD**

Gérard Nicolas, Voreppe; Gérard Ponthenier, Le Pont de Claix, and Gérard Turc, Echirolles, all of France, assignors to Commissariat à l'Energie Atomique, Paris, France

Filed May 29, 1980, Ser. No. 154,144

Claims priority, application France, Jun. 7, 1979, 79 14592

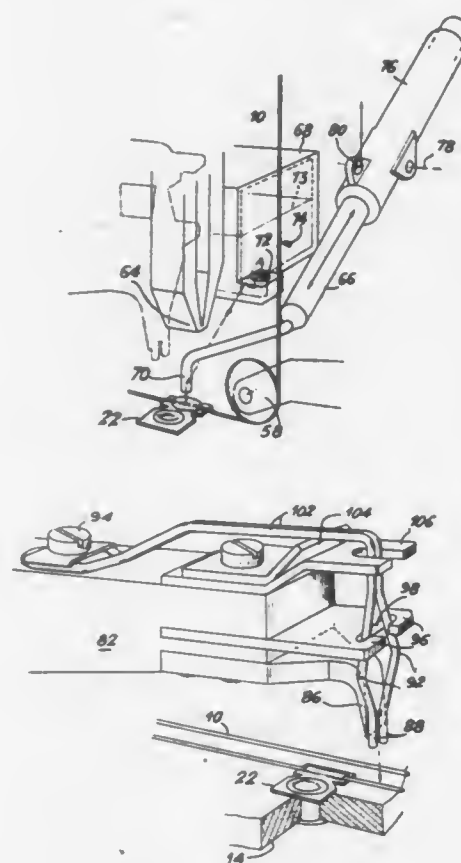
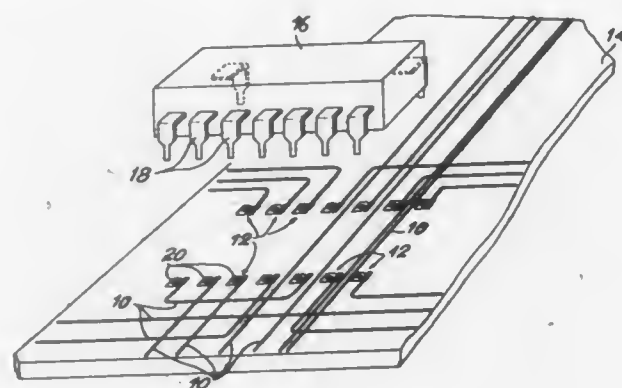
Int. Cl.<sup>3</sup> H05K 3/20; B23P 19/00

U.S. Cl. 29—831

10 Claims

1. A method for producing an electrical interconnection circuit on an insulating base support incorporating conductive zones able to receive clips of electronic components, wherein said method comprises the steps of: providing conductive zones comprising pellets, each defining a connector adapted to receive one of said clips, a wire weld-

ing zone, and a zone of reduced width area acting as a thermal shunt between said connector and said welding zone; joining the different conductive zones to be interconnected by adhering a thermally weldable insulating wire to said base support; depositing liquid flux on parts of the wire to be welded resting on said wire welding zones; welding said parts of the wire to said wire welding zones; cutting said wire after welding to form in said wire a welded end and an unwelded end; gripping said unwelded end of the wire; and bringing said unwelded end of the wire into contact with another wire welding zone.



3. An apparatus for producing an electrical interconnection circuit on an insulating base support incorporating conductive zones each defining a connector adapted to receive one clip of an electronic component and a wire welding zone, said insulating base support being covered with adhesive resin outside said conductive zones, wherein said apparatus comprises an X-Y coordinate table to which is fixed the insulating base support, means for controlling the translations of said table in accordance with two perpendicular directions, a tool-carrying head constituted by a fixed shaft and a rotary frame connected to the shaft, means for controlling the rotation of the frame about an axis perpendicular to the support, means carried by the fixed shaft for uncoiling a thermally weldable insulated wire, means carried by the rotary frame for applying the wire to the sup-

port, means carried by the rotary frame for depositing a given quantity of liquid flux on parts of the wire to be welded resting on a conductive zone, means carried by the rotary frame for simultaneously baring and welding the thermally weldable wire to said welding zones, means carried by the rotary frame for cutting the wire after welding to form in said wire a welded end and an unwelded end, and means carried by the rotary frame for gripping the unwelded end of the wire to bring the latter into contact with another welding zone.

**4,337,574**  
**METHOD OF MANUFACTURING ELECTRICAL CONNECTOR RECEPTACLES**

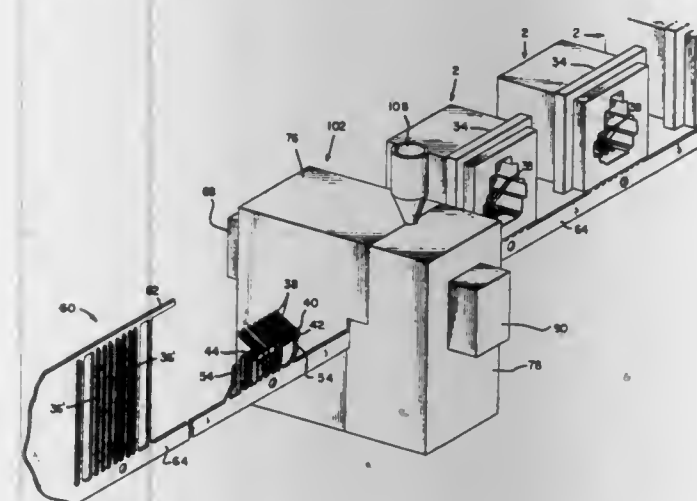
Donald W. K. Hughes, Mechanicsburg, Pa., and John H. F. Lauterbach, Clearwater, Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 969,504, Dec. 14, 1978, Pat. No. 4,231,628. This application Oct. 24, 1980, Ser. No. 200,113

Int. Cl.<sup>3</sup> H01R 43/00

U.S. Cl. 29—883

4 Claims



1. A method of making electrical connector receptacles of the type comprising an insulating housing having a plug-receiving end and a rearward end, a plug-receiving opening extending into said plug-receiving end, said opening having opposed internal sidewalls and opposed internal endwalls, said housing having oppositely directed external sidewalls and oppositely directed external endwalls, a plurality of electrical conductors with each of said conductors having an intermediate portion in side-by-side spaced-apart relationship, each of said conductors comprising a first end which serves as a contact spring extending from one of said internal sidewalls diagonally into said opening and towards said rearward end, an intermediate portion extending from said plug-receiving end through said housing between said one internal sidewall and the adjacent external sidewall and towards said rearward end, and a second end which extends externally of said housing, said plug-receiving opening being dimensioned to receive a connector plug having spaced-apart contact members therein which engage said contact springs, said method comprising the steps of:

stamping a continuous strip of conductive sheet metal to produce a continuous strip comprising a carrier strip having groups of blanks for said conductors extending therefrom at spaced intervals with the number of conductor blanks in each group being equal to the number of conductors in said connector receptacle, feeding said strip through a forming die and forming said conductor blanks to the shape of said conductors in said connector receptacle, intermittently feeding said strip to a molding apparatus having a mold cavity which conforms to the shape of said housing and having core pins in said mold cavity which conform to the shape of said plug-receiving opening, positioning one of said groups of formed conductors in

said cavity with said contact portions of said conductors held between said core pins, injecting molding material into said cavity, opening said mold, and feeding said strip whereby, said strip, when it emerges from said mold, has connector housings molded on each of said groups of conductors with molding material surrounding said intermediate portions of said conductors.

**4,337,575**  
**RAZOR BLADE ASSEMBLY**

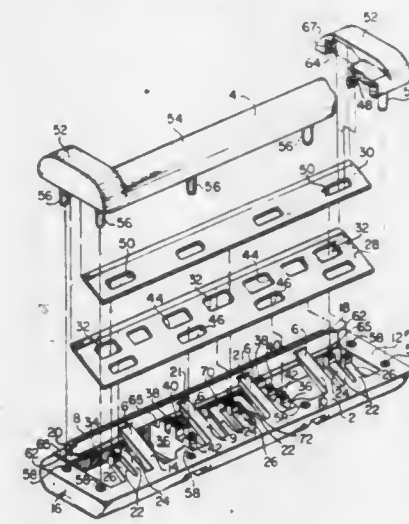
Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 176,138, Aug. 7, 1980. This application Jan. 29, 1981, Ser. No. 229,623

The portion of the term of this patent subsequent to Apr. 13, 1999, has been disclaimed. Int. Cl.<sup>3</sup> B26B 21/22

U.S. Cl. 30—47

11 Claims



1. A razor blade assembly comprising a platform including a base portion, a cap portion fixed to said platform, first arm means extending from said base portion and connected to a guard portion, said first arm means being adapted to flex about its juncture with said base portion to facilitate arcuate movement of said guard portion about said base portion, a first blade comprising a first cutting edge strand portion and a first base strand portion parallel to and spaced from said first cutting edge strand portion, said first cutting edge and first base strand portions being connected to each other by first interconnecting strand portions, a second set of arms extending from said base portion and supporting said first blade, said second set of arms being adapted to flex about its junctures with said base portion to facilitate arcuate movement of said first cutting edge strand portion about said base portion, a second blade comprising a second cutting edge strand portion and a second base strand portion parallel to and spaced from said second cutting edge strand portion, said second cutting edge and second base strand portions being connected to each other by second interconnecting strand portions, a third set of arms extending from said base portion and supporting said second blade, said third set of arms being adapted to flex about its junctures with said base portion to facilitate arcuate movement of said second cutting edge strand portion about said base portion.

**4,337,576**  
**KNIFE WITH RETRACTABLE BLADE**

Jim L. Drost, and Myron K. Gordin, both of P.O. Box 289, Oskaloosa, Iowa 52577

Filed Nov. 6, 1980, Ser. No. 204,647

Int. Cl.<sup>3</sup> B26B 1/08

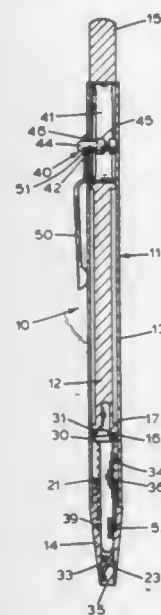
U.S. Cl. 30—162

7 Claims

1. In a knife having a tubular barrel member with a longitudinal bore, a tubular tool support member located within said barrel member bore for slidable movement therein between



operative and inoperative positions; releasable latch means coacting between said barrel member and said support member to releasably lock said support member in said operative position, and a blade assembly located within said barrel member bore and engageable with one end of said support member for movement therewith between said inoperative position wherein said blade assembly is retracted inwardly from said one end of said barrel member and an operative position wherein a portion of said blade assembly extends outwardly from said barrel member one end, the improvement wherein said blade assembly comprises:



- (a) a blade having a cutting portion at one end and a shank portion at an opposite end,
- (b) a handle in which said shank portion of said blade is rigidly secured, said handle having a generally cylindrical shaped periphery and a pair of diametrically opposed tension means that extend beyond the handle periphery to engage the bore of said barrel member as said blade assembly is moved into said operative position to reduce undesired side-to-side movement of said blade when cutting pressure is exerted thereon.

4,337,577

## DECLINATION TRANSPOSER

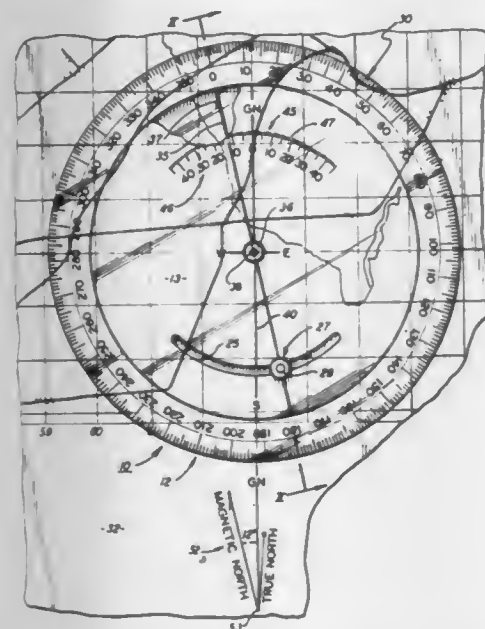
Noel J. Hotchkiss, Elbridge, N.Y., assignor to Declitractor, Inc., Elbridge, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,320

Int. Cl.<sup>3</sup> G01C 21/20

U.S. Cl. 33—1 N

3 Claims



1. An instrument for use in conjunction with a hand held magnetic compass for solving land navigation problems by

directly transposing grid and magnetic values when reading or plotting magnetic directional values on a map, the instrument including

- a transparent circular base having a circular recess formed in its top surface that is coaxially aligned with the axis of the base and a planar bottom surface whereby the base is seatable in a flat position upon a map having grid lines printed thereon when either plotting or reading azimuths on the map,
- a transparent circular disc seated in said circular recess that has a close running fit with the sidewalls of the recess whereby the disc rotates in the recess about the axis of said base, said disc and said base both containing a discernible opening that passes through the axis of the instrument whereby the instrument can be quickly and accurately aligned on a map,
- a compass rose imprinted about the outer periphery of the base having indicating lines representing compass points passing inwardly in a radial direction from the outer edge of the base toward the axis thereof whereby compass headings can be accurately read or plotted on a map,
- a magnetic north line imprinted upon the base that extends radially from the axis of the base to the zero degree compass rose heading to indicate the zero degree azimuth of a magnetic compass,
- a grid north line imprinted along a diameter of the disc for orientating the instrument along the north-south grid lines of a map,
- an angular scale for setting a grid magnetic angle into the instrument, said scale being imprinted upon the disc to either side of the grid north line for accurate displacement of the grid north line from the magnetic north line an amount equal to the grid magnetic angle experienced in the geographic location on the map whereby aligning the grid north line along the north-south grid lines on the map will enable compass azimuth readings to be directly plotted or read from the compass rose without conversion thereby eliminating conversion errors.

4,337,578

## MEASURING DEVICE

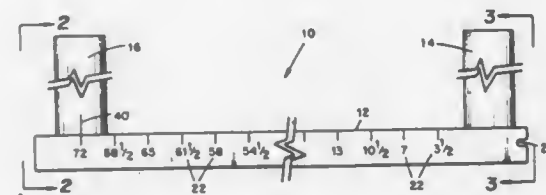
Emery L. Seals, Rte. 5, Box 294, Morristown, Tenn.

Filed Mar. 16, 1981, Ser. No. 244,243

Int. Cl.<sup>3</sup> G01B 5/02

U.S. Cl. 33—125 R

1 Claim



1. A device for measuring lengths of yarn and the like comprising:

- an elongated base member having a generally U-shaped cross section which defines a longitudinally extending slot;
- a first cylindrical post projecting from a longitudinal side of said base member and fixedly connected to said elongated base member at one end of said longitudinally extending slot;
- a second cylindrical post projecting from the same longitudinal side of said base member as said first cylindrical post; means for mounting said second post member to said base member in said longitudinally extending slot for selected movement toward and away from said first post member along said longitudinally extending slot;
- said first and second posts being of the same diameter; and
- said mounting means comprising:
- fastener means having a head larger than the width of said slot of said base member and disposed in the hollow interior of said base member, and a threaded shank projecting

from said head through said elongated slot of said base member; and,

said second post being formed with a threaded aperture for threadably receiving said threaded shank;

said second post being threaded onto said shank to tightly capture the edges of said base member defining said slot between said second post and said head of said fastener means, at any location along said elongated slot;

measuring indicia comprising a plurality of marks on said base member, the first mark corresponding to the shortest length measurable by said measuring device being spaced from the centerline of said first post toward said second post by a distance substantially equal to the sum of the radii of said first and second posts and corresponds to a linear measurement substantially equal to the circumference of said first post plus two times the diameter of said first post.

whereby a complete turn of yarn encompassing said first and second posts is the length denominated by said indicia.

4,337,579

## DEFORMABLE REMOTE CENTER COMPLIANCE DEVICE

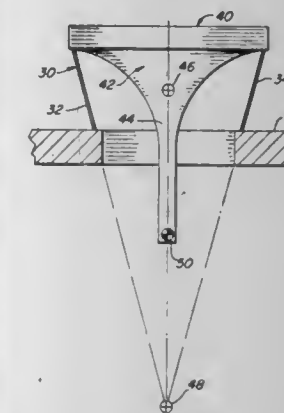
Thomas L. De Fazio, Watertown, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Apr. 16, 1980, Ser. No. 140,768

Int. Cl.<sup>3</sup> G01B 5/25

U.S. Cl. 33—169 C

4 Claims



1. A deformable remote center compliance device comprising: a base; an intermediate member; deformable support means disposed along radii from a first motion center interconnected between said base and said intermediate member; and operator means having a first upper rigid portion interconnected with said intermediate member and a second lower deformable portion having a second motion center for establishing a remote center of compliance between said first and second centers of motion at, near or beyond the end of said operator means; said lower deformable portion having a reduced cross-section relative to said upper rigid portion.

4,337,580

## METHOD FOR INSPECTING GEAR CONTACT PATTERNS

Takashi Tanno, and Shigemitsu Kolke, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jul. 14, 1980, Ser. No. 168,702

Claims priority, application Japan, Jul. 14, 1979, 54-89457; Aug. 29, 1979, 54-110851

Int. Cl.<sup>3</sup> G01B 5/28, 7/28, 7/34

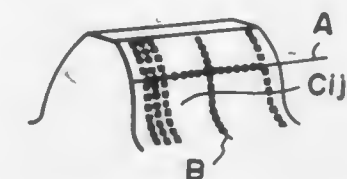
U.S. Cl. 33—179.5 R

20 Claims

1. Method for inspecting a gear contact pattern on a tooth surface of a gear tooth of a gear which comprises the steps of determining on the tooth surface of the gear tooth a plurality of regularly located measuring points, establishing a standard tooth profile for the measuring points, measuring the tooth surface at the measuring points to detect deviations of the tooth surface from the standard tooth profile at the measuring

points, determining a reference which is the deviation of maximum positive value, counting the number of the measuring points of which deviations are within a predetermined limit of the reference, determining a gear contact ratio which is a ratio of the counted number of the measuring points to the total number of the measuring points so as to select gears in which the gear contact ratio is above a predetermined value.

9. Method for inspecting a gear contact pattern on a tooth surface of a gear tooth of a gear which comprises the steps of determining on the tooth surface of the gear tooth a plurality of regularly located measuring points, establishing a standard



tooth profile for the measuring points, measuring the tooth surface at the measuring points to detect deviations of the tooth surface from the standard tooth profile at the measuring points, determining a reference which is the deviation of maximum positive value, dividing the tooth surface into four triangular corner zones and a diamond-shaped center zone, counting the number per unit area in each zone of the measuring points of which deviations are within a predetermined limit from the reference, and accepting the tooth surface when the counted number in the center zone is not less than that in the other zones.

4,337,581

## TARGET STRUCTURE FOR USE WITH AN ALIGNMENT APPARATUS

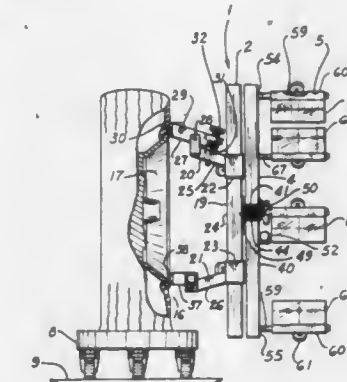
Leonard F. Eck, McPherson, Kans., assignor to Kansas Jack, Inc., McPherson, Kans.

Filed Feb. 19, 1980, Ser. No. 122,530

Int. Cl.<sup>3</sup> G01B 11/275

U.S. Cl. 33—288

13 Claims



1. A target structure mountable upon a wheel of a vehicle for checking the alignment thereof and comprising:

- (a) a target support;
- (b) means for mounting said target support to a wheel in laterally spaced relationship to a side of said wheel; and
- (c) a plurality of targets attached to said target support and respectively having a planar portion extending laterally of the side of said wheel and spaced radially from the rotational axis of said wheel;
- (d) said plurality of targets including four said targets respectively positioned on horizontal and vertical cardinal locations around said wheel;
- (e) said cardinal locations including vertically aligned upper and lower locations and horizontally aligned front and rear locations.

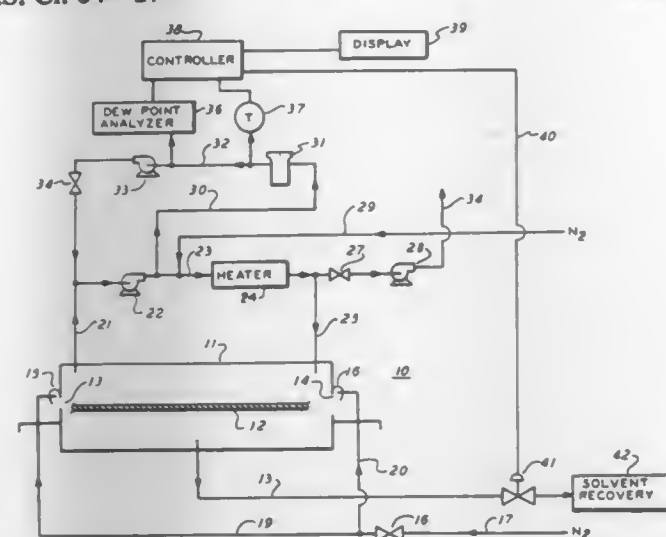


**4,337,582**  
**METHODS FOR CONTROLLING VAPOR**  
**CONCENTRATIONS IN AN ATMOSPHERE**  
 Stephen E. Smith, Wyckoff, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Sep. 30, 1980, Ser. No. 192,582  
 Int. Cl.<sup>3</sup> F26B 3/04

U.S. Cl. 34-27

2 Claims



1. The method of maintaining a predetermined degree of saturation of solvent vapor in a curing oven to which an inert gas is supplied while the oven is maintained at a temperature between 200°-600° F. such that the one or more solvents in a solvent borne resin coating on a material passed through said oven is evaporated to form an oven atmosphere comprised of inert gas and one or more evaporated solvent vapor which atmosphere is removed from said oven, the improvement comprising:

- sensing the temperature of the oven atmosphere;
- determining the highest dew point of the solvent vapors in the oven atmosphere;
- establishing a predetermined dew point below said oven temperature and establishing a predetermined difference value;
- subtracting said highest dew point from said predetermined dew point to determine the actual difference therebetween; and
- comparing said actual difference and said predetermined difference and varying the rate of removing solvent vapor in response to said comparison to maintain said actual difference at a value greater than said predetermined difference and said predetermined degree of saturation without condensation of said solvent vapors.

**4,337,583**  
**APPARATUS AND METHOD FOR DRYING A**  
**SUBSTANCE**  
 Kenneth R. Harris, Rte. 8, Box 551, Rapid City, S. Dak. 57701  
 Filed May 14, 1981, Ser. No. 263,422  
 Int. Cl.<sup>3</sup> F26B 3/06, 17/20

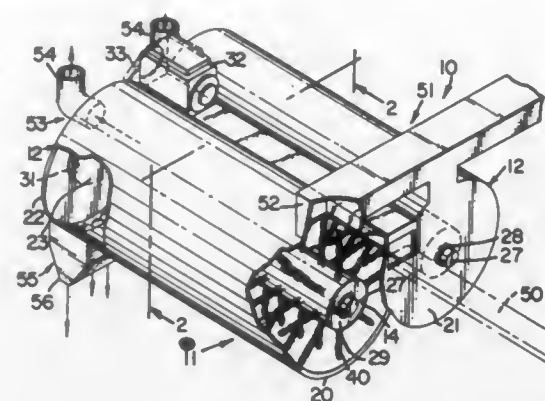
U.S. Cl. 34-33

8 Claims

1. A method for drying a wet substance, said method comprising the steps of:

- moving said wet substance into side by side first and second housings with an elongated aperture therebetween for providing communication of said substance between said housings;
- imparting motion to said wet substance in each housing;
- causing said wet substance from one of said first and second connected housings to impact said wet substance from the other of said first and second connected housings at said aperture thereby pulverizing said substance;

- passing dry gas through said substance to dry said substance;
- exhausting said gas from said housings; and

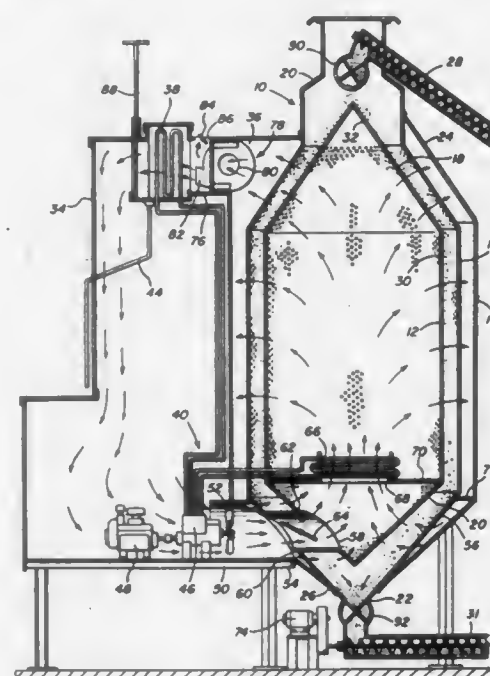


- directing said dry, pulverized substance from said housings.

**4,337,584**  
**HEAT PUMP GRAIN DRYER**  
 Lawrence D. Johnson, R.R. 1, Glenburn, N. Dak. 58740  
 Filed Sep. 5, 1980, Ser. No. 184,335  
 Int. Cl.<sup>3</sup> F26B 17/14

U.S. Cl. 34-65

8 Claims



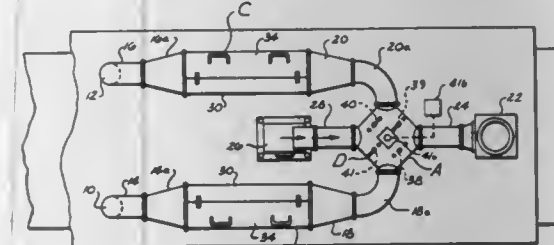
1. A grain dryer including means defining a gravity flow path for granular material to be dried and laterally through which drying air may be passed, said flow path including inlet and outlet end portions, supply means for supplying granular material to said inlet end portion and discharge means for discharging granular material from said outlet end portions, air passage means including means for passing heated drying air laterally through the inlet end portion and cooled drying air laterally through said outlet end portion, said air passage means defining a substantially closed loop circuit and means for pumping air through said circuit, said air passage means including heating means for heating the drying air immediately prior to its passage laterally through said inlet end portion and cooling means for cooling and dehumidifying said drying air after its passage laterally through said inlet end portion and prior to its passage laterally through said outlet end portion, said dryer including a pair of inner and outer loosely telescoped and perforated tubular members including upper and lower ends and defining a generally annular area therebetween comprising said gravity flow path, the upper and lower ends of said inner tubular member being closed, an outer shell at least substantially enclosing said outer tubular member, an outer

partition extending about said outer tubular member between the latter and said shell intermediate the upper and lower ends of said outer tubular member, an inner partition in said inner tubular member extending thereacross and having an opening formed therein, said heating means comprising heat exchange means disposed across said opening, said air passage means including the area between said outer tubular member and said shell above and below said outer partition, said air passage means including duct means for ducting air from the upper portion of the last-mentioned area above said outer partition to the lower portion of said last-mentioned area below said outer partition, said cooling means being disposed in said duct means.

**4,337,585**  
**HEAT RECOVERY AND AIR PREHEATING APPARATUS**  
**FOR TEXTILE DRYER OVENS**  
 William H. Hebrank, 14 Hermitage Rd., Greenville, S.C. 29615  
 Filed Jul. 26, 1979, Ser. No. 60,974  
 Int. Cl.<sup>3</sup> F28D 17/00; F26B 19/00

U.S. Cl. 34-86

6 Claims



1. Heat recovery and replacement air preheating apparatus for use in textile heat treatment machinery comprising:

- a dryer oven heated by a suitable heat means having a dryer chamber through which textile fabric is passed for treatment;
- a first port carried by said dryer oven communicating directly with an interior of said dryer chamber;
- a second port carried by said dryer oven communicating directly with said interior of said dryer chamber spaced from said first port;
- duct means connected to said first and second ports;
- exhaust means for delivering a flow of hot exhaust gases from said dryer oven;
- air flow means for delivering a flow of replacement air to said dryer oven in a direction reverse to that of said flow of exhaust gases;
- valve manifold means connected in said duct means for selectively controlling said flow of replacement air into said dryer oven and said flow of gases out of said oven alternately through said first and second ports;
- first thermal storage means connected in said duct means in series flow relationship with said first port and said valve manifold means for recovering and storing heat from said exhaust gases;
- second thermal storage means connected in said duct means in series flow relationship with said second port and said valve manifold means for recovering and storing heat from said exhaust gases;
- valve means included in said valve manifold means having a first position in which said flow of exhaust gases passes through said first port and first thermal storage means and said flow of replacement air simultaneously passes inwardly through said second thermal storage means and said second port;
- said valve means having a second position in which said flow of exhaust gases passes outwardly through said second port and second heat storage means and said flow of replacement air simultaneously passes inwardly through said first heat storage means and first port; and
- means for alternating said valve means between said first and second positions;

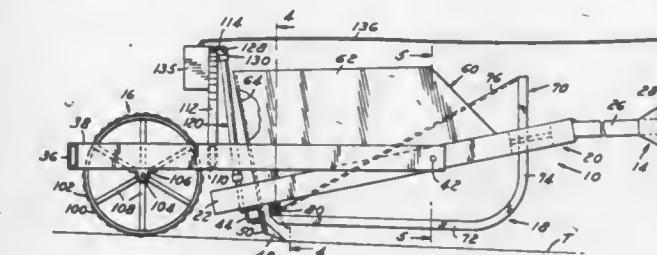
1020 O.G.-2

has been previously heated by said flow of exhaust gases thereby purging and returning heat exhausted from said dryer in the form of preheated replacement air in a manner which maintains said apparatus substantially free and clean of lint from said textile fabric and in which a substantial amount of exhaust heat is prevented from reaching the outside environment and which maintains said apparatus at a reduced temperature.

**4,337,586**  
**APPARATUS FOR THE HANDLING AND**  
**CONDITIONING OF SNOW**  
 Joseph Buono, 9797 Bitten Dr., P.O. Box 189, Brighton, Mich. 48116  
 Filed Mar. 25, 1981, Ser. No. 247,493  
 Int. Cl.<sup>3</sup> E01H 4/00

U.S. Cl. 37-222

9 Claims



1. An apparatus for the handling and conditioning of snow and adapted to be pulled by a tractor or other power source comprising:

- a tongue and hitch assembly at the forward end of the apparatus and located on the centerline thereof;
  - a roller assembly at the rearward end of the apparatus; and
  - a scraper and snow collector assembly intermediate the forward and rearward ends;
- said scraper and snow collector assembly having a raised position and a lowered position including a front elongated frame of U-shaped configuration when viewed from the top and having a pair of laterally spaced apart tubular side members having the forward ends thereof connected by a laterally extending tubular front cross brace;
- said roller assembly including a rear elongated frame having a pair of laterally spaced apart tubular side elements having the rearward ends thereof connected by a laterally extending tubular back cross support;
- the side elements of said rear frame being located outboard of the side members of said front frame;
- first pivot means connecting the forward ends of said side elements to intermediate portions of said side members;
- a scraper blade support mounting element extending parallel to said front cross brace at the back of said front frame and abutting and secured to the bottom of said tubular side members at the rear end portions thereof;
- a laterally extending scraper blade secured to said scraper blade mounting element and located beneath said front elongated frame, said blade comprising a plurality of downwardly inclined teeth for scraping snow or dirt from the terrain when the scraper and snow collector assembly is in said lowered position;
- said scraper and snow collector assembly further including a hopper open at the top and at the bottom and supported by said front frame, said hopper extending forwardly from said scraper blade towards said front cross brace to accumulate and collect snow scraped from the terrain by said scraper blade;
- said hopper including a pair of solid side walls, one side wall being secured and extending upwardly from each of the side members of said front frame, said hopper further including a transversely extending screen at the back of said hopper, said screen being located between said solid side walls and extending vertically upwardly from said scraper support element, said screen permitting snow in



said hopper to sift through the openings provided therein to redeposit quantities of accumulated snow in low areas of the terrain as the apparatus moves forwardly; said hopper further including a pair of generally vertical floating side panels on the inboard sides of said side members, each side panel having a runner portion along the lower edge thereof adapted to engage the terrain, the rearward end of each side panel being loosely connected to the corresponding tubular side member adjacent said scraper blade; guide means spaced from each tubular side member and secured to the front cross brace, each guide means extending rearwardly, the front end portion of each side panel being received in the space between the corresponding side member and guide means whereby each side panel will move vertically about the loosely connected end as a result of the runner portion moving along the terrain; said side panels being generally solid and preventing the snow scraped by said scraper blade from escaping out the sides of the hopper; said roller assembly further including a roller having a transversely extending axle, with the ends of the axle being mounted in bearings provided on the side elements of said rear frame, said roller compacting the redeposit quantities of accumulated snow in the low areas of the terrain; and hydraulic actuating means interposed between said rear frame and the scraper support on said front frame, which is effective when energized to pivot or tilt said front frame about said pivot means so that said scraper blade can be raised or lowered with respect to the terrain; said tongue and hitch assembly including an elongated tongue extending forwardly from and secured to said front cross brace.

4,337,587

## VEHICLE POWER CONTROL SYSTEM

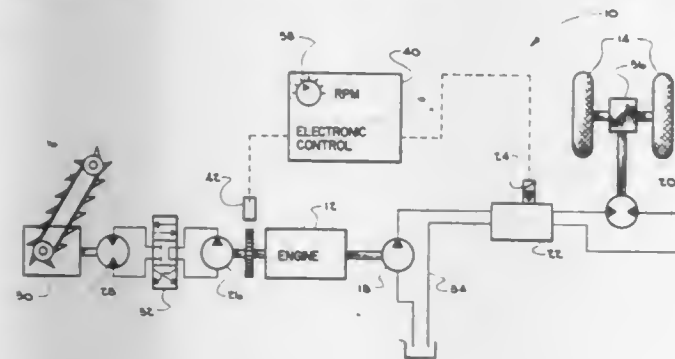
Glen T. Presley, 403 W. Stocker, Angola, Ind. 46703

Filed Apr. 14, 1980, Ser. No. 139,864

Int. Cl.<sup>3</sup> E02F 5/06

U.S. Cl. 37—83

7 Claims



1. A trencher control system which varies the vehicle drive speed so as to maintain a preset torque on the digging chain as the digging conditions vary, comprising:  
a prime mover;  
a drive means connecting the prime mover to the digging chain;  
a pump means driven by the prime mover;  
a vehicle drive motor connected to the drive wheels of the trencher, said motor being driven by said pump;  
RPM sensing means on the prime mover;  
a servo-controlled valve means between the pump means and the vehicle drive motor which varies the amount of flow from the pump means to the drive motor; and  
an electronic control means which controls the servo of the valve means, the control means receives a signal from the RPM sensing means and compares the signal with an adjustable reference, if the signal received is less than the reference, the control means signals the servo to decrease the flow to the vehicle drive motor, if the signal is greater than the reference, the control means signals the servo to

increase the flow to the drive motor and further load the prime mover, whereby the control means maintains the prime mover at its peak torque output regardless of changes in load.

4,337,588

## DIGITAL SPRING ROLL DISPLAY DEVICE

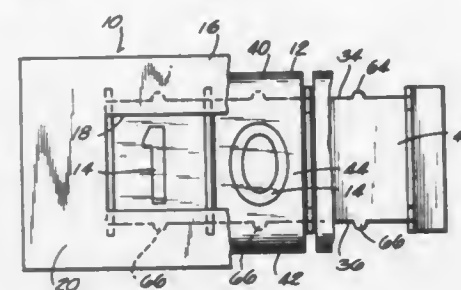
Robert C. Clapper, Racine, Wis., assignor to DCI Marketing, Milwaukee, Wis.

Filed Jul. 2, 1981, Ser. No. 279,702

Int. Cl.<sup>3</sup> G09F 3/18

U.S. Cl. 40—10 R

8 Claims



1. A display device comprising  
a support structure including a planar portion having a display window and a rearward surface defining a plane,  
a spring roll positioned adjacent said rearward surface and being visible through said window, said spring roll including display characters along its length and comprising a thin strip of material having the property of tending to form coils at its opposite ends,  
means for supporting said spring roll adjacent said plane defined by said rearward surface of said planar portion, said means for supporting including a planar member having a planar forward surface positioned closely adjacent but rearwardly of said rearward surface, said planar member having spaced parallel edges, one of said curled opposite ends being supported rearwardly of one of said edges and the other of said curled opposite ends being supported rearwardly of the other of said edges, and  
means for preventing movement of the ends of said spring roll past said edges of said planar forward surface, said means for preventing movement including apertures formed in the ends of said spring roll and including a first pin joined to said one edge and projecting away from said one edge and a second pin joined to said other edge and projecting away from said other edge, one of said apertures in one end of said spring being adapted to slip over said first pin as said spring roll is translated in one direction until its end having the aperture is substantially uncoiled, and the other of said apertures in the opposite end of said spring roll being adapted to slip over said second pin as said spring roll is translated in a direction opposite to said one direction until said opposite end is substantially uncoiled.

4,337,589

## METHOD OF MAKING HINGED POP-UP ITEMS

John K. Volkert, Northfield; Ib Penick, Prospect Heights, and Robert B. Volkert, Wilmette, all of Ill., assignors to Compak Systems, Inc., Northfield, Ill.

Filed Jul. 2, 1980, Ser. No. 165,264

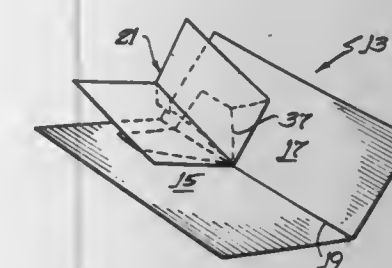
Int. Cl.<sup>3</sup> G09F 1/10

U.S. Cl. 40—124.1

13 Claims

1. A method of making an item of the character described comprising  
forming a blank from sheet material which blank includes a pair of basepieces and a pair of pop-up panels, at least one of which pop-up panels is originally connected along a straight line to one of said basepieces,  
applying an adhesive pattern to said sheet material blank,

folding said sheet material blank so that said pop-up panels are superimposed upon the portion of said blank constituting said basepieces and subsequently folding said blank along a straight line to bring said basepieces into superimposed position with said pop-up panels sandwiched therebetween, whereby a minor region of each of said pop-up panels becomes respectively adhesively attached to one of said basepieces, and  
cutting one common edge of at least one of said basepieces and said one pop-up panel following said adhesive attachment to eliminate said original connection between said one pop-up panel and said one basepiece so as to free said edge of said



one pop-up panel to allow said edge to move away from said one basepiece,  
whereby said basepieces are hingedly interconnected along a straight line with said pop-up elements sandwiched therebetween and with each of said pop-up panels being pivotally attached to one of said basepieces generally at an angle of between about 15° and about 70° to said line of hinged interconnection so that the pivoting of said basepieces about said line of hinged interconnection to an open position causes said pop-up panels to rise up out of the plane of each of said basepieces with said edge of said one pop-up panel moving away from said one basepiece edge.

4,337,590

## REFLECTIVE DEVICE FOR CARRYING VARIABLE INFORMATION FOR EXAMPLE FOR ADVERTISING PURPOSES

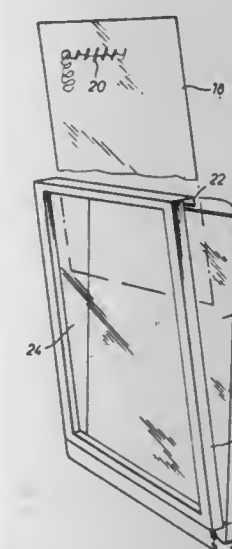
Harold Jackson, Flat 5, 123 Gloucester Pl., London W. 1, England

Filed Sep. 18, 1980, Ser. No. 188,593

Int. Cl.<sup>3</sup> G09F 19/00

U.S. Cl. 40—615

13 Claims



1. A reflecting device for the display of information which includes a substantially flat layer of highly reflecting material placed over a backing member and over which is laid a single flexible sheet of transparent or translucent synthetic plastics material having the information printed thereon, the flat layer, the backing member, and the sheet all being held together by a frame carrying a pane of substantially rigid transparent material having parallel, flat front and rear surfaces, said frame

being constructed in such a manner that it can readily be opened for removal and replacement of the sheet, whereby a person's mirror image is viewable in the flat layer through the pane and sheet while simultaneously viewing the information printed on the sheet.

4,337,591

## FISHING LURE SYSTEM

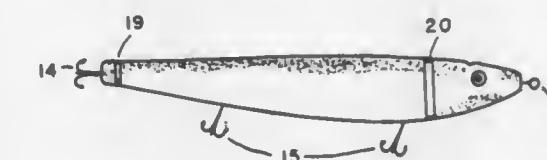
Harold A. Gell, 13720 Lockdale Rd., Silver Spring, Md. 20906, and Daniel P. Olszewski, 124 Mars Ct., Indialantic, Fla. 32903

Filed Apr. 24, 1980, Ser. No. 143,329

Int. Cl.<sup>3</sup> A01K 85/00

U.S. Cl. 43—42.09

2 Claims



1. A fishing lure system, comprising:  
a central body section including hook and leader connection means and means for receiving a calibrated ballast weight;  
a plurality of calibrated ballast weights;  
a plurality of pairs of bait simulating patterns;  
left and right transparent body halves adapted to encompass said center body section; a selected one of said calibrated ballast weights, and a selected pair of said pairs of bait duplicating patterns; and a band to secure said center body section, said selected ballast weight, said selected pair of bait duplicating patterns and said left and right body halves together whereby said assembly may be disassembled and reassembled utilizing different ones of said calibrated weights and said bait duplicating patterns, said band including projection means for interacting with the water as the lure is retrieved to impart motion to the lure.

4,337,592

## METHOD OF CONTROLLING COCKROACHES

Tokuichiro Hasegawa, Nagoya, Japan, assignor to Takashi Kawal, Hajima, Japan, a part interest

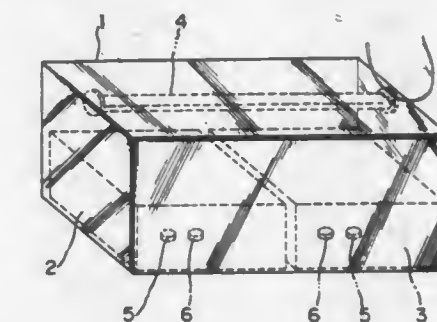
Continuation of Ser. No. 99,086, Nov. 30, 1979, abandoned. This application Mar. 23, 1981, Ser. No. 246,710

Claims priority, application Japan, Oct. 24, 1978, 53-130799

Int. Cl.<sup>3</sup> A01M 1/04

U.S. Cl. 43—113

6 Claims



1. Method of controlling cockroaches, comprising the step of irradiating said cockroaches with discontinuous ultraviolet rays, said irradiating being alternately on and off for 15 minutes each, for a total time of from 9 to 96 hours, and wherein said ultraviolet rays have wavelengths toward the longer wavelengths in the ultraviolet band and below 291 nm.



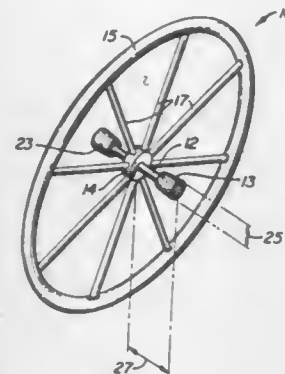
# 4,337,593 ANATOMICALLY MANIPULABLE ROTATABLE IMPLEMENT

Wesley J. McAllister, 11254 Exeter St., Loma Linda, Calif. 92354

Filed Oct. 19, 1979, Ser. No. 86,552  
Int. Cl.<sup>3</sup> A63H 1/00

U.S. Cl. 46-64

13 Claims



1. A manually rotatable, anatomically manipulable and supportable implement comprising:  
rigid body means defining a radius of gyration  $R$  about an axis and being characterized by a center of gravity;  
contact means for providing a point of support of said rigid body means on a portion of a user's anatomy, said contact means defining a rolling diameter  $D$  centered about said axis; and  
means for rigidly spacing said point of support from said center of gravity along said axis to define a distance  $L$ ; the overall dimensions of said implement and the dimensional parameters  $R$ ,  $L$ , and  $D$  being sized to permit the user to execute maneuvers wherein said contact means undergoes rolling motion along an anatomical portion of said user while the gravitational torque acting about said center of gravity causes a precessional velocity that correlates with said rolling motion to permit said user to maintain some anatomical portion underneath said rolling contact means for significant precessional rotation without bumping against portions of said body means, and wherein said length  $L$  divided by the product of said diameter  $D$  and the square of said radius of gyration  $R$  is in the range of approximately 0.05 to 0.11 reciprocal inches squared to permit said maneuvers to be carried out over a substantial range of kinematic variables.

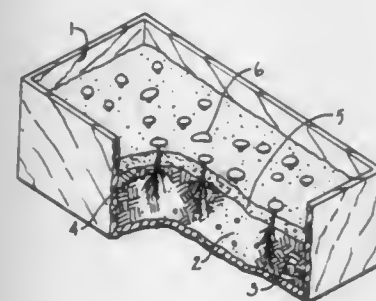
# 4,337,594 MUSHROOM CASING COMPOSITION AND PROCESS

William A. Hanacek, Salinas; James E. Kahl, Scotts Valley, and Angus B. Mackenzie, Salinas, all of Calif., assignors to Castle & Cooke, Inc., San Francisco, Calif.

Filed Apr. 18, 1980, Ser. No. 141,460  
Int. Cl.<sup>3</sup> A01G 1/04

U.S. Cl. 47-1.1

18 Claims



1. A process for the preparation of a relatively nutrient-free

casing layer useful in the cultivation of mushrooms, comprising the steps of:

- providing a mold;
- forming an aqueous slurry of a relatively nutrient free casing substrate, a foam forming, hydrophilic, synthetic, organic prepolymer resin, and a buffering agent;
- filling said mold with said slurry and curing said slurry to a thermosetting, spongy block;
- removing said cured block from said mold; and
- pulverizing said cured block.

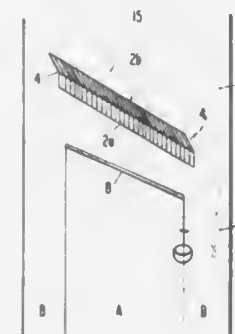
# 4,337,595 METHOD AND APPARATUS FOR PROTECTING EXTRACTS OBTAINED BY TAPPING TREES

Gerard G. Philippe, Jakarta, Indonesia, assignor to Carlier, Philippe & Melkye (H.K.) Limited, Hong Kong

Filed May 29, 1980, Ser. No. 154,254  
Int. Cl.<sup>3</sup> A01G 23/10

U.S. Cl. 47-10

9 Claims



1. A method for protecting from rain water the extracts obtained by tapping trees, wherein a strip of aluminum foil in which aluminum strip folds, pleats or wrinkles are formed, is secured to the trunk of the tree above a tapping slit so as to form a gutter, which diverts the rain water flowing down the trunk from the tapping slit.

# 4,337,596 SLIDING DOOR ACTUATING MECHANISM

Calvin V. Kern, Maumee, and James J. Villano, Toledo, both of Ohio, assignors to Eltra Corporation, Toledo, Ohio

Filed Nov. 29, 1979, Ser. No. 99,111  
Int. Cl.<sup>3</sup> E05F 11/38

U.S. Cl. 49-210

30 Claims



1. A system for opening and closing a sliding door in a door frame, said door being moveable forward in a first direction to slide said door open and moveable backward in said first direction to close said door and moveable forward and backward in

a second direction to respectively unlatch and latch said door in said frame, comprising:

- opening and closing means for exerting a first force on said door to open said door forward in said first direction and for exerting said first force on said door to close said door backward in said first direction to slide said door to a substantially closed position relative to said door frame, and exerting a second force backward in said second direction to latch said door within said door frame; said first force and said second force being continuously applied to slide said door backwards in said second direction to close said door and to move said door backward in said second direction to latch said door; said opening and closing means including winch means and electrical motor means mechanically coupled to said winch means; said system including differential means for allowing compound movement of said door; said system including switch means responsive to said door being in said substantially closed position for controlling said electrical motor means to provide said second force for latching said door.

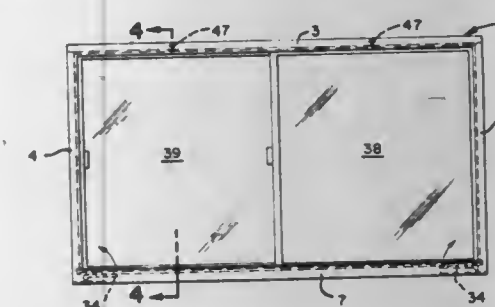
# 4,337,597 SLIDING WINDOW CONSTRUCTION HAVING PIVOTAL CHARACTERISTIC TO FACILITATE CLEANING BOTH SIDES OF THE WINDOW

Ernest F. Struckmeyer, 1261 S. Mayfair, Daly City, Calif. 94015

Filed Apr. 7, 1980, Ser. No. 138,235  
Int. Cl.<sup>3</sup> E05F 7/02

U.S. Cl. 49-256

4 Claims



1. A window construction having one or more window panes adapted for normally slidable transverse movement to effect opening and closing of said window panes of each window pane about a vertical axis so as to permit cleaning of both sides of each window pane from the inside of the room in which the window construction is installed, the combination comprising:

- a main window frame adapted to be fixed within an opening in a wall to frame said opening and provide support for one or more window panes adapted to be mounted therein;
- at least one window pane normally slidably mounted on said main window frame in an elevated position for selective transverse slidable movement in the plane of said main window frame; and
- means interposed between said window pane and said main window frame normally supporting said window pane in said elevated position and selectively operable to lower said window pane to a lower position in which said window pane is pivotally suspended in the opening formed by said main window frame whereby said window pane may be pivoted out of the plane of said main window frame to give access to both sides of the window pane.

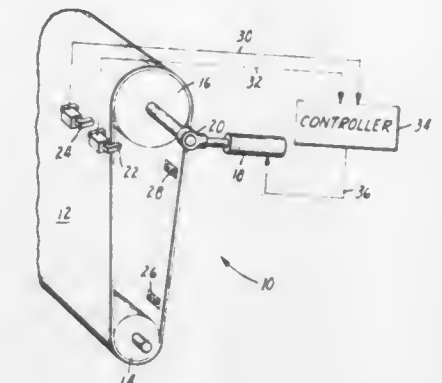
# 4,337,598 ENDLESS BELT WITH AUTOMATIC STEERING CONTROL

Jerry J. Barth, Red Wing, and Lawrence A. Martin, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Dec. 21, 1979, Ser. No. 106,272  
Int. Cl.<sup>3</sup> B24B 21/18

U.S. Cl. 51-135 BT

14 Claims



1. In a grinding machine utilizing an endless coated abrasive belt, a plurality of spaced and aligned rollers for supporting said belt, one of said rollers being movably supported to control the transverse position of the belt with respect to a path about the rollers, drive means for moving said position controlling roller, and sensing means for sensing movement of the belt transverse to its length and for providing a transverse movement signal indicative of the direction of transverse motion to the drive means to cause movement of said position controlling roller such as to impart transverse movement of the belt in a direction opposite to the sensed direction, wherein said sensing means comprises:

- at least one permanent magnet comprising a flexible magnet material including domain sized particles supported by a polymeric binder, said magnet being a part of the belt, movable with the belt, and being positioned such that the poles thereof exhibit a given orientation with respect to an edge of the belt;
- magnetic field sensing means positioned adjacent the path of the magnet on the belt for responding to a change in the field provided by a said magnet as a result of transverse movement of the belt and for providing said transverse movement signal indicative of the direction of said transverse movement; and
- means responsive to said transverse movement signal for controllably energizing said drive means to impart a reverse transverse movement to said belt.

# 4,337,599 METHOD OF SHOULDER GRINDING

Tsuyoshi Koide, Toyota, and Yasuo Suzuki, Kariya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 2, 1980, Ser. No. 136,479  
Claims priority, application Japan, Apr. 3, 1979, 54-40550; Apr. 10, 1979, 54-43929

Int. Cl.<sup>3</sup> B24B 1/00

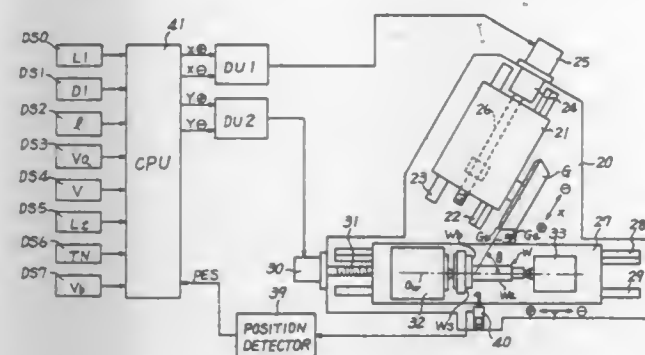
U.S. Cl. 51-289 R

4 Claims

1. A method of grinding a shoulder portion of a workpiece comprising the steps of:  
rotating the workpiece about a first axis;  
providing a grinding wheel having a grinding surface whose width is smaller than the shoulder portion of the workpiece for use in grinding the shoulder portion;  
rotating the grinding wheel about a second axis extending at an acute angle to the first axis;  
effecting first relative movement between the rotating grinding wheel and the rotating workpiece to engage the grind-

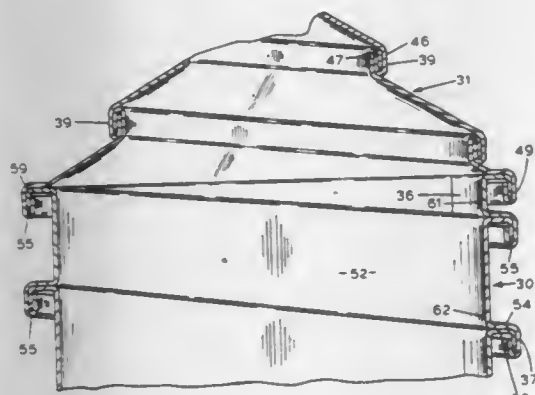


ing surface of the grinding wheel with the radially inner portion of the shoulder portion; and effecting second relative movement between the rotating grinding wheel and the rotating workpiece to move the



grinding surface of the grinding wheel in a direction away from the first axis to grind the shoulder portion from the radially inner portion to the radially outer portion thereof by the grinding surface of the grinding wheel.

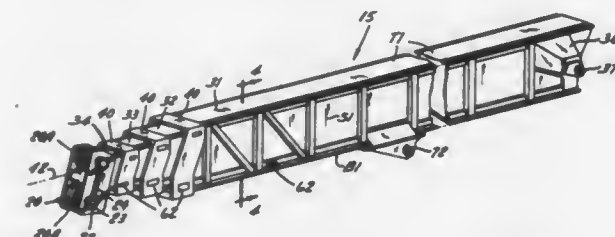
**4,337,600**  
**HELICAL STORAGE BIN**  
Elmer K. Hansen, 801 S. Martha St., Sioux City, Iowa 51106  
Filed Apr. 11, 1980, Ser. No. 139,574  
Int. Cl.<sup>3</sup> E04B 7/00, 1/32  
U.S. Cl. 52—82 1 Claim



1. A cylindrical storage bin comprising:
  - (a) a one piece upright side wall structure formed of a continuous metal ribbon member wound in a closed helical cylindrical shape, and having an upper end and a lower end,
  - (b) coating locking means formed on the opposite sides of said ribbon member to continuously and rigidly interlock adjacent sides of the ribbon member in said closed cylindrical shape,
  - (c) a roof unit for the upper end of said wall structure having an outer peripheral portion,
  - (d) means for securing said outer peripheral portion to the upper end of the side wall structure,
  - (e) means for supporting the lower end of the side wall structure on a foundation with the axis of the wall structure extended substantially vertically,
  - (f) said wall structure including a vertically continuous wall member,
  - (g) said coating locking means, at the junction of adjacent sides of said ribbon member, including a pair of annular horizontal flange sections projected in a superposed relation laterally outwardly from the wall member, with one of said flange sections terminating in a female locking hook and the other of said flange sections in a male locking hook, said locking hooks extended vertically of said wall member whereby said coating locking means forms a continuous reinforcing rib exteriorly of and about the wall member over the full height thereof,

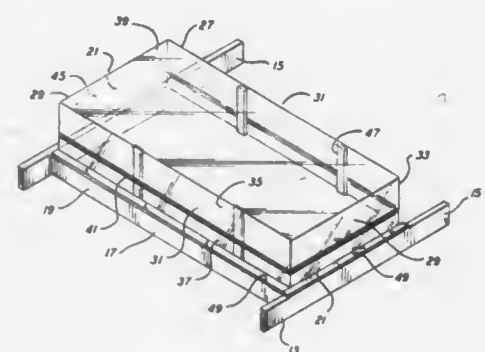
- (h) said roof unit formed of a continuous metal ribbon member wound in a closed helical stepped dome shape, and
- (i) coating locking means formed on opposite sides of said roof ribbon member to continuously and rigidly interlock the adjacent sides of the roof ribbon member in the helical dome shape thereof,
- (j) said locking means in interlocked engagement being extended vertically at the junction of adjacent sides of said roof ribbon member to form a riser section in said stepped dome shape roof unit that constitutes a continuous integral support for the roof unit.

**4,337,601**  
**HIGH-STRENGTH LIGHT-WEIGHT BOOM SECTION FOR TELESCOPIC CRANE BOOM**  
Lembit Vaerk, and Narahari Gattu, both of Cedar Rapids, Iowa, assignors to Harnischfeger Corporation, West Milwaukee, Wis.  
Filed Apr. 24, 1980, Ser. No. 143,496  
Int. Cl.<sup>3</sup> B66C 23/06  
U.S. Cl. 52—118 16 Claims



1. A high-strength light-weight hollow boom section for a telescopic crane boom comprising:
  - a top wall, a bottom wall, and a pair of lateral walls between said top and bottom walls;
  - each of said walls comprising a pair of spaced apart longitudinally extending edge portions, a relatively thinner imperforate plate portion extending between and joined to said pair of edge portions and welding material joining said plate portion to said edge portions;
  - and each edge portion of a lateral wall being in edgewise abutting relationship with and joined to an edge portion of said top and bottom walls and welding material joining each edge portion of a lateral wall to an edge portion of said top and bottom walls.

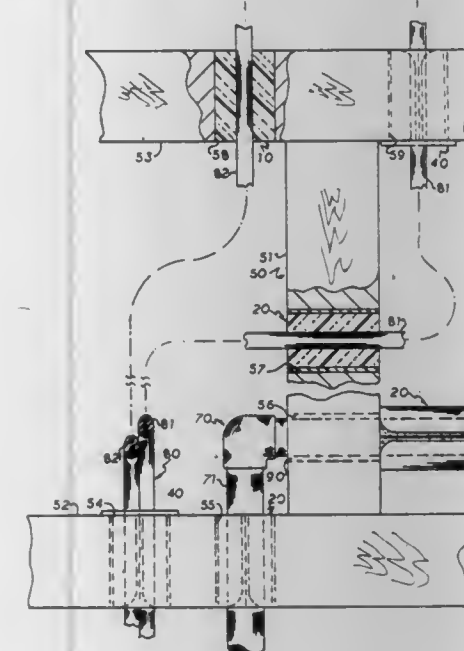
**4,337,602**  
**ENCLOSURE**  
Richard P. King, 7 Orange Ct., Wappingers Falls, N.Y. 12590  
Filed Apr. 18, 1980, Ser. No. 141,633  
Int. Cl.<sup>3</sup> E06B 6/26  
U.S. Cl. 52—202 6 Claims



1. An enclosure for insulating a ceiling entrance from the loss of heat and moisture, said enclosure comprising:
  - an envelope having a lower edge, said lower edge being secured to said entrance, said envelope being flexible and having a slot through it;

fastening means located in said slot for opening and closing said slot; and means for supporting said envelope above said ceiling entrance.

**4,337,603**  
**BUSHING, FORMED COMPRESSIBLE INSULATION FOR INSULATING AIR SPACE CREATED BY HOLES**  
James D. Davidson, 67 Grantour Ct., Pontiac, Mich. 48055  
Filed Jun. 21, 1979, Ser. No. 50,825  
Int. Cl.<sup>3</sup> E04B 5/48; E04F 17/08  
U.S. Cl. 52—220 12 Claims

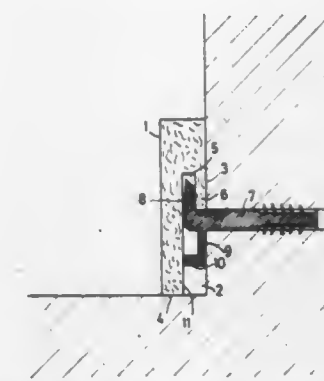


1. An improved wood building structure such as a dwelling, said building structure having outer periphery walls comprised of wood structural wall components, further comprising electrical and plumbing articles being installed through drilled holes in said components, wherein the improvement comprises:
  - a one piece bushing formed of compressible expandable thermal insulation being installed around said articles and therebetween said inner circumference wall of said drilled holes, defining a thermally insulated air space; and reducing infiltration and heat transfer through said air space, conserving energy now used to heat or cool said building, said one piece bushing being cylindrically formed of compressible expandable thermal insulation with a slit running the full length of said bushing; and penetrating to the longitudinal center line thereof, said bushing comprising an expansion hole formed on the longitudinal center line; and running the full length of said one piece bushing, said bushing comprising an outer protective flexible surface layer with a slit running full length of said surface layer, coinciding with said slit in said compressible expandable thermal insulation one piece bushing.

**4,337,604**  
**BASEBOARD FASTENABLE TO A WALL BY A HOLDER**  
August Bürgers, Erkelenz-Gerderath, Fed. Rep. of Germany, assignor to Europatent S.A., Luxembourg, Luxembourg  
Filed Nov. 30, 1979, Ser. No. 99,174  
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1978, 2853092  
Int. Cl.<sup>3</sup> E04F 19/04  
U.S. Cl. 52—287 4 Claims

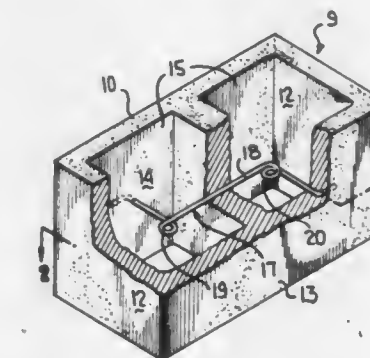
1. A baseboard fastenable to a wall by a holder comprising a baseboard formed with a recess extending in a longitudinal direction of the baseboard and opening towards a wall side and a floor side of the baseboard, said recess extends upwardly forming a groove-like depression

in said baseboard and forming a downward directed rib on the wall side of said baseboard, a holder comprises a dowel arranged below said rib and perpendicular to the wall side of the baseboard, said dowel has one end projecting beyond said wall side of said baseboard and being adapted to be fastened in a hole in the wall, another end of said dowel extends in said recess beneath said rib and in one-piece therewith has an upward bent holding



part engaging behind and contacting said rib as well as a downwardly bent stop part, said downwardly bent stop part at a rear wall side thereof is set back towards said wall side of said baseboard relative to said holding part at a wall-facing rear side thereof by an amount equal to the thickness of said rib and has an extension which extends in a longitudinal direction of said dowel and extends in a lower region of said recess resting in contact against a rear side of said baseboard.

**4,337,605**  
**CONCRETE BUILDING BLOCKS WITH LOOPED SECURING RODS FOR MORTARLESS WALL CONSTRUCTION**  
Arthur L. Tudek, 507 Indiana Ave., Glassport, Pa. 15045  
Filed Jul. 18, 1980, Ser. No. 170,067  
Int. Cl.<sup>3</sup> E04B 2/26  
U.S. Cl. 52—293 5 Claims



1. A generally rectangular hollow concrete building block for use in constructing concrete block walls including a concrete footing having a row of uniformly spaced and vertically extending reinforcing bars anchored therein, said block having at least one generally rectangular opening extending vertically therethrough and having flat top, bottom, side and end walls, securing bar retaining and locating means embedded in the interior of said walls and extending transversely into the center of said opening, said bar retaining means having one end fixedly embedded in one wall of opening and extending into the center thereof where it is twisted to form a transversely positioned loop in the center of said opening and its other end fixedly embedded in an adjacent wall, said block being positionable above said reinforcing bars with said opening and said loop alignable therewith and moved downwardly thereover whereby said bars are sleeved through said loops and aligned



and retained in end to end abutting relation relative to each other in courses without the use of mortar.

**4,337,606**  
**METAL PANEL AND MOUNTING STRUCTURE**  
 Hans E. Reusser, Westlake, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio  
 Filed Feb. 28, 1980, Ser. No. 125,472  
 Int. Cl.<sup>3</sup> E04D 3/364  
 U.S. Cl. 52—520 17 Claims

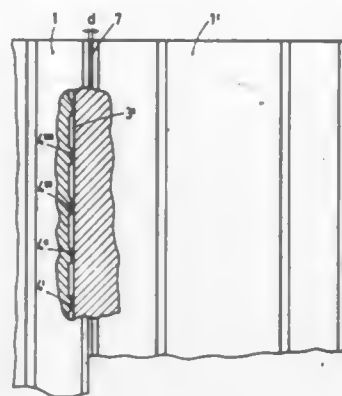


1. A standing seam panel assembly including, a plurality of adjacently connected panels disposed atop supporting means, said panels each having a bottom joined to opposite first and second side walls, said first side wall having an uppermost fixed male seam and said second side wall having an uppermost female seam, said male seam provided with a top portion extending away from its respective said panel first side wall and joined to a nose portion in turn connected to an inwardly facing flange, said nose portion projecting outward from its respective said panel first side wall, said top portion and flange spaced apart to define an inwardly directed groove therebetween, each said male seam including a substantially straight upwardly and inwardly inclined section extending above said first side wall, said female seam provided with an outwardly extending top portion joined to a downwardly directed deformable flange defining an outwardly and downwardly facing cavity therebeneath, said female seam top portion and flange extending away from their respective said panel second side wall, a mounting clip disposed intermediate said first and second panel side walls of said adjacently connected panels and said female seam of one said panel adapted to overlies said male seam of another one said panel without significant relative pivotal displacement between said adjacently disposed panels whereby, said overlying deformable flange may be crimped downwardly into engagement with said male seam upwardly and inwardly inclined section to securely retain said male seam within said female seam cavity and provide a laterally and vertically locked panel assembly seam resulting in the interconnection of adjacent ones of said panels.

**4,337,607**  
**TONGUE AND GROOVE BOARDS WITH SPACERS PERMITTING EXPANSION, AND METHOD OF MAKING THE SAME**  
 Giovanni Boschetti, 6911 Vezio, Switzerland  
 Filed Mar. 28, 1980, Ser. No. 135,145  
 Claims priority, application Switzerland, Apr. 23, 1979, 3879/79  
 Int. Cl.<sup>3</sup> E04C 1/30 2 Claims

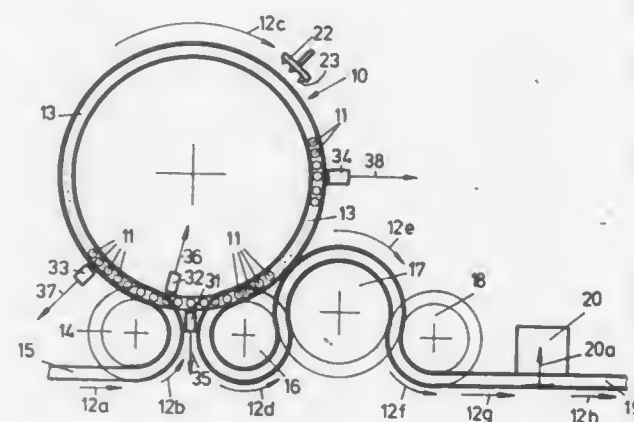
1. A tongue and groove board having confronting surfaces when assembled with adjacent said boards, having on the bottom of the groove of each said board a plurality of projections which are spaced apart at their bases in the direction of the length of the board and which are of such low mechanical resistance to compression that an assembly of the boards will expand by compressing said projections rather than by buck-

ling, the interval between bases of the projections being greater than the length of the projections in the direction of the length



of the board, said intervals having been formed by compression of the material of the board between the projections.

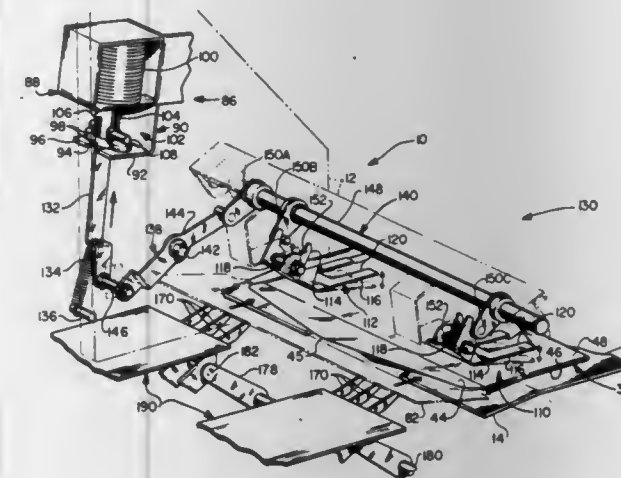
**4,337,608**  
**METHOD AND APPARATUS FOR CLEANING BOTTLE FILLING DEVICES AFTER BOTTLE BREAKAGE**  
 Hermann Schlosser, Guldental; Felix Zelder, Münster-Sarmseim; Rudolf Riedel, and Klaus Borberg, both of Bad Kreuznach, all of Fed. Rep. of Germany, assignors to Seitz-Werke GmbH, Bad Kreuznach, Fed. Rep. of Germany  
 Filed Jul. 11, 1980, Ser. No. 168,771  
 Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928160  
 Int. Cl.<sup>3</sup> B65B 3/04, 7/28  
 U.S. Cl. 53—471 22 Claims



1. A method of cleaning bottle-filling device including filling elements defining a liquid conveying path having fine glass splinters and fragments therein inaccessible to an external spray after bottle breakage occurring occasionally in filling stations circulating in bottle filling machines, especially counterpressure filling machines, said method including the steps of: spraying liquid for a thorough and basic interior cleaning of the liquid conveying path with the filling elements as well as against that filling station in which the bottle breakage occurred, also to free said last mentioned filling station of glass splinters and fragments, while continuing with the filling machine circulation and still during the same circulation during which breakage occurred; rinsing the pertaining filling device, with the liquid supplied to the bottle to be filled, at least during the first machine circulation following the circulation during which said bottle breakage and liquid spraying took place, a bottle being filled, as a result of said rinsing, during each circulation during which said rinsing occurs; discharging from said filling machine the bottles filled during said rinsing; and separating-out the bottle filled during said rinsing of the filling device and the interior cleaning of the liquid conveying path, said bottle being taken from the unbroken

bottles filled at the remaining filling stations where no breakage occurred during the circulation prior to said circulation during which breakage occurred.

**4,337,609**  
**ENVELOPE STUFFING APPARATUS**  
 Dean H. Foster, Stratford, and Harold Silverman, Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.  
 Filed Sep. 17, 1980, Ser. No. 188,173  
 Int. Cl.<sup>3</sup> B65B 35/50  
 U.S. Cl. 53—569 8 Claims



1. In envelope stuffing apparatus which has an enclosure inserting station and includes a deck at the inserting station, and includes means for delivering the envelope in a path of travel to the inserting station, and includes means for opening the envelope, and includes means for inserting an enclosure into the envelope and for removing the envelope from the inserting station, and wherein said opening means includes means for supporting the flap of the envelope above the deck, and said opening means includes first finger means insertable into the envelope for stripping apart from each other the front and back panels of the envelope, an improvement in the envelope opening means, said improvement comprising:

- (a) solenoid means operable in response to delivery of the envelope to the inserting station;
- (b) second finger means for depressing the envelope toward the deck against the resistance of the flap supporting means; and
- (c) linkage means interconnecting the second finger means and solenoid means for normally holding the second finger means out of the path of travel of delivery of said envelope and for lowering the second finger means into engagement with the envelope when the solenoid means is operated, whereby the envelope is depressed toward the deck after the envelope is delivered, and said lowered second finger means depressing said envelope sufficiently to open said envelope enough to permit insertion of said first finger means into said envelope.

**4,337,610**  
**ANIMAL CONTROL HALTER**  
 Earl Taylor, 2244 Clinton La., Las Vegas, Nev. 89110  
 Filed Feb. 5, 1981, Ser. No. 231,762  
 Int. Cl.<sup>3</sup> B68B 1/02 6 Claims

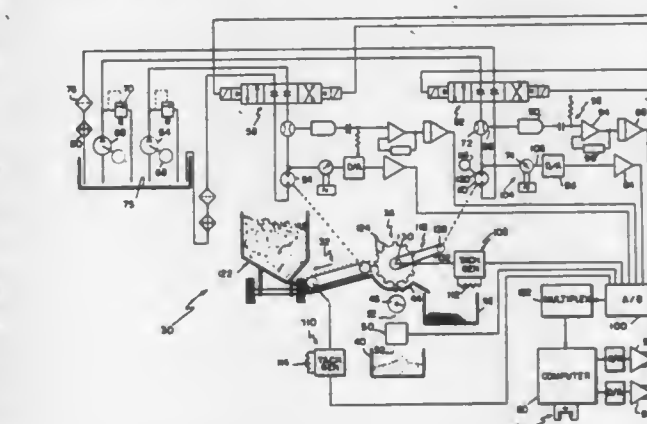
1. An animal control halter including in combination: a crown piece connected to at least first and second cheek straps extending therefrom toward the front of the animal's nose; first and second connecting rings connected, respectively, to the forward ends of said first and second cheek straps; a chin strap connected between said first and second con-

necting rings for passing beneath the chin of the animal and having a guide ring therein at an intermediate point; a curved, rigid nose bar, shaped to generally conform to the shape of the animal's nose, connected at opposite ends thereof to said first and second connecting rings; and



control rope means having a portion thereof passing through the guide ring of said chin strap for connection to a lead rope, said control rope means connected through said first and second rings and having a chin portion for passing underneath the animal's head to apply a clamping action between said chin portion thereof and said nose bar.

**4,337,611**  
**AUTOMATIC CONTROL OF A COMBINE THRESHING CYLINDER AND FEEDER CONVEYOR**  
 Michael P. Mailander, Lafayette; Gary W. Krutz, and Larry F. Huggins, both of West Lafayette, all of Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.  
 Filed Dec. 10, 1980, Ser. No. 215,056  
 Int. Cl.<sup>3</sup> A01D 41/00 13 Claims



1. An automatic control for a combine which comprises a threshing cylinder and a feeder conveyor, the automatic control comprising means for driving the threshing cylinder, means for sensing the threshing cylinder drive speed, means including means adjacent the threshing cylinder for sensing the moisture content of the materials being threshed for establishing a desired threshing cylinder speed, means for comparing the threshing cylinder drive speed to the desired threshing cylinder speed and for producing a first output signal in response to such comparison, and means for coupling the first output signal to the means for driving the threshing cylinder to control it including controlling the speed of said cylinder by rapidly decreasing said speed as necessary to prevent excessive damage to the materials being threshed.



4,337,612

## ROW CROP UNIT

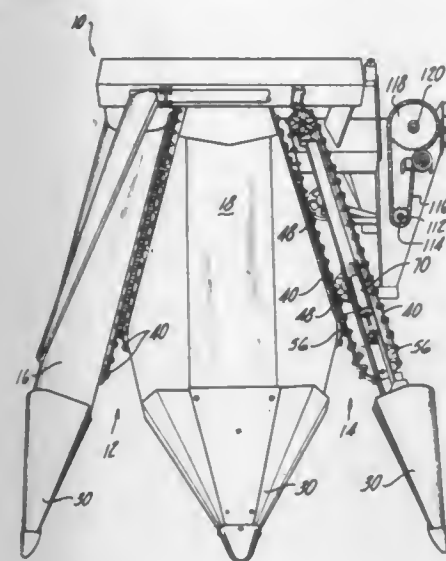
Earl E. Dean, Warren; Marshall L. Quade, Pinckney, both of Mich., and William F. Temple, Albany, Ga., assignors to Massey-Ferguson Inc., Detroit, Mich.

Filed Dec. 28, 1980; Ser. No. 210,882

Int. Cl.<sup>3</sup> A01D 67/00, 45/00

U.S. Cl. 56—98

7 Claims



1. A row crop unit for a crop harvesting machine comprising:

- a pair of fore-and-aft extending side by side endless molded crop gathering belts;
- a drive sprocket associated with the rear end of each of the crop gathering belts;
- a plurality of idler assemblies, each including an idler rotatably mounted on an idler shaft, a forward idler assembly being associated with the forward end of each of the crop gathering belts;
- a frame assembly including a cross frame member and a plurality of forwardly extending frame members supporting only the upper ends of the idler shafts whereby said frame assembly does not extend below the idlers, the rear ends of the forwardly extending frame members being connected to the cross frame member;
- first drive means associated with the frame and including drive shafts on which the drive sprockets are mounted, the first drive means being capable of causing the endless crop gathering belts to be driven;
- cutting means disposed behind the forward end of the molded crop gathering belts; and
- second drive means capable of driving the cutting means.

4,337,613

## WHEEL ASSEMBLY FOR HAYING MACHINE

Ulrich Wessel, and Albert Krauss, both of Gottmadingen, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG Zweigniederlassung Fahr, Gottmadingen, Fed. Rep. of Germany

Filed Nov. 13, 1980, Ser. No. 206,619

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1979, 2946404

Int. Cl.<sup>3</sup> A01D 79/00

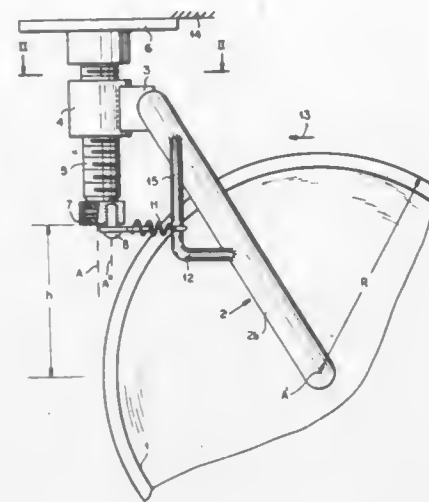
U.S. Cl. 56—370

6 Claims

1. In a haying machine having a frame, a wheel assembly comprising:

- an upright threaded spindle fixed to said frame, having a lower end, and defining an upright axis;
- an anchor fixed to said lower end of said spindle and forming a pivot offset from said upright axis;
- a nut threaded on said spindle above said anchor, whereby rotation of said nut on said spindle about said upright axis displaces said nut axially along said spindle;
- a rigid wheel support having one end fixed to said nut and another end defining a horizontal axis, said support having

another anchor horizontally generally level with said anchor of said spindle, said other anchor and pivot being most closely juxtaposed when said support lies in a predetermined angular position relative to said upright axis corresponding to straight-ahead travel of said haying machine;



- a generally horizontal spring element below said lower end of said spindle and engaged between said pivot and said other anchor of said wheel support, whereby said spring element orbits about said pivot underneath said spindle as said wheel support, other anchor, and nut rotate about said upright axis; and
- a wheel carried on said other end and rotatable about said horizontal axis.

4,337,614

## PIN LOCKING ASSEMBLY

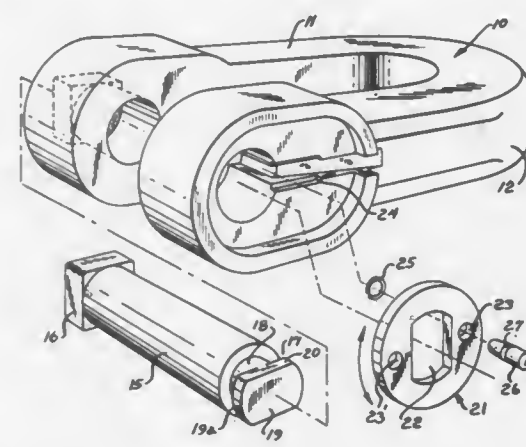
Terry L. Briscoe, Portland, Oreg., assignor to ESCO Corporation, Portland, Oreg.

Filed Feb. 19, 1980, Ser. No. 122,593

Int. Cl.<sup>3</sup> F16G 15/06

U.S. Cl. 59—86

10 Claims



1. A pin locking assembly for a shackle comprising a leg-equipped shackle providing aligned openings in the legs thereof for receipt of a pin, a pin mounted in said openings by axial movement into said openings, a recess in one of said legs communicating with the opening therein and accessible from the outside, a plate positioned in said recess preventing axial movement of said pin, said plate being rotatable in said recess from removable to non-removable positions, lug means extending axially through said plate releasably maintaining said plate in said non-removable position and against rotation, passage means in said member for pryingly removing said lug means, and means operably associated with said assembly for confining said plate against axial movement when said plate is in said non-removable position.

4,337,615

## GAS TURBINE FUEL CONTROL SYSTEM

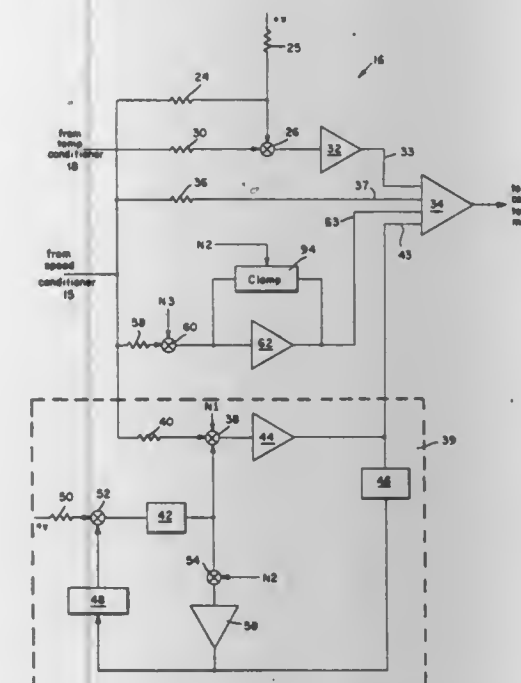
Stephen R. LaCroix, Scottsdale, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Mar. 21, 1979, Ser. No. 22,532

Int. Cl.<sup>3</sup> F02C 9/32

U.S. Cl. 60—39.14 R

29 Claims



1. A system for controlling fuel flow in a gas turbine engine, comprising:

- timing means for generating a time signal indicative of the elapsed time from engine start-up;
- means for sensing engine speed;
- means responsive to said timing means and to the sensed engine speed for scheduling a rate of fuel flow as a function of the time signal;
- means for producing an error signal when the rate of fuel flow to the gas turbine engine exceeds a predetermined rate for the sensed engine speed; and
- means for inhibiting said timing means in response to said error signal to maintain the fuel flow rate to said predetermined schedule corresponding to the sensed engine speed.

4,337,616

## FUEL AIR RATIO CONTROLLED FUEL SPLITTER

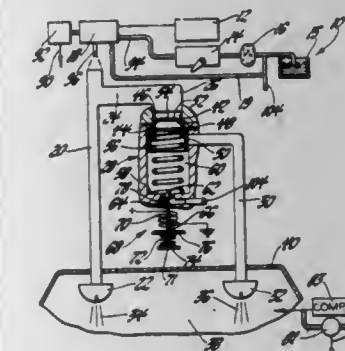
Noel L. Downing, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 14, 1980, Ser. No. 140,141

Int. Cl.<sup>3</sup> F02C 9/04

U.S. Cl. 60—39.28 R

4 Claims



1. A fuel control system for establishing a desired scheduled pilot fuel/air ratio at the pilot nozzle supplying fuel to a gas turbine engine combustor comprising: a pilot fuel nozzle and a main fuel nozzle, fuel metering means for supplying total engine fuel requirements, conduit means for directing the total engine fuel requirements to said pilot nozzle and said main

nozzle, said conduit means including an unrestricted conduit directly connected between said fuel metering means and said pilot nozzle to maintain fuel metering means outlet pressure on said pilot fuel nozzle, said pilot fuel nozzle having a small orifice outlet therefrom for mixing reduced quantities of fuel with inlet air to maintain a combustible fuel/air mixture, a branch conduit to said main nozzle, fuel splitter valve means for regulating fuel flow from said fuel metering means into said unrestricted conduit and said branch conduit, means establishing a control signal schedule corresponding to a desired, predetermined pilot fuel/air ratio required to maintain fuel flow from said pilot fuel nozzle to produce a fuel/air mixture therefrom to maintain combustor efficiency during reduced fuel flow rates from said fuel metering means, said fuel splitter valve means including means responsive to said control signal to throttle fuel flow from said fuel metering means to said branch conduit so as to maintain a controlled residual fuel flow in said unrestricted conduit to maintain the scheduled pilot fuel/air ratio at low levels of fuel flow from said metering means thereby to prevent either pilot nozzle fuel richness or pilot nozzle fuel leanness that would otherwise reduce combustor efficiency.

4,337,617

## FUEL CONTROL SYSTEM FOR A GAS TURBINE ENGINE

Trevor S. Smith, Sutton Coldfield, England, assignor to Lucas Industries Limited, Birmingham, England

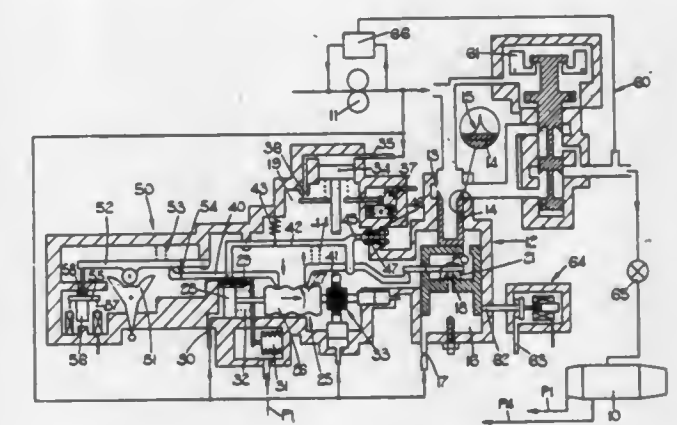
Filed May 6, 1980, Ser. No. 147,119

Claims priority, application United Kingdom, Jul. 13, 1979, 7924479; Feb. 27, 1980, 8006552

Int. Cl.<sup>3</sup> F02C 9/16

U.S. Cl. 60—39.28 R

10 Claims



1. A fuel control system for a gas turbine engine, comprising a variable metering device, selector means for setting a desired thrust of the engine, a first three-dimensional cam movable in response to sensed values of first and second air pressures from the engine compressor, said first cam being profiled as a function of said first and second pressures for a plurality of corresponding sensed values, a second three-dimensional cam movable with said first cam, said second cam being profiled as a function of a plurality of desired fuel flows for corresponding sensed values of said air pressures, first and second cam followers respectively engaging said first and second cam profiles, and a linkage, responsive to the operating positions of said selector means and of said first and second cam followers, for varying the operating position of said metering device.



4,337,618

## GAS TURBINE ENGINE FUEL BURNERS

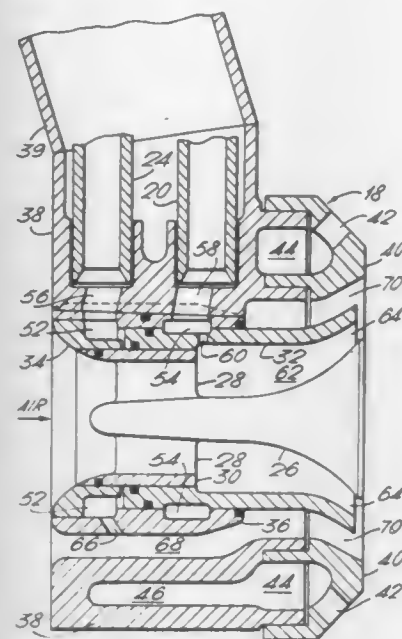
Eric Hughes, Nuneaton, and Donald McKnight, Binley, both of England, assignors to Rolls-Royce Limited, London, England  
Filed May 23, 1980, Ser. No. 152,655

Claims priority, application United Kingdom, Jun. 6, 1979, 7919727

Int. Cl.<sup>3</sup> F02C 7/22; B05B 7/06

U.S. Cl. 60—39.55

7 Claims



1. A gas turbine engine fuel injector having a liquid fuel supply means, gaseous fuel supply means and water injection means, the liquid fuel supply means comprising a liquid fuel duct, a first manifold having a plurality of discrete outlets, an annular discharge duct which is also arranged to receive a flow of compressed air and a liquid fuel and air discharge nozzle, the gaseous fuel supply means comprising a gaseous fuel duct, a second manifold having a plurality of discrete outlets, forming a gaseous fuel discharge nozzle and the water injection means comprising a water supply duct and a third manifold having a plurality of outlets in communication with a water injection duct also arranged to receive a flow of compressed air, and a water and air discharge nozzle, the water and the air discharge nozzle being located between the liquid fuel and gaseous fuel discharge nozzles.

4,337,619

## HOT WATER SYSTEM

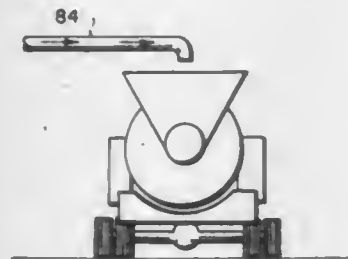
William G. Wyatt, Arlington, Tex., assignor to Vapor Energy, Inc., Dallas, Tex.

Filed May 8, 1981, Ser. No. 261,703

Int. Cl.<sup>3</sup> F02C 7/00

U.S. Cl. 60—39.55

13 Claims



1. A method of producing hot water through combustion of fuel and air and the mixture of water, steam and non-combustibles to provide resultant hot water at a select temperature, said method comprising the steps of:

providing a vapor generator of the type having a chamber for the receipt and combustion of a fuel-air mixture;

supplying feed water to said vapor generator chamber for

the conversion of said feed water, fuel and air to steam and non-condensibles therein;

conveying said steam and non-condensibles away from said vapor generator;

delivering supply water to be heated to said steam and non-condensibles in selective flow rates;

mixing of said water to be heated with said steam and non-condensibles and producing resultant hot water therefrom;

sensing the temperature of said resultant hot water and producing an output signal in response thereto; and detecting the output of said sensing means and regulating the flow of said supply water and correspondingly the temperature of said resultant hot water.

2. A hot water supply system utilizing a combustion of fuel and air and the mixture of water, steam and non-combustibles to provide resultant hot water at a select temperature, said system comprising:

a vapor generator of the type having a chamber for the receipt and combustion of a fuel-air mixture;

a means for supplying feed water to said chamber for the conversion of said feed water, fuel and air to steam and non-condensibles therein;

means for conveying said steam and non-condensibles away from said vapor generator;

means for selectively delivering supply water to be heated to said steam and non-condensibles;

at least one chamber in communication with said conveying and delivering means for the mixing of said water to be heated with said steam and non-condensibles and production of resultant hot water therefrom;

means for sensing the temperature of said resultant hot water and producing an output signal in response thereto; and

control means for detecting the output of said sensing means and controlling said supply water delivery means for regulating the flow of said supply water and correspondingly the temperature of said resultant hot water.

4,337,620

## LOAD SENSING HYDRAULIC SYSTEM

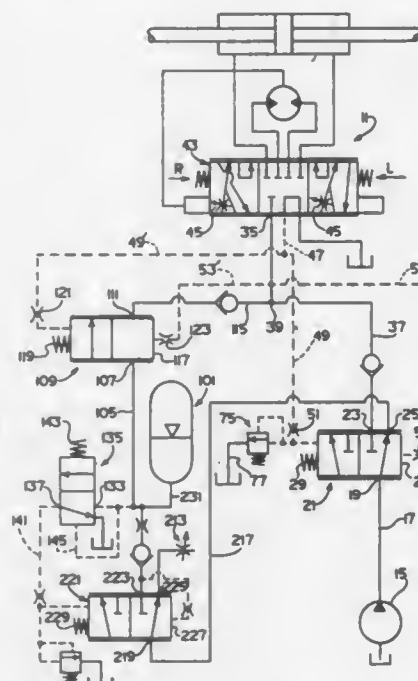
Oliver W. Johnson, Chaska, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 15, 1980, Ser. No. 169,002

Int. Cl.<sup>3</sup> F15B 1/02; G05D 11/03

U.S. Cl. 60—418

11 Claims



2. A system for controlling the flow of fluid from first and second fluid sources to a priority load circuit and to an auxiliary load circuit means, the priority load circuit including means defining a main, variable flow control orifice, means

providing a pilot pressure signal from upstream of said variable flow control orifice, and means providing a load pressure signal from downstream of said variable flow control orifice, the priority load circuit being normally operable in response to a pressure differential X between said pilot pressure signal and said load pressure signal, said system comprising:

(a) first flow control valve means including an inlet port in fluid communication with the first fluid source, a priority outlet port in fluid communication with the priority load circuit, an excess flow outlet port in fluid communication with the auxiliary load circuit means, a movable valve member movable between one position permitting substantially unrestricted fluid communication from said inlet port to said priority outlet port, and another position permitting substantially unrestricted fluid communication from said inlet port to said excess flow outlet port, and said movable valve member being biased toward said one position by said load signal pressure, and by a biasing means exerting a biasing force equivalent to said pressure differential X, said movable valve member being biased toward said another position by said pilot pressure signal;

(b) second flow control valve means including an inlet port in fluid communication with the second fluid source, a priority outlet port in fluid communication with the priority load circuit, a movable valve member movable between one position permitting substantially unrestricted fluid communication between said inlet port and said priority outlet port, and another position substantially preventing fluid communication from said inlet port to said priority outlet port, said movable valve member being biased toward said one position by said load pressure signal and a biasing means exerting a biasing force equivalent to a pressure differential Y, said movable valve member being biased toward said another position by said pilot pressure signal; and

(c) said pressure differential Y being less than said pressure differential X whereby:

(i) when the fluid delivery of the first fluid source is sufficient to maintain said pressure differential X between said pilot pressure signal and said load pressure signal, the movable valve member of said second flow control valve means is in said another position, and all fluid required by said priority load circuit is supplied by the first fluid source, through said first flow control valve means; and

(ii) when the fluid delivery of the first fluid source is insufficient to maintain the pressure differential X between said pilot pressure signal and said load pressure signal, the pressure differential therebetween is reduced to said pressure differential Y, the movable valve member of said first flow control valve means is in said one position, the entire fluid delivery of the first fluid source flows to the priority load circuit, and the movable valve member of said second flow control valve means is biased away from said another position to permit a sufficient flow of fluid from the second fluid source to the priority load circuit to maintain said pressure differential Y across the main variable flow control orifice.

4,337,621

## POWER ELEMENT ASSEMBLY

Ernest Lane, Jr., and Raymond E. Seekins, both of Lockport, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 21, 1980, Ser. No. 170,745

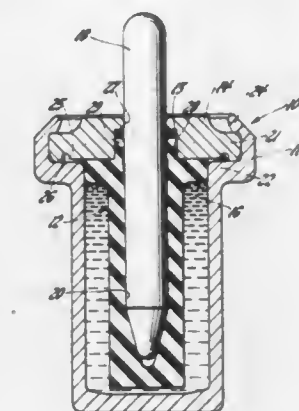
Int. Cl.<sup>3</sup> F01B 29/10

U.S. Cl. 60—527

3 Claims

1. In a power element assembly for use in a liquid environment to operate devices such as valves, switches and the like wherein the assembly is of the type having a cup, an elastomeric diaphragm, a flange seal sealingly clamping the diaphragm to the cup so that the diaphragm and cup cooperatively retain a thermally expansible material extending about a central piston pocket in the diaphragm, a piston received in the pocket in the diaphragm and extending through a central opening in the flange seal and displaced outwardly by thermal

expansion of the expansible material, and a rigid annular member received about the piston in an annular recess in the flange seal for preventing extrusion of the diaphragm into the opening in the flange seal: the improvement comprising in combination, a sealing neck formed integral with the diaphragm and extending about the piston, the recess in the flange seal having an inner peripheral surface sized so that the recess can fully accommodate said sealing neck, said sealing neck having radially spaced outer and inner peripheral surfaces, said inner peripheral surface having a plurality of axially spaced and radially inwardly projecting annular seal beads, said outer peripheral surface having a concave cross-section prior to assembly, and



said annular seal beads having a predetermined interference fit with respect to the piston and the end dimension and the depth of concavity of said outer peripheral surface prior to assembly of the piston and diaphragm being determined so that said sealing neck is deformed radially outward midlength thereof and said outer peripheral surface is caused to conform to and sealingly engage with said inner peripheral surface of said recess while said annular seal beads retain their separate identity while being sealingly retained in engagement with the piston by compression of said sealing neck in the recess in the flange seal during assembly of the piston and diaphragm and thereafter under both static and dynamic conditions of the piston.

4,337,622

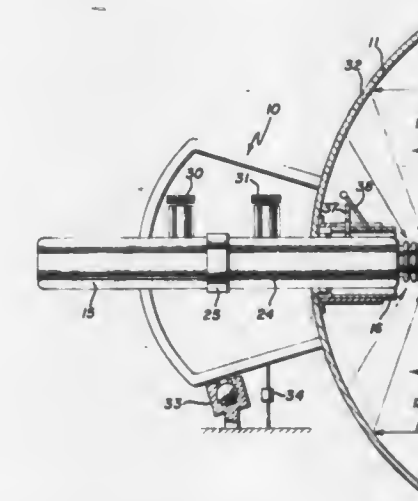
## ENERGY STORAGE

Wilfred V. Johnson, 36 Rocky Hill Rd., Oxford, Mass. 01540  
Filed May 12, 1980, Ser. No. 148,758

Int. Cl.<sup>3</sup> F03G 7/06

U.S. Cl. 60—641.13

11 Claims



1. Apparatus for storing solar energy comprising:

(a) an optical device for concentrating the sun's rays, to a restricted area,

(b) a motor located at the area and having an element movable in response to changes in temperature,



- (c) a cell contacted by the said movable element for storing the energy produced by the element,  
 (d) a shutter for interrupting the sun's rays to the motor on occasion to allow the motor temperature to drop and cause the element to retract, said shutter being in the form of a tube that is guided for axial movement from a closed position where it is co-extensive and envelops with said motor to an open position in which it is non-coextensive with said motor.

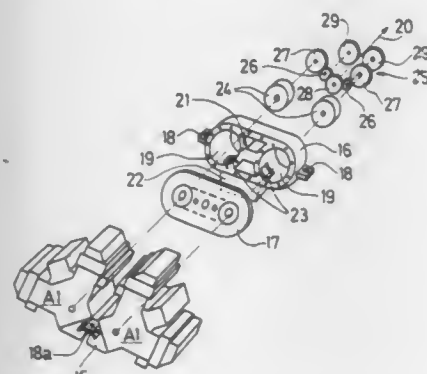
**4,337,623**  
**VEHICLE DRIVE SYSTEM**  
 Sven-Olof Kronogård, Karstorsvägen 31, Lomma, Sweden (S 23400)

Division of Ser. No. 148,217, May 9, 1980, which is a continuation of Ser. No. 844,079, Oct. 20, 1977, abandoned. This application May 14, 1980, Ser. No. 149,760

Claims priority, application Sweden, Oct. 20, 1976, 7611617 Int. Cl.<sup>3</sup> F01B 21/02

U.S. Cl. 60—716

6 Claims



1. A vehicle drive system comprising at least two prime movers and a base block communicating said prime movers with an output shaft,  
 said base block having a housing enclosing two parallel, cylindrical chambers, and provided with external mounting members for mounting the block in a vehicle,  
 a strengthening wall structure separating said chambers and being defined by part-cylindrical surfaces bordering said chambers,  
 means for mounting said prime movers directly at said base block, with their shafts aligned with the axes of said chambers, and  
 gearing means enclosed in said base block, connected to said prime movers and said common output shaft.

**4,337,624**  
**CRYOSTATIC DEVICE**  
 Christian H. Hamon, Saint-Maur, France, assignor to Societe Anonyme de Telecommunications, Paris, France  
 Filed Jun. 18, 1980, Ser. No. 160,483

Claims priority, application France, Jun. 29, 1979, 79 16840 Int. Cl.<sup>3</sup> B65D 25/04, 25/18, 90/04; F17C 13/00

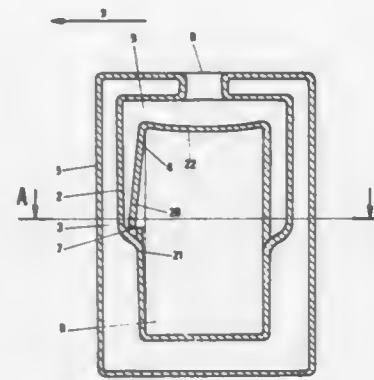
U.S. Cl. 62—45

10 Claims

1. A cryostatic device comprising an inner wall and an outer wall connected at their upper parts by a filling orifice, a vacuum being made between the two walls, wherein a tank for cryogenic liquid, which is defined by the inner wall, is divided by a separating partition into two tanks, a primary tank and a secondary tank, the secondary tank surrounding at least a part of the primary tank, the filling orifice opening into the secondary tank from above the primary tank, and the primary tank and the secondary tank communicating via a communicating opening located in the separating partition at a level such that the volume of the primary tank located below said communicating opening is approximately equal to the volume located above said communicating opening in said primary tank, wherein said partition includes a generally horizontally-extending portion disposed directly below said filling orifice

and a generally vertically-extending portion extending downward from said horizontally-extending portion, and wherein said inner wall includes:

- a first portion extending substantially parallel to the vertically-extending portion of said partition;  
 a second portion which tapers from said first portion to join said partition at a vertical location disposed below said communicating opening; and  
 a third portion defining the bottom of said primary tank.  
 10. A cryostatic device comprising:  
 inner and outer walls defining an evacuated space therebetween, said inner wall further defining a tank for cryogenic liquid;  
 a separating partition dividing said tank into primary and



- secondary chambers, the secondary chamber surrounding at least part of said primary chamber;  
 a cryogenic liquid filling orifice extending through said inner and outer walls proximate their uppermost parts to permit said secondary chamber to receive cryogenic liquid directly from said filling orifice; and  
 means for maintaining cryogenic liquid in said primary chamber at at least a predetermined level with cryogenic liquid from said secondary chamber, said means comprising a communicating orifice defined through said separating partition at said predetermined level in said primary tank;  
 wherein said separating partition has an upper portion having a concave configuration forming a dish positioned directly below said filling orifice.

**4,337,625**  
**WASTE HEAT DRIVEN ABSORPTION REFRIGERATION PROCESS AND SYSTEM**

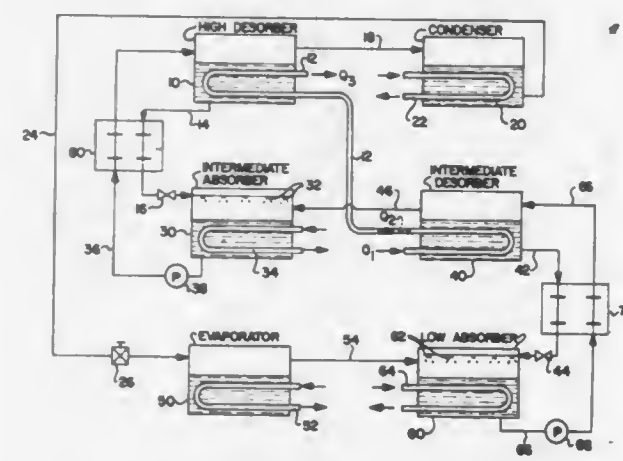
William H. Wilkinson, Columbus, Ohio, assignor to Battelle Development Corp., Columbus, Ohio

Filed Mar. 2, 1981, Ser. No. 239,256

Int. Cl.<sup>3</sup> F25B 7/00, 15/00, 27/02

U.S. Cl. 62—79

25 Claims



1. A process for producing refrigeration from a sensible

waste heat source using a compound absorption refrigeration cycle with a refrigerant and an absorbent compatible with said refrigerant, said absorbent having a negligible volatility at the temperatures encountered during operation, comprising the steps of:

- (a) supplying heat from said waste heat source and utilizing a portion of it to desorb as relatively high pressure vapor at least a portion of said refrigerant from a first working solution of said absorbent and said refrigerant,  
 (b) condensing at least a portion of the refrigerant vapor from step (a) at said relatively high pressure,  
 (c) passing the resultant liquid refrigerant to an area of relatively lower pressure where at least a portion of it is expanded and evaporated, drawing heat from an external space and producing a refrigerating effect,  
 (d) contacting the refrigerant vapor formed in step (c) with a second working solution of said absorbent and refrigerant to absorb at least a portion of said refrigerant vapor into solution,  
 (e) passing the resultant solution to an area of intermediate pressure and supplying another portion of heat from said waste heat source from step (a) to desorb as vapor at least a portion of the refrigerant from step (d), and returning said second working solution to step (d),  
 (f) contacting the refrigerant vapor from step (e) with said first working solution of said absorbent and refrigerant from step (a) to absorb at least a portion of said refrigerant vapor into solution, and  
 (g) returning the resultant solution to step (a).

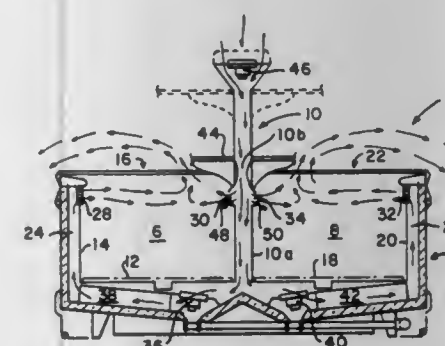
**4,337,626**  
**WELL TYPE REFRIGERATED CASE WITH DEFROST AIR INTAKE AND COLLIDING BAND AIR DEFROST**  
 Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 145,859, May 1, 1980, which is a continuation-in-part of Ser. No. 107,261, Dec. 26, 1979, Ser. No. 76,669, Sep. 18, 1979, Ser. No. 60,549, Jul. 25, 1979, and Ser. No. 11,804, Feb. 14, 1979. This application Jan. 21, 1981, Ser. No. 226,768

Int. Cl.<sup>3</sup> A47F 3/04

U.S. Cl. 62—82

16 Claims



9. A refrigerated display case, comprising:  
 an open top cabinet containing a well type region;  
 defrost conduit means extending upwardly in said well type region between opposite sides of said cabinet to divide said well type region into separate first and second open top product display spaces;  
 first air conduit means extending around said first display space within said cabinet, said first air conduit means containing first refrigeration coil means;  
 first air outlet means and first air inlet means of said first air conduit means located on opposite sides of said first display space;  
 second air conduit means extending around said second display space within said cabinet, said second air conduit means containing second refrigeration means;  
 second air outlet means and second air inlet means of said

second air conduit means located on opposite sides of said second display space;  
 wherein said first and second inlet means are located in said column and said defrost conduit means comprises an upwardly extending part of said first and second conduits;  
 main air circulating means for circulating air through said first and second conduit means, respectively, and across the open tops of said first and second display spaces between the respective outlet means and inlet means in the form of respective air curtains during a refrigeration cycle;  
 further air circulating means located in said defrost conduit means above said respective first and second inlet means; and  
 defrost control means for energizing said further air circulating means at the start of a defrost cycle to draw ambient air from above the refrigerated display case into said defrost conduit means, first and second portions of said ambient air being directed out of said first and second inlet means to collide with said first and second air curtains flowing toward said first and second inlet means, respectively, at least portions of said air curtains being thereby reversed and caused to flow over the top of and outside the display case, and a further portion of said ambient air being drawn into said first and second conduit means by said main air circulating means to flow through said first and second conduit means and over said first and second refrigeration coil means.

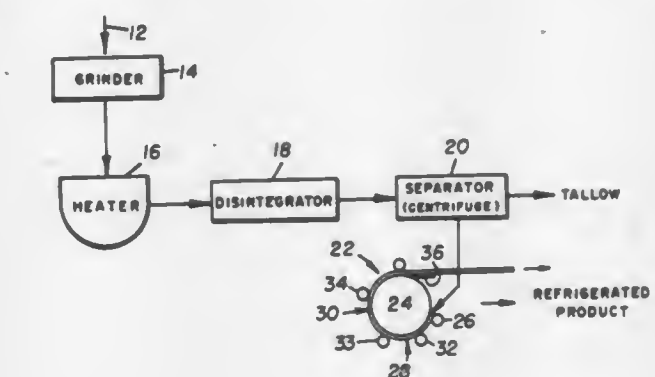
**4,337,627**  
**APPARATUS FOR REFRIGERATING PROTEIN MATERIALS**

Eldon N. Roth, 99 Madera Ct., San Ramon, Calif. 94583  
 Division of Ser. No. 103,498, Dec. 14, 1979, Pat. No. 4,294,860, which is a continuation-in-part of Ser. No. 970,579, Dec. 18, 1978, abandoned, which is a continuation of Ser. No. 849,166, Nov. 7, 1977, abandoned. This application Jun. 8, 1981, Ser. No. 271,546

Int. Cl.<sup>3</sup> A23G 9/00

U.S. Cl. 62—346

6 Claims

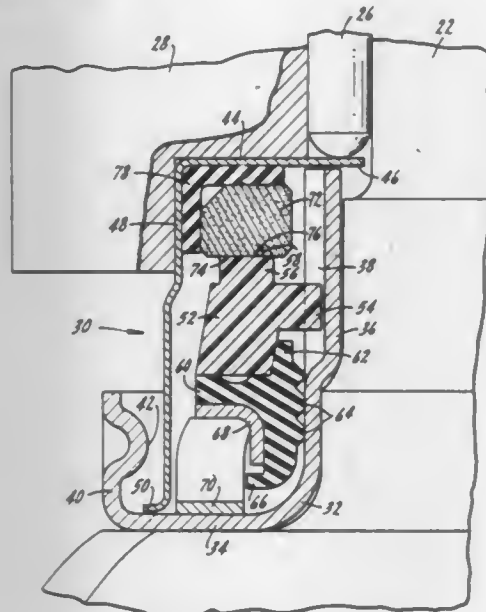


1. Apparatus for rapidly reducing the temperature of a viscous paste substance, said apparatus comprising  
 a first drum having a cylindrical exterior surface formed of thermally conductive heat transfer material,  
 means for refrigerating said heat transfer surface,  
 means for rotatively driving said first drum,  
 means for introducing a sheet of the viscous paste substance onto the surface of said first drum and for urging said viscous paste sheet into intimate heat exchange contact with said heat exchange surface of said first drum,  
 a second drum having a cylindrical exterior surface formed of thermally conductive heat exchange material,  
 means for refrigerating said heat exchange surface of said second drum,  
 means for rotatively driving said second drum,  
 transfer means for removing said sheet of viscous paste substance from said first drum and applying it to the heat exchange surface of said second drum with the originally



exposed surface of the sheet adjacent said heat exchange surface of said second drum, and means for removing said sheet of viscous paste substance from said second drum.

**4,337,628**  
**UNIVERSAL JOINT WITH UNITARY FACE SEAL AND RETAINER ASSEMBLY**  
 C. Roger Greene, Rockford, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.  
 Filed Aug. 20, 1980, Ser. No. 179,928  
 Int. Cl.<sup>3</sup> F16D 3/26  
 U.S. Cl. 464—131 9 Claims



1. In a universal joint including a trunnion journaled by bearing elements in a bearing block; the improvement comprising a unitary assembly including a cartridge secured to said trunnion, a shroud axially spaced from said cartridge and secured to said bearing block, a washer member in driven relationship with said cartridge and defining a first axially facing sealing surface, a mating face member engaged with said shroud and defining a second axially facing sealing surface, a boot member engaged with said washer member and in axial sliding sealing contact with said cartridge, and a spring biasing said boot and washer members axially toward said mating face member such that said surfaces are engaged to establish a face seal.

**4,337,629**  
**RESILIENT SHAFT COUPLING**  
 Jürgen Walter, Haltern-Hullern, Fed. Rep. of Germany, assignor to Hackforth GmbH & Co., Herne, Fed. Rep. of Germany

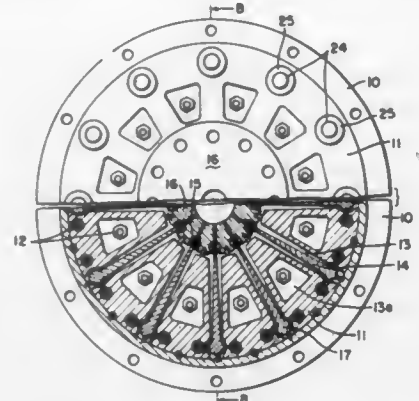
Filed Mar. 20, 1980, Ser. No. 132,304  
 Claims priority, application Fed. Rep. of Germany, Mar. 13, 1978, 2810885

Int. Cl.<sup>3</sup> F16D 3/80, 3/56  
 U.S. Cl. 464—24 2 Claims

1. A resilient shaft coupling having damping by liquid displacement, said coupling comprising:  
 an inner driving member having recesses located in the generated surface thereof and extending in the axial direction;  
 an outer driven member having liquid-filled chambers bounded by filling elements;  
 a plurality of resilient elements connected to said outer coupling member, extending radially of the axis of rotation of said coupling, and disposed between said inner and outer members, the radially inner free ends of said resilient elements being received in said axial recesses of said inner member, each of said resilient elements extending between some of said liquid-filled chambers in such a way that liquid responds to relative movement between said inner

and outer members by being displaced from one of said chambers to an adjacent chamber bounded by one of said resilient elements;

two journal pins respectively provided on each of said resilient elements on those lateral end faces thereof at that end of said resilient element opposite said free end, said outer



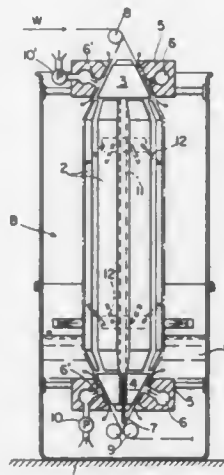
member having corresponding bores for receiving respective journal pins therein; and bearing sleeves respectively interposed between said journal pins and said corresponding bores in said outer member, at least one of said two journal pins of each resilient element being directly connected with said outer driven member in such a way as to rotate positively therewith.

**4,337,630**  
**EXTERNALLY HELD CYLINDRICAL EXPANDER FOR TUBULAR WARES**

Christian Strahm, Küsnacht, Switzerland, assignor to Lindauer Dornier Gesellschaft mbH., Fed. Rep. of Germany  
 Filed Sep. 2, 1980, Ser. No. 183,368

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935374

Int. Cl.<sup>3</sup> D06B 23/04  
 U.S. Cl. 68—13 R 4 Claims



1. In an externally held cylindrical expander for tubular wares having a central support for radially adjustable expandable props and segment-shaped guide elements borne by the props, in particular for treating the tubular wares with liquid treatment substances, a longitudinally tapered body mounted to each end of the central support as entry and exit parts, and the guide elements extend in the longitudinal direction of the expander between the two bodies,

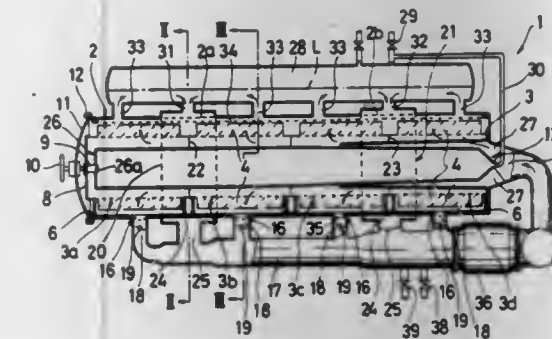
the improvement comprising bearing means conforming to the shape of and surrounding at least in part at least the lower tapered body and including discharge apertures distributed on the interior periphery of said tapered body, said discharge apertures issuing into a gap between said bearing means and said body, whereby a fluid issuing from

said discharge apertures into said gap supports said expansion and stressing said leaf springs, and means for interlocking the movement of said second conveyor with said conveyor support.

**4,337,631**  
**APPARATUS FOR TREATMENT OF MATERIALS**  
 Akio Fukuroi, Uozu, and Isao Sugimoto, Aichi, both of Japan, assignors to Yoshida Kogyo K.K. and Nippon Dyeing Mfg. Co., both of Tokyo, Japan

Filed Mar. 31, 1981, Ser. No. 249,389  
 Claims priority, application Japan, Mar. 31, 1980, 55-41421[U]

Int. Cl.<sup>3</sup> D06B 5/18  
 U.S. Cl. 68—189 5 Claims



1. An apparatus for the treatment of materials with treatment liquid, comprising:

(a) a horizontally extending elongate cylindrical vessel of generally circular cross section for containing the treatment liquid;

(b) a plurality of perforated hollow beams connected end to end and supported concentrically within said vessel for supporting on and around said beams the materials to be treated;

(c) said vessel having an inlet at its one end for introducing the treatment liquid into said vessel, a plurality of first outlets at its bottom for discharging a portion of the treatment liquid out of said vessel, and at least one second outlet at its top for discharging the remaining portion of the treatment liquid out of said vessel, each of said first outlets being disposed substantially centrally of one of said beams, said second outlet being radially aligned with a joint between an adjacent pair of said beams;

(d) a pressure-control tank disposed above said vessel for controlling liquid pressure in said vessel, said tank coextending longitudinally with said vessel;

(e) a plurality of connection pipes communicating at one end with said tank and at the other end with said vessel, at least one of said connection pipes being radially aligned with said second outlet, the other connection pipes being spaced apart from adjacent joints of said beams longitudinally along said vessel; and

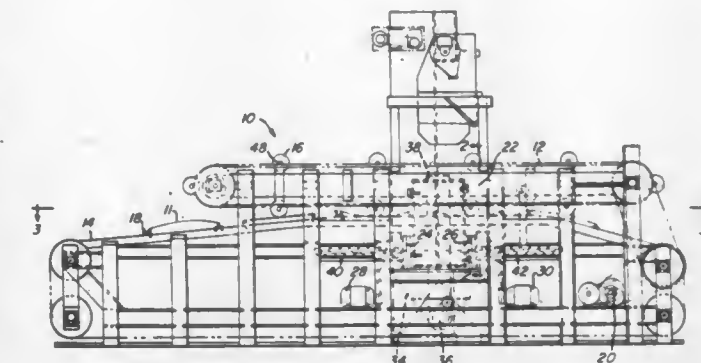
(f) means for supplying and circulating the treatment liquid through said vessel and said tank.

**4,337,632**  
**LEAF SPRING STRESS PEENING METHOD AND APPARATUS**

Gerold Lienert, Georgetown, Canada, assignor to Rockwell International Corporation, Pittsburgh, Pa.  
 Filed Jun. 12, 1980, Ser. No. 158,732

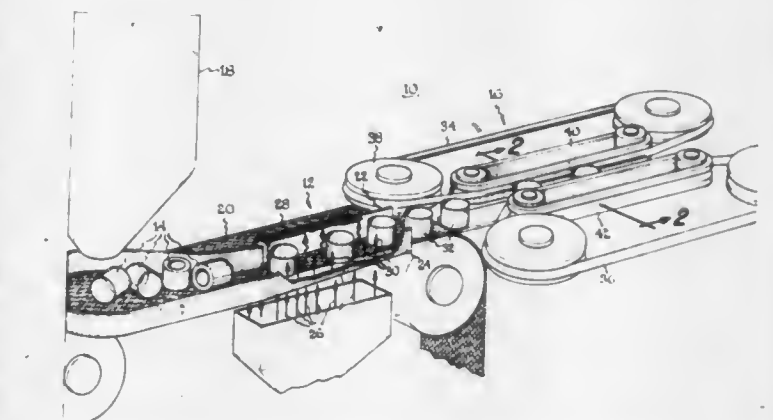
Int. Cl.<sup>3</sup> B24C 1/10  
 U.S. Cl. 72—53 7 Claims

1. Apparatus for stress peening leaf springs comprising a conveyor including means for supporting and transporting a plurality of leaf springs thereon, means for deflecting and stressing each leaf spring as each leaf spring traverses a predetermined area, means located in said predetermined area for shot peening the tension side of the deflected spring, a second conveyor transporting a plurality of said means for deflecting



porting and transporting said leaf springs to provide said deflection as said leaf springs traverse said predetermined area.

**4,337,633**  
**CYLINDER HANDLING DEVICE**  
 Harold W. Logue, North Olmsted, Ohio, assignor to General Electric Company, Schenectady, N.Y.  
 Filed Jul. 3, 1980, Ser. No. 165,609  
 Int. Cl.<sup>3</sup> B21D 3/00 8 Claims



1. A method of automatically removing any out-of-round condition in deformable metal cylinders which comprises:

(a) feeding a plurality of deformable metal cylinders in a horizontal direction to moving alignment means including a vertical gas column which orients each cylinder with the cylindrical axis in a vertical direction and aligns said vertically oriented cylinders in a row while being rotated, and  
 (b) gripping the vertically aligned rotating cylinders successively between a pair of spaced apart horizontally disposed conveyor belts traveling at different linear speeds with sufficient mechanical force to rotate said cylinders and remove any out-of-round condition found while said cylinders are being transported.

**4,337,634**  
**EXTERNALLY HELD CYLINDRICAL EXPANDER FOR TUBULAR WARES**

Werner Strudel, Friedrichshafen, Fed. Rep. of Germany, assignor to Lindauer Dornier Gesellschaft mbH., Fed. Rep. of Germany

Filed Oct. 22, 1980, Ser. No. 199,636  
 Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949876

Int. Cl.<sup>3</sup> B21B 17/00, 25/02; B29D 7/24  
 U.S. Cl. 72—113 4 Claims

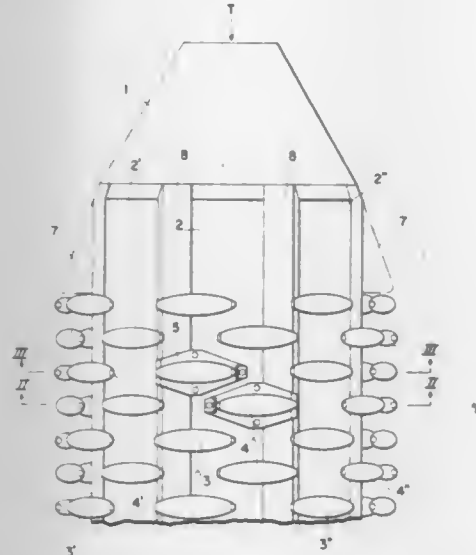
1. In an externally held cylindrical expander for tubular wares with a central support for radially adjustable, spreading rest means and sector-shaped longitudinal elements borne by said rest means, in particular for the treatment of the tubular



ware with liquid treatment means, the longitudinal elements extending between bodies tapering in the longitudinal direction, mounted between the ends of the support, and acting as entry and exit means,

the improvement comprising:

- (a) rollers with axes of rotation transverse to the ware transport direction T mounted on the outsides of the individual longitudinal elements in transverse planes of the expander,
- (b) the rollers located in a common transverse plane covering the gaps between rollers located in an adjoining transverse plane,



- (c) the rollers from adjoining transverse planes mounted on one longitudinal element overlap by their ends at the center of said longitudinal element,
- (d) the other ends of the rollers project beyond the side edges of said longitudinal element and overlap with the rollers of the adjoining longitudinal element, and
- (e) the rollers evince a convex profile of such kind that the convex curvature of all rollers located in a common transverse plane on the expander periphery coincides with the smallest settable circumference of the expander in its unspread position.

4,337,635

## COMPRESSION TOOL

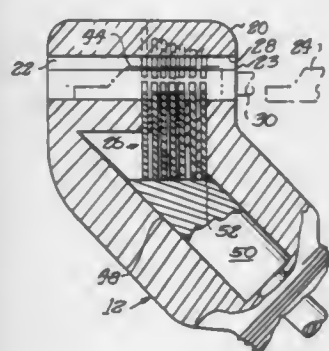
William C. Martin, and Stephen V. Hoydic, Jr., both of Fairview, Pa., assignors to Teledyne Penn-Union, Edinboro, Pa.

Filed Jul. 3, 1980, Ser. No. 165,774

Int. Cl.<sup>3</sup> B21D 7/06, 37/10

U.S. Cl. 72-410

22 Claims



1. A compression tool for compressing a generally tubular workpiece, comprising: a tool head having a through opening, a plurality of generally parallel, spaced apart movable compressing members carried by said tool head, a stationary compression surface carried by said tool head and oppositely facing said plurality of movable compressing members, guide means carried by said tool head for slidably mounting said plurality of movable compressing members, means carried in said tool head defining a maximum compressing position for

each of said plurality of compressing members, said maximum compressing positions generally increasing in a predetermined progression from one end of said tool head through opening toward an opposite end of said tool head through opening and ram means for driving said plurality of compressing members towards their respective maximum compressing positions.

4,337,636

## VEHICLE SECURING DEVICE FOR FRAME STRAIGHTENING AND REPAIRING APPARATUS

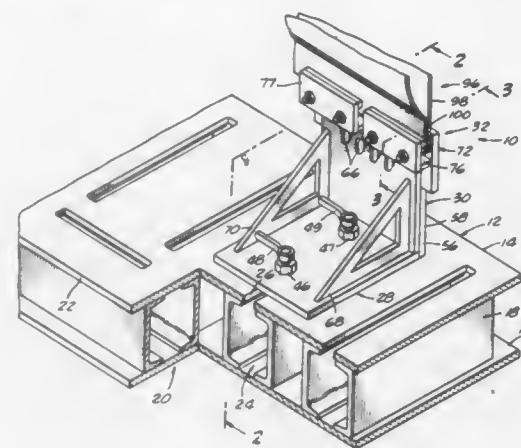
Allan H. Clausen, 24406 Alliene, Lomita, Calif. 90717

Filed May 12, 1980, Ser. No. 148,726

Int. Cl.<sup>3</sup> B21D 1/12

U.S. Cl. 72-457

10 Claims



1. A device for securing a vehicle having a frame to a support surface of a vehicle frame straightening apparatus wherein the support surface includes an elongated opening there-through having an elongate axis that defines a first axis of the support surface, the device comprising
  - (a) a base plate comprising two holes therethrough;
  - (b) two restraining assemblies each rotatably carried within a respective hole for insertion through the elongated opening for securely holding the base plate against the support surface without rotation of the base plate;
  - (c) gripping means for removably gripping a portion of the vehicle frame;
  - (d) a receiving member affixed to the base plate and defining a receiving channel substantially perpendicular to the first axis for receiving the gripping means; and
  - (e) securing means for removably securing the gripping means within the receiving channel so that the gripping means can be removably secured at a plurality of locations within the receiving channel for gripping different portions of the vehicle frame.

4,337,637

## PARALLEL POSITIONING DEVICE

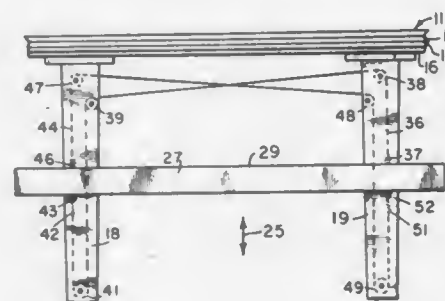
Burton A. Rolland, Zionsville, Ind., assignor to Hurco Manufacturing Company, Inc., Indianapolis, Ind.

Filed Sep. 25, 1980, Ser. No. 190,732

Int. Cl.<sup>3</sup> B21D 11/22

U.S. Cl. 72-461

23 Claims



1. A positioning device comprising:

mounting means for mounting the device to a base and securing the device in a fixed position on the base; first and second separately guided means supported by said mounting means for movement in a pre-determined direction toward and away from a reference line established by said mounting means;

drive means on said mounting means and coupled to said first guided means for moving said guided means in said direction; and

elongated connector means coupled between said first and second guided means to pull said second guided means in said direction in synchronism with movement of said first guided means in said direction.

4,337,638

## LIQUID GAGING SYSTEM SELF TEST CIRCUITRY

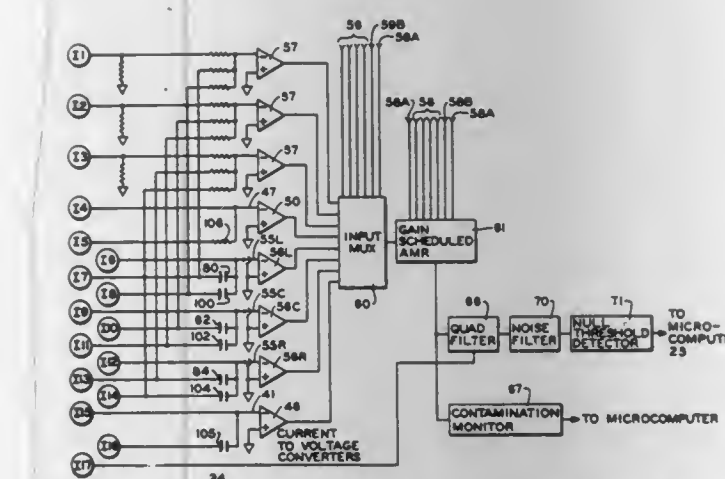
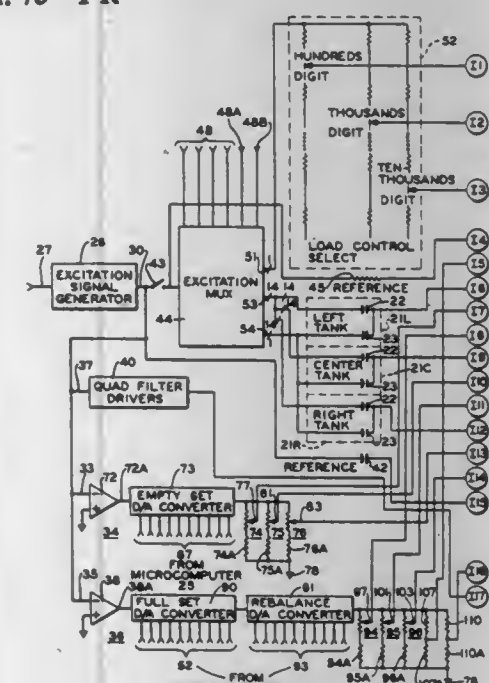
Kenneth L. Leonard, Brooklyn Park; Dwight D. Colby, Roseville; William R. Dougherty, St. Anthony; Jerome A. Fahley, Fridley, and Martin J. van Dyke, Brooklyn Park, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 14, 1980, Ser. No. 149,797

Int. Cl.<sup>3</sup> G01F 23/26

U.S. Cl. 73-1 R

28 Claims



1. In a liquid gaging system, an apparatus for self testing the system, comprising:
  - excitation signal generator means for providing an excitation signal;
  - precision resistor means for providing a precise resistive load;
  - means for monitoring the precision resistor means, the means for monitoring comprising threshold detector means for

determining whether the excitation signal has an amplitude above a predetermined threshold; and means for connecting the precision resistor means to the excitation signal generator means and to the means for monitoring.

4,337,639

## GAS VOLUME FLOW RATE MEASUREMENT APPARATUS

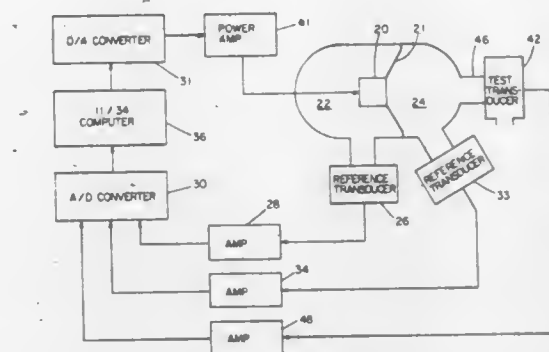
Andrew C. Jackson, Davis, Calif., assignor to The Children's Hospital Medical Center, Boston, Mass.

Filed Feb. 29, 1980, Ser. No. 126,125

Int. Cl.<sup>3</sup> G01F 1/72, 25/00

U.S. Cl. 73-3

14 Claims



1. Apparatus for measuring gas volume delivered at rapidly varying flow rates, over wide ranges of frequency of variation in said flow rates, comprising
  - a chamber having an outlet,
  - means for varying the volume of said chamber to cause a volume of gas to be delivered from said outlet, and
  - means for measuring changes in the pressure in and volume of said chamber during said varying, so that the volume of gas delivered therefrom can be derived,
 wherein said means for measuring the changes in the volume of said chamber comprises
  - a second closed chamber,
  - means for subjecting said second chamber to variations in volume equal in magnitude to and simultaneous with said volume variations in said first chamber, and
  - means for measuring the pressure in said second chamber.

4,337,640

## KNOCKING SENSOR

Shigeo Muranaka; Michio Onoda, both of Yokohama, and Kunihiro Sugihara, Takasho, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

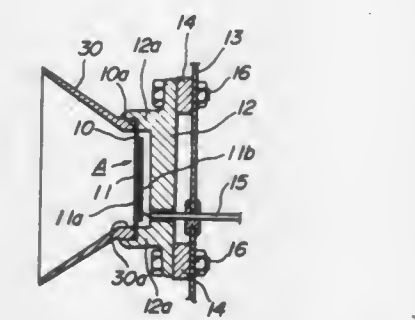
Filed Apr. 8, 1980, Ser. No. 138,572

Claims priority, application Japan, Apr. 10, 1979, 54-43485; Apr. 10, 1979, 54-47352[U]

Int. Cl.<sup>3</sup> G01L 23/22

U.S. Cl. 73-35

2 Claims



1. A knocking sensor for detecting knocking at a given frequency in an internal combustion engine, said engine mounted in a vehicle having a body structure defining a cabin, said sensor comprising:



a thin plate, said plate having a resonant vibration frequency equal to said given frequency;  
 case means for peripherally mounting said thin plate, said case means being located apart from said engine and being mounted in said cabin;  
 a piezoelectric element mounted on said plate for providing an electrical signal indicative of any vibration of said plate;  
 means for defining a resonant cavity which is resonant at said given frequency, said means including said thin plate;  
 means for sound collection located adjacent said engine; and  
 means for defining a duct acoustically coupling said sound collection means and said resonant cavity defining means.

4,337,641

## DEVICE FOR DETECTING ENGINE KNOCK

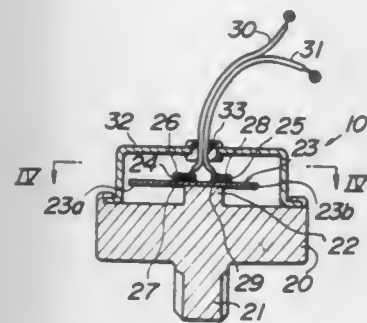
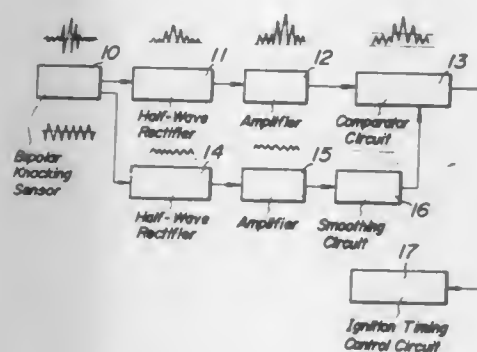
Kunihiko Sugihara, Takasho; Kenji Yoneda, Fujisawa, and Shigeo Muranaka, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 5, 1980, Ser. No. 156,745

Claims priority, application Japan, Jun. 6, 1979, 54-77322[U]  
 Int. Cl.<sup>3</sup> G01L 23/22

U.S. Cl. 73—35

8 Claims

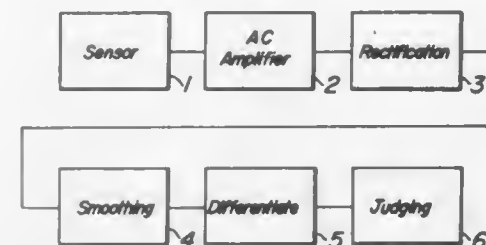


1. A device for detecting engine knock comprising a bipolar vibration sensor secured to a spark ignition internal combustion engine and having first and second outputs for generating respectively a first signal representing individual ringing engine vibrations due to engine knock and a second signal representing the background engine vibrations due to engine operation, separately, a smoothing circuit connected to the second output side of the vibration sensor for forming a mean value of said second signal, and a comparator circuit having a first input terminal connected a first output side of said vibration sensor and a second input terminal connected to the output side of said smoothing circuit for comparing said mean value with the peak value of said first signal and generating a signal representing whether the engine is in engine knock condition or not.

4,337,642  
**DEVICE FOR JUDGING KNOCKING STRENGTH**  
 Kenichi Yoshida, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan  
 Filed Jul. 17, 1980, Ser. No. 169,760  
 Claims priority, application Japan, Jul. 18, 1979, 54/91199  
 Int. Cl.<sup>3</sup> G01L 23/22

U.S. Cl. 73—35

6 Claims



1. A device for judging the knocking strength of an internal combustion engine comprising, in combination:  
 a resonant type vibration sensor having a resonant frequency which coincides with a knocking frequency range of the engine to be detected, said sensor being connected for detecting vibrations of the engine in its combustion chambers and for delivering an electric output signal corresponding to the vibrations;  
 means including a rectifier circuit and a smoothing circuit for deriving a rectified envelope wave from said electric output signal;  
 means for differentiating said envelope wave to form a differentiated output signal having an amplitude representing the steepness of the envelope signal; and  
 means for judging the knocking level based on the value of the differentiated signal.

4,337,643

## KNOCK DETECTING APPARATUS FOR INTERNAL COMBUSTION ENGINE

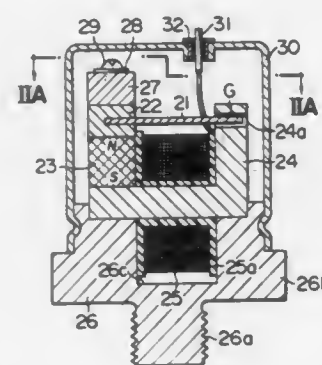
Hiroaki Yamaguchi, Anjo; Tadashi Hattori, and Yoshinori Ootaka, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 28, 1980, Ser. No. 211,296

Claims priority, application Japan, Nov. 30, 1979, 54-155765  
 Int. Cl.<sup>3</sup> G01L 23/22

U.S. Cl. 73—35

6 Claims



1. A knock detecting apparatus for internal combustion engines, comprising:  
 housing means;  
 vibrating means made of a magnetic material and having a resonance characteristic in a range of frequencies where knocking of an engine occurs, said vibrating means being disposed to vibrate in at least two different directions of vibration;  
 magnetic path means mounted on said housing means including a plurality of gaps formed adjacent to said vibrating means, each of said gaps being formed in said magnetic

path means in one of said at least two different vibration directions; and  
 magnetic flux sensing means for sensing a change in the reluctance of said magnetic path means due to a change in the width of said gaps caused by vibration of said vibrating means.

4,337,644

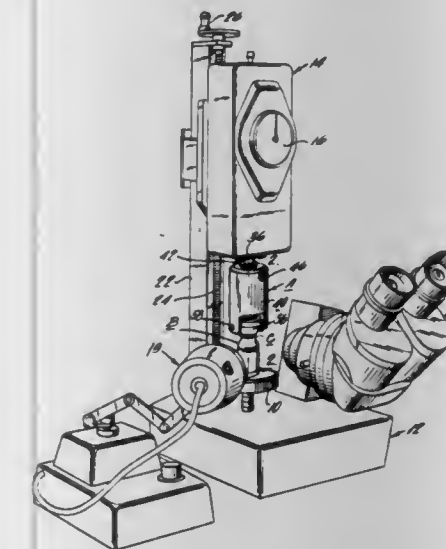
## GIMBAL ANVIL FOR SEAL FORCE TEST DEVICE

L. David Leiter, Willow Grove, Pa., assignor to The West Company, Phoenixville, Pa.

Filed Oct. 2, 1980, Ser. No. 193,014

Int. Cl.<sup>3</sup> G01M 3/00; G01B 5/02

U.S. Cl. 73—52



1. A gimbal-type anvil for a seal force test apparatus for checking the integrity of sealed container-closure assemblies including means for applying an external force to the assembly in a direction to compress the resilient sealing element of the assembly comprising a housing adapted to be mounted on the force applying means of the apparatus and at least a pair of annular ring members pivotally connected to said housing about axes transverse to the longitudinal axis of the container-closure assembly, the intersection of said pivotal axes defining a pivot point disposed closely adjacent a feeler wall formed in one of said ring members which engages the cap to apply a displacement force in a direction opposing the residual static force in the resilient sealing element.

4,337,645

## LAMP PRESSURE CHECKING DEVICE

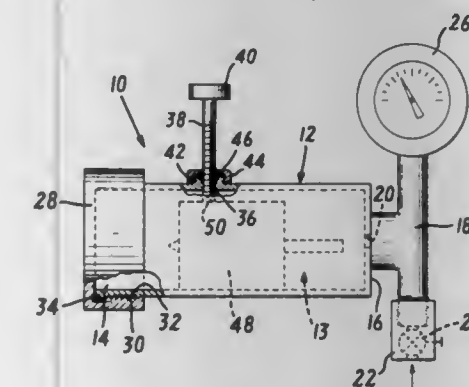
Robert S. Brown; Russell C. Schwickert, both of Lake Blawie, and Nickolas Demas, Cranford, all of N.J., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Dec. 15, 1980, Ser. No. 216,074

Int. Cl.<sup>3</sup> G01M 3/02

U.S. Cl. 73—52

12 Claims



1. A lamp-pressure checking device comprising:  
 (a) a housing;

(b) said housing having a chamber therein;  
 (c) means for allowing insertion of a lamp bulb into said chamber;  
 (d) means for sealing said chamber, said means for sealing providing a gastight seal;  
 (e) means for pressurizing said chamber to a predetermined pressure;  
 (f) means for measuring the pressure in said chamber; and  
 (g) means in said chamber for breaking a lamp bulb inserted therein.

4,337,646

## OSCILLATING RHEOMETER DIE SET

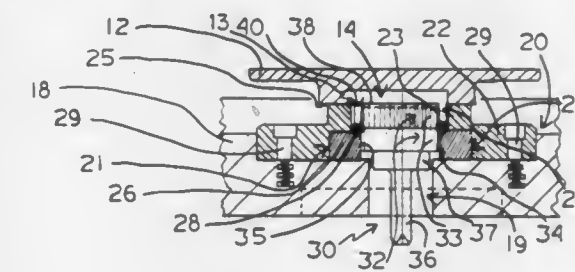
M. Foster Fraleigh, 112 Lake Shore Dr., Old Port Cove Marina, North Palm Beach, Fla. 33408

Filed Jun. 11, 1980, Ser. No. 158,505

Int. Cl.<sup>3</sup> G01N 11/14

U.S. Cl. 73—59

10 Claims



1. An elastomeric testing device having a lower platen, facilitating rapid removal of cured elastomeric samples, comprising:  
 a stationary die ring secured to the surface of the lower platen, said die ring having an interior circumferential surface defining an aperture, and a recessed portion on the lower area of said interior circumferential surface;  
 a collar residing in said recessed portion, said collar having a recess therein;  
 an oscillator having a head extending into said aperture, said head having an outer circumferential surface;  
 a means for sealing the elastomeric samples between said oscillator and said die ring at said recessed portion of said die ring, said sealing means residing in said recess of said collar; and  
 the combined surfaces of said interior circumferential surface, said outer circumferential surface, and said sealing means forming an elastomeric annular cavity whereby the cured elastomer is confined to said elastomeric annular cavity.

4,337,647

## ENGINE ROUGHNESS SENSOR

Charles R. Radcliffe, Fraser, and James A. Davis, Bloomfield Hills, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 7, 1979, Ser. No. 101,396

Int. Cl.<sup>3</sup> G01M 15/00

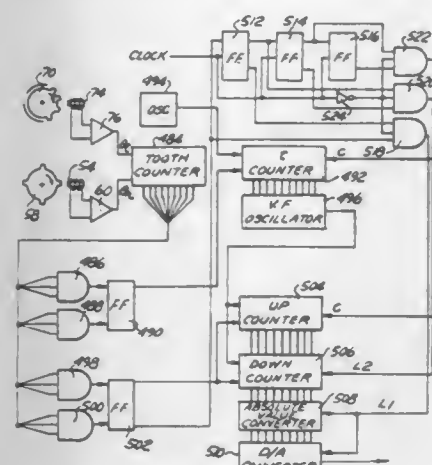
U.S. Cl. 73—116

22 Claims

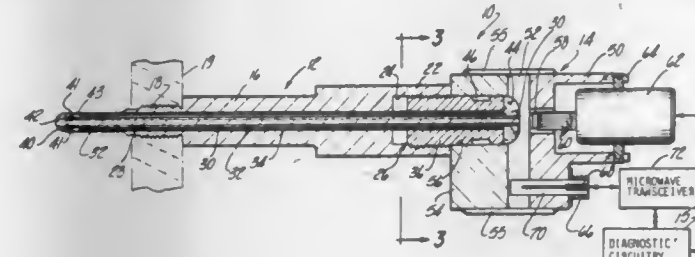
1. A roughness sensor for generating roughness signals indicative of the variation in the magnitude of the torque impulses imparted to a rotating element, the sensor comprising:  
 means detecting the rotational position of the rotating element for generating first interval signals indicative of a first angular interval of the rotating element's rotation for each torque impulse, and for generating second interval signals indicative of a subsequent angular interval of the rotating element's rotation, wherein the rotating member has a maximum rotational velocity in response to each torque impulse in said subsequent angular interval;  
 means response to said first and second interval signals for generating a normalized signal having a value propor-



tional to the magnitude of the torque impulse determined by the time required by the rotating element to rotate through said subsequent angular interval and inversely proportional to engine speed determined by the time required for the rotating element to rotate through said first angular interval;

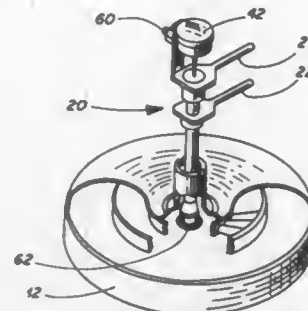


**4,337,648**  
**DUAL PROBE COUPLER**  
John W. Gillespie, Chelsea, Mich., assignor to Jodon Engineering Associates, Inc., Ann Arbor, Mich.  
Filed Nov. 3, 1980, Ser. No. 203,631  
Int. Cl.<sup>3</sup> G01M 15/00  
U.S. Cl. 73—117.3 8 Claims



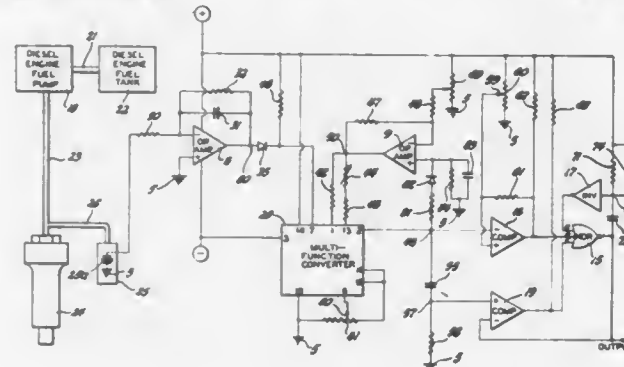
7. For use in a probe assembly for detecting timing events in an internal combustion engine and comprising a probe adapted to transmit microwave and optical energy to and from an engine cylinder and a coupler adapted to be removably received onto said probe for transducing said microwave and optical energies into electrical signals, the improved probe comprising a body having means at one end adapted to be received into an engine cylinder and a second end, microwave transmission means extending entirely through said body and projecting from said first and second ends of said body, and optical transmission means extending entirely through said body coaxially with said microwave transmission means, said microwave transmission means and said optical transmission means being telescopically received one within the other entirely through said body, said second end of said body having an external surface adapted telescopically to receive said coupler in a plurality of angular orientations with respect to the axis of said microwave transmission means, said optical transmission means and said body.

**4,337,649**  
**APPARATUS FOR DETERMINING END-PLAY IN A TORQUE CONVERTER**  
Karl Stagg, 6 Helen Pl., Clifton, N.J. 07011  
Filed Jan. 21, 1980, Ser. No. 113,922  
Int. Cl.<sup>3</sup> G01M 17/00  
U.S. Cl. 73—118 5 Claims



1. Apparatus for determining end-play in a torque converter, comprising:  
(a) a tubular housing;  
(b) a spring-operated plunger slidably arranged in said casing;  
(c) a plurality of locking pins slidably attached to said casing, engaging said plunger during its downward motion and releasing said plunger during its upward motion;  
(d) a pair of plunger-operating handles, one of which is attached to said spring-operated plunger and the other of which is attached to said casing, for moving said plunger;  
(e) a central rod slidably disposed inside said plunger and extending exteriorly of said casing, said central rod including an integral ring, and a second spring between said casing and ring, said ring biasing the end of said central rod out of said casing; and  
(f) an adjustable measuring gauge having a central pin slidably extending in the direction of said central rod so that an upward movement of said central rod representing the end-play of the torque converter causes said pin to push upward, thereby providing a reading of the end-play on said gauge.

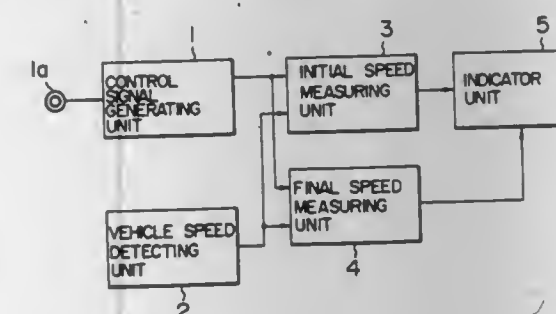
**4,337,650**  
**DIESEL ENGINE START OF FUEL INJECTION DETECTING SYSTEM**  
Herman F. Brandt, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.  
Filed Nov. 21, 1980, Ser. No. 208,864  
Int. Cl.<sup>3</sup> G01M 15/00  
U.S. Cl. 73—119 A 4 Claims



1. A diesel engine start of fuel injection detecting system that is sensitive to the change of fuel line pressure between the fuel pump and the injector upon the start of fuel injection, comprising:  
means for producing an electrical pressure signal that varies directly in magnitude with changes of fuel line pressure between the fuel pump and the injector;  
means for modifying said pressure signal by raising the magnitude thereof to a selected mathematical power;  
means for producing a first electrical signal when said modified pressure signal reaches a selected value;  
means for detecting the inflection point of said modified

pressure signal upon the start of fuel injection and for producing a second electrical signal upon the detection thereof; and  
means responsive to said first and second electrical signals for producing an output signal that is indicative of start of fuel injection.

**4,337,651**  
**APPARATUS FOR MEASURING AND INDICATING BRAKING VEHICLE SPEEDS**  
Yasuhisa Yoshino, Okazaki; Akira Kuno, Oobu; Hidetoshi Shimizu, and Harumasa Minegishi, both of Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of Japan  
Filed Nov. 24, 1980, Ser. No. 209,421  
Claims priority, application Japan, Dec. 6, 1979, 54-169435  
Int. Cl.<sup>3</sup> G01L 5/28  
U.S. Cl. 73—129 7 Claims

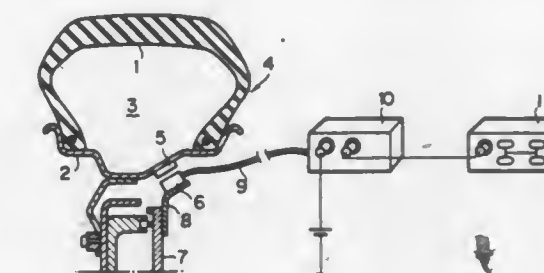


1. A braking vehicle speed measuring apparatus comprising:  
vehicle speed detecting means for generating a number of vehicle speed pulse signals proportional to the speed of a vehicle;  
control signal generating means for detecting the start and end of braking of said vehicle and generating a start-of-braking indication control signal and an end-of-braking indication control signal;  
initial speed measuring means for measuring the speed of said vehicle at predetermined intervals irrespective of braking of said vehicle, said initial speed measuring means being responsive to said start-of-braking indication control signal to store the speed of said vehicle just before said start of braking; and  
final speed measuring means responsive to said end-of-braking indication control signal to measure the speed of said vehicle just after said end of braking.

**4,337,652**  
**TIRE PRESSURE DROP DETECTING APPARATUS**  
Akira Matsuda, Higashi Murayama; Yoshihiro Hayakawa, Akigawa; Shigeo Yasuda, Musashino; Motoaki Iwasaki, Musashino, and Hiroshi Nishino, Musashino, all of Japan, assignors to Bridgestone Tire Company Limited and Mitaka Instrument Company Limited, both of Tokyo, Japan  
Filed Jun. 9, 1980, Ser. No. 157,983  
Claims priority, application Japan, Jun. 15, 1979, 54-082412[U]  
Int. Cl.<sup>3</sup> B60C 23/04  
U.S. Cl. 73—146.5 23 Claims

1. Apparatus for detecting a pressure drop in a tire chamber formed in a tire-and-wheel assembly including a wheel rim rotatable about a predetermined axis and an annular pneumatic tire fitted to the wheel rim, comprising:  
an electric oscillator assembly fixedly positioned with respect to said predetermined axis, and  
an electric resonator assembly mounted on said wheel rim and arranged to be brought into face-to-face relationship to said oscillator assembly when said tire-and-wheel assembly assumes a predetermined angular position about said predetermined axis,

wherein the resonator assembly comprises:  
a protective receptacle fast on said wheel rim and having a concavity open toward said oscillator assembly when said tire-and-wheel assembly assumes said predetermined angular position;  
a pressure-sensitive switch unit responsive to a drop of the air pressure in said tire chamber below a predetermined value and including a casing structure fixedly positioned within said receptacle and a member projecting from said casing structure into said tire chamber through an opening in said wheel rim and formed with a passageway open into the tire chamber;  
a resonant capacitor positioned within said receptacle;



a resonant inductor positioned within the receptacle and electrically connected to said resonant capacitor across said switch unit; and  
a body of dielectric potting compound securely held within said receptacle and having encapsulated therein the resonant inductor and capacitor and at least a portion of the casing structure of said switch unit,  
in which said resonant inductor consists of a resonant coil which is wound in a generally rectangular configuration when viewed in plan on a plane to be confronted by said oscillator assembly when said tire-and-wheel assembly assumes said predetermined angular position about said predetermined axis of the wheel rim said switch unit and said resonant capacitor being positioned internally of said resonant coil.

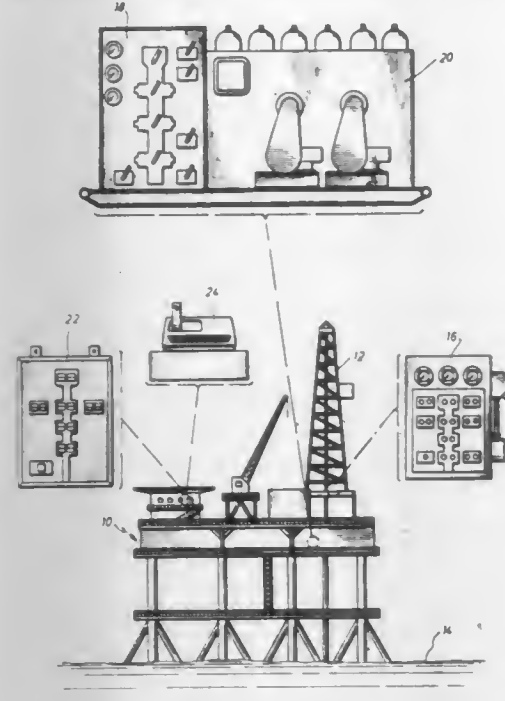
**4,337,653**  
**BLOWOUT PREVENTER CONTROL AND RECORDER SYSTEM**

John A. Chauffe, Houston, Tex., assignor to Koomey, Inc., Houston, Tex.  
Filed Apr. 29, 1981, Ser. No. 258,510  
Int. Cl.<sup>3</sup> E21B 47/00; E03B 7/07; E21B 44/00  
U.S. Cl. 73—151 7 Claims

1. In combination with a blowout preventer control system for controlling the opening and closing of various preventers and measuring the status of various conditions in the system and having various control stations of a control system recorder comprising,  
position measuring means connected to various blowout preventers for measuring the position of the various blowout preventers,  
operating data gathering means connected to the blowout preventer system for measuring various operating conditions in the system,  
a recorder connected to the position measuring means and to the operating data gathering means,  
means for periodically actuating the recorder for periodically recording the position of the position measuring means and recording the measurement of the operating data gathering means, and



means connected to the recorder for recording the position of the position measuring means and the measurement of



the operating data gathering means each time the blowout preventer control system is actuated.

4,337,654

## NATURAL GAS CALORIMETER

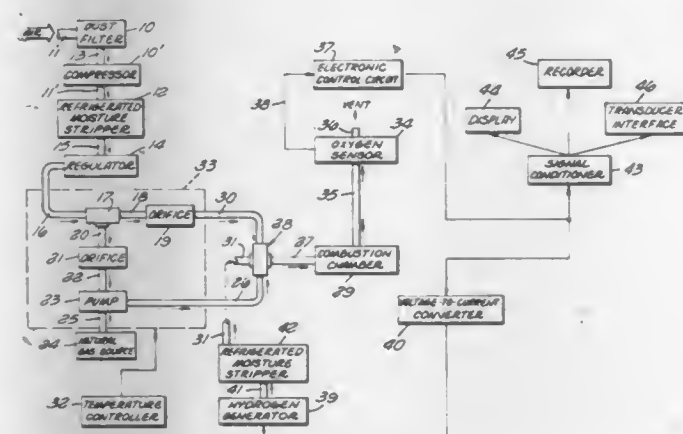
Robert R. Austin, Pasadena, and Ernst R. Ginkel, San Dimas, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,419

Int. Cl.<sup>3</sup> G01K 17/04

U.S. Cl. 73—190 CV

12 Claims



1. Apparatus for the automatic and continuous determination of a molar ratio of oxygen to a gas for stoichiometrically complete combustion, comprising: first means to produce a flow of a combustible gas at an invariant, standard volumetric rate; second means to produce a flow of air at an invariant, standard volumetric rate; electrolysis means having an electrical input current to produce a variable titrant flow; third means of combusting said gas, said air and said titrant in a manner such that combustion is substantially complete; a sensor providing electrical signals corresponding to the level of oxygen after combustion; electronic control circuitry connected from said sensor regulating titrant to maintain a predetermined oxygen excess; and utilization means to produce an output which is a linear function of said current.

### 4,337,655 VALVE PROVIDED WITH A MEASURING INSTRUMENT AND INTENDED FOR A MOVING MEDIUM

Inge B. Sundstrom, Ekebergbacken 86, Farsta, and Per R. W. Cairenius, Braxstigen 7, Tyreso, both of Sweden

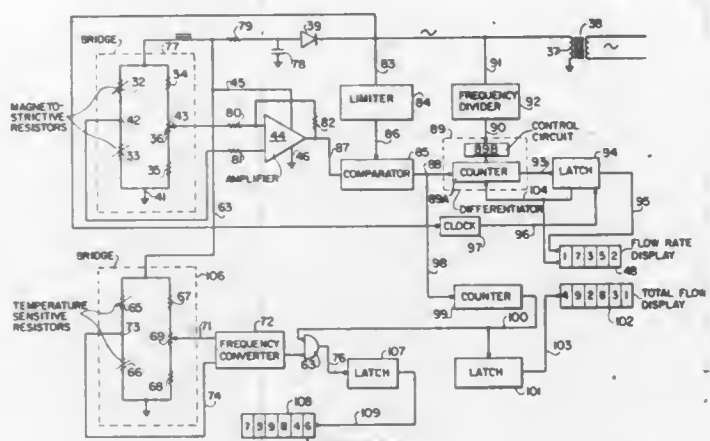
Continuation-in-part of Ser. No. 59,389, Jul. 20, 1979, abandoned, which is a continuation of Ser. No. 828,668, Aug. 29, 1977, abandoned. This application Sep. 29, 1980, Ser. No. 191,442

Claims priority, application Sweden, Sep. 9, 1976, 7610764

Int. Cl.<sup>3</sup> G01F 1/115; G01K 17/00

U.S. Cl. 73—193 R

8 Claims



1. In combination, a valve unit for a moving heat carrying medium in a feeder pipe of a heat radiator and electrical measuring means, supplied with voltage at a source frequency, for measuring the rate of flow of the moving medium, said valve unit being part of an integral unit comprising a length of conduit through which the moving medium flows, a propeller-like rotor disposed in the conduit and the valve unit itself, the valve unit being integrated with said conduit and serving in controlling the flow of the moving medium through the conduit, said rotor including a permanent magnet associated therewith, said measuring means including magnetic pulse generator means located exteriorly of said rotor for sensing the magnet field produced by said magnet and for generating a train of electrical pulses in accordance with the rotation of said rotor, said measuring means further comprising counting means responsive to a control signal for counting the number of pulses produced during the rotation of the rotor during a selected differential time period related to the source frequency, a frequency divider means for dividing the source frequency so as to produce said control signal with a frequency which is substantially lower than the source frequency, and means for indicating the count reached by said counting means during said selected time period.

### 4,337,656 DEVICE FOR MEASURING DEPTH AND TEMPERATURE ESPECIALLY FOR TANKS OR THE LIKE

Eugen Rapp, Tilsiterstr. 12, 2805 Stuhr II, Fed. Rep. of Germany

Filed Aug. 12, 1980, Ser. No. 177,528

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932243

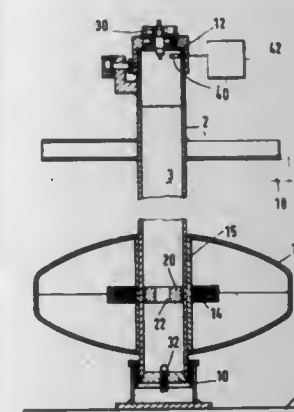
Int. Cl.<sup>3</sup> G01F 23/28

U.S. Cl. 73—290 V

18 Claims

1. Device for measuring depth and temperature, especially for liquid storage tanks or the like, comprising a vertical measuring tube, a float device encircling the measuring tube, a cylindrical reflector within the measuring tube and vertically movable therein and functionally interconnected with said float device for movement therewith, a first ultrasonic trans-

mitter/receiver in one end of the measuring tube, said reflector having a through-hole parallel to the axis of the measuring



tube, and a second ultrasonic transmitter/receiver placed in the other end of the measuring tube.

4,337,657

## OIL LEVEL GAUGE

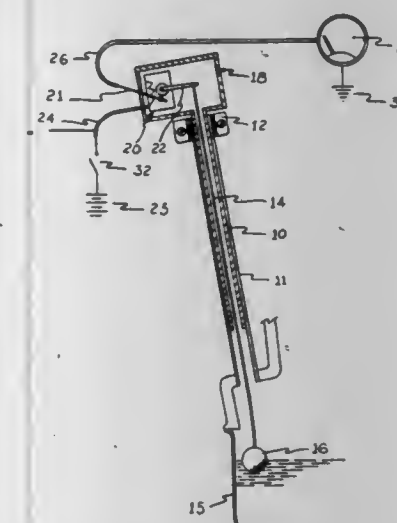
Benny G. Morris, 3053 Wood St., Portage, Ind. 46368

Filed Aug. 11, 1980, Ser. No. 177,197

Int. Cl.<sup>3</sup> G01F 23/10

U.S. Cl. 73—313

1 Claim



1. A liquid level indicator for use on motor vehicles having an oil pan, a dip stick pipe and an electrical circuit including a battery, a switch and an electrically operable gauge, said indicator comprising a tube mounted in said dip stick pipe having an upper end and a lower end, said tube lower end being adjacent said oil pan, an elongated stiff wire having first and second ends and slidable endwise within said tube between said first and second ends, said first end extending from said tube lower end and carrying a ball float thereon buoyantly supported on the oil in the oil pan, said tube including a housing at said upper end, a variable resistor in said housing connected in said circuit, said wire second end extending from said tube upper end into said housing, said resistor having a shiftable contactor connected to the upper end of said wire, whereby endwise movement of said wire changes the setting of said resistor to activate said gauge when said circuit switch is closed, and means for adjustably fastening said indicator tube to said dipstick pipe at a selected longitudinal position relative to said stiff wire whereby said resistor may be set to give a reading on said gauge corresponding to the initial level of oil in said oil pan.

4,337,658

## HUMIDITY SENSOR

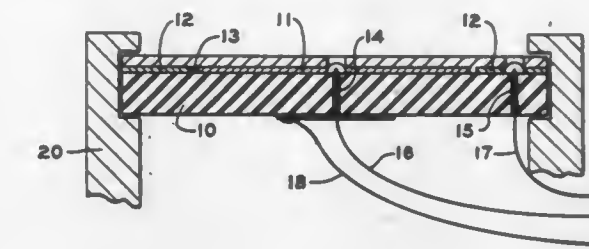
Curtus D. Motchenbacher, Minnetonka, and Merle E. Nicholas, Minneapolis, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 196,902, Oct. 14, 1980, abandoned. This application Sep. 14, 1981, Ser. No. 301,697

Int. Cl.<sup>3</sup> G01W 1/00

U.S. Cl. 73—335

22 Claims



1. A high impedance relative humidity sensing element comprising:  
a high purity insulating substrate;  
an inner conductive film on the surface of said substrate to form one terminal of said sensing element;  
an outer conductive film on the surface of said substrate, the perimeter of said inner film being completely encompassed by but spaced from said outer film, thereby leaving a continuous loop of substrate exposed between said inner and outer films, said outer film forming the second terminal of the element; and,  
a high impedance humidity responsive film applied to cover said continuous substrate loop and to extend onto said inner and outer conductive films so that said humidity responsive layer forms a continuous loop bridging said spacing in a continuous manner.

4,337,659

## COMPUTER TAPE AND REEL SIGNATURE FOR COMPUTER DATA FILE SECURITY

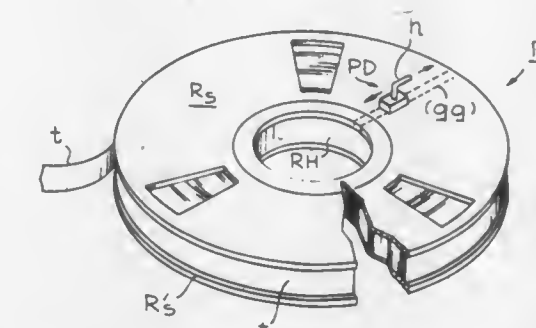
Herbert U. Ragle, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 29, 1979, Ser. No. 53,304

Int. Cl.<sup>3</sup> G11B 5/00, 5/74

U.S. Cl. 73—432 R

16 Claims



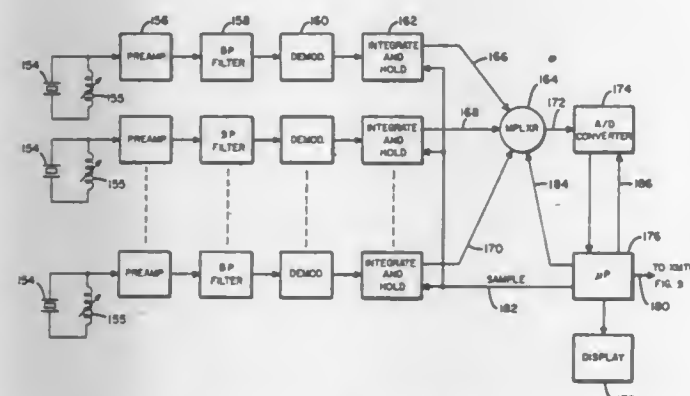
1. A method of developing a wrapping profile, or winding signature, for a tape web segment adapted to be wrapped upon a prescribed reel, this method being adapted to enhance computer tape file security so that each time such a web is wound upon a reel, the winding mode, after repeated windings, is assumed to leave the array of wrapped web edges in a unique edge wrap profile represented by the position of each winding edge as sighted radially along one side of the reel, such a profile constituting the winding signature, this method involving:

providing electronic means for automatically monitoring the relative positions of these web-edges and so detecting this "winding-signature", and also for electronically representing and storing these position values as a prescribed



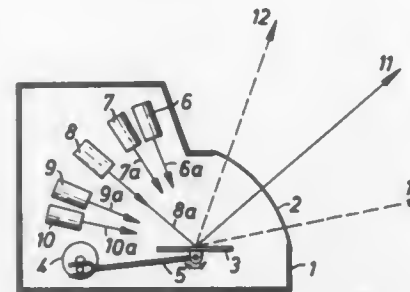
encoded "signature" representation each time the web is wound;  
this means being adapted to automatically make such "signature" representations available for use in monitoring unspooling and respooling operations.

**4,337,660**  
**ULTRASONIC TIRE TESTING APPARATUS**  
Arnold A. Weiss, Minneapolis, Minn., assignor to AMF Incorporated, Santa Ana, Calif.  
Division of Ser. No. 70,720, Aug. 29, 1979, Pat. No. 4,297,876.  
This application Mar. 9, 1981, Ser. No. 242,109  
Int. Cl.<sup>3</sup> G01N 29/04  
U.S. Cl. 73—600 7 Claims



1. An electronic system for use in ultrasonic inspection apparatus comprising:
  - (a) a plurality of transmitters for producing directional beams of pulsed ultrasonic energy, the transmitters being physically arranged so that the beams focus on a predetermined area of the product to be inspected;
  - (b) a plurality of receiving channels, each having
    1. an ultrasonic receiver transducer adapted to receive ultrasonic energy transmitted through said product from at least one of said plurality of transmitters and producing an electrical signal characteristic of said received ultrasonic energy;
    2. a bandpass filter coupled to said receiver transducer for attenuating frequency components of said electrical signal above and below a predetermined center frequency;
    3. demodulator means coupled to the output of said bandpass filter;
    4. an integrate and hold circuit means for periodically integrating the electrical output from said demodulator during a predetermined time interval and holding said integrated, signal;
  - (c) multiplexer means having a plurality of input lines, an output line and a control line, the output from said integrate and hold circuits of said plurality of receiving channels being coupled individually to said plurality of input lines of said multiplexer means;
  - (d) an analogue-to-digital converter circuit having its input coupled to said output line of said multiplexer means; and
  - (e) a stored program digital computing means having input means and output means, said input means being coupled to the output of said analogue-to-digital converter circuit, said output means being coupled to said transmitter means, said integrate and hold circuit means and said control line of said multiplexer means.

**4,337,661**  
**EQUIPMENT FOR ULTRASONIC EXAMINATION**  
Carl Kretz, Zipf, Austria, assignor to Kretztechnik Gesellschaft m.b.H., Zipf, Austria  
Filed Sep. 10, 1979, Ser. No. 74,162  
Claims priority, application Austria, Jan. 23, 1979, 464/79  
Int. Cl.<sup>3</sup> G01N 29/00; A61B 10/00  
U.S. Cl. 73—628 8 Claims

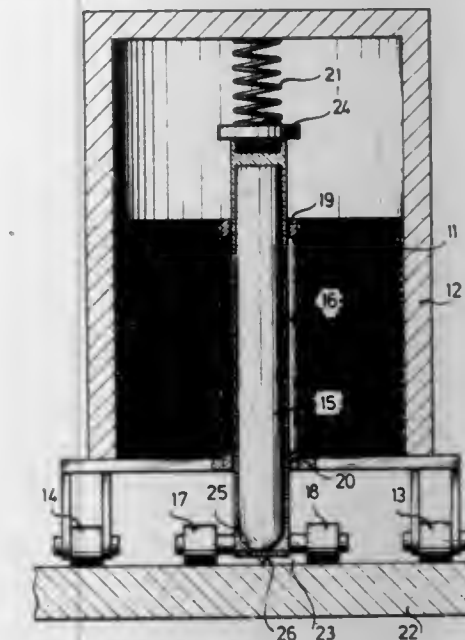


1. Equipment for ultrasonic examination by the pulse-echo method, comprising
  - (a) a plurality of spaced sound transducers spaced in a predetermined pattern, each sound transducer comprising a primary sound transducer and being operable to project a sound beam defining a sound path into a common sectional plane of an object to be examined, and to receive echoes originating in the sectional plane in response to the projected sound beams for deriving echo signals therefrom, the sound paths being spaced from each other in the sectional plane,
  - (b) a scanning mechanism operable in cycles to sweep the sound paths in the sectional plane oscillatingly so that the sound path defined by the sound beam of each sound transducer coincides at least once during each cycle with a predetermined line of reflection in the sectional plane,
  - (c) display screen means operable to receive a part of the echo signals to display them in a section scan mode,
  - (d) sound transducer control means operable to operate said primary sound transducer for operating each sound transducer when none of the sound paths defined by said plurality of sound transducers coincides with the predetermined line in each given cycle, and
  - (e) scan mode control means operable when the sound path coincides with the predetermined line for displaying said section scan mode in response to the echo signals from said primary sound transducer in a different scan mode in a plurality of times per cycle when none of the sound paths defined by said plurality of sound transducers coincides with said predetermined line.

**4,337,662**  
**ELECTRODYNAMIC SOUND CONVERTER**  
Hermann J. Kopineck, Dortmund; Wolfgang Böttcher, Schwerte; Klaus D. Mreyen, Holzwickede; Werner Borchert, Bochum, and Volker Deutsch, Wuppertal, all of Fed. Rep. of Germany, assignors to Estel Hoesch Werke AG, Dortmund, Fed. Rep. of Germany  
Filed Nov. 20, 1980, Ser. No. 208,820  
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949256  
Int. Cl.<sup>3</sup> G01N 29/04  
U.S. Cl. 73—632 10 Claims

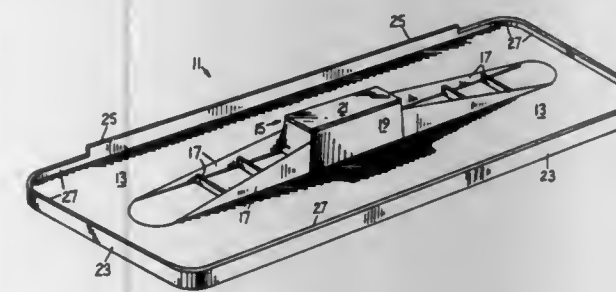
1. Electrodynamic sound converter for non-destructive ultrasonic testing of workpieces during relative movement of the workpiece and the testing head, comprising an annular electromagnet operative for producing a magnetic field; a rod-shaped core extending coaxially through said electromagnet and having a tip projecting beyond the same in direction towards a workpiece to be tested; means mounting said core to be axially slidable relative to said electromagnet, towards and away from the workpiece; means for independently maintain-

ing said electromagnet and said tip of said core at fixed predetermined spacing from a surface of the workpiece; means for biasing said tip towards said surface; and a high-frequency coil adjacent said tip and operative for producing electromagnetic oscillations.



ing said electromagnet and said tip of said core at fixed predetermined spacing from a surface of the workpiece; means for biasing said tip towards said surface; and a high-frequency coil adjacent said tip and operative for producing electromagnetic oscillations.

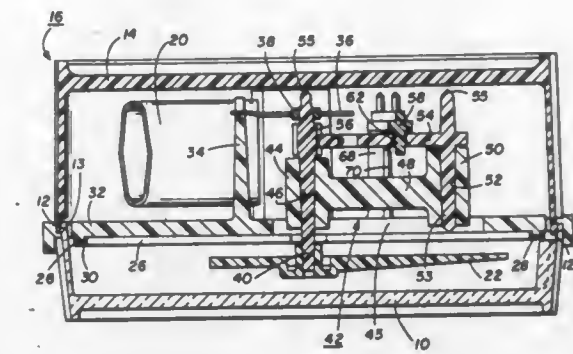
**4,337,663**  
**DEVICE FOR TESTING THE SUCTION STRENGTH OF AN UPRIGHT VACUUM SWEEPER**  
Thomas E. Baird, 2132 N. 24th St., Springfield, Ill. 62702  
Filed Oct. 20, 1980, Ser. No. 198,808  
Int. Cl.<sup>3</sup> G01L 7/00  
U.S. Cl. 73—700 4 Claims



1. A device for testing the suction strength of an energized inverted upright-type vacuum sweeper, comprising: a relatively rigid flat plate of a size to sealingly cover the rug nozzle of said inverted upright-type vacuum sweeper, and a centrally attached lifting handle having smooth vertically disposed gripping surfaces thereon, said handle and said plate being integrally molded from plastic material.

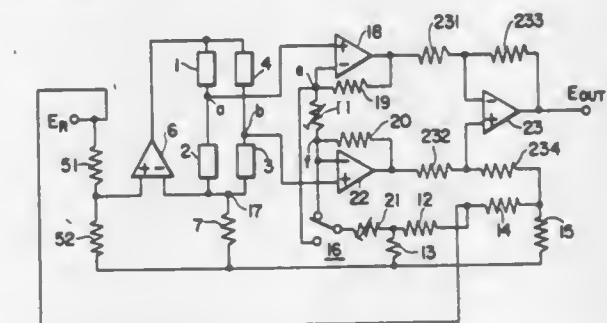
**4,337,664**  
**PRESSURE GAUGE CONSTRUCTION**  
Frederick M. Kipp, and Richard H. Wetterhorn, both of Fairfield, Conn., assignors to Dresser Industries, Inc., Dallas, Tex.  
Filed Jun. 5, 1980, Ser. No. 156,710  
Int. Cl.<sup>3</sup> G01L 7/04  
U.S. Cl. 73—741 14 Claims

1. In a pressure gauge comprising a casing, a socket extending outward of said casing for connecting to a source of pressure to be gauged, a Bourdon tube extending from a fixed end in fluid communication with said socket to a free end displaceable in correlation to the values of pressure received at said socket and a movement operably transmitting pressurized displacement of said Bourdon tube to an output pointer shaft supported for rotation, the improvement comprising a forma-



joined therewith and from which said displacement portion has been severed.

**4,337,665**  
**SEMICONDUCTOR PRESSURE DETECTOR APPARATUS WITH ZERO-POINT TEMPERATURE COMPENSATION**  
Hideo Sato; Kanji Kawakami, and Motohisa Nishihara, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
Filed Feb. 13, 1980, Ser. No. 121,093  
Claims priority, application Japan, Feb. 26, 1979, 54-20847  
Int. Cl.<sup>3</sup> G01B 7/16 11 Claims



1. A semiconductor pressure detector apparatus comprising: a strain-electric signal conversion bridge which has two arms with both their ends connected, at least one semiconductor strain gauge being included between midpoints of the two arms and one end of the corresponding arm; means to hold at a predetermined value a sum of currents flowing through the two arms of said bridge; two negative feedback amplifiers whose inverting input terminals are connected to each other through a resistance and whose noninverting input terminals are connected to the midpoints of the two arms of said bridge; a differential amplifier which differentially amplifies outputs of said two amplifiers; means to generate a potential that is equal to potentials of the midpoints of the two arms in a state in which said bridge is balanced at a predetermined temperature and under a predetermined pressure; and means to apply the potential of the midpoint potential generating means equal to the potentials of the midpoints, to the inverting input terminal of one of said two negative feedback amplifiers through a resistance.



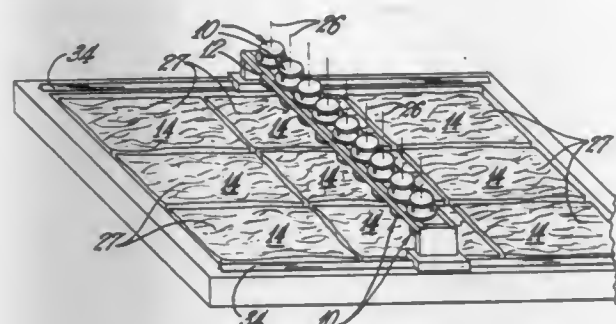
4,337,666

**METHOD AND APPARATUS FOR MEASURING THE EXPANSION OF A MAT OF FIBROUS MATERIAL**  
 Rabindra K. Bhattacharyya, Granville, and James S. Belt, Utica, both of Ohio, assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Jun. 30, 1980, Ser. No. 164,465  
 Int. Cl.<sup>3</sup> G01N 19/00

U.S. Cl. 73-818

6 Claims



1. The method of measuring the expansion of a mat of fibrous material comprising:

- moving a contact plate along a line into contact with the surface of the mat;
- sensing contact between the contact plate and said surface with a load cell;
- sensing the position of the contact plate along said line responsive to the sensing of contact between said contact plate and said surface;
- moving said contact plate along said line out of contact with said surface; and
- repeating the sequence of steps (a), (b), (c) and (d) during the expansion of said mat.

4,337,667

**ULTRASONIC FLOWMETER**

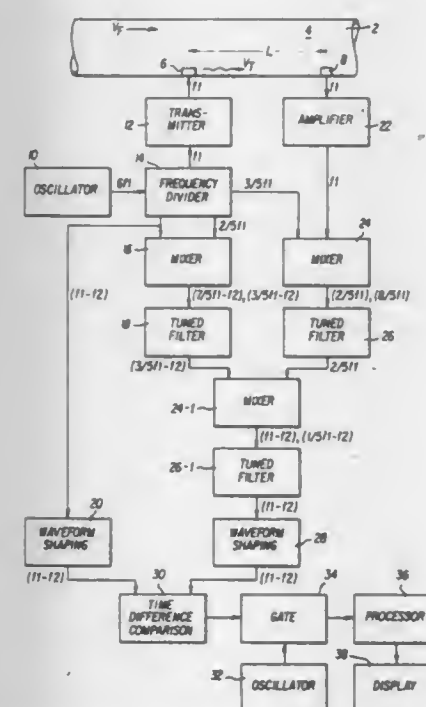
Shinzo Takada, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan  
 Filed Feb. 13, 1980, Ser. No. 121,176

Claims priority, application Japan, Feb. 16, 1979, 54-16945

Int. Cl.<sup>3</sup> G01F 1/66

U.S. Cl. 73-861.28

1 Claim



1. An ultrasonic flowmeter, comprising:  
 signal generator means for generating a transmission signal having a frequency ( $f_1$ ), for generating a first reference signal having a frequency ( $3/5f_1$ ), for generating a second

reference signal having a frequency ( $2/5f_1$ ), and for generating a third reference signal having a frequency ( $f_1 - f_2$ );  
 transmitting means for converting said transmission signal into a continuous ultrasonic wave having a frequency ( $f_1$ ) and for transmitting said ultrasonic wave in a fluid;  
 receiving means spaced by a predetermined distance from said transmitting means for receiving said ultrasonic wave propagating in said fluid and for converting said ultrasonic wave into a reception signal, said reception signal having a frequency ( $f_1$ );

first mixer circuit means coupled to receive said second reference signal and said third reference signal for producing a first difference signal, said first difference signal having a frequency ( $3/5f_1 - f_2$ ) which is the difference between the frequency ( $2/5f_1$ ) of said second reference signal and the frequency ( $f_1 - f_2$ ) of said third reference signal;

second mixer circuit means coupled to receive said reception signal and said first reference signal for producing a second difference signal, said second difference signal having a frequency ( $2/5f_1$ ) which is the difference between the frequency ( $f_1$ ) of said reception signal and the frequency ( $3/5f_1$ ) of said first reference signal;

third mixer circuit means coupled to receive said first and second difference signals for producing a corrected reception signal, said corrected reception signal having a frequency ( $f_1 - f_2$ ) which is the sum of the frequency ( $3/5f_1 - f_2$ ) of said first difference signal and the frequency ( $2/5f_1$ ) of said second difference signal; and  
 phase difference detecting circuit means coupled to receive said corrected reception signal and to receive said third reference frequency for detecting a phase difference between said corrected reception signal and said third reference signal and for converting said detected phase difference into a time interval.

4,337,668

**ORIFICE WEAR COMPENSATION**

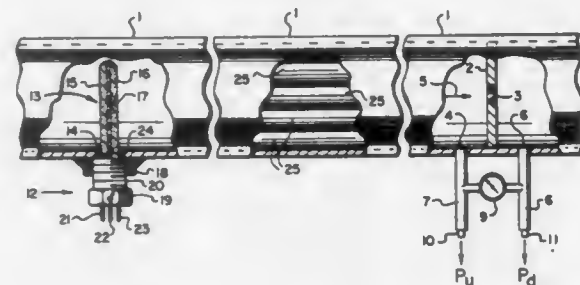
Joseph E. Zupanick, Richardson, Tex., assignor to Sun Gas Company, Dallas, Tex.

Filed Dec. 5, 1980, Ser. No. 213,442

Int. Cl.<sup>3</sup> G01F 1/50

U.S. Cl. 73-861.61

10 Claims



1. In a method for measuring the volumetric rate of flow of a gas through a conduit, which method employs a precision orifice disposed in the gas flow path and means for measuring the pressure differential across the orifice whereby the pressure differential may be utilized in a standard formula to obtain the volumetric rate of flow, the improvement comprising:

- determining analogously the wear to the precision orifice by measuring the wear to a probe fixed in the gas flow path upstream of the precision orifice;
- deriving an orifice wear correction factor from the measured wear on the probe; and
- including the correction factor in a modified standard formula to obtain a volumetric rate of flow value corrected for orifice plate wear.

5. In apparatus for measuring the volumetric rate of flow of a gas through a conduit, which apparatus includes:

- a precision orifice disposed in the gas flow path;

4,337,670

**YIELDABLE MULTI-FUNCTION LINKAGE APPARATUS FOR POWERED PIVOTING LOADS**

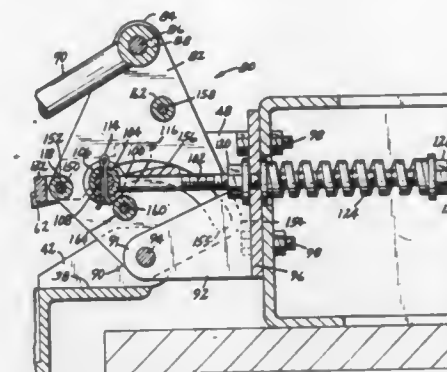
Ronald R. Carlson, Excelsior, Minn., assignor to Steco Incorporated, Minneapolis, Minn.

Filed Oct. 2, 1979, Ser. No. 81,178

Int. Cl.<sup>3</sup> F16H 21/44; A47C 19/06

U.S. Cl. 74-96

29 Claims



1. A yieldable multi-function linkage apparatus for connecting a powered drive arm and a rotatable structure rotatable between first and second end positions comprising:

- a fixed connecting plate connected to the rotatable structure for rotation therewith;
- a movable connecting plate rotatably attached to said fixed connecting plate for attachment to the powered drive arm; and

holding means for yieldably and releasably connecting the rotatable structure and the movable connecting plate, said holding means enabling said drive arm to be driven without transferring the motion of said rotatable structure to said drive arm when force in excess of the force required to move said rotatable structure acts on said rotatable structure, said holding means disengaging rotationally said drive arm from said rotatable structure when the rotatable structure is rotated to one of its end positions whereby the rotatable structure can be rotated completely independent of the drive arm.

4,337,671

**APPARATUS FOR TRANSLATING ROTARY MOVEMENT TO RECTILINEAR MOVEMENT**

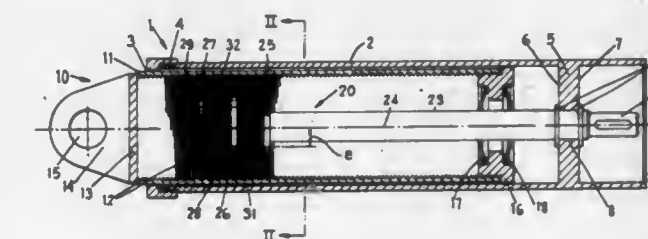
Andersson P. Ulf, Lindetofta 14, S-53100 Lidköping, Sweden  
 PCT No. PCT/SE79/00127, § 371 Date Feb. 5, 1980, § 102(e)  
 Date Jan. 18, 1980, PCT Pub. No. WO80/00032, PCT Pub. Date Jan. 10, 1980

PCT Filed Jun. 5, 1979, Ser. No. 190,764

Claims priority, application Sweden, Jun. 5, 1978, 7806574  
 Int. Cl.<sup>3</sup> F16H 1/18, 27/02

U.S. Cl. 74-424.8 C

3 Claims



1. In a device for translating a rotary movement into a linear movement comprising an elongated cylinder having an internal thread, and a rotatable drive shaft, an associated end of which having a roller body assembly thereon cooperating with said internal thread so that when a relative rotation occurs between said cylinder and said shaft, said parts are displaced in the longitudinal direction in relation to each other, said roller body assembly comprising at least two cylindrical roller bodies axially spaced along the length of said drive shaft and the axes of rotation of which are radially spaced from the axis of said

(B) means for measuring the pressure differential across said orifice; and

(C) means employing predetermined characteristics of said orifice and said measured pressure differential in a standard formula to obtain the volumetric rate of flow; the improvement comprising:

- a probe fixed in the gas flow path upstream of said precision orifice;
- means for measuring wear to said probe;
- means employing said measured probe wear for developing and orifice wear correction factor; and
- means applying said correction factor to said standard formula;

whereby a volumetric rate of flow is obtained which is corrected against wear of said precision orifice.

4,337,669

**CRYOGENIC PUMP AND AIR SAMPLER**

Johann Chatzipetros, Frechen, and Manfred Helten, Titz-Müntz, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

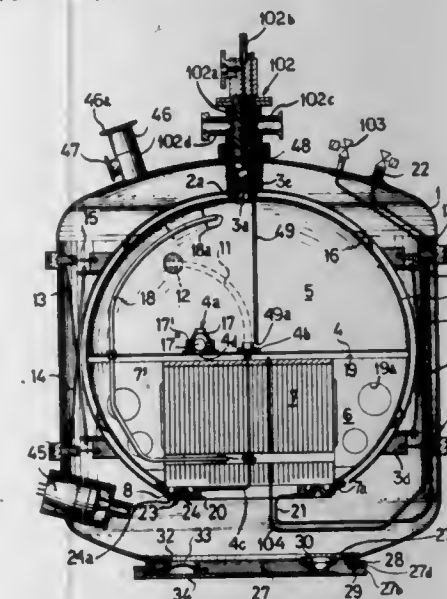
Filed Oct. 17, 1980, Ser. No. 198,041

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1979, 2942305

Int. Cl.<sup>3</sup> G01N 1/14

U.S. Cl. 73-863.11

12 Claims



1. A cryogenic sampler, especially for air samples, comprising:

- an evacuated vessel;
- a reservoir for a cryogenic liquid coolant mounted in said reservoir and having an upright normal position;
- a membrane partitioning said reservoir into an upper first compartment and a lower second compartment in said position;
- a cryogenic adsorber in said second compartment and communicating with said vessel for maintaining a vacuum therein;
- a plurality of spaced-apart cold fingers disposed below said adsorber in said position;
- means for cooling said fingers and including at least one tube traversing said membrane and opening into said first compartment; and
- respective nozzles formed on said vessel and selectively blockable and unblockable for passing respective air samples across said fingers.

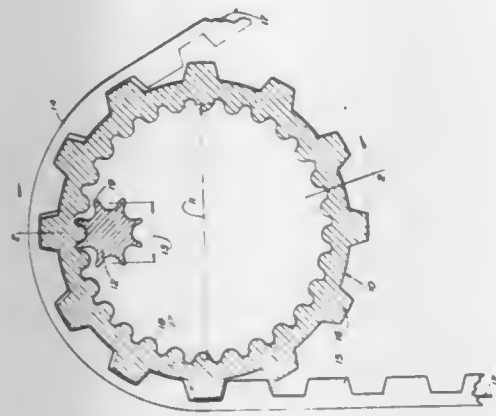


drive shaft and from each other, the outer surfaces of which being provided with ridges extending in planes oriented at right angles to said axis of rotation of each said roller body, the improvement comprising wherein said roller bodies are each of a diameter that closely corresponds to the internal diameter of said cylinder between the edges of said internal thread, and wherein said roller bodies constitute a support for the associated end of said drive shaft.

**4,337,672**  
**SPEED CHANGING FLOATING POWER TRANSMISSION RING**  
Samuel Shiber, 345 Dunbar Rd., Mundelein, Ill. 60060  
Filed May 15, 1980, Ser. No. 150,218  
Int. Cl.<sup>3</sup> F16H 55/17

U.S. Cl. 74-438

4 Claims



1. A floating power transmission ring gear system comprising in combination:

a floating power transmission ring gear having an inner toothed periphery with a first pitch diameter, said inner periphery is meshed with and supported by a pinion gear having a second pitch diameter substantially smaller than said first pitch diameter, said ring gear has an outer periphery which is engaged with and supported by a belt means,

the improvement wherein said ring gear is supported by said pinion gear through the gear mesh between them and serves to reduce the linear movement of said belt means per a revolution of said pinion.

**4,337,673**  
**CONTROL APPARATUS FOR A VEHICLE POWER TRANSMISSION**  
Tamio Kawamoto, Sagami-hara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan  
Filed Jan. 29, 1980, Ser. No. 116,638  
Claims priority, application Japan, Jan. 30, 1979, 54/9871  
Int. Cl.<sup>3</sup> F16H 57/06; G05G 5/06, 9/18

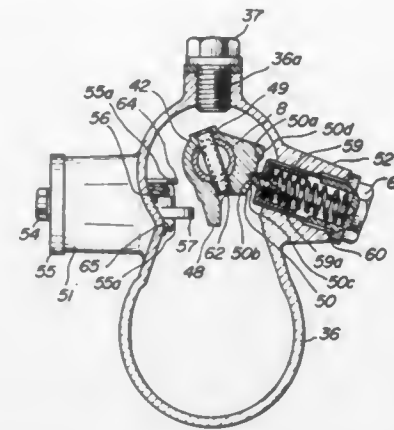
U.S. Cl. 74-475

2 Claims

1. A control apparatus for a vehicle power transmission including a rotatable and axially movable fork rod for effecting shifting into or from different gear shift positions, and a manually operated control lever connected, by means of a shifter bracket, to the fork rod for effecting the rotation and/or axial movement thereof, and having a shift pattern in which a forward running gear shift position and a reverse running gear shift position are located on substantially the same shift line, the improvement therein comprising:

a reverse misselection preventing mechanism which prevents shifting from the forward running gear shift position directly into the reverse running gear shift position, and which includes a first member formed integrally with the shifter bracket and projecting radially outwardly from the fork rod, and a second member supported by a housing for

the control lever, said second member being movable between a first position in which said first and second members abut with each other preventing rotation of the fork rod, and a second position in which said first member is not moved by said second member permitting rotation of the fork rod; and  
a selection check mechanism which provides selection click feeling when the fork rod is rotated to a selected position

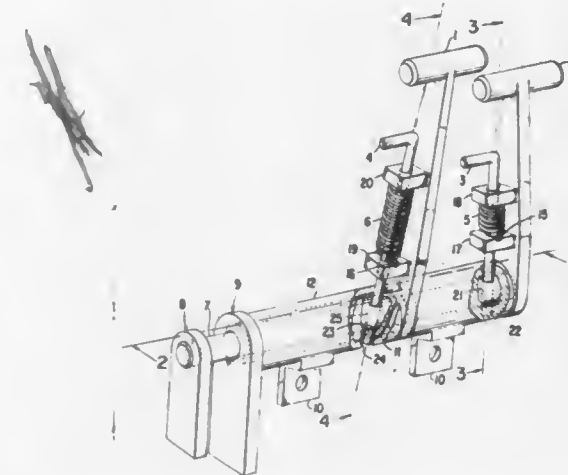


in which a shift can be made into at least one of the gear shift positions, and which includes a first element formed integrally with the shifter bracket in the vicinity of said first member of the reverse misselection preventing mechanism, a second element movably supported by said housing, and resilient means urging said second element against said first element, one of said first and said second elements having such a profile as to cooperate with the other to produce said selection click feeling.

**4,337,674**  
**LATERAL TUBE TRANSMISSION CONTROL**  
Roger W. Lawrence, 30 E. Cliff St., Somerville, N.J. 08876  
Filed Jul. 7, 1980, Ser. No. 166,166  
Int. Cl.<sup>3</sup> G05G 5/10, 5/18

U.S. Cl. 74-475

3 Claims



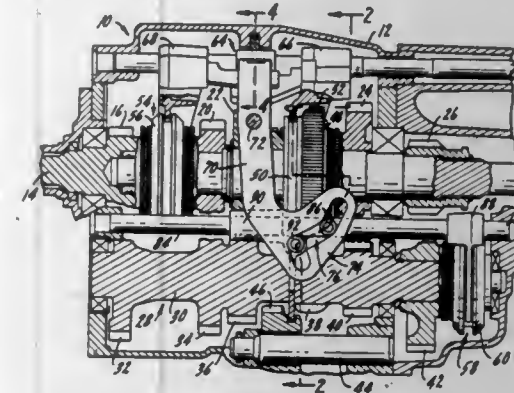
1. An apparatus for selecting transmission gear positions comprising:

- (a) one lever;
- (b) one arm;
- (c) a shaft with a diametrical hole;
- (d) a housing with a transverse hole; and
- (e) a locking means which simultaneously engages the diametrical hole in the shaft and the transverse hole in the housing for locking automatically the position of said lever relative to said housing to restrain said lever from moving relative to said housing for positively holding the gear selection made by positioning said lever.

**4,337,675**  
**TRANSMISSION SHIFT CONTROL APPARATUS**  
John W. Holdeman, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.  
Filed May 27, 1980, Ser. No. 153,128  
Int. Cl.<sup>3</sup> G05G 5/10, 9/12

U.S. Cl. 74-477

6 Claims



1. In a multiple speed ratio power transmission having gear ratios selectively engageable for defining torque delivery paths between an input member and an output member, and shift control means for selectively engaging said gear ratios; the improvement wherein said shift control means comprises first engaging means slidable in an engaging direction for engaging one gear ratio, second engaging means slidable in an engaging direction for engaging another gear ratio, and a lever pivotable about a fulcrum between an intermediate position and first and second engaging positions, said lever and said engaging means defining camming means for sliding said first engaging means in its engaging direction in response to pivoting of said lever from said intermediate position to said first engaging position and for sliding said second engaging means in its engaging direction in response to pivoting of said lever from said intermediate position to said second engaging position, said camming means preventing sliding of said second engaging means as said lever pivots between said intermediate and first engaging positions and preventing sliding of said first engaging means as said lever pivots between said intermediate and second engaging positions, said second engaging means being slidably supported by said first engaging means.

**4,337,676**  
**MANUAL OPERATION DEVICE**  
Shinsaku Tanaka, Tokyo, and Takashi Watanabe, Kawasaki, both of Japan, assignors to Tanashin Denki Co., Ltd., Tokyo, Japan  
Filed Feb. 7, 1980, Ser. No. 119,372  
Claims priority, application Japan, Jul. 23, 1979, 54-93413; Jul. 23, 1979, 54-11576  
Int. Cl.<sup>3</sup> G05G 1/02, 5/00, 17/00

U.S. Cl. 74-483 PB

5 Claims



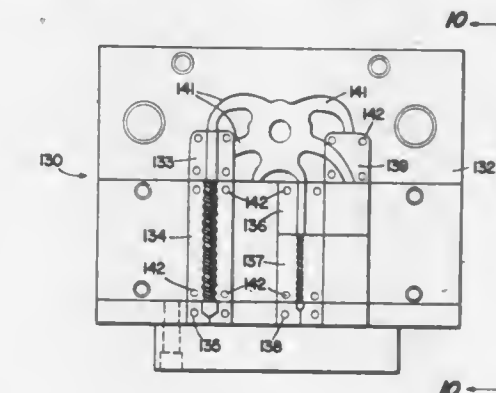
1. A manual operation device which comprises:  
a plurality of operation members;  
a drive rotatable member acting as a source of drive power;

a driven rotatable member detachably fitted to the drive rotatable member;  
an engagement member for engaging and locking the driven rotatable member in a state disengaged from the drive rotatable member;  
a transmission member movable back and forth with the driven rotatable member; and  
a plurality of self-returning insertable actuating members which are associated with respective ones of said operation members, and constructed to be manually moved between the transmission member and the associated operation members to disengage the engagement member from the driven rotatable member and also transmit a moment of the transmission member to the operation member.

**4,337,677**  
**METHOD OF MAKING DIE-CAST MASONRY DRILL**  
James E. Rauckhorst, Geneva, and Thomas J. Skingle, Parma, both of Ohio, assignors to Acme-Cleveland Corporation, Highland Heights, Ohio  
Division of Ser. No. 116,225, Jan. 28, 1980, Pat. No. 4,314,616.  
This application Nov. 28, 1980, Ser. No. 211,421.  
Int. Cl.<sup>3</sup> B22D 19/06

U.S. Cl. 76-108 A

9 Claims



1. A method of making a masonry drill which comprises the steps of:

forming an insert from a hard material, said insert being formed with sides having parallel planar side portions and a chisel edge across the top of the insert with leading cutting edges on either side of said chisel edge and a bottom edge opposite said cutting edges, said insert also being formed with means for interlocking with a drill body, said interlocking means comprising a pair of projections, one projection extending from the plane of each of said planar side portions, each of said projections extending the greatest distance from the plane of said side portion near the bottom edge of said tip;  
placing said insert in a mold for casting a drill having an axially elongated body with spiral grooves cast in the exterior surface of said body substantially along its length; casting the drill by filling said mold with molten metal to form a cast drill therein, said molten metal substantially surrounding said projections, and covering the portion of each of said projections nearest said chisel edge to form a secure interlocking relationship between said insert and said body; and  
allowing said cast drill to cool with said molten metal solidifying and subsequently contracting around said insert to securely hold said insert in place in said drill.



4,337,678

## THREADED CLOSURE REMOVAL TOOL

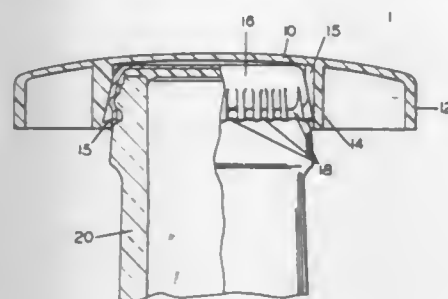
George V. Mumford, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 30, 1981, Ser. No. 249,048

Int. Cl.<sup>3</sup> B67B 7/18

U.S. Cl. 81-3.4

3 Claims



1. A hand operated tool for removing a threaded closure from a threaded bottle neck, said closure having a plurality of vertical grooves peripherally spaced around its upper exterior portion, comprising in combination, a molded plastic body having an oval-shaped top element, an integral vertical flange depending from the perimeter of said top element and engageable by the fingers to impart torque to the tool, a circular integral wall depending from and closed at one end by said top element and centrally located within the perimeter of said vertical peripheral flange, diametrically opposed portions of said circular wall being integral with said peripheral flange to facilitate the transmission of torque to said circular wall, with said wall and flange having the same vertical height in said integral portions, and a plurality of peripherally spaced vertical ribs on the inner surface of said circular wall respectively adapted to engage the vertical grooves of the closure by application of said circular wall in surrounding relationship thereto.

4,337,679

## PLATE SHEARS

Gleb L. Krylov, prospekt K. Marxa, 20, kv. 93; Ivan V. Stanovoi, ulitsa Privokzalnaya, 29, kv. 8, and Georgy P. Fuga, ulitsa Z. Kosmodemyanskoi, 93, kv. 4, all of Azov Rostovskoi oblasti, U.S.S.R.

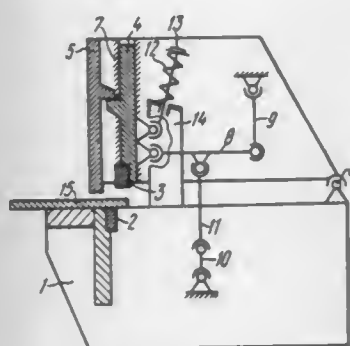
PCT No. PCT/SU79/00050, § 371 Date Mar. 2, 1981, § 102(e) Date Mar. 2, 1981, PCT Pub. No. WO81/00070, PCT Pub. Date Jan. 22, 1981

PCT Filed Jul. 2, 1979, Ser. No. 243,908

Int. Cl.<sup>3</sup> B26D 7/02; B23D 15/06

U.S. Cl. 83-385

1 Claim



1. Plate shears comprising a bed-mounted fixed blade co-operating with a movable blade secured on a blade beam mounted in a clamping beam articulated to the bed, and a drive for actuating the blade and clamping beams, characterized in that the clamping beam (5) is provided with guides (7) for the blade beam (4) to be mounted therein for reciprocation in the direction of shearing from the drive and through the agency of a system of articulated levers (8,9) with one of these levers being articulated to the blade beam (4) and to the drive.

4,337,680

## DIE JAW MEMBERS FOR TUBE CUTOFF APPARATUS

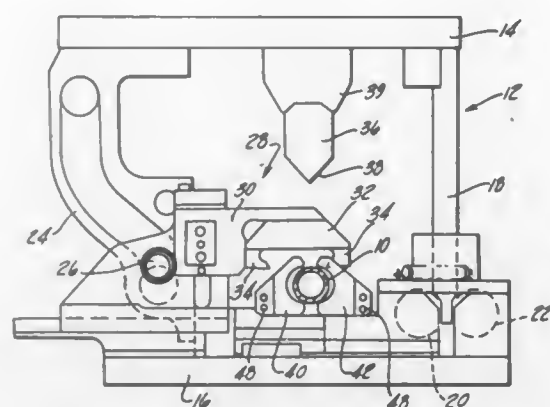
John J. Borzym, 4820 Schoolbell, Birmingham, Mich. 48010

Filed Dec. 5, 1980, Ser. No. 213,296

Int. Cl.<sup>3</sup> B23D 21/00

U.S. Cl. 83-456

12 Claims



1. For use with apparatus for cutting off lengths of an elongate workpiece and of the type including a notching blade and a severing blade respectively shiftable in first and second paths of travel within a reference plane and transverse to said workpiece for respectively producing a notch in the periphery of said workpiece and for severing said workpiece through said notch, a pair of opposed clamping members for holding said workpiece during notching and severing thereof, each of said clamping members comprising:

a body of rigid material having a blade supporting surface in one face thereof extending essentially parallel to said reference plane and in close proximity to said severing blade, said body further including

(1) a clamping surface configured to complementarily engage a side of said workpiece,

(2) first surface portions relieved relative to said blade supporting surface defined in said one face thereof adjacent said blade supporting surface and aligned with said first path of travel

the first relieved surface portions of the bodies of an associated pair thereof defining a slot in said pair of clamping members through which said notching blade may pass.

4,337,681

## POLYPHONIC SLIDING PORTAMENTO WITH INDEPENDENT ADSR MODULATION

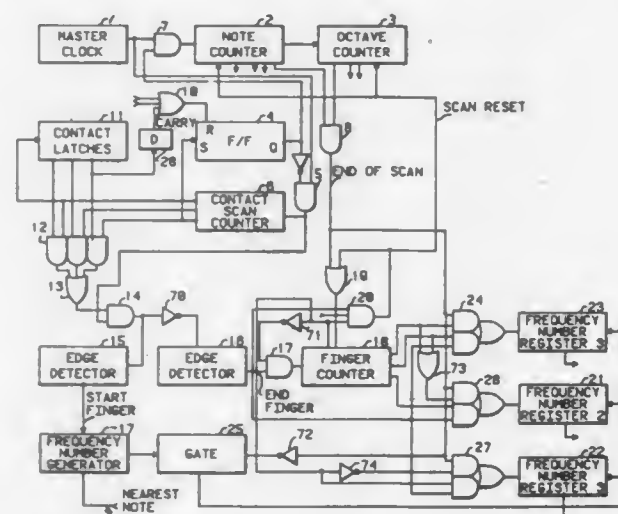
Ralph Deutsch, and Leslie J. Deutsch, both of Sherman Oaks, Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Aug. 14, 1980, Ser. No. 178,246

Int. Cl.<sup>3</sup> G10H 1/057, 1/22, 7/00

U.S. Cl. 84-1.24

22 Claims



1. In a keyboard operated electronic musical instrument in

which the pitches of the generated tones are determined by frequency numbers corresponding to actuated keyboard switches, apparatus for providing polyphonic portamento effect in response to the lateral displacement of any number of N player fingers in contact with said keyboard switches and for providing tones with ADSR envelope modulation functions in response to the contact of said N player fingers with said keyboard switches comprising:

- a switch array comprising a multiplicity of keyswitches arranged in a linear array such that a plurality of contiguous keyswitches is actuatable by each of said N fingers in contact with said switch array,
- a scanning means for providing scanning signals to said switch array,
- a detection means responsive to said scanning signals whereby detection signals are generated corresponding to each actuated keyswitch in said switch array,
- a center detection means responsive to said detection signals whereby a note signal is generated corresponding to each one of said N player fingers in contact with said switch array,
- a frequency number generator responsive to each said note signal wherein said frequency numbers are generated thereby producing said polyphonic portamento effect corresponding to the lateral displacement of said player fingers in contact with said keyboard switches,
- an envelope generator means for creating said ADSR envelope modulation functions in response to a control signal,
- a note assignor means responsive to said detection means whereby said control signal is generated corresponding to each of said N player fingers placed in contact with said switch array,
- a tone generation means responsive to said frequency numbers whereby musical tones are generated at pitches corresponding to said frequency numbers, and
- an envelope modulation means for modulating each of said musical tones by a corresponding one of said ADSR envelope modulation functions thereby producing said tones with an ADSR envelope modulation function in response to the contact of said N player fingers in contact with said key board switches.

4,337,682

## PIANO SOUNDBOARD

Gerhard Schwichtenberg, Wolfenbüttel, Fed. Rep. of Germany, assignor to Wilhelm Schimmel Pianofortefabrik GmbH, Fed. Rep. of Germany

Filed Apr. 15, 1980, Ser. No. 140,488

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2915959

Int. Cl.<sup>3</sup> G10C 3/06

U.S. Cl. 84-193

15 Claims



1. A soundboard for a piano or the like comprising a laminate having a metal core for the production of sound vibration, said metal having a modulus of elasticity and an inherent damping factor corresponding to steel of at least a grade St 34, and at least one outer cover layer bonded thereto in full surface

contact on each side thereof, each of said outer cover layers having a damping characteristic corresponding to that of wood.

4,337,683

## SYNTHETIC WOODWIND INSTRUMENT REED AND METHOD FOR ITS MANUFACTURE

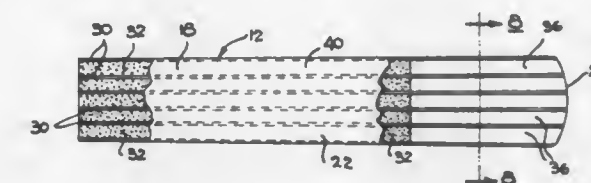
John G. Backus, 2233 Via Guadalupe, Palos Verdes Estates, Calif. 90274

Filed Jul. 22, 1980, Ser. No. 171,168

Int. Cl.<sup>3</sup> G10D 9/02

U.S. Cl. 84-383 A

9 Claims



1. A synthetic woodwind reed formed with a vamp and base portion comprising a plurality of substantially parallel longitudinal rib members fabricated of epoxy resin reinforced with a material selected from the class consisting of graphite and boron and having a high modulus of elasticity, a low density and a loss factor comparable to that of natural cane (Arundo Donax), a low density binder material in the spaces between said ribs for binding said ribs together, the number of said ribs and the width thereof being chosen to make for an effective modulus of elasticity and density for the reed so as to afford a natural vibration frequency thereof of at least 2000 Hz.

4,337,684

## OUTRIGGER HOLDER ASSEMBLY FOR PERCUSSION MUSICAL INSTRUMENTS

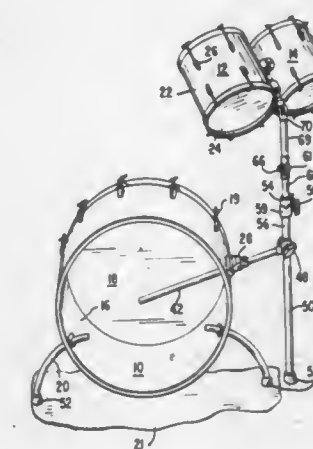
Alfred J. Le Mert, Mount Prospect, Ill., assignor to Ludwig Industries, Chicago, Ill.

Filed Feb. 23, 1981, Ser. No. 236,768

Int. Cl.<sup>3</sup> G10D 13/02

U.S. Cl. 84-421

6 Claims



1. An outrigger holder assembly for percussion musical instruments including at least one bass drum adapted to be placed on a supporting surface and at least one other percussion musical instrument, said assembly comprising a first vertical support member adapted to rest on said supporting surface, a rigid bass drum positioning member connected between the bass drum and the vertical support member, a pivotal connection between the vertical support and the bass drum positioning member, means affording adjustment of the distance between the vertical supporting member and the bass drum,



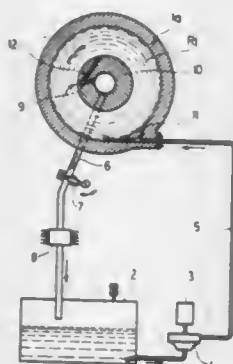
an extension member secured to the first vertical support member, means for vertically adjustably connecting the first vertical support member and the extension member together, a first pivot means positioned at the end of the extension member spaced from the connection with the vertical support, a second extension member including a second pivot means connected to said first pivot means at said end of the extension member and provided with a second pivot means at the other end, a third extension member provided with a third pivot means connected to said second pivot member at one end and including supporting means cooperating with the other percussion instrument to support the same in detachable relationship, and means for fixing the rotative position of said pivots and the vertical position of said adjustable connection and for readily releasing the various fixing means for said pivots and said adjustable connection.

**4,337,685**  
**APPARATUS FOR GENERATING A PROPELLANT GAS**  
German Munding, Bad Friedrichshall; Wolfgang Müller, Möckmühl, and Heinrich Strobl, Munich, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Filed Apr. 12, 1976, Ser. No. 677,236  
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1975, 2518149

Int. Cl.<sup>3</sup> F41F 1/04  
U.S. Cl. 89—7

14 Claims

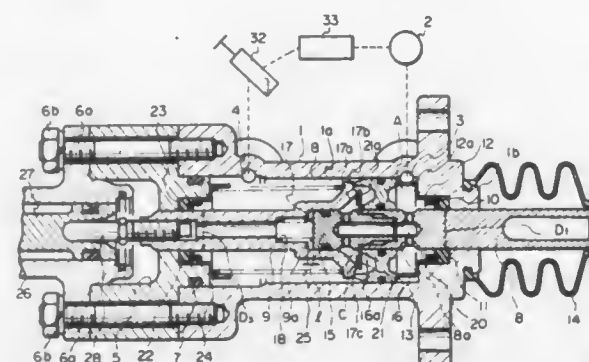


1. An apparatus for generating propellant gas such as used in propelling projectiles, comprising wall means defining at least one rotation chamber which forms a propellant gas generator and means for feeding at least one liquid propellant tangentially into said chamber, wherein the improvement comprises that said feeding means include a closed liquid propellant circuit connected to said rotation chamber for flowing propellant into and removing it from said rotation chamber, said feeding means includes an inlet into and an outlet from said rotation chamber for generating a rotating ring of propellant in said rotation chamber, and blocking means in operative association with each of said inlet and said outlet for blocking flow of the propellant therethrough into and out of said rotation chamber during the period commencing with the increase of the pressure propellant within the rotation chamber at the outset of the generation of the propellant gas and terminating at the decrease of the pressure of the propellant after the completion of the generation and utilization of the propellant gas.

**4,337,686**  
**HYDRAULIC FORCE MULTIPLYING DEVICE**  
Yoshimoto Ohta, Ichikawa, Japan, assignor to Tokico Ltd., Kawasaki, Japan  
Filed Mar. 7, 1980, Ser. No. 128,123  
Claims priority, application Japan, Mar. 8, 1979, 54/29762[U]; Mar. 8, 1979, 54/29763[U]; Mar. 8, 1979, 54/29765[U]

Int. Cl.<sup>3</sup> F15B 9/10; F16J 1/10  
U.S. Cl. 91—49

9 Claims

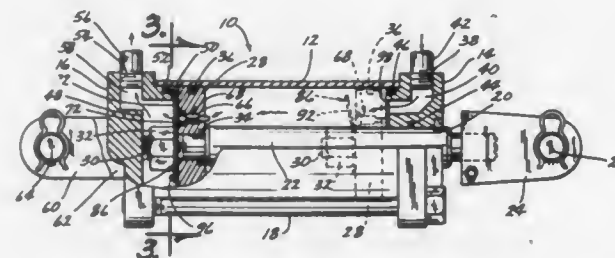


1. A hydraulic force multiplying device comprising:  
a housing having an inlet port connected to a source of hydraulic pressure and an outlet port;  
an input rod and an output rod, one end of each of said input and output rods being slidably connected to one end of the other rod within said housing;  
a free piston slidably disposed between the outer circumference of the input rod and the inner wall of the housing and dividing the interior of the housing into an inlet side oil chamber and an outlet side oil chamber, said free piston being engaged with said output rod;  
a passage formed in said input rod for connecting the two oil chambers; and  
a valve for controlling oil flow in said passage, said valve having a valve member on one of said input and output rods and a valve seat member on the other of said input and output rods, one of said members being resiliently displaceable relative to the associated rod and in the direction of the axis of the rod, whereby when the input rod moves rapidly toward the output rod said valve element engages with said valve seat element for generating a differential pressure between the inlet and outlet chambers, and the input rod can move further toward and relative to the output rod by the resilient displacement of said one element.

**4,337,687**  
**POPPET TRIP DEVICE FOR HYDRAULIC CYLINDERS**  
Robert A. Hoover, Sioux City, Iowa, assignor to Prince Manufacturing Corporation, Sioux City, Iowa  
Filed May 23, 1980, Ser. No. 152,850  
Int. Cl.<sup>3</sup> F15B 15/22

U.S. Cl. 91—401

12 Claims



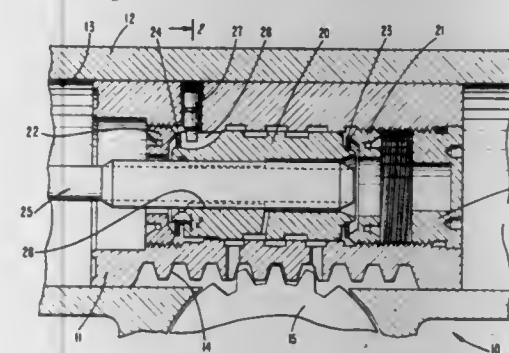
1. A hydraulic cylinder unit comprising,  
an elongated cylinder having a head end and a base end,  
a piston rod slidably extended through said head end,  
a piston mounted on said rod interiorly of said cylinder,  
said piston including a generally axially extended poppet

bore therethrough, said bore being radially offset from the axis of said piston rod at a position radially intermediate the piston rod and cylinder,  
a pair of oppositely disposed valve seats in said bore,  
a poppet supported within said bore for axial movement between said valve seats, said poppet including oppositely disposed valve heads adapted for seated engagement on said valve seats respectively in response to movement of said poppet in opposite directions,  
said poppet including head and base ends extended outwardly from said piston when said poppet is moved toward said cylinder head and base ends respectively, said head end of said poppet adapted for engagement with said cylinder head end in response to movement of said piston to said cylinder head end whereby said poppet is unseated and fluid communication is established through said poppet bore,  
a contact member radially positioned within said cylinder for engagement with said cylinder base end and base end of the poppet, and  
means for supporting said contact member at a position between said cylinder base end and piston for engagement with said base end of the poppet in response to movement of said piston rod to the cylinder base end whereby said poppet is unseated and fluid communication is established through said poppet bore,  
said contact member comprising a spring clip having a fixed generally flat portion and an arm extended from said fixed portion transversely across said cylinder for engaging said base end of the poppet, and said cylinder base end said arm being axially deflected relative to said fixed portion upon engagement with said cylinder base end.

**4,337,688**  
**POWER STEERING GEAR WITH ADJUSTABLE VALVE POSITIONING PIN**  
Peter H. Sheppard, R. H. Sheppard Co., Inc., Hanover, Pa.  
17331

Filed Nov. 26, 1979, Ser. No. 97,388  
Int. Cl.<sup>3</sup> F15B 9/10; F16K 31/50  
U.S. Cl. 91—422

8 Claims



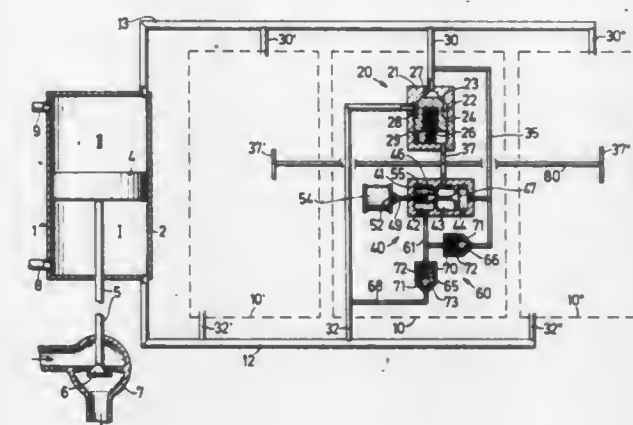
1. An integral power steering gear having a reciprocating power piston in a cylinder, a valve within the piston to selectively distribute pressurized fluid to a first and second end of the piston within the cylinder for steering action, a steering input shaft operatively engaging the valve, an output means in engagement with said piston, the improvement comprising valve guide means including a pin having side guide surfaces and extending between said piston and said valve to allow relative reciprocating action but not rotation, and means including the side guide surfaces of said pin to vary selectively a lateral clearance of said guide means relative to said valve to provide optimum clearance, whereby to gain maximum reversibility of the valve within the piston and improved ease of manufacture.

**4,337,689**  
**SAFETY SYSTEM FOR A DOUBLE ACTING SERVOMOTOR**

Samuel Heusler, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland  
Filed Jun. 6, 1980, Ser. No. 157,059  
Claims priority, application Switzerland, Jun. 22, 1979, 5856/79

Int. Cl.<sup>3</sup> F15B 13/042, 13/043  
U.S. Cl. 91—438

4 Claims



1. A safety system for a double-acting servomotor having a cylinder and a piston disposed in the cylinder to divide the cylinder into a pair of chambers while being movable between a control position and a safety position; said safety system comprising

a pressure responsive shut-off valve connected between said chambers to control a flow of medium therebetween, said shut-off valve being operable between a closed position blocking communication between said chambers and an open position connecting said chambers to each other, said shut-off valve including a housing, a spool having a valve disk connected thereto to define a chamber in said housing on each side of said disk which communicate with one another when said valve disk is in said open position and a valve control chamber on the side of said spool which is remote from said valve disk, one of said two valve chambers being connected on one side on said disk to said one servomotor chamber and on another side of said disk to said other servomotor chamber;  
a control valve having a pair of inputs and an output, one of said inputs being connected to one of said chambers which is increasing when the piston moves into the safety position and said output being connected to said valve control chamber of said shut-off valve to switch said shut-off valve between said positions thereof; and  
a pressure responsive selector having a pair of inputs and an output, one of said selector inputs being connected to one of said chambers which is decreasing when the piston moves into the safety position, the second of said selector inputs being connected to said one chamber and said selector output being connected to a selected one of said selector inputs which is connected to the other of said chambers and receiving pressure medium from this servomotor chamber and to the other of said inputs of said control valve whereby with said control valve output connected with said other input of said control valve, said shut-off valve is in said closed position and with said control valve output connected with said one input of said control valve, said shut-off valve is in said open position.



4,337,690

**FLUID PRESSURE ACTUATED BRAKE UNIT**

Lars M. Severinsson, Hishult, Sweden, assignor to SAB Industri AB, Landskrona, Sweden

PCT No. PCT/SE79/00175, § 371 Date May 6, 1980, § 102(e) Date May 6, 1980, PCT Pub. No. WO80/00605, PCT Pub. Date Apr. 3, 1980

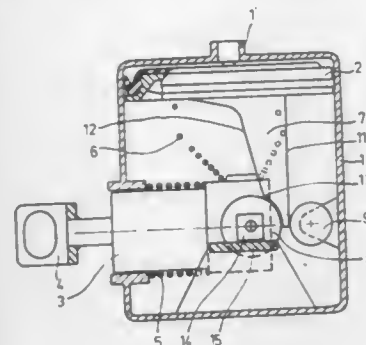
PCT Filed Aug. 22, 1979, Ser. No. 193,275

Claims priority, application Sweden, Sep. 8, 1978, 7804953

Int. Cl.<sup>3</sup> F16J 1/10

U.S. Cl. 92—129

2 Claims



1. A fluid pressure actuated brake unit for a braking system operable to effect a full braking stroke with successive fast acting low leverage brake application and slower acting higher leverage brake operation partial braking strokes comprising in combination, a housing defining a cylinder with a piston therein movable axially, means confining a braking system push rod assembly to move axially in a direction perpendicular to the piston, a wedge element movable with said piston for engaging during said slower acting partial stroke said push rod assembly with a wedge surface inclined at a wedge angle relative to the axis of the piston to transmit a force from the piston to move the push rod in a braking stroke direction over the brake operation partial stroke, said wedge surface presenting the wedge angle terminating in an edge departing from the inclination of said wedge surface, a working roller for moving the push rod assembly having a roller circumference positioned to mate with said edge and wedge angle during the full braking stroke thereby to coat the wedge angle with said working roller during the brake operation partial stroke following the brake application partial stroke in a mode such that only the wedge edge contacts the roller during the application stroke for the low leverage fast acting portion of the braking stroke and provides a gradual transition from the low leverage partial stroke to the higher leverage stroke as the wedge angle contacts the roller in the higher leverage brake operation partial stroke, said roller circumference and wedge element being positioned so that braking stroke contact between the roller and wedge element is limited to the edge and wedge surface of the wedge element.

4,337,691

**VALVE DRIVING APPARATUS**

Hisao Tomaru, Yamanashi, Japan, assignor to Kitazawa Valve Co., Ltd., Tokyo, Japan

Filed Jan. 3, 1980, Ser. No. 109,403

Claims priority, application Japan, Jun. 8, 1979, 54-78108[U]; Jun. 8, 1979, 54-78110[U]; Jun. 8, 1979, 54-78111[U]

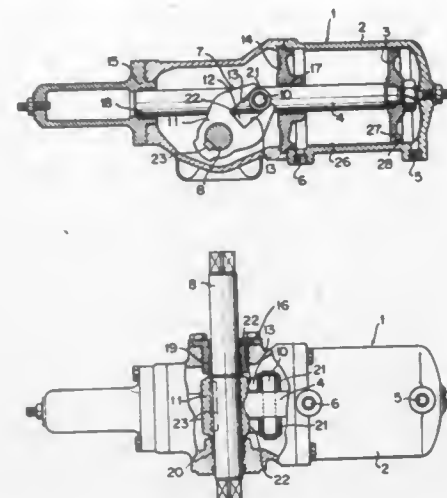
Int. Cl.<sup>3</sup> F01B 9/00

U.S. Cl. 92—138

3 Claims

1. In a valve driving apparatus having:  
a cylinder;  
a piston slidably positioned in said cylinder for reciprocating with respect to said cylinder;  
a piston rod attached to said piston and slidably positioned within said apparatus;  
a valve drive shaft rotatably positioned within said apparatus;  
a conversion-transmission means operatively associated with said piston rod and said valve drive shaft for converting

reciprocating movement of said piston rod to a rotational movement of said valve drive shaft; and  
piston rod bearing supports for supporting said piston rod, and drive shaft bearing supports for supporting said drive shaft;  
the improvement comprising:



a plurality of cylindrical bearing members having the same shape and dimensions, each of said bearing members being respectively inserted into one of said bearing supports for respectively supporting said piston rod in sliding movement and supporting said drive shaft in rotational movement; and  
whereby said bearing members can be interchanged with each other.

4,337,692

**FLUID CYLINDER ASSEMBLY HAVING MINIMIZED OUTSIDE DIAMETER**

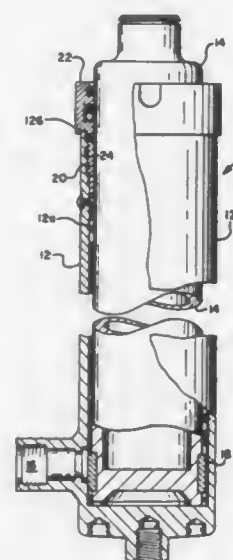
Elie C. Sifri, Gresham, Oreg., and Michael D. Schmidt, Springfield, Ohio, assignors to Cascade Corporation, Portland, Oreg.

Filed Jul. 25, 1980, Ser. No. 172,129

Int. Cl.<sup>3</sup> F16J 15/18

U.S. Cl. 92—168

4 Claims



1. A fluid cylinder assembly comprising an elongate cylindrical shell having interior and exterior arcuate surfaces respectively, a plunger member movable longitudinally within said shell and extensible from one end of said shell, annular retainer means inserted within said end of said shell in surrounding relationship to said plunger member for limiting the extensibility of said plunger member from said end of said shell, mating engagement means, formed on said interior surface of said shell at a position proximate said end of said shell and upon said annular retainer means respectively, for detachably fastening said annular retainer means to said interior surface of said

shell so as to prevent withdrawal of said annular retainer means from said end of said shell, and resilient seal means for preventing leakage of fluid between said annular retainer means and said interior surface of said shell, said engagement means formed on said interior surface of said shell being separated from said end of said shell by an annular portion of said interior surface having no said engagement means formed therein, said resilient seal means being interposed compressibly in a position between and abutting said annular retainer means and said annular portion of said interior surface respectively so as to be nearer to said end of said shell than any of said engagement means, said annular retainer means including a flange portion exterior of said end of said shell and projecting radially outward beyond said exterior surface of said shell at said end thereof, said flange portion having means defining a recess therein for encircling said exterior surface of said shell at said end thereof so as to resist radial expansion of said end of said shell, said recess having a wall abutting said exterior surface of said shell at said end of said shell, said wall of said recess and said exterior surface of said shell at said end of said shell both having mating surface means inclined radially inwardly toward said end of said shell for forcibly urging said shell inwardly toward said resilient seal means in response to the fastening of said annular retainer means to said interior surface of said shell by said engagement means.

4,337,693

**PEPPER CORING AND SLICING APPARATUS**

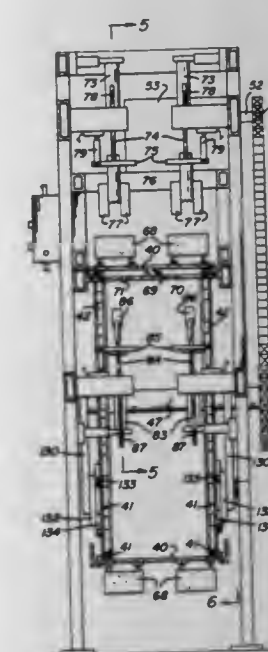
Peter L. Dandrea, Landisville, N.J., assignor to Garden Green Vegetable Processors, Inc., Landisville, N.J.

Filed Nov. 26, 1980, Ser. No. 211,328

Int. Cl.<sup>3</sup> A23N 4/12, 4/22

U.S. Cl. 99—491

20 Claims



1. A pepper coring and slicing apparatus comprising in combination,  
(a) pepper holding means for holding a pepper at a pepper coring station,  
(1) oriented with its stem up so that the pepper core is disposed along a vertical axis,  
(2) with the top exposed and a pair of completely exposed side regions extending from the top to the bottom of the pepper and on diametrically opposite sides of the pepper, and  
(3) with the bottom of the pepper extending between the said pair of side regions exposed,  
(b) vertically reciprocable pepper coring and slicing means comprising,  
(1) first coring and slicing means disposed above said pepper holding means including a hollow cylindrical corer disposed with its cylindrical axis vertical and having a cutting edge completely about its lower end, and a pair of spaced apart co-planer side cutting blades

having linearly extending lower cutting edges extending radially outward from said corer from diametrically opposite sides of the latter and spaced downward at a lower elevation than the corer cutting edge, and  
(2) second slicing means disposed below said pepper holding means including a planer bottom cutting blade having a linearly extending upper cutting edge oriented substantially co-planerly with the said pair of upper spaced apart co-planer cutting blades, and  
(c) actuating means for vertically reciprocating said first and second coring and slicing means to cause  
(1) said first means to descend so that said corer cuts through the pepper top and cuts the core from the pepper, and said side cutting blades cut the top, sides and the outer parts of the bottom of the pepper, and  
(2) said second means to rise and cut the uncut bottom of the pepper between the cuts made by said first means side cutting blades, said actuating means thereafter retracting said first and second coring and slicing means out of engagement with the pepper.

4,337,694

**SYSTEM FOR HANDLING AND BALING METALLIC SCRAP MATERIAL**

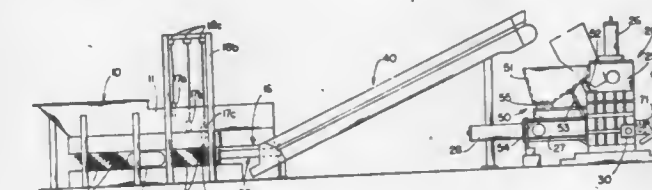
Stanford M. Brown, 1647 Thornapple River Dr., SE., Grand Rapids, Mich. 49506

Division of Ser. No. 108,508, Dec. 31, 1979. This application Jun. 29, 1981, Ser. No. 278,629

Int. Cl.<sup>3</sup> B30B 9/32

U.S. Cl. 100—45

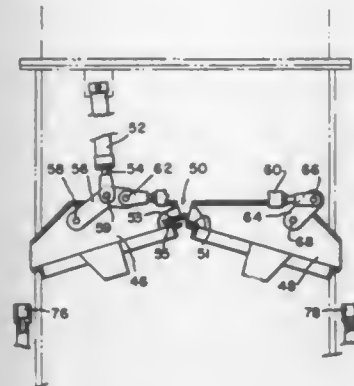
9 Claims



1. A system for handling and baling metallic scrap material which comprises a baling means having a charge box with an opening on the top thereof for receiving the scrap material and a means for compacting the material into a bale, the improvement comprising a first hopper means mounted adjacent said baling means at the side thereon adjacent said opening of said charge box; means for mounting said first hopper means for movement from a loading position for receiving metallic scrap material to a dumping position in which dumping position the material in said first hopper means is dumped into said charge box through said opening; actuating means for actuating said first hopper means from said loading position to said dumping position; a weigh means for sensing the weight of said material in said hopper; actuating means for moving said hopper means from the said loading position to said dumping position, said actuating means being responsive to a predetermined weight of material sensed by said weight means; a second hopper means located at a remote position from said baling means, said second hopper means including a first conveyor means for conveying said material from a receiving end of the second hopper means to a discharge end thereof; a second conveyor means extending from said discharge end of said second hopper means to said first hopper means; the actuation of said first and second conveying means and said actuating means for said first hopper means being responsive to the weight of material sensed by said weigh means whereby when the system is in operation the conveyors are operated to discharge material into said first hopper until said predetermined weight is sensed which in response thereto said actuating means actuates said first hopper means to dumping position and said first and second conveying means become inoperative while said first hopper is in a non-loading position.

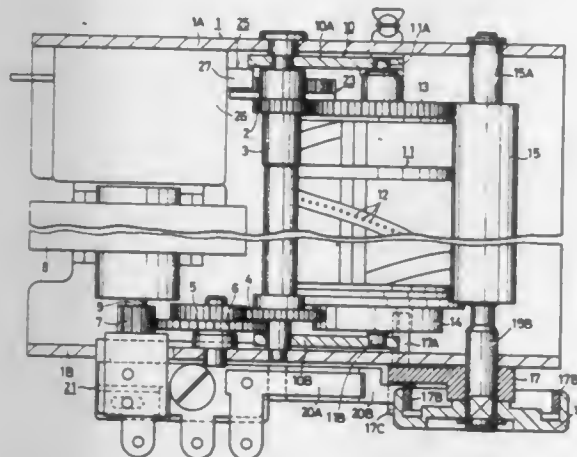


4,337,695  
**FILTER PRESS WITH PIVOTING DIVERTER DOORS**  
 W. Richard Clendaniel, Andover, Mass., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.  
 Filed Jan. 26, 1981, Ser. No. 228,800  
 Int. Cl.<sup>3</sup> B01D 25/12  
 U.S. Cl. 100—195 4 Claims



1. A filter press comprising: pressing members for pressing the liquid out of a solid in a liquid to form a solid cake; means for separating the pressing members to release the cake; washing means located to flow water against the pressing members; a pair of diverter doors located below the pressing members and washing means, said diverter doors being pivotally mounted with one diverter door having a portion thereof overlapping the other diverter door in the closed position, and means for pivoting the overlapping diverter door from the closed position in a first rotational direction and then in the opposite rotational direction while simultaneously pivoting the other diverter door in said first rotational direction to allow dropping said solid cake through the open diverter doors.

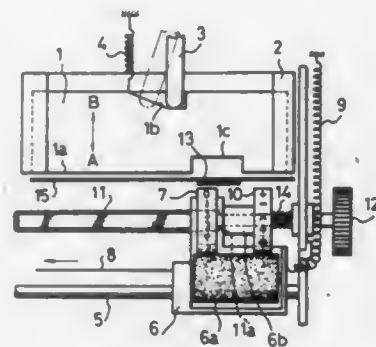
4,337,696  
**PRINTING APPARATUS**  
 Fumito Komatsu, Shiojiri, and Tadashi Kamijima, Shimosuwa, both of Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan  
 Filed Aug. 14, 1980, Ser. No. 177,964  
 Claims priority, application Japan, Apr. 17, 1980, 55-50628  
 Int. Cl.<sup>3</sup> B41J 3/08  
 U.S. Cl. 101—93.04 8 Claims



1. A printing apparatus comprising: a motor producing a rotational drive torque, torque transmission means, a drive wheel fixedly mounted on a rotary shaft and driven by the rotation drive torque through said torque transmission means, said drive wheel being rotated in one direction, a base frame rotatably supporting said rotary shaft, a swingable support plate swingably supported to said rotary shaft, a printing drum rotatably supported to said swingable sup-

port plate and having at one end a first circumferential torque transmission part engaged with said drive wheel, printing web feeding means for feeding a printing web so as to face the circumferential surface of said printing drum, said printing web feeding means having a rotational axis parallel to the rotational axis of said printing drum, biasing means for biasing said printing drum in the opposite direction to the printing web to be fed, and forcible stopping means for selectively preventing said printing drum from rotating around its own axis, and to simultaneously effect printing, said one direction of rotation of said drive wheel being determined such that, when said forcible stopping means is operative to prevent rotation around the axis of said printing drum caused by rotational torque transmitted from said drive wheel, said printing drum is rotated around only said rotary shaft toward said printing web in a sun-and-planet motion to effect printing by rotational torque transmitted from said drive wheel.

4,337,697  
**SERIAL PRINTER**  
 Masatsugu Aoki, Yokohama, and Yasuhiko Iwane, Tamayama, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan  
 Filed Dec. 27, 1979, Ser. No. 107,528  
 Claims priority, application Japan, Dec. 30, 1978, 53-164159  
 Int. Cl.<sup>3</sup> B41J 9/08  
 U.S. Cl. 101—93.48 10 Claims

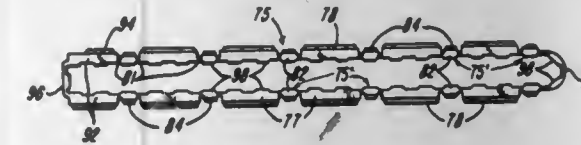


1. A serial printer comprising first and second type wheels mounted on a rotary shaft for axial movement into a printing position along a printing line and carrying a plurality of respective type elements positioned at said printing line by rotation of said shaft, a single hammer lying along said entire printing line and having a recess formed opposite a non-printing position on said printing line, means for placing said second type wheel in said non-printing position so as to be opposite said recess whenever type elements from said first type wheel are selected for printing and placing said first type wheel in said non-printing position so as to be opposite said recess whenever type elements from said second type wheel are selected for printing, means for moving said hammer towards said type wheels for printing a character corresponding to the selected type element, and a mask member held in position between said recess and said non-printing position.

4,337,698  
**ENDLESS PRINTING BAND**  
 William A. Jenkins, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio  
 Division of Ser. No. 960,911, Nov. 15, 1978, Pat. No. 4,265,174.  
 This application Oct. 14, 1980, Ser. No. 196,925  
 Int. Cl.<sup>3</sup> B41J 1/20 8 Claims

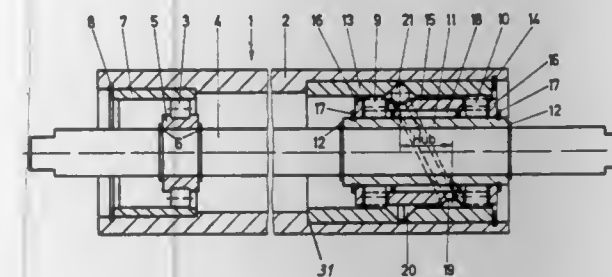
1. A flexible endless printing band adapted for use in a print head of a label dispensing apparatus, the printing band comprising two series of first pads, the first pads having outwardly

projecting printing characters, a first link portion connecting each pair of adjacent first pads, a pair of adjacent second pads each being of a length shorter than each first pad, the second pads having outwardly projecting printing characters, a second flexible link portion longer than a said first link portion,



the second link portion connecting adjacent second pads, each second pad being connected to one series of first pads by a said first link portion, and the combined lengths of a pair of adjacent first pads and the intervening first link portion being substantially equal to the combined lengths of the pair of adjacent second pads and the intervening second link portion.

4,337,699  
**DEVICE FOR AXIALLY RECIPROCATING AN INKING-UNIT ROLLER**  
 Hermann Beisel, Walldorf, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Fed. Rep. of Germany  
 Filed Jul. 30, 1980, Ser. No. 173,763  
 Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931141  
 Int. Cl.<sup>3</sup> B41F 1/46  
 U.S. Cl. 101—348 4 Claims

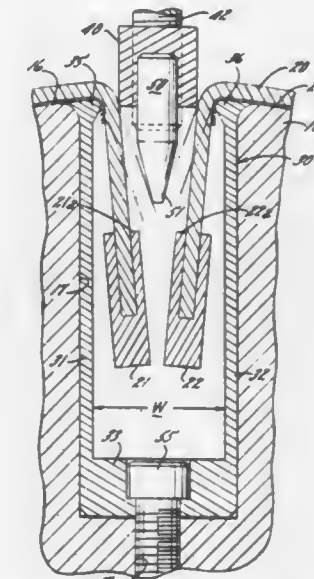


1. Device for axially reciprocating a printing-unit roller having a stationary shaft and a roller jacket rotatably driven by friction drive, the device being disposed within the printing-unit roller and being driven by rotational movement of the printing-unit roller, comprising drive means for effecting axial reciprocation of the printing-unit roller at a speed reduced with respect to the rotational speed of the printing-unit roller including two roller bearings disposed within the printing-unit roller between the roller jacket and the shaft, a first bushing also disposed within the roller between the roller jacket and the shaft and formed with cutouts through which said roller bearings extend, as well as with a first groove, a second bushing fixed in the roller jacket and formed with a second groove, one of said grooves being of elliptic form, said first bushing being revolvable as a cage and a ball being received simultaneously in both of said grooves and being rollable therein.

4,337,700  
**BLANKET CYLINDER CONSTRUCTION FOR PRINTING PRESS**  
 Gordon Etchell, Downers Grove, and Cyril W. Frank, Brookfield, both of Ill., assignors to Pathfinder Graphic Associates, Inc., Cicero, Ill.  
 Filed May 30, 1980, Ser. No. 154,540  
 Int. Cl.<sup>3</sup> B41F 1/28 1 Claim

1. In a printing press a blanket cylinder having a longitudinal groove of rectangular section and of constant width and depth formed in the surface thereof, an insert of rectangular "U"-shaped cross section dimensioned to seat in the groove flatly with respect to the bottom and side walls of the groove, a blanket having reinforcing bars secured to its ends, the rein-

forcing bars being received in the insert and extending longitudinally along the inner walls thereof so that the reinforcing bars present, along their inwardly facing sides, upwardly facing ledge surfaces spaced parallel to one another, a longitudinal clamping bar dimensioned to bridge and clampingly seat upon the ledge surfaces and a series of radially oriented cap screws spaced along the length of the groove, the cap screws penetrating the clamping bar and insert and threaded into holes at the bottom of the groove so that upon uniform tightening of the cap screws the reinforcing bars are drawn downwardly toward the bottom of the groove thereby uniformly tensioning the blanket, the clamping bar having, extending radially from its underside, a plurality of wedge elements spaced between



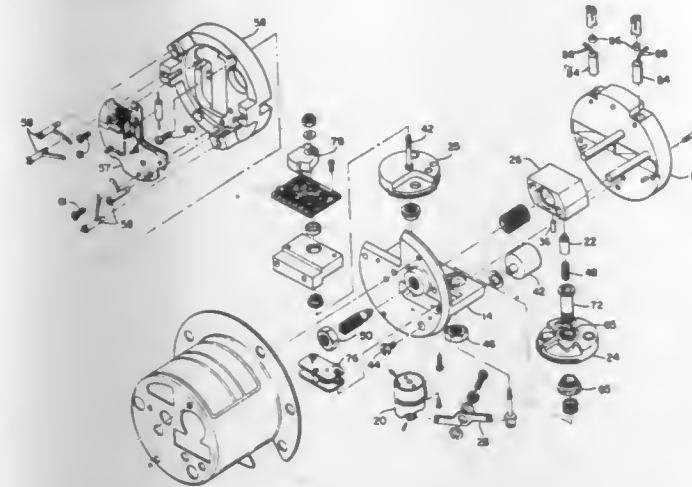
adjacent ones of the clamping screws for the purpose of wedging apart the ends of the blanket and the attached reinforcing bars to prepare for entry therebetween of the clamping bar into seated position on the reinforcing bars, the insert having integral flanges along its outer edges over which the ends of the blanket are bent at right angles tending to hold the insert captive along its length against centrifugal dislodgement, the flanges extending mutually inwardly so that the gap defined by the flanges is less than the internal width dimension of the insert and just large enough to comfortably accommodate the heads of the cap screws between the bent-over ends of the blanket thereby to enable use of the blanket cylinder with a plate cylinder having a narrow gap and a maximum of printing area.

4,337,701  
**ELECTROMECHANICAL WARHEAD SAFETY-ARMING DEVICE**  
 James G. Janson, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.  
 Filed Jan. 28, 1980, Ser. No. 115,989  
 Int. Cl.<sup>3</sup> F42C 15/24, 15/34 4 Claims

1. A warhead safety-arming device comprising: a pair of rotors side by side with meshed geared surfaces, said rotors having centers of gravity such that said rotors are driven in opposing directions due to inertial effects on said centers of gravity; a setback weight attached to one of said rotors for locking in a predetermined position said rotor pair, whereby said rotor pair is free to turn upon depression of said setback weight by a predetermined acceleration; a solenoid assembly connected to said rotors; a clevis latch pin mounted so it fits into said setback weight for holding said setback weight in position; a bellcrank connecting said solenoid assembly and said clevis latch pin for withdrawing said clevis latch pin from said setback weight when said solenoid assembly is activated;



a releasing means connected to said solenoid assembly for unlocking said setback weight;  
 an escapement engaged to one of said rotors for timing the period said rotor pair is driven when said setback weight is depressed;



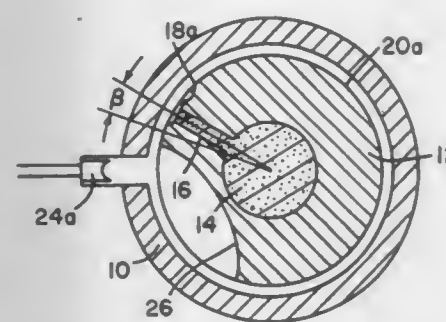
a switch electrically connected to at least one of said rotor pair such that it is kept from an on configuration until said rotor pair can no longer be driven by inertia; and  
 at least one detonator electrically connected to said switch which is armed when said switch is in said on configuration.

#### 4,337,702 ELECTROEXPLOSIVE AND PERCUSSION SAFE AND ARM DEVICE

Robert E. Betts, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 9, 1980, Ser. No. 158,009  
 Int. Cl.<sup>3</sup> F42C 15/34

U.S. Cl. 102—254



1. In a safe and arming device having an outer housing with an inner core structure mounted for movement of the outer housing and the core structure relative to each other and with a pressure squib mounted on the outer housing for exerting pressure on a burst disk that is mounted on said core structure and with charge means mounted in the core structure for being ignited and set off by the pressure squib when sufficient pressure from the pressure squib is applied to the burst disk, the improvement comprising: said burst disk being replaced by a percussion cap and said pressure squib being replaced by a squib charge that applies force linearly toward a specific area to apply force to the face of said percussion cap to cause said percussion cap to be set off and thereby said charge means.

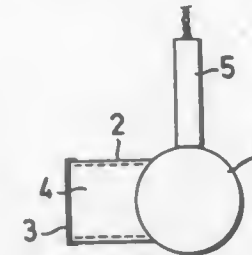
#### 4,337,703 PROCESS AND ARRANGEMENT FOR GUIDING THE EFFECT OF UNDERWATER DETONATIONS OF UNDERWATER EXPLOSIVE BODIES

Hartmut Schöner, Bonn, Fed. Rep. of Germany, assignor to Diehl GmbH & Company, Fed. Rep. of Germany  
 Filed Jan. 22, 1975, Ser. No. 543,247

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1974, 2403791

Int. Cl.<sup>3</sup> F42B 22/00, 3/00; F42D 3/00  
 U.S. Cl. 102—406

4 Claims



1. Apparatus for guiding and increasing the effect of underwater detonation of an underwater explosive body, comprising  
 (a) an underwater explosive body (1) adapted to be submerged in a body of water adjacent a target;  
 (b) means (2) including a separate rigid generally cylindrical hollow wall rigidly secured at one end to said explosive body for defining a hollow space on the side of said explosive body facing the target; and  
 (c) means (5) for detonating said explosive body to cause the gases of high density generated in the hollow space by the detonation of the explosive charge to be accelerated to high speeds prior to meeting with the surrounding water.

#### 4,337,704 TURBULENT-WATER WAY

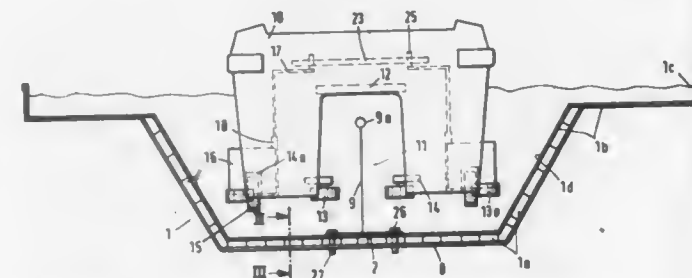
Klaus Becker, Jürgen Cittrich, and Karl E. Kaufmann, all of Wetter, Fed. Rep. of Germany, assignors to Mannesmann DeMag A.G., Duisburg, Fed. Rep. of Germany  
 Filed May 28, 1980, Ser. No. 153,895

Claims priority, application Fed. Rep. of Germany, May 28, 1979, 2921629

Int. Cl.<sup>3</sup> A63G 21/18

U.S. Cl. 104—70

10 Claims



1. A trough for a turbulent waterway comprising:  
 (a) a bottom surface constructed of bar grating;  
 (b) two side walls constructed of bar grating;  
 (c) said side walls being loosely connected to said bottom surface and extending upwardly therefrom; and  
 (d) said bottom surface and said side walls having an overlying synthetic film for providing a watertight environment.

#### 4,337,705 RESILIENTLY INTERCONNECTED PIVOTED TRUCKS

Rudolf Schellenberg, Effretikon, Switzerland, assignor to Schweizerische Lokomotiv und Maschinenfabrik, Winterthur, Switzerland

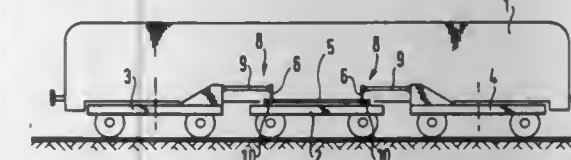
Filed Apr. 3, 1978, Ser. No. 892,880

Claims priority, application Switzerland, Feb. 10, 1978, 1499/78

Int. Cl.<sup>3</sup> B61F 5/00, 5/38, 13/00

U.S. Cl. 105—168

10 Claims



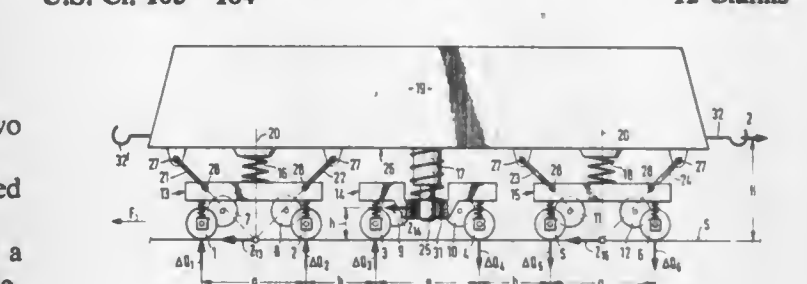
1. In a cross-coupling arrangement for coupling at least two trucks of a rail vehicle; the combination including  
 a shaft having a coaxial cavity at each end thereof; mounted in a respective cavity of said shaft;  
 a pair of journal pins, each pin having a conical part and a cylindrical threaded part at one end, each pin being secured to a respective bearing and projecting from said shaft to permit mounting of said shaft on an axis of rotation longitudinally of said shaft;  
 a pair of levers each lever being fastened to one end of said shaft and arranged at least approximately in the proximity of the transverse plane of said universal bearing at said end of said shaft;  
 a pair of support brackets for mounting on one of a vehicle body and a central truck of the rail vehicle; and  
 a clamping sleeve in each respective bracket receiving a respective conical part of a journal pin in mating relation, said sleeve having an outside diameter greater than the largest diameter of said journal pin.

2. In combination with a rail vehicle having two trucks and a body supported on said trucks; a cross-coupling arrangement between said trucks, said arrangement including  
 a shaft extending longitudinally of said vehicle, said shaft having a coaxial cylindrical cavity at each end;  
 a pair of universal bearings, each universal bearing being mounted in a respective cavity of said shaft;  
 a pair of support brackets mounted on said body;  
 a pair of journal pins, each pin being secured in a respective mounting bracket in fixed relation and projecting into a respective cavity of said shaft and secured to a respective universal bearing to permit rotation and angular movement of said shaft relative to said pins; and  
 a pair of linkages, each said linkage connecting a respective end of said shaft with a respective one of said trucks, each linkage including a lever fastened at one end of said shaft and arranged at least approximately in the proximity of a transverse plane of said universal bearing at said end of said shaft.

7. In combination with a rail vehicle having three trucks; a cross-coupling arrangement between said trucks, said arrangement including  
 a shaft extending longitudinally of said vehicle, said shaft having a coaxial cylindrical cavity at each end;  
 a pair of universal bearings, each universal bearing being mounted in a respective cavity of said shaft;  
 a pair of support brackets mounted on a middle one of said trucks;  
 a pair of journal pins, each pin being secured in a respective mounting bracket in fixed relation and projecting into a respective cavity of said shaft and secured to a respective universal bearing to permit rotation and angular movement of said shaft relative to said pins; and  
 a pair of linkages, each said linkage being fastened to a respective end of said shaft to connect said one end of said shaft with a respective outer one of said trucks, each linkage including a lever fastened to one end of said shaft

and arranged at least approximately in the proximity of a transverse plane of said universal bearing at said end of said shaft.

#### 4,337,706 RAILWAY LOCOMOTIVE



1. A track propulsion vehicle comprising a vehicle body having a drawhook for transmitting a total traction force;  
 three trucks supporting said body thereon, each said truck having a pair of driving axles mounted therein;  
 a plurality of motors, each said motor being drivingly connected to a respective axle, said motors being disposed in two parallel electrically connected groups with one group comprising the motors of the three successive axles leading in a direction of travel and the other group comprising the motors of the three successive trailing axles, each said motor group being operable to deliver different power from the other motor group to said respective axles; and  
 means connecting each respective truck to said body for transmitting a traction force therebetween, said means of the two outer trucks equalizing the load on said driving axles thereof and said connecting means of the middle truck defining a theoretical point of attack for a traction force thereat at a predetermined height above a rail upper surface, said height corresponding to a predetermined moment produced in the transmission of said latter traction force, said moment relieving the load on the leading axle of said middle truck and increasing the load on the trailing axle of said middle truck.

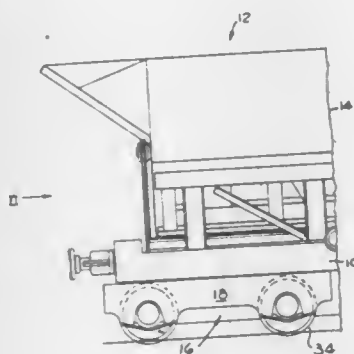
6. A track propulsion vehicle comprising  
 a vehicle body having a drawhook at a given height above a plane coincident with a rail upper surface for transmitting a total traction force;  
 three trucks supporting said body thereon, each said truck having a pair of driving axles mounted therein, said axles of each said pair of axles being spaced a first distance apart from each other and said pairs of axles being spaced a second distance from an adjacent pair of axles;  
 a plurality of motors, each said motor being drivingly connected to a respective axle, said motors being disposed in two parallel electrically connected groups with one group comprising the motors of the three successive axles leading in a direction of travel and the other group comprising the motors of the three successive trailing axles, each said motor group being operable to deliver different power from the other motor group to said respective axles; and  
 means connecting each respective truck to said body for transmitting a traction force therebetween, said means of the two outer trucks equalizing the load on said driving axles thereof and said connecting means of the middle truck defining a theoretical point of attack for a traction force thereat at a predetermined height above said plane,



said height corresponding to a predetermined moment produced in the transmission of said latter traction force, said moment relieving the load on the leading axle of said middle truck and increasing the load on the trailing axle of said middle truck.

**4,337,707**  
**RAILWAY HOPPER CAR BOGIE**  
Cornelis Brouwer, Potchefstroom, South Africa, assignor to Rotaque (Proprietary) Limited, Potchefstroom, South Africa  
Continuation of Ser. No. 874,180, Feb. 1, 1978, abandoned, which is a continuation of Ser. No. 760,799, Jan. 19, 1977, abandoned. This application Feb. 20, 1980, Ser. No. 122,974  
Claims priority, application South Africa, Jan. 28, 1976, 76/0485

Int. Cl.<sup>3</sup> B61D 7/04; B61F 5/04, 5/14, 5/52  
U.S. Cl. 105—250 18 Claims

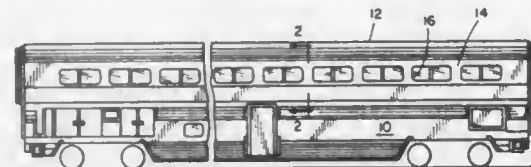


1. A wheeled rail vehicle comprising
  - (a) a base frame which is of elongated rectangular form in plan view;
  - (b) a hopper supported on said base frame, said hopper having a discharge opening at the bottom thereof which opening is elongated in the direction of elongation of said base frame, which extends continuously over substantially the entire length of said frame, and which is arranged so that the load carried in said hopper, upon being discharged, falls through said base frame;
  - (c) a pair of bogie frames on which wheels of said vehicle are mounted, said bogie frames being located beneath opposite ends of said base frame, each bogie frame being U-shaped in plan view and comprising two spaced side members joined by a transverse member, said side members of each bogie frame extending away from said transverse member of that bogie frame towards the center of said vehicle;
  - (d) bearing structures between said base frame and each bogie frame and forming means which support said base frame on said bogie frames and permit relative pivoting movement between the base frame and the bogie frames about respective vertical axes, said bearing structures being radially spaced horizontally from the respective vertical axes about which said bogie frames and base frame can perform relative pivoting motion; and
  - (e) means for limiting pivoting motion and separation of said bogie frames and base frame relatively to one another about said axes.

**4,337,708**  
**RAILWAY CAR SUPERSTRUCTURE FRAME**  
William H. Peterson, Homewood, Ill., assignor to Pullman Incorporated, Chicago, Ill.  
Filed Apr. 11, 1980, Ser. No. 139,514  
Int. Cl.<sup>3</sup> B23K 31/00; B23P 15/00; B61D 17/08  
U.S. Cl. 105—397 11 Claims

1. A welded structural frame for a railway car wall which displays low distortion during and after assembly comprising: a longitudinal U-section member forming part of a side wall frame and having a pair of opposed, horizontal sides and having a vertical base interconnecting said horizontal

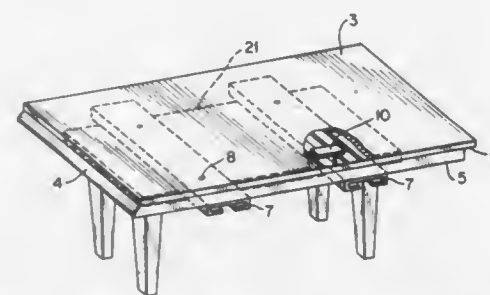
sides, said U-section member also having an outer surface disposed in a generally vertical plane to facilitate attachment of an outer wall sheath;  
a pair of aligned, wall pillar members fitted about the U-shaped member with one abutting each of the sides of the longitudinal member and being welded thereto and said pillar members having an outside, flat section in alignment with and in a vertical plane with the outer surface of the longitudinal U-section member thereby providing a smooth, continuous surface for attachment of an outer wall sheath to said railway car;  
a reinforcing member having means located at the juncture of the wall pillar members and the longitudinal U-section member therein and having weld means to interconnect the reinforcing member and the sides of the longitudinal member forming means in alignment with the vertical



- pillar members to thereby provide a continuous, structural wall pillar member extending through the longitudinal member for improved rigidity and dimensional stability.
9. A method of constructing a low distortion welded structural frame for a railway car wall comprising:
    - a first step of welding a pair of aligned wall pillar members to opposite sides of a U-shaped longitudinal member having a pair of horizontal sides interconnected by a base and aligning the outer portions of the wall pillar members and the longitudinal member in a common plane to facilitate attachment of an outer wall sheath for said railway car;
    - a second step of positioning a reinforcing member between the sides of the longitudinal member in alignment with the wall pillar members; and
    - a third step of welding the reinforcing member to the sides of the longitudinal member in position to provide a continuous framing member extending across said railway car.

**4,337,709**  
**WALL STORABLE TABLE ATTACHMENT TOP**  
James A. Nicholson, 10600 Van Stralen Way, Rancho Cordova, Calif. 95670  
Filed Jan. 20, 1978, Ser. No. 871,102  
Int. Cl.<sup>3</sup> A47B 33/00 3 Claims

U.S. Cl. 108—33

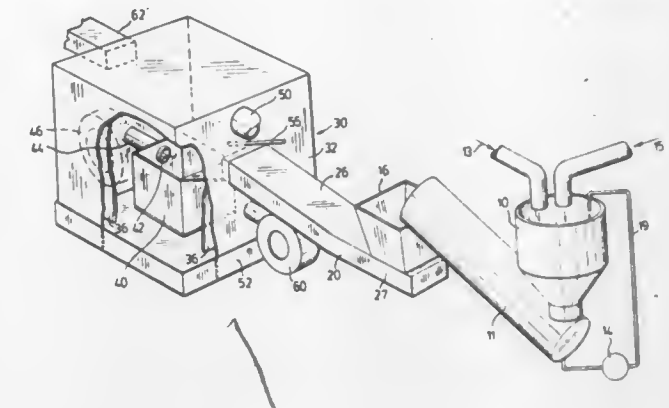


1. A storable table attachable top comprising, a generally rectangular planar top member, said top member being attached by its base to the upper surface of a generally rectangular base frame with the edges of said top member extending beyond said base frame on three sides thereof, the fourth edge of said top member being flush with the top of a side of said base frame, said side of said base frame being provided with a lateral projection with a recess therein, said recess providing a curved downwardly extending back wall culminating at one end of the base frame to form a finger grip; means for providing an anchorage for clamping devices, said means being at

tached to the bottom of said base frame; magnetic holding means comprising a plurality of spacers, each said spacer being provided with a magnetically attractable plate on the outer surface and having an inner surface attached to the bottom of said base frame, each said spacer having a height sufficient to space the magnetically attractable plate further from the base frame than the height of said means of providing for the anchorage for clamping devices.

**4,337,711**  
**METHOD FOR COMBUSTION OF PETROLEUM AND SOLID WASTES**  
Clifford Bolton, 1094 Third Line, Oakville, Ontario, L6L 4B1, Canada  
Filed Sep. 22, 1980, Ser. No. 189,268  
Int. Cl.<sup>3</sup> F23G 7/00 9 Claims

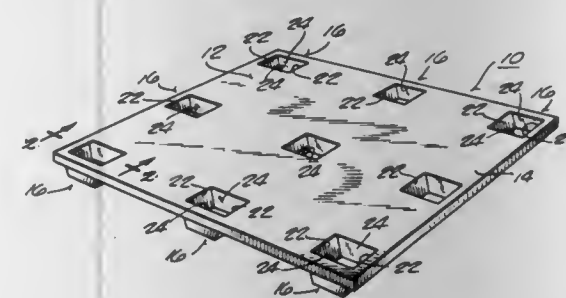
U.S. Cl. 110—346



1. A method for controllably combusting liquid petroleum wastes which comprises mixing particulate combustible solids with said liquid petroleum wastes in a ratio within the range of about 30:70 to 75:25 by volume liquid petroleum wastes to particulate combustible solids and feeding said mixture of liquid petroleum wastes and particulate solids at a controlled rate to a combustion chamber for combustion therein.

**4,337,710**  
**PALLETS MOLDED FROM MATTED WOOD FLAKES**  
Bruce A. Haataja, Lake Linden; Tauno B. Kilpela, Atlantic Mine; Anders E. Lund, and James F. Hamilton, both of Houghton, all of Mich., assignors to Michigan Technological University, Houghton, Mich.  
Division of Ser. No. 972,034, Dec. 21, 1978. This application Jul. 2, 1980, Ser. No. 165,393  
Int. Cl.<sup>3</sup> B65D 19/24 8 Claims

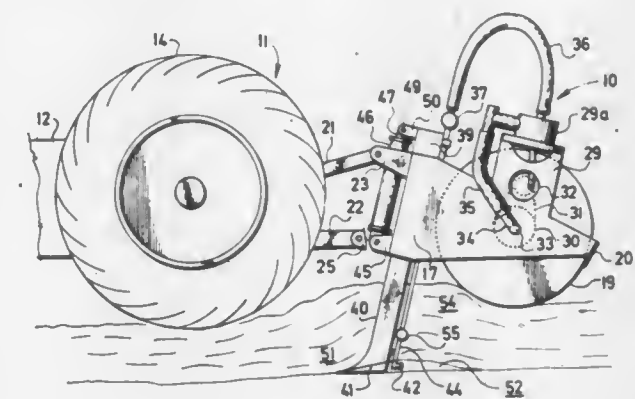
U.S. Cl. 108—53.3



1. A pallet comprising
  - a generally flat, rectangular deck member having a major plane and a flat upper surface; and
  - a plurality of parallel rows of spaced, hollow leg members projecting integrally from said deck member, said leg members in each of said rows being laterally aligned with a said leg member in the adjacent row, each of said leg members having a bottom wall spaced from said deck member a sufficient distance to permit entry of fork lift tines beneath said deck member and opposed pairs of side walls integrally connecting said bottom wall with said deck member and inclining outwardly from said bottom wall toward said deck member;
 said deck and leg members being molded as a one-piece unit from a layered mixture of a resinous particle board binder and flake-like wood particles having an average length of about 1 1/4 to about 6 inches, an average thickness of about 0.005 to about 0.075 inch, and an average width of about 3 inches or less and no greater than the average length, each layer of said wood particles forming at least said deck member lying substantially flat in a plane generally parallel to the major plane with said wood particles therein being randomly oriented.

**4,337,712**  
**INJECTION PLOW**  
Jan Michalko, Bratislava, Czechoslovakia, assignor to Jednotne reolnicke druzstvo, Modra, Czechoslovakia  
Continuation-in-part of Ser. No. 929,953, Aug. 1, 1978, abandoned. This application Aug. 6, 1980, Ser. No. 175,876  
Claims priority, application Czechoslovakia, Aug. 1, 1977, 5062-77

Int. Cl.<sup>3</sup> A01C 23/02  
U.S. Cl. 111—7 5 Claims



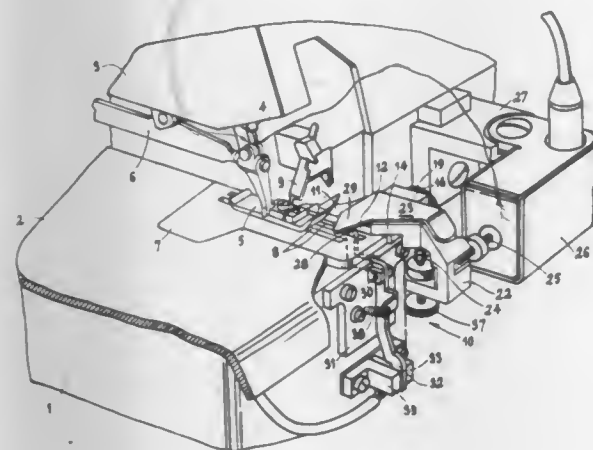
1. A fertilizer injection plow for underground fertilization by a fluid fertilizer, said plow being adapted for mounting on a ground traversing vehicle, comprising a frame, a ground-engaging fertilizer-storing drum mounted on the frame for rotation by ground contact, a pump mounted on the frame and having an inlet and an outlet port, means drivingly connecting



the pump to the drum so that the pump is driven by the drum in synchronism therewith, a first conduit means connecting the inlet port of the pump to the interior of the drum, a plowshare, a liquid injecting nozzle mounted adjacent the plowshare, and a second conduit means connecting the outlet port of the pump to the injecting nozzle, whereby engagement between the drum and the ground determines the depth of penetration of the plowshare into the ground, and means for adjusting the plowshare vertically relative to the drum, whereby the depth of penetration of the plowshare into the ground can be selectively adjusted.

**4,337,713**  
**INVISIBLE STITCH HEMMING FOR TUBULAR MATERIAL**

Giovanni Palacino, Via Dei Giacinti 12, Milan; Gianfranco Garzulano, Via F. Cavallotti 13, Novara, and Adelmo Garagiola, Via Cavour 41, Inveruno, Milan, all of Italy  
Filed Aug. 6, 1980, Ser. No. 175,613  
Claims priority, application Italy, Sep. 25, 1979, 25966 A/79  
Int. Cl.<sup>3</sup> D05B 35/04, 35/10  
U.S. Cl. 112—153 6 Claims



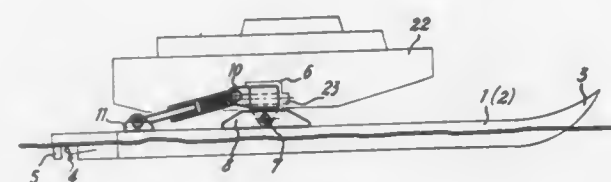
1. A hemming device for forming invisible stitches in tubular workpieces with areas of increased thickness in a sewing machine having a needle and presser foot aligned with a sewing axis associated with a needle plate mounted in the machine's worksurface, said hemming device comprising:

- (a) a straight guide (11) pivotably mounted on the machine adjacent the sewing axis for maintaining alignment of a workpiece with the latter;
- (b) a hemmer plate (23) pivotably attached to the upper surface of said straight guide including:
  - (i) a tip (29) disposed in spaced and overlying relation to the needle plate defining a passage therebetween for advance of the workpiece along the sewing axis;
- (c) means defining a feeler (28) pivotably mounted on the machine in operative association with said passage for detecting those areas of a workpiece of increased thickness;
- (d) actuator means operatively connected to said feeler (28) for displacing said straight guide (11) upon detection of areas of increased thickness of the workpiece; and
- (e) means forming a part of said straight guide (11) for maintaining the workpiece in alignment with the sewing axis after its displacement by said actuator means.

**4,337,714**  
**Patent Not Issued For This Number**

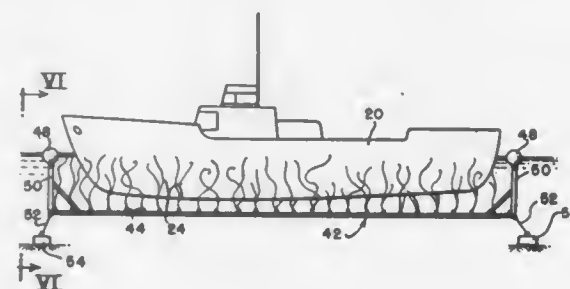
**4,337,715**  
**ARTICULATED CATAMARAN**

Pierre J. de Pingon, 7 avenue du Parmelan, 74000 Annecy, France  
PCT No. PCT/FR79/00046, § 371 Date Feb. 8, 1980, § 102(e)  
Date Feb. 5, 1980, PCT Pub. No. WO80/00018, PCT Pub.  
Date Jan. 10, 1980  
PCT Filed May 31, 1979, Ser. No. 194,300  
Int. Cl.<sup>3</sup> B63B 1/22  
U.S. Cl. 114—121 6 Claims



1. In a catamaran comprising two elongated floats each having a longitudinal axis, a beam extending between and interconnected at its ends to said floats for vertical swinging movement of said floats relative to said beam about a horizontal axis perpendicular to said longitudinal axes, and a cockpit mounted on said beam; the improvement comprising links pivotally interconnecting each end of the beam and the associated float, means for altering the lengths of said links simultaneously in opposite directions, means mounting the cockpit on the beam for vertical swinging movement of the cockpit and beam relative to each other about a horizontal axis disposed between the floats, and means acting between the beam and the cockpit to maintain the cockpit upright upon movement of the beam to an inclined position.

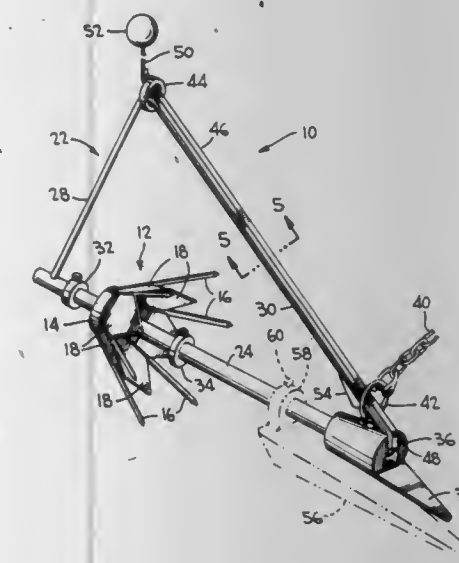
**4,337,716**  
**MARINE GROWTH WIPER**  
Jack Harris, 4460 1/2 Utah St., San Diego, Calif. 92116  
Filed Mar. 24, 1977, Ser. No. 780,749  
Int. Cl.<sup>3</sup> B63B 59/00  
U.S. Cl. 114—222 16 Claims



1. A marine growth wiper for a waterborne object comprising:

a plurality of cords which are limp;  
negatively buoyant underwater support means for positioning the cords below the waterline and within wiping distance of a submerged surface area of the waterborne object; and  
said cords being positively buoyant so as to stream upwardly from the underwater support means and move responsively to water action to wipe the bottom of the object free of marine growth.

**4,337,717**  
**REVERSIBLE GRAPPLING ANCHOR**  
Clarence T. Gregory, 11 Pelham Heights, Anniston, Ala. 36201  
Filed Apr. 28, 1980, Ser. No. 144,413  
Int. Cl.<sup>3</sup> B63B 21/24, 21/46  
U.S. Cl. 114—294 8 Claims

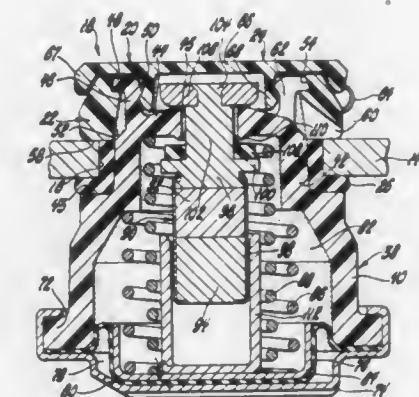


1. A reversible grappling anchor comprising an anchor head, bottom engaging means carried by said anchor head for interlocking engagement with a bottom of a body of water, a generally triangular frame including a lower sliding bar and an upstanding reversing bar connected to opposite ends of said sliding bar, said sliding bar being connected to said head for sliding movement therethrough, said reversing bar includes a front portion and a rear portion, and an anchor cable slip ring slidably mounted on said reversing bar rear portion for movement between an anchor support upper position and a tension applying lower position, and a float and cable assembly coupled to said slip ring for pulling said slip ring to said lower position when an associated anchor cable is slack.

**4,337,718**  
**LOW TIRE PRESSURE TRANSDUCER**  
John A. Stewart, Flint, and Wayne C. Nichols, Corunna, both of Mich., assignors to General Motors Corporation, Detroit, Mich.  
Filed Jul. 28, 1980, Ser. No. 173,032  
Int. Cl.<sup>3</sup> B60C 23/02  
U.S. Cl. 116—34 R 2 Claims

1. A low tire pressure transducer for emitting a magnetic signal when tire pressure falls below a set value comprising a housing,

means engaging the housing for retaining the housing on a tire rim,  
a diaphragm extending across the housing to separate the housing into first and second chambers, the second chamber being subject to a pressure buildup due to leakage, vent means in the housing for supplying tire pressure to the first chamber,  
a valve comprising a port in the housing connecting the second chamber to atmosphere and a closure member for selectively closing the port,  
magnetic signalling means including a first portion mounted for movement with the diaphragm and a second portion connected to the closure member and loosely mounted to the housing for limited movement, so that diaphragm



movement can selectively separate and move the portions together,  
one of the portions comprising a magnet assembly for producing a magnetic flux,  
the other of the portions comprising a magnetic shunt for containing at least part of the magnetic flux when the diaphragm moves the portions together to thereby subdue magnetic flux emitted from the transducer, and  
spring means in the second chamber acting along with air pressure in the second chamber against the diaphragm for momentarily moving both portions and opening the valve to relieve pressure buildup when it occurs and for separating the first and second portions when tire pressure falls below the preset value, whereupon the shunt is moved away from the magnet to permit magnetic flux to be emitted from the transducer.

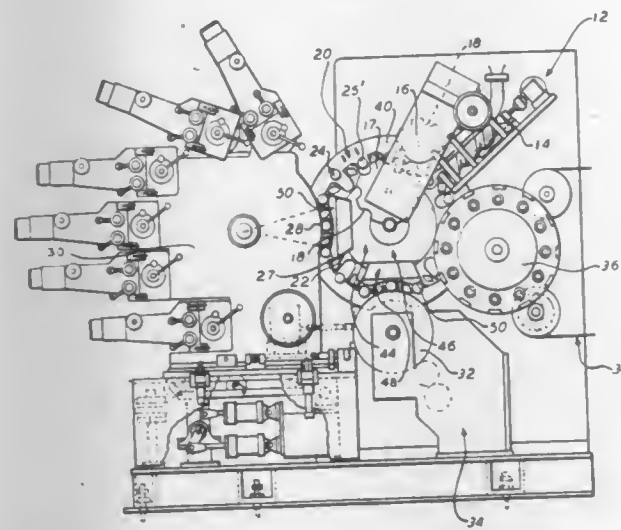
**4,337,719**  
**MANDREL SUPPORT MEANS FOR CONTAINER DECORATING APPARATUS**  
Pieter S. vander Griendt, Bernardsville, N.J.; Robert W. Tielrooy, Amstelveen, Netherlands, and Edward J. Russell, Gladwin, Mich., assignors to Van Dam Machine Corporation of America, West Paterson, N.J.  
Filed Apr. 16, 1981, Ser. No. 254,807  
Int. Cl.<sup>3</sup> B05C 11/00  
U.S. Cl. 118—46 7 Claims

1. In an apparatus for the continuous decoration of containers, a mandrel wheel assembly comprising:  
A. a substantially circular rotatable mandrel wheel,  
B. a plurality of mandrel assemblies pivotally mounted on the circumferential periphery of said mandrel wheel, said mandrel assemblies extending parallel to the axis of rota-



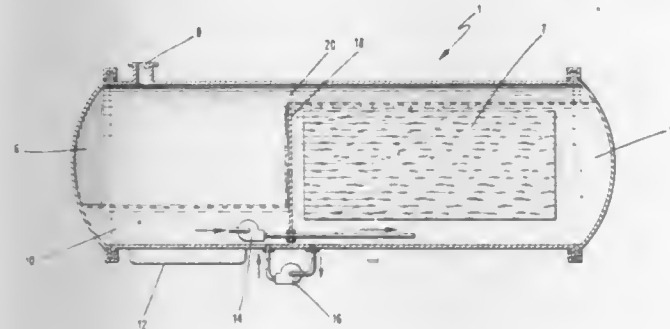
tion of said mandrel wheel and in the same direction with respect to each other,

- C. a central stationary shaft extending through said mandrel wheel at its axis of rotation, and
- D. a secondary mandrel support means mounted about said shaft in spaced apart relation to said mandrel wheel, said secondary mandrel support means comprising:
- a planar support member mounted nonrotatably about said shaft, and



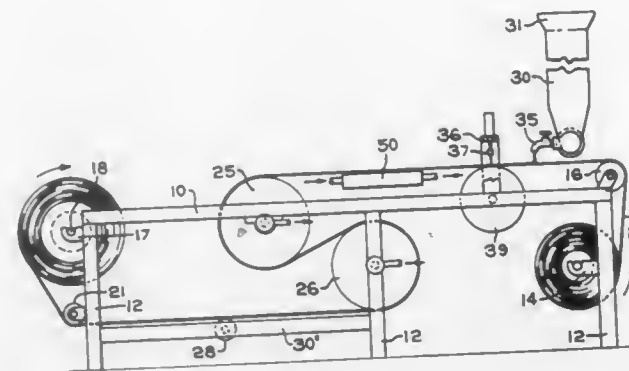
- at least one planar support cam extending radially from said support member, said support cam defining a camming surface radially removed from said support member, said support cam adapted to cammingly engage said mandrel assemblies along a portion of their axial lengths to support said mandrels when said mandrels are engaged in a coating operation.

**4,337,720**  
**APPARATUS FOR TREATMENT OF WOOD**  
 Bror O. Häger, Forsetevägen 5, S182 63 Djursholm, Sweden  
 Filed Nov. 10, 1980, Ser. No. 205,187  
 Claims priority, application Sweden, Nov. 13, 1979, 7909340  
 Int. Cl.<sup>3</sup> B05C 3/109  
 U.S. Cl. 118—50 6 Claims



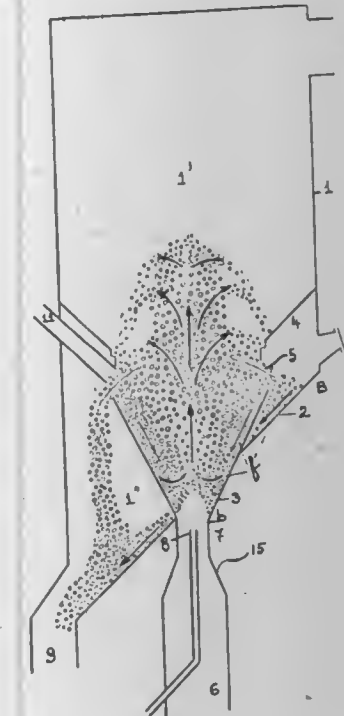
- An apparatus for the treatment of wood comprising: a vessel, said vessel including a storage chamber for the storage of treatment liquid and a treatment chamber wherein wood can be contacted with said treatment liquid, said vessel further including means to exclude ambient air from the interior of the vessel, said storage chamber and said treatment chamber being separated by a substantially vertical intermediate wall portion which includes means to permit communication between the storage chamber and the treatment chamber to equalize the pressure in each chamber, said communication means further enabling said treatment liquid in said treatment chamber to flow into said storage chamber upon achieving a desired level in said treatment chamber.

**4,337,721**  
**PROCESSING HOT MELT ADHESIVE**  
 Richard S. Varga, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio  
 Filed Mar. 27, 1978, Ser. No. 890,449  
 Int. Cl.<sup>3</sup> B05C 5/00  
 U.S. Cl. 118—60 1 Claim



- An apparatus for preparing a thin film of hot melt adhesive for deposit on a disposable carrier member for stripping therefrom comprising support means, a supply roll mounted on one end of said support means, said disposable carrier member rolled up on said supply roll for unwinding therefrom, a take-up roll mounted on the other end of said support means, said disposable carrier member extending from said supply roll to said take-up roll, drive means connected to said take-up roll for rotating said roll, an extruder mounted adjacent to said one end of said support means for extruding a thin film of adhesive onto said carrier member, said extruder has a feed screw that is located in a vertical direction for depositing its feed onto said carrier member, cooling means mounted on said support means for direct contact with said carrier member for cooling said hot melt adhesive as said adhesive moves with said carrier member from said supply roll to said take-up roll, control means mounted on said support means between said cooling means and said extruder, said control means cooperative with said carrier member to regulate the thickness of deposit of said hot melt adhesive passing toward said cooling means with said carrier member, said carrier member being a disposable silicone roll of paper, said extruder having a plurality of laterally spaced discharge valves for spreading the output of said extruder across said carrier member, said control means includes a back-up roller operative to contact the underside of said carrier member, an elongated blade extending across said carrier member opposite said back-up roller for regulating the amount of hot melt adhesive passing underneath said blade for deposit onto said carrier member, said cooling means includes a pair of cooling rollers upon which said carrier member is trained as it moves past said blade to said take-up roll, cooling means connected to said pair of cooling rolls for removing heat from said carrier member and said hot melt adhesive, said cooling means includes an elongated cooling box operative to support said carrier member as said carrier member passes from said control means to said take-up roll, and said pair of rollers are located on said support means to direct said carrier member into an S-shaped loop to expose said carrier member directly to the first one of said pair of cooling rollers and thence expose said hot melt adhesive directly to the remaining one of said pair of cooling rollers.

**4,337,722**  
**APPARATUS FOR GRANULATING AND/OR COATING PARTICLES IN A SPOUTED BED**  
 Christian Debayoux, Toulouse; Hubert Lacroix, Villeneuve Tolosane, and Felix Sternicha, Toulouse, all of France, assignors to Societe Chimique des Charbonnages, Paris, France  
 Filed Dec. 1, 1980, Ser. No. 212,046  
 Claims priority, application France, Nov. 30, 1979, 79 29462  
 Int. Cl.<sup>3</sup> B01J 2/16; B05C 5/00  
 U.S. Cl. 118—303 5 Claims

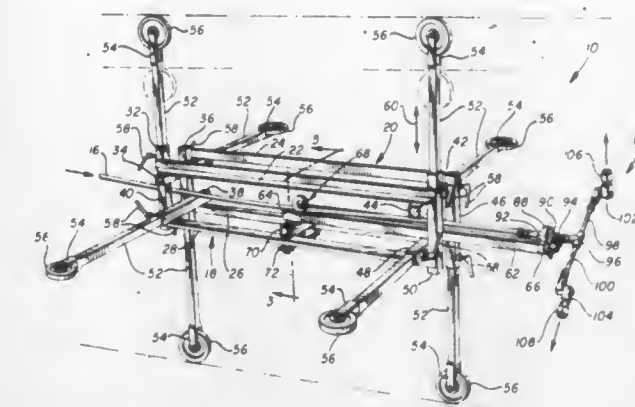


- An apparatus for granulating and/or coating solid particles in a spouted bed comprising: a downwardly converging frustoconically shaped hollow body having a hollow cylindrical shaped body mounted coaxially around and extending upward therefrom, said hollow cylindrical shaped body having an outlet connected thereto for appropriately shaped granules; a gas feed conduit coaxially attached to said frustoconically shaped hollow body at the bottom smaller end thereof; a spray nozzle positioned coaxially within said gas feed conduit adjacent said bottom smaller end of said frustoconically shaped hollow body; a downwardly inclined recentering flange attached to the inside walls of said hollow cylindrical shaped body, said flange extending so as to overlap said frustoconically shaped body so as to define an annularly extending gap around the top edge of said frustoconically shaped body and said flange for providing an outlet for finished granules; and an inclined bottom floor attached to said cylindrical shaped body and to the extension of said frustoconically shaped body for closing off the bottom of said cylindrical shaped body.

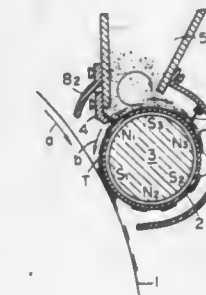
**4,337,723**  
**PIPE INTERIOR SURFACE COATING DEVICE**  
 J. C. Davis, 9818 Hathaway, Dallas, Tex. 75220  
 Filed Dec. 15, 1980, Ser. No. 216,287  
 Int. Cl.<sup>3</sup> B05C 7/02, 7/08  
 U.S. Cl. 118—306 8 Claims

- A pipe interior surface coating device, comprising: a carriage adapted to be supported within a pipe near the longitudinal central axis of said pipe and to be moved longitudinally inside said pipe; and spray means for applying coating material to the interior surface of said pipe including bracket means mounted on said carriage and having one end thereof extending past a first end of said carriage, a rotating sprayer assembly mounted on said one end of said bracket for rotation about an axis essentially parallel to said central pipe axis, said rotating sprayer assembly comprising a swivel member at said axis of rotation, whirler tubes extending radially from said swivel member and nozzle means attached to the outer end of each whirler tube, and means to receive a supply of said coating

material, said swivel member and said whirler tubes forming fluid conduits for delivery of said coating material from said receiving means to said nozzle means and means to adjustably position each nozzle means for discharge of said coating material toward the interior surface of said pipe and at an angle relative to a radial line extending from the axis of rotation of said rotating sprayer assembly whereby impetus is provided to drive said assembly at a selected rotational speed.



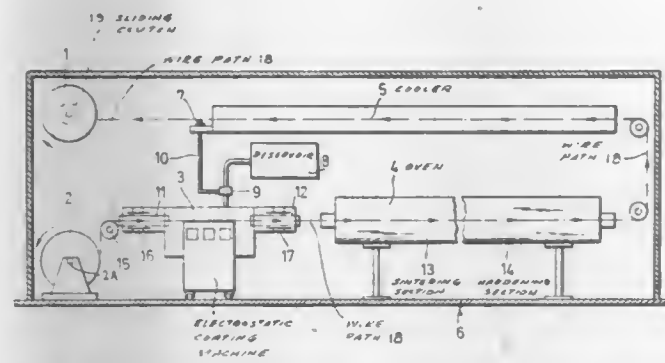
**4,337,724**  
**DEVELOPING DEVICE**  
 Nagao Hosono, Chofu; Junichiro Kanbe, Tokyo; Kozo Arao, and Nobuyuki Miyake, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan  
 Filed Feb. 6, 1980, Ser. No. 118,927  
 Claims priority, application Japan, Feb. 15, 1979, 54-17739  
 Int. Cl.<sup>3</sup> G03G 15/09  
 U.S. Cl. 118—652 11 Claims



- A developing device comprising: developer holding means disposed with a minute gap with respect to a latent image bearing member for moving developer in a predetermined direction to a development station; developer supply means for supplying developer to the surface of said developer holding means; a scatter preventing cover to prevent scattering of developer removably attached to said developer supply means for covering at least a portion of said holding means at a location spaced downstream from the development station and upstream of said developer supply means with respect to the direction of movement of the developer; control means for controlling the thickness of a developer layer on said developer holding means, said control means being positioned downstream of said supply means and upstream from the development station; and a developer removing member attached to said cover and adapted to be in contact with the surface of said developer holding means to remove the developer on the surface of said developer holding means and to again impart the removed developer to the surface of said developer holding means at a position upstream of said developer supply means and downstream of the development station.



**4,337,725**  
**APPARATUS FOR COATING WIRES WITH INSULATOR**  
 Wolfgang Voelker, Arolsen; Alfons Schmitt, Neuhoef, and Fritz Radeck, Arolsen, all of Fed. Rep. of Germany, assignors to Felten & Guillaume Carlswerk Aktiengesellschaft, Cologne, Fed. Rep. of Germany  
 Division of Ser. No. 167,323, Jul. 10, 1980. This application Mar. 13, 1981, Ser. No. 243,340  
 Claims priority, application Fed. Rep. of Germany, Jul. 30, 1979, 2930870  
 Int. Cl.<sup>3</sup> B05B 5/02; B05C 11/10  
 U.S. Cl. 118—665 10 Claims



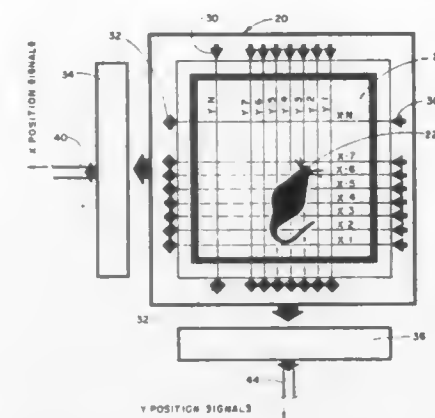
1. A device for continuously coating wire and the like elongated bodies with insulation or like coatings, comprising a reservoir for containing a pulverized insulator; an electrostatic coating machine having an inlet end and an outlet end for the wire and connection means to the reservoir to receive pulverized insulator therefrom, and operative for coating wire continuously passing therethrough with the insulator received from said reservoir by establishing a potential difference between the wire and the insulator, said machine being capable of applying a thickness of coating to the wire proportional to the rate of supply of insulator received by the machine from said reservoir, a sintering and hardening oven continuously receiving the coated wire from said electrostatic coating machine and continuously sintering and hardening the coating thereon; a cooler for continuously receiving the coated wire from said oven and cooling the coated wire; means for passing the wire with even speed through said electrostatic coating machine, said oven and said cooler; a thickness sensor downstream of said oven for continuously monitoring coating thickness after the coating has been sintered and hardened; and control means interconnected between said thickness sensor and said electrostatic coating machine for adjusting the rate of supply of the pulverized insulator into the electrostatic coating machine in dependence upon coating thickness, whereby coating thickness is maintained at a desired value within a predetermined tolerance.

**4,337,726**  
**ANIMAL ACTIVITY MONITOR AND BEHAVIOR PROCESSOR**

Jan A. Czepakewski, 4348 Shire Cove, Columbus, Ohio 43220; Harold L. Hill, 425 Rhoads Ave., Columbus, Ohio 43205, and Kenneth J. Kober, 595 S. James Rd., Columbus, Ohio 43213  
 Filed Jul. 7, 1980, Ser. No. 166,306  
 Int. Cl.<sup>3</sup> A01K 45/00

U.S. Cl. 119—1 20 Claims  
 1. An animal activity monitor and behavior processor comprising, in combination, means forming an observation area for containing an animal specimen; a plurality of spaced beams of radiation projected across said observation area, so as to be interrupted by the animal, as it moves within said area; a total activity counter for automatically recording each interruption

of any of the plurality of beams; and an ambulatory counter that automatically records only the first interruption of any

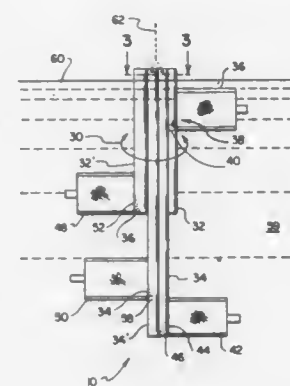


one of the plurality of beams until such one beam is reactivated by an interruption of another of the plurality of beams.

**4,337,727**  
**MODULAR CAGE SYSTEM FOR UNDERWATER USE**  
 Roger W. Mickelsen, 132 W. 255 South; Rex C. Infanger, 595 N. 900 West, both of Orem, Utah 84057, and Richard A. Heckman, 603 E. 4300 North, Provo, Utah 84601  
 Filed Jul. 3, 1980, Ser. No. 165,493  
 Int. Cl.<sup>3</sup> A01K 61/00

U.S. Cl. 119—2

15 Claims



14. A method of constructing an aquatic vertical housing and feeding structure comprising the following steps and variations in the order thereof:

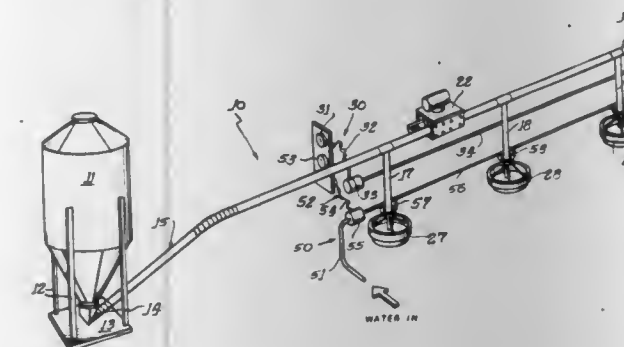
- (a) tiering together a first plurality of feeding tubes, each having an open top end, in substantially parallel fashion, said tubes being oriented so that said top ends are substantially even with a top line normal to a longitudinal axis of each tube, thereby creating a first tier of feeding tubes;
- (b) tiering together a second plurality of feeding tubes, each having an open top end, in parallel fashion, said tubes being oriented so that said top ends are substantially even with a top line normal to a longitudinal axis of each tube, each of said second plurality of tubes having a longer length than the longest of said first plurality of tubes, thereby creating a second tier of feeding tubes having a longer length than said first tier of feeding tubes;
- (c) coupling said first tier of feeding tubes to said second tier of feeding tubes in an orientation that places said top ends of said tubes in both said first and second tiers substantially even with each other, and which further points a front face of each of said tiers in the same direction;
- (d) detachably connecting a plurality of cages, each having a plurality of caged compartments therein, to exposed areas along said front faces of said first and second tiers;
- (e) creating a feed opening along said front face of selected tubes of said tiers that is assessable from the inside of each of said caged compartments of said cages; and

(f) blocking each of said tubes at a point immediately below each of said openings.

**4,337,728**  
**PROGRAMMED HOG FEEDER AND PROCESS**  
 Carl Van Gilst; Howard S. Brembeck, both of Goshen, and Bradley E. Donahoe, Elkhart, all of Ind., assignors to Chore-Time Equipment, Inc., Milford, Ind.  
 Continuation of Ser. No. 63,425, Aug. 3, 1979, abandoned. This application Feb. 23, 1981, Ser. No. 236,831  
 Int. Cl.<sup>3</sup> A01K 5/02

U.S. Cl. 119—51 R

16 Claims

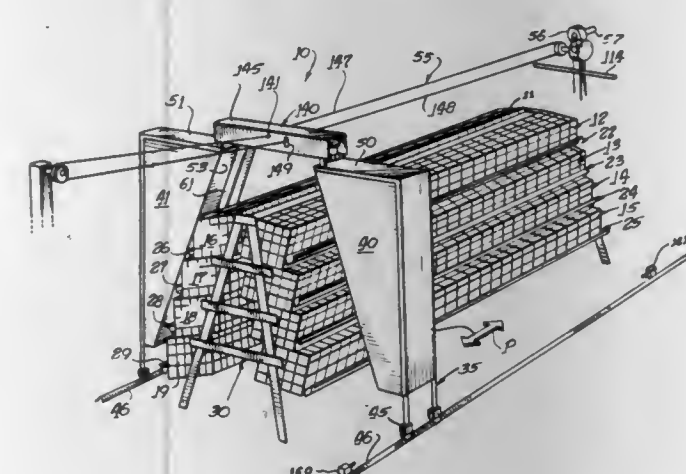


9. A method of feeding hogs, comprising the steps of providing the hogs with all the feed they care to consume for not more than three separate limited feeding periods of time per day, and denying all feed to the hogs for not more than three separate limited feeding periods of time per day, at least one feeding period extending for approximately two hours and at least one feedless period extending for approximately six hours, whereby to maximize hog weight gain and minimize the amount of feed consumed by each hog per pound of weight gained by that hog.

**4,337,729**  
**TRAVELING HOPPER FEED DELIVERY SYSTEM**  
 William Peppier, and Mark Skinner, both of Decatur, Ala., assignors to Chore-Time Equipment, Inc., Milford, Ind.  
 Filed May 13, 1980, Ser. No. 149,337  
 Int. Cl.<sup>3</sup> A01K 39/012

U.S. Cl. 119—52 B

43 Claims



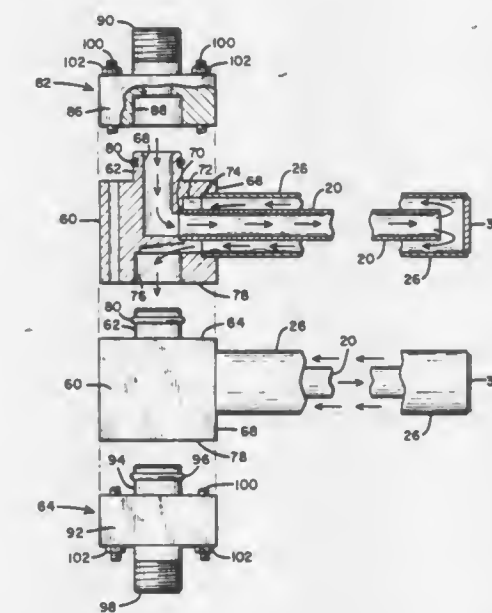
1. A feeding system for delivering feed to feed receptacles associated with rows of animal confinement cages, the system comprising, in combination, a mobile frame, hopper means mounted on the frame for carrying a load of feed past the feed receptacles, distributor conveyor means defined by a conveyor wall and carried by the hopper means for drawing feed from the hopper and for urging it toward each feed receptacle, the conveyor wall defining a feed drop-out aperture, drive means carried by the mobile frame for operating the distributor conveyor means, the drive means including cable means having one cable run drivably connected to the mobile frame for pulling the frame and hopper means along the feed receptacles

and an opposite cable run, the drive means further including a drive sheave drivably connected to the distributor conveyor means and having the second cable run trained about the drive sheave so as to operate the distributor conveyor means whenever the feed hopper is moved, the system further including delivery means for delivering limited amounts of feed from the distributor conveyor means wall aperture to each feed receptacle, sensor-operated valve adjustment means located at the conveyor wall aperture for adjusting the flow of feed from the distributor conveyor means to the feed receptacles, and return means for returning undelivered feed from the distributor conveyor means back to the hopper means.

**4,337,730**  
**HOT WATER PROBE**  
 Lynn R. Skow, North Branch, Minn., assignor to Gemini Systems, Inc., Rush City, Minn.  
 Filed Oct. 16, 1980, Ser. No. 197,548  
 Int. Cl.<sup>3</sup> F22B 33/00

U.S. Cl. 122—20 A

4 Claims



1. Water heating apparatus for use in heat transfer relation with the combustion chamber of a fuel burning appliance comprising, in combination:

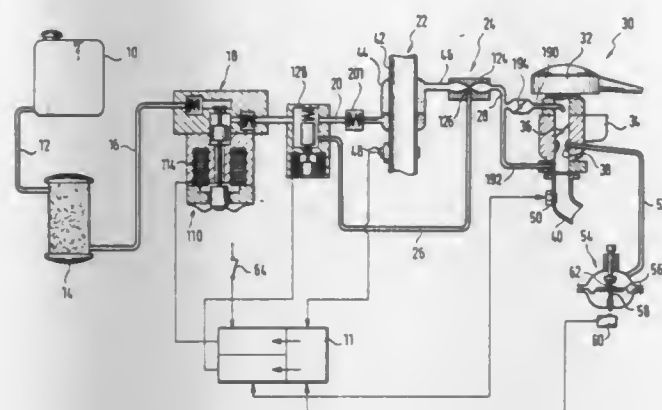
- a plurality of header members each including a block of material having a first tubular connector extending outwardly from one surface thereof, a second tubular connector extending inwardly into an opposite surface thereof, said connectors being adapted for mutual interfitting, and a heat exchanger extending from another surface thereof to project into a combustion chamber, and providing a continuous path for fluid flow from an inlet connected to one of said connectors to an outlet connected to the other of said connectors, said header members being arranged in a succession with the first connector of each subsequent member interfitted in the second connector of a previous member;
- first adaptor means including a first further block of material having a first further connector extending thereinto and adapted to interfit with the first connector of the initial member of said succession;
- second adaptor means including a second further block of material having a second further connector extending therefrom and adapted to interfit in the second connector of the first member of said succession;
- fastener means traversing said blocks for maintaining said connectors in interfitted relation to enable flow of liquid through said heat exchangers in succession;
- and means for supplying water to one of said further connectors and receiving water from the other of said further connectors after flow thereof through said heat exchangers.



**4,337,731**  
**FEED SYSTEM FOR INTRODUCING WATER VAPOR**  
**INTO THE SUCTION PATH OF AN INTERNAL**  
**COMBUSTION ENGINE**

Werner Lohberg, Paderborn, Fed. Rep. of Germany, assignor to Reuter Technologie GmbH, Fed. Rep. of Germany  
 Filed Oct. 4, 1979, Ser. No. 81,796  
 Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843355

Int. Cl.<sup>3</sup> F02D 19/00; F02M 25/02  
 U.S. Cl. 123—25 B 11 Claims

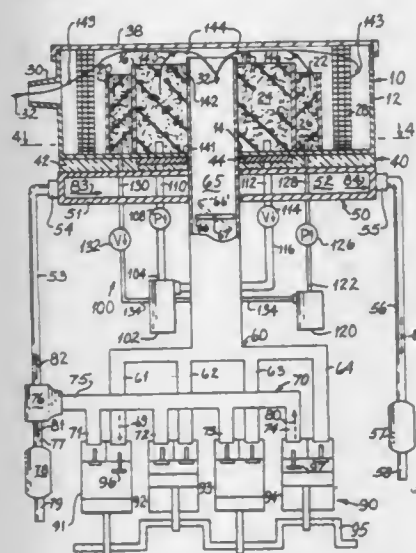


1. A feed system for introducing water in the liquid and/or vapor state into the suction path of an internal combustion engine, comprising a water reservoir and a first heat exchanger means for receiving exhaust gases from the internal combustion engine and for receiving water from said reservoir in heat exchange relationship with said exhaust gases, said system further comprising a second heat exchanger means, located downstream of said first heat exchanger means and upstream of said suction path, for regulating the temperature of the water and/or steam to be fed into the suction path as a function of an operating parameter of the suction path.

**4,337,732**  
**FUEL AND WATER CONDITIONER AND METHOD THEREFOR**

Martin E. Gerry, 13452 Winthrop St., Santa Ana, Calif. 92705  
 Filed May 27, 1980, Ser. No. 153,699

Int. Cl.<sup>3</sup> F02D 19/00  
 U.S. Cl. 123—25 B 15 Claims



1. A method for conditioning energy-producing components fed to an engine which develops motive power, comprising in combination the steps of:  
 (a) diffusing and vaporizing fuel from its liquid to its gaseous state within an air cleaner assembly;  
 (b) diffusing and vaporizing water from its liquid to its gaseous state within said assembly, concurrently with step (a);

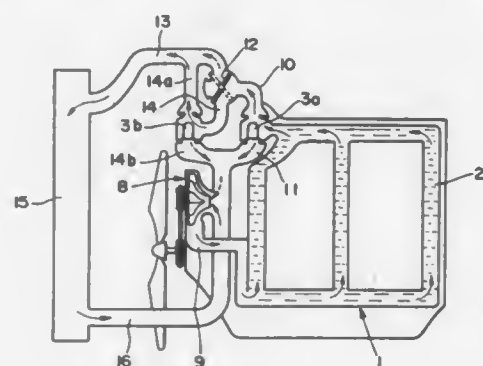
- (c) mixing the fuel and water in their gaseous states with air within said assembly; and  
 (d) passing the gaseous mixture of fuel, water and air into said engine.

**4,337,733**  
**COOLING LIQUID TEMPERATURE CONTROL SYSTEM**  
**FOR INTERNAL COMBUSTION ENGINE**

Makizo Hirata, Kakogawa, and Shinji Abe, Akashi, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

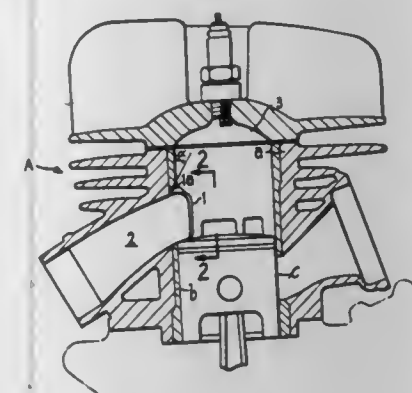
Filed Apr. 23, 1981, Ser. No. 256,746  
 Claims priority, application Japan, Apr. 28, 1980, 55-56946  
 Int. Cl.<sup>3</sup> F01D 7/16

U.S. Cl. 123—41.1 5 Claims



1. A cooling liquid temperature control system for an internal combustion engine comprising:  
 a cooling liquid outlet passage connected at one end thereof to an outlet of a jacket containing a cooling liquid for the engine and at the other end thereof to an inlet of a heat exchanger;  
 a primary bypass branching from said cooling liquid outlet passage at the outlet of the jacket and connected to an inlet of a cooling liquid circulating pump;  
 a thermostat valve set at a low operating temperature mounted at the junction of the cooling liquid outlet passage and the primary bypass;  
 a secondary bypass branching from the cooling liquid outlet passage midway thereof and connected to the inlet of the cooling liquid circulating pump;  
 a cooling liquid control valve mounted in the junction of the cooling liquid outlet passage and the secondary bypass;  
 a tertiary bypass branching from the secondary bypass midway thereof and connected to the inlet of the heat exchanger;  
 a thermostat valve set at a high operating temperature mounted at the junction of the secondary bypass and the tertiary bypass;  
 an outlet passage connecting the outlet of the heat exchanger to the inlet of the cooling liquid circulating pump; and  
 a return passage connecting an outlet of the cooling liquid circulating pump and an inlet of the jacket;  
 wherein the cooling liquid control valve is coupled to a throttle valve for controlling the power of the engine and operative to open the cooling liquid outlet passage and closes the secondary bypass when the throttle valve has an opening in a predetermined range and to open the secondary bypass and close the cooling liquid outlet passage when the throttle valve has an opening not in the predetermined range.

**4,337,734**  
**TWO-CYCLE ENGINE**  
 Toshimitsu Ito, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan  
 Filed Sep. 29, 1980, Ser. No. 192,336  
 Claims priority, application Japan, Sep. 27, 1979, 54-124557  
 Int. Cl.<sup>3</sup> F02B 25/14  
 U.S. Cl. 123—65 PE 6 Claims



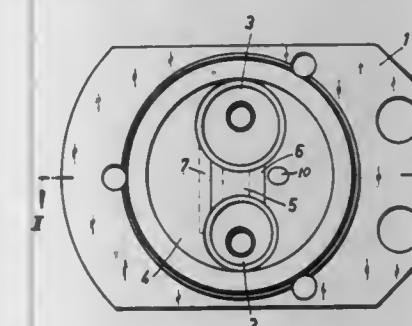
1. In a two cycle engine of the type having a cylinder with an axis, a piston slidably disposed in said cylinder, and an exhaust port through the wall of said cylinder, the closed and opened condition of said exhaust port being a function of the axial position of said piston in said cylinder, said exhaust ports having generally axial side walls and an upper edge extending into the cylinder and away from the piston when said piston is in a lower position, said upper edge at its intersection with the inside cylinder wall, viewed toward said exhaust port, forming the upper portion of an isosceles triangle.

**4,337,735**  
**LIGHT METAL CYLINDER HEAD FOR A**  
**VALVE-CONTROLLED INTERNAL COMBUSTION**  
**ENGINE**

Emil Lichtner, Odenthal-Voiskwinkel; Gerd Ungerling, Bergisch Gladbach, and Gerhard Glebel, Cologne, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany  
 Filed Feb. 6, 1980, Ser. No. 119,108

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1979, 2904940

Int. Cl.<sup>3</sup> F02F 1/26  
 U.S. Cl. 123—193 H 3 Claims



1. A light metal cylinder head for an internal combustion engine controlled by valves, said cylinder head having a bottom which is adapted to be directed toward a combustion chamber belonging therewith, said bottom being provided with valve openings to allow communication with valves belonging therewith, and said cylinder head also having a bore communicating with said bottom substantially between said valve openings for receiving at least one of an injection nozzle and ignition aid, said cylinder head further having improvement in combination therewith comprising:  
 at least two spaced apart titanium metal inserts in that portion of said bottom extending specifically between said

valve openings and to a limited extent capable of taking up changing stresses in said cylinder head; and  
 an oxide layer coating additionally provided on only that portion of said bottom bonded by said metal inserts between said valve openings, adjacent the region of said bore, said oxide layer coating having complementary dual effect thereof both for preventing cracks as well as fissure tendency due to thermal stresses and simultaneously for equalizing localized temperature differences in the cylinder head entirely to protect against formation of cracks since further increase of the combustion chamber temperature is substantially reduced and taking-up of material stresses is made possible through more nominal heat expansion of said oxide layer coating compared with that of the light metal cylinder head itself, said metal inserts comprising a material which is also resistant with respect to how said oxide layer coating is produced, said oxide layer coating providing insulation exclusively for a hot location on said bottom to decrease peak temperatures at said location on the one hand and on the other hand permitting only minimal increase of temperature thereof.

**4,337,736**  
**METHOD OF PRODUCING CYLINDER HEADS, AND**  
**CYLINDER HEADS PRODUCED THEREBY**

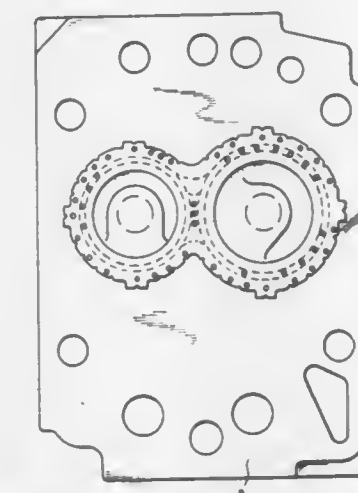
Walter Rasch; Karl-Heinz Caspers; Klaus Wiebicke, all of Nuremberg, and Max Albert, Nürnberg-Kornburg, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Division of Ser. No. 30,898, Apr. 17, 1979, Pat. No. 4,284,041.

This application May 15, 1981, Ser. No. 264,024

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2816989

Int. Cl.<sup>3</sup> F02F 1/24  
 U.S. Cl. 123—193 H 5 Claims



1. A cylinder head produced having partially reinforced cylinder heads, particularly of internal combustion engines, providing a preformed workpiece of a predetermined material composition; and  
 casting on said workpiece a material capable of producing a bond with said predetermined material composition for forming a positive connection between said workpiece and said casting material, comprising:  
 a cast portion; and  
 a preformed workpiece positively connected to said cast portion for reinforcing those parts of said cast portion which are highly stressed during use;  
 wherein said predetermined material composition of said preformed workpiece is comprised of a composition including, by weight percent:

C	3.0	maximum



-continued

Si	1.7-2.2
Mn	1.0-1.5
Ni	18-22
Cr	1.8-2.4
Nb	0.1
Mg	0.05
Fe	Balance

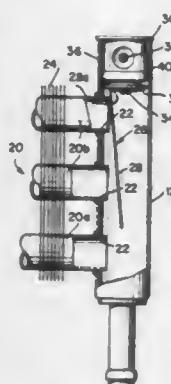
and wherein said casting material includes a cast iron composition same as that of cylinder heads of internal combustion engines.

#### 4,337,737 TEMPERATURE REGULATOR FOR OIL COOLING SYSTEM

Murray Pechner, 2309 W. 144th St., Gardena, Calif. 90249  
Filed May 9, 1980, Ser. No. 148,566  
Int. Cl.<sup>3</sup> F01M 1/00

U.S. Cl. 123-196 AB

5 Claims



1. In an oil cooler for an internal combustion engine having means defining at least one cooling path for flow of oil extending between oil inlet and outlet plenums, the improvement in regulating the temperature and viscosity of the oil comprising means responsive to the oil temperature and thereby operative to progressively restrict the cooling path means at least partially as the oil temperature decreases and to progressively open the cooling path means as the oil temperature increases.

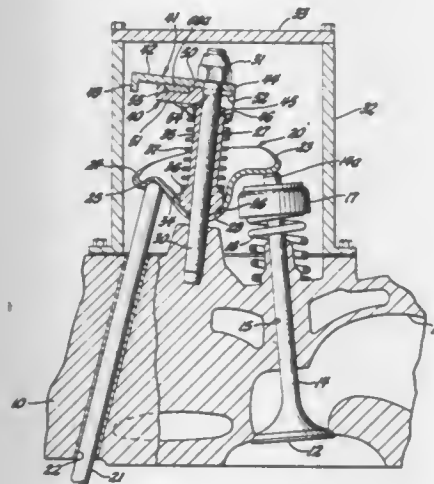
#### 4,337,738 VALVE CONTROL MECHANISM

William C. Bubniak, Troy, and Harry R. Mitchell, Bloomfield Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 19, 1975, Ser. No. 588,333  
Int. Cl.<sup>3</sup> F02D 13/06

U.S. Cl. 123-198 F

16 Claims



1. In an internal combustion engine having a cylinder head

and reciprocally journaled therein a poppet valve with a return spring connected thereto and a reciprocally driven member for operating the poppet valve in a direction opposed by its spring with each stroke of the member in a direction substantially opposite that of the poppet valve, a rocker for normally transmitting valve operating movement from the member to the poppet valve, said rocker having spaced apart surfaces on one side thereof engageable with oppositely facing surfaces of the member and the poppet valve and a bearing portion intermediate its ends with a bearing surface on the opposite side of said rocker from said spaced apart surfaces, said bearing portion having an aperture therethrough, a support stud extending through said aperture and fixed at one end to said cylinder head, an aperture pivot bearing slidably supported on said support stud and provided with a seat, said pivot bearing being movable axially on said support stud from a first position at which said seat pivotally journals said bearing surface about the rocking axis of said rocker to a second position at which said rocker is movable to a position at which it is pivotally supported by the oppositely facing surface of the poppet valve and, power means, including spring means, responsive to engine operating conditions, to effect movement of said pivot bearing to selectively position said seat at said first position and at said second position.

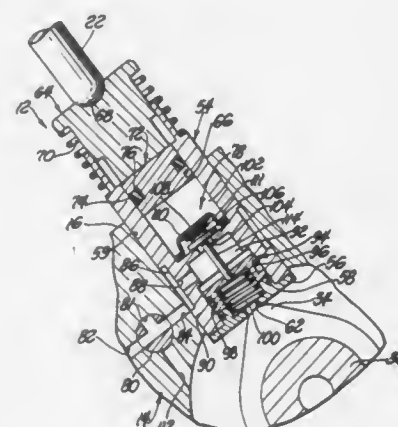
#### 4,337,739 VALVE CONTROL MECHANISM FOR INTERNAL COMBUSTION ENGINES

Edgar R. Jordan, 32260 W. Twelve Mile Rd., Farmington, Mich. 48018

Filed Mar. 24, 1980, Ser. No. 132,949  
Int. Cl.<sup>3</sup> F02D 13/06

U.S. Cl. 123-198 F

1 Claim



1. An internal combustion engine cylinder valve control mechanism for use in the valve train of the engine to selectively deactivate a cylinder valve, said mechanism comprising: first and second cylindrical members reciprocable in an axial relationship with respect to each other to define a cavity therebetween of a volume that varies upon relative axial movement between the members said first cylindrical member being adapted to slidably engage a camshaft of the engine, said second cylindrical member being adapted for connection to a pushrod of the valve train to move therewith; a piston located within said cavity and sealingly slidable in axial relationship with the first cylindrical member to define a chamber therebetween that varies upon relative axial sliding between the first cylindrical member and the piston; an inlet passage for feeding pressurized fluid to the chamber to move the piston away from the first cylindrical member to prevent the second cylindrical member from reciprocating with respect to the first cylindrical member; an exhaust passage exhausting the pressurized fluid from the chamber so that the piston is movable towards the first cylindrical member to allow the second cylindrical member to reciprocate with respect to the first cylindrical member to deactivate the valve operation; biasing means operatively associated with the first and second cylindrical members for

biasing the first and second cylindrical members apart wherein said first cylindrical member maintains sliding engagement with the camshaft so that said mechanism slides on the camshaft during the reciprocation due to the biasing action of the biasing means; a support having an aperture extending completely therethrough for slidably supporting said first cylindrical member for axial reciprocation therein; a valve operatively disposed in said support for alternately opening and closing said inlet and outlet passages, for selectively placing said inlet and outlet passages in fluid communication with said chamber; wherein the first cylindrical member has a control port for feeding pressurized fluid to the chamber from the inlet passage; a check valve that prevents the pressurized fluid from flowing from the chamber back through the control port and through the inlet passage; a third cylindrical member sealingly slidable in axial relationship with the first cylindrical member within the cavity and having a projecting member extending in an axial direction towards said check valve to open the check valve to allow the pressurized fluid to be exhausted from the chamber; and resilient means for biasing said third cylindrical member toward said check valve, to thereby open said check valve in the absence of pressurized fluid from the inlet passage.

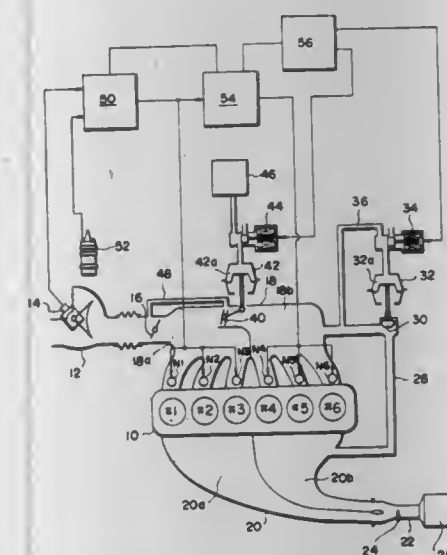
#### 4,337,740 INTERNAL COMBUSTION ENGINE

Fukashi Sugawara, Yokohama; Haruhiko Iizuka, Yokosuka; Yukihiko Etoh, Kandaiji, and Toshiaki Tanaka, Fujisawa, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 18, 1980, Ser. No. 160,564  
Claims priority, application Japan, Jun. 22, 1979, 54-78701  
Int. Cl.<sup>3</sup> F02D 17/00

U.S. Cl. 123-198 F

3 Claims



1. An internal combustion engine comprising:
  - (a) first and second cylinder units, each said units including at least one cylinder;
  - (b) an intake passage having disposed therein a throttle valve and being divided downstream of said throttle valve into first and second branches communicating with said first and second cylinder units, respectively, said second branch having an intake entrance;
  - (c) a stop valve positioned generally in the vicinity of said intake entrance of said second branch;
  - (d) an exhaust gas sensor for providing a signal indicative of the air/fuel ratio at which said engine is operating;
  - (e) fuel supply means for supplying fuel to said first and second cylinder units, said fuel supply means including means responsive to engine loads for determining a basic value of fuel supply amount and means responsive to the air/fuel ratio indication signal from said exhaust gas sensor for correcting said basic value to maintain a desired air/fuel ratio;
  - (f) control means for cutting off the supply of fuel to said second cylinder unit to shift engine operation from a full

engine mode into a split engine mode, and for closing said stop valve to shut off the flow of fresh air to said second cylinder unit, and for providing a low load indication signal when the engine load is below a predetermined value; and

- (g) wherein said fuel supply means is responsive to the low load indication signal from said control unit for determining said basic value of fuel supply amount to create a mixture having an air/fuel ratio richer than said desired air/fuel ratio, whereby an air/fuel mixture leaner than said desired air/fuel mixture is obtained temporarily when the engine operation is shifted from a split engine mode into a full engine mode and an air/fuel mixture richer than said desired air/fuel mixture is obtained temporarily when the engine operation is shifted from the full engine mode into a split engine mode.

#### 4,337,741 ROTARY INTERNAL COMBUSTION ENGINE

Nicholas M. Q. McKenna, and Peter J. Raven, both of 48 Pembroke Rd., Seven Kings, Ilford, Essex, England

Filed Feb. 19, 1980, Ser. No. 122,480  
Claims priority, application United Kingdom, Feb. 23, 1979, 7906582

U.S. Cl. 123-228

Int. Cl.<sup>3</sup> F02B 53/00

9 Claims



1. A rotary internal combustion engine comprising a housing, a rotor-receiving chamber in the housing, a rotor which is mounted for rotation in the rotor-receiving chamber, at least five discrete combustion chambers which are separated by lobe portions of the rotor, and a valving arrangement for each lobe portion of the rotor, each valving arrangement being mounted in the housing and including an exhaust valve, a power/exhaust slide, a by-pass valve, an induction/compression slide and an inlet valve, the power/exhaust slide being positioned between the exhaust valve and the by-pass valve, the by-pass valve being positioned between the power/exhaust slide and the induction/compression slide, and the induction/compression slide being positioned between the by-pass valve and the inlet valve, the by-pass valve allowing compressed gas to pass from the combustion chamber adjacent one side of a lobe portion to the combustion chamber adjacent the other side of the lobe portion whereby in use of the engine the compressed gas can be ignited when it has been by-passed to the combustion chamber on the said other side of the lobe portion to impart power to the periphery of the rotor substantially solely in the direction of rotation of the rotor.



# 4,337,742 IDLE AIR CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

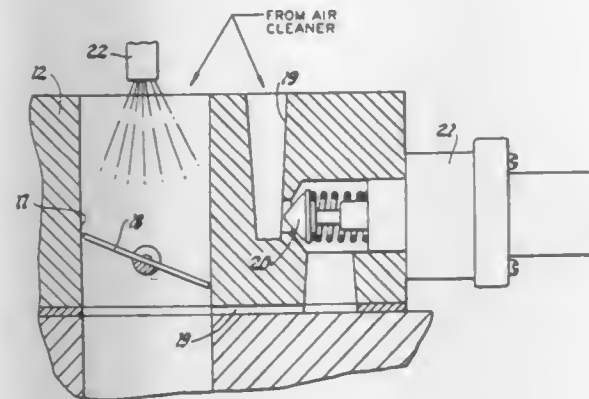
Clifford R. Carlson, Fenton; Joseph M. Kotzan, Pontiac, and Leo H. Voelkle, Keego Harbor, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 2, 1981, Ser. No. 250,317

Int. Cl.<sup>3</sup> F02M 3/00, 23/04

U.S. Cl. 123—339

2 Claims



1. Idle air control apparatus for a vehicle driving internal combustion engine having at least one air induction passage, the engine being subject to stall during engine idle due to large amplitude changes in idle speed caused by predetermined engine loading events and changes in engine and environmental parameters, the engine further being characterized by random idle speed fluctuations of amplitude insufficient to produce stall, the apparatus comprising:

a control valve in the air induction passage effective during engine idle to control air flow therethrough;

a stepper motor effective, in response to the arithmetic count of applied electrical pulses, to position the control valve with respect to a reference position;

register means effective to store at least one valve control number representing the currently desired position of the control valve, said register including memory means that survives engine shutoff;

means effective to sense the predetermined engine loading events and arithmetically change the valve control number in the register means by a predetermined amount assigned to each such event;

up-down counter means effective to arithmetically count the pulses applied to the stepper motor and thus indicate actual control valve position;

means effective to recurrently compare the contents of the up-down counter means and register means and apply pulses as required to the stepper motor at a first predetermined rate to reduce any difference therebetween;

means responsive to actual engine speed only during occurrence of a predetermined steady state idle condition to compare actual engine speed with a desired engine idle speed and arithmetically change the valve control number in the register at a second predetermined rate substantially slower than the first predetermined rate to reduce any difference between said speeds, whereby the apparatus acts to control engine idle air flow to prevent stall due to the predetermined engine loading events and parameter changes but ignores the small random idle speed fluctuations for stability.

# 4,337,743 THROTTLE PEDAL FEEDBACK APPARATUS FOR ECONOMICAL ENGINE OPERATION

Richard W. Mattson, Rossford, Ohio, assignor to Eltra Corporation, Toledo, Ohio

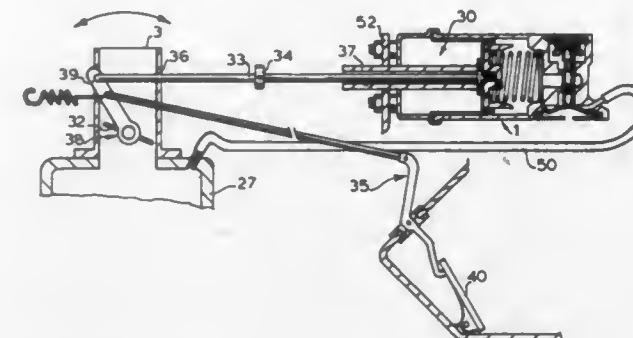
Continuation of Ser. No. 824,755, Aug. 15, 1977, abandoned.

This application Aug. 20, 1979, Ser. No. 67,970

Int. Cl.<sup>3</sup> F02D 11/08

U.S. Cl. 123—396

2 Claims



1. An apparatus adapted to provide a stepwise throttle control feedback to indicate operation of an internal combustion having an intake manifold at a vacuum level less than a first predetermined vacuum level in said intake manifold, comprising:

resistance means;

means for stepwise engaging said resistance means and said throttle control at a preselected relative position therebetween;

motor means for moving said resistance means;

control means responsive to said vacuum for controlling said motor to stepwise adjust the position of said resistance means;

said means for stepwise engaging including linkage means having a first section operably connected to said throttle control and a second section operably connected to said resistance means and movable therewith, said first section including stop means adapted to engage said second section;

said motor means being responsive to said control means;

said control means being operably connected to said intake manifold and being adapted to provide a said vacuum level of said intake manifold to said motor means when said vacuum of said intake manifold is above said first predetermined level, and being adapted to stepwise remove said substantially constant second vacuum level to said motor means when said vacuum of said intake manifold is below said first predetermined level;

said motor means including a piston slidably mounted in a chamber in a first body, said substantially constant second vacuum level being provided to a portion of said chamber between a first end thereof and said piston;

said resistance means including a spring disposed in said portion of said chamber between said first end and said piston;

said second section of said linkage means being connected to said piston;

said control means including a valve means disposed within said first body and having a first port connected to said intake manifold, a second port connected to an ambient atmospheric pressure and an output port connected to said portion of said chamber between said first end and said piston;

said valve means including a valve member adapted to operably connect said intake manifold to said portion of said chamber when said vacuum level is above said first predetermined vacuum level and to stepwise connect said ambient atmospheric pressure to said portion of said chamber when said vacuum level is below said first predetermined vacuum level;

said valve member being adapted to simultaneously close said first port and open said second port.

# 4,337,744 IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Karl Seeger, Markgröningen; Werner Jandt, Ludwigsburg; Manfred Mezger, Markgröningen; Uwe Kiencke, Ludwigsburg; Jürgen Wäsemeyer, Nuremberg; Georg Haubner, Berg, and Werner Meier, Rednitzhembach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

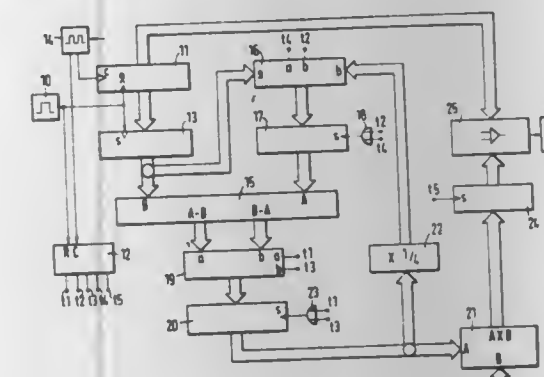
Filed Dec. 31, 1980, Ser. No. 221,788

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1980, 3000562

Int. Cl.<sup>3</sup> F02P 5/04

U.S. Cl. 123—416

18 Claims



1. An ignition timing system for an internal combustion engine having an ignition coil of which the primary circuit contains an electrically controllable interrupter switch for energizing the primary circuit during the dwell time of the switch and setting off a spark in the secondary circuit of the coil when the switch opens at the end of the dwell time, said timing system comprising:

means (14) for producing pulses at a constant frequency; first counting means (11) connected for counting pulses of said constant frequency pulse producing means and having count starting means (10) connected in circuit therewith and count result storage means (13) connected for provision in said count result storage means by said first counting means of a count value (Zn) representative of engine speed;

means for producing a parameter-dependent count value (P) representative of the substantially current condition of at least one engine operation parameter;

first multiplier means (21) for multiplying said parameter-dependent count value by a speed-dependent count value obtained from said engine speed count value and thereby producing a product count value, and

comparator means (25) responsive to a count output of said first counting means (11) and to the count value produced by said multiplier means (21) for providing an ignition timing signal to said interrupter switch when the count output of said first counting means (11) reaches or exceeds said count value produced by said first multiplier means (21).

# 4,337,745 CLOSED LOOP AIR/FUEL RATIO CONTROL SYSTEM WITH OXYGEN SENSOR SIGNAL COMPENSATION

Allen J. Pomerantz, Bancroft, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 26, 1980, Ser. No. 191,070

Int. Cl.<sup>3</sup> F02M 7/00

U.S. Cl. 123—440

2 Claims

1. A fuel control system for an internal combustion engine having means defining an exhaust passage into which spent combustion gases are discharged, comprising, in combination: a sensor responsive to the oxidizing/reducing conditions in the exhaust passage effective to generate a sensor signal varying between high and low values when the oxidizing/reducing condition of the exhaust gases varies through a stoichiometric

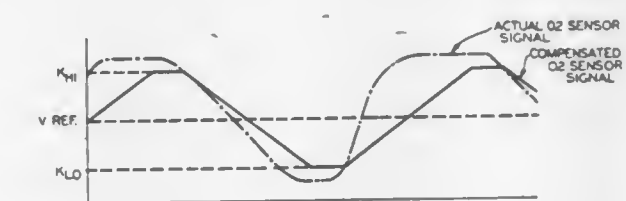
condition, the time response of the sensor signal to changing oxidizing/reducing conditions in one direction through the stoichiometric condition varying from its time response to changing oxidizing/reducing conditions in the opposite direction through the stoichiometric condition and varying with sensor aging and operating temperature;

means responsive to the sensor signal effective to generate a compensated sensor signal (A) increasing at a constant rate less than the smallest rate of change of the sensor signal over the sensor life and operating temperature range in response to a change in the oxidizing/reducing condition through the stoichiometric condition when the sensor signal is greater than the compensated sensor signal and (B) decreasing at the constant rate when the sensor signal is less than the compensated sensor signal;

means effective to limit the maximum value of the compensated sensor signal to a value less than the sensor signal high value and limiting the minimum value of the compensated sensor signal to a value greater than the sensor signal low value;

means effective to compare the compensated sensor signal to a reference value intermediate the limited values of the compensated sensor signal and which represents a desired oxidizing/reducing condition of the exhaust gases and providing an error signal; and

means responsive to the error signal effective to adjust the



ratio of the air-fuel mixture supplied to the engine in a sense tending to restore the desired oxidizing/reducing condition, the adjustment of the air-fuel ratio being independent of variations of the time response of the sensor signal.

2. The method of generating a compensated sensor signal from the sensor signal provided by a sensor monitoring the oxidizing/reducing condition in the exhaust gases discharged from an internal combustion engine for use in a closed loop air/fuel ratio controller, comprising the steps of: comparing the value of the sensor signal with the value of the compensated sensor signal;

increasing the value of the compensated sensor signal at a constant rate less than the smallest rate of change of the sensor signal in response to a change in the oxidizing/reducing condition through the stoichiometric condition when the value of the sensor signal is greater than the value of the compensated sensor signal;

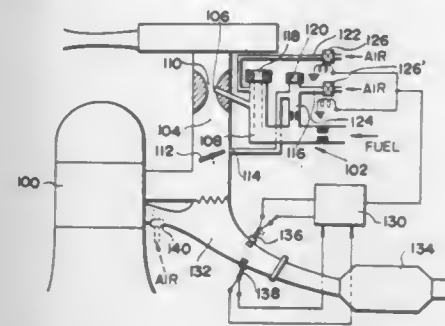
decreasing the value of the compensated sensor signal at the constant rate when the value of the sensor signal is less than the value of the compensated sensor signal; and

limiting the compensated sensor signal to values between a maximum value less than the maximum sensor signal value and a minimum value greater than the minimum sensor signal value, the compensated sensor signal being independent of differences in the time response of the sensor signal in response to changes in the oxidizing/reducing conditions through the stoichiometric condition.



**4,337,746**  
**SYSTEM FOR FEEDBACK CONTROL OF AIR/FUEL RATIO IN INTERNAL COMBUSTION ENGINE**  
 Kenji Masaki, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 20, 1980, Ser. No. 161,406  
 Claims priority, application Japan, Jun. 22, 1979, 54-78697  
 Int. Cl.<sup>3</sup> G01N 27/58; F02D 33/00; G01N 27/46; F02D 3/04  
 U.S. Cl. 123-489 11 Claims



1. A control system for feedback control of the air/fuel ratio of an air-fuel mixture supplied to an internal combustion engine, the system comprising: an electrically controllable fuel supply means for supplying fuel to the engine;
- a first oxygen-sensitive air/fuel ratio sensor having an oxygen ion conductive solid electrolyte layer and two electrode layers formed on the solid electrolyte layer and disposed in an exhaust passage of the engine;
- a power supply means for supplying a DC current to said solid electrolyte layer of said first sensor whereby said first sensor produces an output having one of (a) first type slope output characteristic wherein the magnitude of the output of said first sensor varies generally proportionally as the air-fuel ratio of said air-fuel mixture varies but remains above the stoichiometric air/fuel ratio of said air-fuel mixture and (b) second type output characteristic wherein the magnitude of said first sensor varies generally proportionally as the air/fuel ratio varies but remains below said stoichiometric ratio;
- a second oxygen-sensitive air/fuel ratio sensor disposed in said exhaust passage and positioned proximate to said first sensor, said second sensor having an off-type output characteristic wherein the output characteristic of said second sensor varies between a generally constant maximally high level and a generally constant maximally low level when the air/fuel ratio of said air-fuel mixture changes across said stoichiometric ratio; and
- a control means for providing a control signal to said fuel supply means by utilizing the output of said first sensor as a feedback signal, said control means further including a discriminating means responsive to the output of said second sensor for selectively blocking the output of said first sensor means from said control means according to the output of said second sensor.

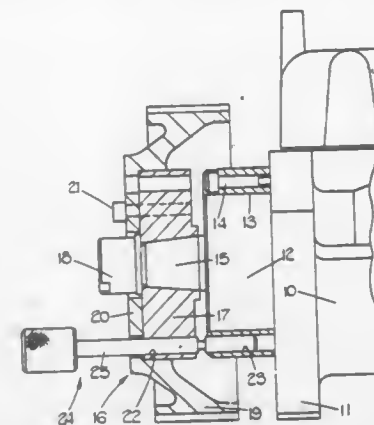
**4,337,747**  
**FUEL INJECTION PUMPING APPARATUS**  
 John R. Jefferson, Rainham, and Frank Cunliffe, Doddington, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Jan. 13, 1981, Ser. No. 224,695  
 Claims priority, application United Kingdom, Feb. 8, 1980, 8004234

Int. Cl.<sup>3</sup> F02M 59/20 3 Claims

1. A fuel injection pumping apparatus of the kind comprising a housing, a drive shaft extending from the housing, sprocket means mounted on the drive shaft, said sprocket means defining a toothed peripheral surface for engagement in use, with a flexible drive member which is also engaged with a sprocket driven by the associated engine, the apparatus including an injection pump driven by said drive shaft and which delivers fuel at a predetermined time, to an outlet, said sprocket means

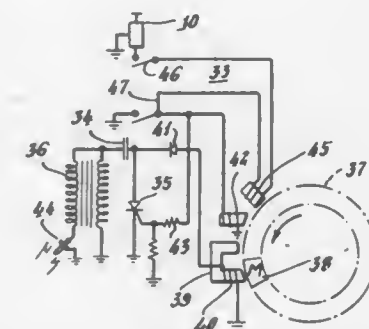
being formed in two parts, one of which is rigidly secured to the drive shaft and the other of which is adjustably secured to said one part and has a peripheral surface for engagement by the drive member, and the housing of the apparatus mounts an adjustable member, said adjustable member and said one part defining apertures which can be engaged in use, by a retaining



tool, the arrangement being such that in use the adjustable member is accurately set relative to the housing of the apparatus before the apparatus is secured to the engine, said retaining tool being engaged in said apertures to hold the drive shaft at a predetermined position whilst the engine position is adjusted after which the sprocket parts are secured together.

**4,337,748**  
**INTERNAL COMBUSTION ENGINE**  
 Thomas O. J. Engman, Mullsjö, Sweden, assignor to Husqvarna Aktiebolag, Huskvarna, Sweden  
 Filed Apr. 11, 1980, Ser. No. 139,333  
 Claims priority, application Sweden, Apr. 11, 1979, 7903213  
 Int. Cl.<sup>3</sup> F02P 5/02 6 Claims

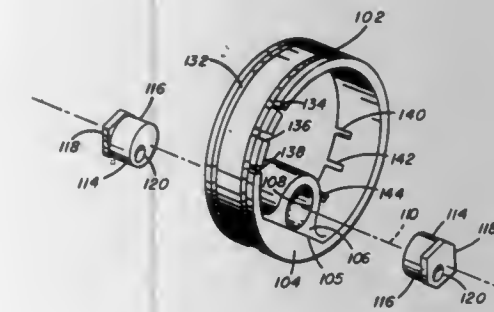
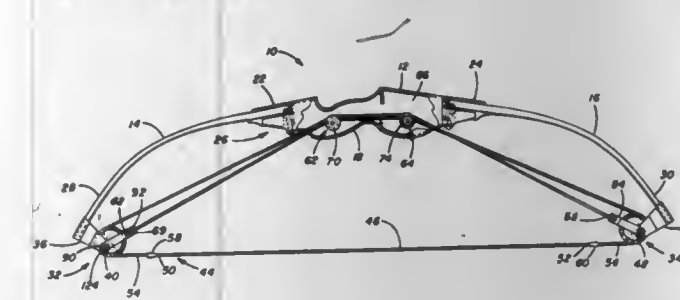
U.S. Cl. 123-602



1. In an internal combustion engine having a pressure discharge opening in a cylinder wall, and an electric ignition system having an ignition coil, a current source, and a spark release trigger means arranged to effect ignition in said engine at a time before top dead center during a compression stroke for producing maximum mechanical output from said engine, the improvement wherein said ignition system has an ignition presetting circuit with a second spark release trigger means positioned to provide a time of ignition earlier in the compression stroke of the engine than the time of ignition determined by said first-mentioned spark release trigger means, said second spark release trigger means being positioned to provide a substantially higher pressure at said discharge opening as compared with the pressure when ignition is determined by said first-mentioned spark release trigger means, and further comprising an operating valve in said discharge opening, and an operating switch connected to selectively energize said ignition presetting circuit.

**4,337,749**  
**COMPOUND BOW**  
 Alex J. Barna, 1216 Crawford St., Duquesne, Pa. 15110  
 Division of Ser. No. 927,547, Jul. 24, 1978, Pat. No. 4,261,320.  
 This application Jun. 26, 1980, Ser. No. 163,152  
 Int. Cl.<sup>3</sup> F41B 5/00 4 Claims

U.S. Cl. 124-24 R



1. A method for controlling the draw weight of a compound bow comprising, extending a first cable portion between eccentric wheel means attached to the free end portions of a pair of limbs of the bow, connecting the first ends of second and third cable portions to the ends of the first cable portion, connecting the second ends of the second and third cable portions to the free end portions of the pair of limbs respectively, passing a preselected amount of the intermediate portion of the second and third cable portions around a portion of the peripheral surface of the eccentric wheel means to thereby control the amount of the cable intermediate portion positioned on the peripheral surface to provide a preselected draw weight for the bow, positioning the cable intermediate portion in a first annular groove on the peripheral surface of the eccentric wheel means.

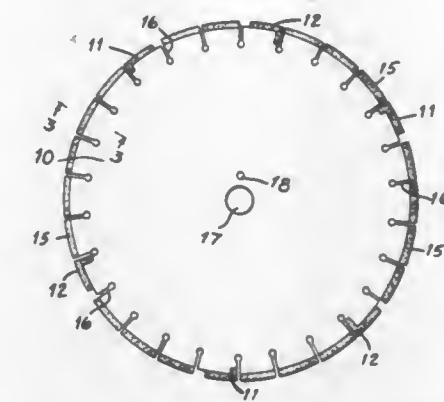
**4,337,750**  
**ABRASION RESISTANT DIAMOND BLADE**  
 Richard E. Dutcher, Lilburn, Ga., assignor to Norton Company, Worcester, Mass.

Filed Oct. 8, 1980, Ser. No. 195,580  
 Int. Cl.<sup>3</sup> B24D 5/06 2 Claims

U.S. Cl. 125-15

1. A circular rotary cutting blade having hard abrasive segments, selected from the group consisting of diamond particles, cubic boron nitride particles or diamond and cubic boron nitride particles bonded in a hard metal matrix, bonded to the periphery, and separated by radially extending gullets, wherein

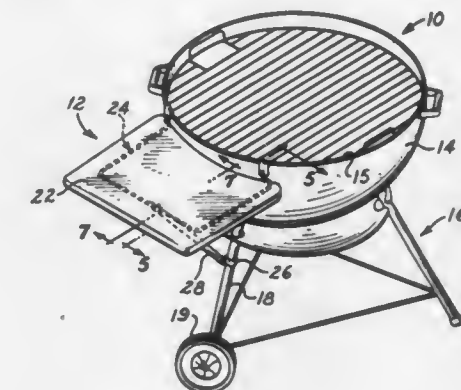
at least some of the segments are hook shaped and have a leg extending from one end toward the center of the blade, the



improvement comprising the inclusion of segments having leg lengths differing, one from the other, by at least 10%.

**4,337,751**  
**BARBECUE GRILL ACCESSORY**  
 Gerald L. Sampson, 5324 Long Acre Rd., and John E. Rummele, 2219 N. 7th, both of Sheboygan, Wis. 53081  
 Filed Feb. 1, 1980, Ser. No. 117,669  
 Int. Cl.<sup>3</sup> B28D 1/32; A47B 5/00 1 Claim

U.S. Cl. 126-25 R



1. A barbecue grill accessory for a grill having a fire bowl with a rim and an understructure supporting the fire bowl, said accessory comprising: (a) a generally U-shaped wire frame comprising a horizontal outer portion and side legs bent at an angle to the outer portion, said side legs extending generally horizontally toward the fire bowl and having inner end portions that extend vertically and which are adapted to abut against the exterior surface of said fire bowl below the rim, said side legs not contacting each other or anything else other than said outer portion so that the side legs can thereby be spread apart with respect to each other depending upon the diameter of the fire bowl, said inner end portions being configured to include a stop means portion on the frame which will extend over and partially around an inner edge of a table to prevent accidental upward displacement of the front of the table relative to the U-shaped wire frame, (b) inverted U-shaped metal clips connected to the vertical inner end portion of each side leg, each said clip being adapted to hook over the rim of the fire bowl and cooperating with said vertical inner portions of said side legs that abut against the exterior of said fire bowl so as to thereby support said wire frame in a cantilevered fashion with respect to the fire bowl so that the U-shaped wire frame extends in a generally horizontal plane at an elevation below said rim; (c) said U-shaped frame constituting an upwardly facing support surface for loosely supporting said table thereon, (d) said table seated on said support surface in spaced relation to said rim to enable closing a cover of the grill over



the rim without interference from the table, said table having a width greater than the width of said wire frame, (e) a brace removably connected to the understructure of the grill, said brace extending upwardly at an angle and having an upper end secured to said outer portion of the frame to further support the outer portion of the frame, and (f) an array of feet on the bottom of the table arranged within and closely adjacent the inner outline of the U-shaped wire frame so that the table will not move laterally and outwardly relative to the frame.

4,337,752

## HEAT RETAINING COLLAR

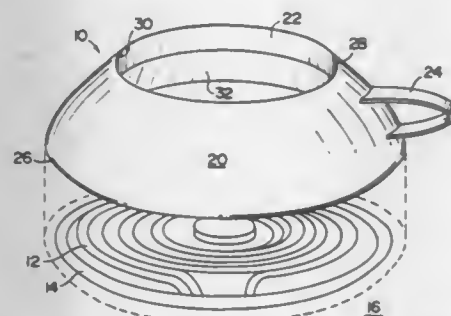
Nicholas P. Leones, 200 Howard Dr., Belleair Beach, Fla. 33535

Filed Oct. 10, 1980, Ser. No. 195,794

Int. Cl.<sup>3</sup> F24C 15/10

U.S. Cl. 126—215

6 Claims



1. A heat retaining collar for use in intensifying and capturing the heat generated by a range burner which burner is disposed substantially centrally and horizontally coplanar with an aperture formed on a conventional range top, comprising, in combination,

- a spacing wall surrounding the aperture and supported on the range top, said spacing wall having an outer and an inner edge portion,
- a first annular wall extending upwardly and radially inwardly from said outer edge portion,
- a second annular wall extending upwardly and radially inwardly from said inner edge portion,
- said first and second annular walls interconnected remote from said spacing wall by means of an annular flange wall vertically oriented so that said flange wall, spacing wall and first and second annular walls together define a dead air space having an enlarged lower volume portion and a comparatively narrowed upper volume portion,
- an item of cookware to be disposed within said collar and supported by the burner so that a lower portion of a wall of the cookware item is surrounded by said collar,
- means contacting the cookware wall above the burner so as to define a further air space defined by said contacting means, said second annular wall, and the cookware wall, said further air space having a narrowed upper portion,
- said contacting means comprising an annular shelf member extending horizontally inwardly from and supported by said vertical flange,
- said contacting means further comprising a first nesting collar supported on said shelf member and extending radially inwardly, said nesting collar having an open inner portion adapted to receive the item of cookware therein.

4,337,753

## STOVE HAVING NONESCAPING SMOKE

Terrance E. McGinn, Sellersville, Pa., assignor to Penn-Field Stove, Inc., Sellersville, Pa.

Filed Aug. 27, 1980, Ser. No. 181,781

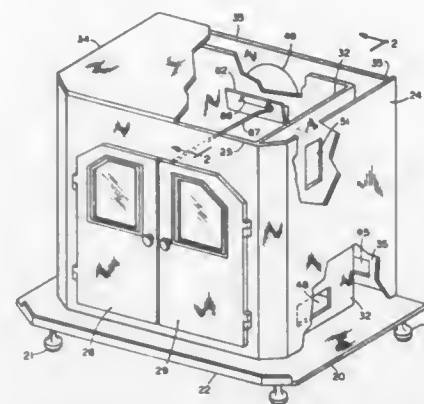
Int. Cl.<sup>3</sup> F23L 3/00

U.S. Cl. 126—287

1 Claim

1. A stove comprising a cabinet having spaced inner and outer walls providing a heating chamber between them and the inner wall providing therein an internal fire box, the outer wall

having a front door opening and a rear flue outlet opening, a movable door for closing the front door opening, the inner wall having a main side opening remote from the flue opening so that combustion gases from the fire box must pass through the chamber to exit out of the flue opening, the inner wall also having a rear auxiliary opening directly opposite the flue opening so that combustion gases from the fire box can pass directly to the flue opening, a movable closure for the auxiliary opening



which is biased by its own weight toward an open position, and operative connecting means including a pusher rod which is pivotally connected to the closure at one end and at its other end projects into the path of the front door whereby the closure is closed when the door is closed and the closure is open when the door is open, so that, thereby, combustion gases escape directly from the fire box through said auxiliary opening and directly to the flue and bypass said chamber.

4,337,754

## SOLAR REFLECTOR AND HEAT STORAGE DEVICE

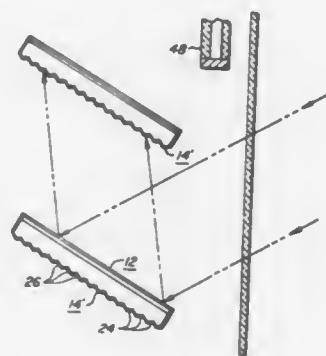
Steven J. Conger, P.O. Box 286, Snowmass, Colo. 81654

Filed Apr. 14, 1980, Ser. No. 140,503

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—430

11 Claims



1. A solar energy collection and emission tray comprising: a reflective upper surface for reflecting impinging sunlight; an absorptive lower surface;
- a heat storage material disposed between said upper and lower surfaces; and
- said lower surface including first and second sets of alternating, divergently directed faces, said first set being a high absorptivity, low emissivity surface and said second set being highly emissive so that the thermal energy absorbed by said first set and stored by said heat storage material is emitted by said second set.
3. A passive solar system for use within a structure adjacent a window, comprising: a plurality of trays having a reflective upper surface for reflecting impinging sunlight passing into the structure through the window, and having an absorptive lower surface disposed opposite said upper surface;
- a heat storage material disposed between said upper and lower surfaces; and
- means for supporting said trays adjacent said window in a

predetermined spaced relationship so that relatively high angled sunlight is reflected from the upper surface of a first tray back through said window thereby keeping said structure cool and relatively low angled sunlight is reflected onto the lower surface of a second tray situated above said first tray so that said reflected low angled sunlight is absorbed by the lower surface of said second tray and stored within said heat storage material of said tray for later emission by said lower surface, said trays sized and disposed so that a substantial portion of the view through said window is unobstructed by said trays; said lower surface of each of said plurality of trays including: first and second sets of alternating, divergently directed faces;

said first set disposed in a first direction so that sunlight reflected from said upper surface of said first tray onto said lower surface of said second tray impinges upon said first set of faces, said first set being a high absorptivity, low emissivity surface; and

said second set being highly emissive and disposed in a second direction away from said window so that the thermal energy absorbed by said first set and stored by said heat storage material is emitted by said second set into said structure.

4,337,755

## SOLAR COLLECTOR BLOCK

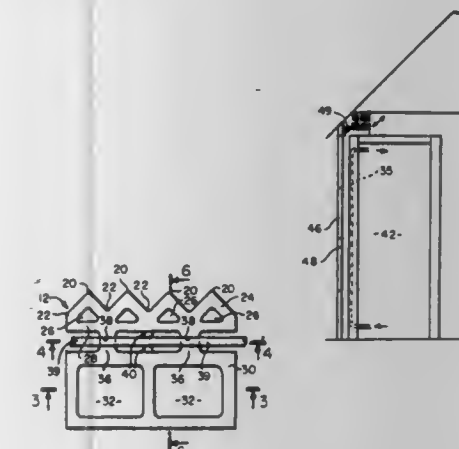
Jay R. Pitha, R.D. #3, Box 211, Washington, N.J. 07882

Filed Apr. 23, 1980, Ser. No. 143,010

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—431

29 Claims



1. Apparatus for collecting solar heat comprising a building block including a front outside surface for facing in a generally southern direction, the outside face having surfaces that meet with one another along lines from which the said surfaces slope away from the south so that the sun strikes intervening areas of said sloping faces when the sun shines on said sloping surfaces in the morning and afternoon respectively, first passage-defining chambers in the block extending generally parallel to said lines from which the surfaces slope away from a north-south meridian, walls closing the rearward parts of the chambers, the block having a rearward portion that is secured to the walls closing the rearward parts of the chambers for stiffening the block, a chamber in the rearward portion of the block, and heat insulating material in the chamber for impeding the flow of heat from the rearward portion of the block toward the front face of the block when there is no sunlight shining on the front face, the walls of the block and all of the chambers being part of a continuous casing, and said first chambers being adapted for vertically continuous circulating-fluid passage alignment when plural such blocks are arrayed in successive layers to define a wall.

4,337,756

## PANEL FOR COLLECTING SOLAR ENERGY WITH REDUCED LOSSES

Sergio Serapioni, Via S. Romedio, 1, Brentonico, Italy

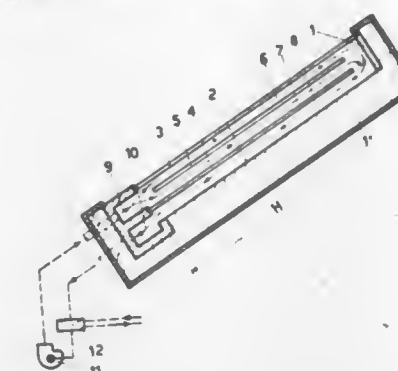
Filed Dec. 4, 1979, Ser. No. 100,113

Claims priority, application Italy, Dec. 5, 1978, 30537 A/78

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—432

7 Claims



1. A panel for collecting solar energy, comprising on a common support: a base absorbing surface, a flat transparent cover plate parallel thereto, and first and second intermediate glass plates between and parallel to said absorbing surface and said cover plate, said first glass plate being closer to said cover plate than said second glass plate, an air inlet and an air outlet, said air inlet positioned adjacent said first plate and means for flowing an air stream from said air inlet so as to flow along both sides of said first glass plate and to join again downstream of said first glass plate and then flow between said second glass plate and said absorbing surface and flow to said air outlet downstream of said absorbing surface, the distance between said base absorbing surface and said second glass plate being less than the distance between said intermediate glass plates or between the cover plate and said first intermediate glass plate.

7. A panel for collecting solar energy, comprising on a common support: a base absorbing surface, a flat transparent cover plate parallel thereto, and first and second intermediate glass plates between and parallel to said absorbing surface and said cover plate, said first glass plate being closer to said cover plate than said second glass plate, and means for causing an air stream to flow within the panel from an air inlet and to divide in front of said first glass plate so as to flow along both sides of said first glass plate and to join again downstream of said first glass plate and flow to an air outlet downstream of said absorbing surface, the distance between said base absorbing surface and said second glass plate being less than the distance between said intermediate glass plates or between the cover plate and said first intermediate glass plate, the distances between the intermediate glass plates and between said glass plates and respectively said cover plate and said absorbing surface being in the range from 1 to 12 mm, and the distance between said absorbing surface and said second glass plate being in the range of from 1 to 5 mm.

4,337,757

## SOLAR HEAT COLLECTION AND STORAGE SYSTEM

Alwin B. Newton, 136 Shelbourne Dr., York, Pa. 17403

Filed Jan. 7, 1980, Ser. No. 109,799

Int. Cl.<sup>3</sup> F24J 3/02

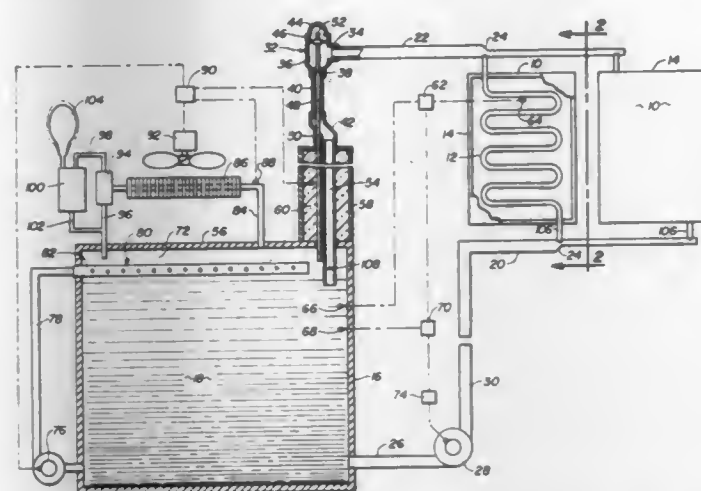
U.S. Cl. 126—437

11 Claims

1. A closed solar energy collection and storage system comprising in combination, one or more solar heat collector units extending upward from lower to an upper level, feed and return headers respectively connected to said lower and upper levels of said collector units at the opposite ends thereof for simultaneous circulation therethrough, a liquid storage tank at a level below at least said upper return header, a circulating pump, means connecting said pump to the lower part of said tank, a first conduit between said pump and said lower feed header, a multiple jet spray device in the upper portion of said



tank to condense any steam present therein, a second pump connected to said tank at a level to receive liquid from said tank, and a conduit between said second pump and spray device to operate said spray for condensing any steam or vapor passed to said tank by a return vent, and a second conduit

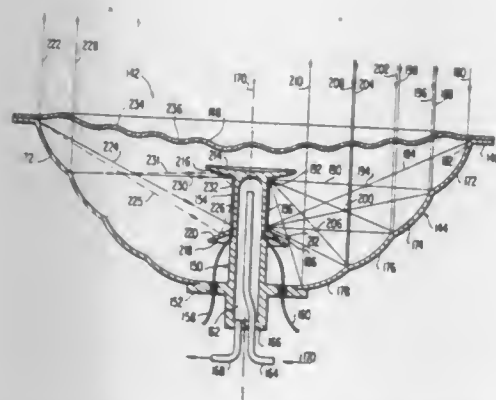
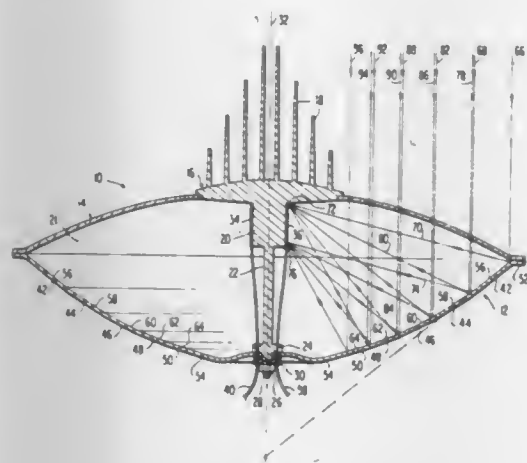


extending downward from said upper return header into liquid in said tank, and a return vent extending downward from said upper return header coaxially through at least a portion of said second conduit to the top of said storage tank for passage of air and/or gas or steam therebetween.

4,337,758

**SOLAR ENERGY COLLECTOR AND CONVERTER**  
Aden B. Meinel, and Walter B. Meinel, both of 10121 Catalina Hwy., Tucson, Ariz. 85715

Continuation-in-part of Ser. No. 917,735, Jun. 21, 1978, abandoned. This application May 4, 1979, Ser. No. 35,846  
Int. Cl.<sup>3</sup> F24J 3/02; H01L 31/00; F28F 7/00  
U.S. Cl. 126—438 28 Claims



13. Apparatus for collecting and concentrating energy from a remote electromagnetic radiation source, comprising first reflector means defining a concave reflective surface

having a cross-section including a focal axis, the cross-section being substantially symmetrical about the focal axis, support means associated with the first reflector means, and receiver means for absorbing energy reflected from the reflective surface of the first reflector means, the receiver means being carried by the support means and including receiver surface means extending in outwardly spaced substantially parallel relation to the focal axis, the receiver surface means having a predetermined finite length along and being substantially symmetrical with respect to the focal axis,

the reflective surface of the first reflector means being contoured and positioned with respect to the receiver surface means so that radiated electromagnetic energy striking the reflective surface is reflected directly onto and distributed substantially uniformly over the full extent of the receiver surface means when the focal axis is oriented toward the remote electromagnetic radiation source, the apparatus having a shape generated by translating the cross-section and its focal axis along a line perpendicular to the focal axis and to the plane of the cross-section to develop an elongated module in which the first reflector means is a trough-shaped structure having a focal plane defined by the path through which the focal axis is translated and wherein the receiver surface means is disposed in laterally spaced parallel relation to the focal plane on each side thereof.

4,337,759

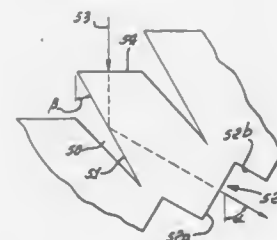
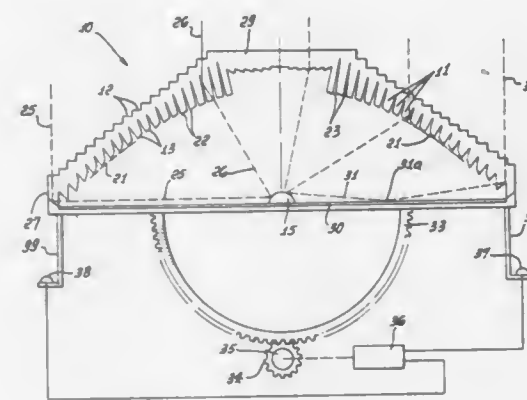
**RADIANT ENERGY CONCENTRATION BY OPTICAL TOTAL INTERNAL REFLECTION**

John M. Popovich, 2640 Hermosa Ave. #3, Hermosa Beach, Calif. 90254; William A. Parkyn, Jr., 40210 92d St., Leona Valley, Calif. 93550, and David G. Pelka, 8315 Kenyon Ave., Los Angeles, Calif. 90045, assignors to John M. Popovich, Hermosa Beach; William A. Parkyn, Jr., Leona Valley and David G. Pelka, Los Angeles, all of, Calif.

Continuation of Ser. No. 83,467, Oct. 10, 1979, abandoned. This application Feb. 27, 1981, Ser. No. 238,859  
Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—438

32 Claims



1. A radiant energy redirecting system comprising  
(a) a radiant energy transmitting body means,  
(b) said means comprising multiple elements, each of which acts as a radiant energy redirecting module, having on its cross-sectional perimeter an entry face to receive incidence of said energy into the interior of said perimeter, an exit face to pass said energy to the exterior of said perimeter in a direction towards the reverse side of the body

from the side of said incidence, and a Totally Internally Reflecting face angled relative to said entry and exit faces to redirect towards said exit face the radiant energy incident from said entry face,

(c) said body means generally redirecting incident radiant energy for travel towards a predetermined target zone situated apart from and on the reverse side of said body relative to the side of said incidence, said entry faces defining a first set and said exit faces defining a second set, the faces of one of the sets being variably angled relative to one another, and with angularity that progressively increases for successive elements, relative to the target zone,

(d) the elements forming tapered gaps therebetween, said gaps having apices, the body being continuous and uninterrupted everywhere along straightlines joining successive of said apices, in planes normal to said faces.

4,337,760

**METHOD FOR THE TREATMENT OF TUMORS WITH  $\beta$ -GLUCURONIDASE ACTIVITY DEPENDENT PHARMACEUTICALS**

David Rubin, c/o Israel Medical Research Foundation, P.O. Box 3592, Jerusalem, Israel, assignor to Adolf Schwimmer, Savyon; Irwin Steven Schwartz, Tel-Aviv and David Rubin, Jerusalem, all of, Israel

Continuation-in-part of Ser. No. 951,269, Oct. 13, 1978, Ser. No. 951,270, Oct. 13, 1978, and Ser. No. 11,619, Feb. 12, 1979. This application Oct. 31, 1979, Ser. No. 89,888  
Int. Cl.<sup>3</sup> A61B 19/00

U.S. Cl. 128—1 R

10 Claims

1. In a process of selectively delivering the aglycone of a glucuronide compound to tumor cells having higher  $\beta$ -glucuronidase activity than that of the surrounding tissues by hyperacidifying the tumor cells and then administering to the patient a glucuronide compound, the aglycone of which is to be delivered to the tumor cells, whereby the  $\beta$ -glucuronidase activity of the hyperacidified tumor cells causes deconjugation of the glucuronide compound at the site of the tumor cells and release of the aglycone thereat, the improvement wherein the tumor selectivity of the process is improved and the risk of deconjugation of the glucuronide compound at the site of non-tumor tissues is diminished, comprising:

administering to the patient an alkalizing agent in an amount sufficient to maintain the pH level of the non-tumor tissues of the patient at approximately 7.4 during the glucuronide treatment.

4,337,761

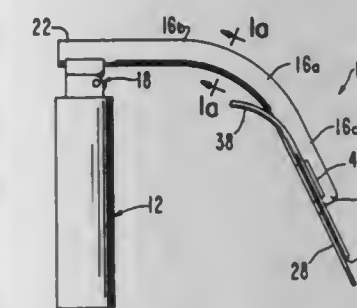
**LARYNGOSCOPE**

Michael S. Upsher, 2957 Adeline Dr., Burlingame, Calif. 94010  
Filed Nov. 28, 1979, Ser. No. 98,271

Int. Cl.<sup>3</sup> A61B 1/06

U.S. Cl. 128—11

32 Claims



1. In a laryngoscope of the type having a handle: a generally self-sustaining blade having a first end, a second end, and means at the first end thereof for attaching the same to the handle, the blade being curved at a portion thereof intermediate the ends, the blade adapted to be inserted into the throat of a patient and being tubular along its length to present a guide to permit a flexible, elongated member to be directed along and

through the blade and into the throat, said blade having a slot therein at a location permitting a view of the throat through and along a portion of the blade as the blade is initially inserted in the throat, said slot being sufficiently narrow to retain said flexible member within the tubular blade as said member is guided therethrough from said first end to said second end; means coupled to the blade for presenting a light source near the second end thereof; an elongated fiber optic viewing member having a first end face near said second end and extending at least partially along the blade toward said first end thereof, said viewing member having a second end face for viewing light striking said first end face of the member.

4,337,762

**SURGICAL RETRACTOR**

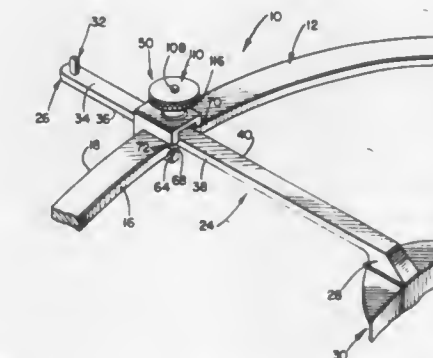
William K. Gauthier, 400 Northline, Metairie, La. 70005

Filed Feb. 19, 1980, Ser. No. 122,619

Int. Cl.<sup>3</sup> A61B 17/02

U.S. Cl. 128—20

5 Claims



1. A surgical retractor comprising:

an annular support ring;  
a unitary one-piece retractor arm having a retractor blade integrally mounted thereon at one end of said arm and a stop on another end of said arm; and  
a unitary, integral clamp coupling said retractor arm to said support ring, said clamp including a unitary one-piece C-shaped body having a pair of legs at one end of said C-shaped body, and having ring accommodating openings therethrough and arm accommodating openings therethrough, said ring and arm accommodating openings being oriented at a right angle with respect to each other so that said arm is oriented at a right angle with respect to said support ring when said arm is held on said ring by said clamp, said clamp body including abutment means on said legs abutting the inner periphery of said support ring to prevent said clamp from separating from said support ring, whereby said clamp allows engagement of both the ring and arm members with one locking member; said clamp further including a projection extending upwardly therefrom and having a bore defined therethrough, said clamp further including a rod extending through said bore for contacting at one end thereof said retractor arm and a captive nut on another end of said rod, said captive nut and said projection having first coupling means thereon for attaching said nut to said projection, said captive nut and said rod having further coupling means thereon for forcing said rod one end against said retractor arm, said clamp having support ring capture means for holding said ring in said clamp, said retractor arm being sandwiched between said rod one end and said support ring so that said retractor arm is securely held on said ring by said clamp.



4,337,763

## ILLUMINATED SURGICAL INSTRUMENT

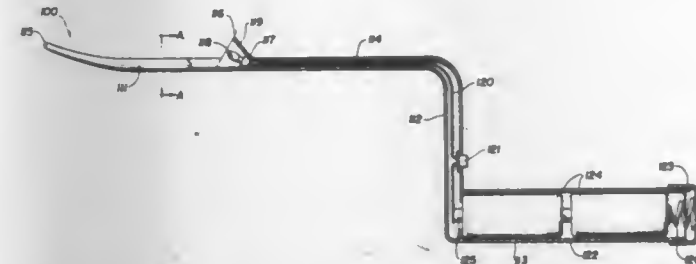
Cornel H. Petrassevich, Philadelphia, Miss., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Apr. 21, 1980, Ser. No. 141,764

Int. Cl.<sup>3</sup> A61B 17/24

U.S. Cl. 128—20

4 Claims



1. A surgical retractor comprising:

- a substantially straight, generally horizontally extending blade portion having a distal tip, a proximate end and a concave upper surface;
- a shank portion generally downwardly vertically depending from the proximate end of said blade;
- a handle portion joined to the lower end of said shank portion and projecting rearwardly therefrom and generally parallel to said blade portion;
- illumination means for projecting a circle of light toward the tip of said blade, said means being mounted on the concave upper surface of said blade at a location between  $\frac{1}{4}$  and  $\frac{2}{5}$  of the length of said blade from the tip thereof, said illumination means comprising a bulb and socket, said socket being formed in said concave surface and projecting slightly upwardly away from said blade at said location and in the direction of the tip of said blade;
- said bulb being located externally of said blade;
- said socket comprising a flared upper wall extending towards said tip to form an integral shade, whereby said socket and shade are integrally formed in said blade and whereby the user's eye is shielded from the direct light from said bulb, and whereby said shade also directs more of the light towards said tip to better illuminate the area under examination;
- battery means contained in a hollow formed in said handle;
- electrically conducting means connecting said illuminating means to said battery means; and
- switch means for completing or interrupting the electrical circuit between said light fixture and said battery means.

4,337,764

## ADJUSTABLE MOTION BRACE

Max Lerman, Beverly Hills, Calif., assignor to United States Manufacturing Company, Pasadena, Calif.

Filed Mar. 2, 1981, Ser. No. 239,404

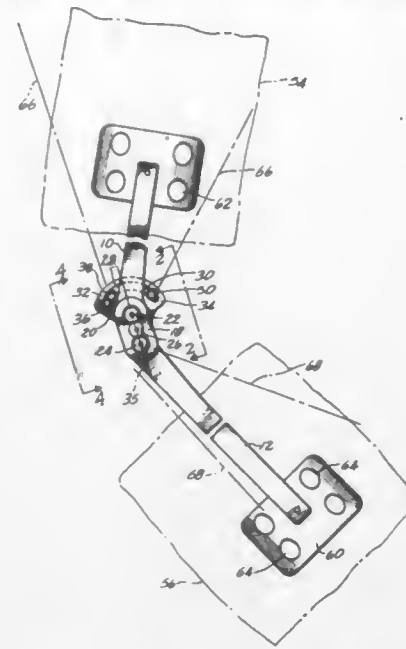
Int. Cl.<sup>3</sup> A61F 5/00

U.S. Cl. 128—80 F

2 Claims

1. A brace comprising a first bar; a second bar; pivot means for joining adjacent portions of the first and second bars to allow the first and second bars to pivot relative to each other about an axis; a bracket overlying said adjacent portions of the first and second bars; first means for rigidly securing the bracket to the first bar, the bracket extending away from the first bar toward the second bar; means for rigidly securing the bracket to the second bar; the bracket having left and right protruding portions extending laterally away from respective left and right edges of the second bar; an elongated continuous groove on the left protruding portion and the right protruding portion of the bracket; adjustable left stop means for being releasably secured to a desired location in the portion of the groove on the left protruding portion of the bracket so the second bar can engage the left stop means for limiting its travel in the left direction; and adjustable right stop means for being

releasably secured to a desired location in the portion of the groove on the right protruding portion of the bracket so the



second bar can engage the right stop means for limiting its travel in the right direction.

4,337,765  
MOUTHGUARD

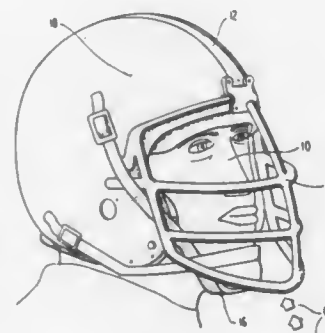
Edgar S. Zimmerman, 631 Newman Springs Rd., P.O. Box 216, Lincroft, N.J. 07738

Filed Nov. 26, 1980, Ser. No. 210,824

Int. Cl.<sup>3</sup> A63B 23/00

U.S. Cl. 128—136

11 Claims



1. A mouthguard comprising:

- a member formed of a resilient material and having an approximate U-shape corresponding generally to the shape of the arch of the upper jaw;
- said member having a bottom wall and spaced inner and outer flanges extending upwardly therefrom, forming a cavity for receiving the upper teeth;
- said bottom wall having a bottom surface substantially flat laterally and being of greater width than the width of the lower teeth so as to extend laterally across the full width of the lower teeth;
- said bottom wall being formed in an anterior-posterior direction to include over the length of each molar-bicuspid region a portion of greater thickness than the remainder of said bottom wall for minimizing potential shock resulting from a blow to the lower jaw, said bottom surface of said bottom wall having an even surface curved in the anterior-posterior direction over said thickened portions in each said molar-bicuspid region.

4,337,766  
VALVES

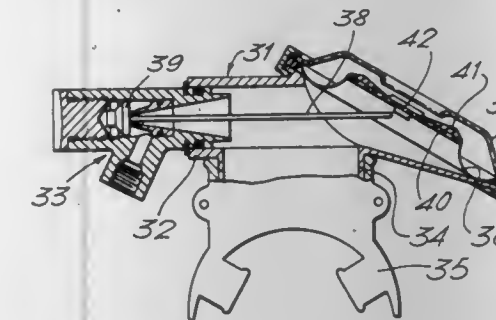
Leonard J. Feathers, Sussex, England, assignor to Chubb Patents Limited, Bognor Regis, England

Filed May 21, 1980, Ser. No. 151,866

Int. Cl.<sup>3</sup> A62B 7/04

U.S. Cl. 128—204.26

4 Claims



1. Breathing apparatus comprising a source of pressurized breathing gas; breathing interface means; means defining a gas flowpath from said source to said interface means and including a demand regulator for controlling the flow of gas from the source to the interface means in accordance with the respiratory demands of a user of the apparatus, the regulator comprising means defining a first chamber, means defining an inlet port connected to said source and opening to said first chamber, means defining an outlet port opening to said first chamber and leading to said breathing interface means, a valve head disposed within said first chamber and closely surrounded at its periphery by the wall of said first chamber so as to maintain the head generally concentric therewith, means defining a seating for the valve head whereby in a first position the head seats over said outlet port to close that port to gas flow, an elongate stem rigidly secured at one end to the valve head and extending generally coaxially therewith through said outlet port with clearance relative to said outlet port sufficient to permit the rigidly interconnected assembly of said valve head and stem to perform angular tilting movement as a unit to tilt said valve upon its seating away from its said first position thereby to open said outlet port to gas flow, means defining a second chamber communicable with said first chamber through said outlet port, and means responsive to the pressure within said second chamber and adapted to flex inwardly of said second chamber in response to inhalation by a user of the apparatus, said stem extending away from said valve head and through said second chamber to be engageable at its other end by said pressure-responsive means such that said inward flexure of the pressure-responsive means displaces said other end of the stem to tilt said valve head away from its said first position as aforesaid directly through the agency of said stem, and said inlet port opening to said first chamber at a location which is to the same side of said valve head as said outlet port in the sense that when said valve head is tilted away from its said first position to open said outlet port as aforesaid gas can flow through said first chamber from said inlet port to said outlet port and thence to said breathing interface means without passing between the periphery of said valve head and the surrounding wall of said first chamber.

4,337,767

## DISPOSABLE ANESTHESIA MASK COVER

James I. Yahata, 20 Lee Ter., Short Hills, N.J. 07078

Filed Jan. 15, 1981, Ser. No. 225,210

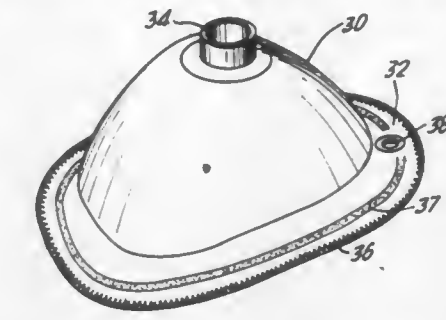
Int. Cl.<sup>3</sup> A61M 17/02

U.S. Cl. 128—206.28

5 Claims

1. A disposable cover adapted to be inserted within an anesthesia mask having a body portion with a peripheral edge and a central circular inlet opening, said cover comprising a composite member having a pliable peripheral portion surrounding a central more rigid portion, said pliable portion adapted to overlap the peripheral edge of said mask, said more rigid portion being shaped to conform to the inside surface of the body

portion of said mask and having tubular projection means alignable with said inlet opening and sized with an outside



diameter to be frictionally engaged in said inlet opening and thereby hold said cover within said anesthesia gas mask.

4,337,768

## POLYVINYL CHLORIDE SHEET AND METHOD OF MAKING THE SAME

Kenji Hatada, and Hiroaki Kobayashi, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jul. 7, 1980, Ser. No. 166,581

Claims priority, application Japan, Feb. 26, 1980, 55/22270

Int. Cl.<sup>3</sup> A61M 5/14

U.S. Cl. 128—214 D

9 Claims

1. A polyvinyl chloride sheet comprising an uncrosslinked portion having on a surface thereof a crosslinked layer having a thickness of about 0.05 to about 2 microns, said crosslinked layer having a degree of chlorination of about 45% or less as compared to the degree of chlorination of the uncrosslinked portion of the sheet, and said sheet having a heat shrinkage of about 1% or less.

7. A blood bag comprising a polyvinyl chloride bag made from the sheet of claim 1, and with anticoagulation agents in said bag containing sodium citrate as a main constituent.

4,337,769

## PRESSURE INFUSION MODULE

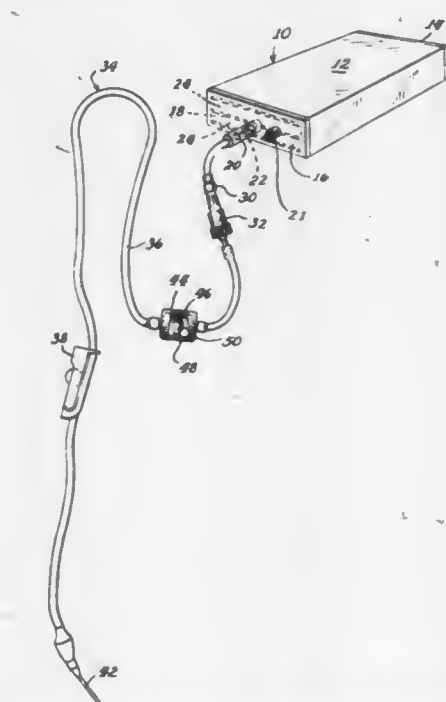
Raymond G. Olson, Niles, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 1, 1980, Ser. No. 174,489

Int. Cl.<sup>3</sup> A61M 5/00

U.S. Cl. 128—214 F

20 Claims



1. A liquid administration device which comprises a flexible, flat collapsible container for liquid, an outlet tube communicating with said container and a rigid housing enclosing said



container with said outlet tube projecting outwardly therefrom, the improvement comprising, in combination: flexible, compressed cellular material positioned within said housing and exerting pressure on said container tending to urge said container toward its flat collapsed position and to expel said liquid through said outlet tube when any such liquid is present in the container.

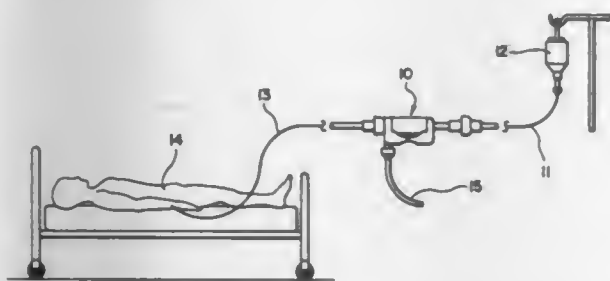
#### 4,337,770 FLOW REGULATING DEVICE FOR ARTERIAL CATHETER SYSTEMS

James E. Young, 2080 E. 4675 South, Salt Lake City, Utah 84117; Ralph S. Walker, 9767 N. 6530 West, Highland, and James R. Chidester, Rte. 1, Box 150 B, American Fork, both of Utah 84003

Division of Ser. No. 46,234, Jun. 7, 1979, Pat. No. 4,278,083. This application Apr. 9, 1981, Ser. No. 252,360  
Int. Cl.<sup>3</sup> A61M 5/00

U.S. Cl. 128—214 R

12 Claims



1. A flow regulating device which provides a continuous regulated flow of a medical fluid to an intravenous catheter system used in monitoring arterial functions and in the infusion of medical fluids to an artery or vein, and which also provides for an intermittent, manually controlled, larger flushing flow of fluid to the catheter system, said device comprising a control member having an inlet means adapted to be connected to a source of a medical fluid and an outlet means adapted to be connected to an intravenous catheter; a first passage connecting said inlet and outlet means for fluid flow communication therebetween, said first passage at least in part comprising a section of flexible conduit fitting coaxially over a cylindrical, hollow extension which extends from said outlet means to about the midsection of said flexible conduit; valve means comprising a substantially cylindrical plug member positioned coaxially within said flexible conduit and having a flexible conduit engaging portion around the plug member intermediate its ends, said flexible conduit engaging portion being positioned adjacent to the extending end of said cylindrical, hollow extension, said flexible conduit engaging portion also being of sufficient diameter to form a substantially flow tight seal with the interior wall of said flexible conduit when the flexible conduit is not being deformed, so that fluid cannot flow around said plug member, and whereby when said flexible conduit is deformed, it creates flow channels extending across the flexible conduit engaging portion on said plug member, so that said larger, flushing flow of fluid can flow around said flexible conduit engaging portion on said plug member and through said first passage; and a second passage by-passing said valve means and connecting said inlet and outlet means, said second passage containing flow restriction means which limits the flow of fluid therethrough, under a given pressure, to a desired amount.

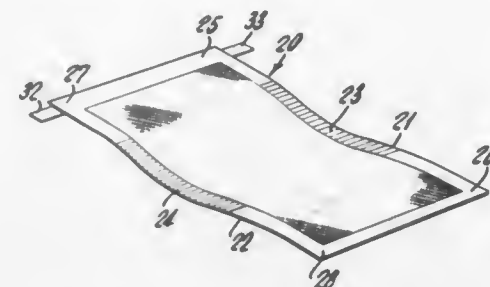
#### 4,337,771 CONFORMABLE DISPOSABLE DIAPER HAVING REINFORCED PORTIONS

Heinz A. Pieniak, Chicago, and Virginia L. Repke, Oak Forest, both of Ill., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Continuation-in-part of Ser. No. 872,860, Jan. 27, 1978, abandoned. This application Dec. 21, 1979, Ser. No. 106,336  
Int. Cl.<sup>3</sup> A41B 13/02

U.S. Cl. 128—287

9 Claims



1. A unitary disposable diaper comprising: a first outer layer in the form of a moisture-impervious backing, an absorbent batt positioned in superposed relationship with respect to said backing, a second layer in the form of a moisture-pervious facing positioned in superposed relationship with respect to said batt, side and end margins formed by said batt being shorter and narrower than said first and second outer layers, an elongated elastic ribbon member disposed along substantially the entire length of at least one margin of the diaper, said ribbon member being secured in said margin, said member being secured in the central region of the margin to gather said region, and said member being secured at at least one end of the margin substantially continuously from the end of the central region to an outermost edge of the diaper, and at least one reinforced corner portion provided by said secured end, said secured end being effectively inelastic.

#### 4,337,772 ADHESIVE BACKED SANITARY NAPKIN

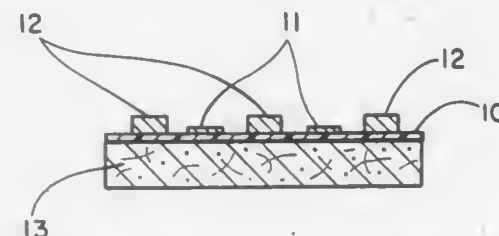
Robert J. Roeder, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 6, 1981, Ser. No. 241,252

Int. Cl.<sup>3</sup> A61F 13/16

U.S. Cl. 128—290 R

5 Claims



1. A sanitary napkin with a body facing surface and a garment facing surface comprising in combination an absorbent batt, a fluid impermeable baffle positioned between the batt and the garment of the wearer and adhesive attachment means on the garmentfacing side said attachment means including a plurality of discrete portions of pressure sensitive adhesive terminating before the ends of the garment facing surface at least partially separated by discrete portions of nonpressure sensitive adhesive having a thickness two to ten times that of the pressure sensitive adhesive.

#### 4,337,773 METHOD OF AND DEVICE FOR PLACING A BARRIER IN A CAVITY PROVIDED IN A BONE SHAFT

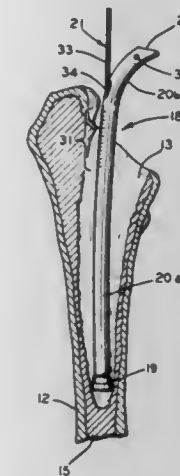
Demetrios D. Raftopoulos, 3703 Cherrywood La., Toledo, Ohio 43615, and James D. Baril, 465 Canal Ct., Waterville, Ohio 43566

Filed Oct. 20, 1980, Ser. No. 198,585

Int. Cl.<sup>3</sup> A61B 17/32; A61F 1/00

U.S. Cl. 128—305

5 Claims



3. A device for positioning a plug at an exact depth in a cavity formed in a femur shaft opening into the intramedullary canal, comprising:  
a. A die for cutting and retaining the plug;  
b. An elongated hollow body having an open end for detachably connecting the die thereto;  
c. A scale defined on said body for determining the depth at which the plug may be released from said device;  
d. Means for detachably connecting said die to said hollow body; and  
e. Means for releasing the plug from said die.

#### 4,337,774 MICRO SURGICAL CLIP

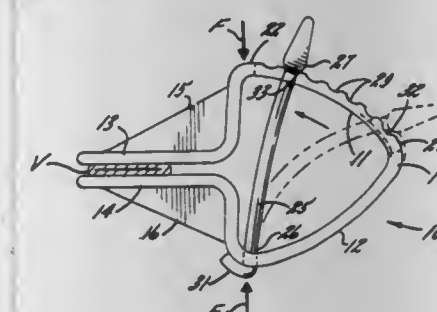
Alfred R. Perlin, Highland Park, Ill., assignor to Metatech Corporation, Northbrook, Ill.

Continuation-in-part of Ser. No. 915,439, Jun. 14, 1978, abandoned. This application Sep. 15, 1980, Ser. No. 187,192

Int. Cl.<sup>3</sup> A61B 17/12

U.S. Cl. 128—325

3 Claims



1. A surgical clip for clamping of small blood vessels comprising first and second arms arranged in opposition to one another terminating in a pair of opposed generally flat and smooth jaws, the arms being integrally joined at one end and merging with structural continuity with one another free of any abrupt reduction in cross sectional thickness in the region of joining, the arms being formed of a springy material for movement toward and away from one another, the arms being outwardly sprung so that the jaws tend to occupy positions spaced from one another for interposition of a blood vessel between them, the first arm having along its outer edge a cam track which is divergently angled with respect to the second arm, a cam follower arm swingably anchored in a fixed position on said second arm and extending bridgely to the first arm and having at its end a cam follower member riding upon

the cam track and projecting uniformly outwardly from the first arm along the entire cam track for convenient fingertip manipulation, the cam track being so shaped and oriented that as the cam follower member is advanced progressively along the cam track between a jaw-releasing position and a jaw-clamping position the arms are cammed toward or allowed to move away from one another so that the jaws apply a desired degree of clamping force to the blood vessel, said cam track having formed thereon a closely spaced series of shallow dent recesses in the path of the cam follower member and along which the cam follower member may be manually pressed by substantially equal light manual pressure in opposite directions to adjust the clamping positions of the jaws while sensing the number of clicks as a measure of the distance traversed, the cam follower arm being formed of a resilient rod mounted cantilever-fashion on said second arm so that when the cam follower arm is flexed and then manually released the cam follower member tends to move automatically to a predetermined position on the cam track.

#### 4,337,775 CATHETER DRAINAGE AND PROTECTION UNIT

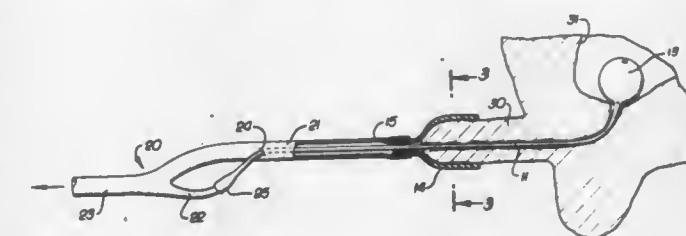
Yale B. Cook, Sun Valley, and Charles R. Brooks, Manhattan Beach, both of Calif., assignors to Irving Levine, Calabasas, Calif.

Filed Nov. 24, 1980, Ser. No. 209,840

Int. Cl.<sup>3</sup> A61M 25/00

U.S. Cl. 128—349 B

4 Claims



1. A catheter drainage and protection unit for draining fluids from the male urethra comprising:  
(a) a cannula having a distal portion adapted for insertion through the male urethra into the bladder, said cannula having a draining end for the drainage of fluid;  
(b) expandable means for securing said cannula in place within the urethra, said expandable means being integral with the distal end of said cannula;  
(c) a flexible cap having an exit port concentrically disposed about the draining end of said cannula and a body engaging portion integral therewith;  
(d) a drainage assembly comprising a central drainage tube and first and second branch tube members in communication with said central drainage tube, said first branch tube being coupled to the exit port of said cap and concentrically receiving the draining end of said cannula there-through, the draining end of said cannula being disposed through an aperture in the wall of said first branch tube and being coupled to the second branch tube of said central drainage tube; and  
(e) means for sealing the couplings between said cap and cannula, and said central drainage tube.

#### 4,337,776 IMPEDANCE MEASURING PACER

Christopher N. Daly, Bilgola Plateau; Michael S. Hirshorn, Darling Point; David K. Money, Pennant Hills, and Loraine K. Holley, Rockdale, all of Australia, assignors to Teletronics Pty. Ltd., Australia

Filed Aug. 29, 1980, Ser. No. 182,820

Int. Cl.<sup>3</sup> A61N 1/36

U.S. Cl. 128—419 PT

25 Claims

1. A system for measuring pacer electrode impedance comprising a pacer including means for delivering stimulating



pulses to a connected electrode, and externally controlled means for causing at least some of said stimulating pulses to be delivered in a sequence having decreasing amplitudes; and a

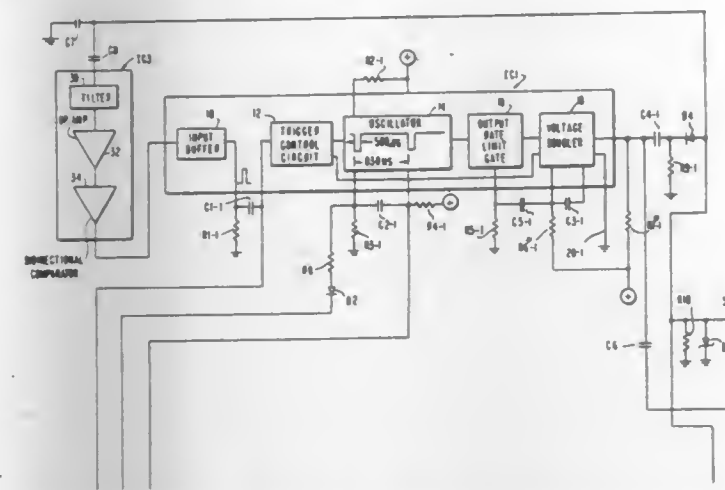


chart associated with said pacer which depicts electrode impedance as a function of the number of said at least some stimulating pulses required for the amplitudes thereof to decrease by a predetermined factor.

4,337,777

## RATE LIMITED PACER

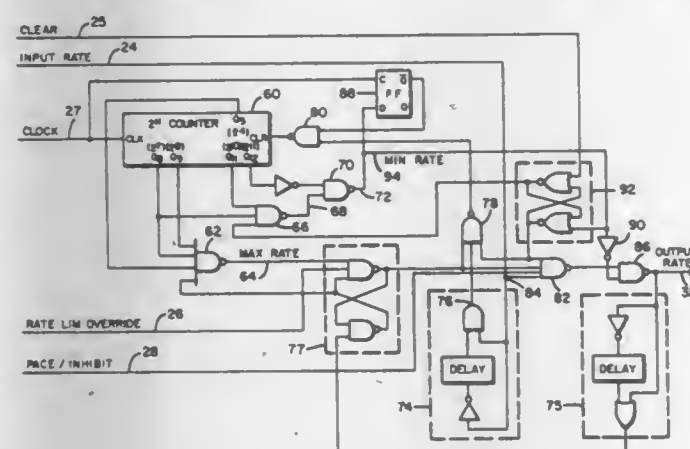
Jerome T. Hartlaub, New Brighton; Ray S. McDonald, St. Paul, and Lawrence C. Hudziak, White Bear Lake, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Dec. 24, 1980, Ser. No. 220,204

Int. Cl.<sup>3</sup> A61N 1/36

U.S. Cl. 128—419 PG

4 Claims



1. A rate limited pacer comprising: an oscillator for providing clock pulses at a clock rate; memory means for storing parameter data; pacer logic means for producing an input rate signal in response to stored parameter data and said clock pulses; and rate limit logic means responsive to said input rate signal and said clock pulses for producing an output rate signal equal to said input rate signal if said input rate signal is between an upper maximum rate limit and a lower dropout rate limit and for producing an output rate substantially equal to said maximum rate limit if said input rate signal exceeds said maximum rate limit and for producing an output rate at a minimum rate if said input rate is lower than said dropout rate.

4,337,778

## BLOOD PRESSURE MEASURING APPARATUS

Abe Akira, Takatsuki; Shoji Kimura, Kameoka, and Miyawaki Yoshinori, Yawata, all of Japan, assignors to Omron Tateisi Electronics, Inc., Kyoto, Japan

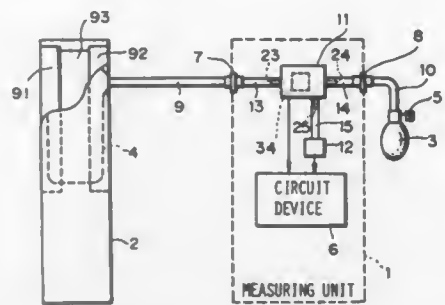
Filed Jul. 15, 1980, Ser. No. 169,202

Claims priority, application Japan, Aug. 1, 1979, 54/98843

Int. Cl.<sup>3</sup> A61B 5/02

U.S. Cl. 128—680

11 Claims



1. Blood pressure measuring apparatus comprising an occluding cuff including an inflatable bladder, an air guiding passage one end of which is connected to said bladder, air pressure control means connected to the other end of said passage for inflating or deflating said bladder through said passage, a microphone within said passage for sensing Korotkoff sounds which are propagated through said passage from said bladder and for generating Korotkoff sound signals, pressure transducer means for sensing the applied pressure within said bladder and for generating pressure signals, and circuit means operative in response to said Korotkoff sound and pressure signals to measure the systolic and diastolic blood pressures of a patient whose blood pressure is to be measured.

4,337,779

## PHYSIOLOGICAL EVENT DETECTOR

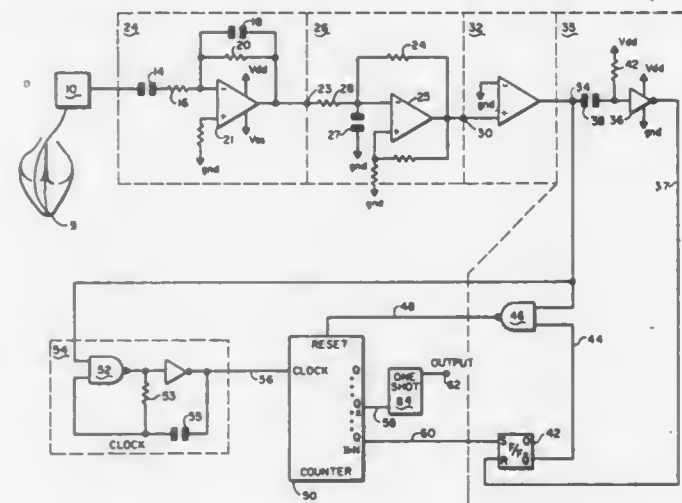
Richard P. Spevak, Moundsview, and Lynn D. Hansen, Fridley, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 11, 1980, Ser. No. 176,900

Int. Cl.<sup>3</sup> A61B 5/02

U.S. Cl. 128—691

3 Claims



1. An improved physiologic waveform discriminator for detecting the mechanical pumping action of the heart based upon an impedance plethysmograph signal produced by an impedance plethysmograph coupled to the heart for producing a time varying electrical plethysmograph signal determined by the instantaneous volume of heart, wherein said improvement comprises;

frequency selective means for amplifying passband components of said plethysmograph signal for producing a passband signal; time measuring circuitry activated when said passband components of said plethysmograph signal exceed a predetermined level for measuring the time period duration that said passband components of said plethysmograph signal exceed said predetermined level; and, output circuitry for producing an output detection signal when said time period duration exceeds a preset minimum duration.

4,337,780

## MUSCLE TESTING APPARATUS

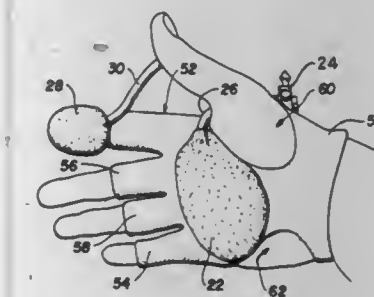
Glen F. Metrick, 2366 E. Mall Dr., Apt. 515, Ft. Myers, Fla. 33901

Filed May 9, 1980, Ser. No. 148,307

Int. Cl.<sup>3</sup> A61B 5/10

U.S. Cl. 128—774

8 Claims



1. An apparatus for objectively evaluating the amount of pressure needed to reach the pre-breaking point of a muscle of an individual during the course of a muscle strength test comprising:

first pressure sensitive means for sensing the pressure applied to a muscle; second pressure sensitive means for sensing the pressure applied to a muscle; pressure responsive means for indicating the pressure sensed by said first or second pressure sensitive means; and means interconnecting said first and second pressure sensitive means to said pressure responsive means for selectively interconnecting said first or said second pressure sensitive means to said pressure responsive means.

4,337,781

## ROLLER SUPPORT FOR CAGE SWEEP MECHANISM

Charles F. Brundage, Lenexa, Kans., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 31, 1980, Ser. No. 135,980

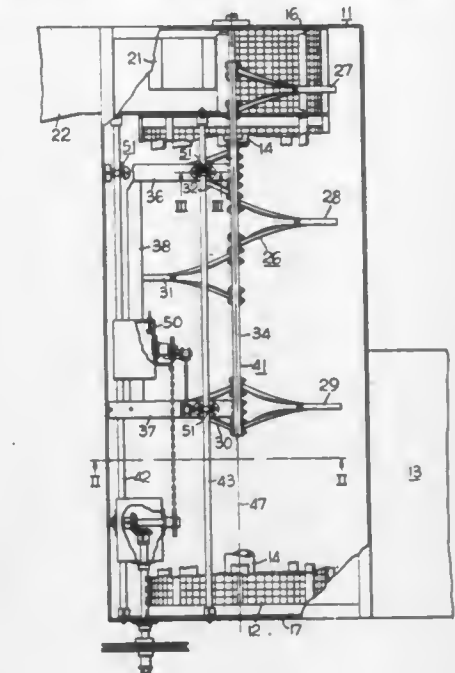
Int. Cl.<sup>3</sup> H01D 41/12

U.S. Cl. 130—27 H

2 Claims

1. In an axial flow rotary harvester having a foraminous cylindrical cage, a threshing rotor within said cage supported for rotation about an axis and a cage sweep mechanism for preventing an accumulation of threshed material on the upper exterior of the cage characterized by a pair of parallel support rails above said cage extending axially relative thereto, a cage sweep carriage presenting a plurality of axially spaced scraper fingers adjacent the upper exterior surface of said cage, two pairs of roller members supporting said carriage on said rails, the roller members of each pair being spaced from one another in the direction of said axis, a radially inward facing cylindrical bearing surface on each of said roller members, shaft members on said carriage individually mounting said roller members, each shaft member having a radially outward facing cylindrical bearing surface in cooperative

engagement with the cylindrical bearing surface of its associated roller member, a helical recess in the cylindrical bearing surface of each of said shaft members, said recesses extending axially beyond the cylindrical bearing surfaces of the associated roller



members and inducing egress of foreign particles from between the engaging cylindrical bearing surfaces of said roller and shaft members, and power means reciprocating said carriage axially in relation to said cage.

4,337,782

## CORN AND CEREAL THRASHER

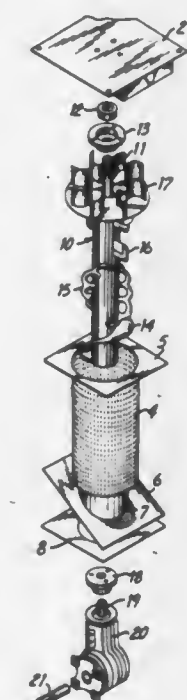
Jose T. Da Silva, Ribeirao Preto, Brazil, assignor to Cia Penha de Maquinas Agricolas-Copemag, Sao Paulo, Brazil

Filed May 22, 1981, Ser. No. 266,215

Int. Cl.<sup>3</sup> A01D 9/00

U.S. Cl. 130—30 E

4 Claims



1. A corn and cereal thrasher comprising: a vertical casing, a cylindrical screen in said casing with a space between said screen and said casing, a rotor in said cylindrical screen and coaxial therewith, said rotor comprising from bottom to top a helicoidal elevator portion, thrashing loops, thrashing blades and a radial fan,



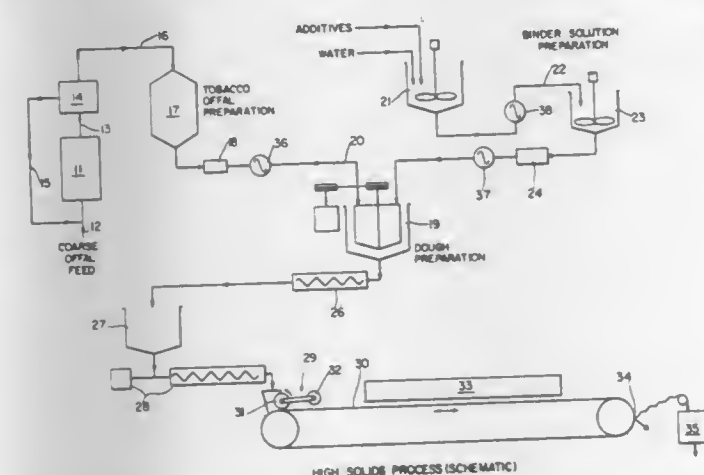
means for driving said rotor, an inclined plate at the lower end of said cylindrical screen and a horizontal plate below said inclined plate with a space therebetween, an input chute at one side of said casing opening into said space between said horizontal plate and said inclined plate, a discharge chute at the opposite side of said casing to receive and discharge grain passing through said cylindrical screen into said space between said screen and said casing, and a discharge opening in an upper portion of said casing for discharge of air from said radial fan together with chaff and other light waste.

**4,337,783**  
**FORMING SHEET FROM RECONSTITUTED TOBACCO**  
John D. Hooper, Keynsham, and John F. Britton, Bishopsworth, both of England, assignors to Imperial Group Limited, London, England

Filed Feb. 3, 1981, Ser. No. 231,145  
Claims priority, application United Kingdom, Feb. 9, 1980, 8004414

Int. Cl.<sup>3</sup> A24B 3/14  
U.S. Cl. 131—375

7 Claims



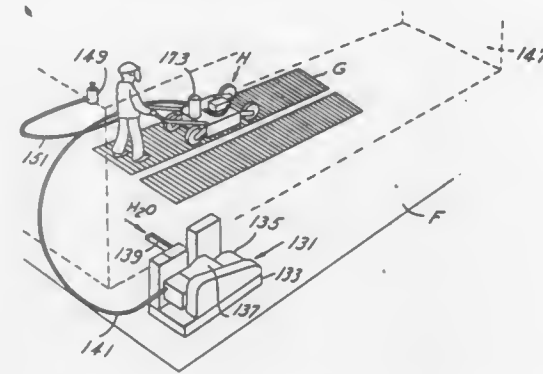
1. A method of forming a continuous tobacco sheet comprising the steps of
  - (a) forming a slurry comprising 35–60% by weight of ground tobacco particles having a particle size of less than 250 microns, 4–10% by weight of binder and 30–60% by weight of water,
  - (b) extruding the slurry between a pair of contra-rotating rollers onto an endless casting conveyor to form an extruded sheet thereon wherein one of the contra-rotating rollers supports the casting conveyor and
  - (c) drying the extruded sheet on the casting conveyor.

**4,337,784**  
**METHOD FOR CLEANING FLOOR SURFACES WITH HIGH PRESSURE WATER JETS**  
William G. Goerss, Fenton, Mich., assignor to N L B Corp., Wixom, Mich.  
Division of Ser. No. 934,756, Aug. 21, 1978, Pat. No. 4,219,155. This application May 1, 1980, Ser. No. 145,392  
Int. Cl.<sup>3</sup> B08B 3/02

- U.S. Cl. 134—34
1. A method for removing paint from floors and floor gratings by using a cleaning device having a plurality of high pressure water nozzles mounted within a hollow spray enclosure and discharging a stream of water under high pressure through said water nozzles towards a floor and floor grating wherein said cleaning device includes a fixed spindle mounted to said hollow spray enclosure, with said water nozzles being mounted to a tubular body which is rotatably mounted on said spindle, a dump valve including a movable valve element which is normally biased to a first position to direct said water through an orifice into said hollow spray enclosure, a pneumatic power means rotatably driving said tubular body, and said pneumatic power means being operably connected to said

dump valve for shifting said valve element to a second position, to close said orifice and direct all of said water through a vertical bore within said spindle comprising:

directing said stream of high pressure water through said orifice into said hollow spray enclosure when said valve element is in its first position and said tubular body is not being driven for rotation by said pneumatic power means; directing all of said stream of high pressure water downwardly through said vertical bore within said fixed spindle and into a plurality of radial discharge ports at the lower end of said vertical bore only when said pneumatic power means is rotatably driving said tubular body and said valve element is in its second position;



said tubular body having an annular water chamber in close proximity to said radial discharge ports, said annular water chamber receiving said downwardly directed stream of high pressure water and directing said stream of high pressure water radially outward through a plurality of angularly disposed water nozzles whereby high pressure water jets impinge onto the floor and floor grating; permitting movement of high pressure water between said tubular body and said spindle to thereby lubricate the rotative movement of said tubular body on said spindle; and movably transporting said water jets over and along surface portions of said floor and floor grating for forcefully and operatively impinging upon the surface portions of said floor and floor grating.

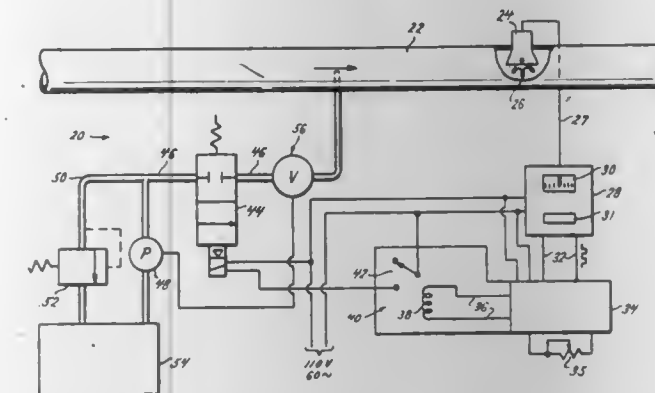
**4,337,785**  
**METHOD USING COPPER-COPPER-ALLOY TUBE FOR WATER SUPPLY**  
Shiro Sato, Aichi, and Kiyoji Sagisaka, Nagoya, both of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan  
Division of Ser. No. 643,769, Dec. 23, 1975, abandoned. This application Mar. 26, 1979, Ser. No. 24,178  
Claims priority, application Japan, Dec. 23, 1974, 49/147791  
Int. Cl.<sup>3</sup> E03B 7/04; F24D 12/00

- U.S. Cl. 137—1
1. The method of carrying water for human consumption without contaminating the water, comprising: passing water for human consumption, at a temperature below 90° C., through a copper base alloy tube consisting essentially of 0.05–2.8% by weight magnesium, 0.1% calcium and the balance essentially copper.

**4,337,786**  
**VARIABLE RATE FERTILIZER INJECTION SYSTEM**  
Richard G. Myers, and James P. Stuckey, both of Fremont, Nebr., assignors to Valmont Industries, Inc., Valley, Nebr.  
Filed Jun. 23, 1980, Ser. No. 162,085  
Int. Cl.<sup>3</sup> G05D 11/13

- U.S. Cl. 137—3
7. A method for injecting an additive into a liquid carrying irrigation line to maintain a constant proportional mix of said

additive as the rate of liquid flow therethrough varies and shutting the system down upon failure of the injection system including the steps of measuring the rate of liquid flow in the irrigation line, producing a triggering pulse indicating that a predetermined amount of liquid has flowed through the line, injecting a predetermined amount of additive through an injection line and into the irrigation line in response to the triggering pulse, opening a solenoid in the injection line to permit a

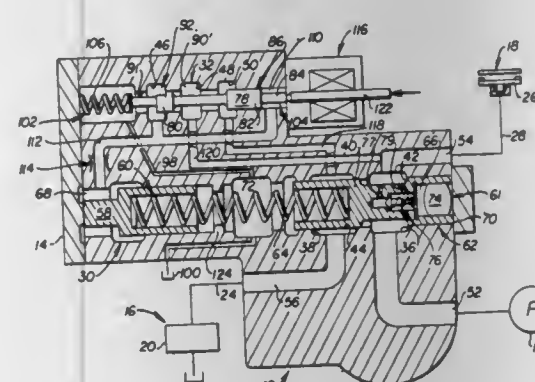


predetermined amount of additive to flow therethrough, continuously pumping the additive into the injection line, returning the additive to a reservoir through a pressure relief valve and line when the solenoid is closed and shutting the system down should the time between injections vary from a preselected range including sensing the rate of additive flow in the injection line, timing the on and off periods of additive flow, and operating a contact should the on or off period exceed a predetermined limit.

**4,337,787**  
**PRESSURE REGULATING HYDRAULIC CIRCUIT AND VALVE**  
Sammy J. Rhodes, deceased, late of Aurora, Ill. (by The Old Second National Bank of Aurora, executor), assignor to Caterpillar Tractor Co., Peoria, Ill.  
PCT No. PCT/US80/00270, § 371 Date Mar. 12, 1980, § 102(e) Date Mar. 12, 1980, PCT Pub. No. WO81/02641, PCT Pub. Date Sep. 17, 1981  
PCT Filed Mar. 12, 1980, Ser. No. 197,832  
Int. Cl.<sup>3</sup> G05D 11/13

U.S. Cl. 137—101

13 Claims



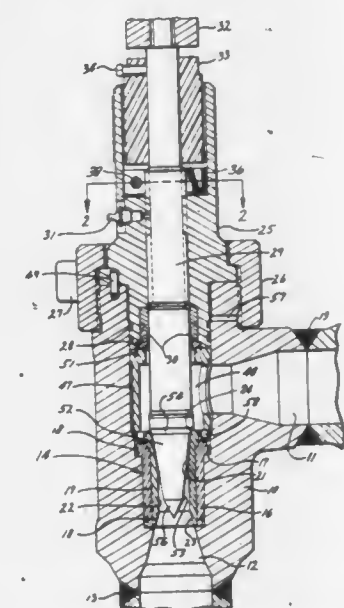
1. A hydraulic circuit (10), comprising: fluid supply means (12) for delivering pressurized fluid flow; first and second means (16,18) for operating at first and second preselected fluid pressure levels of fluid flow thereto, respectively, said first preselected pressure level being less than said second preselected pressure level; first and second fluid pathways (24,28) establishing fluid flow from said fluid supply means (12) to said first and second means (16,18), respectively; a main valve element (30) having a bore (44), a spool (40) and inlet and outlet grooves (36,38), said spool (40) being movable in said bore (44) from a first (62) toward a second (63) position in response to fluid pressure in said second

fluid pathway (28) being at said second preselected pressure level and from said second (63) toward said first (62) position in response to fluid pressure in said second fluid pathway (28) being at a reduced pressure level relative to said second preselected pressure level, said inlet groove (36) being positioned in fluid communication with said fluid supply means (12) and, at said first and second positions (62,63), in controlled fluid communication with said outlet groove (38) through said first and second fluid pathways (24,28), respectively, said outlet groove (38) being positioned in fluid communication with said first means (16); and

pilot means (32) for automatically initiating a fluid pressure level at less than said second preselected pressure level in said second fluid pathway (28) and opening said first fluid pathway (24) to fluid flow in response to fluid flow being blocked from said fluid supply means (12) into said second fluid pathway (28) and for simultaneously blocking fluid flow through said first fluid pathway (24) and initiating fluid flow through said second fluid pathway (28) in response to a preselected input signal, said pilot means (32) including a pilot valve element (34) movable between a first position at which said inlet groove (36) is positioned in fluid communication with said outlet groove (38) through said pilot valve element (34) and a second position at which said inlet groove (36) is blocked from fluid communication with said outlet groove (38) through said pilot valve element (34).

**4,337,788**  
**HIGH PRESSURE VALVE**  
Fritz O. Seger, Mission Viejo, Calif., assignor to Smith International Inc., Newport Beach, Calif.  
Filed Feb. 2, 1981, Ser. No. 230,392  
Int. Cl.<sup>3</sup> F16K 43/00  
U.S. Cl. 137—315

21 Claims



17. A high pressure adjustable choke comprising: a valve body having a side inlet passage and an end outlet passage having a diverging portion; a removable seat assembly mounted in the body in alignment with the outlet passage, including a support sleeve slidably fitted into the valve body; means for sealing between the support sleeve and the valve body; and an erosion resistant sleeve having a conical valve seat tapering inwardly at an angle of about 30° at its inlet end, a conical converging passage having a taper of about 10° downstream from the valve seat, a cylindrical passage immediately downstream from the converging passage, and a diverging passage immediately downstream from the cylindrical passage aligned with the diverging portion of the outlet passage; an axially movable stem aligned with the seat assembly, including an erosion resistant plug having a conical seal



surface near its upstream end having a taper of about 30° for engaging the valve seat in the sleeve and a converging conical control surface downstream from the seal surface with the same taper as the converging passage;

means for moving the stem between a closed position with the seal surface on the plug engaging the valve seat in the sleeve and a fully open position wherein the smaller end of the control surface is within the converging passage, the flow cross section of the annulus between the control surface of the plug and the converging passage in the fully open position being about the same as the flow cross section through the cylindrical passage and including a clearance between the control surface and the converging passage when the seal surface engages the valve seat;

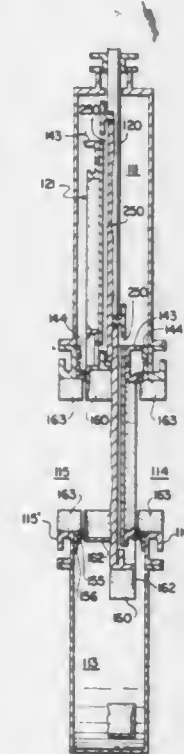
the length of the control surface being greater than the length of the converging passage and greater than the length of the stroke of the stem between the open and closed positions, the length of the converging passage in the sleeve being less than the stroke of the stem between the open and closed positions, and the total length of the converging passage and the cylindrical passage being greater than the length of the control surface on the plug so that a vena contracta of fluid flowing through the valve can occur in the liner sleeve downstream from the valve seat in all positions of the valve stem between the closed position and the fully open position and including the fully open position;

a removable bonnet surrounding the stem for retaining the stem in the valve body;

a seal between the valve bonnet and the valve body; and

a removable cage between the bonnet and seat assembly lining the valve body and including a side opening aligned with the inlet passage.

**4,337,789**  
**SHUT-OFF VALVE FOR INTERRUPTING A FLOW OF A FLUID THROUGH A PIPELINE**  
 Pietro Lonardo, Genoa, Italy, assignor to Hermann Rappold & Co. GmbH, Düren, Fed. Rep. of Germany  
 Filed Apr. 7, 1980, Ser. No. 137,752  
 Claims priority, application Italy, Apr. 9, 1979, 12541 A/79  
 Int. Cl.<sup>3</sup> F16K 3/00, 49/00  
 U.S. Cl. 137—340 7 Claims



1. A shut-off valve for interrupting a flow of a fluid through a pipeline, particularly a flow of high temperature air in a gas main associated with a blast furnace, said valve comprising: a valve body adapted to be connected to pipes of a pipeline, said valve body having a pair of spaced walls having openings aligned with each other and with the pipes when said valve body is connected thereto, said openings defin-

ing a valved passageway, said valve body having therein first and second chambers on opposite sides of said openings;

a valve plate and a plate connected to said valve plate, said plate having therethrough an aperture, said valve plate and said plate being movably mounted within said valve body for simultaneous movement between a valve closed position, whereat said valve plate extends between and interrupts communication between said openings and said plate is in said second chamber, and a valve open position, whereat said valve plate is in said first chamber and said aperture in said plate is aligned with said openings in said spaced walls of said valve body;

valve seats provided on said valve body at positions adjacent said first chamber and said openings;

outer flanges on said valve plate at an end thereof remote from said plate, said flanges contacting said valve seats and closing communication between said first chamber and said second chamber when said valve plate is in said valve closed position, said flanges being within said first chamber and spaced from said valve seats when said valve plate is in said valve open position, thereby enabling communication between said first and second chambers;

flanges extending outwardly from opposite major surfaces of said valve plate;

a pair of seal devices, each said seal device being positioned within said valve body adjacent a respective said opening; means for urging each said seal device toward a respective said flange when said valve plate is in said valve closed position and toward a respective side of said plate, at a location surrounding said aperture therein, when said valve plate is in said valve open position;

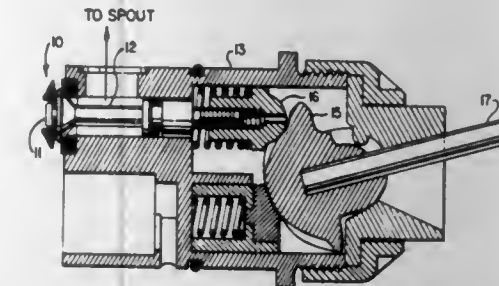
passage means in said valve plate, said passage means opening at a first end thereof into said first chamber outwardly of said outer flanges and opening at a second opposite end thereof freely outwardly of one of said flanges at a position remote from said first chamber;

cooling means for introducing a gaseous cooling fluid into said first chamber, whereby when said shut-off valve is in the closed position said outer flanges contact said valve seats to prevent said cooling fluid from passing between lateral clearances exterior of said valve plate into said second chamber, said cooling fluid passing through said passage means in said valve plate into said second chamber, and whereby when said shut-off valve is in the open position said cooling fluid passes between said outer flanges and said valve seats through said lateral clearances exterior of said apertured plate into said second chamber and then between limited clearances between respective seal devices and sides of said apertured plate into said passageway.

**4,337,790**  
**FILTERING DEVICE**  
 Daniel C. Buchner, Wallaceburg, Canada, assignor to Waltec, Inc., Ontario, Canada  
 Filed Nov. 3, 1980, Ser. No. 203,232  
 Claims priority, application Canada, Jul. 21, 1980, 356640  
 Int. Cl.<sup>3</sup> E03D 1/32  
 U.S. Cl. 137—550 3 Claims

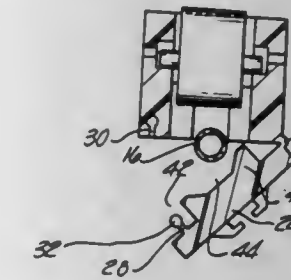
1. In a faucet of the type having a removable cartridge member receivable in an underbody member, said cartridge member carrying a cam member, at least one cam follower member and a valve member actuated by the cam follower member upon movement of the cam to control fluid communication between a spout and a source of water, a passage in said underbody member through which water flows from said source to said spout, the improvement comprising: (1) an axially extending enlarged head portion formed at one end of said valve member, (2) a filter member secured to said head portion of said valve member and movable therewith within said passage to prevent large particles from entering said faucet, (3)

said filter member including an inner annular member having a through hole, whereby said filter member is secured to said



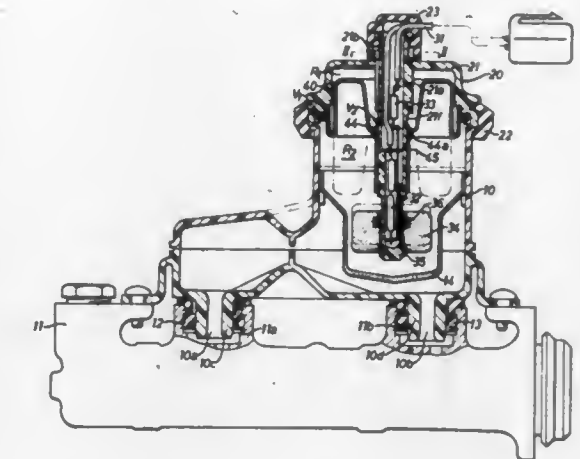
head portion of said valve member by forcing said filter member over said head portion in a detachable manner so that the filter member can be easily removed.

**4,337,791**  
**FLOW REGULATOR ASSEMBLY**  
 James H. Tech, Battle Creek; Mary J. LaFountain, Marshall, both of Mich., and Virginia M. Van Sickle, Glen Ellyn, Ill., assignors to La-Van Tech Development Corp., Marshall, Mich.  
 Filed Nov. 17, 1980, Ser. No. 207,129  
 Int. Cl.<sup>3</sup> F16K 7/06  
 U.S. Cl. 137—556 4 Claims



1. A flow regulator assembly for controlling fluid flow in flexible tubes comprising: a body member having parallel spaced side walls spaced to opposite sides of a wall portion having a surface for engaging one side of a flexible tube, a roller member having an axle extending from opposite ends of said roller, the ends of said axle being disposed in elongated and facing recesses formed in the interior surfaces of said side walls to maintain said roller attached to said body member, said surface of said wall portion and said elongated recesses being disposed at an angle to each other, said roller being rotatable to move said axle to selected positions in said recesses and to move said roller into engagement with the tube and depress the tube against said surface to restrict the passage in the tube in proportion to the amount of rotation of said roller member, means formed in said recesses and engageable with said axle of said roller member to resist rotation of said roller member from said selected position, indicator means indicating the position of said roller member and the corresponding fluid flow in said tube, hinge means formed as a unit with said wall portion and one of said side walls to permit movement of said wall portion from an open position permitting attachment of said body member to a selected point intermediate opposite ends of the tube to position said tube between said roller member and said surface, and means for latching said wall portion to the other of said side walls when said wall portion is in a closed position after said tube has been disposed in said body member, said body member, said wall portion, said hinge means and said latch means being molded as a unit of plastic material.

**4,337,792**  
**FLUID RESERVOIR FOR BRAKE MASTER CYLINDERS**  
 Yoshihisa Nomura, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan  
 Filed Jun. 20, 1980, Ser. No. 161,335  
 Claims priority, application Japan, Jun. 29, 1979, 54-90580[U]  
 Int. Cl.<sup>3</sup> F15B 7/10  
 U.S. Cl. 137—558 4 Claims



1. In a fluid reservoir for mounting on a brake master cylinder, comprising a casing for storing an amount of brake fluid therein, said casing having an upper opening, a cap member of elastic material detachably coupled over the upper opening of said casing, and a diaphragm seal member coupled within said cap member to close off brake fluid stored in said casing and to subdivide the interior space of said casing into an upper chamber vented through a portion of said cap member and a lower chamber located above the liquid surface of the brake fluid, said diaphragm seal member being provided at the outer periphery thereof with an inlet check valve assembly for permitting the flow of air from the upper chamber into the lower chamber and provided at the central portion thereof with an outlet check valve assembly for permitting the flow of air from the lower chamber into the upper chamber, the improvement wherein said inlet check valve assembly comprises an annular valve seat in the form of a lower stepped portion formed on the inner peripheral wall of said cap member, a cylindrical retainer member of hard material integrally secured to the outer periphery of said diaphragm seal member and having an annular flange facing to said annular valve seat and an upper end resiliently engageable with an upper stepped portion formed on the inner peripheral wall of said cap member, an annular lip of elastic material integrally formed on the annular flange of said retainer member, and resilient means for biasing said retainer member toward the upper stepped portion of said cap member to press said annular lip into contact with said annular valve seat.

**4,337,793**  
**COPPER-ALLOY TUBE WATER SUPPLY**  
 Shiro Sato, Aichi, and Kiyoji Sagisaka, Nagoya, both of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan  
 Continuation of Ser. No. 643,769, Dec. 23, 1975, abandoned.  
 This application Mar. 26, 1979, Ser. No. 24,179  
 Claims priority, application Japan, Dec. 23, 1974, 49-147791  
 Int. Cl.<sup>3</sup> E03B 7/04; F15B 1/00  
 U.S. Cl. 137—561 R 7 Claims

1. In a combination including potable water supply tubes in combination with a waterworks, the improvement wherein the tubes are made of a copper base alloy consisting essentially of 0.05–2.8% by weight magnesium, 0–1% calcium and the balance essentially copper.



4,337,794

## SOLENOID VALVE ASSEMBLY

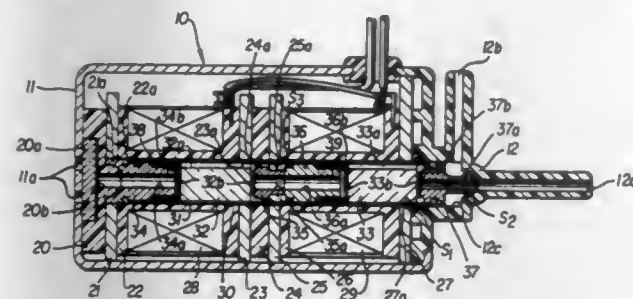
Minoru Yamanaka; Hideo Haneda, both of Toyota; Masatoshi Kato, Kariya, and Mitsuyuki Suzuki, Gamagori, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan  
Filed May 20, 1980, Ser. No. 151,591

Claims priority, application Japan, Jun. 26, 1979, 54-087274[U]

Int. Cl.<sup>3</sup> F15B 13/044

U.S. Cl. 137—596.17

4 Claims



1. A solenoid valve assembly comprising first and second bobbins including solenoids which are co-axially supported by a housing;  
first and second valve bodies slidably supported in each axial bore of the first and second bobbins and movable independently with respect to energized conditions of said solenoids;  
an outlet port formed in the housing to receive control pressure from two different pressure sources applied to first and second inlet ports formed in the housing;  
a first valve core of magnetic material positioned within said housing;  
a second valve core of non-magnetic material positioned within said housing;  
a third valve core of magnetic material positioned within said housing and secured to said second valve core;  
a fourth valve core of non-magnetic material positioned within said housing;  
a single sleeve of non-magnetic material secured to each of said valve cores wherein said valve cores are positioned within said axial bores of said bobbins;  
means communicating with said outlet and said first and second inlet ports formed in said single sleeve and said valve cores via opposite ends of said single sleeve;  
said first valve body comprising magnetic material axially movable and supported in said single sleeve between said first valve core and said second valve core wherein said first valve body is responsive to operation of said solenoid of said first bobbin independent of said solenoid of said second bobbin;  
said second valve body comprising magnetic material axially movable and supported in said single sleeve between said third valve core and said fourth valve core wherein said second valve body is responsive to operation of said solenoid of said second bobbin independent of said solenoid of said first bobbin; and  
means for biasing said valve bodies, respectively, in an axial direction.

4,337,795

## SINGLE LEVER MIXING FAUCET

Pericles A. Argyris, and William R. Williams, both of Morgantown, W. Va., assignors to Sterling Faucet Company, Schaumburg, Ill.

Filed Apr. 28, 1975, Ser. No. 572,397

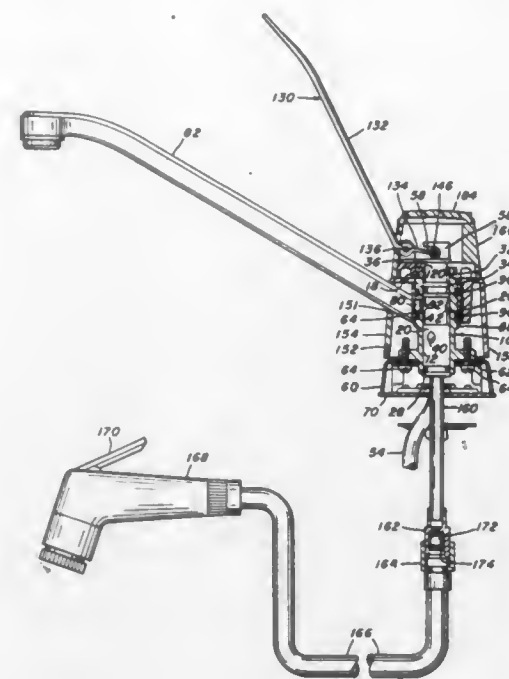
Int. Cl.<sup>3</sup> F16K 11/02

U.S. Cl. 137—625.17

12 Claims

1. A mixing faucet comprising a body having a through bore, hot and cold inlet ports in said body communicating with said bore, an outlet port communicating with said bore, a spindle mounted in said bore for rotary movement between open and closed positions and for axial movement between open and

closed positions, a pivot member rotatably mounted on the upper portion of said body, an operating handle pivotally mounted on said pivot member, a portion of said handle being operatively connected with the upper end of said spindle whereby upon pivotal movement of said handle in a vertical



plane said spindle is moved axially between open and closed positions and upon rotary movement of said pivot member in a horizontal plane said spindle is moved between said hot and cold positions, means on said pivot member adapted to cooperate with means on said spindle to limit the axial movement of said spindle in both directions.

4,337,796

## MULTIPLE FOUR-WAY CONTROL VALVE

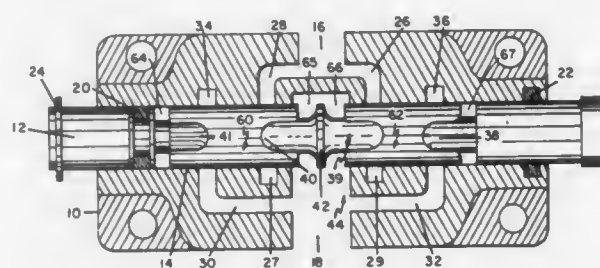
Roland W. Bonney, Box 65, R.F.D. 1, Kennebunkport, Me. 04046

Filed Dec. 11, 1980, Ser. No. 215,272

Int. Cl.<sup>3</sup> F16K 11/07

U.S. Cl. 137—625.17

1 Claim



1. A multiple four-way control valve comprising:  
a valve housing;  
a cylindrical bore defined within said valve housing;  
an inlet bore defined within said valve housing;  
first and second pressure channels defined within said valve housing communicating with said inlet port and said cylindrical bore, to allow the entrance of hydraulic fluid into said cylindrical bore;  
first and second pressure grooves defined around said cylindrical bore of said valve housing communicating with said first and second pressure channels respectively;  
an outlet port defined within said valve housing communicating into said cylindrical bore;  
first and second relief channels defined in said valve housing, extending from said outlet port through said valve housing to said cylindrical bore;  
first and second relief grooves defined around the inside of said cylindrical bore in said valve housing communicating with said first and second relief channels;

a first series of operation ports of like diameter defined in said valve housing arrayed in a first transverse plane to the axis of, and communicating with, said cylindrical bore;  
a second series of operation ports of like diameter defined in said valve housing arrayed in a second transverse plane to the axis of, and communicating with, said cylindrical bore;  
a spool member positioned in said cylindrical bore and being rotatably and axially movable within said cylindrical bore;  
a central spool projection member extending around and projecting from said spool member with its outer periphery contacting said cylindrical bore;

first and second collar members protruding from said spool member and contacting said cylindrical bore, each spaced equidistant from said central spool projection, the inner portions of said first and second collar members extending, when said spool member is in a neutral position, to block said first and second pressure channels and said first and second pressure grooves, and the outer portions of which extend beyond said first and second relief grooves and said first and second relief channels, said first and second collar members defining a first, second, third and fourth cut-away section around said spool at their respective inner portion ends and outer portion ends, said second and third cut-away sections being separated by said central spool projection;

first and second slots defined upon said first collar member, and third and fourth slots defined on said second collar member, all in axial alignment, said first slot aligned with said first relief groove when said rotary spool is in a neutral position, said second slot aligned with said first pressure groove to empty said first pressure groove into said outlet chamber, said third slot positioned on said valve aligned with said second pressure groove to empty said second pressure channel into said outlet chamber; and said fourth slot aligned with said second relief groove;

seal means adapted to seal said spool in a fluid-tight relation in said housing within said cylindrical bore;

a second series of slots defined on said collar members to equalize pressure on said spool opposite each of said operation ports, each slot opposite one of said first, second, third and fourth slots with a plurality of cavities defined in the valve housing opposite each operation port, said cavities aligned with said second series of slots on said spool; each of said slots in said first and second series of slots having a width of the diameter of one of said operation ports with its inside rear end terminating at a point contacting said cylindrical bore and its outside end opening into its respective cut-away section around said spool; and

said spool when in said neutral position and under pressure allows hydraulic fluid to pass through said first and second pressure channels around through said first and second pressure grooves, through said narrower cut-away second and third sections of said spool and out said outlet port while said spool is blocking all of said operation ports, said spool if moved into an active position where said central spool projection is aligned with and contacting said cylindrical bore, further closing off one of said pressure channels by a land on one of said collars while directing the pressure through said slot on the other collar to a rotationally selected operation port while relieving pressure on a corresponding selected operation port of the other series by venting it through a slot on the other collar to said relief channel and to said outlet port.

4,337,797

## BIMETALLIC VALVE SPOOL

John T. Caruso, Kenmore, N.Y., assignor to Moog Inc., East Aurora, N.Y.

Filed Aug. 18, 1980, Ser. No. 178,778

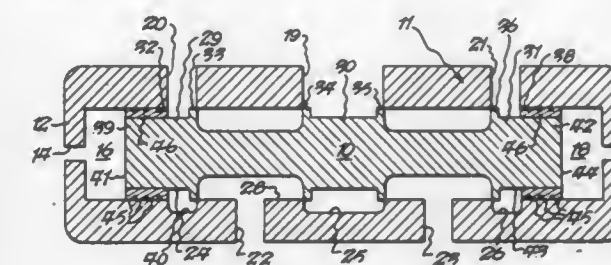
Int. Cl.<sup>3</sup> F15B 13/043

U.S. Cl. 137—625.48

8 Claims

1. In a valve having a spool member slidably mounted within a sleeve member, said sleeve member having an inwardly-facing cylindrical surface and penetrated by a plurality of ports

through which fluid may flow, said spool member having a plurality of metering lands cooperating with said sleeve member ports such that the relative positions between said members may define metering orifices between said lands and ports through which fluid may selectively flow, the outwardly-facing surfaces of said lands being arranged in common imaginary cylinder, and wherein said members are formed of a relatively hard material, the improvement which comprises:



a bearing land provided on said spool member and adapted to slidably engage the facing proximate cylindrical surface portion of said sleeve member,  
said bearing land having a diameter substantially equal to the diameter of said imaginary cylinder and being formed of a relatively soft material having hardness of from about R<sub>h</sub>45 to about R<sub>h</sub>100,  
whereby the tendency of said members to gall at high relative velocities therebetween may be reduced.

4,337,798

## CONVERTER FOR VALVES

Ted Zettergren, Kungsgarden 3402, 870 52 Nyland, Sweden

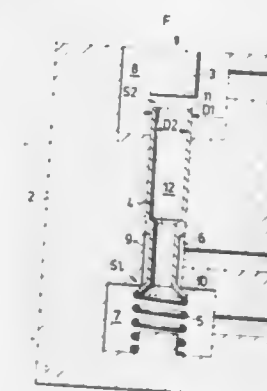
Filed Oct. 3, 1980, Ser. No. 193,535

Claims priority, application Sweden, Oct. 11, 1979, 7908452

Int. Cl.<sup>3</sup> F16K 11/16

U.S. Cl. 137—627.5

3 Claims



1. A converter for electrohydraulic or electropneumatic conversion, comprising a housing (2), a piston (4) movable in said housing (2), a pressure pin (3) reciprocating by means of a magnet relative to the piston (4), a channel (P) for the supply of pressure medium, a control channel (C) for outflow and inflow of control pressure medium and a channel (T) for draining the converter, wherein the piston (4) is tubular and includes a channel (12) extending through the piston, which piston (4) runs in a cylinder bore (6) having uniform diameter, above and beneath which a respective upper and lower cavity (7, 8) are located, in the upper cavity (8) said pressure pin (3) is located and into which said drainage channel (T) opens, and into the lower cavity (7) the control channel (C) opens, wherein the



pressure channel (P) opens into said cylinder bore (6), at a tubular space (9) located between the piston and the cylinder bore wall, which space extends downward to a lower end of the piston (4) where the lower end of the piston has a preferably conically shaped widening (10) so that the widening and the transition of the lower cavity to the cylinder bore (6) form a first seat valve (S1), which is closed when the piston is in an uppermost position, and wherein the upper end (11) of the piston together with the free end of the pressure pin (3) make a planar abutment to form a second seat valve (S2), and a weak return spring (5) is provided to press the piston (4) against its uppermost position, and further wherein said space (9) is formed so that the outer diameter of the piston (4), at the space (9) is uniform and smaller than the general piston diameter, whereby the effective piston area defines an equal top and bottom of the space (9), and wherein the outer diameter (D1) of said upper end (11) of piston (4) only slightly exceeds its coplanar inner diameter (D2), and a small hole (16) or a small slit is made through the piston wall close to the upper end (11) of the piston (4).

4,337,799

## THREAD PROTECTOR

C. Roger Hoover, 7950 Ellinger, Houston, Tex. 77040

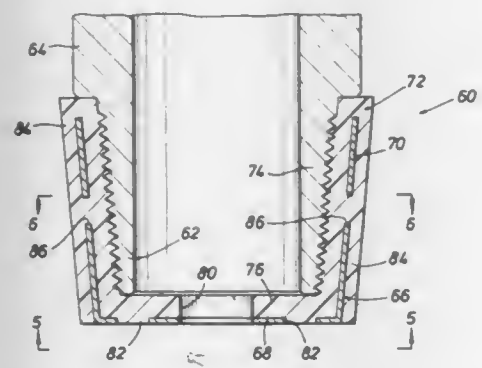
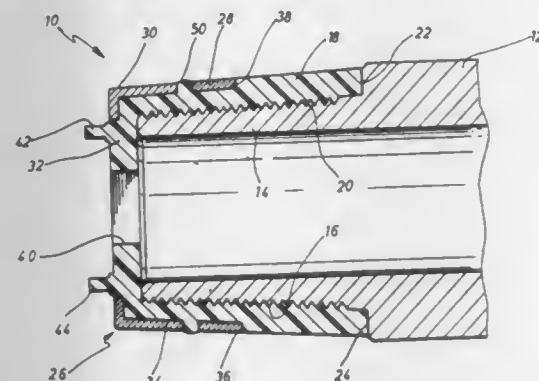
Continuation-in-part of Ser. No. 189,314, Sep. 22, 1980,

abandoned. This application Apr. 10, 1981, Ser. No. 252,917

Int. Cl.<sup>3</sup> B65D 59/06

U.S. Cl. 138—96 T

7 Claims



1. A thread protector for the tapered external threads of pipes, said thread protector comprising:

- (a) a thread cap composed of synthetic plastic material and being formed to define tapered internal threads adapted to receive the externally threaded pin portion of a pipe, said thread cap defining an outer frusto-conical side wall;
- (b) a metal cap being received about at least a portion of said thread cap and defining a frusto-conical side wall and a planar end wall flange forming a circular central opening, said side wall being formed to define a plurality of locking openings;
- (c) said thread cap defining an end wall forming a central thread cap opening in substantially concentric relation with said central opening;
- (d) a plurality of projections extending from said end wall of said thread cap within said circular central opening, said

projections being oriented in substantially evenly spaced relation and adjacent said end wall flange for engagement by a straight tool to facilitate installation and removal of said thread protector; and

- (e) a plurality of integral locking portions extending from said thread cap through said locking openings and establishing a mechanically interlocked relation between said thread cap and said metal cap.

4,337,800

## TWO PIECE EXTRUDED HOSE

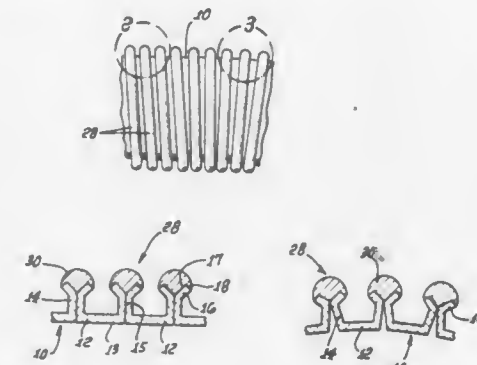
Lennart L. Carlson, Irvine, and Douglas I. Holberg, San Clemente, both of Calif., assignors to Steward Plastics, Inc., Laguna Hills, Calif.

Filed Jul. 7, 1980, Ser. No. 166,344

Int. Cl.<sup>3</sup> F16L 11/11

U.S. Cl. 138—122

3 Claims



3. A flexible hose comprising:

an extruded plastic strip of channel-shaped cross section including a web forming the inside of the hose, said web having first and second sides, spaced flanges projecting radially outward from each of said first and second sides of said web, said legs substantially forming an I-beam arrangement with said web and flanges, said plastic strip being helically wound to form the hose, with the flanges of succeeding turns arranged in contiguous pairs and the flanges being angularly flexible with respect to the webs such that the contiguous pairs of flanges are free to move apart at their innermost ends whereby, on application of axial tension, the adjacent webs of each turn are permitted to separate.

4,337,801

## DEVICE FOR SHEDDING WARP YARNS IN A WEAVING LOOM

Hajime Suzuki, Anjo; Yoshifumi Umemura, Toyoake, and Shozo Ueda, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Jul. 23, 1980, Ser. No. 171,376

Claims priority, application Japan, Jul. 26, 1979, 54-95860

Int. Cl.<sup>3</sup> D03C 5/00

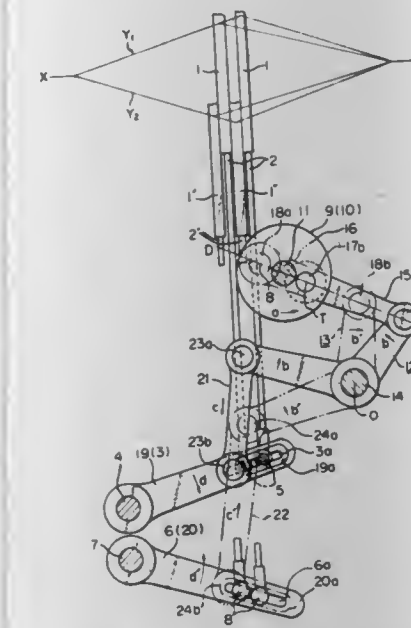
U.S. Cl. 139—57

6 Claims

1. A device for shedding warp yarns in a weaving loom, comprising:

- (a) cranks rotatable about rotational centers in synchronization with the weaving operation of said weaving loom;
- (b) synchronizing levers pivoted swingably around swinging centers;
- (c) connecting rods operably connecting said cranks to said synchronizing levers via connecting pivots;
- (d) synchronizing links operably linked with said synchronizing levers via linking pivots and linked with lift members for vertically moving heddle frames via linking pins; and
- (e) wherein said synchronizing levers and said synchronizing links are so arranged that, when said connecting rods are located at their dead points, which correspond to the outermost positions of said heddle frames, and said rota-

tional centers of said cranks and said connecting pivots between said cranks and said synchronizing levers are aligned with first imaginary straight lines, one of said linking pivots between said synchronizing levers and said



synchronizing links is near a second imaginary straight line which passes through the corresponding linking pin, while the corresponding synchronizing link is located at its dead point. and the corresponding swinging center.

4,337,802

## METHOD AND APPARATUS FOR LIQUID FILLING OF CONTAINERS

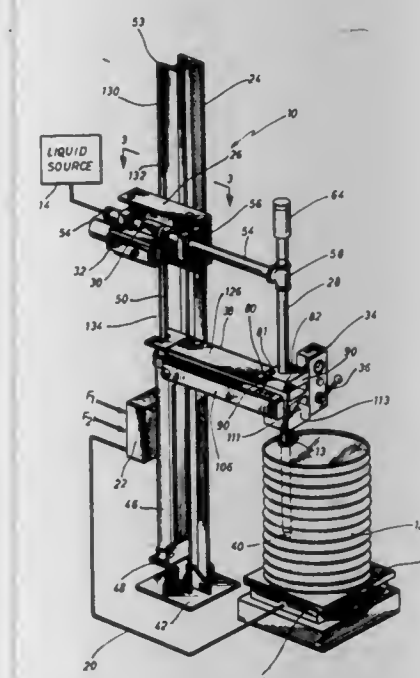
Harry L. Kennedy; Prakash M. Kesaree, both of Freeport, and Abolfazl Rahimzadeh, Lake Jackson, all of Tex., assignors to Velasco Scale Company, Inc., Freeport, Tex.

Filed Sep. 30, 1980, Ser. No. 192,497

Int. Cl.<sup>3</sup> B65B 3/28

U.S. Cl. 141—1

18 Claims



1. Liquid filling apparatus for subsurface filling of containers with liquid comprising:

- a conduit for introducing the liquid into a container, said conduit being movable between a raised and a lowered position;
- a valve to control the rate of flow of liquid through the conduit to such a container;
- a first signal generator for generating a signal to initiate movement of the conduit from its raised position to its lowered position;
- a second signal generator actuatable by movement of the conduit towards its lowered position, for generating a signal to

actuate the valve to commence flow of liquid at a slow fill rate into such a container;

- a delay mechanism actuatable by the signal from the second signal generator to trigger a fast fill rate dispensation of liquid after a predetermined interval;
- a weight responsive device adapted to generate a first and a second control signal when the weight of the liquid in the container equals a first and a second cut-off weight, respectively, said first control signal being operable to initiate withdrawal of the conduit towards its raised position and to actuate the valve to return to a slow fill rate of dispensation of liquid through the conduit;
- a wiper device for urging liquid adhering to the outside of the conduit toward such a container during withdrawal of the conduit; and
- a third signal generator actuatable when the conduit has been raised a predetermined distance from such a container for generating a signal to stop further movement of the conduit, said second control signal, which is generated when the second cut-off weight of liquid within such a container is achieved, initiates the termination of flow of liquid from the conduit and the movement of the conduit to its raised position.

4,337,803

## METHOD OF RECHARGING FIRE EXTINGUISHER BOTTLES

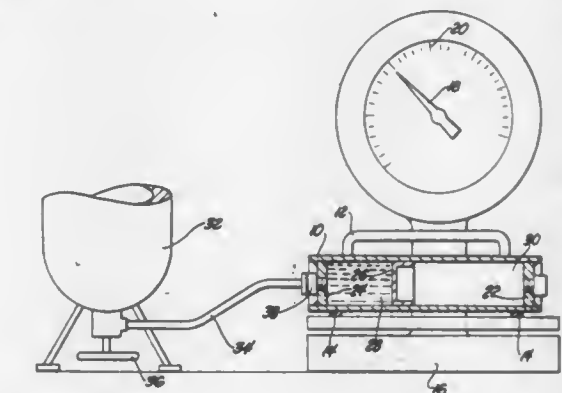
Anthony J. Monte, Macomb, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 21, 1980, Ser. No. 170,465

Int. Cl.<sup>3</sup> B65B 1/32

U.S. Cl. 141—2

3 Claims



1. A method of charging liquid fire suppressant and pressurized gas into a fire extinguisher bottle 52 equipped with a filler plug, said method being carried out with the use of two transfer cylinders 10, 66, each having a floating piston therein cooperating with the respective cylinders' end walls to define two separate chambers therein; said method comprising the steps of:

- positioning one of the transfer cylinders on a weighing machine 16, and
- adding liquid fire suppressant into one of its two chambers until a predetermined weight of suppressant is in said one chamber;
- connecting a first filler hose 34 between said one chamber and the filler plug 38 on said fire extinguisher bottle 52;
- applying a force to the floating piston and opening the filler plug to pump substantially all of the liquid suppressant through the hose into said bottle;
- pressurizing said liquid suppressant by connecting a second filler hose 44 between the filler plug on the bottle and an independent source of pressurized gas; and
- opening the filler plug to admit a predetermined quantity of said pressurized gas to the bottle.



**4,337,804**  
**HOUSEHOLD SYSTEM FOR VACUUM PACKING**  
**FOODS**

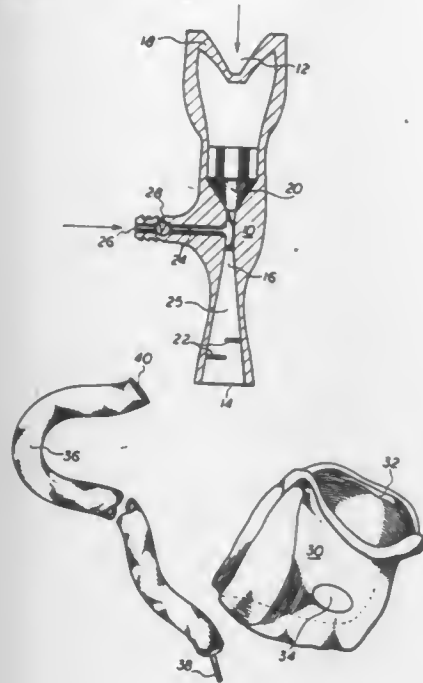
Ralph M. Maruscak, Apt. 416, 250 Cedar Ridge Apts., Monroeville, Pa. 15146

Filed Jan. 16, 1981, Ser. No. 225,693

Int. Cl.<sup>3</sup> B65B 31/08; B65D 33/16

U.S. Cl. 141—65

5 Claims



1. A system for evacuating food storage containers, said system comprising:

a suction tube having an input port that is connectable to a water faucet and a suction arm that provides a low pressure condition in response to a fluid flow into said input port;

a container for holding food;

a flexible tube having a needle valve at one end thereof, said flexible tube connectable at the one end to said container by penetration thereof with the needle valve and connectable at the other end to the suction arm of the suction tube; and

wherein said container is provided with a resealable opening through which the food is placed into and taken out of the container, and said container includes a self-sealing bladder portion adapted for insertion of the needle valve end of the flexible tube.

**4,337,805**  
**AGRICULTURAL BAG LOADING APPARATUS**

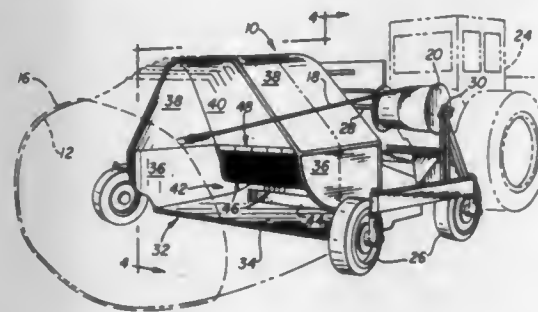
William C. Johnson, Omaha; David H. Rasmussen, Arlington, both of Nebr., and Richard H. Lee, Astoria, Oreg., assignors to AG-Bag Corporation, Arlington, Nebr.

Continuation of Ser. No. 32,766, Apr. 24, 1979, abandoned. This application Dec. 3, 1980, Ser. No. 212,606

Int. Cl.<sup>3</sup> B65B 1/24

U.S. Cl. 141—71

35 Claims



1. An agricultural bag loading apparatus for loading material into agricultural bags, said apparatus comprising:  
a housing defining an intake chamber for receiving silage

and an output chamber adapted to receive the mouth of an agricultural bag;  
means securing the mouth of an agricultural bag to said output chamber;  
a passageway formed between said intake chamber and said output chamber;  
a primary shaft;  
means for rotatably supporting said primary shaft in said passageway;  
drive means for selectively rotating said primary shaft;  
a plurality of teeth mounted along said primary shaft in a random pattern with said teeth being evenly distributed on the surface of said shaft, said teeth being adapted to force silage from the intake chamber through said passageway and into said output chamber when the shaft is rotated;  
a comb mounted on said housing and extending to within a predetermined distance from said shaft for removing silage from said teeth when the shaft is rotated;  
said teeth being operable when rotated to force silage from the intake chamber, through said passageway, through said output chamber and into the agricultural bag; and  
means for yieldably engaging the filled end of the agricultural bag to resist the movement of the loading apparatus away from the filled end of the bag as silage is forced into the agricultural bag so that silage is loaded into the bag at a predetermined pressure.

**4,337,806**  
**LIQUID DISPENSING DEVICE**

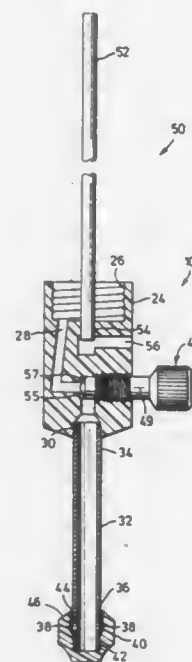
Dominic Cirella, 139 Wentworth North, Hamilton, Ontario, Canada (L8L 5V6)

Filed Aug. 26, 1980, Ser. No. 181,739

Int. Cl.<sup>3</sup> B65B 3/04; B67C 3/00

U.S. Cl. 141—286

4 Claims



1. A device for floating liquid from a container onto a base layer formed of another liquid, comprising:

a connector attachable to the container to pass liquid from the container;

a tubular member having an upper end attached to the connector to receive the liquid passing from the container and a lower end having at least one aperture from which the liquid can escape; and,

a cap attached to the tubular member lower end, the cap having internal surfaces defining a well disposed about and rising above the apertures so that escaping liquid is constrained to rise vertically out of the well, the cap having external surfaces which are immersible in the base layer to permit the liquid rising out of the well to flow over the external surfaces onto the base layer, wherein one

of the connector and tubular member including means for regulating the flow of the liquid from the container.

**4,337,807**  
**HIGH PRESSURE COUPLING**

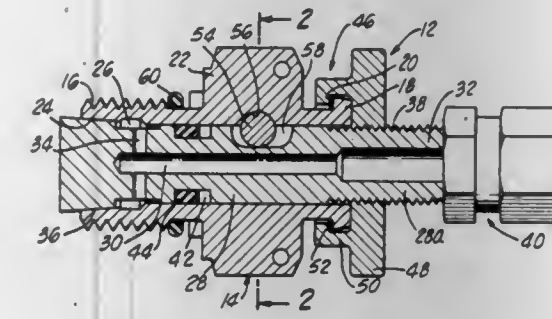
Meyer Piet, 15430 Proctor Ave., City of Industry, Calif. 91747

Continuation of Ser. No. 62,341, Jul. 31, 1979, abandoned. This application Feb. 27, 1981, Ser. No. 238,761

Int. Cl.<sup>3</sup> B65B 3/04; F16K 3/12

U.S. Cl. 141—383

3 Claims



1. A high pressure valve for operably interconnecting a source of high pressure gas with the inlet of a high pressure system said valve being of the type used in high pressure gas applications involving pressures of between 5000 and 25,000 pounds per square inch and comprising:

(a) a valve body having a longitudinal bore extending there-through, said bore terminating proximate a first end of said body in an elongated, tapered valve seat, said valve body including:

(1) first connector means for removably connecting said valve body with the high pressure system;

(2) a gas flow passageway disposed proximate said tapered valve seat; and

(3) a radially outwardly extending locking shoulder;

(b) a valve stem carried within said bore of said valve body for reciprocal movement with respect thereto, said valve stem being provided with a gas flow passageway having an inlet and an outlet, said outlet being adapted to communicate with said gas flow passageway of said valve body, said valve stem further including:

(1) an elongated valve face disposed at a first end thereof having side walls tapering at the same angle as said valve seat and adapted to cooperate therewith when seated thereagainst to provide a long frustoconically shaped sealing surface;

(2) second connector means for removably interconnecting said inlet valve stem with the source of high pressure gas; and

(3) external threads provided proximate the second end thereof for threadably receiving said second connector means; and

(c) valve actuating means for urging longitudinal movement of said valve stem within said longitudinal bore of said valve body to move said elongated valve face into sealing engagement with said elongated valve seat said means comprising an internally threaded ring rotatably carried by said valve body in threadable engagement with said threaded valve stem, said ring being provided with an internal flange means adapted to pressurally engage said locking shoulder of said body as said ring is rotated relative to said valve body and further including means for preventing relative rotation between said valve body and said valve stem whereby as said ring is rotated relative to said body, said valve stem will be moved within said longitudinal bore to bring said valve face into sealable engagement with said valve seat.

**4,337,808**  
**SUPER-SURFACER**

Itsuo Morisaki, Amagasaki, Japan, assignor to Morisaki Jutakusangyo Kabushiki Kaisha, Hyogo, Japan

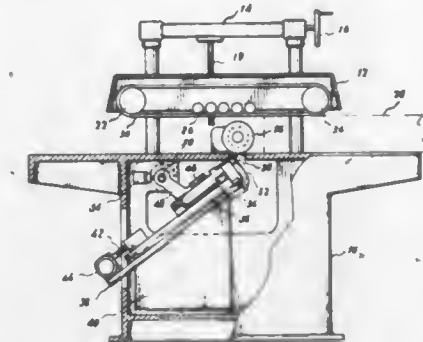
Filed Jun. 30, 1980, Ser. No. 164,095

Claims priority, application Japan, Aug. 31, 1979, 54-111844; Mar. 24, 1980, 55-37780

Int. Cl.<sup>3</sup> B27C 1/14

U.S. Cl. 144—114 A

6 Claims



1. A super-surfacer provided with a table, a blade slot formed laterally in the surface of said table, an inclined shaving blade extending through said blade slot for shaving timber fed longitudinally along the surface of said table passed said shaving blade, at least a portion of said slot and protruding blade edge defining a blade shaving position, the length of the knife edge of said shaving blade being longer than the width of said blade slot, means for reciprocally moving said shaving blade relative to said slot and means for sharpening said shaving blade, said sharpening means being positioned adjoining at least one end of said slot and displaced from the blade shaving position whereby said shaving blade upon being reciprocated is sharpened by said sharpening means.

**4,337,809**  
**LOG SPLITTER**

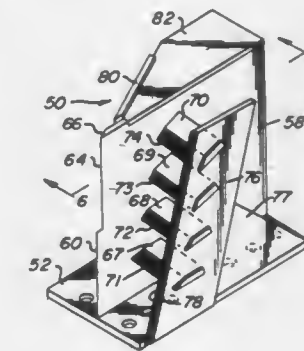
Robert K. Bertolette, 52 Ivy Cir., Norristown, Pa. 19403, and John E. Bertolette, 259 Graterford Rd., Schwenksville, Pa. 19473

Filed Aug. 25, 1980, Ser. No. 180,982

Int. Cl.<sup>3</sup> B27L 7/00

U.S. Cl. 144—193 A

16 Claims



1. In a log splitter having means for feeding a log along a path of travel in which the log is split into a plurality of pieces, the improvement comprising:

a splitting mechanism which includes a main splitter arranged with a cutting edge facing the forward end of a log fed along said path of travel, said cutting edge of said main splitter being formed by a straight-sided wedge construction having a straight side and a beveled surface joined at said cutting edge, and a plurality of cutting knives on one side of said main splitter extending generally transversely to said main splitter with cutting edges facing the forward end of a log fed along said path of travel, said cutting knives being spaced apart relative to one another in the



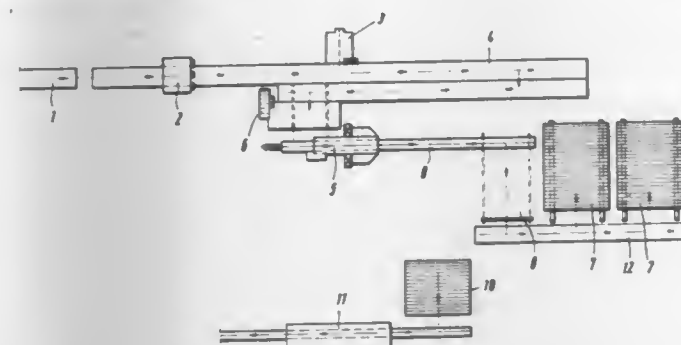
direction transverse to the path of travel of the log to define at least three shearing compartments through which a log is fed as it is being split into pieces.

**4,337,810**  
**METHOD OF PRODUCING CUT TIMBER FROM ROUND TIMBER**

Otto Kreibbaum, Ortsteil Thüste, 3216 Salzhemmendorf 7, Fed. Rep. of Germany  
Continuation of Ser. No. 964,671, Nov. 29, 1978, abandoned.  
This application Oct. 30, 1980, Ser. No. 202,114  
Int. Cl.<sup>3</sup> B27B 1/00

U.S. Cl. 144—357

2 Claims



1. A method of producing cut timber from round logs in a manner to increase the cut timber yield by increasing the average useable diameter of the logs, comprising the steps of pre-cutting all of the round logs to the same predetermined substantially constant length with the said length being within the range of between two to three meters, measuring the minimum useable diameter of each pre-cut log, providing longitudinal guide surfaces on the periphery of the pre-cut logs for establishing a guide surface relationship for each log in accordance with narrow useable diameter ranges of their minimum useable diameters, sorting the logs in accordance with their said measured minimum useable diameter and dividing them into a plurality of groups of logs having useable diameters within said narrow useable diameter ranges respectively and the same guide surface relationship, separately storing the groups of logs, presetting a timber cutting saw for each group of logs in accordance with its useable diameter range and guide surface relationship to provide a predetermined optimum timber yield for the respective guide surface relationship, and cutting the logs of each group of logs in succession with the timber saw into timber sections with the saw preset for that group of logs while guiding each log for cutting with its longitudinal guide surfaces to provide said optimum timber yield.

**4,337,811**  
**ROTARY PLANER**

Everett J. Partington, 620 S. Elizabeth, Oconomowoc, Wis. 53066

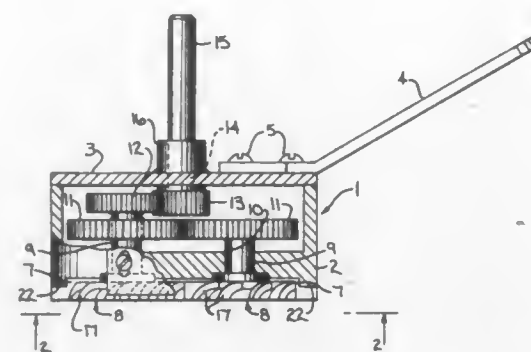
Continuation-in-part of Ser. No. 5,556, Jan. 22, 1979, abandoned. This application Jun. 25, 1981, Ser. No. 277,172  
Int. Cl.<sup>3</sup> B27C 1/10

U.S. Cl. 145—4.2

7 Claims

1. A rotary planer to be moved across a work surface to plane the surface, comprising a body having a generally flat outer face and having a pair of communicating openings in said face, the forward portion of said face, with respect to the direction of travel of said planer, being offset inwardly from the plane of said face to provide an inwardly offset forward portion, a rotary cutter journaled within each of said openings, and a drive mechanism interconnecting the cutters with a rotating power source, said drive mechanism including means for rotating the cutters in opposite directions, each rotary cutter including a plurality of teeth disposed circumferentially of the respective cutter, the outer extremities of said teeth being substantially flush with said face and the outer extremities of said teeth projecting outwardly beyond said offset for-

ward portion, movement of said planer in said direction of travel effecting engagement of the projecting teeth with the



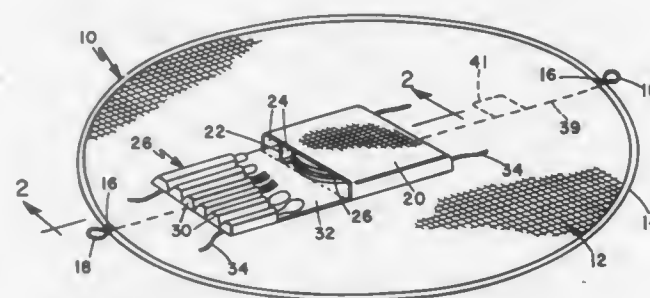
work surface to plane said surface, said face riding on the planed surface as said planer moves in said direction of travel.

**4,337,812**  
**COMBINED PICNIC BAG AND TABLECLOTH**  
Eileen Trinkner, 1819 Chalcedony St., Apt. #2, San Diego, Calif. 92109

Filed Feb. 2, 1981, Ser. No. 230,527  
Int. Cl.<sup>3</sup> A45C 9/00

U.S. Cl. 150—11

6 Claims



1. A combined picnic bag and tablecloth comprising:  
a pliable cover having an interior and exterior surface for providing a table-like setting,  
a circular hem formed adjacent the perimeter of the cover and containing two oppositely placed openings,  
a draw cord contained within the hem graspable through the hem openings for drawing the cover perimeter together to form a bag,  
a pocket with storage compartments therein spaced substantially in the center of the interior surface of the cover,  
a flap hinged to and foldable over the pocket,  
a flap having compartments for storage on its inner and outer surfaces,  
means for securing the flap in position over the pocket, at least one utility pouch formed in the cover accessible from the exterior surface thereof.

**4,337,813**  
**TREAD CONFIGURATION OF PNEUMATIC TIRES FOR MOTOR VEHICLES**

Heinz-Dieter Räch, Garbsen, and Henner Pieper, Langenhagen, both of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany  
Filed Aug. 14, 1980, Ser. No. 177,857

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1979, 2933485

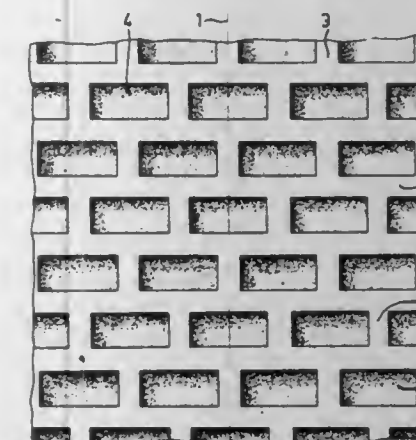
Int. Cl.<sup>3</sup> B60C 11/10

U.S. Cl. 152—209 R

5 Claims

1. A tread configuration with an axial direction and a circumferential direction for pneumatic vehicle tires especially spare tires to be used temporarily, consisting of in combination: transverse webs having a width, circumferential webs with a

circumferential dimension, and a large number of substantially rectangular depressions having a long side located along the axial direction of the tire, said depressions being successively arranged in both the axial and circumferential directions of the tire, said depressions being respectively separated from one another by successive transverse webs and circumferential webs, the width of said webs corresponding to approximately



1/4 to 3/4 of the circumferential dimension of said depressions, said circumferential webs in pairs being offset relative to each other without any circumferential rows thereof being provided though sequentially following each other in offset relationship so that the tread configuration causes a loud noise to be generated as a constant reminder for necessity of changing the tire which is not intended for continuous operation, especially not for high speeds.

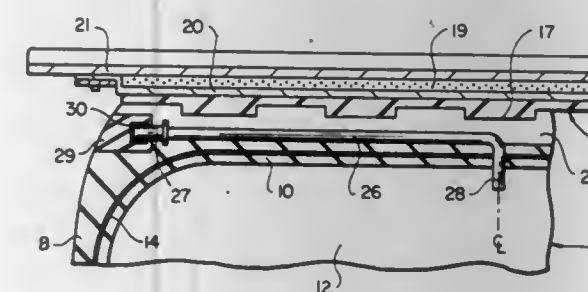
**4,337,814**  
**AIR VALVE CONDUIT IN THE TRACK WALL OF A TIRE**  
Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01272, § 371 Date Sep. 22, 1980, § 102(e) Date Sep. 22, 1980, PCT Pub. No. WO82/00978, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 22, 1980, Ser. No. 261,114  
Int. Cl.<sup>3</sup> B60C 29/00

U.S. Cl. 152—429

5 Claims



1. In a tire (7) having an interior air chamber (12) bounded in part by a side wall (8) and a track wall (10), the improvement comprising:

an elongated air conduit (26, 33, 37) having first and second ends, said first end communicates with said air chamber (12) through said track wall (10) and said second end being disposed in said side wall (8); and  
an air valve receptacle (27) in said side wall (8) and at said second end of said air conduit (26, 33, 37).

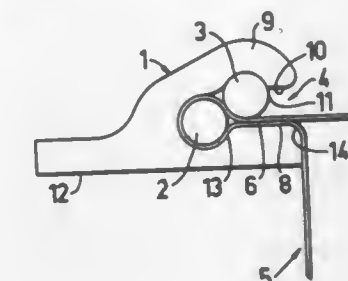
**4,337,815**  
**DEVICE FOR ATTACHING A CLOTH**  
Rune Lindström, Kage, Sweden, assignor to Skega AB, Ersmark, Sweden

Continuation of Ser. No. 850,834, Nov. 11, 1977, abandoned.  
This application Aug. 6, 1980, Ser. No. 175,844

Claims priority, application Sweden, Nov. 15, 1976, 7612730  
Int. Cl.<sup>3</sup> A47H 13/00

U.S. Cl. 160—392

6 Claims



1. A device for releasably holding flexible sheet material, comprising a holding member having a longitudinal slot with an entrance opening to said slot extending along the length of said slot, a first elongate locking member inserted through said entrance opening into said slot, and a second elongate locking member inserted through said entrance opening, after said first locking member, into said slot, said second locking member having a thickness greater than the entrance opening and being inserted through said opening by force, the device being such that the flexible sheet material extends around said first locking member and has two layers of material unsecured to each other and extending past the second locking member and out through said entrance opening adjacent a first wall of the slot, and said second locking member, when in its effective locking position in said slot, is in contact with said first locking member through one of said layers and situated between said two layers of the flexible material on one side and a second wall of the slot on the other side of said second locking member, which second wall is defined by a surface of a slightly resilient overhang integrally formed with the holding member, whereby tension applied to the layer nearest said first wall tends to lock the sheet more firmly in the slot and tension applied to the other of said layers tends to release the material from the slot.

**4,337,816**  
**PROCESS FOR PRODUCING SPHERICAL GRAPHITE CASTINGS**

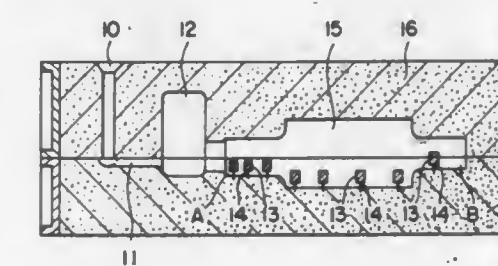
Yasuo Kaku, Hiroshima, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 82,521, Oct. 9, 1979, abandoned. This application Apr. 24, 1981, Ser. No. 256,988

Claims priority, application Japan, Oct. 9, 1978, 53-123526  
Int. Cl.<sup>3</sup> B22D 27/00

U.S. Cl. 164—58.1

3 Claims



1. A process for molding cast iron comprising arranging within the mold's hollow part a plurality of spherizing alloy blocks, the spherizing alloy being selected from one of the groups consisting of Fe-Si-Mg, Si-Ca-Mg, Si-Ce-Mg-Re, or Fe-Mg, and then pouring an iron melt into the casting mold, so that spherical graphite cast iron is formed in situ around the

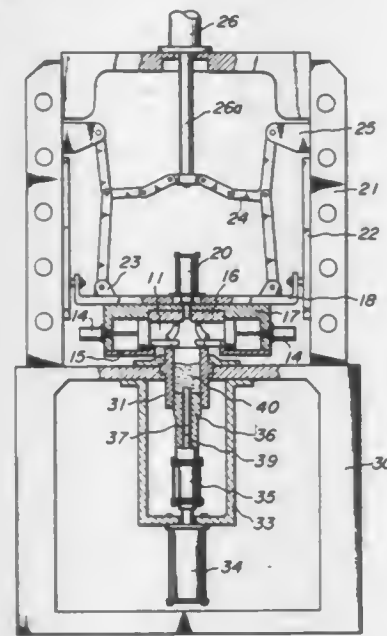


sphering alloy blocks, with the provisos that (a) each sphering block is attached to one end of a supporting rod made of a soft steel whose melting point is higher than that of the sphering alloy, the other end of which is attached to the inner wall of the mold's hollow part, so that the sphering block is not in direct contact with the mold wall, and (b) the concentration of sphering blocks is greater at the inlet end of the mold's hollow part and lesser at the far end of the hollow part.

**4,337,817**  
**METHOD OF JOINING A MEMBER TO A DIECAST ARTICLE WRAPPING THEREABOUT IN DIECASTING**  
 Mikiya Komatsu; Masashi Arita, and Syunsuke Suzuki, all of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 29, 1980, Ser. No. 125,857  
 Claims priority, application Japan, Mar. 3, 1979, 54-24070  
 Int. Cl.<sup>3</sup> B22D 17/08, 17/20, 19/04  
 U.S. Cl. 164-120

2 Claims

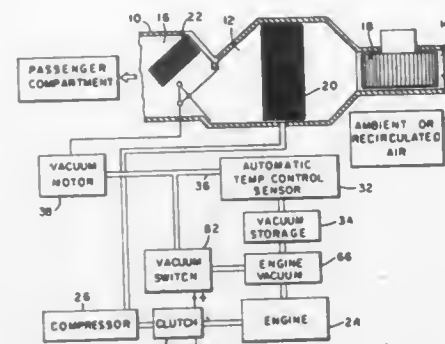


1. A method of joining a member to a diecast article, using an apparatus comprising a die defining a die cavity therein, an injection sleeve associated with said die and communicating with said die cavity, a forcible feed means slidably arranged in said injection sleeve for forcibly filling said die cavity with a molten metal, means associated with said forcible feed means for driving said forcible feed means, said forcible feed means including a tip portion defining an aperture adapted to receive a member, means associated with said forcible feed means for displacing a portion of a member beyond an outermost surface of said tip portion defining said aperture to expose sides of a member to a cavity defined by walls of said injection sleeve, said method comprising the steps of:

- inserting a member into said aperture, said member cooperating with said displacing means such that a portion of said member extends beyond an outermost surface of said tip portion of said forcible feed means to expose an end surface and side surfaces of said member to the cavity defined in said injection sleeve;
- filling said sleeve with molten metal to surround said portion of said member with said molten metal to preheat said portion to a degree such that a metallurgical bond will be obtained upon casting said metal about said portion;
- injecting said metal into said die cavity by translation of said forcible feed means along said injection sleeve while maintaining said portion of said member exposed to said molten metal; and
- solidifying said metal about said member.

**4,337,818**  
**VEHICLE TEMPERATURE CONTROL SYSTEM**  
 Rudolph J. Franz, Schaumburg, Ill., assignor to Eaton Corporation, Cleveland, Ohio  
 Filed Jun. 18, 1979, Ser. No. 50,022  
 Int. Cl.<sup>3</sup> F25B 13/00  
 U.S. Cl. 165-2

4 Claims



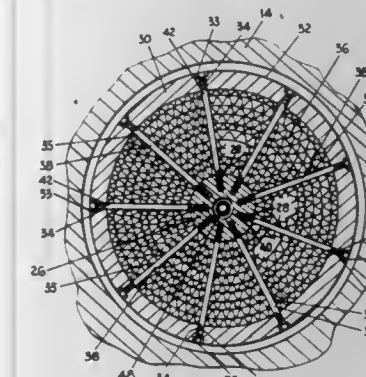
4. A method of automatically controlling the air temperature in a vehicle passenger compartment, said method comprising:
- providing a housing having a fluid passageway communicating with said compartment;
  - flowing ambient air through said fluid passageway;
  - providing a heater core in said fluid passageway for transferring heat to flowing air;
  - providing energizable refrigerating means for cooling air flowing through said passageway;
  - selecting a set point temperature at which the air in said compartment is to be maintained;
  - sensing the air temperature within said compartment and the ambient air temperature exteriorly of said vehicle, said sensing step including generating a control signal having a magnitude responsive to the ambient air temperature, the air temperature in said compartment, and said set point temperature;
  - cycling said refrigerating means in a preselected cycle pattern in response to said control signal as the passenger compartment temperature rises above said set point temperature;
  - modulating said on/off cycling means as the in-car temperature falls below said set point temperature;
  - de-energizing said clutch in response to a control signal indicative of ambient temperatures below a predetermined value, whereupon said refrigeration means is maintained de-energized; and
  - directing a modulated air flow over said heater core in response to said control signal at temperatures below said predetermined value for heating said compartment.

**4,337,819**  
**HIGH TEMPERATURE METAL HEAT RECUPERATION WHEEL**  
 William A. Phillips, 617 Westshire Ct., NW., Comstock Park, Mich. 49321  
 Filed Aug. 25, 1980, Ser. No. 180,685  
 Int. Cl.<sup>3</sup> F28D 19/00  
 U.S. Cl. 165-9

17 Claims

1. An improved gaseous heat recuperator having a metal wheel with a rim, a core and a heat transfer medium therebetween; means for supplying a heated gaseous stream to one side of the wheel and means for supplying a cooler gas to another side of the heat exchange wheel; means for rotating the wheel about a central axis thereof to transfer the heat from the heated gaseous stream to the cooler gaseous stream, wherein the improvement comprises:
- a plurality of structural steel spokes which extend radially between said core and said rim of said metal wheel, each of said spokes having one end retained in one of the core and the rim;
  - the other end of each spoke being radially slidable in the

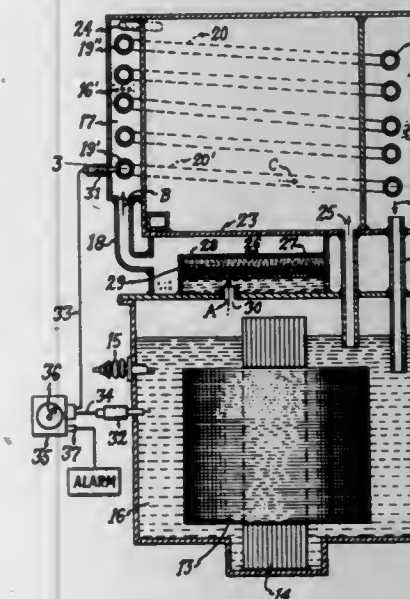
other of the core and the rim to allow for thermal expansion of the spokes; and means for maintaining the position of the rim with respect to the core;



the spokes being of a size and number, and at a position within the wheel to materially strengthen the wheel and minimize actual expansion and contraction of the spokes as a result of exposure to both hotter and cooler gases during rotation of the wheels.

**4,337,820**  
**LEAK DETECTOR FOR VAPORIZATION COOLED TRANSFORMERS**  
 Linden W. Pierce, Rome, Ga., assignor to General Electric Company, N.Y.  
 Division of Ser. No. 21,543, Mar. 19, 1979, Pat. No. 4,232,551.  
 This application Feb. 22, 1980, Ser. No. 123,621  
 Int. Cl.<sup>3</sup> F28D 15/00; G08B 21/00  
 U.S. Cl. 165-11 R

1 Claim

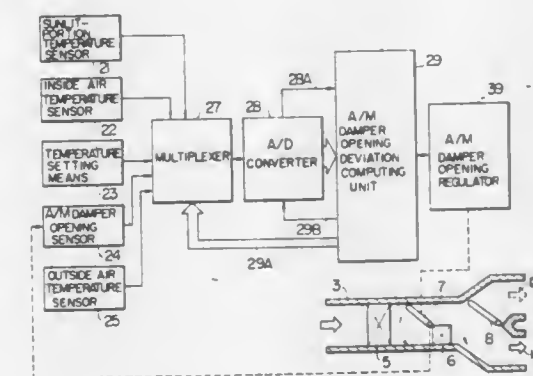


1. An excess moisture detector for vaporization cooled transformers comprising:
- a transformer tank containing a condensable coolant and having an opening in the top;
  - a heat exchanger assembly connected to the top of said transformer tank for receiving said coolant in vapor form and returning said coolant in condensed form to the tank;
  - a quantity of moisture adsorbing material in an apertured container located intermediate the heat exchanger and the tank for removing moisture from the coolant, said moisture adsorbing material being moisture saturated due to excessive moisture within said transformer;
  - temperature sensing means within a portion of the heat exchanger to determine the temperature within said heat exchanger;
  - temperature sensing means within the tank to determine the temperature of the coolant within the tank; and
  - indicating means for determining the differences in the heat

exchanger temperature and the coolant temperature and for providing an indication when a predetermined temperature differential is exceeded thereby detecting that said moisture adsorbing material has become inoperative due to the presence of excess moisture.

**4,337,821**  
**AIR CONDITIONER SYSTEM FOR AUTOMOBILES**  
 Atsunori Saito, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan  
 Filed Nov. 21, 1979, Ser. No. 96,554  
 Claims priority, application Japan, Nov. 28, 1978, 53/147576;  
 Sep. 12, 1979, 54/117507  
 Int. Cl.<sup>3</sup> F25B 29/00  
 U.S. Cl. 165-12

4 Claims

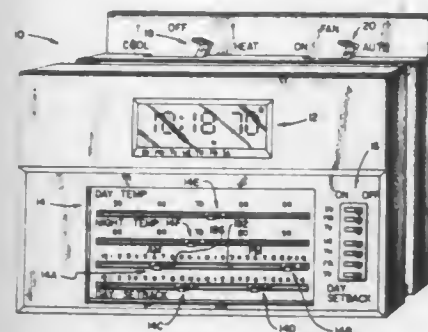




4,337,822  
**DIGITAL THERMOSTAT**  
 Tom M. Hyltin, 5733 Preston Haven, Dallas, Tex. 75230, and J. Scott Jamieson, 715 Waverly Dr., Arlington, Tex. 76015  
 Division of Ser. No. 67,028, Aug. 16, 1979, Pat. No. 4,264,034.  
 This application Nov. 13, 1980, Ser. No. 206,672  
 Int. Cl.<sup>3</sup> F25B 29/00

U.S. Cl. 165—26

1 Claim



1. In an automatic thermostat of the type having a programmable switch circuit for cycling heat transfer apparatus on and off, the improvement comprising:  
 a system mode interrogator for generating a signal representative of the selected system mode;  
 a temperature comparator circuit for performing the comparative relation operations ( $T_A - T_{SET}$ ) or ( $T_{SET} - T_A$ ) and for generating a turn-on command signal when either one of the following comparative relations is satisfied:  
 $T_A - T_{SET} \geq K_1$  in response to a mode signal indicating the cooling mode,  
 $T_{SET} - T_A \geq K_2$  in response to a mode signal indicating the heating mode;  
 a timing circuit responsively coupled to the programmable switch and to the temperature comparator for enabling the transmission of the turn-on command signal after the elapse of a predetermined minimum-off interval following the generation of the turn-on command signal; and,  
 a temperature differential control unit coupled to the temperature comparator to carry out the following operations in response to the presence of the turn-on command signal and to the enabling condition of the minimum-off timer:  
 $T_A - T_{SET} \geq \Delta T_1$ , in response to a mode signal indicating the heating mode, and  
 $T_{SET} - T_A \geq \Delta T_2$ , in response to a mode signal indicating the cooling mode,  
 the turn-on command signal being terminated when either of the latter comparative relations are satisfied,  
 wherein  $K_1$ ,  $K_2$ ,  $\Delta T_1$ , and  $\Delta T_2$  are arbitrary temperature bias values, and  $T_A$ =ambient temperature,  $T_{SET}$ =set point temperature.

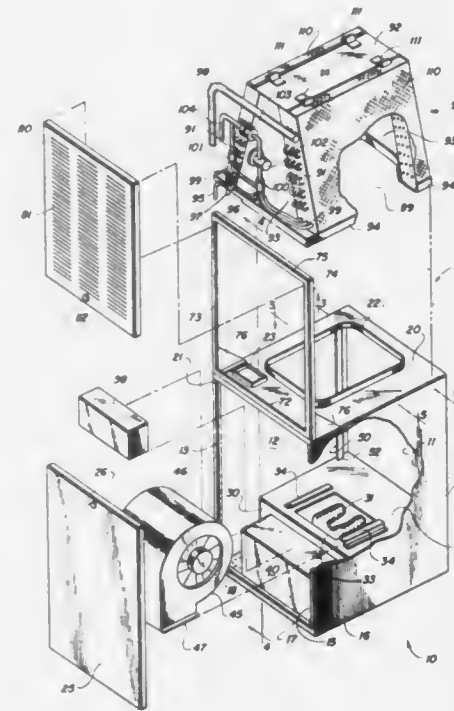
4,337,823  
**ELECTRIC FURNACE FOR MOBILE AND MODULAR HOMES**  
 Michael J. DelPercio, St. Louis County, Mo., assignor to Intertherm Inc., St. Louis, Mo.  
 Filed Oct. 5, 1979, Ser. No. 82,005  
 Int. Cl.<sup>3</sup> F25B 29/00; F28F 7/00

U.S. Cl. 165—48 R

3 Claims

1. A down-flow type furnace of doorless closet installation in mobile or modular homes and the like, comprising an enclosed upright rectangular heater-blower cabinet having  
 a lower air outlet duct opening in the cabinet bottom wall, an electric heating element,  
 a blower,  
 an air inlet opening in the cabinet top wall,  
 forward cabinet door means to provide access to said heating element and blower, and  
 an air inlet assembly including  
 a rectangular frame member substantially vertically

mounted, along its lower edge only, onto the forward edge of the top wall of the heater-blower cabinet, the other edges of said frame member being free, whereby said other edges of said frame member may on installation be connected to the final wall trim of such doorless closet,  
 said frame member having an opening commencing above and adjacent to said cabinet top wall, the opening width being substantially the entire width of said cabinet, and an air conducting panel removably secured across said frame member opening; in combination with  
 a refrigeration coil assembly positioned on the cabinet top wall over its said air inlet opening at substantially the level of said frame member opening and mountable therethrough,  
 whereby the height of the furnace cabinet and height of installation are minimized while removal of said air conducting panel affords optimum access for servicing said refrigeration coil assembly, whether of a heat pump or an air conditioner.



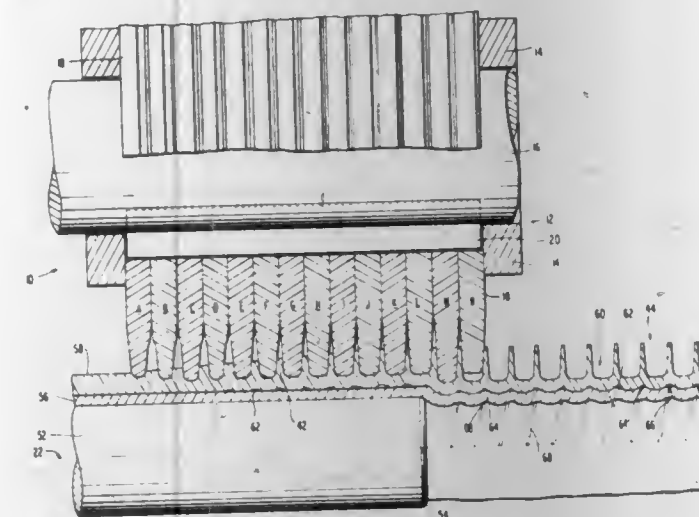
3. The method of installing an electric furnace in a mobile home or the like, for subsequent utilization of a refrigerant coil, comprising the steps of  
 installing in a doorless closet space upon a floor duct plenum, a down-flow heater-blower cabinet having a top wall air inlet, and  
 constructing a forward closet wall immediately above the edge of the top wall of the heater-blower cabinet and finishing same to the top and side edges of a frame commencing about the level of such top wall and extending upward,  
 the frame having an air conducting panel; and thereafter  
 removing such air conducting panel and positioning through such frame, on the top wall of the heater-blower cabinet about its air inlet, an uncased refrigerant coil and operatively connecting same to an outdoor coil and to the electric furnace,  
 whereby, on adding the uncased refrigerant coil, return air may flow through the air conducting panel to and through the coil and thence through the heating elements of the electric furnace.

4,337,824  
**DOUBLE WALL HEAT EXCHANGER**  
 Kenneth L. Kirk, Cranston, R.I., assignor to Amtrol, West Warwick, R.I.

Filed Oct. 24, 1980, Ser. No. 200,598  
 Int. Cl.<sup>3</sup> F28F 1/36

U.S. Cl. 165—70

16 Claims

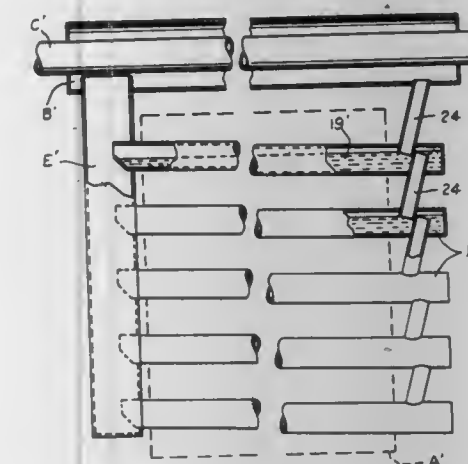


1. Double wall tubing which comprises:  
 (i) an outer tube having an outer helical fin and a continuous, small helical groove on the inside of the outer tube, the helical groove following the helical path of the outer helical fin;  
 (ii) an inner tube having a slightly-raised continuous helical protrusion which mates with the inner helical groove of the outer tube; and  
 (iii) a continuous, narrow helical passageway between the inner tube and outer tube formed by the mating continuous, small helical groove and the slightly-raised continuous helical protrusion, said continuous, narrow helical passageway being unimpeded and extending from one end of said double wall tubing to the other end thereof, the inner surface of the outer tube, except in the region of the inner, continuous, small helical groove thereof, contacting the outer surface of the inner tube, except in the region of the slightly-raised continuous helical protrusion.

4,337,825  
**HEAT PIPE MANIFOLD HEAT EXCHANGER**  
 James M. Stewart, 115 Sylvan Way, Greenville, S.C. 29605  
 Division of Ser. No. 859,977, Dec. 12, 1977, Pat. No. 4,285,394.  
 This application Feb. 6, 1981, Ser. No. 231,983  
 Int. Cl.<sup>3</sup> F28D 15/00

U.S. Cl. 165—104.21

8 Claims



1. Heat pipe manifold heat exchange apparatus for exchanging heat between first and second heat exchange media comprising:

frame means having closed sides and open opposed faces through which a flow of said first medium is delivered;  
 a plurality of heat tubes carried by said frame means exposed to said first medium flow having a vaporizable heat transfer medium therein;  
 collector means connected to said heat tubes adjacent one end thereof receiving vaporized heat transfer medium therefrom;  
 manifold means communicating with said collector means, said manifold means including means for conveying a flow of said second heat transfer medium therethrough; and  
 overflow means connected between adjacent ends of said heat tubes remote from said collector means for returning said condensed heat transfer medium to said heat tubes and maintaining a desired level of said heat transfer medium therein; whereby vaporized heat transfer medium from the heat tubes condenses in said manifold transferring its latent heat to said second medium therein.

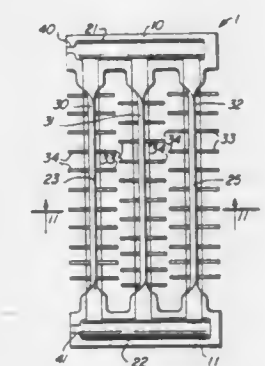
4,337,826  
**HEAT EXCHANGERS AND METHOD OF MAKING SAME**

Richard W. Kritzer, Chicago, Ill., assignor to Peerless of America, Inc., Chicago, Ill.

Filed Feb. 26, 1979, Ser. No. 15,124  
 Int. Cl.<sup>3</sup> F28D 1/04; B21D 53/02

U.S. Cl. 165—151

9 Claims



1. A heat exchanger comprising  
 a. two sheet members bonded together in face-to-face relation to each other  
 b. said sheet members defining a plurality of elongated tubular members disposed therebetween in substantially planar spaced relation to each other; and  
 c. said sheet members including a plurality of fins  
 (1) integral thereto,  
 (2) spaced from each other along said tubular members,  
 (3) having elongated base portions extending transversely across said sheets and said tubular members, and  
 (4) projecting transversely and oppositely outwardly away from said sheets and said tubular members.

4,337,827  
**HELICAL STEAM GENERATOR TUBE SUPPORT**  
 Felix S. Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.  
 Filed Oct. 1, 1980, Ser. No. 192,775  
 Int. Cl.<sup>3</sup> F28F 9/00; F22B 37/20

U.S. Cl. 165—172

1 Claim

1. A support structure for a heat exchanger having helically coiled tubes being arranged generally parallel and being arranged in a plurality of concentric tube rows, comprising:  
 a plurality of longitudinally extending generally flat support plates having support members affixed to the longitudinal edges thereof and extending perpendicular from the plane thereof, the members on one edge of a strip being in a shifted position relative to the members on the other edge thereof to accommodate the helical geometry of the tubes, the plates being arranged generally parallel to the helical axis and each plate extending between a pair of adjacent

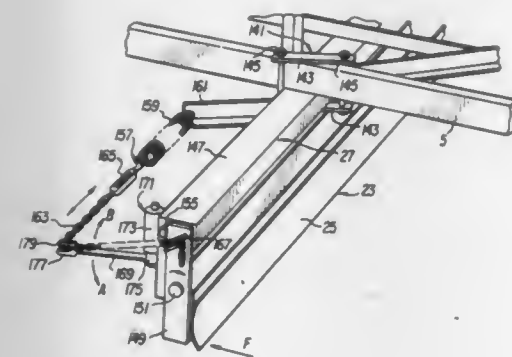
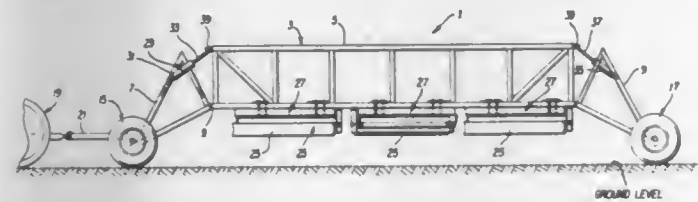






- ii. a second hydraulic fluid motor for imparting swinging movement to the rear section;
  - iii. a first hydraulic fluid line for providing fluid communication between the first and second motors;
  - iv. a second hydraulic fluid line for supplying pressurized hydraulic fluid to the motors; and
  - v. means for equalizing the displacement of hydraulic fluid between the motors and permitting both the front and rear sections to engage the contact means.
7. An improved land plane for connection to a tow vehicle and a pressurized hydraulic fluid source, which land plane comprises:

- (a) a front wheel assembly and a rear wheel assembly;
- (b) a pivotal tongue carried by the front wheel assembly for connecting the plane to a tow vehicle; and
- (c) a hydraulic steering system including:
  - i. a first hydraulic motor carried by the front wheel assembly for actuation by the pivotal tongue;
  - ii. a second hydraulic fluid motor carried by the rear wheel assembly;
  - iii. means for providing fluid communication between the first and second fluid motors for actuation of the second fluid motor in response to the actuation of the first fluid motor;



- iv. means for permitting independent actuation of the second fluid motor by the pressurized hydraulic fluid source; and
- v. means in fluid communication with the means for providing fluid communication between the first and second fluid motors for bypassing fluid flow to the second fluid motor to purge entrapped air from the steering system and directing the purged air back to the pressurized hydraulic fluid source to permit compensation for variations in steering between the front and rear wheel assemblies.

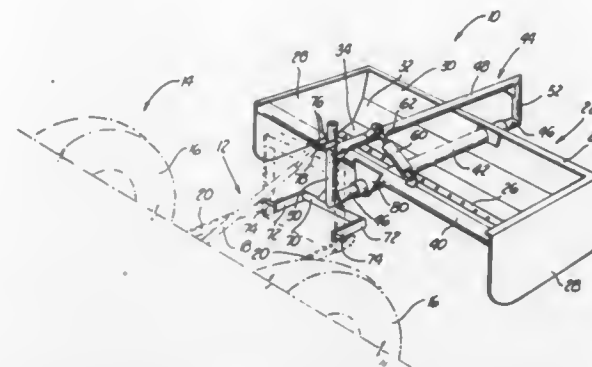
10. A pivotal grader blade having a biasing mechanism for imparting a restoring force in opposition to applied forces encountered during grading for controlled tripping of the blade and prevention of damage thereto, which biasing mechanism comprises:

- (a) resilient means for imparting the restoring force; and
- (b) means for transmitting the restoring force from the resilient means to the pivotal grader blade so as to require a greater degree of applied force for initiating tripping of the blade than that which is required for subsequent continued tripping of the blade, which transmitting means includes:
  - i. a linkage; and
  - ii. an elongate member having a free end for camming against the linkage at a desired point along the length thereof.

**4,337,833**  
**TILTABLE BOX SCRAPER FOR THREE-POINT ATTACHMENT TO A TRACTOR**  
 Rafael J. Welch, P.O. Box 175, St. John, Kans. 67576  
 Filed Dec. 8, 1980, Ser. No. 213,995  
 Int. Cl.<sup>3</sup> E02F 3/76

U.S. Cl. 172-445.1

3 Claims



2. An improved tiltable box scraper for attaching to a standard three-point hitch at the rear of a farm tractor or the like, the scraper comprising:
- a scraper housing having a moldboard with a cutting blade attached at an angle to the bottom of the moldboard and a pair of vertical end plates, the opposite ends of the moldboard attached to the rear of the end plates;
  - a lateral support brace, parallel to the moldboard, the opposite ends of the support brace attached to the front of the end plates;
  - a pipe sleeve, one end of the sleeve attached to and centered on the support brace, the other end attached to and centered on the moldboard;
  - a housing support having a lower pivot bar, an upper bar, a first upright bar attached at one end to the upper bar and having a second portion attached to the pivot bar, and a second upright bar attached to the other end of the upper bar and the pivot bar, the pivot bar slidably received through the pipe sleeve;
  - pivot means attached at one end to the support brace and the other end attached to the upper bar for pivoting the housing on the pivot bar; and
  - attachment means secured to the first upright bar for releasably attaching the scraper to the three-point hitch.

**4,337,834**  
**IMPLEMENT TO BE MOUNTED ON A TRACTOR FOR THE LOOSENING OF SOIL**  
 Ernst Weichel, Postfach 1180, 7326 Heiningen, Fed. Rep. of Germany  
 Filed Apr. 17, 1980, Ser. No. 141,183  
 Claims priority, application Fed. Rep. of Germany, Apr. 18, 1979, 2915628

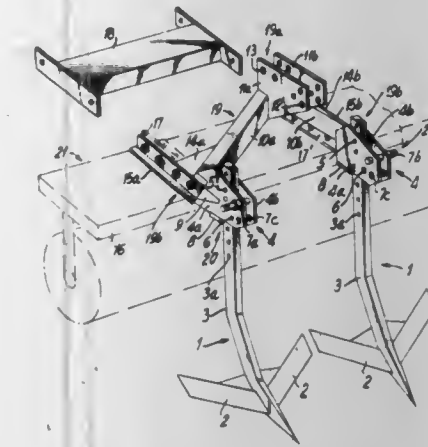
Int. Cl.<sup>3</sup> A01B 59/06

U.S. Cl. 172-448

6 Claims

1. An implement for loosening soil arranged to be propelled by a tractor as the tractor travels on the surface of the soil, comprising at least one supporting structure extending transversely of the direction of travel thereof, whenever it is propelled by the tractor, at least two loosening bits releasably connected to said supporting structure, means attached to said supporting structure for mounting additional implements whose tools are to be driven by the power take-off of the tractor through at least one universal joint shaft, said supporting structure having the shape of an inverted V arranged with the apex thereof extending upwardly from the loosening bits so as to form a passage for enabling the universal joint shaft driving the tools of an additional implement to extend there-through, said supporting structure carrying at its apex upper coupling means and the two lower ends of said supporting structure carrying lower coupling means, said loosening bits

arranged upwardly adjustably in said lower coupling means, said upper and lower coupling means being adapted for en-



gagement with link members linking said supporting structure with the tractor.

**4,337,835**  
**SCRAPER FOR DOUBLE DISK FURROW OPENER**  
 Ronald M. Steilen, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.  
 Filed Jan. 23, 1981, Ser. No. 228,033  
 Int. Cl.<sup>3</sup> A01B 23/06

U.S. Cl. 172-560

14 Claims



1. In a double disk blade assembly including a support, and a pair of rotatable blades having inside surfaces, a scraper assembly comprising:
- a hinge rigidly secured to the support between the disk blades;
  - a pair of scrapers rockably supported by the hinge and movable against the inside surfaces of the disk blades; and
  - a leaf spring supported adjacent the hinge and including biasing portions urging the respective scrapers into engagement with the inside surfaces of the corresponding disk blades.

**4,337,836**  
**BULLDOZER LINKAGE**  
 David H. Seaberg, Davenport, Iowa, assignor to J. I. Case Company  
 Filed Sep. 26, 1980, Ser. No. 191,476  
 Int. Cl.<sup>3</sup> E02F 3/76

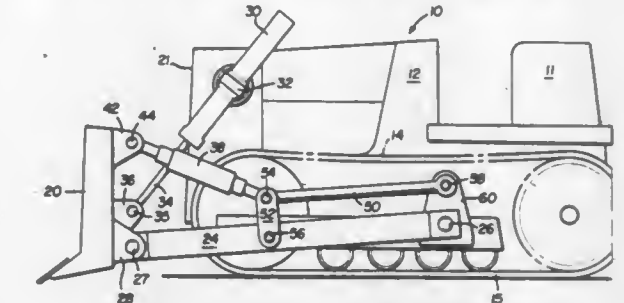
U.S. Cl. 172-826

1 Claim

1. In an earth-working vehicle having a frame and a transverse blade at the forward end thereof, a pair of spaced apart pushbeams each pivotally secured at one end on opposed sides of said vehicle to track frames and said beams pivotally secured to said blade at their opposed ends, the improvement comprising:
- a leveling link assembly for each pushbeam, each leveling link assembly including a mounting plate connected to one of said track frames, one of said pushbeams being pivotally mounted to said mounting plate, a leveling link pivotally mounted at one end to said mounting plate, said leveling link being vertically spaced above said pushbeam and

generally parallel thereto, the other end of said leveling link being pivotally connected to support links which are pivotally connected to said pushbeam, said leveling link, support links, mounting plate, and pushbeam forming a parallelogram;

an adjustable strut pivotally connected at one end to the support links of one of said leveling link assemblies and at its other end to an upper corner of said blade; and

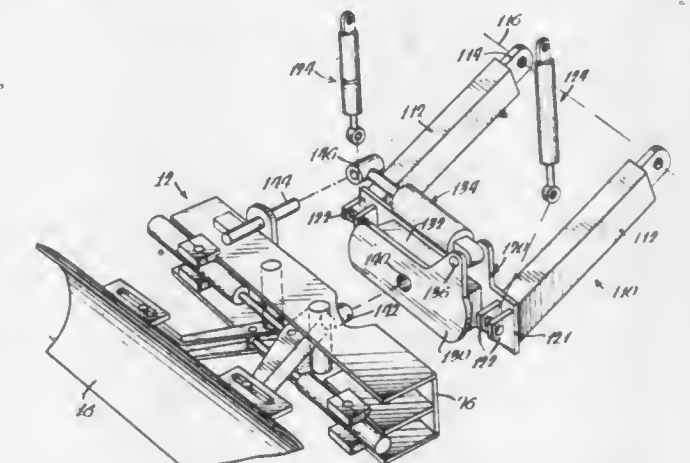


a tilt cylinder pivotally connected between the support links of the other leveling link assembly and another upper corner of said blade whereby said adjustable strut and tilt cylinder force said blade into a relatively vertical attitude upon said blade being raised to thereby reduce blade roll-back and actuation of said tilt cylinder causing tilting of said blade while said blade is being kept at said relatively vertical attitude.

**4,337,837**  
**MOUNTING MECHANISM FOR ANGLE DOZER BLADE**  
 Roland N. Nissen, Wichita, Kans., assignor to J. I. Case Company, Racine, Wis.  
 Division of Ser. No. 950,593, Oct. 12, 1978, Pat. No. 4,244,429.  
 This application Jun. 19, 1980, Ser. No. 161,127  
 Int. Cl.<sup>3</sup> E02F 3/76

U.S. Cl. 172-822

9 Claims



1. A mounting mechanism for supporting a dozer blade on a vehicle comprising: a mounting frame; arm means comprising a pair of laterally spaced arms, between said mounting frame and said dozer blade, for pivotally mounting said blade on said mounting frame; moving means comprising a pair of separate laterally spaced motor means, carried by said mounting frame, each motor means being operatively connected to the laterally opposite one of said arms for moving said arm means to shift said dozer blade relative to said mounting frame about at least one generally vertical axis; linkage means for pivotally linking said mounting frame and said vehicle; first fluid ram means, joining said vehicle and said linkage means, for pivoting said linkage means on said vehicle to raise and lower said mounting frame and said dozer blade as a unit; and second fluid ram means, joining said linkage means and said mounting frame, for pivoting said mounting frame with respect to the longitudinal axis of said vehicle.

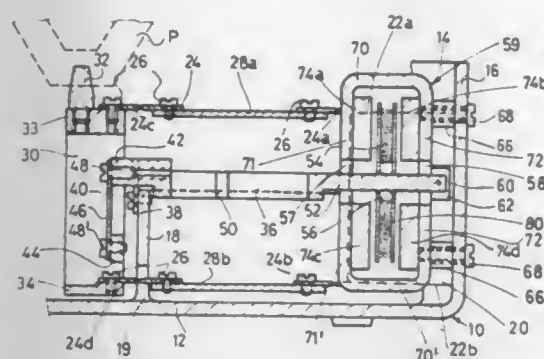


**4,337,838**  
**WEIGHING APPARATUS INCLUDING IMPROVED PERMANENT MAGNET SYSTEM**  
 Peter Kunz, Gossau, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland

Filed Apr. 20, 1981, Ser. No. 255,670  
 Claims priority, application Switzerland, Jul. 30, 1980, 5806/80

Int. Cl.<sup>3</sup> G01G 7/00  
 U.S. Cl. 177—212

8 Claims



1. In a weighing apparatus of the electromagnetic load compensation return-to-zero type including a frame (10), load-receiving means (30) connected for vertical movement from a normal no-load position relative to the frame, permanent magnet means (59) connected with the frame for establishing a permanent magnetic field, compensation coil means (54) connected with said load-receiving means for movement in said magnetic field, means responsive to displacement of said load-receiving member, upon the application of a load thereto, from its initial no-load position for supplying compensating current to said coil means to produce a restoring force for returning said load-receiving means to its initial no-load position, and indicator means for indicating the magnitude of the load as a function of the compensating current required to return the load-receiving means to its initial no-load position; the improvement wherein

- (a) said permanent magnet means comprises two pairs of spaced parallel flat magnet members (74a, 74b; 74c, 74d), whereby the spaces between the magnet members of each pair define a common air gap (80), the magnet members of one pair being oppositely magnetized relative to the corresponding magnet member of the other pair so that the magnetic field between one pair of magnet members extends in a direction opposite that of the magnetic field established between the other pair of magnet members;
- (b) and further wherein said compensation coil means comprises a flat annular coil (54) contained in a plane extending in said air gap between and parallel with said magnet members, said coil normally being symmetrically arranged relative to said magnet members when said load-receiving member is in its initial no-load position.

**4,337,839**  
**MEANS FOR IMPROVING AUTOMOBILE DRIVEABILITY**  
 Lael B. Taplin, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

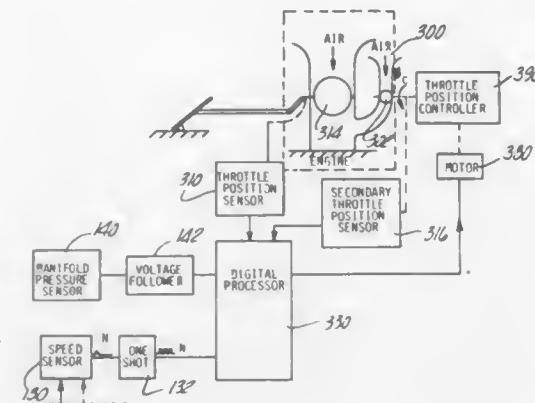
Division of Ser. No. 14,660, Feb. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 863,634, Dec. 22, 1977, abandoned. This application Jun. 30, 1980, Ser. No. 164,669  
 Int. Cl.<sup>3</sup> B60K 31/00; F02D 11/10

U.S. Cl. 180—179

14 Claims

1. In a vehicle powered by an internal combustion engine having a moveable throttle for determining the vehicle speed and a control linkage for setting the position of said throttle in response to operator commands, and a second throttle means for improving the driveability of the automobile, comprising: means providing a first signal indicative of the position of said throttle set by said control linkage;

factor which is determined by parameters of the vehicle and providing an output proportional to the product thereof; second multiplying means for multiplying the output of said first multiplying means by a factor which is constituted by the quotient of a variable indicative of vehicle speed divided by the manifold absolute pressure of the vehicle engine and providing an output proportional to the product thereof; means providing the difference between said first signal and the output of said second multiplying means;



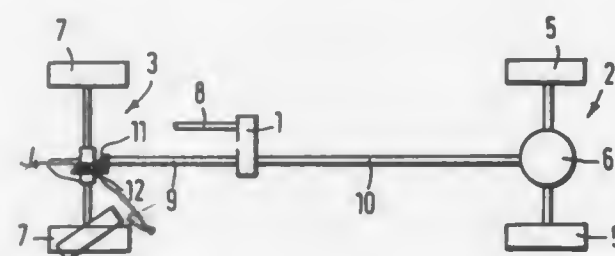
differentiating means providing an output proportional to the derivative with respect to time of said output of said difference means; control means responsive to the output of said differentiating means for modifying the last named output in accordance with the desired dynamics of the engine and vehicle; and means for positioning said second throttle in proportion to the output of said control means.

**4,337,840**  
**DRIVING DEVICE FOR AUTOMOBILES, IN PARTICULAR ALL-TERRAIN VEHICLES**  
 Ernst Buefler, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jul. 8, 1980, Ser. No. 166,816  
 Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928351

Int. Cl.<sup>3</sup> B60K 17/34  
 U.S. Cl. 180—233

4 Claims



1. In a driving device for automobiles, for example all-terrain vehicles, wherein the driving engine can simultaneously drive several vehicle axles by way of a transfer case having an input shaft connected to said driving engine and two output shafts, a constant drive is applied to at least one vehicle axle via one of said output shafts and a differential gear, and a drive for at least one additional vehicle axle is directly provided from the other output shaft via at least one freewheel device that is automatically locking and without a differential gear, the improvement characterized in that:

the two output shafts of said transfer case are constantly engaged with said input shaft;

said at least one freewheel device comprises separate, automatically lockable freewheel devices associated with each individual wheel on the axle driven thereby, which indi-

vidual freewheel devices are effective during both forward and reverse travel; and

the transmission ratio in the axle drive of the vehicle axle driven by way of the freewheel devices is designed sufficiently larger than the ratio in the axle drive of the constantly driven vehicle axle that at no time during cornering, within the entire possible steering lock range of the steerable vehicle wheels, does there occur a strain due to the relative drives to the constantly driven vehicle axle and the vehicle axle driven by way of the freewheel devices.

**4,337,841**  
**ACCIDENT PREVENTION APPARATUS FOR POWER TAKEOFFS**  
 Gerald S. Law, Rubena Lodge, 48 Dromara Rd., Hillsborough, County Down, Northern Ireland

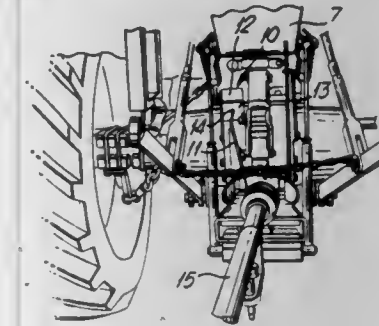
Filed Mar. 7, 1980, Ser. No. 128,372

Claims priority, application United Kingdom, Mar. 7, 1979, 7907966; May 22, 1979, 7917750; Jan. 3, 1980, 8000221

Int. Cl.<sup>3</sup> B60R 21/00

U.S. Cl. 180—271

6 Claims



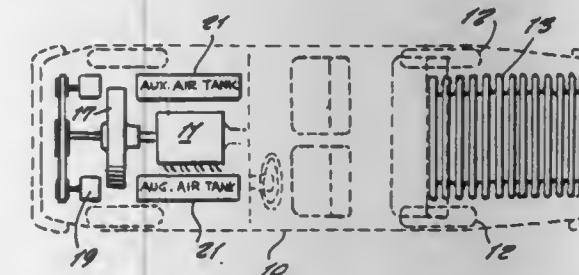
1. An apparatus having at least one moving part driven through a gear box by an internal combustion engine, accident prevention apparatus comprising in electrical circuit, cut-off means to cut off transmission of power from the internal combustion engine driving the moving part so as to stop the moving part, elongated contact-sensitive means extending in the vicinity of the moving part having a portion positioned adjacent a movement-sensitive means, the cut-off means being activated when the elongated contact-sensitive means is deflected so as to cause it to touch the movement-sensitive means, the transmission cut-off means comprising at least one solenoid which on being energized in response to contact of the movement-sensitive means and the elongated contact-sensitive means mechanically moves a gear lever of the gear box to a neutral position immediately causing power from the engine to cease to be transmitted to the moving part.

**4,337,842**  
**VEHICLE POWERED BY AIR PRESSURE ENGINE**  
 Ray P. Spangler, c/o George Spector 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., both of New York, N.Y. 10007

Filed Feb. 20, 1980, Ser. No. 123,196  
 Int. Cl.<sup>3</sup> B60K 3/00

U.S. Cl. 180—302

2 Claims



1. A vehicle, comprising in combination, a compression operated engine on said vehicle driving a flywheel and the vehicular wheels, a pipe between said engine and a compression

power source, said power source comprising a supply tank containing compressed air, and means whereby a high compression is maintained in said tank while said air is removed therefrom to said engine, wherein said means comprises said compressed air tank being expandable wherein a valve along said pipe is controlled by a knob on a dashboard of said vehicle for air volumerate control to said engine wherein a brake lining is provided around said flywheel in combination with a brake system of said vehicle.

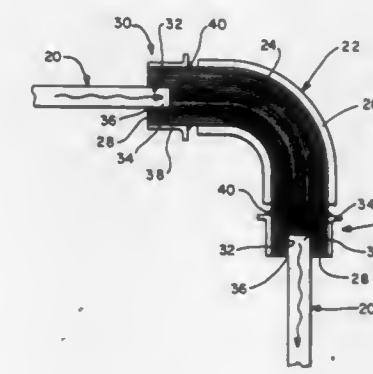
**4,337,843**  
**SONIC WAVEGUIDE ARRANGEMENT USING DIFFERENT WAVEGUIDES AND TECHNIQUE FOR COUPLING THE WAVEGUIDES TOGETHER**  
 Richard C. Wendel, Hermitage, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jul. 22, 1980, Ser. No. 171,244

Int. Cl.<sup>3</sup> G10K 11/00; G01K 1/02; G01N 29/00

U.S. Cl. 181—175

7 Claims



1. A sonic waveguide arrangement for use in transmitting sonic energy from one point to another along a non-linear path, said arrangement comprising a first sonic waveguide consisting essentially of a single rod of material extending from one end thereof to its other end along a linear section of said path, a second different sonic waveguide including a plurality of fibers each smaller in cross-section than said rod and means for maintaining said fibers in a flexible bundle larger in cross-section than said rod, said second waveguide extending from one end thereof to its other end along a short, curved section of said path adjacent to said linear path section, and means for coupling adjacent ends of said first and second waveguides together for passing sonic energy therebetween, said first waveguide being of a type which transmits sonic energy over said linear path section with less transmission losses than would said second waveguide if the latter were used to transmit sonic energy over the same linear path section and said second waveguide being of a type which transmits sonic energy over said curved path section with less transmission losses than would said first waveguide if the latter were used to transmit sonic energy over the same curved path section.

**4,337,844**  
**TREE SUPPORT FOR HUNTERS**  
 Robert C. Hice, Sr., Rte. 8, Cumming, Ga. 30130  
 Filed Apr. 28, 1980, Ser. No. 144,201  
 Int. Cl.<sup>3</sup> A01M 31/02; A45F 3/26; A47C 9/10  
 U.S. Cl. 182—187

1. An apparatus for engaging trees and the like for supporting a person above the ground, comprising:

- a first openable frame section surrounding the trunk of a tree and including a first pair of parallel tubular arms joined by an upper tree-engaging member and a lower tree-engaging member, said first frame section gripping said tree upon the exertion of downward pressure on said lower tree-engaging member;
- a second frame section telescopically mounted to said first frame section by a second pair of parallel arms slidably receivable within said first pair of arms and joined by a



support member, for selective extension of said support member in a direction away from said tree; and



a flexible seat suspended between said first frame section and said support member of said second frame section.

#### 4,337,845 TELESCOPIC ELEVATOR DEVICES IN PARTICULAR FOR DOLLIES

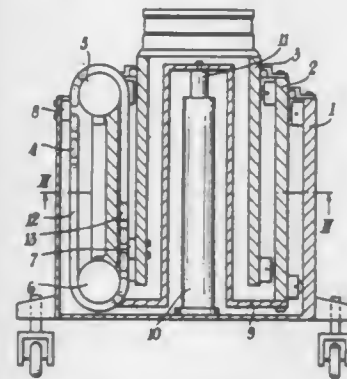
Sante Zelli, and Salvatore Zelli, both of No. 15, Via Poggibonsi, 00148 Rome, Italy

Filed Sep. 10, 1980, Ser. No. 185,676

Claims priority, application Italy, Sep. 18, 1979, 50287 A/79  
Int. Cl.<sup>3</sup> B66B 11/04

U.S. Cl. 187-17

3 Claims



1. A telescopic elevator device in particular for dollies for cinema or television, characterized in that it comprises, in combination, a wheel mounted base member, a first extension member telescopically slidable on said base, a second extension member telescopically mounted at the interior of the first extension member, and means for controlling simultaneous sliding of said extension members with respect to the base with a differential speed such that the sliding speed of the second extension member is the double of the sliding speed of the first extension member, said means for the sliding with differential speed comprising a chain transmission, passing over two sprockets fastened to the first extension member and having their rotation centers aligned on a straight line parallel to the axis of sliding of said extension members, the two rectilinear portions of said chain transmission being respectively connected with the upper end of the base member and with the lower end of said second extension member, the simultaneous sliding of the two telescopic extension members being controlled by a hydraulic ram operating on a tubular member concentric and coaxial with said extension members and said tubular members having at the base a flange rigidly connected with a base of said first extension member, said base and extension members being of triangular cross-sectional configuration.

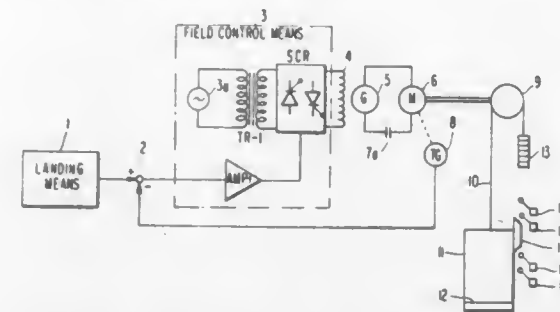
#### 4,337,846 ELEVATOR RELEVELLING CONTROL APPARATUS Masashi Yonemoto, and Eiki Watanabe, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1980, Ser. No. 142,808

Claims priority, application Japan, Apr. 24, 1979, 54/50494  
Int. Cl.<sup>3</sup> B66B 1/44

U.S. Cl. 187-29 R

15 Claims



1. An elevator releveling control apparatus for causing an elevator car to restart when it has landed out of alignment with a landing floor at which it was required to land, comprising: first position detecting means for detecting that said car has landed out of alignment with said landing floor position by a first predetermined distance, second position detecting means for detecting that said car has landed out of alignment with said landing floor position by a second predetermined distance greater than said first predetermined distance, landing means for generating a landing speed command signal, the value of which varies with the distance by which said car is out of alignment with said landing floor position, load detecting means for detecting whether the load in said car has exceeded a predetermined value, and means responsive to said landing speed command signal for releveling said car when positional misalignment of said car has been detected by said first position detecting means when said load detecting means has detected that the load in said car does not exceed a predetermined value, and for releveling said car when a positional misalignment of said car has been detected by said second position detecting means when said load detecting means has detected that said load in said car exceeds a predetermined value.

#### 4,337,847 DRIVE CONTROL FOR AN ELEVATOR Joris Schröder, Lucerne, and Martin Meier, Gisikon, both of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland

Filed Sep. 4, 1980, Ser. No. 184,121

Claims priority, application Switzerland, Sep. 27, 1979, 8687/79

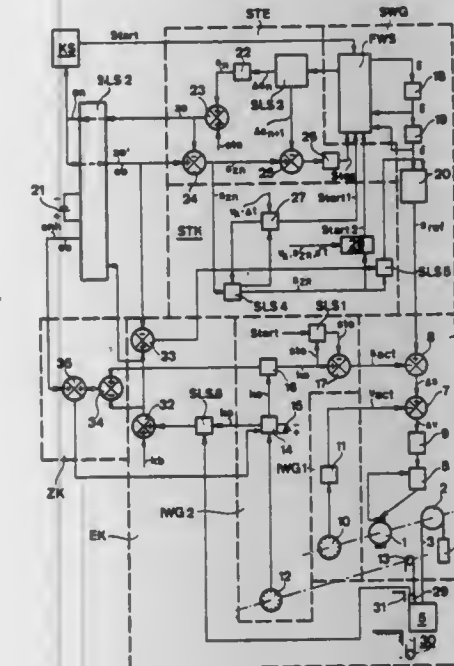
Int. Cl.<sup>3</sup> B66B 1/30

U.S. Cl. 187-29 R

11 Claims

1. A drive control for a transportation system, especially an elevator having an elevator cabin, comprising: a regulation circuit; said regulation circuit comprising: a velocity regulation circuit; a position regulation circuit including an actual-value transmitter; at least one pulse transmitter operatively associated with the actual-value transmitter of the position regulation circuit; and at least one digital-analogue converter; a reference value transmitter generating a group of travel curves; a control storage provided for said reference value transmitter; said control storage containing at least permissible jerk

values and threshold values of the acceleration of the elevator cabin; three summation stages with which there is connected the control storage; said summation stages generating by progressive numerical integration, respectively, the acceleration, the velocity and the displacement path of the elevator cabin; said three summation stages including a last summation stage delivering an output magnitude to said regulation circuit as a displacement path-reference value; a storey site storage; a stop initiation device serving for the determination of a braking application point of the elevator cabin; said stop initiation device coacting with said control storage and said storey site storage and generating a stop initiation signal;



a stop correction device with which there is connected said stop initiation device; said stop correction device producing by interpolation of neighboring elevator travel curves an optimum travel curve and controlling the control storage of the reference-value transmitter; an arrival correction device connected with the actual-value transmitter of the position regulation circuit and the storey site storage; said arrival correction device influencing said reference-value transmitter; a counter correction device acting upon said actual-value transmitter and said storey site storage; and a current regulation circuit operatively connected with said velocity regulation circuit.

#### 4,337,848 START CONTROL DEVICE, ESPECIALLY FOR AN ELEVATOR Gerhard Kindler, Meggen, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

Filed Apr. 10, 1981, Ser. No. 252,877

Claims priority, application Switzerland, Apr. 21, 1980, 3056/80

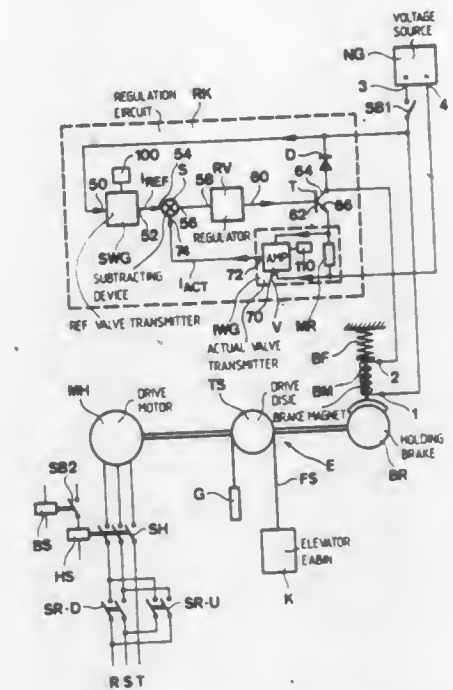
Int. Cl.<sup>3</sup> B66B 1/32

U.S. Cl. 187-29 R

7 Claims

1. A start control apparatus, especially for an elevator, comprising: an elevator drive motor which can be turned-on by means of closing contacts of a mains protection; an electromechanical holding brake containing at least one brake magnet and one brake spring; means defining a voltage source having a first terminal and a second terminal;

said brake magnet having a first terminal and a second terminal; a brake protection having a closing contact for connecting said first terminal of said brake magnet with said first terminal of said voltage source and for energizing the brake magnet upon turning-on the elevator drive motor and for lifting-off the holding brake against the force of the brake spring; a regulation device with which there is operatively connected said brake magnet; said regulation device having a reference value transmitter;



said reference value transmitter having an input; said input of said reference value transmitter being connected by means of the closing contact of the brake protection with said first terminal of said voltage source; a switching transistor having a collector and serving as an adjustment element of said regulation device; and said second terminal of said brake magnet being connected with said collector of said switching transistor, by means of which there can be connected said brake magnet with said second terminal of said voltage source.

#### 4,337,849 ENERGY MANAGEMENT DAMPER Richard W. Storek, and James P. Theuerkauf, both of Macomb, Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 24, 1980, Ser. No. 171,872

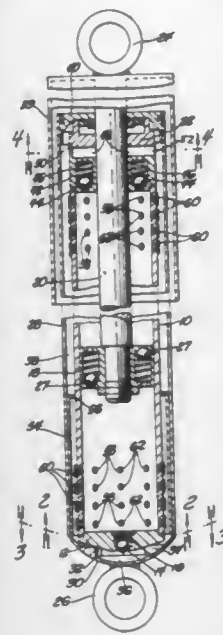
Int. Cl.<sup>3</sup> F16F 9/52

3 Claims

1. An expansible chamber energy management damper comprising a first cylinder having a head end and a rod end, a piston and piston rod reciprocable in the cylinder, a second cylinder having a head end and a rod end and surrounding the first and having its inside cylinder walls spaced from the outside cylinder walls of the first cylinder, the annular space between the two cylinder walls constituting a fluid reservoir, the two cylinders spaced apart axially at their head ends to provide a head chamber between them, fluid flow passages connecting said head chamber and said annular reservoir, at least two fluid flow passages in the piston for fluid flow through the piston, a check valve in one of said at least two passages to permit fluid to flow from the rod side of the piston, a check valve in the remaining one of said at least two fluid flow passages to permit fluid to flow toward the rod side of the piston, packing means in the rod end of the first cylinder to provide a fluid seal between the first cylinder and the rod which allows normal reciprocation of the piston and piston rod without fluid leakage past the rod to atmosphere, check valve means for permitting fluid flow from the rod side of the piston to the fluid reservoir, check valve means for permitting fluid



flow from the head chamber into the first cylinder, means to conduct fluid between the space inside the first cylinder and the reservoir, and temperature responsive valve means nor-



mally closing the last-named fluid conducting means and openable when the fluid heats to a predetermined high temperature, whereby heating of the fluid to a potentially destructive temperature unloads the damper.

4,337,850

**HYDRAULIC DAMPER**

Akihiro Shimokura, Higashimine, Japan, assignor to Tokico Ltd., Kawasaki, Japan

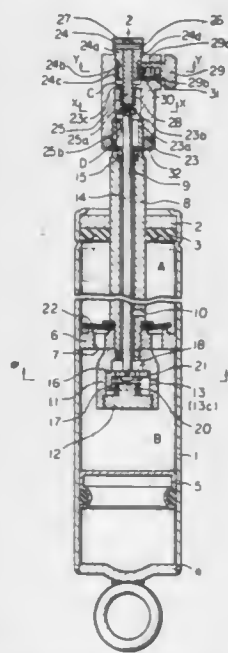
Continuation of Ser. No. 8,339, Jan. 31, 1979, abandoned. This application Sep. 25, 1980, Ser. No. 190,847

Claims priority, application Japan, Feb. 6, 1978, 53/13498[U]

Int. Cl.<sup>3</sup> F16F 9/34

U.S. Cl. 188—319

3 Claims



1. A hydraulic damper comprising a cylinder containing oil therein, a hollow piston rod one end of which projects out of the cylinder and the other end of which extends into the cylinder, a piston provided on the inner end of the piston rod and dividing the interior of the cylinder into two oil chambers, a connecting passage including the interior of the hollow piston rod and placing the two oil chambers in communication, a rod member rotatably extending through the hollow piston rod and projecting out of the cylinder, a valve mechanism on the inner end of the rod member for changing the effective area of the connecting passage and consisting of a first member secured to said rod and a second member secured to said piston, said first member being slidable on said second member during

rotation of said rod member, one of said first and second members having a plurality of orifices spaced therearound and the other of said first and second members successively covering said orifices during rotation of said rod member in one direction and successively uncovering said orifices during rotation in the other direction, an adjusting element receiving member detachably connected to the other end of the piston rod, and adjusting element mounted on the adjusting element receiving member and being rotatable and axially displaceable relative thereto, the inner end of the adjusting element being adapted to non-rotatably engage with the outer end of the rod member, said adjusting member having a plurality of axially extending grooves in the outer circumferential surface thereof corresponding in number and position to said orifices, and a spring biased lock element mounted on the adjusting element receiving member and resiliently engaging in respective ones of said grooves for normally holding said adjusting element against rotation due to vibration and the like and permitting incremental rotation for uncovering or covering one of said orifices when said adjusting element is rotated to move said lock element out of one groove into a next adjacent groove for adjustment of the effective area of said connecting passage.

4,337,851

**BRAKE SUPPORT ASSEMBLY**

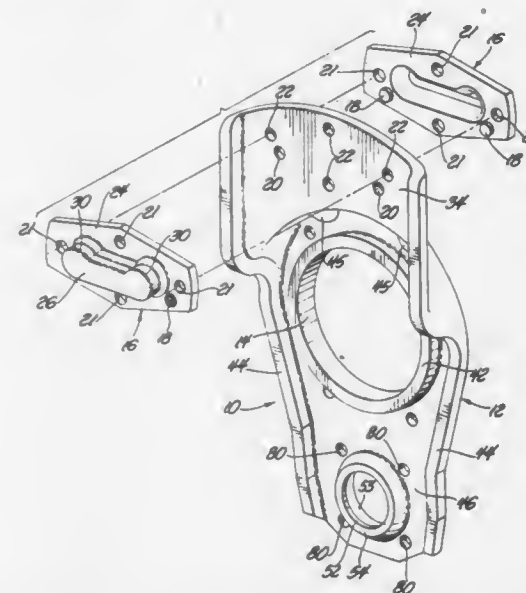
William L. Pringle, 999 Lakeshore Rd., Grosse Pointe Shores, Mich. 48236

Filed May 23, 1980, Ser. No. 152,743

Int. Cl.<sup>3</sup> F16D 51/22

U.S. Cl. 188—330

25 Claims



1. A brake support assembly (10) to be mounted on a vehicle for supporting a brake shoe assembly (28) and an actuator therefor, said assembly (10) comprising; a backing plate (12) having an opening (14) extending therethrough for receiving an axle therethrough to fixedly mount said backing plate (12) on the axle and having a plurality of alignment bores (20, 20') therein and having a support flange (34) having opposite parallel faces and having integral side flanges 44 extending therefrom, anchoring means (16) removably attached to said backing plate (12) for pivotally supporting the brake shoe assembly (28) and comprising an anchoring plate (24, 24') having projecting means (26, 92) for pivotally engaging the brake shoe assembly (28) and said projecting means (26, 96) including spaced rounded anchors (30, 94) for pivotally engaging oppositely disposed brake shoes (32) of the brake shoe assembly (28) and one of said anchoring plates (24, 24') being disposed on each of said parallel faces of said support flange (34) whereby said rounded anchors (30, 94) are paired to coact with spaced ribs (36, 38) of a brake shoe (32), removable fastening means (40) removable from said anchoring means (16) and said backing plate (12) independently of said alignment means for securing

said anchoring means (16) to said backing plate (12) and for allowing said anchoring means (16) to be removed and replaced, and alignment means (18, 18') structurally different from said fastening means (40) for positioning said anchoring means (16) at a predetermined position on said backing plate (12) whereby said anchoring means (16) may be removed and replaced while maintaining a constant positioning of the brake shoe assembly (28) and said alignment means (18, 18') including projections (18, 18') extending from said anchoring means (16) for coacting with said alignment bores (20, 20') to align said anchoring means (16) at said predetermined position on said backing plate (12).

4,337,852

**LOAD CONTROL LINK**

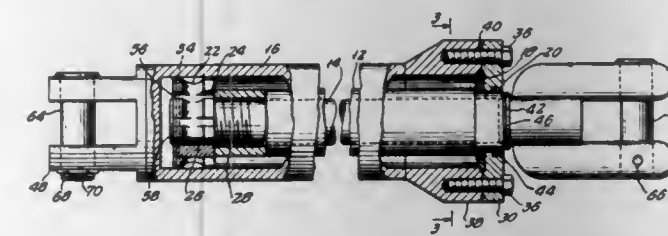
John F. Flory, Morristown, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 23, 1980, Ser. No. 152,854

Int. Cl.<sup>3</sup> F16F 7/12

U.S. Cl. 188—375

14 Claims



1. A device for controlling tension loads comprising: a housing, a shaft within said housing, a cutting member, cutting means bearing on said cutting member, said cutting member being cylindrical and said cutting means comprising a collar concentric about said cutting member and mounted on said housing, said collar having a cutting edge on its inside periphery and said cutting member having an outside diameter slightly larger than the inside diameter of said collar, and connection means attached at the opposite end of said housing or said shaft such that tension load applied to said connection means tends to produce relative motion between said cutting means and said cutting member resulting in energy dissipation by the action of cutting material from said cutting member.

4,337,853

**COVER FOR LUGGAGE CASE AND METHOD OF MAKING**

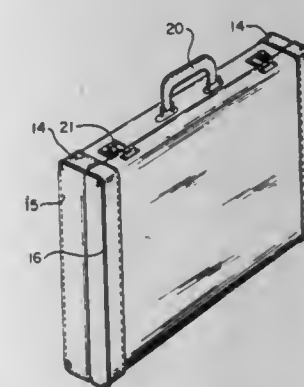
Michael Davis, New Castle, Pa., assignor to Airway Industries, Inc., Ellwood City, Pa.

Filed Sep. 30, 1980, Ser. No. 192,607

Int. Cl.<sup>3</sup> A45C 5/02

U.S. Cl. 190—53

8 Claims



1. A cover for a luggage case of the type having cooperating dished shells hinged along an edge, said cover comprising a main piece of sheet material of generally rectangular shape for one of said shells, and a pair of end strips of sheet material for each of the opposite ends of said main piece, one strip of each pair being shorter in length than the other strip of the pair, the larger strip of each pair of end strips being extended into over-

lapping relation to the edge of said main piece and secured thereto, the remaining edge of said larger strip of each pair of end strips being matched with one edge of the shorter strip of said pair of end strips and stitched together along one side and around the ends of the shorter strip, said main piece and pairs of end strips in assembled relation providing a three-dimensional dished cover conforming to the exterior surface of one of said shells.

4,337,854

**PRESSURE RELEASE DEVICE FOR A TRANSMISSION BRAKE**

Jerry L. Oxley, Rte. #1, Box 87, Greenfield, Iowa 50849

Filed Sep. 8, 1980, Ser. No. 185,343

Int. Cl.<sup>3</sup> B60K 41/24

U.S. Cl. 192—13 R

11 Claims



1. Apparatus for transferring and terminating the transfer of force from a first member to a second member through a fluid medium, comprising:

a fluid filled coupling having respective opposite ends and secured at one end to said first member, said second member arranged for reciprocal movement at the other end of said coupling to act on said fluid, said first member adapted for actuation by a source of power and said second member adapted for connection to a third member to be operated, actuation of said first member effecting relative movement of said first and second members whereby said fluid under pressure in said coupling acts as a solid connection between said members to transmit force therebetween to said third member, means operably associated with said coupling for the removal and storage of said fluid out of operable relationship with said first and second members, and with said first member actuated, fluid is moved out of operable relationship with said first and second members to a point of storage over a determined time interval for operation of said third member whereby at the completion of such removal, the force transmitting fluid connection between said first and second members terminates by removal of the fluid from operable relationship therebetween to relieve pressure on said third member without deactuating said first member.

4,337,855

**MULTIPLE ARMATURE RING AND SPRING MOUNTING ARRANGEMENT FOR ELECTROMAGNETIC FRICTION-TYPE CLUTCHES AND BRAKES**

George T. Bennett, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 7, 1980, Ser. No. 147,490

Int. Cl.<sup>3</sup> F16D 27/07

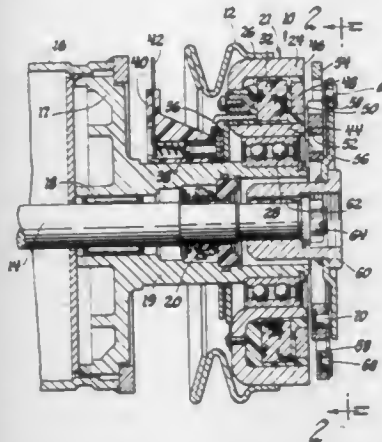
U.S. Cl. 192—84 A

3 Claims

1. In an electromagnetic clutch or brake of the type having a plurality of radially spaced armature rings which are



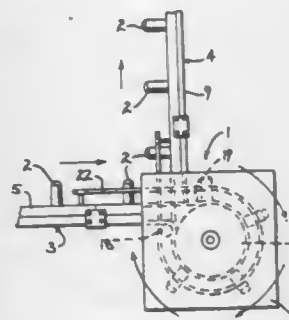
mounted by a spring arrangement on one of two relatively rotatable members and which on energization of a solenoid mounted on the other member are caused to separately frictionally engage respective pole faces on said other member and commonly frictionally engage an interpole ring on said other member with the establishment thereby of a magnetic flux path and then on deenergization are caused to disengage therefrom by the spring arrangement against the resistance of residual magnetism: an improved spring mounting and armature ring arrangement comprising in combination, spring means mounting said armature rings on said one member so that there is relatively small spring resistance to conjoint engagement travel of all said armature rings and a large spring resistance to engagement travel of the radially outermost armature ring



relative to the other armature ring and said radially outermost armature ring having substantially more engagement travel than said other armature ring so that on energization said other armature ring engages before said radially outermost armature ring with overcoming first of said small spring resistance followed by overcoming of said large spring resistance as said radially outermost armature ring is brought to engagement whereby on deenergization the relatively large spring force thus stored in said spring means is effective to overcome the residual magnetism and cause said radially outermost armature ring to first disengage whereupon there is effected an air gap in the magnetic flux path to dissipate such residual magnetism to permit said other armature ring to then be disengaged with just the small spring force of said spring means.

#### 4,337,856 TRANSFER MECHANISM FOR A MAGNETIC CONVEYOR

Wolfgang C. Dörner, Okauchee, Wis., assignor to Dörner Mfg. Corp., Hartland, Wis.  
Filed Aug. 14, 1980, Ser. No. 178,158  
Int. Cl.<sup>3</sup> B65G 47/34, 15/58  
U.S. Cl. 198—599



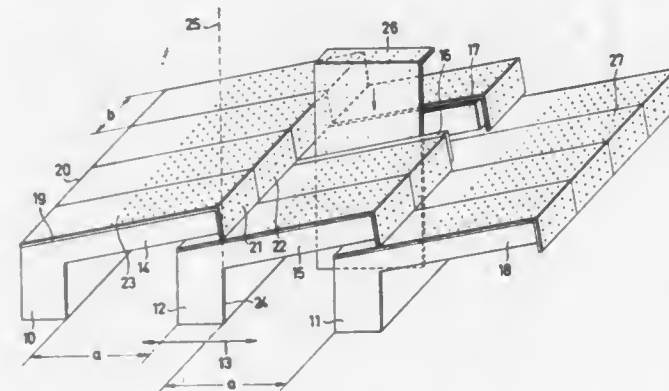
1. A transfer mechanism for a magnetic conveying system, comprising a first conveyor having a first endless belt disposed to convey ferro magnetic articles in a first conveying run, a second conveyor including a second endless belt to convey said articles in a second conveying run, said second conveying run disposed at an angle to said first conveying run, a magnetic pulley, said first and second belts being disposed on said pulley in side-by-side relation, and guide means disposed outwardly of

the pulley and including a pair of spaced generally parallel guide rails extending completely around the periphery of said pulley and arranged in a generally helical configuration for guiding the articles laterally from said first belt to said second belt as the belts travel around said pulley.

4,337,857  
STEPPED GRATE-TYPE COOLER FOR HOT PARTICLES  
Richard Schneider, Wermelskirchen, Fed. Rep. of Germany, assignor to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany  
Continuation of Ser. No. 24,900, Mar. 29, 1979, abandoned, which is a continuation of Ser. No. 758,807, Jan. 12, 1977, abandoned. This application Nov. 24, 1980, Ser. No. 209,319  
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1976, 2604611

Int. Cl.<sup>3</sup> B65G 25/00  
U.S. Cl. 198—773

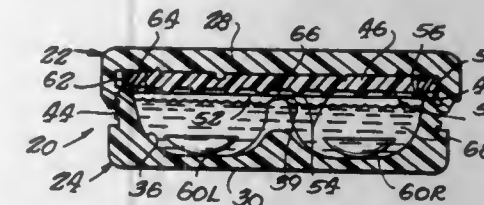
2 Claims



1. A stepped grate-type cooler for particulate material comprising a plurality of spaced grate plate carriers, alternate carriers being stationary and the carriers positioned between the stationary carriers being reciprocable relative thereto between a first position in which each of said reciprocable carriers is in close proximity to an adjoining carrier and a second position in which each of said reciprocable carriers is farthest removed from said adjoining stationary carrier, each of said grate plate carriers including transversely extending carrier beams with integral carrier fingers extending therefrom in the direction of conveyance of said material, a plurality of grate plates respectively carried by said carrier fingers and a means for releasably connecting said grate plates to respective carriers, said grate plates lying flat against said carrier fingers and having depending flange portions extending against the front ends of said carrier fingers, each grate plate having a longitudinal axis positioned in the direction of reciprocal movement of said carriers when said grate is supported thereby, the width of a grate plate along a lateral axis thereof being sufficient to span across the spacing between laterally adjacent fingers so as to be supported thereby, each said grate plate and respective supporting fingers overlapping an adjacent downstream grate and fingers, the clearance between a stationary carrier beam and a reciprocable carrier beam being greater than the width of each of said grate plates when said reciprocable carriers are in a mid-position between said first and second positions of said reciprocable carrier such that each grid plate can be removed from said carriers and rotated by 90° about its longitudinal axis and positioned vertically in said clearance such that the longitudinal axis of said grate is perpendicular to the direction of reciprocal movement of said carriers and said lateral axis is substantially parallel to said direction of reciprocal movement for downward removal through said clearance.

4,337,858  
LENS CASE  
Michael D. Thomas, and Francis E. Ryder, both of Arab, Ala., assignors to Ryder International Corporation, Arab, Ala.  
Filed Mar. 27, 1980, Ser. No. 134,742  
Int. Cl.<sup>3</sup> B08B 3/04, 3/00  
U.S. Cl. 206—5.1

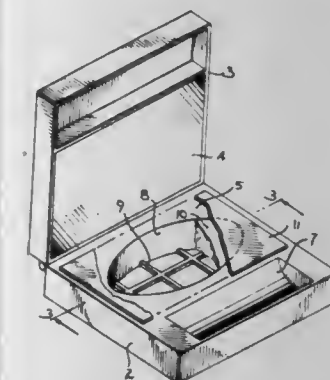
11 Claims



1. A lens case, comprising in combination: a base member and a cover member, said base and cover members having cooperating joining and closing means for selectively joining said base and cover members and thereby closing the lens case, means on said base member including partition means, defining a pair of adjacent pockets, each pocket for receiving a single lens and a quantity of lens disinfecting solution, aperture means in said partition means for permitting said solution to flow between the pockets to maintain substantially equal amounts of said solution therein, said partition means being spaced apart from said cover member, when the lens case is being closed, a sufficient distance for substantially preventing damage to a lens inadvertently located over the partition during said joining and said closing, while substantially preventing transmigration of a lens from one pocket to the other, in the event said lens may adhere to the cover and the cover subsequently rotated as would occur during removal of the cover member after disinfecting of the lenses.

4,337,859  
METHOD OF PRODUCING A COSMETIC PRODUCT CONTAINING A POWDER CAKE  
John H. Murphy, Matamoros; John J. Brodzinski, Milford, both of Pa., and Donald D. Horton, Glen Spey, N.Y., assignors to Kolmar Laboratories Inc., Port Jervis, N.Y.  
Filed Apr. 21, 1980, Ser. No. 142,447  
Int. Cl.<sup>3</sup> A45C 11/00; A45D 33/00; B65B 1/04, 5/00  
U.S. Cl. 206—37

7 Claims

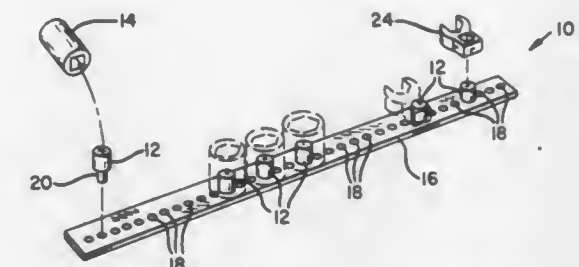


6. A cosmetic product, comprising a casing having a bottom surface and an open top, said casing defining a cavity, a cover to enclose the open top of said casing, the bottom surface of said casing having an opening communicating with said cavity, a grid structure disposed within said opening and dividing said opening into a plurality of apertures, a molded powder cake disposed within the cavity and extending within said apertures in said grid structure, said cake being composed of a mixture of a powdered cosmetic material, a fatty alcohol containing from 12 to 22 carbon atoms in the molecule, cosmetic coloring materials, and a residual amount up to 2% by weight of an evaporable liquid siloxane, the portion of the cake in the region of said grid structure having an increased concentration of said fatty alcohol to provide increased toughness for the cake in

said region, and a sheet of sealing material disposed beneath the cover and enclosing the upper surface of said cake.

4,337,860  
DETACHABLE WRENCH SET ORGANIZER AND STORAGE UNIT  
Alfred C. Carrigan, 22324 NE. Finn Hill Rd., Brush Prairie, Wash. 98606  
Filed Sep. 21, 1981, Ser. No. 304,315  
Int. Cl.<sup>3</sup> B65D 85/20  
U.S. Cl. 206—376

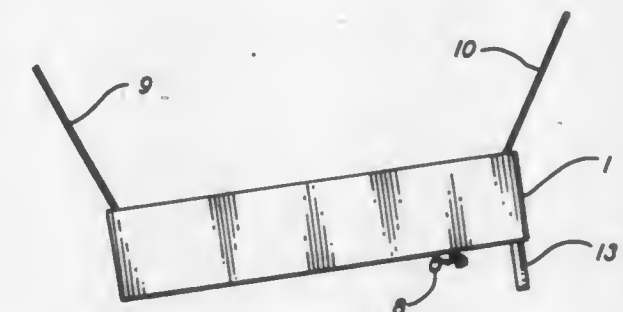
4 Claims



1. Apparatus for organizing and storing individual ones of detachable members of tools having sets of said detachable members, said members having a drive hole in one end adapted to engage a drive member, and having the other end shaped to matingly engage nuts, bolt heads and the like, comprising: (a) a base member in the form of a planar strip having a plurality of spaced holes in its upper surface with means for affixing said base member to a support surface; and (b) a plurality of cylindrical posts, each having an upper cylindrical portion with a top face and a lower base portion with a boss attached thereto adapted to fit removably into said spaced holes in said base member, and said upper portion of said posts fitting with frictional engagement into said drive holes of said tool detachable members, whereby said detachable members may be pressed onto said posts for storage without regard to their radial orientation thereto.

4,337,861  
BINGO CARD BOX  
Calvin R. Smart, 160 S. Main St., Franklin, N.H. 03235  
Continuation-in-part of Ser. No. 775,371, Mar. 7, 1977, abandoned. This application Aug. 17, 1977, Ser. No. 825,397  
Int. Cl.<sup>3</sup> B65D 77/04, 79/00  
U.S. Cl. 206—579

4 Claims

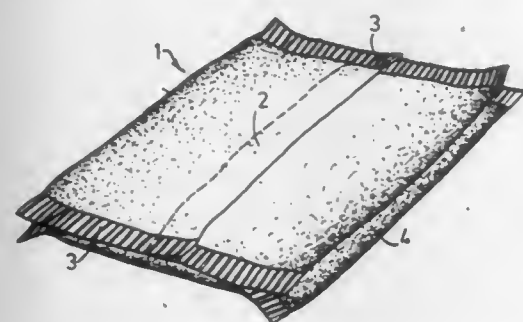


1. A card box adapted to hold a multiplicity of slide-type bingo cards comprising: two trays, an inner one nestling and telescoping within an outer one, said trays each having two sidewalls and an end wall that is on the opposite end from the end wall of the other tray, said end walls being of a height insufficient to support said slide-type bingo cards in a generally upright viewing position; finger-operable locking means adapted to lock the position of one tray with respect to the other and to permit the expanding and collapsing of the space encompassed by said trays as desired by the user thereof; and



front and rear flaps pivotally mounted between and to the sidewalls of said trays and extending upwardly in the open position to support said slide-type bingo cards in said generally upright viewing position, said flaps being supported in said open position by the respective said end wall adjacent thereto and being adapted to being folded down one over the other into said space encompassed by said trays and onto the bottom interior surface of said box when said trays are in a collapsed position, thus facilitating storage of said card box, said space encompassed by said trays when in a collapsed position being approximately the size of the face of one of said bingo cards such that a multiplicity of said bingo cards can lay flat therein on top of said flaps when said card box is collapsed for storage.

**4,337,862**  
**FLEXIBLE VERTICAL FORM, FILL, SEAL PACKAGING MATERIAL AND METHOD OF USING**  
 Andrew K. Suter, Brampton, England, assignor to The Wiggins Teape Group Limited, Basingstoke, England  
 Filed Jan. 2, 1979, Ser. No. 586  
 Claims priority, application United Kingdom, Jan. 9, 1978, 722/78  
 Int. Cl.<sup>3</sup> B65D 3/26; B65B 9/00; B32B 27/00  
 U.S. Cl. 206—632 21 Claims



1. A method of packaging a fill material comprising the steps of:

providing a continuous paper web impregnated with a release composition whereby said release composition is present on a surface of said web, the release treated surface being coated with an adhesive which is substantially non-tacky at ambient temperature and in the absence of pressure and forms a strong initial bond immediately on activation when two portions of said adhesive coated surface of said paper web are bonded together with adhesive coated surface in contact with adhesive coated surface, said release composition present on said surface of said paper web rendering said paper web releasable with respect to said adhesive whereby two portions of said adhesive coated surface of said paper web bonded together with adhesive coated surface in contact with adhesive coated surface may be peeled apart at an interface of said adhesive and said release treated surface of said paper web;

dispensing a quantity of fill material adjacent a first portion of said paper web; and, bonding a second portion of said paper web to said first portion to include the fill material and to form a closed package having closures peelable at an interface of said adhesive and said release treated surface of said paper web by bringing an adhesive coated surface area of said second paper web portion into contact with an adhesive coated surface area of said first paper web portion and bonding said adhesive coated surface areas together by activating said adhesive at said areas.

3. A package formed by the process of claim 1 or 2.

8. A package made in a vertical form, fill, seal process, said package comprising:

a single piece of a paper web impregnated with a release composition whereby said release composition is present on a surface of said web, the release treated surface being coated with an adhesive which is substantially non-tacky at ambient temperature and in the absence of pressure and

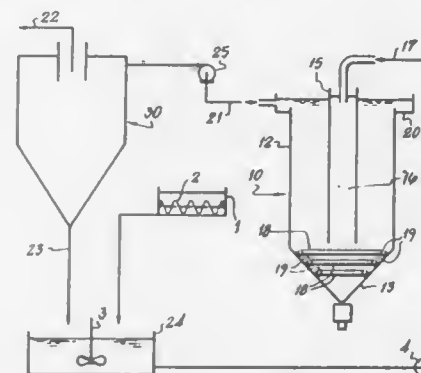
forms a strong initial bond immediately on activation when two portions of said adhesive coated surface of said paper web are bonded together with adhesive coated surface in contact with adhesive coated surface, said release composition present on said surface of said paper web rendering said paper web releasable with respect to said adhesive whereby two portions of said adhesive coated surface of said paper web bonded together with adhesive coated surface in contact with adhesive coated surface may be peeled apart at an interface of said adhesive and said release treated surface of said paper web; and,

said single paper web piece having first and second portions bonded together with an adhesive coated surface area of said first portion of said paper web piece bonded to an adhesive coated surface area of said second portion of said paper web piece, the bond being peelable at an interface of said adhesive and said release treated surface of said paper web.

10. Flexible packaging material suitable for use in a vertical, form, fill, seal packaging process to produce packages of the pillow type, comprising:

a paper web impregnated with a release composition whereby said release composition is present on a surface of said paper web, the release treated surface being coated with an adhesive which is substantially non-tacky at ambient temperature and in the absence of pressure and forms a strong initial bond immediately on activation when two portions of said adhesive coated surface of said paper web are bonded together with adhesive coated surface in contact with adhesive coated surface, said release composition present on said surface of said paper web rendering said paper web releasable with respect to said adhesive whereby two portions of said adhesive coated surface of said paper web bonded together with adhesive coated surface in contact with adhesive coated surface may be peeled apart at an interface of said adhesive and said release treated surface of said paper web.

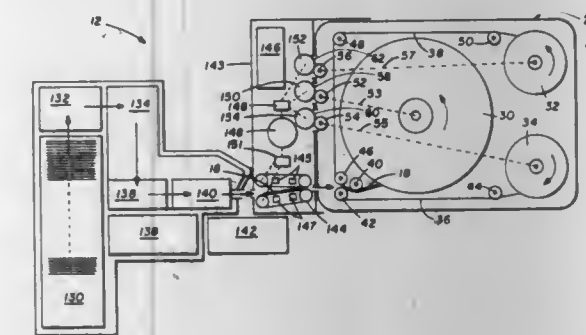
**4,337,863**  
**PROCESS FOR THE CONCENTRATION OF FIBROUS MATERIAL**  
 Alan W. Atkinson, and Adrian M. Steer, both of Rochdale, England, assignors to T and N Materials Research Limited, Manchester, England  
 Filed Jan. 30, 1981, Ser. No. 229,851  
 Claims priority, application United Kingdom, Jan. 31, 1980, 8003243  
 Int. Cl.<sup>3</sup> B03B 9/00  
 U.S. Cl. 209—12 6 Claims



1. In a process for the concentration of fibrous material obtained from mineral melt in a mixture thereof with non-fibrous mineral melt material, comprising subjecting an aqueous suspension of the mixture to centrifugal force in a hydrocyclone to obtain an overflow enriched in fiber and an underflow of reduced fiber content, the aqueous suspension which is admitted to the hydrocyclone being the fiber-enriched fraction which results from a preliminary classification;

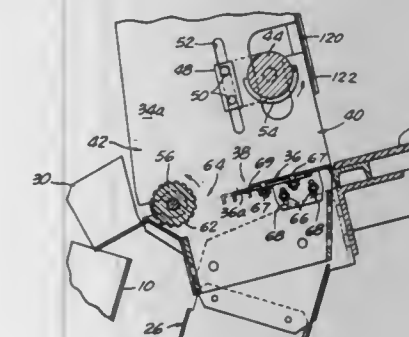
said preliminary classification comprising submitting an aqueous suspension of lower fiber-non-fiber ratio to flow under conditions which bring about settling out under ordinary gravitational force of material reduced in fiber content and formation of a fiber-enriched fraction above it; the improvement consisting of incorporating the underflow from the hydrocyclone in the aqueous suspension which is submitted to said preliminary classification.

**4,337,864**  
**CURRENCY NOTE DISPENSING SYSTEM**  
 Charles M. McLean, Richardson, Tex., assignor to Docutel Corporation, Irving, Tex.  
 Filed Feb. 22, 1980, Ser. No. 123,642  
 Int. Cl.<sup>3</sup> B07C 5/00  
 U.S. Cl. 209—534 23 Claims



1. A system for dispensing currency notes, comprising: a cartridge for receiving a predetermined number of currency notes, comprising a housing, a supply spool mounted for rotation therein, at least one take-up spool mounted for rotation therein and at least one film secured at opposite ends to said supply spool and said take-up spool and wound about said spool, means for interlocking said housing and said supply spool to prevent unauthorized dispensing of currency notes from the cartridge, and means to detect unauthorized operations of said cartridge; a loader for accepting a quantity of currency notes and loading the predetermined number of currency notes individually into said cartridge; a dispenser for dispensing currency notes individually from said cartridge; and said cartridge being adapted for use selectively with both said loader and said dispenser and being transferrable from said loader to said dispenser.

**4,337,865**  
**FEEDER MECHANISM FOR CONTROLLING DELIVERY OF FRUIT TO A JUICE EXTRACTOR**  
 Robert F. Rohm, Yorba Linda, and Olav Berge, Monterey Park, both of Calif., assignors to Brown International Corporation, Covina, Calif.  
 Filed Sep. 8, 1980, Ser. No. 185,331  
 Int. Cl.<sup>3</sup> B07C 5/06  
 U.S. Cl. 209—548 24 Claims



1. Feeder mechanism for controlling the delivery of fruits

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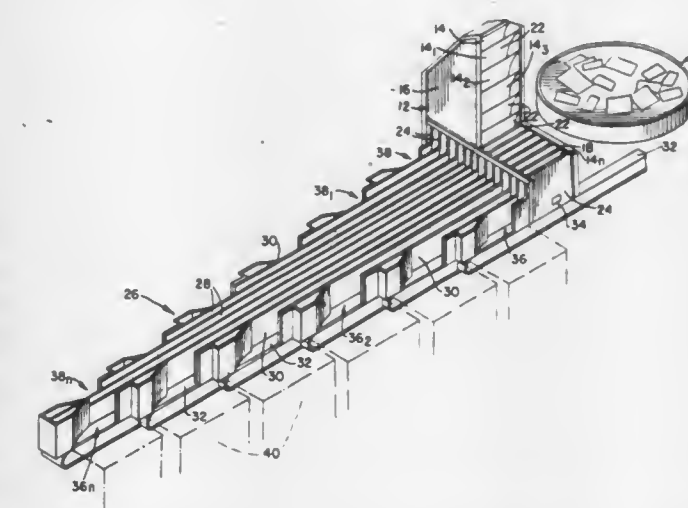
from a supply source to a juice extractor for processing therein, which comprises:

means providing a feed path having an inlet end adapted to receive fruits from said supply source, and an outlet end adapted for connection with a delivery path for conducting the fruits to the juice extractor;

gating means at the inlet end of said feed path operative to admit to the feed path fruits that do not exceed a predetermined size; and

means at the outlet end of said feed path movably operable to impel fruits from the feed path to the delivery path, and upon cessation of its movement being operable to provide a fruit retaining stop abutment between the feed path and the delivery path.

**4,337,866**  
**MAIL SORTING APPARATUS AND SYSTEM**  
 Robert C. Suling, Crozet; Charles W. Tomlinson, Orange, and Winfred G. Fields, Waynesboro, all of Va., assignors to Acme Visible Records, Inc., Crozet, Va.  
 Filed Jul. 28, 1980, Ser. No. 172,652  
 Int. Cl.<sup>3</sup> B07C 9/00, 7/04  
 U.S. Cl. 209—656 10 Claims



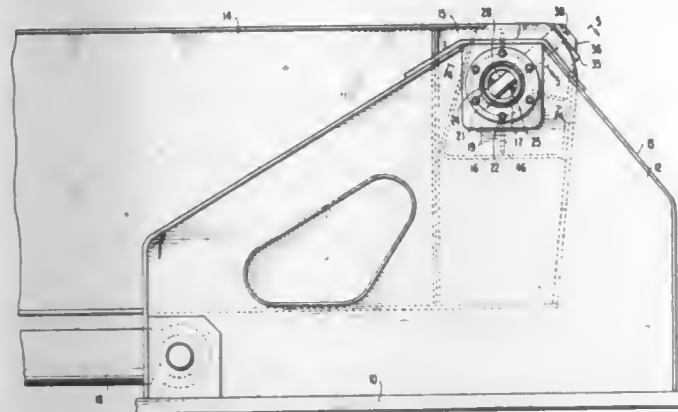
1. In combination with routing apparatus for correspondence having a housing and plurality of slots for entry of said correspondence to a selected conveyor path and movement from said housing to a discharge location along each path, a rack assembly for collection of correspondence at a discharge location of each of two adjacent conveyor paths, said rack assembly comprising a hanger assembly including a frame having a plurality of members arranged in a rectangular pattern, each said member formed by a substantially rectangular plate connected to an adjacent plate along respective sides of minor dimension, a collection device for said correspondence supported by said hanger assembly, said collection device having an opening located to receive correspondence from either or both of said adjacent conveyor paths, and means for supporting said hanger assembly below said discharge location of each said conveyor path.

**4,337,867**  
**CURANE BOOM PIVOT STRUCTURE**  
 Stanley R. Spain, Greencastle, Pa., assignor to Kidde, Inc., Clifton, N.J.  
 Filed Aug. 13, 1980, Ser. No. 177,646  
 Int. Cl.<sup>3</sup> B66C 23/26  
 U.S. Cl. 212—181 11 Claims

1. In a crane boom pivot structure including a rotational crane boom pivot shaft, a crane turntable support bearing means for the ends of the pivot shaft and a crane boom section to rotate with the pivot shaft in unison therewith without relative rotational movement, the improvement comprising a cross axis locking pin for said pivot shaft and boom section including a screw-threaded portion, the pivot shaft having a



cross axis bore receiving said locking pin, an adjacent locking member fixed rigidly to the boom section and being engaged by said locking pin to lock the pivot shaft and boom section against relative rotation on the axis of the pivot shaft, and a nut



on the screw-threaded portion of the locking pin externally of the boom section, whereby the pivot pin can be placed through the cross axis bore of the pivot shaft and retracted therefrom while rotation of said nut is restrained and without necessitating access to the interior of said boom section.

**4,337,868**  
**TELESCOPIC CRANE BOOM HAVING ROTATABLE EXTEND/RETRACT SCREWS**  
Narahari Gattu, Cedar Rapids, Iowa, assignor to Harnischfeger Corporation, West Milwaukee, Wis.  
Filed Feb. 19, 1980, Ser. No. 122,506  
Int. Cl.<sup>3</sup> B66C 23/06  
U.S. Cl. 212—267 9 Claims

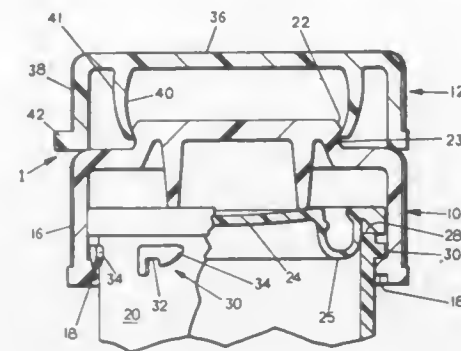


1. In a multisection telescopic boom: a hollow base section; a hollow intermediate section telescopic within said base section; a hollow fly section telescopic within said intermediate section; a first elongated rotatable screw located within said boom and having its base end rotatably mounted on and connected to the base end of said base section; a first nut means rigidly mounted on the base end of said intermediate section and engaged by said first screw; a second elongated rotatable screw located within said boom and having its base end rotatably mounted on and connected to the base end of said intermediate section; and a second nut means rigidly mounted on the base end of said fly section; and screw drive means operable to rotate both screws simultaneously to effect simultaneous axial telescopic movement of the axially movable boom sections, said screw drive means comprising at least one motor connected to effect rotation of said first screw, and means connected to effect rotation of said second screw to effect rotation of said second screw.

**4,337,869**  
**CLOSURE ASSEMBLY**  
David P. Guinle, Memphis, Tenn., assignor to Owens-Illinois, Inc., Toledo, Ohio  
Filed Jan. 19, 1981, Ser. No. 225,878  
Int. Cl.<sup>3</sup> B65D 55/02; H61J 1/00; B65D 85/56  
U.S. Cl. 215—201 9 Claims

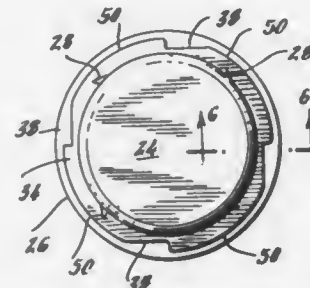
1. A closure assembly for a container having an annular neck opening comprising: a first closure member including means for closing said annular neck opening, releasable locking means on said first closure member for engaging cooperating locking means on the container neck, said locking means requiring a complex manipulation for removal of said first closure member from said container; a second closure member, means on said second closure member for closing said container neck open-

ing, said last mentioned means permitting removal of said second closure member from said container neck by a rela-



tively simple manipulation, and cooperating means on said closure members for releasably securing said closure members in stacked relationship.

**4,337,870**  
**TAMPER-PROOF CLOSURE CAP AND METHOD OF FABRICATION**  
Frederick D. Keeler, 55 Strobel Rd., Trumbull, Conn. 06611  
Filed Apr. 23, 1980, Ser. No. 142,964  
Int. Cl.<sup>3</sup> B65D 41/34  
U.S. Cl. 215—252 17 Claims



1. An improved closure member comprising:  
a. a closure body thermoformed of a polystyrene material;  
b. said closure body including a generally annular shaped cap member, a generally annular shaped shoulder member integrally formed with said cap member and a generally annular shaped skirt member, said shoulder member having a plurality of arcuate cuts and a plurality of frangible bridge members mechanically formed therein, said bridge members extending between said cap and skirt members for maintaining said cap and bridge members in spaced relationship; and,  
c. said frangible bridge members circumferentially positioned about said shoulder member and extending outwardly from said cap member to said skirt member.

**4,337,871**  
**CROWN CLOSURE**  
Raymond L. Tucker, Broadbeach, Australia, assignor to Mauri Brothers & Thomson (Aust.) Pty. Limited, New South Wales, Australia  
Filed Sep. 12, 1980, Ser. No. 186,600  
Claims priority, application Australia, Sep. 20, 1979, PE0595  
Int. Cl.<sup>3</sup> B65D 41/12 3 Claims

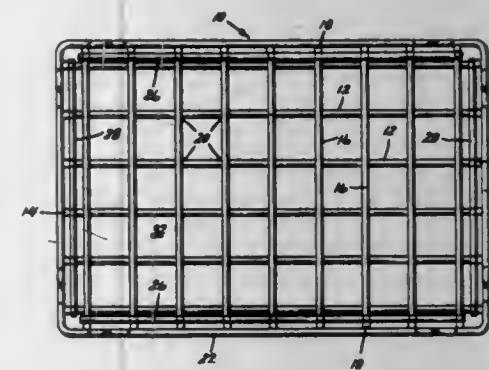
1. A crown seal cap blank of the kind comprising a central roof portion and a downwardly extending skirt with an outwardly flared and ribbed peripheral edge portion wherein each rib of the peripheral skirt portion is of substantially the same

breadth throughout its length, and wherein the breadth of a rib is greater than the distance separating adjacent ribs, whereby



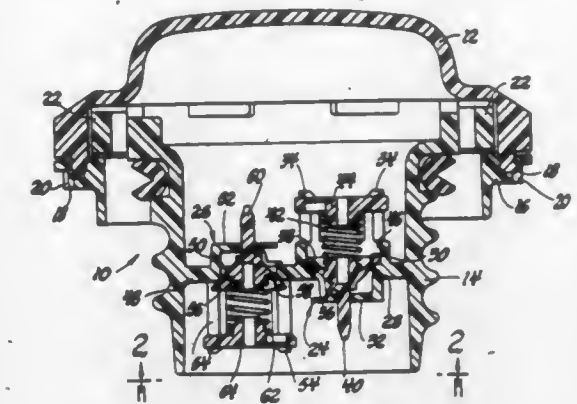
upon application to close a bottle the peripheral edge of each rib crumples to provide a central depression in the rib.

**4,337,872**  
**FURNACE BASKET**  
Dennis L. Wright, 911 Jamaica Dr., Fort Wayne, Ind. 46825  
Filed Apr. 17, 1980, Ser. No. 141,179  
Int. Cl.<sup>3</sup> B65D 6/08, 6/32, 21/02  
U.S. Cl. 220—19 3 Claims



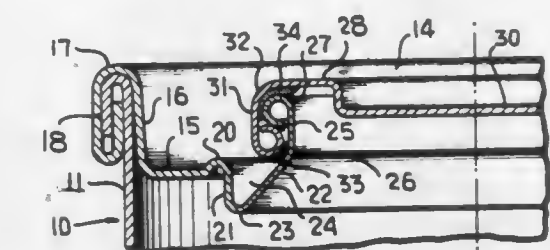
1. A furnace basket comprising:  
a plurality of first parallel spaced rods of substantially equal length having upturned end portions,  
a plurality of second parallel spaced rods of substantially equal length having upturned end portions, said second rods overlying and extending substantially perpendicular to said first rods to form a basket bottom and the upturned end portions defining a basket wall having four straight sides which join in corners,  
said first and second rods having pressure welds at the intersections thereof,  
a first perimetral rod extending around the outside of the basket wall in engagement with the upper ends of said upturned portions and being welded thereto, four rods being welded to said upturned portions on the inner side of said wall with spaces between ends of said inner rods adjacent rod corners, said inner rods being disposed opposite and parallel to said first perimetral rod thereby sandwiching said upturned portions therebetween, the top ends of the upturned portions being substantially coplanar with said perimetral and inner rods thereby defining a supporting ledge for a superposed basket, said bottom being flat and said wall being upright, said bottom lying in a plane parallel to the plane of said top ends and sandwiching rods, and a second perimetral rod also extending around the outside of the basket wall in the mid-portion thereof, in engagement with said upturned portions and being welded thereto, the intersections of all of said rods forming a grid pattern for said bottom and wall, the welds between rods being pressure welds characterized by fusion at the grain boundaries without grain growth.

**4,337,873**  
**FUEL CAP WITH POPPET TYPE VALVES**  
Lawrence P. Johnson, Huron, Ohio, assignor to General Motors Corporation, Detroit, Mich.  
Filed Nov. 17, 1980, Ser. No. 207,390  
Int. Cl.<sup>3</sup> B65D 51/16  
U.S. Cl. 220—204 4 Claims



1. A fuel cap assembly comprising: a handle portion; a threaded closure portion adapted to be threadably inserted in a fuel fill tube for closing of a fuel tank, said threaded closure portion including a pair of valve body structure means each having a valve seat portion, a valve guide portion, and positioning means; and a pair of pressure differential operated valve means for cooperating with said valve body structure means for controlling the respective maximum and minimum pressure conditions in the fuel tank when the fuel cap assembly is in place to close the fill tube, each valve means including a valve member having a flexible conical portion cooperating with respective valve seat portions on said threaded closure portion and a guide stem disposed in respective valve guide portions on said threaded closure portion to facilitate alignment of the conical portion with its valve seat upon valve closure, retainer means positioned by respective positioning means on said threaded closure portion, and spring means disposed between said conical portion and said retainer means for urging said valve means to a closed condition and for permitting the respective valve members to operate to control the maximum and minimum pressure conditions in the fuel tank.

**4,337,874**  
**SNAP LOCK COVER END UNIT**  
James R. Hoenig, Tinley Park, and Salvador C. Mallorca, Downers Grove, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.  
Filed Feb. 9, 1979, Ser. No. 10,785  
Int. Cl.<sup>3</sup> B65D 41/16, 41/18  
U.S. Cl. 220—306 3 Claims



1. A recloseable end unit for containers, said end unit comprising an end ring having means on an outer periphery thereof for attachment to a container body, said ring having an inner terminal upstanding axial flange terminating in an outwardly directed curl, and a removable cover, said cover including an end panel and an outer terminal depending axial flange terminating in an outwardly directed curl, said axial flanges being in telescoped relation with said ring curl being axially outwardly



and radially inwardly compressively engaged between said end panel and said cover curl, said cover axial flange being connected to said end panel in a rounded corner, and said ring curl is seated in said rounded corner, said ring including an end panel portion, and hinge means mounting said ring flange on said end panel portion for facilitating radial inward deflection of said ring flange and ring curl during positioning and removal of said cover, said ring hinge means including an axially outwardly opening channel portion and a bend connecting said ring flange to a radial inner edge of said channel portion.

4,337,875

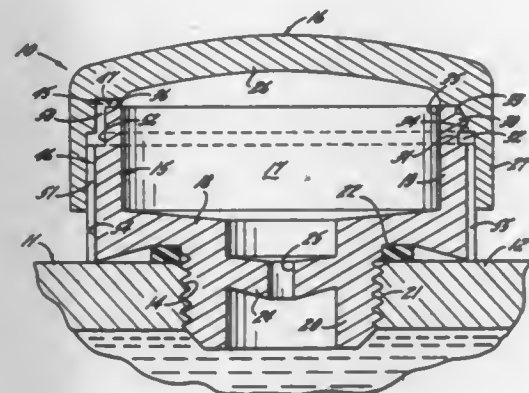
**OVERFLOW AND VENT CAP FOR A CONTAINER**  
Dale E. Lyons, Belvidere, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Mar. 12, 1981, Ser. No. 243,068

Int. Cl.<sup>3</sup> B65D 51/16

U.S. Cl. 220—368

14 Claims



1. A cap for closing an opening in the top of a container for liquid while venting the container to atmosphere, said cap comprising a lower, upwardly opening cup-shaped member, coupling means on the bottom of said cup-shaped member and adapted to interfit releasably with the opening in the container, a hole in said cup-shaped member and establishing communication between the container and the interior of said cup-shaped member, an upper, downwardly opening cup-shaped member telescoped with said lower cup-shaped member whereby a chamber is defined between the two members, means on said members and preventing axial separation and relative rotation of the members, a radially extending vent passage defined between said members and communicating with said chamber, and an axially extending vent passage defined between said members and communicating with said radially extending vent passage, the axially extending vent passage being open to atmosphere.

4,337,876

**APPARATUS FOR DISPENSING ARTICLES**  
Joseph Thompson, Bergen County, N.J., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 68,967, Aug. 23, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 168,140

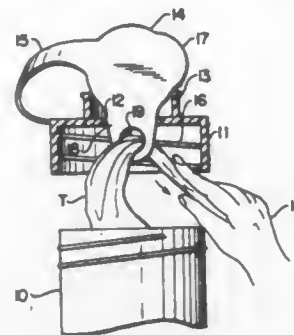
Int. Cl.<sup>3</sup> A47K 10/20

U.S. Cl. 221—36

13 Claims

1. A dispensing device for articles comprising a container having:  
a removable closure with a slitted opening,  
a cap integrally joined to said closure by a strap, for closing said opening, and  
a threading protrusion integral with the cap for receipt through the opening whereby an article may be engaged therewith and drawn from the container through the opening to initiate dispensing of the articles through the opening, said protrusion being sufficiently rigid to facilitate passage through said slitted opening, said threading protrusion having an opening therethrough through which part of an article in the container is inserted when the protrusion is extended through the opening in the

closure, so that withdrawal of the protrusion from the opening pulls a part of the article along with it, whereby



the article may be engaged and pulled from the container through the opening and said protrusion being thin enough to readily enter the slitted opening.

4,337,877

**APPARATUS FOR SUPPLYING SLIDE FASTENER SLIDERS**

Hisashi Doori, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Japan

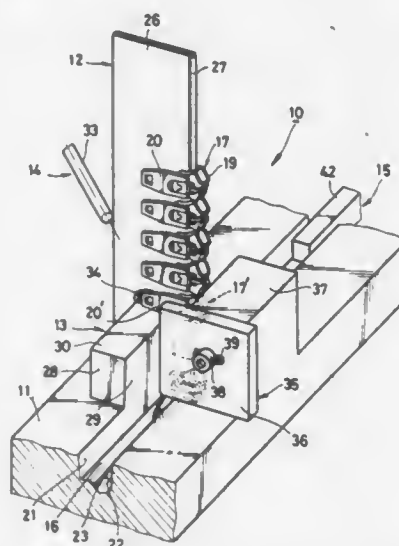
Filed Sep. 4, 1980, Ser. No. 184,029

Claims priority, application Japan, Sep. 7, 1979, 54-124216[U]

Int. Cl.<sup>3</sup> B65H 9/00; B23Q 7/10

U.S. Cl. 221—171

10 Claims



1. An apparatus for supplying slide fastener sliders one at a time to a predetermined position, each of the sliders including a body having a pair of substantially parallel flat wings interconnected at one end by a neck and a pull tab pivotally connected to one of the wings, said apparatus comprising:

- a base having a groove with at least one end opened for passage of the sliders;
- track means extending upwardly from said base and having a longitudinal edge for carrying slidably thereon the sliders stacked sideways with their respective pull tabs arranged in the recumbent position for gravity delivery of the sliders to said groove;
- means on said base engageable with said recumbent pull tab of the leading slider for retaining the same on said longitudinal edge with the body of said leading slider positioned just above the groove without engaging said retaining means;
- means for releasing said leading slider pull tab from retaining engagement with said slider retaining means, and for orientating said leading pull tab from said recumbent position into the raised position where it is directed substantially perpendicularly to the slider wings and to said one end of said groove, thereby allowing the leading slider to fall into said groove; and

(e) means for feeding said slider which has fallen into said groove in and along the latter through said one open end to the predetermined position.

4,337,878

**METHOD OF WEIGHING AND DISPENSING MATERIAL FROM A SURGE BIN**

James D. Brock, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

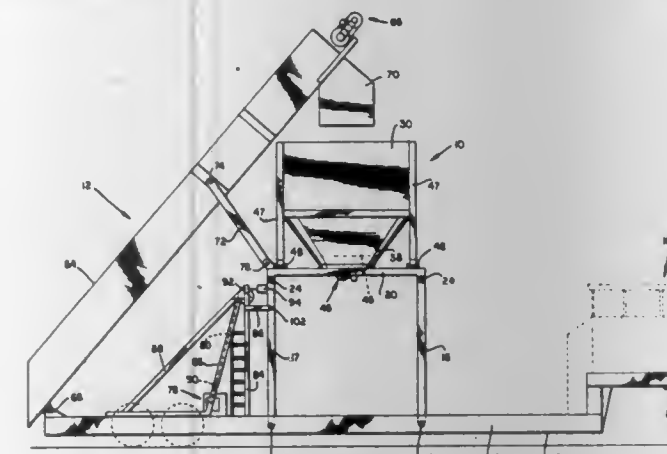
Division of Ser. No. 951,373, Oct. 10, 1978, Pat. No. 4,248,359, which is a continuation-in-part of Ser. No. 912,501, Jun. 5, 1978,

Pat. No. 4,249,351. This application Sep. 26, 1980, Ser. No. 191,276

Int. Cl.<sup>3</sup> B65G 27/24

U.S. Cl. 222—1

2 Claims



1. A method of weighing and dispensing material from a surge bin comprising the steps of:  
collecting said material in a batcher to a predetermined amount;  
dispensing said collected material from said batcher into said surge bin;  
dispensing a quantity of material from said surge bin while again collecting material in said batcher to said predetermined amount;  
continuously weighing said surge bin and material therein as said material is dispensed from said surge bin to determine an initial weight of material dispensed from said surge bin;  
interrupting dispensing of said material from said surge bin responsive to said predetermined amount of material being collected in said batcher;  
storing said initial weight of material dispensed from said surge bin prior interruption of dispensing of said material from said surge bin;  
dispensing said predetermined amount of collected material from said batcher into said surge bin;  
weighing said surge bin and material therein to establish the weight of said surge bin and material therein;  
dispensing a quantity of said material from said surge bin; and  
continuously weighing said surge bin and material therein while material is being dispensed from said surge bin to determine a further weight of material dispensed from said surge bin.

4,337,879

**SQUEEZING DEVICE**

Rodney W. Park, Dana Hohenort Ave., Constantia, Cape Province, South Africa

Filed Jun. 16, 1980, Ser. No. 159,418

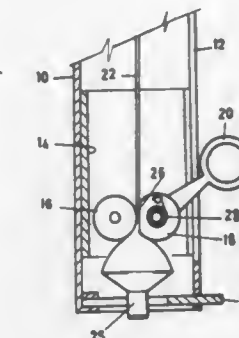
Int. Cl.<sup>3</sup> B65D 35/28

U.S. Cl. 222—102

6 Claims

1. A device for squeezing deformable tubes which have a neck and contain a material to be dispensed, the device comprising a housing, means for holding the neck of a tube relative to the housing, a slide in the housing, the housing defining a path of movement for the slide, a first roller mounted on the slide and having an axis which is perpendicular to the path of

movement of the slide, a second roller mounted on the slide about an axis parallel to the axis of the first roller and having a flat face formed thereon, the first and second rollers being arranged so that a tube can be inserted between them, means for ensuring that the rollers progress in one direction only along a tube inserted between the rollers, means for rotating the second roller, the slide being movable in a direction



towards the neck of a tube in the housing so that on rotating the second roller in the first direction, the roller progresses along and squeezes the tube between itself and the first roller, while on rotation in the opposite, second direction the flat face is presented towards the first roller with the tube being a loose fit between the rollers and the slide so that the slide can move towards the neck of the tube.

4,337,880

**MEASURING AND DISPENSING ASSEMBLY**

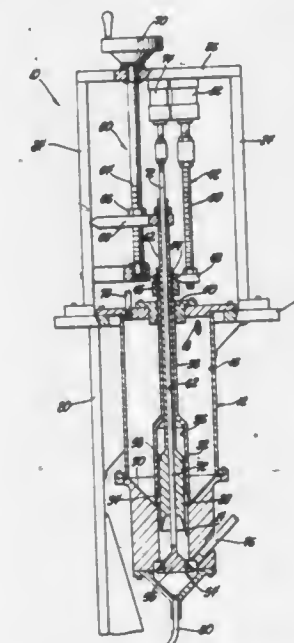
Walter J. Rozmus, Traverse City, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Apr. 11, 1980, Ser. No. 139,318

Int. Cl.<sup>3</sup> G01F 11/34

U.S. Cl. 222—152

11 Claims

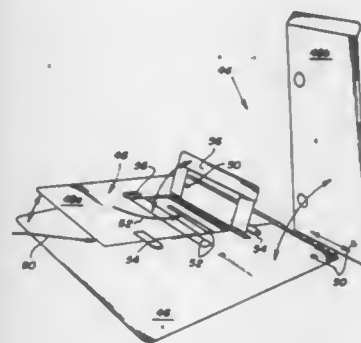


1. A measuring and dispensing assembly (10) comprising; housing means (12) defining a measuring chamber (14), inlet valve means (28, 32) for controlling the flow of material into said measuring chamber (14), outlet valve means (54) for controlling the flow of material out of said measuring chamber (14), a control member (58) selectively movable into and out of said measuring chamber (14) to any one of various fixed adjusted positions for selectively varying the volume of said measuring chamber (14), and adjustment means (60) for selectively adjusting the fixed position of said control member (58) in said measuring chamber (14) so that said control member (58) remains stationary as said respective valve means (28, 32 and 54) open and close whereby said control member (58) may be moved to a fixed position in said measuring chamber (14)



and remain there when said inlet valve means (28, 32) is open to fill said measuring chamber 14, said housing means (12) defining a supply chamber (16) above said measuring chamber (14), said inlet valve means (28, 32) being between said supply chamber (16) and said measuring chamber (14) and including a valve seat (28) about the upper end of said measuring chamber (14) and at the bottom of said supply chamber (16) and a valve member (32) having a valve periphery (34) for engaging said valve seat (28) about the upper end of said measuring chamber (14) when in the closed position, said control member (58) being disposed within said valve member (32) periphery (34) for movement into and out of said measuring chamber (14).

**4,337,881**  
**APPARATUS FOR IMPLANTING POCKETS**  
 Joseph W. A. Off, and Judson H. Early, both of Dallas County, Tex., assignors to Haggard Company, Dallas, Tex.  
 Continuation of Ser. No. 16,404, Mar. 1, 1979, abandoned. This application Aug. 5, 1980, Ser. No. 175,576  
 Int. Cl.<sup>3</sup> A41D 27/20; A41H 43/00  
 U.S. Cl. 223—1 22 Claims

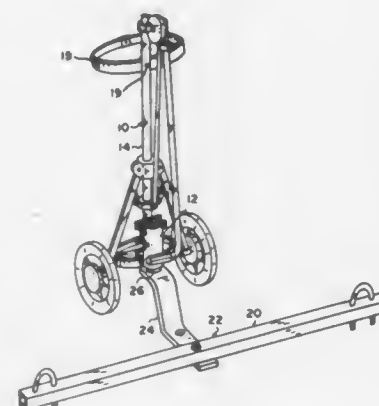


8. An apparatus for folding back and securing the edges of a slit formed through a pocket bag and garment panel to form a pocket slot in a pocket implantation apparatus, comprising: the slit having Y-shaped end portions and a straight central portion; means for releasably holding the pocket bag and garment panel in predetermined relationship; means for selectively folding back the central portion of the slit against the pocket bag; means for selectively folding back the end portions of the slit against the pocket bag; and means for adhesively securing the folded back edges of the slit to the pocket bag to complete the pocket slot.

14. Apparatus for holding a garment panel in a pocket bag in a predetermined relationship comprising: a lower plate having an aperture therethrough for receiving a garment panel on its upper surface; an intermediate plate having an aperture therethrough operatively aligned with the aperture through the lower plate and comprising first and second portions normally positioned adjacent one another, said intermediate plate for clamping the garment panel in engagement with the lower plate and for receiving a pocket bag on its upper surface; means supporting the intermediate plate for pivotal movement about an axis extending parallel to the plane of the lower plate between a closed position wherein the intermediate plate extends parallel and adjacent to the lower plate to clamp a garment panel in engagement therewith and an open position wherein the intermediate plate extends at a substantial angle relative to the plane of the lower plate to facilitate insertion of a garment panel therebetween and also supporting the second portion of the intermediate plate for sliding movement laterally relative to the first portion and relative to the lower plate to facilitate removal of garment panels having pocket bags secured thereto; an upper plate having an aperture therethrough operatively

aligned with the apertures in the lower and intermediate plates; and means supporting the upper plate on the first portion of the intermediate plate for pivotal movement about an axis extending parallel to the plane of the intermediate plate between a closed position wherein the upper plate extends parallel and adjacent to the intermediate plate to clamp a pocket bag in engagement therewith and an open position wherein the upper plate extends at a substantial angle relative to the plane of the intermediate plate to facilitate the insertion of a pocket bag therebetween.

**4,337,882**  
**GOLF CLUB CART CARRIER**  
 Auburn R. Hampton, 1307 Garth Ave., Decatur, Ala. 35601  
 Filed May 12, 1980, Ser. No. 148,754  
 Int. Cl.<sup>3</sup> B60R 9/08  
 U.S. Cl. 224—42.03 R 9 Claims

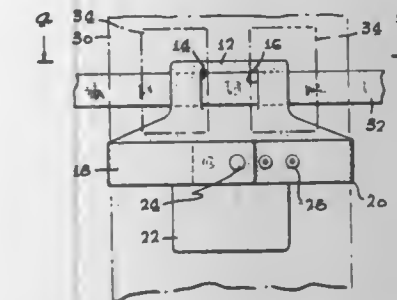


1. A golf club carrier comprising: a golf club cart comprising: elongated support means extending vertically and having a downwardly extending open end tubular end region, and bag holding means comprising means for supporting a golf bag on said elongated support means, and including a lower positioned platform and a vertical support extending upwardly therefrom and a plurality of fixed, spaced lateral supports, transverse to and connected to said vertical support, and said vertical support joined to said elongated support means; and vehicle supported attachment means adapted to be attached to the rear of an automotive vehicle, and including a generally vertical tubular socket member adapted to removably mate within said tubular end region of said elongated support means of said golf cart.

**4,337,883**  
**SKATEBOARD HOLDER**  
 John R. Pate, 401 S. Barrington, Apt. 106, Los Angeles, Calif. 90049  
 Continuation-in-part of Ser. No. 47,164, Jun. 11, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,649  
 Int. Cl.<sup>3</sup> A45C 11/24  
 U.S. Cl. 224—250 10 Claims

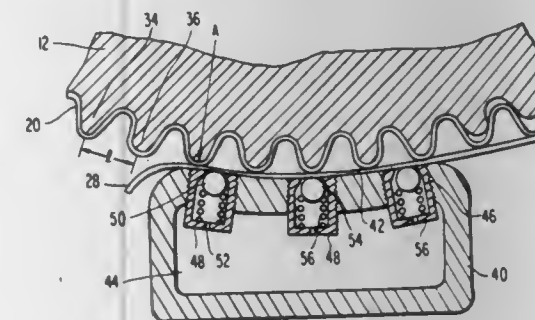
1. A skateboard holder comprising: a hanger; means for removably attaching said hanger to a belt; strap means depending from at least one vertical edge of said hanger and adapted to be removably positioned under the upper wheels of a skateboard when said skateboard is vertically oriented and positioned against said hanger so that its wheels extend outwardly from said hanger, said strap means being wider along said at least one vertical

edge from which it is dependent than at the portion positioned under said skateboard upper wheels; and



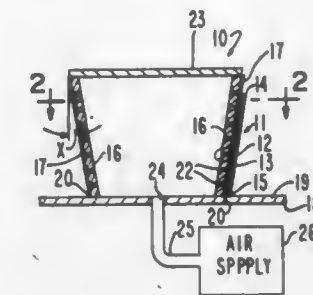
means for fastening said strap means when positioned under said skateboard upper wheels, said means for fastening being adapted to support the weight of said skateboard.

**4,337,884**  
**SINGLE FACER**  
 Tadashi Hirakawa; Hiroaki Sasashige, both of Mihara; Hiroyuki Takenaka, and Keiichi Katayama, both of Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan  
 Filed Aug. 15, 1980, Ser. No. 178,458  
 Claims priority, application Japan, Aug. 17, 1979, 54/113106[U]  
 Int. Cl.<sup>3</sup> B65H 17/20, 17/28  
 U.S. Cl. 226—52 4 Claims



1. In a single facer including a corrugating roll having flutes extending along its peripheral surface for forming a corrugating web, (a) a pressure member opposed to said corrugating roll for pressing a liner web against the corrugated web to form a single-faced corrugated board; (b) said pressure member having an arcuate surface substantially conforming to the contour of an arc extending through the tips of said flutes and having a length in the circumferential direction of said roll which is greater than the distance between two adjacent flutes thereof; (c) means for providing a gaseous layer between said arcuate surface of said pressure member and the liner web; (d) said pressure member including a chamber for receiving gas and said means for providing said gaseous layer includes a plurality of openings formed in said chamber; (e) a plurality of spring-biased members positioned adjacent said openings and projecting slightly beyond said arcuate surface of said pressure member; and (f) said spring-biased members being moved against said bias during operation of the single facer to provide spaces for passage of gas through said openings to provide said gaseous layer.

**4,337,885**  
**APPARATUS FOR GUIDING TAPE**  
 Alfred F. Stahler, 5521 Big Oak Dr., San Jose, Calif. 95129  
 Filed Jun. 10, 1980, Ser. No. 111,170  
 Int. Cl.<sup>3</sup> B65H 17/32  
 U.S. Cl. 226—97 14 Claims



1. Apparatus for guiding a tape comprising, in combination: a reference member having a reference surface against which the edge of the tape will be aligned, a guiding member having a guiding surface with which the broad side of the tape will be substantially aligned, means for mounting said guiding member and said reference member so that said guiding surface and said reference surface intersect, means for moving the tape in the direction of the line of intersection of said guiding surface and said reference surface, means for directing a gaseous stream to said guiding surface to provide a gaseous cushion between said surface and the tape, and means for urging the tape along said guiding surface against said reference surface to steer the tape.

**4,337,886**  
**WELDING WITH A WIRE HAVING RAPIDLY QUENCHED STRUCTURE**  
 William H. King, Higginum, and Bernard H. Kear, Madison, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.  
 Continuation of Ser. No. 28,404, Apr. 9, 1979, abandoned. This application Apr. 28, 1980, Ser. No. 146,949  
 Int. Cl.<sup>3</sup> B23K 35/30  
 U.S. Cl. 228—263 B 4 Claims



1. The method of fusion welding a superalloy workpiece which comprises heating the workpiece locally with a welding heat source and introducing weld filler wire into the vicinity of the workpiece where it is heated, to cause melting of the wire and fusion thereof with the superalloy workpiece, characterized by imparting to the weld filler wire a rapidly quenched structure prior to the introduction thereof into the vicinity of the heated workpiece, to make the wire at least partially amorphous or microcrystalline and to thereby provide a ductile portion on an otherwise brittle weld filler wire.



4,337,887

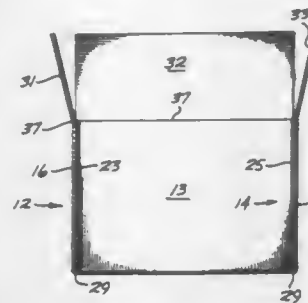
**REINFORCED HALF SLOTTED CONTAINER**

Thomas J. Gerard, Winter Haven, and John E. Gillmore, Sr., Brandon, both of Fla., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Sep. 18, 1979, Ser. No. 76,641  
Int. Cl.<sup>3</sup> B65D 5/56, 5/00

U.S. Cl. 229—16 R

1 Claim



1. A reinforced half slotted container formed from a single sheet blank comprising first, second, third and fourth side walls, each of said side walls being formed of an outer side wall and an inner reinforcing panel joined to said outer side wall along a first score line on the upper edge of said side wall, said side wall and reinforcing panel being formed from the same panel,

said inner reinforcing panel being adhered to said outer side wall and being of a height equal to the height of said outer side wall and a width substantially equal to the width of said outer side wall, and  
bottom closure panels joined to each of said outer side walls along a second score line on the edge opposite said first score line.

4,337,888

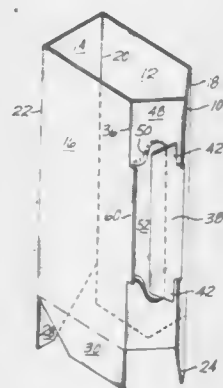
**NON-GLUED MANUFACTURERS JOINT**

Kishor N. Kudalkar, Carol Stream, Ill., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Apr. 13, 1981, Ser. No. 254,002  
Int. Cl.<sup>3</sup> B65D 5/10, 5/42

U.S. Cl. 229—48 R

2 Claims



1. A manually formed manufacturer's joint for a container comprising

a first flap hinged along a score line to one end of said container, the length of said first flap hinge being less than the full length of the end of container,  
said first flap having a pair of shoulders offset outwardly from said hinge a distance substantially equal to twice the width of the material forming the container, the length of said offset section being equal to the length of said hinge and the length of said first flap at said shoulders being the maximum length of said first flap,  
a panel hingedly joined along a score line to the opposite end of said container,  
a second flap within and hinged along a score line to said

panel, said second flap hinge being within said panel and parallel to said opposite end,  
said second flap further being formed by a pair of side cuts in said panel extending from each end of said second flap hinge to said panel hinge, and an end cut extending between said two side cuts and being offset from said panel hinge a distance substantially equal to twice the width of said material forming said container,  
the length of said end cut being at least equal to the length of said first flap offset section and the panel side cuts being parallel between said end cut and said panel hinge to form a projection on said container end, and  
the maximum width of said second flap being slightly larger than the maximum width of said first flap, whereby said first flap may be inserted through said aperture, its offset section may fit within the aperture formed by said projection and it may be locked in place by said second flap being rotated into the plane of said panel.

4,337,889

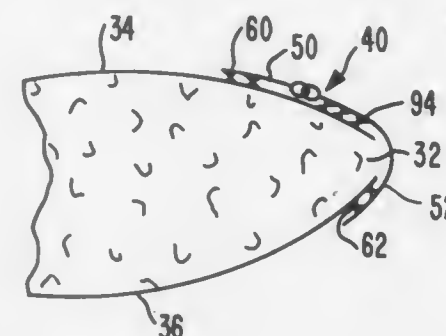
**RECLOSABLE BAG WITH SLIDE FASTENER**

George B. Moertel, Conneautville, Pa., assignor to Talon, Inc., Meadville, Pa.

Filed Feb. 6, 1980, Ser. No. 119,063  
Int. Cl.<sup>3</sup> B65D 33/20

U.S. Cl. 229—62

3 Claims



1. A reclosable bag comprising  
a bag body having two side walls and an elongated opening formed between end portions of the two side walls,  
a slide fastener having a pair of support tapes and a pair of rows of coupling elements mounted on the inner longitudinal edges of the support tapes,  
a pair of attachment means attaching the tapes to the respective side walls adjacent the opening, and  
an easy peelable adhesive securing an inner portion of one support tape to the opposite side wall from which the one support tape is attached by the corresponding attachment means.

4,337,890

**METHOD OF PREPARING AND PROCESSING RECEIPTS FOR CUSTOMERS OF PARKING LOTS OR THE LIKE**

Hans Buchmann, Oetwil, Switzerland, assignor to Zühlke Engineering AG, Schlieren, Switzerland

Division of Ser. No. 22,317, Mar. 20, 1979, Pat. No. 4,257,551.  
This application Aug. 6, 1980, Ser. No. 176,488

Claims priority, application Switzerland, Mar. 21, 1978, 3063/78

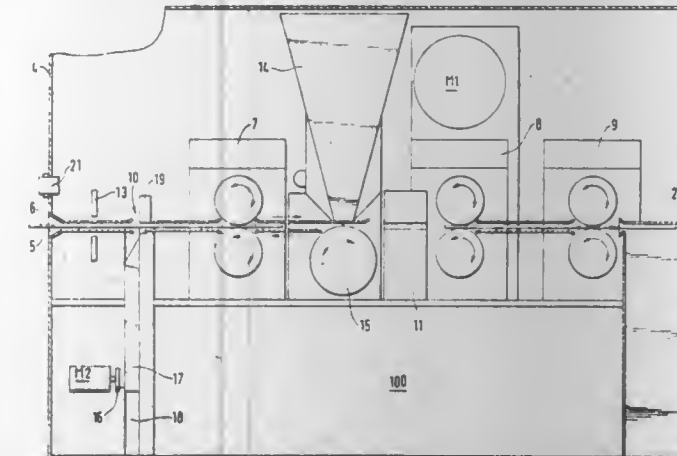
Int. Cl.<sup>3</sup> G06K 1/08

U.S. Cl. 234—1

3 Claims

1. A method of converting a sheet-like carrier of information into two receipts, comprising the steps of applying legible information to at least one portion of the carrier; applying encoded information at least to another portion of the carrier; and separating said one portion from said other portion of the carrier so that each of the separated portions constitutes a discrete receipt and the entire legible information is applied at least to that receipt which is constituted by said one portion of

the carrier prior to said separating step whereas a portion of the encoded information is applied to that receipt which is constituted by said other portion of the carrier prior to said separating step so that neither of said receipts contains the entire legible information together with the entire encoded



information, said second applying step including applying a first part of said encoded information to said one portion and a second part of said encoded information to said other portion so that, upon completion of said separating step, each of said receipts contains only the respective part of the encoded information.

4,337,891

**ELECTRIC CONTROL DEVICE FOR A CENTRAL HEATING BOILER**

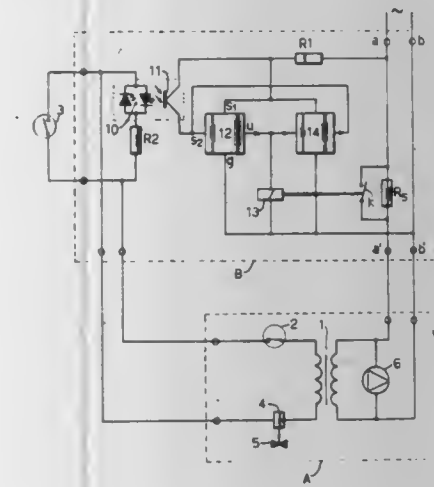
Paulus T. J. Overman, Apeldoorn, and Henricus J. Slats, Ugchelen, both of Netherlands, assignors to Veg-Gasinstituut N.V., Apeldoorn, Netherlands

Filed Jun. 17, 1980, Ser. No. 160,154  
Claims priority, application Netherlands, Jun. 19, 1979, 7904801

Int. Cl.<sup>3</sup> F24D 3/00, 5/10

U.S. Cl. 236—9 A

2 Claims



1. An electric control device for a central heating boiler which is provided with a pump, a burner, an electrically operated shut-off valve for controlling the fuel supply to the burner and an electric control circuit comprising a supply transformer having a primary winding for connection to voltage mains and a series circuit connected to the secondary winding thereof, the series circuit including the control winding of the electrically operated shut-off valve, a first thermostat controlled contact and a maximum thermostat controlled contact and wherein the pump is connected in parallel with the primary winding of the supply transformer, characterized in that the device is provided with a circuit for external mounting on the boiler connected to the supply voltage mains and the contact of the first thermostat and said circuit comprising a high resis-

tance value series resistor connected between the supply mains and the primary winding and the pump of the boiler, a relay having a normally open contact connected in parallel to the series resistor such that when at least one of the first thermostat and the maximum thermostat contacts changes state the relay is energized thereby short circuiting the series resistor connected in parallel to the contact thereof whereby the full supply voltage is applied to the pump and the primary winding of the transformer, and wherein when the first thermostat contact is open and the maximum thermostat contact is closed the energizing of the relay and thereby the operation of the pump is maintained for a predetermined time.

4,337,892

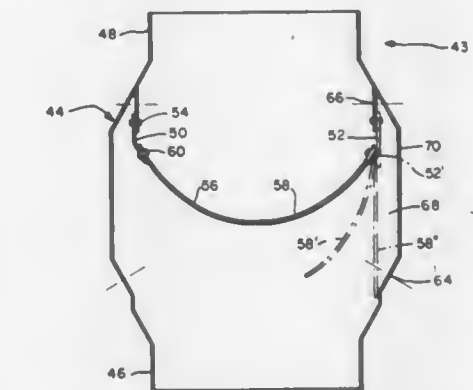
**DRAFT CONTROL ARRANGEMENT FOR VENT OF COMBUSTION APPARATUS**

Werner Diermayer, 1275 Panorama Dr., Lafayette, Calif. 94549, and Luitpold Kutzner, Marschnerstrasse 78, D-8000 Munich, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 198,046  
Int. Cl.<sup>3</sup> G05D 23/02

U.S. Cl. 236—93 R

8 Claims



1. For use in a heating apparatus having a damper for controlling the flow of exhaust gases through a vent, the combination of means forming a flow passage, flow control means comprising first and second actuating elements formed in the shape of blades disposed in the vent for opening and closing the flow area of the passage in response to temperature change, said first element being formed of a shape memory material which rapidly deforms between two different shapes when heated to its phase change temperature, said second element being formed of a thermostat material which changes shape substantially proportional to temperature change, said first and second elements coacting to provide a rapid rate of flow passage opening during the initial phase of temperature rise following burner ignition followed by a rate of flow area opening substantially proportional to further temperature rise.

4,337,893

**MULTI-PHASE MODULAR COMFORT CONTROLLED HEATING SYSTEM**

Staunton O. Flanders, Highland Park, and William A. Ness, Kildeer, both of Ill., assignors to Energy Savings Parhelion, Northbrook, Ill.

Continuation-in-part of Ser. No. 137,737, Apr. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 104,191, Dec. 17, 1979, abandoned. This application Nov. 20, 1980, Ser. No. 208,509

Int. Cl.<sup>3</sup> F24H 3/06; F24D 5/18

U.S. Cl. 237—7

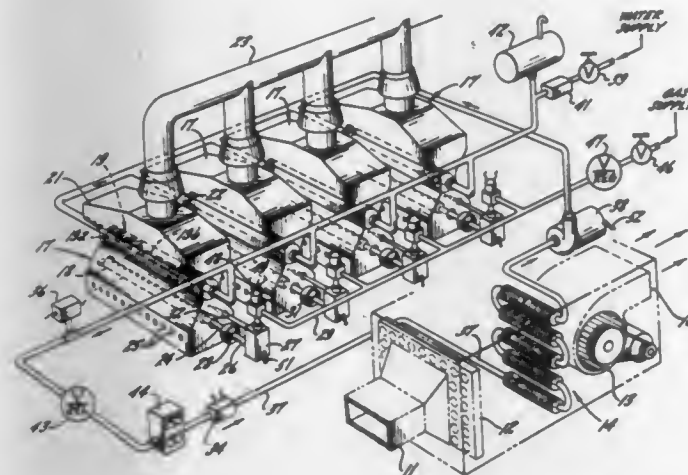
31 Claims

1. A gas-fired space heating system, comprising:  
(a) a plurality of modular incremental gas-fired burner assemblies each including  
a housing,  
heat exchanger means mounted in the housing for effecting heating of a fluid in contact therewith, said heat exchanger means comprised of a thermally conductive



material with a heat transfer surface area that is large enough relative to the volume of said fluid in contact therewith and the flow rate of said fluid so that thermal energy is transferred to said fluid substantially instantaneously when said heat exchanger means is heated, and a gas burner mounted in the housing for effecting heating of the thermally conductive material of said heat exchanger means;

(b) a low mass closed loop circulation system for transferring heat from said fluid to a space to be heated, said circulation system including moving means for continuously moving said fluid into contact with said heat exchanger means to effect heating of said fluid when any one of said gas burners is in operation, said moving means circulating substantially all of the fluid confined within said circulation system through said plurality of heat



exchangers, whereby the heat added to said fluid by the firing of one additional gas burner is manifested by a direct increase in temperature in the space being heated without a delay due to the time needed to heat a mass of ambient temperature fluid and heat is continuously removed from said system at a rate that is substantially the same as the rate at which heat is added by said gas burners; means for measuring the air temperature in said space; firing means for individually firing the gas burner in each of said burner assemblies to effect heating of the associated heat exchanger means and incremental heat transfer to said fluid; and means for comparing the air temperature in a space to be heated with a reference temperature and for activating said firing means to fire one or more of said burners as a function of the difference between said measured space temperature and said reference temperature.

4,337,894

## WALL PROTECTIVE HEATING SYSTEM

James T. Shupe, Rt. 2, E. Brow Rd., Trenton, Ga. 30752  
Filed Feb. 25, 1980, Ser. No. 124,383

Int. Cl.<sup>3</sup> F24C 5/04

U.S. Cl. 237-46

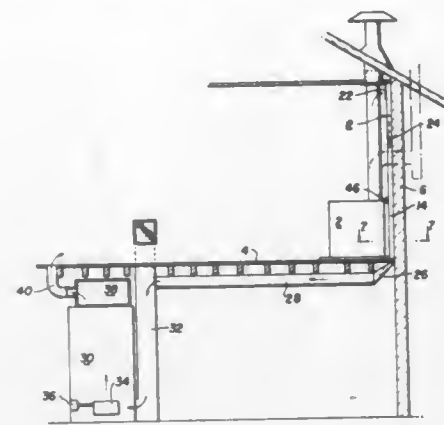
12 Claims

1. A system for protecting a wall of a building from heat emitted by a free standing stove near the wall for burning solid combustible materials, comprising,

a channel having an internal airflow passage and an air inlet opening at the upper end of the airflow passage to receive air from an upper part of the room, said channel including a thermally conductive panel which has a width for laterally spanning the space between the stove and the wall, said channel being formed of a plurality of interconnected sections of U-shaped cross section,

means for mounting the channel on a wall adjacent to the stove where one surface of the panel faces said stove to receive heat therefrom and the opposite surface of the panel faces the airflow passage to heat air in the channel, duct means having an inlet end connected to the airflow

passage in the channel and an outlet end which is in the building and spaced from the stove and channel,



4,337,895

## HIGH SPEED ROTARY ATOMIZERS

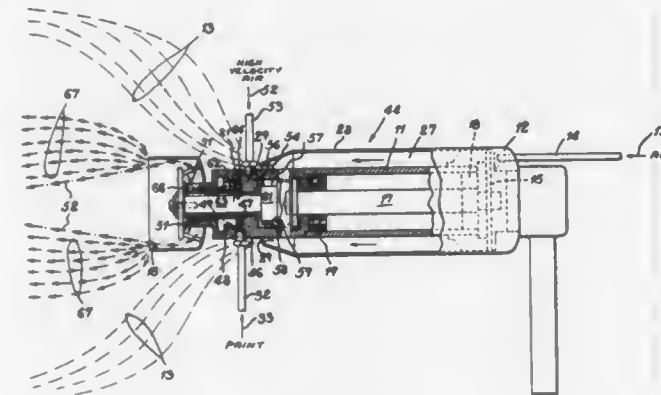
Thomas Gallen, 1516 Buck Rd., Feasterville, Pa. 19047

Filed Mar. 17, 1980, Ser. No. 130,787

Int. Cl.<sup>3</sup> B05B 3/04, 7/00, 1/06

U.S. Cl. 239-7

6 Claims



1. In a high speed rotary atomizer having a vane rotated by air which vane in turn rotates a shaft carried upon bearings and which shaft includes a spindle extension for rotating a disc, the method of spray painting which consists in passing a second source of air and atomizing particles of spray material upon the inner peripheral surface of said rotating disc, wherein said second source of air is introduced downstream of said bearings for fluid sealing said bearings from said paint particles and, whereby the paint particles are drawn by the second source of air inwardly toward the axis of the disc to produce an improved doughnut-shaped spray pattern.

4,337,896

## ULTRASONIC FUEL ATOMIZER

Harvey L. Berger, Poughkeepsie, and Charles R. Brandow, Highland, both of N.Y., assignors to Sono-Tek Corporation, Poughkeepsie, N.Y.

Continuation of Ser. No. 46,641, Jun. 8, 1979, abandoned. This application Dec. 17, 1980, Ser. No. 217,397

Int. Cl.<sup>3</sup> H04F 17/00

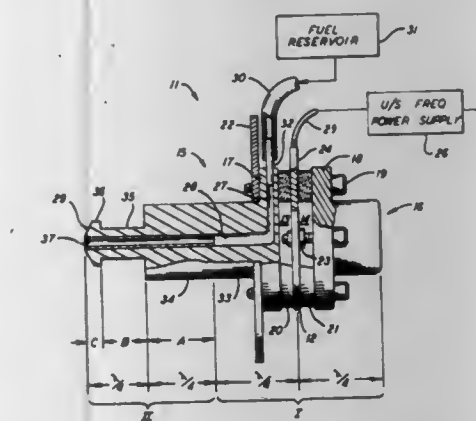
U.S. Cl. 239-102

5 Claims

1. An ultrasonic atomizer for producing a dispersed spray of finely divided liquid particles, the atomizer including a driver means having an output plane for providing longitudinal vibratory displacement at a predetermined ultrasonic operating frequency; a vibration amplifying means in the form of a stepped ultrasonic horn including a first cylindrical portion

having an input end coincident with the output plane of the driver means, the length of the first cylindrical portion being equal to a quarter wavelength at said operating frequency, and a second cylindrical probe portion extending from the other end of the first cylindrical portion and having a diameter substantially smaller than the diameter of the first portion; a flanged tip on the outer end of the second cylindrical probe portion, the diameter of said flanged tip being substantially larger than the diameter of the probe portion but less than the diameter of the first cylindrical portion, and the outer face of said flanged tip forming an atomizing surface; and means for delivering a liquid to flow radially outward across said atomizing surface for atomization by the vibrations produced by said driving means, wherein the improvement comprises:

said atomizing surface having a convexly conical shape that extends to the circumference of said flanged tip and pro-



duces a substantially conical spray pattern of finely divided droplets from liquid flowing thereover when the atomizer is driven at said operating frequency, the axis of said conical shape being parallel to the direction of longitudinal vibration, and the apex angle of said conical shape being supplementary to the spray cone angle of the atomized liquid;

the flanged tip having a short cylindrical portion contiguous to and having the same diameter as the base of the conical atomizing surface for assuring that the atomizing surface vibrates only in the longitudinal mode; and the dimensions of said stepped ultrasonic horn conforming to dimensions calculated from the solution of the time-independent differential equation for the propagation of longitudinal waves in a solid medium at said predetermined ultrasonic operating frequency.

4,337,897

## PROCESS AND DEVICE FOR PRODUCING THE REFRACTORY LINING OF METALLURGICAL VESSELS

Erich Höffken, Dinslaken, and Karl-Dieter Beckers, Neunkirchen-Seelscheid, both of Fed. Rep. of Germany, assignors to Martin & Pagenstecher GmbH, Cologne-Mulheim, Fed. Rep. of Germany

Division of Ser. No. 943,840, Sep. 19, 1978, Pat. No. 4,268,543.

This application Nov. 7, 1980, Ser. No. 204,988

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742415

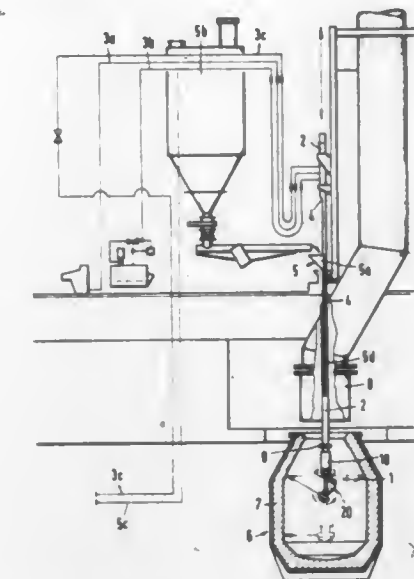
Int. Cl.<sup>3</sup> B05B 3/02

U.S. Cl. 239-214.25

6 Claims

1. A device for centrifugally applying a refractory mass to the walls of the vessel by slinging the same thereon in a direction normal to the walls which device comprises a slinger unit disposable within said vessel, said slinger unit comprising a slinger head having a slinger wheel, a slinger motor driving said slinger wheel, at least one supply conduit for supplying refractory mass to said wheel and means for forming the sup-

plied refractory mass and a binder into lumps, said slinger wheel being disposed on one end of a shaft which shaft is



extendable into said vessel and a second motor for driving said slinger unit about the axis of the vessel.

4,337,898

## BURNER HEADS

Alfred F. Cleall, Warnham, England, assignor to Babcock Product Engineering Ltd., Sussex, England

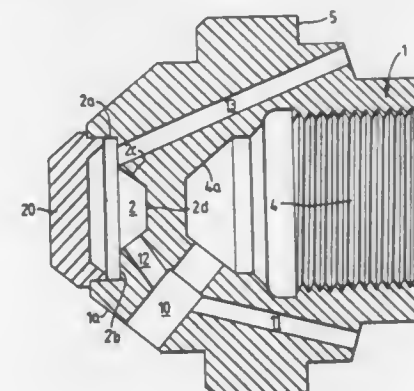
Filed Jul. 15, 1980, Ser. No. 169,155

Claims priority, application United Kingdom, Jul. 17, 1979, 7924826

Int. Cl.<sup>3</sup> F23D 11/16

U.S. Cl. 239-422

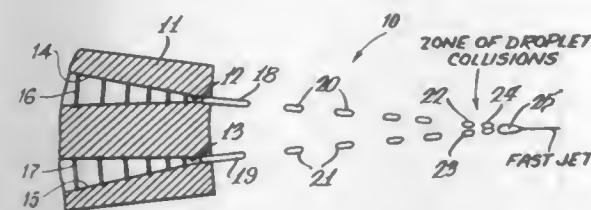
4 Claims



1. A burner head comprising a body part and, at one end of the body part, a chamber formed by the body part and a cap that has been sealingly welded around its periphery to the body part, the body part having a plurality of straight bores extending to the end at which the chamber is formed from the other end and diverging from each other towards the chamber end, the body part also containing, for each bore, two straight ducts having longitudinal axes that meet in the bore, one duct leading to the bore from the end of the body part remote from the chamber and the other duct leading to the bore from the chamber, and one or more further ducts extending through the body part to the chamber from the end of the body part remote from the chamber, said straight bores adapted to communicate with a first fluid source and said straight ducts and said further ducts adapted to communicate with a second fluid source.

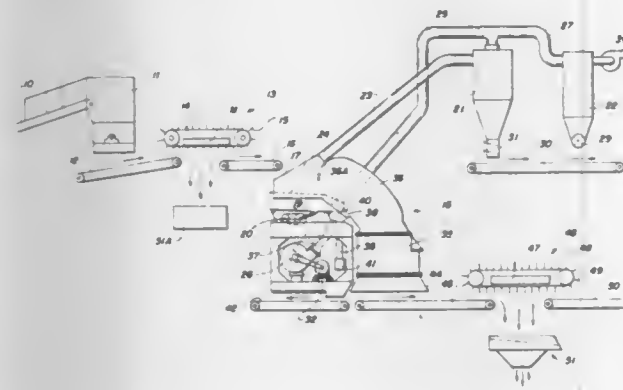


**4,337,899**  
**HIGH PRESSURE LIQUID JET NOZZLE SYSTEM FOR ENHANCED MINING AND DRILLING**  
 Bruce P. Selberg, Rolla, Mo., assignor to The Curators of the University of Missouri, Columbia, Mo.  
 Filed Feb. 25, 1980, Ser. No. 124,061  
 Int. Cl.<sup>3</sup> B05B 1/26, 1/34; E21B 7/18  
 U.S. Cl. 239—543



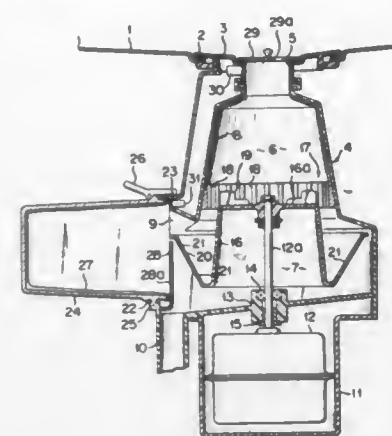
1. A high pressure fluid jet system adapted for use in cleaning, cutting and drilling comprising:  
 a nozzle body formed with at least one internal tapered conduit connected at one end to be supplied from a source of high pressure fluid and terminating at its other end at a jet exit orifice through which a first high velocity linear jet stream is expelled which impinges at a point; and  
 passive means formed within said nozzle body for causing said linear jet stream to break into droplets in a controlled manner.

**4,337,900**  
**METHOD OF RECOVERY OF ALUMINUM FROM WASTE MATERIAL**  
 Robert M. Williams, Ladue, Mo., and Lucian C. Bielicki, Ridgefield, Conn., assignors to Bi-Metal Corp., White Plains, N.Y.  
 Continuation of Ser. No. 83,573, Oct. 11, 1979, abandoned. This application Apr. 24, 1981, Ser. No. 257,463  
 Int. Cl.<sup>3</sup> B02C 19/12  
 U.S. Cl. 241—14



1. A method for recovery of a substantially contaminant free grade of aluminum from a stream of waste material containing an assortment of metallic and non-metallic components, including throw away containers having an aluminum content; the method comprising: treating the waste material to a primary shredding step followed by a primary magnetic classification step to separate out non-magnetic materials; subjecting the output of the magnetic classification step to a secondary shredding and air separating step in which the output of the magnetic classification is classified essentially by weight, the secondary shredding effectively segregating the aluminum and attached magnetic components so as to shred and work the aluminum components to free it from magnetic components and densify and ball the free components into a high concentration of aluminum components separated from other components; and treating the thus densified and balled up segregated components of the classified components to a further classification step for removing magnetically responsive densified and balled up components and dirt from a high grade of densified and balled up free aluminum.

**4,337,901**  
**DEVICE FOR DISPOSING OF GARBAGE**  
 Katsumi Ogura, Nagoya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan  
 Filed Feb. 12, 1980, Ser. No. 120,873  
 Claims priority, application Japan, Feb. 17, 1979, 54-17456  
 Int. Cl.<sup>3</sup> B02C 18/42  
 U.S. Cl. 241—46 B

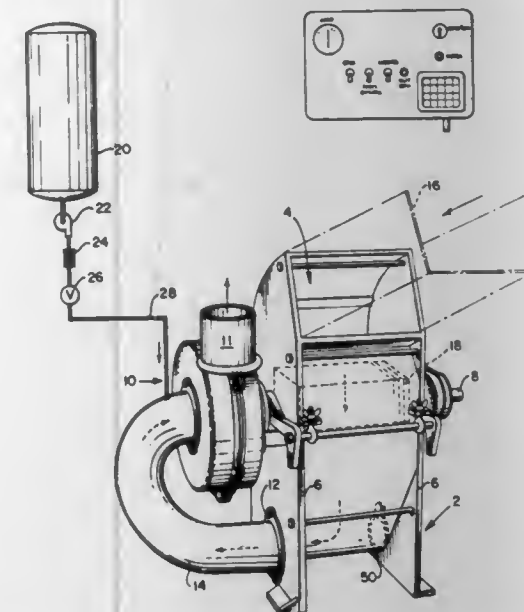


1. A device for disposing of garbage comprising:  
 a case having an upper garbage inlet section, a garbage dividing chamber defined under and communicating with said garbage inlet section and a divided garbage disposal chamber defined under and communicating with said garbage dividing chamber, said divided garbage disposal chamber having a garbage outlet formed in its peripheral wall and a draining port for removing water therefrom;  
 a motor;  
 a garbage dividing mechanism disposed within said garbage dividing chamber and driven by said motor for finely dividing garbage;  
 a rotary draining member provided within said garbage disposal chamber to receive finely divided garbage from said garbage dividing mechanism and driven by said motor for causing the received garbage to be discharged from said garbage outlet by centrifugal force; and  
 a garbage sack case supporting a garbage sack in an interior space so that finely divided garbage discharged from said garbage outlet is received in said garbage sack, said case including water passing means between said interior space and said garbage disposal chamber for preventing garbage in said sack from moving into said garbage disposal chamber and said case further defining an inclined flow path for draining away water entering said garbage sack through said water passing means.

**4,337,902**  
**INSULATION ANTI-STATIC AND BLOWING MACHINE**  
 Melvin C. Markham, Seattle, Wash.  
 Filed Feb. 1, 1980, Ser. No. 117,433  
 Int. Cl.<sup>3</sup> B02C 13/288  
 U.S. Cl. 241—56

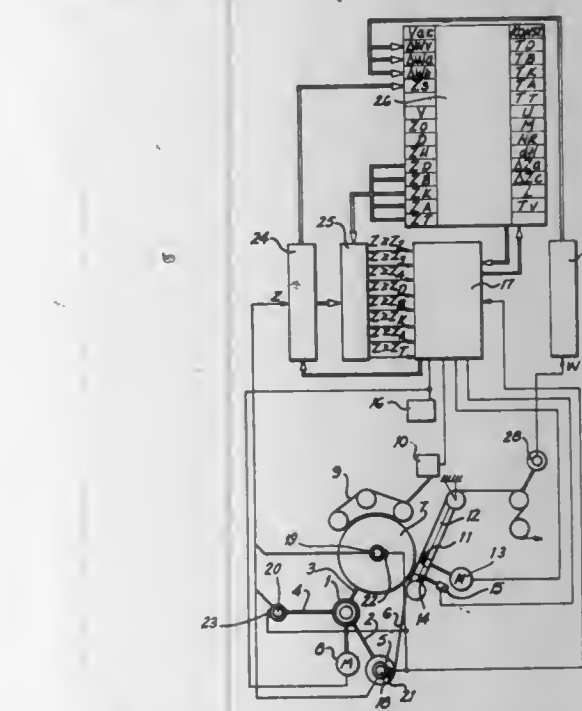
1. An apparatus for fluffing, treating and blowing insulation, comprising:  
 hopper means to receive and temporarily store insulation;  
 hammer mill means to beat the insulation until it is fluffed;  
 blower means for moving the insulation from said hammer mill means through a conduit means to said blower means and from there to a remote location, said blower means including impeller means which comprises a shaft and a plurality of impeller blades extending outwardly therefrom; and  
 means introducing anti-static liquid into said conduit means, at such a position relative to said blower means and at such a rate and with such a trajectory relative to the airflow through said conduit means resulting from the operation of said blower means that the anti-static liquid impinges upon an exposed end of the rapidly turning shaft

of said impeller means in said blower means, wherein the anti-static liquid, upon contact with the rapidly turning



shaft, is splattered throughout the insulation within said blower means.

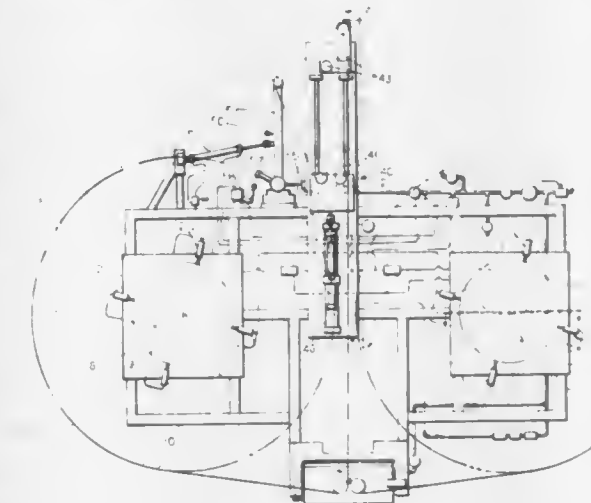
**4,337,903**  
**METHOD OF AND A DEVICE FOR CONTROLLING THE EXCHANGE OF ROLLS OF A WEB-LIKE MATERIAL**  
 Peter Kessler, Plauen; Joachim Kaiser, Plauen; Wolfgang Keil, Plauen; Hans-Günter Despong, Dresden; Jürgen Haufe, Koenigsbrueck, and Matthias Kieser, Dresden, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.  
 Filed Jul. 31, 1980, Ser. No. 175,195  
 Claims priority, application German Democratic Rep., Aug. 16, 1979, 215006  
 Int. Cl.<sup>3</sup> B65H 19/20, 19/12  
 U.S. Cl. 242—56 A



1. A method of controlling the exchange of rolls of a web-like material having an adhesive leading end portion comprising the steps of counting the number of revolutions of the old roll and counting the number of length units unrolled from the old roll, computing from at least two separate intervals of the counted number of revolutions and corresponding intervals of the counted number of web length units parameters including the diameter of the central supporting reel, the web thickness and the number of counting pulses per one revolution of the old roll, the total number of revolutions needed for unrolling

the old roll; computing from the ascertained total number of revolutions and from preset parameters including the length of the adhesive leading end portion of the new roll and the permissible length of the residual trailing end portion of the old web, a set of control numbers for initiating respective steps of the roll exchanging operation; comparing the control numbers with the actual number of revolutions of the old roll to start swinging of the new roll into its adhering position in proximity to the web of the old roll, then accelerating the new roll to a circumferential speed corresponding to the speed of movement of the web of the old roll and holding the latter speed constant, pressing the moving web of the old roll against the adhesive end portion of the new roll and severing the remainder of the web of the old roll.

**4,337,904**  
**WEB TENSION CONTROL METHOD AND APPARATUS**  
 Peter S. Miller, Waterville, and Jack H. Myers, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio  
 Filed Oct. 22, 1980, Ser. No. 199,172  
 Int. Cl.<sup>3</sup> B65H 59/00, 19/08  
 U.S. Cl. 242—75.53

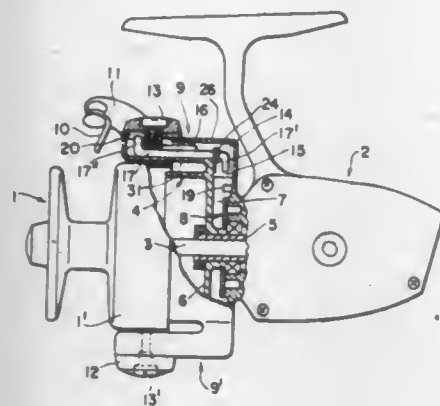


1. The method of controlling tension in a web of tensionally fragile material drawn by a constant speed web processing machine from either one of two supply rolls, wherein the web from one supply roll is spliced to the web from the other supply roll when the drawn web is shifted from one supply roll to the other, comprising the steps of:

- (1) entraining a loop of the web around a first shiftable festooning roller, the position of said first festooning roller being determined by the difference between the web tension force exerted thereon and a constant fluid pressure force exerted on the first festooning roller by a first cylinder;
- (2) applying a drag force to the supply roll which varies as a function of the displacement of the first festooning roller to maintain a controlled range of tension in the web;
- (3) entraining another loop of the web around a second shiftable festooning roller, the position of said second festooning roller being determined by the difference between a constant fluid pressure force exerted on the second festooning roller by a second cylinder and the web tension force exerted on the second festooning roller, said second festooning roller being shiftable by a web tension force in excess of the normal operating tension in a direction to reduce web tension; and
- (4) restricting any movement of said second festooning roller in a direction to increase web tension to a rate within the control limits of said first festooning roller, whereby the fluctuations in web tension accompanying the splicing of the web to shift from one supply roll to the other may be absorbed by the second festooning roller.



**4,337,905**  
**BAIL LATCHING AND RELEASING MECHANISM FOR SPINNING REEL OF OUTSIDE SPOOL TYPE**  
 Kounin Sasaki, Fukuyama, Japan, assignor to Ryobi, Ltd., Hiroshima, Japan  
 Continuation of Ser. No. 24,332, Mar. 27, 1979, abandoned. This application Oct. 30, 1980, Ser. No. 202,394  
 Claims priority, application Japan, Apr. 7, 1978, 53/45942  
 Int. Cl.<sup>3</sup> A01K 89/01  
 U.S. Cl. 242—84.2 G 8 Claims



1. A bail latching and releasing mechanism for use in a spinning reel of the outside spool type including a pair of support housings symmetrically disposed on a rotor to support ends of a bail arm, comprising:

- (a) a bail arm, a bail arm lever coupled to an end of said bail arm, and being rotatably secured to one of said support housings;
- (b) a dead point spring disposed in said one of said support housings for biasing said lever arm in opposite directions relative to its dead point, and
- (c) a kick lever rotatably disposed about its axis and extending into said one of said support housings, said kick lever having a bent end, a space disposed rearwardly of said rotor, said bent end extending into said space to form a lever portion, a projection disposed in said space and adapted to engage said lever portion, the opposite end of said kick lever being bent into said bail arm lever to form a locking portion to thereby permit locking engagement therewith, and

wherein said bail arm lever is provided with a circular bottom surface, said bottom surface being formed with a recess adapted to receive said locking surface, said recess having one end functioning as a locking surface adapted to permit surface contact with said locking portion in the fishing line release position, and having the other end provided with a stopper adapted to permit surface engagement with said locking portion in the fishing line rewinding position.

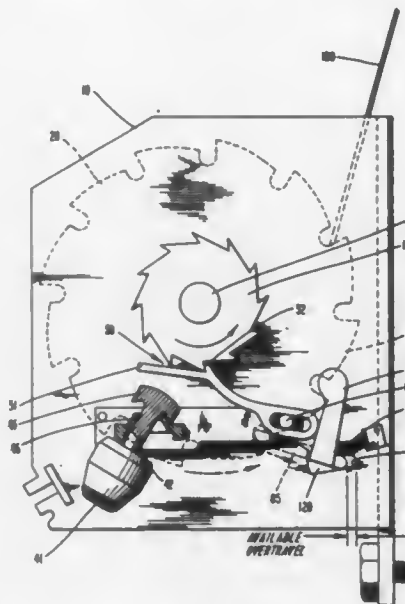
**4,337,906**  
**LOCK UP MECHANISM FOR SEAT BELT RETRACTOR**  
 Arduino Colasanti, East Detroit, and Philip L. Francis, Bloomfield Hills, both of Mich., assignors to Allied Corporation, Morris Township, Morris County, N.J.  
 Filed Nov. 18, 1980, Ser. No. 208,007  
 Int. Cl.<sup>3</sup> A62B 35/02; B65H 75/48  
 U.S. Cl. 242—107.4 A 7 Claims

1. A seat belt retractor for installation in a vehicle comprising:

- a frame having upstanding side walls;
- a spool rotatably supported in said frame;
- seat belt webbing stored on said spool;
- main ratchet wheel means having circumferential ratchet teeth and being rotatable with said spool, said main ratchet wheel means being positioned adjacent to one of said upstanding side walls;
- main locking means for locking said main ratchet means;
- a slotted opening in each of said upstanding side walls, said

main locking means being pivotably supported in said slotted openings;

- a pilot ratchet wheel having circumferential ratchet teeth, said pilot ratchet wheel being rotatable in unison with said main ratchet wheel means and being positioned adjacent to the other of said upstanding side walls;
- inertia sensor means movable in response to acceleration or deceleration of said vehicle; and
- a pilot pawl supported in said frame for pivotal and transverse movements and being positioned between said inertia sensor means and said pilot ratchet wheel, said pilot pawl being movable into engagement with said pilot ratchet wheel in response to actuation of said inertia sen-



sor means, whereby said main locking means is moved by said pilot pawl into locking engagement with said main ratchet wheel means, thereby locking said retractor;

said slotted opening in said other of said upstanding side walls adjacent said pilot ratchet wheel being provided with an elongated portion adjacent an end thereof which supports said main locking means so that the said slotted opening is longer than said slotted opening in said one of said upstanding side walls adjacent said main ratchet wheel means, said main locking means being movable into said elongated portion as result of excessive locking forces being exerted on said main locking means, whereby loads on said pilot pawl and said pilot ratchet wheel are reduced.

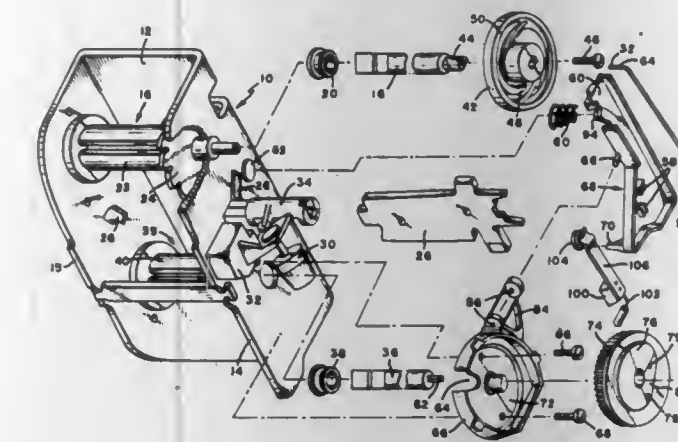
**4,337,907**  
**SEAT BELT RETRACTOR WITH ELECTRICAL SWITCH**  
 William R. Fox, Warren, Mich., assignor to Allied Corporation, Morris Township, Morris County, N.J.  
 Filed Jun. 30, 1980, Ser. No. 164,478  
 Int. Cl.<sup>3</sup> A62B 35/00; B65H 75/48  
 U.S. Cl. 242—107.7 16 Claims

1. In a dual spool seat belt retractor including a housing, a lap belt retractor mounted in said housing and adapted to store a lap belt thereon, a shoulder belt retractor mounted in said housing and adapted to store a shoulder belt thereon, said retractors being rotatable in rewind and extraction directions, rewind means associated with said retractors and normally exerting a rewind force urging said retractors towards the rewind direction, tension relieving means operatively associated with said shoulder belt retractor and effective in an operable position to relieve the rewind force associated with said shoulder belt retractor and ineffective in an inoperable position to relieve said force and release means operable to position said tension relieving means in its inoperable position, the improvement comprising:

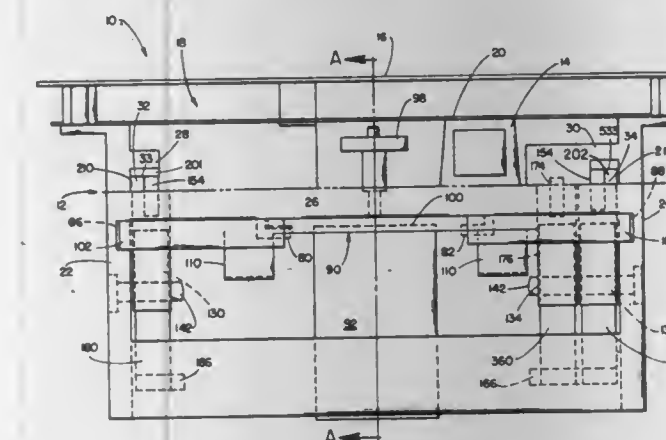
- electric switch means for the control of an electrically activated signal device, said switch means being mounted on said housing and actuated by motion of said release means,

whereby said switch means is moved to a first electrical position when said tension relieving means is in its inoper-

drive member causing the carriage to move from its first position to its second position.



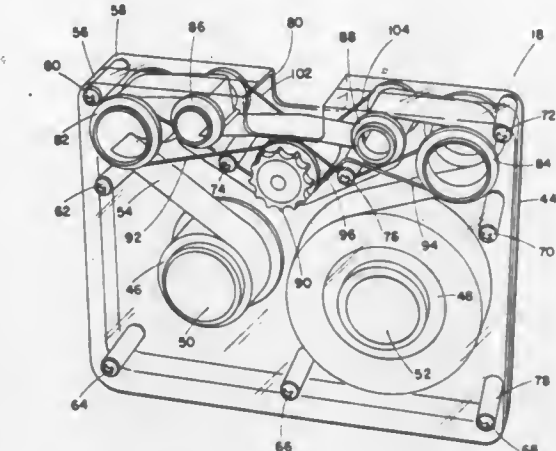
**4,337,908**  
**CARTRIDGE-LOADING APPARATUS FOR TAPE RECORDER DRIVES**  
 Dewey M. Sims, Jr., Wayne, Mich., assignor to Northern Telecom Systems Corporation, Ann Arbor, Mich.  
 Filed May 14, 1980, Ser. No. 149,768  
 Int. Cl.<sup>3</sup> G03B 1/04; G11B 15/32  
 U.S. Cl. 242—198 40 Claims



1. A cartridge tape recorder of the type including a frame, a recording head supported by the frame, a motor and a tape drive member rotated by said motor, and loading means for holding a cartridge in the recorder in operable engagement with the tape drive member upon insertion of the cartridge into the recorder, said loading means comprising:

- a carriage slidably supported on said frame for movement from a first, forward position to a second, rearward, operating position upon insertion of the cartridge, said tape drive member being mounted on said carriage;
- first spring means on said frame and engaging said carriage for biasing said carriage toward its first position;
- lever arm means pivoted to the frame, said arm means being movable from a first position to a second operating position for engaging a cartridge inserted into the recorder, positioning the cartridge and locking the cartridge in the recorder in operable engagement with the tape drive member and the recording head;
- a second spring means at least partially supported on said frame and engaging said lever arm means for biasing said lever arm means from said first position to said second position; and
- camming means acting between said lever arm means and said carriage for enabling movement of said lever arm means from said first position to said second position upon insertion of the cartridge as said cartridge engages the

**4,337,909**  
**MAGNETIC TAPE CASSETTE**  
 Arne M. Harja, Bellevue, Wash., assignor to Sundstrand Corporation, Rockford, Ill.  
 Filed Oct. 24, 1980, Ser. No. 200,286  
 Int. Cl.<sup>3</sup> G03B 1/04; G11B 15/32  
 U.S. Cl. 242—199 26 Claims



17. A magnetic tape system comprising:

- a tape deck including two capstans, a magnetic head, two tape guide pins and two reel drive mechanisms; and
- a tape cassette including:

- a housing including an aperture configured to receive said magnetic head when the cassette is loaded in said tape deck;
- a pair of tape reels including tape rotatably secured within said housing and adapted to be driven by said reel drive mechanisms;
- a pair of annular capstan actuators rotatably secured within said cassette housing and located so as to be coaxial with said capstans when the cassette is loaded in said tape deck;
- a pair of annular tape guide actuators rotatably secured within said cassette housing and located to be coaxial with said tape guide pins when the cassette is loaded in said tape deck; and
- means for simultaneously rotating both of said annular capstan actuators and both of said annular tape guide actuators.

**4,337,910**  
**TAPE TENSIONING DEVICE FOR TAPE RECORDERS OF THE CASSETTE TYPE**  
 Giovanni Santoro, Via Campo di Mele 55, Roma, Italy  
 Filed Sep. 5, 1980, Ser. No. 184,215  
 Claims priority, application Italy, Sep. 5, 1979, 50183 A/79  
 Int. Cl.<sup>3</sup> G03B 1/04; G11B 15/32  
 U.S. Cl. 242—204 6 Claims

1. In a cassette tape recorder comprising a frame having a bottom plate, two toothed members journaled on said plate and adapted to receive the tape-bearing reels of a cassette, a reversible drive gear engageable alternatively with each toothed member, a first support mounted on said plate for limited guided movement relative to said plate, a magnetic head and pinch rollers mounted on said first support and spaced capstans projecting from said bottom plate in positions to cooperate with the pinch rollers in engaging a tape, a tape tensioning device comprising an elastically biased movable second support, a train of an even number of intermeshed gears journaled on said second support, means mounting said second support for limited movement with respect to said first support to an advanced operative position wherein the two outer gears of said train are meshed, respectively, with the two toothed members to cause rotation of the member not engaged by the drive







funicular means intermediate the point of support and the container and comprising a plurality of mutually engageable and disengageable pieces capable of being reoriented about the vertical relative to one another only when disengaged and capable of being engaged in at least several orientations about the vertical.

4,337,917

## GAS PUMP HOLDER

Gerald Tesack, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007  
Filed Jul. 7, 1980, Ser. No. 166,036  
Int. Cl.<sup>3</sup> G05G 5/06

U.S. Cl. 251-90

3 Claims



1. A gas pump holder, comprising in combination, a device insertable between a pivotable handle and a stationary guard of a fuel pump nozzle base, said holder including a foot at one end for resting against said guard, and a channel-shaped plate at its other end for supporting said handle, and an adjustable pivot means between said foot and plate, whereby said means is pivotable from a position maintaining said handle in operation to a closed position permitting said handle to remain in inoperative position wherein said pivot means comprises a pair of levers pivotally attached together, and pivotally attached to said foot and said plate, including a stop on one of said levers adapted to engage the other of said levers to maintain a fixed position of said levers corresponding to the first said position.

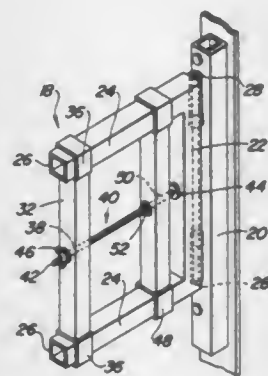
4,337,918

## BRACKET STRUCTURE, ESPECIALLY FOR CARRYING CORRALS SECTIONS ON A VEHICLE OR THE LIKE

James E. Gregory, R.R. #1, Box 130, Fort Madison, Iowa 52627  
Filed May 30, 1980, Ser. No. 154,715  
Int. Cl.<sup>3</sup> F16M 11/00

U.S. Cl. 248-201

11 Claims



1. Bracket structure for attachment to a wall or the like for the purpose of carrying one or more articles, comprising: a carrier having an upright member and upper and lower generally horizontal legs spaced vertically apart and rigidly joined to the upright member and projecting outwardly therefrom in the same direction, each leg having a free, outer terminal end; means on the carrier for the mounting thereof on such wall or the like; an upright outer clamp element having opposite upper and lower end portions substantially in alignment respectively with the legs, each end portion including slide means receiv-

able of the associated leg for selectively mounting the clamp element on and for dismounting the clamp element from the legs and also for selective positioning of the clamp element on the legs relative to the upright member; and means cooperative between the carrier and the clamp element for securing the clamp element in a selected position.

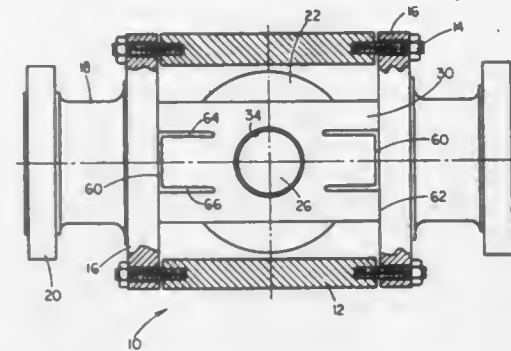
4,337,919

## BEARING RETAINERS FOR A ROTARY VALVE

Roger L. Ripert, Concord, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.  
Filed Jun. 22, 1981, Ser. No. 275,496  
Int. Cl.<sup>3</sup> F16K 5/06

U.S. Cl. 251-304

7 Claims



1. A rotary valve comprising:

- a valve body;
- a rotatable valve closure member in said valve body; an actuator stem for said closure member;
- a pair of trunnions on said closure member; one trunnion removably attached to said stem for rotation therewith and the other trunnion located on the opposite side of said closure member from said one trunnion and axially aligned with said one trunnion;
- a bearing block for each trunnion with a bore therethrough rotatably carrying a respective trunnion;
- said bearing blocks located within said valve body;
- means on said valve body clamping said trunnions to hold them in place therein;
- each said bearing block being characterized that it comprises:
- a pair of opposite substantially parallel surfaces to be clamped by complementary surfaces on said body;
- two pairs of parallel slots in said bearing block intermediate said bore and each of said opposite surfaces and substantially perpendicular to said surfaces;
- said slots being disposed so that projected continuations of each pair thereof are approximately tangential to said bore on opposite sides thereof; and
- means directing clamping forces from said body so that greater forces are applied to the portion of said opposite surfaces outside of each pair of slots than to the portion between each said pair of slots.

4,337,920

## VALVE

Joe P. Parris, Magnolia, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Oct. 16, 1980, Ser. No. 197,409

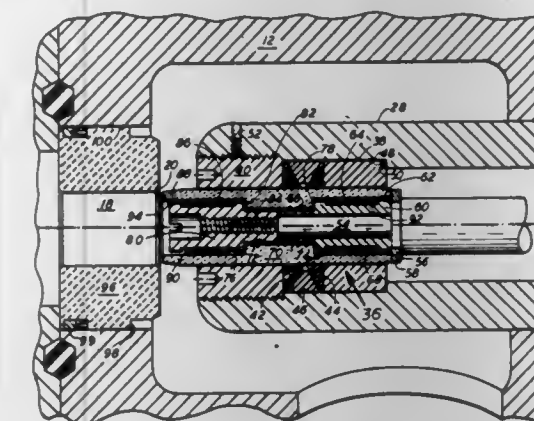
Int. Cl.<sup>3</sup> F16K 1/00

U.S. Cl. 251-357

14 Claims

- 1. A valve for high temperature abrasive service comprising a valve body having an inlet, an outlet and a valve chamber therebetween with a valve seat in said chamber around said outlet,
- a metal valve stem movable toward and away from said valve seat,
- a valve member mounted on said valve stem and adapted

with the movement of said valve stem to control flow through said valve seat, said valve member having a sleeve of abrasion resistant material surrounding said metal valve stem, and



means to securely attach said sleeve to said metal valve stem and including resilient means between said metal stem and said sleeve to center said sleeve on said stem and to insulate said sleeve from tension loading resulting from differential expansion when exposed to elevated temperature.

4,337,921

## INFLATABLE RAM

Thomas P. Edwards, Fareham, England, assignor to FPT Industries, Portsmouth, England

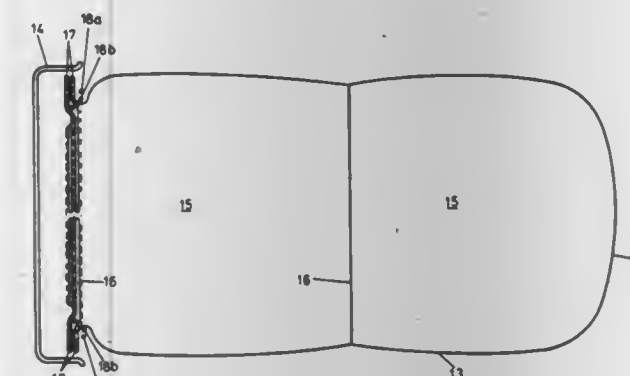
Filed Jul. 22, 1980, Ser. No. 171,089

Claims priority, application United Kingdom, Jul. 30, 1979, 7926502

Int. Cl.<sup>3</sup> B66F 3/24

U.S. Cl. 254-93 HP

8 Claims



1. An inflatable ram having an extensible wall of flexible sheet material connecting two opposed end faces to enclose a space and permit the distance between the end faces to vary, the extensible wall being adapted to collapse in a plurality of folds laid one upon another when the ram is retracted, a plurality of diaphragms attached to and extending transversely of the extensible wall to divide the enclosed space into a series of interconnected compartments, and means tending to restrain each compartment against inflation comprising means adapted for cooperation with each fold to tend to restrain that part of the extensible wall within the fold against extension and whereby restraining forces applied to successive folds progressively increase from one end of the ram to the other so that in operation the ram extends by sequential inflation of the compartments from one end of the ram to the other as the restraining forces applied to the folds are progressively overcome by inflation pressure.

4,337,922

## APPARATUS FOR LAYING AND SECURING HEAVY ELECTRICAL CABLES

Mathias Streiff, Schwanden, and Peter Schnyder, Netstal, both of Switzerland, assignors to Mathias Streiff AG, Schwanden, Switzerland

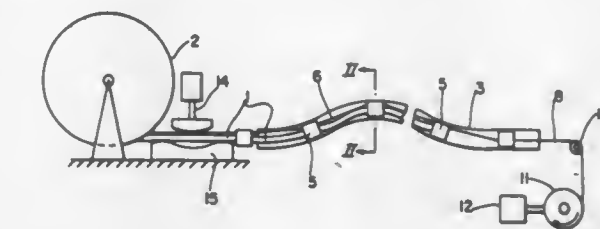
Filed Mar. 25, 1980, Ser. No. 133,866

Claims priority, application Switzerland, Mar. 27, 1979, 2821/79

Int. Cl.<sup>3</sup> B65H 59/00

U.S. Cl. 254-134.3 FT

6 Claims



1. Apparatus for laying and securing heavy electric cable in a cable duct, comprising at least one cable holder fastened with positive force engagement to the cable, said cable holder being connected with at least one draw and tensioning wire for pulling into and securing the cable in the cable duct, the cross section of the cable holder corresponding approximately to the cross section of the cable duct, said cable holder comprising fastening means for fastening the cable, a casing that surrounds the said cable and fastening means, and at least two radially disposed cross pieces that extend between and are connected with said fastening means and said casing, and wherein said at least one draw and tensioning wire is fixed to one of said cross pieces.

4,337,923

## FIBRE OPTICAL CABLE PULLING EYE

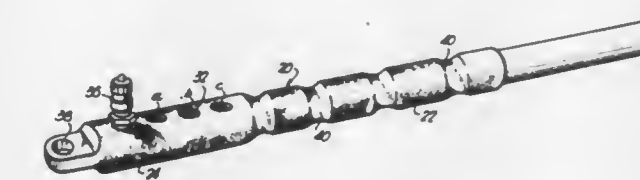
Jackson A. Smith, Box 1058, Aldergrove, B.C., Canada (U0X-1A0)

Filed Sep. 23, 1980, Ser. No. 190,016

Int. Cl.<sup>3</sup> B65H 59/00

U.S. Cl. 254-134.3 FT

1 Claim



1. A device for pulling fibre optic cable of the type having a central strength member, comprising an elongated body having a tubular sleeve at one end for receiving one end of the cable and adapted for circumferentially crimping around the cable at a series of spaced locations along the length of the sleeve; and an integrally formed head portion in alignment with the sleeve, said head portion having a central bore substantially the length of the head for receiving the central strength member of the cable beyond the terminal end of the cable, and means for locking the central strength member to the head portion, comprising at least a pair of spaced locking screws positioned at right angles to the central bore and engaging the strength member to crimp it into sockets aligned with the ends of the locking screws; a pressurization valve in the head portion for pressurizing the connection between the cable and the pulling device; and a pulling eye at the terminal end of the head portion beyond the locking means; the crimping of the tubular sleeve around the cable serving to transmit pull to the cable from the pulling eye in combination with direct pull applied to the central strength.



4,337,924

**POWER PULLING ARRANGEMENT**

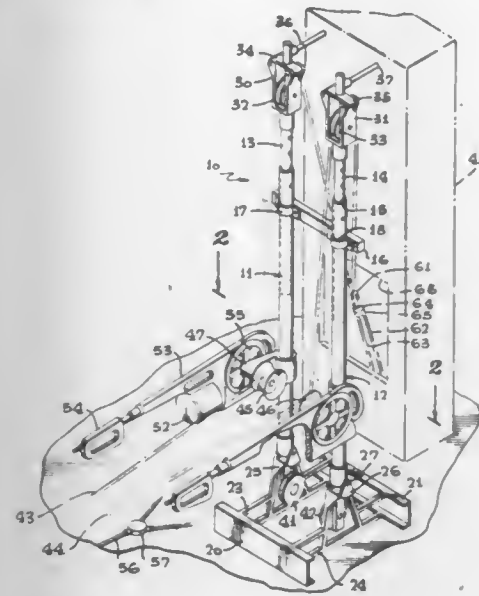
George B. Gebo, 14738 Keswick St., Van Nuys, Calif. 91405

Filed Jun. 15, 1981, Ser. No. 273,593

Int. Cl.<sup>3</sup> E21C 29/16

U.S. Cl. 254—134.3 R

6 Claims



1. In a power driven wire or cable pulling device, the combination which comprises:

- a load bearing member having a pair of substantially parallel, spaced apart, extendable stanchions;
- a support base pivotally attached to said stanchions at a selected end thereof;
- a cross brace having its opposite ends secured to each of said stanchions respectively located in close proximity to the end of said stanchions opposite to the end attached to said support base;
- a pair of cooperating capstons operably carried on said stanchions respectively mid-way between said cross brace and said support base;
- upper and lower pulleys carried on opposite ends of each of said stanchions respectively;
- a pair of pull ropes trained over selective ones of said pulleys associated with each of said pair of stanchions and further, trained over each of said capstons respectively;
- power means operably coupled to each of said capstons for driving said capston at a predetermined and selected speed; and
- a fitting common to said pair of pull ropes at adjacent ends thereof for jointly applying the combined loads of said pull ropes to a wire or cable bundle intended to be pulled.

4,337,925

**HITCH AND SNATCH BOOM ASSEMBLY**

Jefferson C. Shannon, P.O. Box 808, Yazoo City, Miss. 39194

Filed Nov. 24, 1980, Ser. No. 209,486

Int. Cl.<sup>3</sup> B60P 3/28; B66D 3/18

U.S. Cl. 254—264

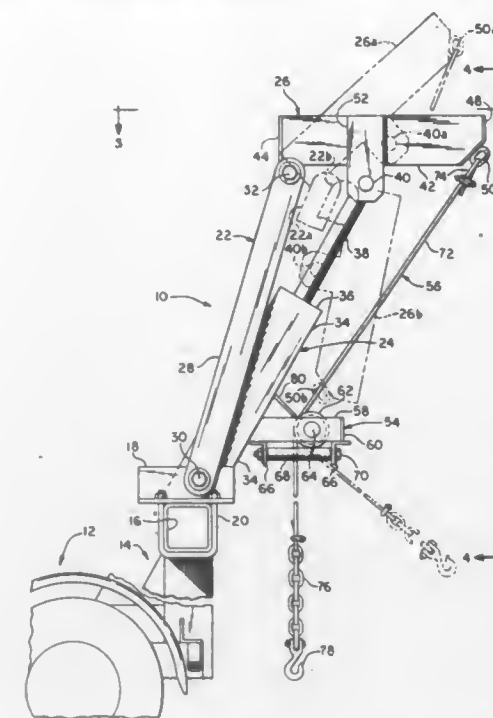
9 Claims

1. A hitch and snatch boom comprising:

- (a) a support means,
- (b) a first, upwardly disposed arm means including upper and lower ends, the lower end being attached to the support means,
- (c) a second upwardly disposed arm means including upper and lower ends, the lower end being attached to the support means,
- (d) one of said arm means being extensible,
- (e) boom means including inner and outer ends and an intermediate connection point disposed between said ends, said boom means being pivotally connected at its intermediate connection point to the upper end of one of said arm means and pivotally connected to the upper end of the

other of said arm means inwardly of said intermediate connection point,

(f) guide roller means mounted to one of said means, and



(g) a cable connected to the boom means outwardly of the intermediate connection point and received by the roller means, said cable having a connection means at the remote end having downward and outward movement capability relative to the roller means.

4,337,926

**WINCH CONTROL**

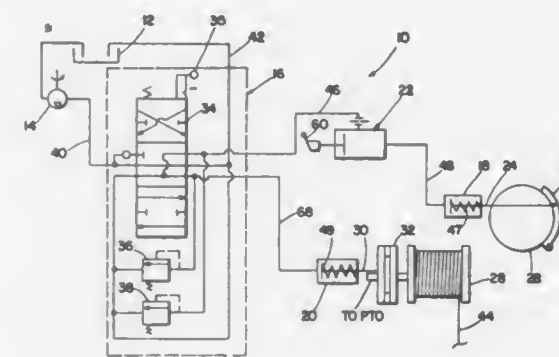
Peter H. Dehaan, Ayr, Canada, assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 2, 1980, Ser. No. 182,877

Int. Cl.<sup>3</sup> B66D 1/14

U.S. Cl. 254—365

4 Claims



1. In a winch comprising a drum; a brake normally engaged with said drum; power input means for rotating said drum in a first direction; clutch means operable to selectively engage said power input means with said drum; and means for controlling said winch comprising a pump, a first actuating cylinder connected to the outlet of said pump and operable to engage said clutch means, a second actuating cylinder connected to the outlet of said pump and operable to selectively disengage said brake, and valve means connected between said pump and said first and second actuating cylinders having a first position connecting the outlet of said pump to said first actuating cylinder and a second position connecting the outlet of said pump to said second actuating cylinder; the improvement including a manually actuated master cylinder assembly connected in series between said valve means and said second actuating cylinder and operable to selectively pressurize said second actuating cylinder independent of said pump.

4,337,927

**FURNACE INSTALLATION PARTICULARLY FOR THE MELTING OF ORE CONCENTRATE**

Friedrich Megerle, Cologne, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

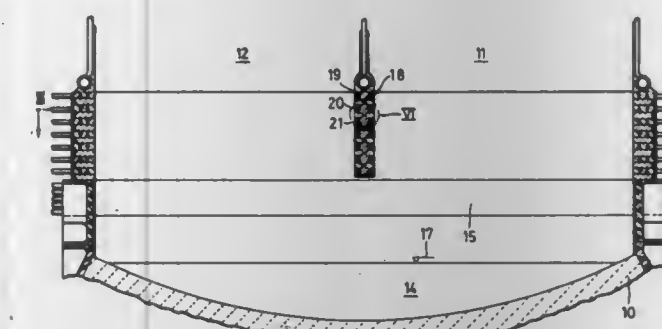
Filed Aug. 13, 1980, Ser. No. 177,740

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935394

Int. Cl.<sup>3</sup> F27D 1/12

U.S. Cl. 266—190

5 Claims



1. In a furnace of the type used for melting of ore concentrate, including exterior side walls and at least one separating wall positioned intermediate said side walls and arranged to dip into the melt to divide the furnace space into separate melting, settling and exhaust spaces, the improvement which comprises:

said separating wall being composed of individual metallic cooling elements in a stacked arrangement, each of said cooling elements being T-shaped, said cooling elements being arranged in super-imposed relation, and each cooling element being provided with means for passing a coolant therethrough.

4,337,928

**APPARATUS FOR CHANGING THE CHARGE DISTRIBUTION IN A BLAST FURNACE**

Kyoichi Ando, Kitakyushu, Japan, assignor to Nippon Steel Corporation, Tokyo and Nittetsu Plant Designing Corporation, Kitakyushu, both of Japan

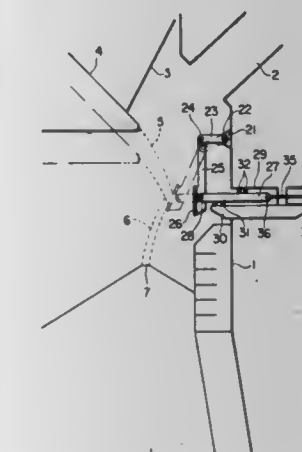
Filed Apr. 25, 1980, Ser. No. 145,456

Claims priority, application Japan, May 2, 1979, 54-58227

Int. Cl.<sup>3</sup> C21B 7/00

U.S. Cl. 266—197

4 Claims



1. An apparatus for changing the charge distribution in a blast furnace, comprising:

- a plurality of arms disposed in a circle within the top of the furnace and extending generally vertically;
- a plate mounted on the bottom of each arm facing toward the center of the furnace in the path of the trajectory of the charge flowing into the furnace for being struck by the charge and deflected into the lower portion of the furnace;
- push rod means to which the lower end of each said arm is pivotally connected, each said push rod means being

movable for moving the lower end of the corresponding arm toward and away from the center of the furnace along a substantially horizontal line;

drive means connected to each said push rod means for moving said push rod means toward and away from the center of the furnace; and

means mounting the upper end of each arm for swinging movement downwardly along an arc away from the center of the furnace and slightly outwardly toward the periphery of the furnace by the movement of the lower end of each said arm toward the center of the furnace by said push rod means, whereby the plate is tilted so as to move the upper edge away from the center of the furnace the closer each plate is moved toward the center of the furnace.

4,337,929

**ROTARY FURNACE FOR MELTING METAL**

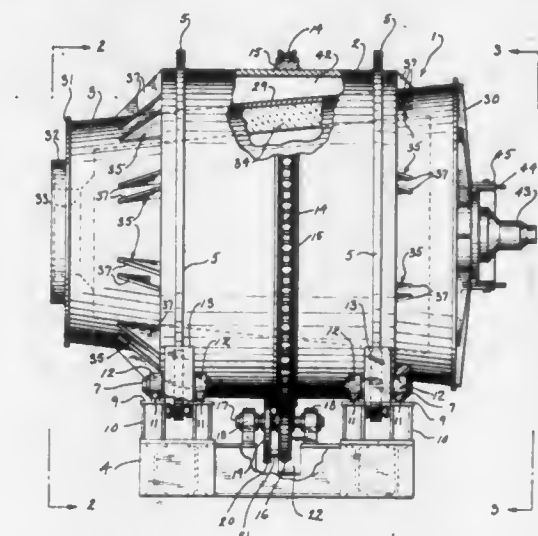
Marvin Evans, Milwaukee, Wis., assignor to College Research Corporation, Germantown, Wis.

Filed Dec. 18, 1980, Ser. No. 217,769

Int. Cl.<sup>3</sup> F27B 7/26

U.S. Cl. 266—248

10 Claims



1. A rotary batch-type furnace for melting and recovering metal, comprising an outer cylindrical drum having open ends, guide means for supporting the drum for rotation about its axis, drive means for rotating the drum, a closed kiln disposed within the drum, said kiln being tapered in a longitudinal direction and having a small diameter end and a large diameter end, said kiln having a discharge opening adjacent said large diameter end for removing molten material from the kiln, heating means associated with the kiln for heating materials therein, and connecting means for mounting the kiln in spaced relation within the drum to provide an annular space therebetween.

4,337,930

**HEAT INSULATING LINING FOR A METALLURGICAL CONTAINER**

Jean-Charles Daussan; Gerard Daussan, both of Metz, and Andre Daussan, Longeville les Metz, all of France, assignors to Daussan et Compagnie, Wolpp, France

Filed Oct. 16, 1980, Ser. No. 197,533

Claims priority, application France, Oct. 23, 1979, 79 26227

Int. Cl.<sup>3</sup> C21C 7/00

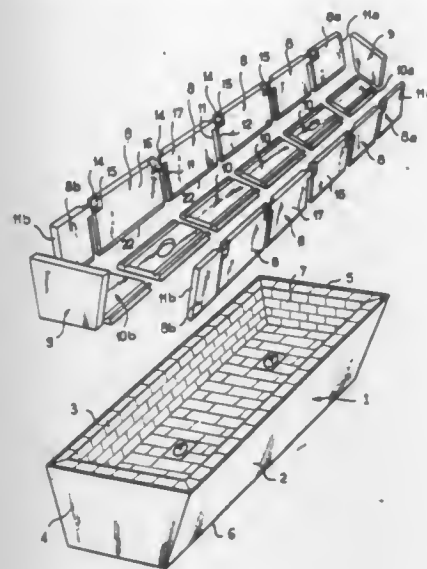
U.S. Cl. 266—283

6 Claims

1. Lining for a metallurgical container, comprising a series of removable plates of heat insulating material adapted to be applied to the inside of the metallurgical container against the lateral walls and the bottom of the latter, at least a part of these plates being quadrangular and identical, the quadrangular and identical plates adapted to be applied against the lateral walls of the container comprising on their two opposite edges a rib extending over a length greater than the height of the level of



liquid metal which has to be introduced into the container, this rib defining a support surface adapted to receive an identical rib formed along the adjacent edge of another said plate, the support surfaces defined by the two ribs formed on the opposite edges of a said plate being oriented in the same direction,



and each plate comprising on its two opposite edges on the part thereof which is not provided with said rib, a protuberance defining a support surface oriented in the opposite direction with respect to that of the rib, the support surface of this protuberance being adapted to receive an identical protuberance formed on the adjacent edge of another said plate.

4,337,931

# SPRING BASE FOR UPHOLSTERED SEATING

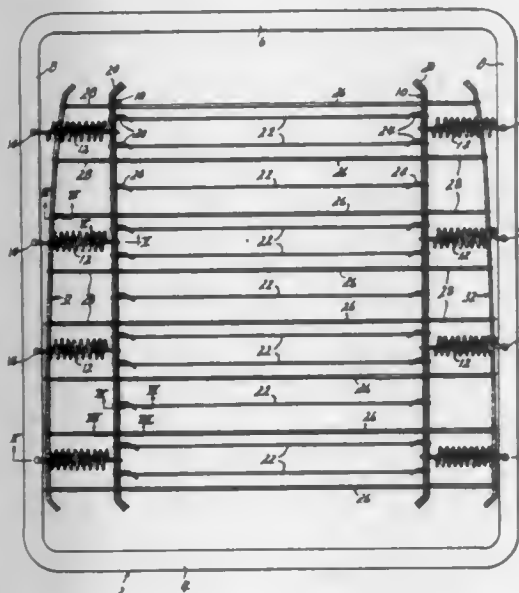
Donald D. Mundell, Carthage, and John P. Gowing, Joplin, both of Mo., assignors to Flex-O-Lators, Inc., Carthage, Mo.

Filed Aug. 25, 1980, Ser. No. 180,593

Int. Cl.<sup>3</sup> F16F 3/02; A47C 7/02

U.S. Cl. 267-102

10 Claims



1. A spring base for the bottoms of upholstered seats of the type consisting generally of a generally level main seating area and upwardly and outwardly inclined bolster seating areas at the sides of said main seating area, and also suitable for use in the backs of said seats, said spring base comprising:

- a pair of bolster strands each including a spring wire and extending forwardly and rearwardly of said seat respectively at opposite sides of said main seating area,
- a series of tension support springs connected at their inner ends to each of said bolster strands in spaced relation along said strand, and extending outwardly therefrom for connection at their outer ends to a rigid seat frame, and
- a series of spring steel cross wires extending transversely between said bolster strands to define said main seating

area, a first group of said cross wires, spaced generally regularly along said bolster strands, being of relatively light-gauge wire, terminating and being affixed at their ends to said bolster wires, and being relatively closely spaced to supply an increased continuity of support for padding layers applied thereover, and a second group of said cross wires, also spaced generally regularly along said bolster strands, being connected to said bolster strands but extending outwardly therefrom in upwardly inclined relation to said main seating area to provide cantilever spring support for said bolster seating areas, the cross wires of said second group being of relatively heavy-gauge wire as compared to said first group, but being relatively widely spaced apart, whereby to provide the increased spring support but lesser continuity of padding support required in said bolster seating areas.

4,337,932

# SAFETY DEVICE FOR A WORKPIECE HOLDER

Ronald E. Dennis, Peoria Heights, and Richard W. Kizer, Morton, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00807, § 371 Date Jun. 25, 1980, § 102(e)

Date Jun. 25, 1980, PCT Pub. No. WO82/00017, PCT Pub.

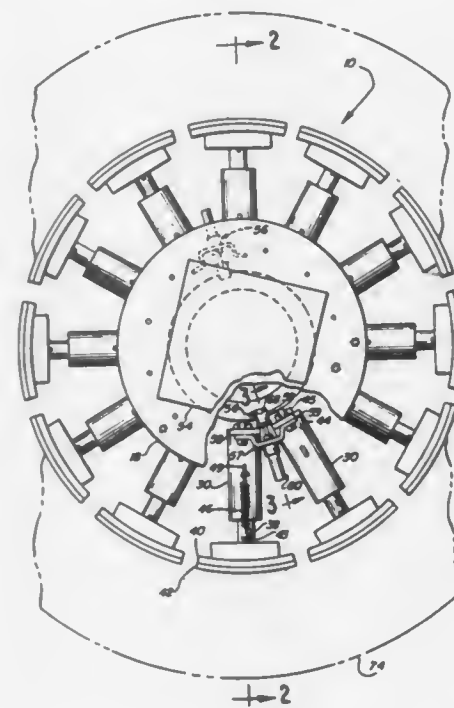
Date Jan. 7, 1982

PCT Filed Jun. 25, 1980, Ser. No. 245,221

Int. Cl.<sup>3</sup> B23Q 3/14

U.S. Cl. 269-23

13 Claims



1. In a workpiece holder (10) for supporting the inner surface of a workpiece (74) including:

- a support structure (12) having a central bore (28);
- spokes (30) carried by said support structure (12), means (38) for engaging said workpiece and for projecting into said bore, said means being slidably attached to said spokes (30) and extending perpendicular to the longitudinal axis (23) of said bore (28), said means (38) having distal ends (40) engaging said workpiece and proximal ends (44) projectable into said bore (28);

a cam (48) located within said bore (28) having a sloped cam surface (50) engaging said proximal ends (44) and movable between a first position at which said proximal ends project into said bore (28) thereby retracting said means (38) on said spokes (30) and a second position wherein said cam surface (50) moves said proximal ends (44) outwardly thereby extending said means (38) on said spokes (30) into engagement with said workpiece (10), the improvement comprising:

latch means (56) for preventing said cam (48) from moving

from said second position toward said first position, said latch means (56) includes means (64) for moving said latch means (56) from an inoperative position to an operative position in engagement with said cam (48) for holding said cam (48) in said second position.

4,337,933

# JIG FOR MOUNTING A FRONT DERAILLEUR IN A BICYCLE

Tetsufumi Egami, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

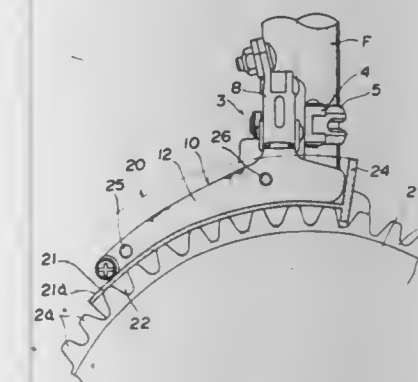
Filed Apr. 9, 1980, Ser. No. 138,670

Claims priority, application Japan, Apr. 25, 1979, 54-56351[U]

Int. Cl.<sup>3</sup> B25B 1/20

U.S. Cl. 269-40

2 Claims



1. A jig for mounting a front derailleur having a pair of guide plates on a frame of a bicycle in a proper position in correspondence with a plurality of front chain gears of different diameters, said jig comprising,

a main body adapted to be positioned opposite to at least one of said guide plates for setting said one guide plate in a predetermined position relative to said chain gears and comprising: a plate having a length which extends the length of said one guide plate, a receiving plate which projects substantially perpendicularly from a lower portion of said main body and has a receiving face of circular arc conforming to the lower end face of said one guide plate, an engaging portion positioned at a lower portion of said receiving plate and shaped to engage with the outer peripheral portion of one of said chain gears, so that when said engaging portion engages with the outer peripheral portion of said chain gear, said receiving face is adapted to receive said one guide plate and set it in a proper position with respect to teeth on said chain gear, and at least two adjustment bolts extending in the projecting direction of said receiving plate and provided in the vicinity of both lengthwise ends of said main body, the extension of said bolts in the projecting direction of said receiving plate being adjustable.

4,337,934

# ASSEMBLY POST

Jack E. Caveney, Hinsdale, Ill., assignor to Panduit Corp., Tinley Park, Ill.

Filed Oct. 20, 1980, Ser. No. 198,406

Int. Cl.<sup>3</sup> B23Q 1/04

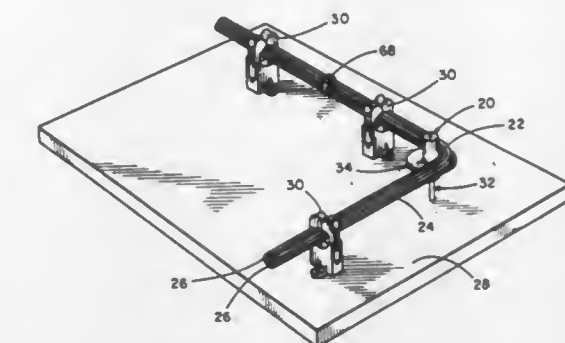
U.S. Cl. 269-77

14 Claims

1. An assembly post for holding a portion of elongate objects, such as wires to be formed into a bundle, elevated with respect to a wiring layout board used in the formation of said bundle and for defining a turn in one or more of said objects, said assembly post comprising:

means for mounting said assembly post on said layout board; holding means supported by said mounting means for holding said portion of said elongate objects, said holding means being movable between an extended position wherein it supports said objects as they are formed into a

bundle and a retracted position wherein said holding means is closer to said layout board than in its extended position; and means for maintaining said holding means in its extended position during wiring of said bundle against a predetermined force greater than the weight of said portion of elongate objects whereby, after layout of the bundle, application of a force greater than said predetermined force causes movement of said holding means to its re-



tracted position and permits application of a tying device and removal of said bundle without substantial interference from said assembly post, said maintaining means comprises a collet extending from said holding means, said collet having a bore for slidably receiving said mounting means, said collet being formed by a curved wall having a window therein, said maintaining means further comprising a resilient finger extending into the window with the distal end of the finger frictionally engaging said mounting means.

4,337,935

# COPYING APPARATUS HAVING A MANUAL INSERTION PAPER FEEDING MECHANISM

Takamasa Sawada, Yokohama; Yoshiaki Sose, Tokyo, and Kanon Tanaka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

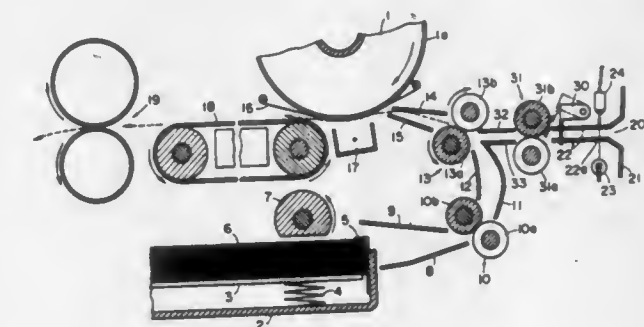
Filed May 20, 1980, Ser. No. 151,691

Claims priority, application Japan, May 24, 1979, 54-63240

Int. Cl.<sup>3</sup> B65H 7/02

U.S. Cl. 271-9

5 Claims



1. A copying apparatus having a manual insertion paper feeding mechanism comprising:

a manual insertion portion discrete from an insertion portion through which normally used paper may be inserted for conveyance thereof; register means for once stopping paper inserted through said manual insertion portion and for thereafter conveying said paper at an adjusted timing; and slip feed means provided between said manual insertion portion and said register means for effecting forward feeding of the paper inserted through said manual insertion portion and for allowing the respective transverse edges of said paper to slip while maintaining the forward feeding condition when the forward movement of said



paper aligned with such respective transverse edges is stopped by stoppage of said register means.

4,337,936

**COMPACT SORTER**

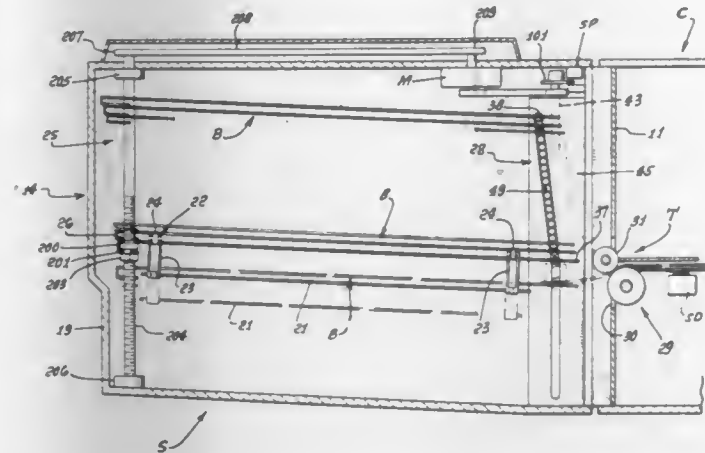
Frederick J. Lawrence, Tustin, Calif., assignor to Gradco/Dendoki, Inc., Santa Ana, Calif.

Filed May 7, 1980, Ser. No. 147,357

Int. Cl.<sup>3</sup> B65H 29/58

U.S. Cl. 271—293

13 Claims



1. An improved sorting apparatus of the shiftable bin type including a frame structure having means for mounting the sorting apparatus on a copying machine at the sheet outlet from the copying machine, sorting bins shiftable relative to one another to provide a wide sheet entry between bins at said outlet, and means for shifting the bins, said bins having ends remote from said outlet pivotally arranged and ends adjacent said outlet mounted for shifting movement past said outlet, said means for shifting said bins engaging successive bins at said ends adjacent to said outlet to move the latter successively from one side of said outlet to the other, said means for shifting said bins also including means for shifting said remote ends uniformly in the direction of movement of said ends adjacent to said outlet, and including control means to intermittently effect operation of said shifting means in opposite directions following passage into successive bins from the copying machine of a selected number of sheets.

4,337,937

**ARM MUSCLE EXERCISER DEVICE**

Rafael E. Lopez, 1924 Fairhaven St., Lemon Grove, Calif. 92045

Filed Jan. 16, 1980, Ser. No. 112,473

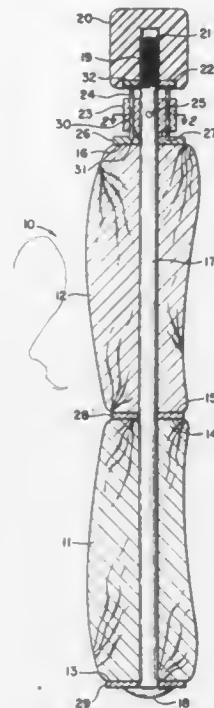
Int. Cl.<sup>3</sup> A63B 21/22

U.S. Cl. 272—67

4 Claims

1. A device for exercising the arm muscles, comprising:  
(a) an elongated shaft having a retainer at one end and being threaded along a portion of the opposite end, said shaft having, intermediate said retainer and threaded end portion, a slot transversely disposed therethrough and elongated along the longitudinal axis thereof;  
(b) a handle assembly comprising at least two tubular members surmounted upon said shaft and each adapted for relative rotating movement thereabout, the longitudinal dimension of said handle assembly as mounted on said shaft being less than the distance between said retainer and said slot;  
(c) an adjustable housing member having a threaded recess comfortably accommodating said threaded end portion;  
(d) friction-producing means responsive to adjustment of said housing member for urging said tubular members of said handle assembly into friction-producing abutment, said means comprising a sleeve member surmounted upon said shaft intermediate said handle assembly and housing member, the surface portion of said sleeve member proximate said handle assembly having a transverse cross-section which is non-circular, said sleeve member having a bore transversely disposed therethrough which is coaxially

ally aligned with said slot through said shaft, said bore further having a crosssectional dimension along the longitudinal axis of said shaft which is less than the elongated dimension of said slot, and a pin member secured within said bore and communicating through said slot which permits said sleeve to move relative to said shaft only along the longitudinal axis of the latter thereby preventing said adjustable housing member from rotating about said threaded end portion in response to rotation of said tubu-



lar members about said shaft so as to prevent the disengagement of said tubular members from said friction-producing abutment; and

(e) a friction-producing plate member surmounted upon said shaft intermediate said handle assembly and said sleeve member, said plate member having a recess extending inwardly therein which is adapted to conformably accommodate said non-circular portion of said sleeve member whereby to prevent relative rotating movement therebetween.

4,337,938

**JOGGER'S AID**

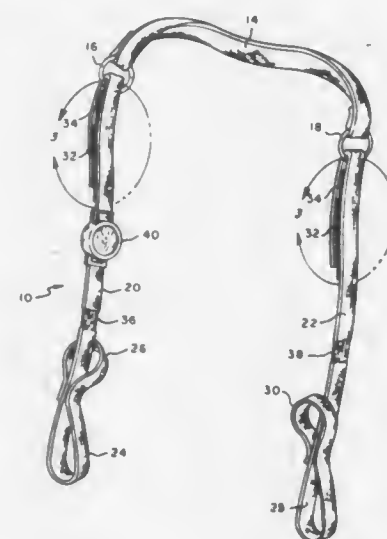
Basilides Rodriguez, 33 Berkley Rd., Mantua, N.J. 08051

Filed Mar. 6, 1981, Ser. No. 241,151

Int. Cl.<sup>3</sup> A63B 23/00, 69/00

U.S. Cl. 272—93

8 Claims



1. A device for increasing the endurance of a runner by supporting the weight of his arms comprising:  
an elongated strap, said strap being of a length so as to

extend approximately from a runner's waist, up one side of his chest, around the back of his neck and down the other side of his chest to his waist again, and  
upper and lower loops formed at each free end of said strap, each of said lower loops being large enough to encircle and support the four fingers of one of the runner's hands, each of said upper loops being of sufficient size and being located relative to the lower loop to encircle and support the thumb of the hand being supported in the respective lower loop.

4,337,939

**ANKLE EXERCISE DEVICE**

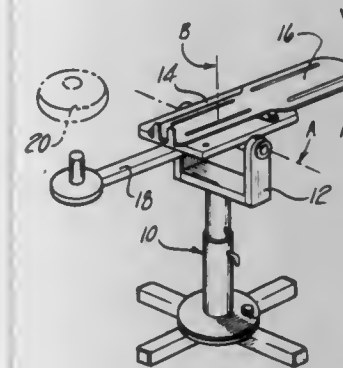
David C. Hoyle, 5933 Little Pine La., and Sue Kandarian, 170 Cedarwald Ct., both of Rochester, Mich. 48063

Filed Feb. 20, 1980, Ser. No. 122,973

Int. Cl.<sup>3</sup> A01B 23/04

U.S. Cl. 272—96

5 Claims



1. In an ankle exercising apparatus of the type having a stand, a pivot plate pivotably connected to the stand for rotation about a horizontal axis, and a rotation resisting means attached to the pivot plate, the improvement comprising:  
a foot receiving means pivotably mounted on the plate for selective rotation about a vertical axis between at least a first position relative to the rotation resisting means in which the ankle is exercised about one axis of possible ankle movement and a second position approximately at right angles to the first position relative to the rotation resisting means in which the ankle is exercised about another axis of possible ankle movement;

means for locking the foot receiving means at each of said first and second positions relative to the pivot plate for use in the selected position;  
said rotation resisting means comprising a weight arm having a vertical pin stationed thereon and extending upwardly therefrom in spaced relation to the pivot plate for receiving angular weights thereon;  
and means for adjusting the distance between the pivot plate and the vertical pin.

4,337,940

**JAVELIN**

Tsai C. Soong, 1839 Jackson Rd., Penfield, N.Y. 14526

Continuation-in-part of Ser. No. 199,941, Oct. 23, 1980, abandoned, Continuation-in-part of Ser. No. 760,163, Jan. 17, 1977, abandoned, Continuation-in-part of Ser. No. 655,462, Feb. 5, 1976, abandoned, Continuation-in-part of Ser. No. 529,792, Dec. 5, 1974, abandoned. This application Nov. 17, 1980, Ser. No. 207,448

Int. Cl.<sup>3</sup> A63B 65/00

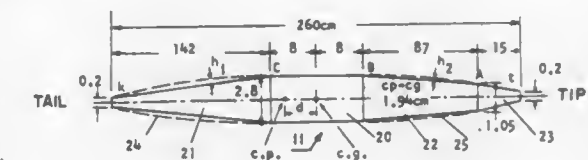
U.S. Cl. 272—106

5 Claims

1. A javelin meeting athletic competition rules as to total weight, minimum and maximum dimensions, general shape, and head size and weight, and with a forward direction proceeding toward a forward tip end of said javelin and an aft direction proceeding toward an aft tail end, said javelin having a center of gravity located substantially forward of its longitudinal center, and comprising:

a. said javelin having a surface shape and finish relative to its

weight distribution effectively locating the aerodynamic center of pressure forward of said longitudinal center and within 0-5 cm aft of said center of gravity at an angle of attack of relative wind of 90° to the axis of said javelin; and



b. indicia indicative of said distance between said aerodynamic center of pressure and said center of gravity as defined in paragraph a. being marked on said javelin.

4,337,941

**BUILDING STRUCTURE**

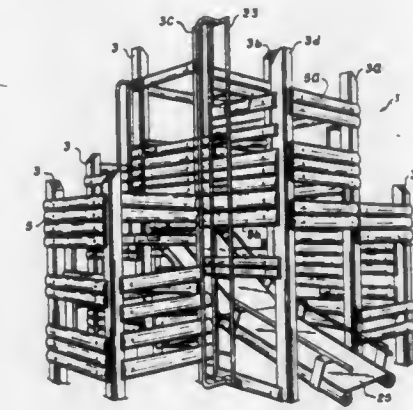
Zoltan Kitka, Surrey, Canada, assignor to Interplay Design Limited, White Rock, Canada

Filed May 22, 1980, Ser. No. 152,342

Int. Cl.<sup>3</sup> A63B 9/00

U.S. Cl. 272—113

11 Claims

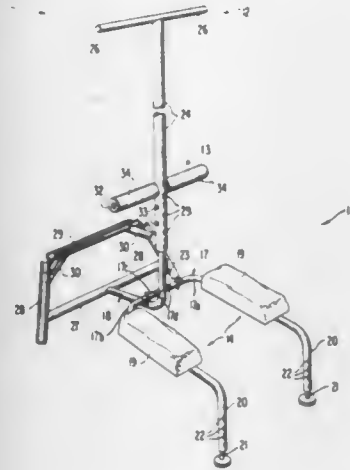


1. A building structure comprising: upright members; mutually perpendicular horizontal members having notches at adjacent ends shaped to receive one said upright member, each notch converging a minor portion of the surface of said upright member so that each horizontal member does not contact a mutually perpendicular horizontal member; and

connecting means for connecting each said horizontal member to said one upright member, the connecting means comprising an elongate fastener extending from said each horizontal member into the one upright member in the direction of the perpendicular horizontal members and towards the center of the one upright member, the fastener being at an angle of substantially 45° with said each horizontal member.

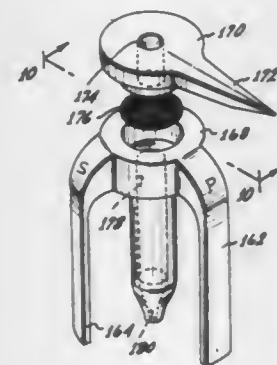


**4,337,942**  
**PORTABLE EXERCISING DEVICE USABLE ALONE OR WITH OTHER DEVICES FOR MULTIPLE ROUTINES**  
 Bruce C. Sidlinger; Joanne Sidlinger, both of 2810 Country Club Rd., Garland, Tex. 75042, and Bruce D. Sidlinger, 7626 Callaghan Rd., Apt. 3006, San Antonio, Tex. 78229  
 Continuation-in-part of Ser. No. 875,102, Feb. 3, 1978, Pat. No. 4,225,131. This application Apr. 2, 1980, Ser. No. 136,431  
 Int. Cl.<sup>3</sup> A63B 23/00  
 U.S. Cl. 272—144 4 Claims



1. A portable exercise device for performing a variety of exercise routines such as shoulder stands, when used alone, and rebounding, running in place or sit-ups when used in combination with another separate free-standing exercise device having a generally horizontal user supporting surface, comprising frame means having a plurality of downwardly projecting horizontally spaced supports for contact with a horizontal surface and disposed to stabilize the frame means, said frame means including a pair of horizontally spaced shoulder pads and cooperating hand grips for performing a shoulder stand, said frame means including a framework having a supporting structure generally resembling an inverted U to be detachably connectable to a mating structure included in said another exercise device, said frame means further including crossbar means supported at an elevated location disposed medially above the space defined by contact with said downwardly projecting supports, said crossbar means comprising alternatively a leg rest for a shoulder stand and hand grips when performing a routine in an upright position.

**4,337,943**  
**CUE BALL SHOOTING GUIDE**  
 Gilbert Stewart, 10732 La Batista, Fountain Valley, Calif. 92708  
 Continuation-in-part of Ser. No. 494,224, Oct. 6, 1978, abandoned. This application Dec. 17, 1979, Ser. No. 104,360  
 Int. Cl.<sup>3</sup> A63D 15/00  
 U.S. Cl. 273—2 2 Claims



1. A cue ball shooting guide for placing a marking spot on the felt surface of a pool table to indicate the line of travel over the felt surface that a cue ball must take to correctly strike an

object ball to propel said object ball towards a pocket in said pool table which comprises:

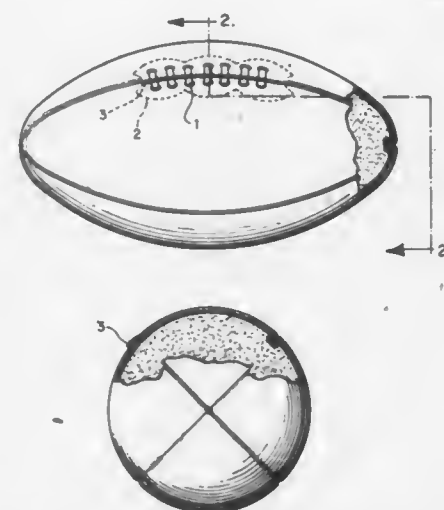
a dispensing member including an essentially vertical hollow tubular member having open ends, the lower of said ends forming a small opening in the bottom of said tubular member;

said dispensing member including an abrasive member located in association with said hollow tubular member, said abrasive member including a surface capable of breaking a piece of chalk into chalk dust when said piece of chalk is moved over the surface of said abrasive member;

support means supporting said dispensing member above said felt surface;

locating means for locating said dispensing member in a position over a point on said felt surface where said marking spot is to be placed, said point lying on a first line which is directed toward the center of said pocket and includes on said first line the tangential point of the object ball with the surface of said felt, said point being one cue ball radius distance away from a second line which is perpendicular to an intersects with said first line and is tangent to the side of said object ball opposite said pocket; said locating means locating said dispensing member over said point such that when a portion of said piece of chalk is abraded on said abrasive member said chalk dust formed passes into said tubular member through the upper ends of said tubular member and exits out said tubular member through said small opening at the lower of the ends of said tubular member and is deposited onto said felt surface at said point forming said marker spot on said felt surface at said point.

**4,337,944**  
**LIGHTER AND SOFTER RECREATIONAL BALLS**  
 Chester F. Massino, Sandwich, Ill., assignor to Ideas That Sell, Inc., Sandwich, Ill.  
 Continuation-in-part of Ser. No. 29,316, Apr. 12, 1979, Pat. No. 4,241,918. This application Nov. 3, 1980, Ser. No. 203,136  
 Int. Cl.<sup>3</sup> A63B 41/08, 45/00, 37/02  
 U.S. Cl. 273—65 A 7 Claims



1. A ball comprising:

(a) an interior portion comprised of waste acrylic yarn fill, (b) a wool or felt batting interior cover comprised of four panels or sections,

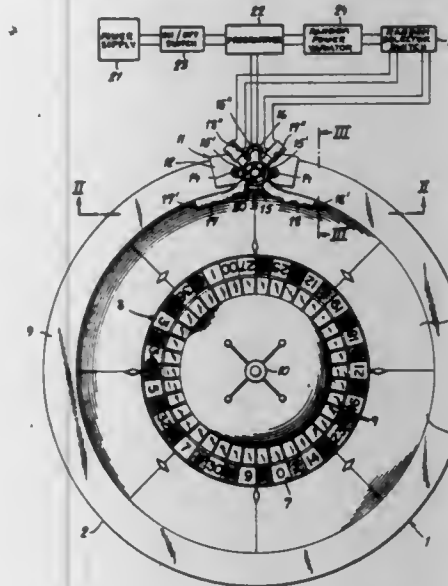
(c) a polyester double-knit outer cover comprised of four panels or sections, each of which are substantially identically shaped and are secured to each other and to said corresponding interior wool or felt batting piece to form seams running the length of the ball,

said ball further characterized by an elevated or raised area along an intermediate portion of one of the seams to enable the ball to be thrown in a spiral, said ball having the general appearance, shape and characteris-

tics of a conventional football when thrown or kicked, but being softer and lighter.

tial melt flow initiation temperature being the minimum temperature at which the melt index under a load of 4350 g be-

**4,337,945**  
**ROULETTE GAMING APPARATUS**  
 David Levy, 360 W. 55th St., New York, N.Y. 10019  
 Filed Mar. 20, 1980, Ser. No. 132,085  
 Int. Cl.<sup>3</sup> A63F 5/04  
 U.S. Cl. 273—142 E 7 Claims



1. A gaming apparatus comprising:

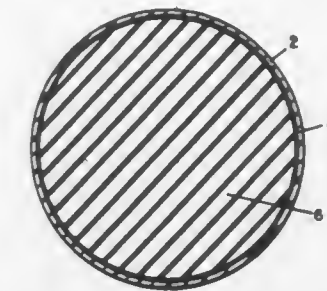
a roulette wheel having a circular rim, a downwardly converging frustoconical bowl contained within said rim and joined thereto below the upper surface of said rim to form therewith a continuous circular track against said rim for a roulette ball, a rotatable wheel head centered within said bowl at the bottom thereof and formed with a plurality of numbered compartments for receiving said roulette ball; and

an automatic roulette ball spinner having at least one guide tube positioned along said rim for directing said ball onto said track, said guide tube having a roulette ball magazine communicating therewith, and means for propelling said ball through said guide tube onto and around said track and a movable member connected with said guide tube and rectilinearly shiftable vertically for lowering said guide tube into a first position wherein the tube rests in the track for discharging said ball onto said track and raising said guide tube into a second position wherein the tube is raised above the track for allowing said ball to travel around said track uninterruptedly over at least one full turn thereof, said member having a vertical guide.

**4,337,946**  
**GOLF BALL**  
 Tasuku Saito, Tokorozawa; Tutomu Noma, Higashimurayama; Tsutomu Matsunaga, Iruma; Nagayoshi Naito, Nagoya; Chiaki Tanaka, Chita, and Motoki Hiratsuka, Nagoya, all of Japan, assignors to Toray Industries, Inc. and Bridgestone Tire Company Limited, both of Tokyo, Japan  
 Filed Nov. 6, 1980, Ser. No. 204,554  
 Claims priority, application Japan, Nov. 8, 1979, 54-144857  
 Int. Cl.<sup>3</sup> A63B 37/06, 37/12 7 Claims

U.S. Cl. 273—225

1. A golf ball comprising a thread-wound central core, an outer cover for the core, said cover being formed of a polyester elastomer and a layer of thermoplastic resin disposed between said cover and said core, said layer having a substantial melt flow initiation temperature of 160° C. or less, said substan-



comes 1 g/10 mins or more, and said layer having high adhesion to the polyester elastomer cover.

**4,337,947**  
**GOLF BALL**  
 Tasuku Saito, Tokorozawa; Tutomu Noma, Higashimurayama; Tsutomu Matsunaga, Iruma; Chiaki Tanaka, Chita; Yoko Furuta, and Nagayoshi Naito, both of Nagoya, all of Japan, assignors to Bridgestone Tire Co., Ltd. and Toray Industries, Inc., both of Tokyo, Japan  
 Filed Nov. 21, 1980, Ser. No. 209,194  
 Claims priority, application Japan, Dec. 10, 1979, 54-159269  
 Int. Cl.<sup>3</sup> A63B 37/12 11 Claims

1. In a golf ball comprising a thread-wound central core and an outer cover for the core; the improvement wherein said outer cover is composed of a composition comprising (a) at least one ionomer which is a copolymer of 75 to 99.8 mole % of at least one  $\alpha$ -olefin and 0.2 to 25 mole % of at least one  $\alpha$ , $\beta$ -unsaturated carboxylic acid to which copolymer at least one metal ion selected from the group consisting of monovalent, divalent and trivalent metal ions is added and (b) at least one polyester elastomer selected from the group consisting of a polyetherester block copolymer, polylactone-ester block copolymer, aliphatic or aromatic dicarboxylic acid copolyester and a mixture of aliphatic dicarboxylic acid copolyester and aromatic dicarboxylic acid copolyester, the content, in said composition, of said polyester elastomer being 3 to 50% by weight.

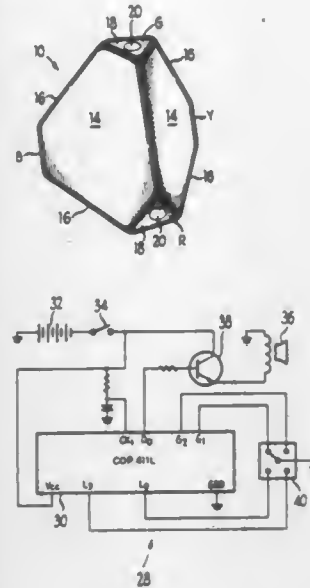
**4,337,948**  
**GAME APPARATUS**  
 Jeffrey D. Breslow, Highland Park; Donald A. Rosenwinkel, Tinley Park, both of Ill.; Steven P. Hanson, Brea, Calif., and Rex M. Harper, Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.  
 Filed Feb. 8, 1980, Ser. No. 119,824  
 Int. Cl.<sup>3</sup> A63F 3/00, 9/00 35 Claims

U.S. Cl. 273—237

1. A game apparatus, comprising: a game object having a housing with a finite number of sides; means within said object for detecting rotation of the object between two of said sides; storage means, electrically connected to said detecting



means, for recording a sequence of rotary movements of said object; and



means, electrically connected to said storage means for subsequently providing an indication of said sequence of movements.

4,337,949

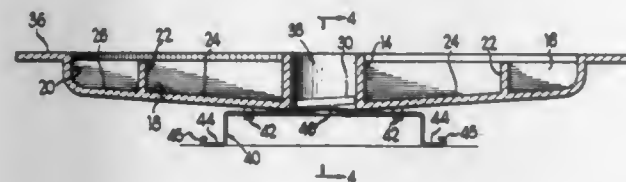
## PLAYING PIECE PROPELLING GAME DEVICE

Michael J. Ferris, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 21, 1981, Ser. No. 226,910

Int. Cl.<sup>3</sup> A63B 65/12, 67/06

U.S. Cl. 273—324



1. A playing piece propelling game device comprising:
  - a plurality of disc-shaped playing pieces;
  - a generally circular, dish-shaped, open, playing surface having a plurality of distinct compartments defined on said surface by a plurality of radially arranged upstanding walls on the surface, said surface further including a generally horizontal peripheral flange;
  - an upstanding receptacle on said playing surface for receiving one of said playing pieces; and
  - a manually actuable propelling means aligned with said receptacle and attached to said playing surface for propelling one of said playing pieces from said receptacle onto said playing surface, said propelling means including a U-shaped leaf spring with a pair of spaced apart downwardly directed arms upon which said playing surface is supported, said propelling means arranged to propel one of said playing pieces upwardly in response to a downward actuation applied to said flange, the direction or propulsion of said playing piece determined by the manner of application of said force to said flange.

4,337,950

## CIRCULAR BOOMERANG

Kenneth N. Gidge, 22 Hayden St., Nashua, N.H. 03060

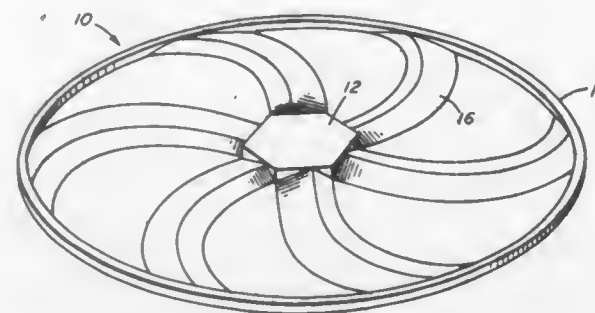
Filed May 12, 1980, Ser. No. 148,663

Int. Cl.<sup>3</sup> A63B 65/08

U.S. Cl. 273—426

1. A boomerang-action toy, comprising
  - (a) a central hub,
  - (b) an integral narrow outer annular rim spaced from and

coplanar with said hub and coaxial therewith, said rim being of substantially uniform dimensions throughout, (c) a plurality of matching integral angularly spaced arms each defining an airfoil in cross-section and extending spirally between said hub and said rim and coplanar therewith, the outer terminus of said arms being proximate to the outer periphery of said rim and each of said arms originating from said hub,



- (d) the length of each of said arms generally corresponding in length to the radius of said toy,
- (e) the inner end of each arm extending generally radially from said hub and the outer end of each arm joining said rim at an acute angle to form with said rim an arm width at the outer end of said arm greater than the arm width at the inner end of said arm.

4,337,951

## PRESSURIZED FACE SEAL WITH INITIAL RUN-IN SURFACE

Ambrogio Perego, Wettingen, Switzerland, assignor to BBC, Brown, Boveri & Company Ltd., Baden, Switzerland

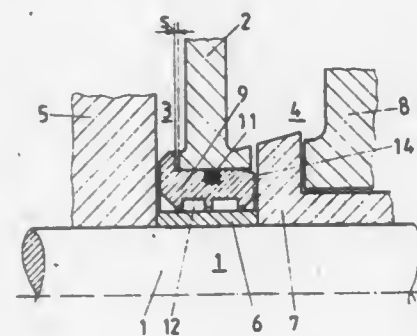
Filed Oct. 2, 1980, Ser. No. 193,359

Claims priority, application Switzerland, Oct. 16, 1979, 9293/79

Int. Cl.<sup>3</sup> F16J 15/38, 15/48

U.S. Cl. 277—27

11 Claims



1. In a sealing arrangement for sealing a rotating part in relation to a stationary part, wherein at both sides of a sealing location between said two parts there prevails a different pressure, the improvement which comprises:
  - a sealing bushing arranged between both of the parts which are to be sealed in relation to one another;
  - said sealing bushing being centered upon one of such parts while forming a sliding fit and during operation being non-rotatable;
  - said sealing bushing forming together with the other part a contactless seal;
  - said sealing bushing in its axial direction directed towards a side of the sealing location impinged at lower pressure bearing by means of a contact location which, after expiration of a running-in time of the sealing bushing forms a first sealing surface, against a related second sealing surface located at the part rotating relative to the sealing bushing;
  - said sealing bushing being provided with a stop portion;

said stop portion following an initial axial play bearing, following expiration of the running-in time of the sealing bushing, at the part which is stationary with respect to said sealing bushing; and

said stop portion limiting the wear of at least one of said sealing surfaces to a predetermined value.

4,337,952

## HERMETIC SEALING APPARATUS FOR A ROTATING SHAFT

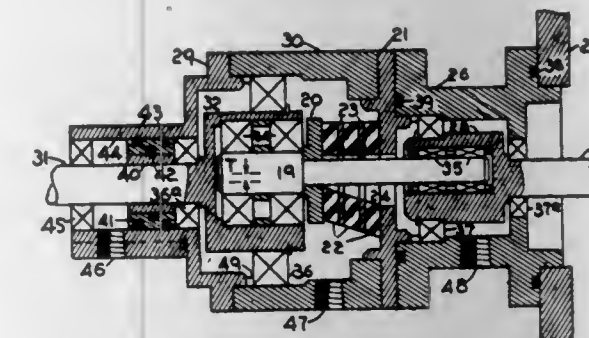
Ernest E. Wagner, P.O. Box 264, Yountville, Calif. 94599

Filed Oct. 25, 1977, Ser. No. 844,722

Int. Cl.<sup>3</sup> F16L 27/10

U.S. Cl. 277—30

5 Claims



1. Means for transmitting rotary motion through an opening in the wall of a vessel to a driven shaft having a first end portion and a second end portion, at least the first end portion being within said vessel, said means comprising:
  - means for rotatably mounting said shaft for rotation about an axis extending through said opening,
  - a drive shaft positioned outside said vessel having an adjacent end portion near said opening and another end portion remote therefrom,
  - means for rotatably mounting said drive shaft in axial alignment with said driven shaft and with said adjacent end portion spaced apart from said second end portion of said driven shaft,
  - an elongated motion transmitting member having an outer end portion and an inner end portion, and a mid portion therebetween,
  - a first bearing means fixedly attached to said adjacent end portion of said drive shaft for rotation therewith,
  - a second bearing means fixedly attached to said second end portion of said driven shaft for rotation therewith,
  - said first and second bearing means being adapted to receive and rotatably support said outer and inner end portions, respectively, of said motion transmitting member and maintain said member so that its axis is parallel to the axes of said drive shaft and said driven shaft and offset therefrom, such that when said drive shaft rotates, said motion transmitting member is moved with said first bearing means and transmits a corresponding rotation to said driven shaft,
  - the axis of said motion transmitting member revolving translationally about the axes of said drive shaft and said driven shaft and remaining parallel thereto without any rotation of said member relative to its own axis,
  - an elongated flexible sealing member surrounding the mid portion of said motion transmitting member,
  - means for sealing one end of said elongated flexible sealing member about said opening in the wall of said vessel, and
  - means for sealing the other end of said elongated flexible sealing member about said mid portion adjacent said outer end portion of the motion transmitting member.

4,337,953

## SEALING DEVICE WITH SEAL LIPS FORMING V-SHAPE

Hideo Ikeda, Fujisawa; Masao Teraoka, Sano, and Junzo Ishimaru, Hiratsuka, all of Japan, assignors to Nissan Motor Co., Ltd. and Keeper Co., Ltd., both of Japan

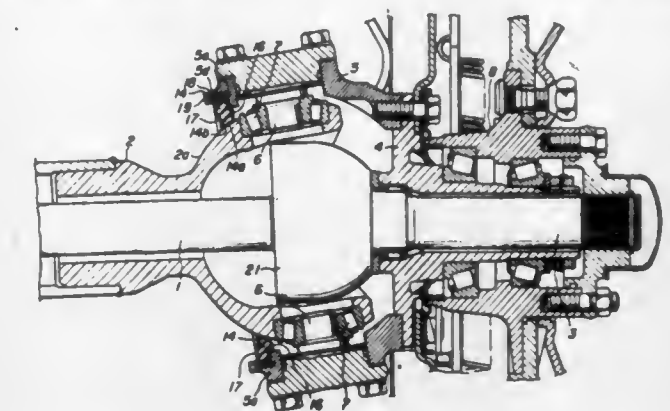
Filed Mar. 7, 1980, Ser. No. 128,019

Claims priority, application Japan, Mar. 13, 1979, 54-28891

Int. Cl.<sup>3</sup> F16J 15/32

U.S. Cl. 277—152

8 Claims



1. In a sealing device including at least one annular seal member made of an elastic material which is held between axially spaced inner and outer fitting members, with the inside periphery of the seal member being in slidable contact with a spherical outer surface on an opposing member, the said annular seal member having at said inside periphery inner and outer axially spaced seal lips forming a generally V-shaped cross-section, which lips contact the outer spherical surface of the opposing member and cooperate therewith to define a space to be filled with grease, the improvement comprising said outer fitting member having a radially inner portion protruding axially inwardly toward said inner fitting member to thereby prevent said seal member from moving radially inwardly, said annular seal member being provided with at least two annular axial projections on its outer surface which contact said outer fitting member, one of said annular projections being in contact with the said axially inwardly protruding inner portion of said outer fitting member, said annular projections cooperating with said outer fitting member to define therebetween at least one space when said outer fitting member is urged against said seal member.

4,337,954

## WEAR SLEEVE OIL SEAL

Robert R. Backlin, Dolton, and Jerome L. Berti, Chicago Heights, both of Ill., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 14, 1980, Ser. No. 196,472

Int. Cl.<sup>3</sup> F16J 15/16, 15/54

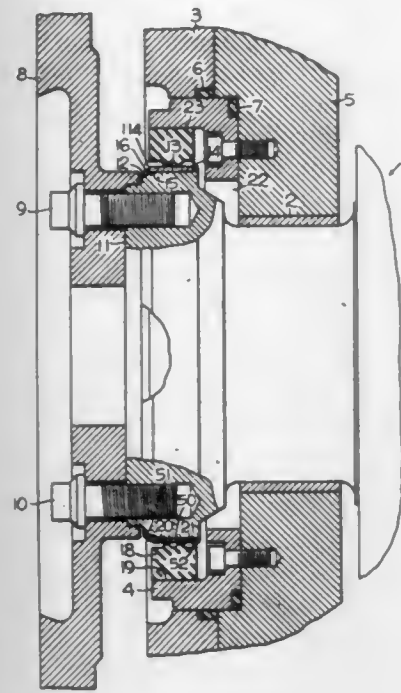
U.S. Cl. 277—237 R

10 Claims

1. A sealed wear sleeve assembly comprising, a shaft, a wear sleeve receiving said shaft, a sealing ring on the inner periphery of said wear sleeve engaging the outer periphery of said shaft and forming a seal, said wear sleeve and shaft forming a metal

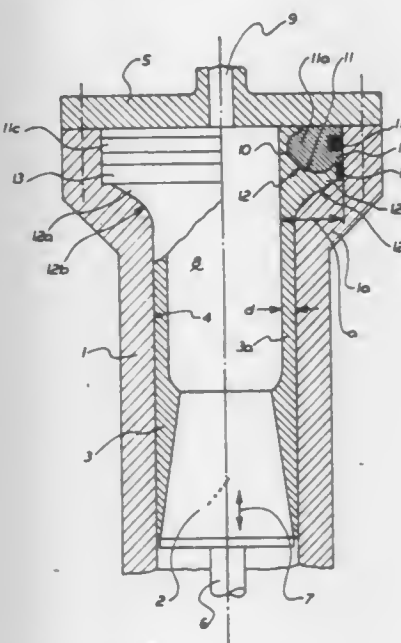


to metal interface for the greater portion of a mutual engagement, a housing encircling said wear sleeve, an oil seal on the



inner periphery of said housing engaging said wear sleeve to thereby provide a sealed wear sleeve assembly.

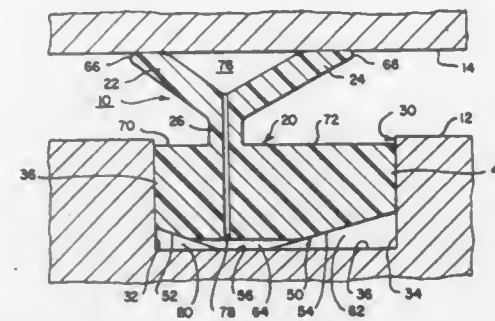
**4,337,955**  
**SEAL FOR A CYLINDER-PISTON ARRANGEMENT**  
 Bernhard Frey, Schaffhausen, Switzerland, assignor to Hydrowatt Systems Limited, London, England  
 Filed Apr. 3, 1980, Ser. No. 136,922  
 Claims priority, application Switzerland, Apr. 6, 1979, 3260/79  
 Int. Cl.<sup>3</sup> B21D 22/12; F16J 15/2  
 U.S. Cl. 277-12 **9 Claims**



1. An apparatus comprising at least two relatively movable working members, an elastic tubular member sealingly engaging said working members as spaced locations and at least partially defining a working chamber, said tubular member stretching and contracting and said working chamber varying in volume as said working members move relatively, said tubular member having a surface bearing at least partially against a support surface formed by one of said working members, a rigid body being located in the area of the sealing engagement of said tubular member with said one of said working members, said rigid body being part of or connected with said one of said working members, and said surface of said tubular member bearing against said support surface of said

one of said working members having a surface portion bonded to said rigid body, said surface portion of said tubular member bonded to said rigid body and said rigid body being immovable relative to said support surface as said tubular member stretches and contracts and the volume of said working chamber varies.

**4,337,956**  
**DOUBLE LIP SEAL WITH PRESSURE COMPENSATION**  
 James A. Hopper, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.  
 Filed Dec. 30, 1980, Ser. No. 221,425  
 Int. Cl.<sup>3</sup> F16J 15/32, 15/40  
 U.S. Cl. 277-29 **10 Claims**



1. A sealing device for application between two confronting, generally parallel, longitudinally extending surfaces, one of which surfaces having a longitudinally extending groove for receiving said sealing device, comprising:

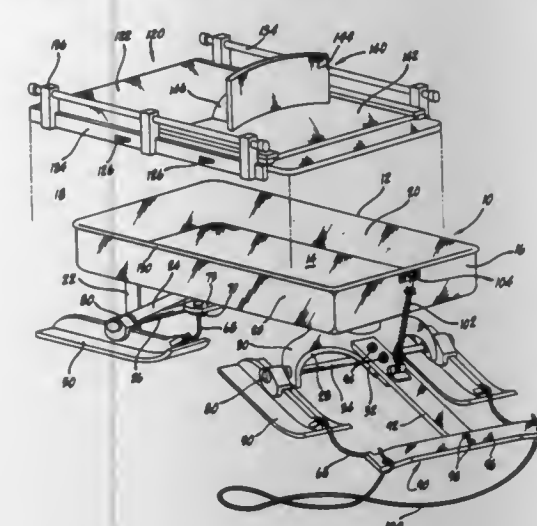
a base member formed of resilient material and, in its undeformed state, being dimensioned to snugly contact said groove only at portions of its opposed sides and at a portion of its bottom surface, thereby to form first and second spaced, longitudinally extending fluid passages between said base member and said groove;  
 a pair of independently flexible, longitudinally extending lip members connected to said base member and extending therefrom for longitudinally uninterrupted, spaced-apart engagement with the other one of said generally parallel surfaces, thereby to form a third fluid passage between said lip members and said other surface;  
 means for providing transverse fluid communication between said first and second fluid passages; and  
 means for providing fluid communication between said third fluid passage and said transverse fluid communication means.

**4,337,957**  
**WAGON TO SLED CONVERSION KIT**  
 Charles A. Heine, Arnold, Mo., assignor to Bertha E. Heine, Arnold, Mo.  
 Filed Dec. 15, 1980, Ser. No. 216,773  
 Int. Cl.<sup>3</sup> B62B 19/04  
 U.S. Cl. 280-7.14 **9 Claims**

1. A conversion kit for a wagon of the type having a bottom wall, sidewalls, and an open top and having a rear axle and a pair of rear wheels mounted to a fixed wheel support and a front axle and a pair of front wheels mounted to a pivotable hitch support, the kit comprising:

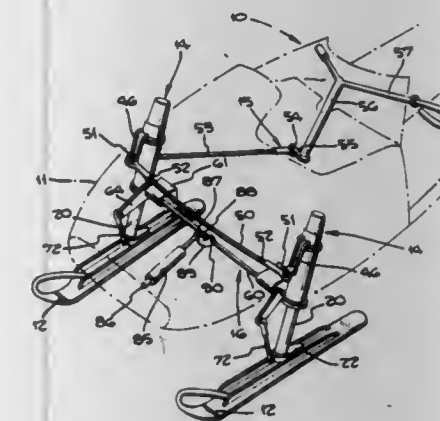
(a) a tow bar having a forwardly disposed cross bar connected to the pivotable hitch support  
 (b) a pair of rear runners and a pair of front runners, each runner including:  
 1. an elongate, relatively wide ground-engaging lower member having an upturned forward end,  
 2. an axle-receiving pivot connection disposed intermediate the ends of said lower member, and  
 3. means limiting rotation of the lower member relative to the wagon but permitting substantially free rotation of

the lower member within the rotation limits said rotation limiting means including means extending between



the front runners and the crossbar on opposite sides of the tow bar.

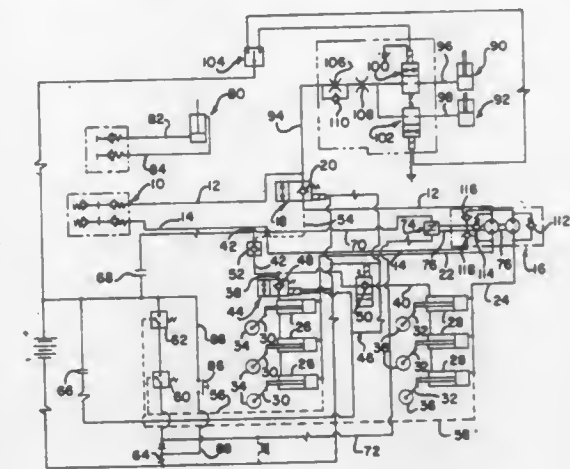
**4,337,958**  
**SUSPENSION AND STABILIZING SYSTEM FOR A SNOWMOBILE**  
 Jerry A. Witt, Solon Springs, Wis., and Izumi Takagi, Akashi, Japan, assignors to Kawasaki Motors Corp. U.S.A., Santa Ana, Calif.  
 Filed Jul. 11, 1980, Ser. No. 167,695  
 Int. Cl.<sup>3</sup> B62M 27/02  
 U.S. Cl. 280-16 **5 Claims**



1. In a suspension and stabilizing system for a snowmobile vehicle having a pair of steerable skis and a steering means therefor, the combination of:

a suspension means for each steerable ski including a steering strut member connected to the ski and reciprocally movable in a generally vertical direction;  
 each of said strut members being connected to said steering means for turning of said strut members and the associated skis;  
 and a stabilizing means interconnecting each steering strut member for dampening movement of said strut members;  
 said stabilizing means including a torsion member carried by said vehicle and pivotally connected to each of the steering strut members and responsive to vertical movement of the skis,  
 a link means universally pivotally connecting each of the steering strut members with the torsion member,  
 said link means including a link member lying in the planar zone defined by the axes of the steering strut member and associated ski.

**4,337,959**  
**SELF-LEVELING AND HEIGHT CONTROL HYDRAULIC SYSTEM**  
 Leonard A. Bettin, Lyons, and William C. Swanson, Clarendon Hills, both of Ill., assignors to International Harvester Co., Chicago, Ill.  
 Filed Jun. 5, 1980, Ser. No. 156,896  
 Int. Cl.<sup>3</sup> A01B 63/22  
 U.S. Cl. 280-43.23 **5 Claims**



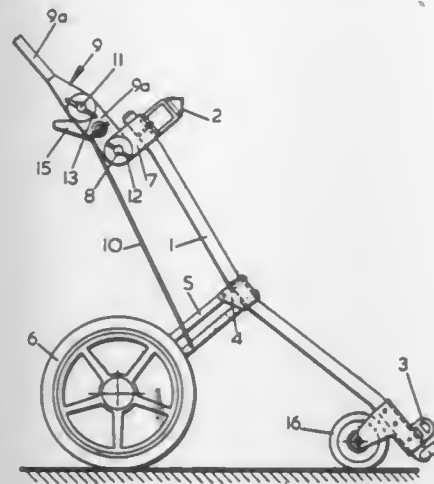
5. A flexible frame implement utilizing self-leveling and automatic height control over its level lift system provided for frame sections thereof, comprising:  
 at least two frame sections joined for relative angular movement;  
 independent hydraulic rams (26, 28) connected to said frame sections for controlling the elevation thereof;  
 a rotary flow divider (74) having a protruding shaft (76) adapted to be mechanically connected to, for sensing the revolutions thereof, and further adapted to be hydraulically connected to, in the level lift system;  
 independent hydraulic connections (22, 24) between the rotary flow divider and each of the rams to afford toothed flow metering, by the rotary flow divider, of fluid flow to and from said rams to maintain a level attitude for the implement;  
 rotation response means (74, 64) including a counter element (74) effective to stop the fluid flow path (40, 42) through said connections to said rams; and  
 a mechanical connection between the protruding shaft (76) of said rotary flow divider and the rotation responsive means (74, 64) enabling the counter element when a predetermined number of shaft revolutions has been tallied thereby in the rotation responsive means, to stop the fluid flow and halt movement of the rams at a desired height of the implement;  
 said counter element comprising a mechanical counter connected whereby said mechanical connection is made between the protruding shaft of the rotary flow divider and said counter element for direct drive of the latter.

**4,337,960**  
**TROLLEYS**  
 Robert M. Stewart, 31 St. Baldreds Rd., North Berwick, East Lothian, Scotland  
 Filed Aug. 20, 1979, Ser. No. 68,128  
 Int. Cl.<sup>3</sup> B62B 3/02  
 U.S. Cl. 280-47.37 R **4 Claims**

1. A collapsible trolley for the carriage of golf clubs or the like comprising a main frame member adapted to support a bag of golf clubs or the like thereon, a pair of leg members pivotally secured to said main frame member and each adapted to carry a ground wheel adjacent its free end, an elongated handle connected to the main frame member, an auxiliary wheel mounted on the main frame member adjacent the lower end thereof, first pivot means intermediate the ends of the handle



for permitting free swinging movement of the free end of the handle relative to the remainder of the trolley when in use whereby the trolley is supported on the ground wheels and auxiliary wheel for passage over the ground, second pivot



means between said handle and the remainder of said trolley for transmitting force applied on said handle to the remainder of said trolley in order to permit collapse of said trolley, and means for selectively locking said handle against rotation about said first and second pivot means.

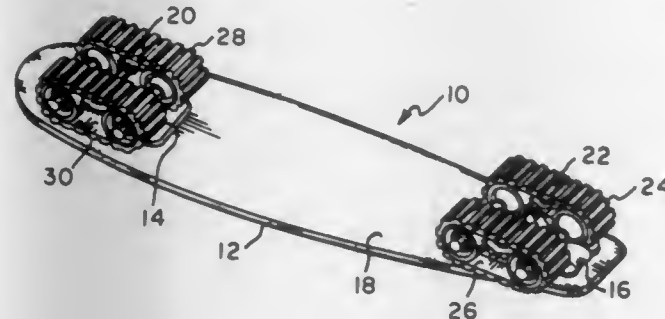
#### 4,337,961 SKATEBOARD

William J. Covert, 700 Mickle St., Millville, N.J. 08332, and Melvyn B. Strickman, R.D. 1, Lawrence Rd., Bridgeton, N.J. 08302

Filed Nov. 16, 1979, Ser. No. 94,977  
Int. Cl.<sup>3</sup> A63C 17/10

U.S. Cl. 280—87.04 A

3 Claims

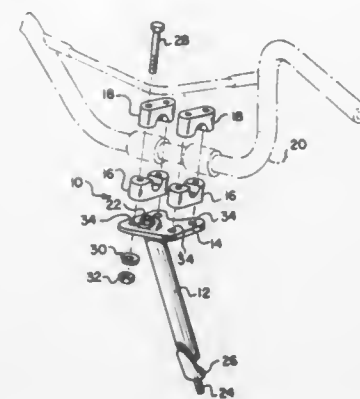


1. In a skateboard including a footboard, front and rear under carriages mounted on the lower surface of said footboard, and front and rear axles carried by said front and rear carriages respectively wherein steering is accomplished by tilting of the footboard, the improvement comprising: right and left truck means pivotally mounted on each of said axles, each truck means being pivotally movable independently of each other truck means; each of said truck means including a longitudinally extending support member pivotally mounted on its respective axle adjacent the middle of said support member and including first wheel means mounted adjacent the forward end of said support member and second wheel means mounted adjacent the rearward end of said support member an endless belt passing around and being supported by said first and second wheel means of each of said truck means and spring means for biasing each of said truck means into an intermediate position.

4,337,962  
HANDLEBAR MOUNTING ASSEMBLY  
David A. Allen, La Verne, and Jay D. Witala, West Covina, both of Calif., assignors to Huff Corporation, Miamisburg, Ohio  
Filed Nov. 3, 1980, Ser. No. 203,299  
Int. Cl.<sup>3</sup> B62K 21/18

U.S. Cl. 280—279

7 Claims



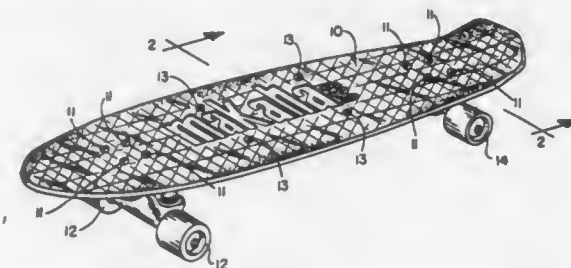
1. In a stem assembly including a hollow stem weldment, a bolt having a head and a threaded shank, said bolt extending through said stem weldment with said head positioned outwardly of an upper end of said stem weldment and a portion of said threaded shank projecting from a lower end of said stem weldment, and a wedge nut threaded on said portion of said threaded shank, an improved pillow block mounting comprising:

- a first plate member having an opening formed therethrough,
- a second plate member attached to said first plate member in non-planar relationship thereto,
- means defining an opening through said second plate member,
- a rim projecting from said first plate member adjacent said opening therethrough,
- an upper portion of said stem weldment being received in said opening in said first plate member,
- said bolt adjacent said head thereof being received in said opening in said second plate member, and
- means fixing said first plate member to said stem weldment.

4,337,963  
SKATEBOARD STRUCTURE  
Richard L. Stevenson, 738 Loma Vista, El Segundo, Calif. 90245  
Filed Aug. 13, 1979, Ser. No. 65,946  
Int. Cl.<sup>3</sup> A63C 17/02, 5/12

U.S. Cl. 280—87.04 A

6 Claims



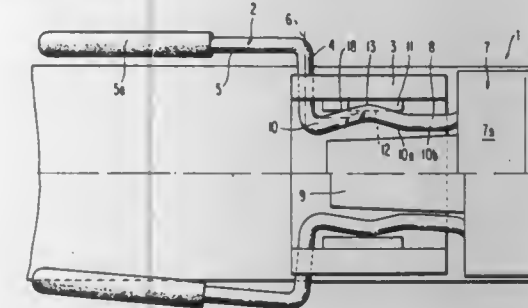
5. In a skateboard which comprises a platform and wheels mounted at each end of the platform, said platform being formed of a top piece and a bottom piece, each of the two pieces having intersecting lattice-work formed integral with the inner surface thereof, said pieces being fitted to one another to cause the lattice-work of each piece to be contiguous to one another and to form a reinforcing honeycomb-like cellular core therebetween, and a plurality of screws extending through one of the pieces to be received by the other of the pieces to hold the two pieces together.

4,337,964  
SKI BRAKE  
Peter Biermann; Ralf Störandt, both of Leonberg, and Rudi Feucht, Weissach, all of Fed. Rep. of Germany, assignors to GEZE GmbH, Leonberg, Fed. Rep. of Germany  
Filed Sep. 8, 1980, Ser. No. 184,910  
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936182

Int. Cl.<sup>3</sup> A63C 7/10

U.S. Cl. 280—605

11 Claims



1. Ski brake comprising an arcuate braking member made of wire borne in a bearing plate so as to be rotatable about a transverse axis by means of pivot shafts, against the force of a spring, said pivot shafts merging at an inner end into a somewhat U-shaped actuating part and at an outer end into longitudinally extending braking arms, and control elements disposed on the actuating part and the bearing plate, said control elements acting in such a manner that the brake arms, during movement toward a non-braking, in-use skiing, position, move supplementarily with reference to a central longitudinal axis of the ski brake such that in the non-braking position they are transversely pulled-in to a position that, in use, lies at least partly on the upper side of a ski, the improvement, wherein the control elements are constituted by wire sections of the actuating part that are disposed in a common plane and outwardly diverging with respect to said central longitudinal axis from a region near the pivot shafts, and by shoulders which are substantially right-angular in transverse cross section and disposed on the bearing plate, said shoulders extending at least over a longitudinal distance equal to the longitudinal extent of said wire sections and having longitudinal edges extending substantially parallel to said central longitudinal axis which said diverging wire sections contact and slide upon shortly before said in-use skiing position is achieved until said sections reach said in-use skiing position.

4,337,965  
SAFETY BINDING ADAPTED TO BE MOUNTED ON A SKI

Georges P. J. Salomon, Annecy, France, assignor to S. A. Des Etablissements Francois Salomon & Fils, Annecy, France  
Continuation of Ser. No. 954,294, Oct. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 747,526, Dec. 6, 1976, abandoned. This application Mar. 27, 1980, Ser. No. 134,457  
Claims priority, application France, Dec. 11, 1975, 75 37908; Mar. 22, 1978, 78 08342

The portion of the term of this patent subsequent to Oct. 9, 1996, has been disclaimed.

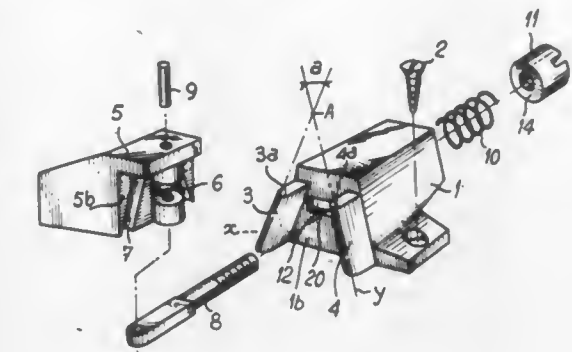
Int. Cl.<sup>3</sup> A63C 9/085

U.S. Cl. 280—628

13 Claims

1. A safety binding for a ski having a longitudinal plane of symmetry comprising a one-piece jaw in which can be engaged and maintained one end of the sole of a ski boot, support means connectible to said ski in front of said jaw and providing two lateral support lines disposed respectively on either side of the longitudinal plane of symmetry of the ski, resilient means urging the jaw against said support means at the support lines, said support means and jaw being engaged such that the jaw can pivot on either line of support, the lines of support viewed along the longitudinal axis of the ski converging towards a point disposed above the ski in order that in one direction of lateral movement of the jaw, the jaw will pivot about one line

of support and in the other direction of lateral movement of the jaw, the jaw will pivot about the other line of support, and means for retaining said jaw on said support means while



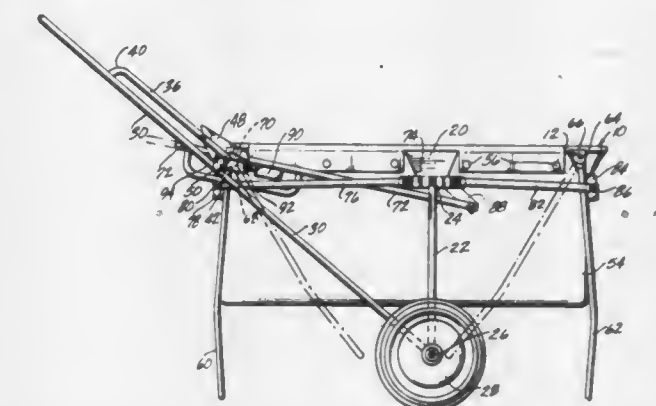
allowing limited upward movement of at least part of said jaw in the course of pivoting of the jaw around one of the support lines.

4,337,966  
FOLDING UTILITY CART  
Roger D. Stevens, 323 W. Highland Ave., Sierra Madre, Calif. 91024

Filed May 5, 1980, Ser. No. 146,746  
Int. Cl.<sup>3</sup> B62B 1/12

U.S. Cl. 280—645

11 Claims



1. A folding cart comprising a container support frame, an axle, a pair of spaced wheels on the axle, a handle secured to the axle, and a pair of spaced upright members secured to the axle extending above the wheels, a container suspended between the upright members from the support frame, the support frame being pivotally attached to the upper end of and supported between the upright members, adjustable means securing the support frame to the handle adjacent one end of the container to hold the container, handle and upright members in rigid relationship, a pair of leg members pivotally secured to the container support frame respectively in front of and behind the axle, and control means linking the leg members for adjusting the angular position of the two leg members relative to the container between a substantially vertical position in which the container is prevented from tipping about the axle and a folded position in which the container is freely supported and transportable on the two wheels.



4,337,967

## STEERING DEVICE

Akio Yoshida, Toyota, and Nobuyuki Inokuchi, Sakaemachi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

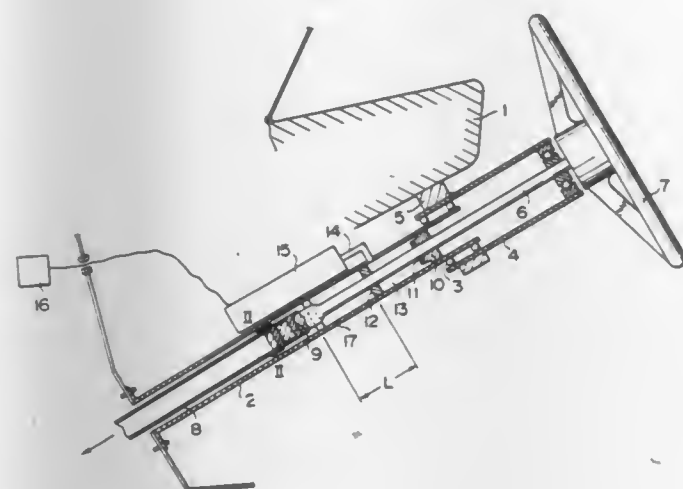
Filed Jun. 4, 1980, Ser. No. 156,323

Claims priority, application Japan, Jun. 25, 1979, 54-80441

Int. Cl.<sup>3</sup> B62D 1/18

U.S. Cl. 280—777

8 Claims



1. A retractable steering wheel assembly for a vehicle comprising:

a steering column assembly comprising a cylindrical tubular member having its lower end portion fixably mounted to a first portion of the body of said vehicle and its upper end portion supported by a second portion of said vehicle body;

a steering shaft assembly at least partially contained within and rotatably supported by said steering column assembly, said steering shaft assembly having a lower end extending below said lower end portion of said steering column tubular member for connection to a steering gear box, and having an upper end adapted for attachment to a steering wheel;

a steering wheel attached to said steering shaft assembly upper end;

a partition wall mounted in said upper end portion of said steering column assembly tubular member, said partition wall being provided with a central opening through which the said steering shaft assembly is inserted such that it may move rotatably and axially with respect to said steering column assembly;

a disc shaped piston fixed to an intermediate position of said steering shaft assembly inside said steering column tubular member and located downwardly from the position where said partition wall is located, said piston being of a dimension and shape such that its outer peripheral surface is in contact with and movable and rotatable relative to the inner surface of said steering column assembly tubular member, whereby said partition wall, said inner surface of said steering column assembly tubular member and said piston define a cylindrical chamber having an effective length which increases as said steering shaft assembly upper end is moved downwardly with respect to said steering column assembly;

pressure means for increasing the pressure within said cylindrical chamber, whereby said piston, said steering shaft assembly upper end and said steering wheel fixed thereto will all be positively retracted downwardly upon operation of said pressure means; and

collision sensing means for causing said pressure means to operate in the event of a collision involving said vehicle.

4,337,968

## SENSITIZED RECORD SHEET

Theodore Maieron, Dayton, Ohio, assignor to The Standard Register Company, Dayton, Ohio

Continuation-in-part of Ser. No. 961,497, Nov. 17, 1978, abandoned. This application Oct. 24, 1980, Ser. No. 200,450

Int. Cl.<sup>3</sup> B41M 5/22

U.S. Cl. 282—27.5

19 Claims

1. A thin spongy porous color developer film for use in producing a color when in contact with a suitable dye precursor, produced by thinly depositing on a substrate a composition consisting essentially of:

an organic solvent soluble phenolic resin capable of serving as an acidic image former when in combination with a suitable dye precursor, in an amount sufficient to serve as such an image former in the final film;

a lipophilic amorphous silica having a stable size not exceeding 50 millimicrons;

a fatty alcohol capable of serving as an adjunct in combination with said silica to obtain a porous film structure without substantially adversely affecting the color forming reaction or the color so formed, the combined amounts of said fatty alcohol and lipophilic silica being sufficient to form a spongy capillary skeletal structure in the deposited film; and

an organic solvent capable of dissolving said phenolic resin and said fatty alcohol and which does not substantially interfere with the color-forming reaction.

19. A method for producing a sheet having printed thereon a color developer being capable of producing a color when in contact with a suitable dye precursor, comprising:

printing with a conventional printing press, in a quantity corresponding to 0.4 to 1.4 g/m<sup>2</sup>, a composition consisting essentially of:

10-70% of a zincated or non-zincated novolac resin;

2-20% of cetyl alcohol;

0.5-6% of pyrogenic hydrophobic silica; and

18-82% of a non-volatile solvent for said novolac resin and said cetyl alcohol.

4,337,969

## EXTENSION MEMBER FOR WELL-LOGGING OPERATIONS

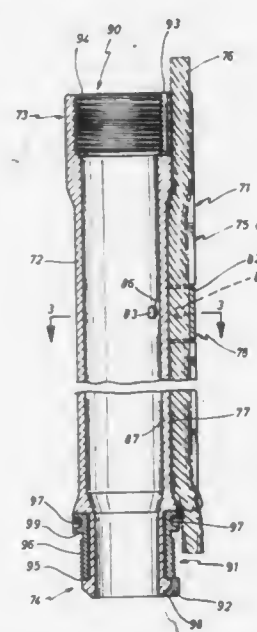
Pierre C. Escaron, Houston, and Joachim A. Hoppe, Spring, both of Tex., assignors to Schlumberger Technology Corp., Houston, Tex.

Filed Oct. 6, 1980, Ser. No. 194,010

Int. Cl.<sup>3</sup> F16L 57/00

U.S. Cl. 285—24

3 Claims



1. A rigid extension member for use with a well-logging cable in a borehole, comprising:  
a cylindrical tube having first and second ends;

means for protecting a well-logging cable, said means being disposed along substantially the entire length of, and on the outer surface of, said cylindrical tube and includes at least two rigid elongate members integrally secured on the outer surface of said tube, which members form a generally U-shaped elongate channel which opens outwardly away from the outer surface of said tube, for receiving the well-logging cable therein;

means for connecting each of said ends of the tube to a tube of another extension member, said means for connecting includes means for aligning said means for protecting with a means for protecting of another extension member; and means for detachably securing the well-logging cable within said means for protecting, and includes at least one generally U-shaped clamp which releasably engages the tube, said at least one clamp being disposed intermediate the ends of the tube, whereby the well-logging cable is protected in said borehole and can be selectively removed from said tube without damage to the well-logging cable.

4,337,970

## UNIVERSAL JOINT FOR MULTIPLE CONDUIT SYSTEM

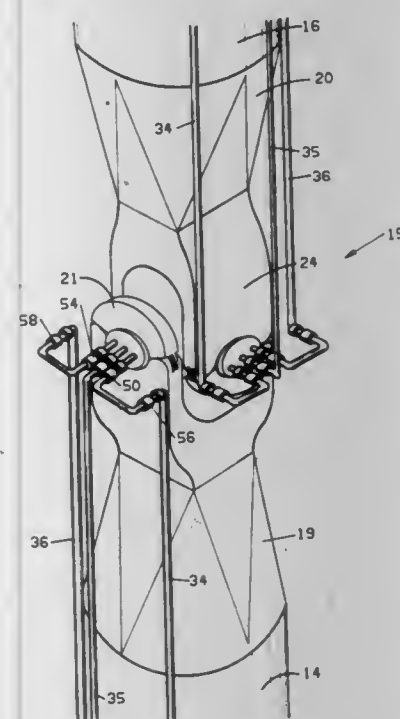
Richard H. Gunderson, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Dec. 20, 1979, Ser. No. 105,678

Int. Cl.<sup>3</sup> F16L 39/00

U.S. Cl. 285—136

12 Claims



1. A universal joint comprising:

a first longitudinally extending member;

a second longitudinally extending member;

means for connecting said first member to said second member to permit said first member to pivot about an axis normal to the longitudinal axis of the said first member and to permit said second member to pivot about an axis normal to the pivot axis of said first member;

an elbow conduit extending through said connecting means; a first rigid conduit supported by said first member and connected to one end of said elbow conduit;

a second rigid conduit supported by said second member and connected to the other end of said elbow conduit;

a first pivot means connecting said first conduit and said elbow conduit for enabling pivotal movement between said elbow conduit and said first conduit, said first pivot means being offset from the pivot axis of said first member; and

a second pivot means disposed in said first conduit for enabling rotational movement of said first pivot means

around the pivot axis of said first longitudinally extending member.

4,337,971

## REMOTE CONNECTOR

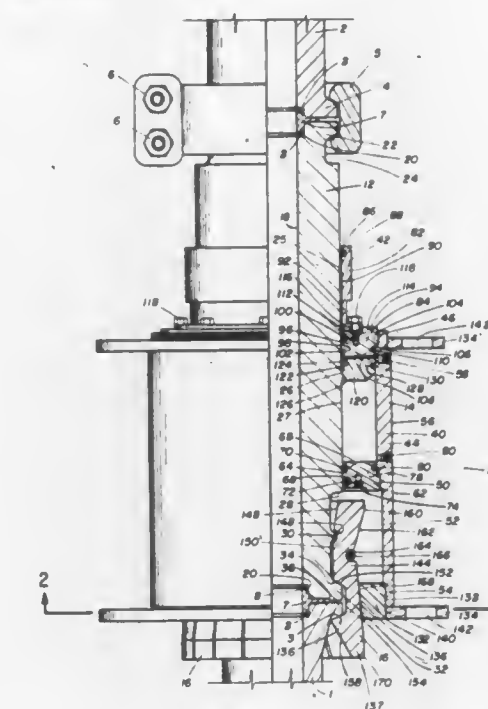
William D. Kendrick, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Aug. 7, 1980, Ser. No. 176,220

Int. Cl.<sup>3</sup> F16L 37/18

U.S. Cl. 285—315

3 Claims



1. A hydraulically actuated connector releasably joining a first flow line to a second flow line in a fluidtight relationship, said connector being releasably secured to one end of said first and second flow lines having seal rings disposed therebetween creating a fluidtight seal and being movable between a first open position to accept connection of said second flow line and a second closed position securing said second flow line thereto by the application of hydraulic pressure thereto, said connector comprising:

body means having

a bore therethrough having, in turn, an annular recess at each end thereof which receives a portion of each of said seal rings therein to facilitate the fluidtight relationship between said connector and said first and second flow lines;

a first flanged end portion,

a threaded portion on the exterior thereof,

an annular recess in the exterior thereof having, in turn, an annular circumferential rib therein,

a second flanged end portion having, in turn, an angular annular shoulder thereon and annular recess in the end surface thereof, and

abutment piston means secured to the threaded portion on the exterior of the body means;

cylinder sleeve means disposed about the body means and slidably sealingly engaging the abutment piston means and the exterior of the body means, the cylinder sleeve means comprising:

cylindrical sleeve means having

first annular end cap piston means secured to one end thereof having, in turn, an annular tubular member secured thereto slidably sealingly engaging the exterior portion of the body means,

first fluid port means located adjacent the first annular end cap piston means between the annular end cap piston means and the abutment piston means secured to the exterior of the body means,

second end cap piston means secured to the interior



thereof intermediate the ends of the cylinder sleeve means,

second fluid port means located adjacent the second end cap piston means between the second end cap piston means and the abutment piston means secured on the exterior of the body means, and

lug cone forcing means secured to the other end thereof having, in turn, flange ring means secured thereto;

segmental lug means pivotally mounted about the body means having a portion thereof pivotally engaging the circumferential rib on the body means and a portion thereof adapted to engage said second flow line, the segmental lug means comprising:

a plurality of elongate members, each elongate member including,

on the interior thereof,

a first tapered surface, a recess which receives a portion of the annular circumferential rib of the body means therein, a first flat horizontal area, a second tapered surface which abuts a portion of the angular annular shoulder on the second flanged end of the body means, a second flat horizontal area, a third tapered surface adapted to engage a portion of said second flow line and a fourth tapered surface adapted to engage a portion of said second flow line, and

on the exterior thereof,

a first flat horizontal surface, first tapered surface terminating in a recess, a second tapered surface and a second flat horizontal area; and

segmental spring retainer means retained within the recess in the exterior of each elongate member of the segmental lug means

whereby said hydraulically actuated connector is closed by the application of said hydraulic pressure to the second fluid port means of the cylinder sleeve means while venting the first fluid port means thereby moving said connector from said first open position wherein the lug cone forcing means of the cylinder sleeve means engages the first tapered surface on the exterior of each elongate member of the segmental lug means causing the first tapered surface on the interior thereof to abut a portion of the annular recess in the exterior of the body means to said second closed position wherein the second and third tapered surfaces on the interior of each elongate member of the segmental lug means engage a portion, respectively of said angular annular shoulder on said second end and a portion on said second flow line and the lug cone forcing means engages the second tapered surface on the exterior of each elongate member of the segmental lug means, the cylinder sleeve means moving with respect to the body means by the translation of the cylinder sleeve means along the body means by the application of said hydraulic pressure to the second fluid port, and is opened by the application of said hydraulic pressure to the first fluid port means of the cylinder sleeve means while venting said second fluid port means thereby moving said connector from said second closed position wherein the lug cone forcing means of the cylinder sleeve means engages the second tapered surface on the exterior of each elongate member of the segmental lug means causing portions of each elongate member of the segmental lug means to engage portions of said flow line to said first open position having the lug cone forcing means of the cylinder sleeve means engaging the first tapered surface on the exterior of each elongate member of the segmental lug means, the cylinder sleeve means moving with respect to the body means by the translation of the cylinder sleeve means along the body means by the application of said hydraulic pressure to the first fluid port means.

4,337,972

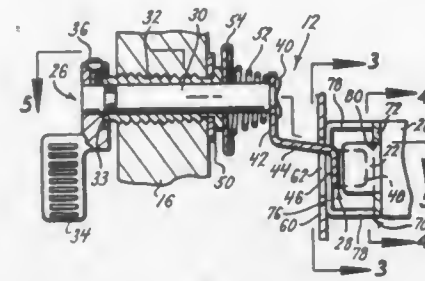
## PANEL BOARD SAFETY LATCH ASSEMBLY

Thomas E. Gill, St. Louis, Mo., assignor to Killark Electric Manufacturing Co., St. Louis, Mo.

Filed Oct. 24, 1979, Ser. No. 87,652  
Int. Cl.<sup>3</sup> E05C 5/02

U.S. Cl. 292-67

8 Claims



1. A safety latch assembly for a circuit breaker panel board, said panel board including a cabinet in which one or more circuit breakers are mounted behind a panel member, the breakers being operable between ON and OFF positions by an actuating member engaged by a handle mechanism mounted in the cover of the cabinet, said safety latch assembly comprising a movable member operable in response to movement of said actuating member, said movable member having means engaging said handle mechanism preventing engagement of said actuating member by said handle mechanism and the closing of the cabinet cover to which said handle mechanism is mounted when said actuating member is in the ON position.

4,337,973

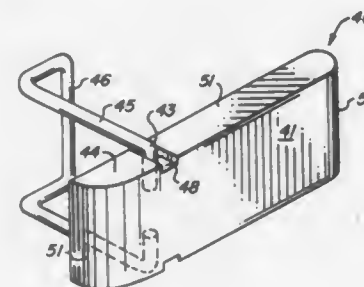
## DOOR LOCK

Jean L. Flynn, 1401 Saratoga Blvd., DeLand, Fla. 32720

Filed Nov. 19, 1979, Ser. No. 95,547  
Int. Cl.<sup>3</sup> E05C 17/54

U.S. Cl. 292-290

8 Claims



1. A portable door lock comprising in combination:

a body member having at least two end portions and an aperture on each of two edges thereof;

a retaining hook member movably attached to said body member for movement thereon and having a hooking end portion shaped to engage an opening in a door jamb striker plate and a pair of spaced arms extending from said hooking end portion to said body member, said spaced arms being of a length to extend from the opening in a door jamb striker plate to one edge of the striker plate and said retaining hook member arms having a pair of spring loaded protrusions disposed in said apertures of said body member; and

said retaining hook member having a folded position with said spaced arms generally parallel and adjacent to said body member, and a connecting position with said spaced arms extending from one end portion of said body member to allow a door to be closed with said retaining hook member hooked to a striker plate opening and a locking position with said retaining hook member arms extending from said body member in a generally perpendicular direction, whereby said hook can be connected to a door

striker plate opening and said body extended over a portion of the edge of a door and door jamb for locking the door against entry.

4,337,974

## VEHICLE ROOF

Georg Kohlpaintner, Maisach, and Wolfgang Rottenfusser, Hanfeld, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Munich, Fed. Rep. of Germany

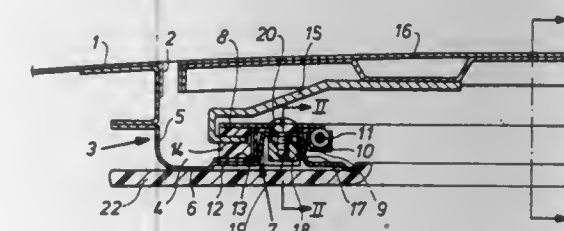
Filed Dec. 3, 1979, Ser. No. 99,825

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1978, 2851939

Int. Cl.<sup>3</sup> B60J 7/04

U.S. Cl. 296-214

5 Claims



1. Vehicle roof with a roof aperture surrounded by a frame, said frame defining, at least in a zone of a front edge and lateral edges of the roof aperture, a gutter having a U-shaped cross-section, said roof aperture being closeable by a sliding top which is mounted by sliding blocks for displacement in guide tracks extending along the lateral edges of the roof aperture, said guide tracks each being formed on a vertical wall defining a side of the gutter nearest the roof aperture, said vertical wall having the shape of a  $\Omega$  in cross section, and a cover attached by screws to the topside of said vertical wall, characterized in that a one-piece mounting strip is arranged in a cavity of the vertical wall, the mounting strip being provided with holes within which the screws serving to attach the cover are fastened to the strip; and wherein a rigid headliner extends up to the edge of the roof aperture, further characterized in that openings for retaining fastening elements for the headliner are provided in the mounting strips.

4,337,975

## SUNSHINE ROOF STRUCTURE OF VEHICLE

Masahiro Tamamushi, Tokyo, and Yoshimasa Tuchiya, Sayama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

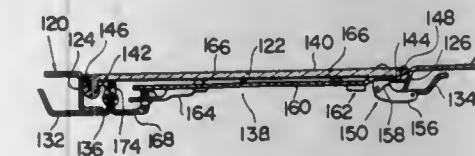
Filed Mar. 17, 1980, Ser. No. 131,180

Claims priority, application Japan, Mar. 16, 1979, 54-34640[U]

Int. Cl.<sup>3</sup> B60J 7/10

U.S. Cl. 296-215

19 Claims



1. A sunshine roof structure of a vehicle, comprising in combination:

a roof panel formed with an opening having opposite ends in a predetermined direction of the vehicle;

a light-transmitting panel placed within said opening and movable between a first position closing said opening and a second position allowing the opening to be open, said light-transmitting panel having a member retaining the

same in said first and second positions adjacent one edge opposite to one of said opposite ends of the opening;

a retaining member fixedly positioned on said light-transmitting panel at the position with respect to said roof panel in the vicinity of one of said opposite ends of said opening;

a light-shield panel having one end detachably engaging with said retaining member for motion with said light-transmitting panel; and

a latch mechanism for providing releasable locking engagement between the light-transmitting panel and light-shield panels, said latch mechanism including a first member secured on the light-shield panel adjacent the other end thereof and a second member secured on said light-transmitting panel adjacent the other end thereof and opposite to said first member, said first and second members being interengageable with respect to one another and permitting releasing with respect to one another.

4,337,976

## REAR OF AN AUTOMOBILE, PREFERABLY A PASSENGER CAR

Anatole Lapine, Doeffingen, and Reinhold Schreiber, Renningen, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

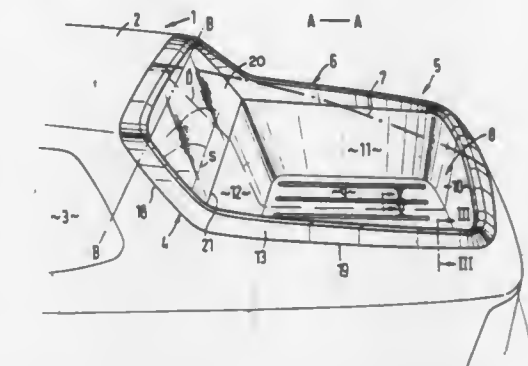
Filed Jan. 28, 1980, Ser. No. 116,208

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1979, 2903161

Int. Cl.<sup>3</sup> B60J 7/00

U.S. Cl. 296-216

16 Claims



1. Rear body construction of an automobile vehicle of the type having a rearwardly directed door opening at the rear end of the vehicle body that, as seen from a side of the vehicle, forms a stepped outline with a roof portion of the vehicle body, comprising a body element that closes the door opening in the body, said body element including: a horizontal wall and upright walls which define a generally trough-shaped receptacle which has a top side that is open toward the exterior of the vehicle body; a frame, connected to said upright walls at least in sections, that conforms substantially to the entire perimeter of the door opening for mating therewith; an upright section in the vicinity of the roof portion; and a window pane in the region of the upright section.

4,337,977

## THREE-WAY HANDLE-OPERATED WALL-AVOIDING RECLINER CHAIR

Walter C. Rogers, Jr., Denton, and David S. Hoffman, High Point, both of N.C., assignors to Royal Development Company, Inc., High Point, N.C.

Filed Sep. 12, 1980, Ser. No. 186,414

Int. Cl.<sup>3</sup> A47C 1/02

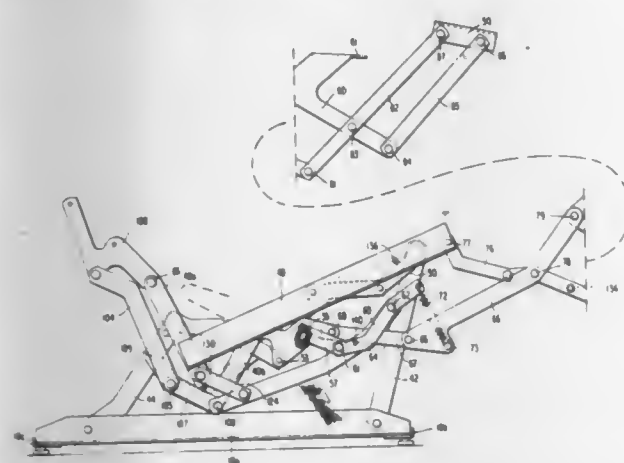
U.S. Cl. 297-85

20 Claims

1. A three-way wall-avoiding, recliner chair comprising: a base, a seat and armrest unit including armrests fixed to the seat, a backrest mounted to and movable relative to the seat, a footrest including a footrest linkage mounted to the seat for movement between a retracted position adjacent the seat and an extended position projected forwardly from the seat, a



handle-operated, actuating mechanism mounted to the seat for actuating the footrest linkage between extended and retracted positions, a linkage system mounting the seat and armrest unit to the base and mounting the backrest to the seat and armrest unit for movement between a normal generally upright position and a plurality of reclining positions, the linkage system comprising, front and rear seat mounting links (42, 44) pivoted to the base and pivotally connected relative to the seat, a first bell crank (107) pivotally connected to the rear seat mounting link, a drive link (104) having one end portion pivotally connected to the backrest and an opposite end position pivotally connected to said first bell crank link (107), a transmission link (63) connected between the handle mechanism and the first bell crank for transmitting a force to the rear seat mounting link (44) to move the seat forwardly relative to the base into a TV position when the footrest is initially actuated to extended position by means of the handle mechanism, a restraining link (124) pivotally connected to and between the seat and the transmission link for preventing movement of the drive link



and the backrest relative to the seat during movement of the seat into TV position, a second bell crank (110) having one end portion pivotally connected to the drive link at the same pivotal connection of the first bell crank to the drive link, said second bell crank having an intermediate portion pivotally mounted to the seat such that the pivotal connection of the first bell crank to the transmission link is aligned with the pivotal connection of the second bell crank to the seat when the seat is in the TV position permitting the backrest to be moved relative to the seat and the seat to be reclined further relative to the base upon application of pressure on the backrest by the chair occupant causing a drive force to be transmitted downwardly from the backrest through the drive link (104) to the bell crank link, and a pitch control link (120) pivotally connected to an end portion of the second bell crank (110) opposite the first end portion thereof and pivotally connected relative to the seat for transmitting actuating forces to the seat and for controlling the pitch of the seat when moving into reclining positions beyond TV position.

4,337,978

# MECHANISM FOR ADJUSTING INCLINATION ANGLE OF SEAT

Kenichi Kazaoka, Nagoya; Koji Hirao, Kariya, and Hideki Takahashi, Hekinan, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 23, 1980, Ser. No. 143,012

Claims priority, application Japan, Apr. 28, 1979, 54-52814

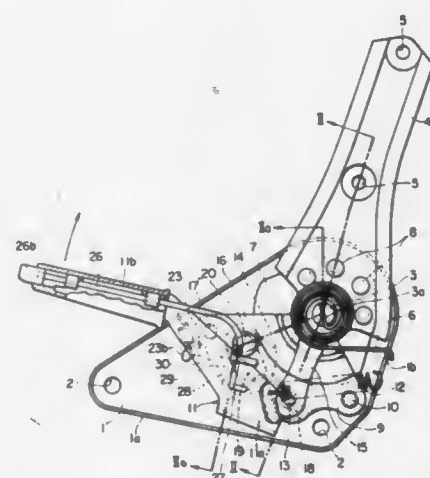
Int. Cl.<sup>3</sup> A47C 1/026; B60N 1/06

U.S. Cl. 297—367

2 Claims

1. A mechanism for adjustably connecting a seat and a backrest, especially for motor vehicles, comprising:  
a seat plate adapted to be fixedly connected to the seat;  
a tiltable plate adapted to be fixedly connected to the backrest;  
pivot means pivotally connecting said seat plate and said tiltable plate together;  
spring means for normally urging said tiltable plate toward

forward turning upon positioning of a passenger on the seat  
a latch gear segment fixed to said tiltable plate;  
first pawl means having a number of teeth formed on the periphery thereof for selective meshing engagement with said latch gear segment and being pivoted to said seat plate;  
lever means pivoted to said plate and operatively connected to said first pawl means through first cam means;  
second pawl means having a number of teeth formed on the periphery thereof selective meshing with said latch gear segment;  
a pivot pin member connected with said second pawl means and operatively connected to said lever means through second cam means;  
guide slot means slidably engaged by said pivot means of said second pawl means, wherein said second pawl means further comprises a separate non-toothed portion on the periphery thereof of a height such that said teeth and said non-toothed portion co-engage said latch gear segment for locking said latch gear segment in position, the relation between said first cam means and said second cam means being such as to assure alternate engagement with and simultaneous disengagement from said latch gear segment depending upon whether said pivot pin member of said second pawl means engages a first part of a second part of said second cam means, respectively;  
control means for changing the throw of said lever means to



thereby change a position of said pivot pin member between said first and second parts of said second cam means;  
a manual handle extending from said lever means within convenient reach of the operator; and  
a manual knob member connecting said control means and neighboring said manual handle for providing a common grip by a palm of the operator;  
wherein said first cam means further comprises a slot cam cut in said first pawl means and a pin member projecting from said lever means for sliding fit in said slot cam and wherein said second cam means further comprises an arcuate slot cam cut in said lever means and said pivot pin member projects from said second pawl means for slidably fitting in said arcuate slot cam, said arcuate slot being shaped in curvature such that a smaller throw of said lever means causes said pivot pin member of said second pawl means in said first part and a larger throw of said lever means causes said pivot pin member in said second part of said arcuate slot cam;  
and further a sub-plate fixedly connected to said seat plate for reinforcing said seat plate and which is in parallel with said seat plate so that a thin compartment is formed between said seat plate and said sub-plate such that latch gear segment, said first and second pawl means and a part of said lever means are mounted within said compartment; and  
wherein said control means for changing the throw of said

lever means further comprises a window cut in said sub-plate and a rod having a finger portion disposed in said window, and wherein said window further comprises first and second stopper portions radially circumferentially spaced apart from each other, said rod being slidably supported by said lever means so as to shift said finger portion between first and second positions in said window engageable with said first and second stopper portions, respectively.

4,337,979

# PROCESS FOR THE IN-SITU LEACHING OF URANIUM

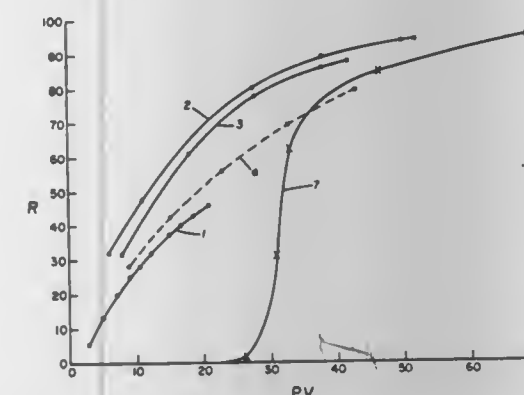
Tsoun-yuan Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 7, 1979, Ser. No. 36,890

Int. Cl.<sup>3</sup> E21C 41/14

U.S. Cl. 299—4

7 Claims



1. In a method for the recovery of uranium from a subterranean uranium-containing deposit penetrated by injection and production systems wherein an aqueous lixiviant containing an oxidizing agent, sulfuric acid, and carbon dioxide is introduced into said deposit via said injection system and displaced through said deposit to solubilize uranium therein and thereafter recovered from said deposit via said production system, the improvement comprising prior to the injection of said lixiviant injecting an aqueous solution of sulfuric acid and oxidizing agent which is substantially free of carbon dioxide into said deposit in an amount of at least one pore volume.

4,337,980

# WEDGE ARRANGEMENTS AND RELATED MEANS FOR MOUNTING MEANS, BASE MEMBERS, AND BITS, AND COMBINATIONS THEREOF, FOR MINING, ROAD WORKING, OR EARTH MOVING MACHINERY

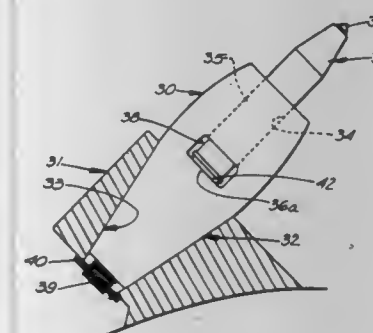
Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 41,075, May 21, 1979. This application Apr. 8, 1980, Ser. No. 138,527

Int. Cl.<sup>3</sup> E21C 35/18

U.S. Cl. 299—91

69 Claims



1. A mounting means-base member combination for use in mining, road planing or earth moving equipment, the combination comprising a mounting means having a shank receiving

perforation to receive the shank of a bit having a cutting end at one end thereof, said mounting means being provided with a first body portion to be engaged with the base member; and a base member provided with socket means to receive said first body portion of said mounting means, the improvement which is characterized by: said first body portion being tapered and said socket means comprising a cavity which is correspondingly tapered so as to just nicely receive said first body portion therein with a wedge action whereby to prevent relative movement between said first body portion and said base member, said tapered cavity extending through a substantial portion of said base member, said base member completely surrounding that part of said tapered first body portion which is received in said tapered cavity, said mounting means-base member combination being fixed against rotation about its axis; and retaining means to retain said tapered first body portion in its seated position within said tapered cavity and to urge said first body portion into full seated position within said base member; and said mounting means having a second body portion extending beyond said tapered cavity, said second body portion and said base member being free of abutting surfaces so as to provide clearance for said wedge action, said shank receiving perforation being at least in said second body portion and extending within at least a substantial length thereof.

4,337,981

# DRIVE AND SUPPORT ARRANGEMENT FOR A DISC-SHAPED ROTOR

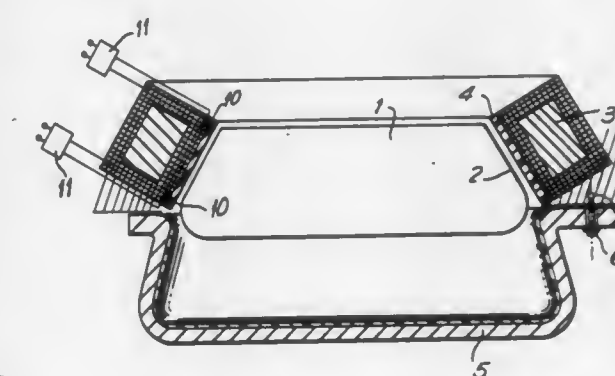
Peter Meinke, Sulzberg 7, 8061 Grossinzemoos, Fed. Rep. of Germany

Continuation of Ser. No. 860,737, Dec. 14, 1977, abandoned, which is a continuation of Ser. No. 601,705, Aug. 4, 1975, abandoned. This application Aug. 27, 1979, Ser. No. 70,334  
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1974, 2437667

Int. Cl.<sup>3</sup> F16C 39/06

U.S. Cl. 308—10

5 Claims



1. An improved combined drive and support apparatus comprising a disc-shaped rotor provided with ferromagnetic materials, having a major vertical axis and a conical peripheral surface provided with a smaller diameter at its upper end, said apparatus being further defined by, a ring-shaped stationary member encompassing said conical peripheral surface of said rotor; said ring-shaped stationary member having an inner surface facing said conical peripheral surface, said inner surface and said conical surface being separated in use by a uniform air gap; the improvement comprising: providing said stationary member with magnetic coil means having drive and support coils formed of a common core for producing a rotating magnetic field for driving said rotor and additionally providing a magnetic field oriented and inclined relative to the rotor axis for positioning said rotor, and measuring sensor means within said magnetic coil formed by said stationary member for measuring the position of the rotor, whereby said rotor is accessible at least one end and is supported in a contactless manner by magnetic forces created by said magnetic coil means.



4,337,982

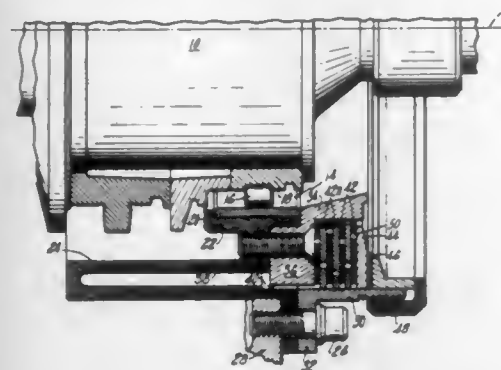
## FRICTION DAMPER

Donald C. Moringiello, Windsor, Conn., and Stephen H. Dallmann, Minneapolis, Minn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 11, 1980, Ser. No. 215,301

Int. Cl.<sup>3</sup> F16C 27/04

U.S. Cl. 308—26



1. For a rotor rotatably supported by a bearing, damper means connected to said bearing, said damper means comprising a pair of concentric cylindrical members, a plurality of axially juxtaposed plate-like elements surrounding a portion of said rotor mounted in friction relationship with each other, each plate-like element having an outer diameter and an inner diameter, means for urging alternate plate-like elements to bear against the pair of concentric rings in a pattern that includes alternate plate-like elements to engage the outer concentric cylinder and the adjacent plate-like element to engage the inner concentric cylinder and means for urging each plate against each other to control the amount of force for attaining relative movement between adjacent plates and means attached to said bearing for restoring said plates to a predetermined position when the rotor is in a balanced condition.

4,337,983

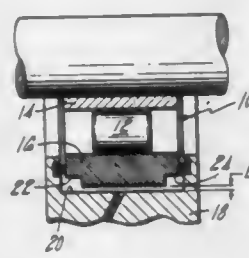
## VISCOUS DAMPER

David H. Hibner, Colchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 11, 1980, Ser. No. 215,303

Int. Cl.<sup>3</sup> F16C 27/04

U.S. Cl. 308—26



1. A viscous damper for a bearing having an outer race, a fixed annular member having a complimentary circular surface surrounding the outer diameter of said outer race and being spaced therefrom defining a circular cavity for receiving oil therebetween, sealing means disposed adjacent the side edges of said outer race to retain the oil in said circular cavity, recesses formed in said outer diameter of the outer race adjacent each of said side edges for increasing the volume where the oil between the space between said outer race and said complimentary circular surface can migrate, said recesses defining recirculating grooves so that the whirling motion imparted to the outer race by said bearing when in its rotating mode recirculates the oil within the circular cavity while permitting the pressure gradient along the expanse between said side edges to remain substantially at a fixed predetermined value.

4,337,984

## LUBRICATION MEANS FOR A JOURNAL AND BEARING

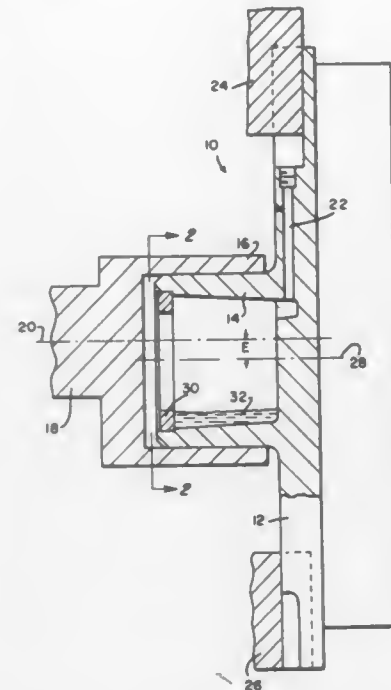
Robert W. Shaffer, Campbellsville, Ky., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jan. 2, 1981, Ser. No. 222,051

Int. Cl.<sup>3</sup> F16C 33/10

3 Claims U.S. Cl. 308—103

13 Claims



1. Lubrication means for a journal and bearing, comprising: first means defining a bearing having a bearing surface; and second means defining a shaft; wherein said shaft and bearing are journaled together (a) to effect support of said shaft by said bearing surface, and (b) to accommodate rotation of said shaft relative to said bearing about a given axis; and means for supplying lubrication to said bearing surface; wherein said supplying means includes means formed in one of said first and second means for storing a supply of lubricant on only one side of said given axis; said storing means also comprises means defining a reservoir of segment-shaped cross-section; said reservoir has an arcuate surface which is eccentric to said given axis; said first means has a bearing axis; and said arcuate surface is concentric with said bearing axis.

4,337,985

## PIVOTED SHOE BEARING

Paul Gerling, Oberhausen, Fed. Rep. of Germany, assignor to Glyco-Maschinenbau GmbH, Essen, Fed. Rep. of Germany

Filed Feb. 8, 1980, Ser. No. 120,110

Claims priority, application Fed. Rep. of Germany, May 19, 1979, 2920344

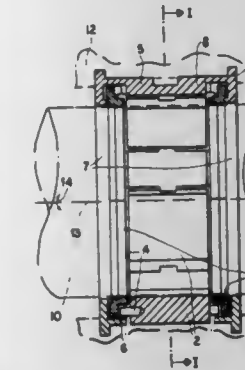
Int. Cl.<sup>3</sup> F16C 17/03, 23/04, 33/74

U.S. Cl. 308—36.1

4 Claims

1. A pivoted shoe bearing fixable in a housing for supporting a shaft for rotation about a limitedly tiltable axis, comprising: a frame securable to said housing; a plurality of bearing segments having concave cylindrical surfaces with radii of curvature equal to the radius of said shaft; said segments being pivotally mounted in said frame in a substantially circular configuration for engaging at said surfaces said shaft to enable radial motion thereof; and a pair of sealing rings floatingly mounted on said frame at

axially opposite sides of said segments for limiting lateral motion thereof and for forming a lubricant-tight fit with



said shaft to ensure retention of sufficient lubricant by said bearing.

4,337,986

## METHOD AND APPARATUS FOR INCREASING THE SPACING BETWEEN PLANTS IN ACCORDANCE WITH THEIR GROWTH RATE

John T. Haub, Maple Grove; James G. Krassas, Plymouth; Stanley C. Rustad, Golden Valley, and Noel Davis, Wayzata, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

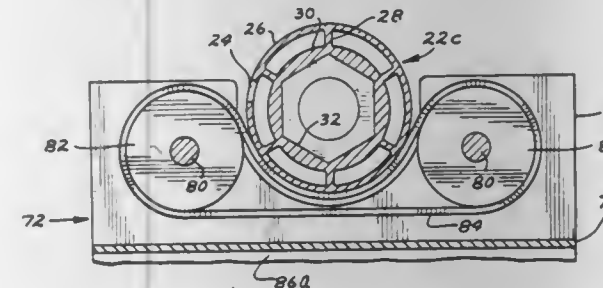
Division of Ser. No. 930,448, Aug. 2, 1978, Pat. No. 4,216,618.

This application Aug. 5, 1980, Ser. No. 175,544

Int. Cl.<sup>3</sup> F16C 27/04

U.S. Cl. 308—177

4 Claims



1. A bearing assembly for rotatably supporting a portion of a first elongated tubular member comprising a pair of laterally spaced cylindrical rollers, means for supporting said rollers in spaced apart relationship, and a flexible belt entrained about said cylindrical rollers, the upper portion of said belt between said rollers cradling said portion of said first tubular member, said bearing assembly being the sole support for said tubular member at said supported portion.

4,337,987

## TRAPPED-KEY SECURITY UNIT

Stuart M. Brooks, 9522 Briar Glenn Way, Gaithersburg, Md. 20760, and Martin R. Fagan, Potomac, Md., assignors to Stuart M. Brooks, Gaithersburg, Md.

Filed Sep. 10, 1980, Ser. No. 185,751

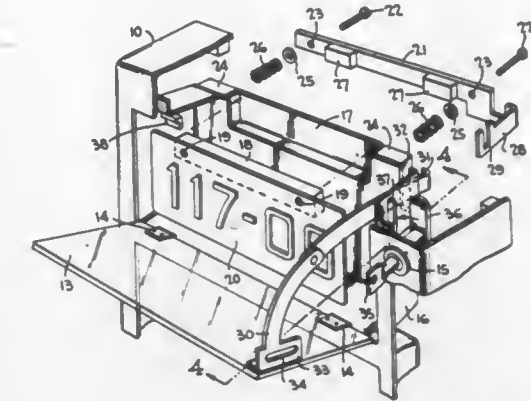
Int. Cl.<sup>3</sup> E05B 11/00

U.S. Cl. 312—219

12 Claims

1. In a cabinet for storing a predetermined article, a security locking arrangement comprising: a key and a lock assembly means comprising a key and a lock having a cam which is rotatable with said key through a prescribed angle between unlocked and locked positions, said key being insertable into said lock, said lock including means for preventing removal of said key therefrom except when said cam is in said locked position; a cabinet door assembly for said cabinet capable of moving between open and closed positions and including closure means for preventing rotation of said cam to said locked

position unless said door assembly is in said closed position; and actuable means responsive to the presence of said article in



said cabinet for permitting rotation of said cam to said locked position and for preventing cam rotation to said locked position when said article is absent from said cabinet.

4,337,988

## MODULAR FURNITURE SYSTEM

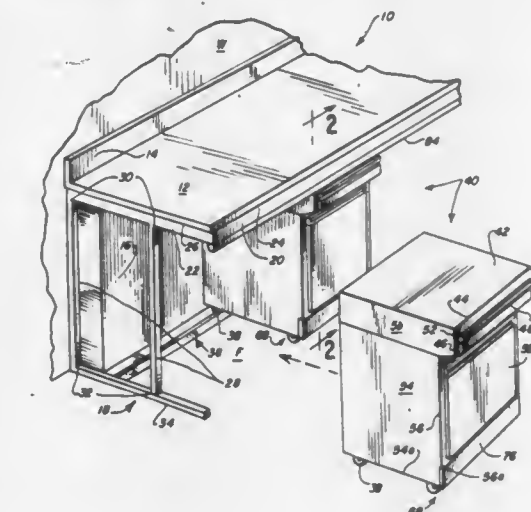
Robert Schenck, Mishicot, Wis., assignor to Curtin Matheson Scientific, Inc., Houston, Tex.

Filed Mar. 17, 1980, Ser. No. 131,032

Int. Cl.<sup>3</sup> A47B 87/00, 91/00

U.S. Cl. 312—250

3 Claims



1. A modular furniture system for convenient rearrangeable assembly upon a floor comprising:

- one or more movable furniture modules, each said module including:
  - a planar top end,
  - at least one rear roller means fixedly secured to a rear portion of said module for movement of said module upon said floor and movement vertically concurrently with said rear portion, and
  - adjustable support means secured to support a forward portion of said module upon said floor;
- a work surface structure including a substantially horizontal countertop and support structure for said countertop providing an open space for moving said module into an installed position in which said module is entirely beneath said countertop;
- means automatically engaging said rear roller means, including a depression for receiving said rear roller means, and elevating the rear roller means and said rear portion of said module, relative to the floor, upon a rearward movement of said module into an installed position beneath said countertop, said adjustable support means being adjustable to elevate the forward portion of said module, when said module is located in said installed position, to corre-



spond to the elevated level of the rear portion to substantially level and planar top end relative to the floor; and (d) said work surface structure including a retainer depending from said countertop forward of the module in the installed position thereof, said retainer depending to an elevation generally between the heights of the top end prior to and subsequent to the elevation of the module whereby the module, prior to elevation, is free to move beneath the retainer into the installed position for elevation therein, said module when elevated, being precluded from outward movement by said retainer.

4,337,989

**ELECTROMAGNETIC SHIELDED CONNECTOR**

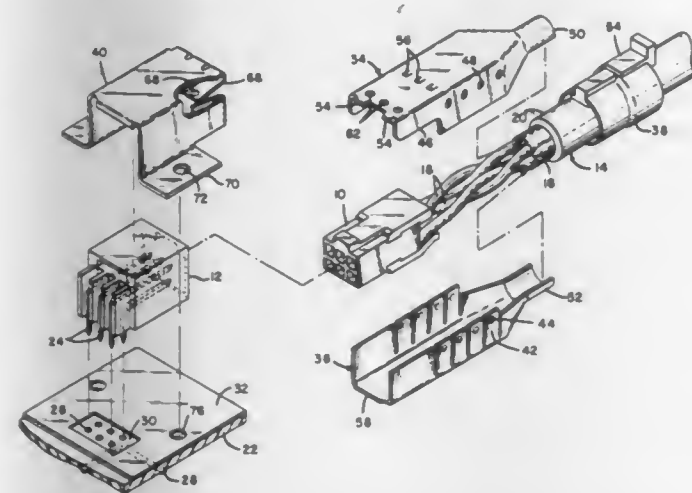
John C. Asick, Harrisburg, John M. Landis, Lemoyne, and Leon T. Ritchie, Mechanicsburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 28, 1980, Ser. No. 154,162

Int. Cl.<sup>3</sup> H01R 13/506, 13/648

U.S. Cl. 339-143 R

11 Claims



1. In combination with an electrical connector having mating first and second members, a kit providing electromagnetic shielding for said connectors, said kit comprising:

a first enclosure formed by an interlocking metallic inner first shell and outer second shells, said shell defining therebetween a cavity adapted to receive one of said connector members therein, each shell having a tail portion adapted to be received within a braided layer of shielded cable said inner first shell having a plurality of cantilever beams extending from a substantial portion of the periphery thereof and having an outwardly directed dimple spaced from the free end of each beam, said outer second shell having a flange depending from a like portion of the periphery thereof and adapted to receive said beams therein in interference fit, said flange also having an array of apertures spaced to each receive a respective dimple to secure said shells together,

clamp means adapted to embrace said cable bringing said braided layer into good mechanical and electrical contact with said tail portions, and

a second enclosure formed by a metallic shroud adapted to substantially enclose said second member and engage shielding associated therewith and the metallic shells of said first enclosure.

4,337,990

**TRANSPARENT HEAT-MIRROR**

John C. C. Fan, Chestnut Hill, and Frank J. Bachner, Newton, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 498,160, Aug. 16, 1974, abandoned. This application May 27, 1976, Ser. No. 690,696

Int. Cl.<sup>3</sup> G02B 5/28

U.S. Cl. 350-1.7

26 Claims

1. A composite film consisting of three continuous and discrete layers, one of said layers being metallic silver in a thick-

ness of from about 30 Å to about 200 Å and the other two layers being transparent and positioned on opposite sides of said metallic silver layer, each of said transparent layers having a thickness within the range of from about 150 Å to about 500 Å, and said transparent layers being ones which cooperate to



provide the composite film with an integrated solar transmission,  $\alpha_{eff}$ , of at least about 0.5 and a ratio of integrated solar transmission to integrated heat reflectivity,  $\alpha_{eff}/\epsilon_{eff}$ , of at least about 5 where integrated solar transmission ( $\alpha_{eff}$ ) and integrated heat reflectivity ( $\epsilon_{eff}$ ) are defined as:

$$\alpha_{eff} = \frac{2.5 \mu m}{0.25 \mu m} \frac{Tr(\lambda)A(\lambda)d\lambda}{2.5 \mu m} \frac{A(\lambda)d\lambda}{0.25 \mu m}$$

$$\epsilon_{eff} = \frac{100 \mu m}{1.0 \mu m} \frac{[1 - R(\lambda)] W_B(T_B, \lambda)d\lambda}{100 \mu m} \frac{W_B(T_B, \lambda)d\lambda}{1.0 \mu m}$$

wherein

$Tr(\lambda)$  = Transmission of heat-mirror at wavelength  $\lambda$

$R(\lambda)$  = Reflectivity of heat-mirror at wavelength  $\lambda$

$A(\lambda)$  = Solar energy spectrum

$W_B(T_B, \lambda)$  = Energy distribution for a blackbody at an operating temperature  $T_B$ .

4,337,991

**LIGHT MICROSCOPE WITH A PLURALITY OF SLIDEWAYS**

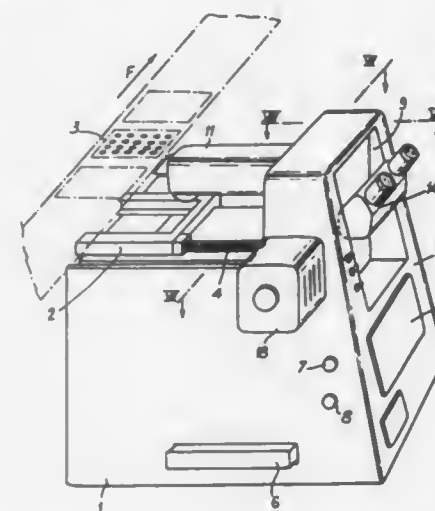
Alain C. Benajam, Bobigny, France, assignor to Le Materiel Biomedical, Paris, France

Filed Sep. 29, 1980, Ser. No. 191,540

Int. Cl.<sup>3</sup> G02B 21/24

U.S. Cl. 350-87

3 Claims



1. Optical microscope comprising: framework means for supporting a plate on which an object to be observed is supported;

a first assembly comprising optical elements for viewing said object;

a second assembly comprising lighting elements for illuminating said object;

said first and second assemblies being independent from one another, each assembly being provided with reversible mounting slides, said framework means being provided with a plurality of slideways for interchangeably receiving said slides for alternatively mounting said first assembly above or below said object and for alternatively mounting said second assembly on the side of said object opposite from the side on which the first assembly is mounted.

4,337,992

**HOLOGRAM MOVIE PROJECTION APPARATUS**

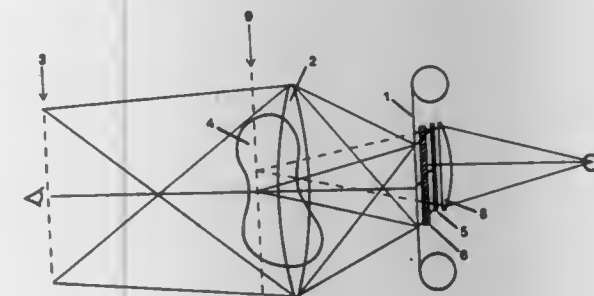
Kenneth C. Johnson, 1215 Brewster Dr., El Cerrito, Calif. 94530

Filed Apr. 16, 1980, Ser. No. 140,754

Int. Cl.<sup>3</sup> G03H 1/04

U.S. Cl. 350-3.79

1 Claim



1. A means of generating three dimensional moving imagery comprising:

a hologram medium comprising elemental time frame holograms recorded on a hologram film or films as narrow juxtaposed bands oriented transversely to the long dimension of said hologram film(s),

appropriate mechanism whereby said hologram film(s) is (are) drawn across a stationary reference beam or beams, the direction of said drawing to be parallel to the long dimension of said hologram film(s), and whereby moving imagery visible from within a system exit pupil is generated,

first focusing means whereby the portion of said hologram film(s) illuminated by said reference beam(s) is substantially imaged onto said exit pupil, the long dimension of said hologram film(s) being imaged transversely to the normal eye plane,

diffraction means comprising a diffraction grating or gratings, whereby said reference beam(s) is (are) generated by diffraction from a source beam or beams,

zero order stop means, preferably a louvered filter or filters interposed between said diffraction grating(s) and said hologram film(s), whereby the portion of said source beam(s) not diffracted by said diffraction grating(s) is blocked from entering said exit pupil,

a small light source or sources from which said source beam(s) originate(s),

second focusing means interposed either between said light source(s) and said diffraction grating(s), or between said diffraction grating(s) and said hologram film(s), or between said hologram film(s) and said first focusing means, or a combination thereof, wherein said second focusing means without said diffraction means and said hologram medium present would image said light source substantially to a point central to the image, thereby eliminating chromatic dispersion at said point, and thereby causing imagery generated from any said time frame hologram and focused in a designated image plane containing said point to appear motionless as said time frame hologram is drawn across said reference beam.

4,337,993

**HOLOGRAPHIC OPTICAL FIBER COUPLER**

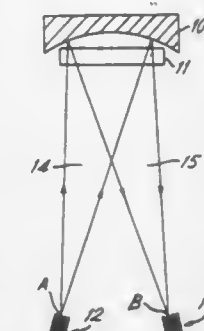
Rudolf Kompfner, Stanford, Calif., assignor to National Research Development Corporation, London, England  
Continuation of Ser. No. 728,915, Oct. 4, 1976, abandoned. This application Nov. 30, 1979, Ser. No. 99,000

Claims priority, application United Kingdom, Oct. 3, 1975, 40593/75

Int. Cl.<sup>3</sup> G02B 5/32

U.S. Cl. 350-96.19

9 Claims



1. An optical system comprising two arrays of optical devices, and means for making individual and simultaneous optical connections each of which involves the passage of light between each selected device of one array and one selected device of the other array to the exclusion of unselected devices, said means comprising at least one phase grating plate in which there are formed a series of volume phase gratings by incidence of complementary reference beams on a holographic medium at different angles, all the phase gratings being of the reflecting type, and the arrangement being such that said individual connections are respectively made via different phase gratings in at least one phase grating plate.

4,337,994

**LINEAR BEAM SCANNING APPARATUS ESPECIALLY SUITABLE FOR RECORDING DATA ON LIGHT SENSITIVE FILM**

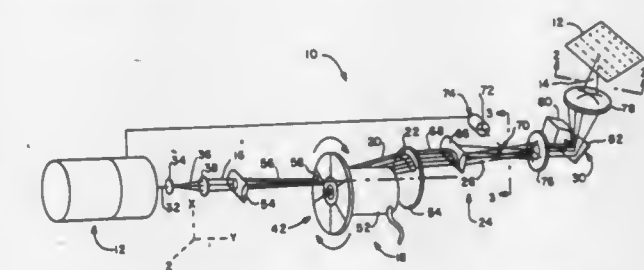
Robert E. Brasier, Carlsbad, Calif., assignor to Datagraphix, Inc., San Diego, Calif.

Filed Jun. 18, 1980, Ser. No. 160,605

Int. Cl.<sup>3</sup> G02B 27/17

U.S. Cl. 350-3.71

15 Claims



1. A linear beam scanning apparatus comprising:

(a) means for providing a source of light;

(b) means cooperating with said source for producing therefrom a stationary beam of light along a fixed path, said beam producing means including means for causing said stationary beam to converge to a line in a predetermined plane;

(c) means acting on said stationary beam for producing therefrom a first continuously arcuately scanning beam of light having a particular cross-sectional segment thereof which repeatedly moves from a first point to a second point along an arcuate path in a predetermined plane, said arcuately scanning beam producing means including a flat disc for supporting at least one holographic grating facet and means for supporting said disc for rotation in said predetermined plane and in the path of said stationary beam.



beam such that the latter impinges on and is diffracted by said grating facet for producing said continuously arcuately scanning beam; and

- (d) means acting on said first arcuately scanning beam for producing therefrom a second continuously linearly scanning beam of light having a particular cross-sectional segment thereof which repeatedly moves from a first point to a second point along a straight-line path in a second, predetermined plane.

4,337,995

## SWITCH FOR OPTICAL TRANSMISSION LINES

Toshiki P. Tanaka, Tokyo; Minoru Maeda, Hinode; Satoshi Aoki, Akigawa, and Shoji Yamada, Hachioji, all of Japan, assignors to Hitachi, Ltd. and Hitachi Cable, Ltd., both of Tokyo, Japan

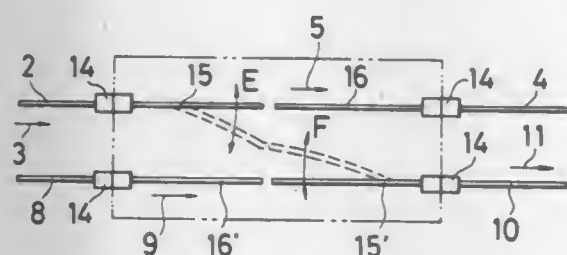
Filed Nov. 8, 1979, Ser. No. 92,513

Claims priority, application Japan, Nov. 17, 1978, 53-141166

Int. Cl.<sup>3</sup> G02B 7/26

U.S. Cl. 350—96.20

13 Claims



1. A switch for optical fiber transmission lines which comprises first, second, third and fourth optical fibers, a substrate to which at least parts of each of the first through fourth optical fibers are attached in such a way that an end of at least the first and second optical fibers can be moved relative to said substrate to which they are attached, and means for moving the first and second optical fibers relative to said substrate from one position where the end faces of the first and second optical fibers confront the end faces of the third and fourth optical fibers, respectively, to another position where the end face of the first optical fiber confronts the end face of the second optical fiber.

4,337,996

## LENS MOUNT SUPPORT FOR SELF-EXTENDING CAMERA

Yoshio Kuramoto, Toyonaka; Hiroshi Ueda, Nara, and Masatoshi Itoh, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

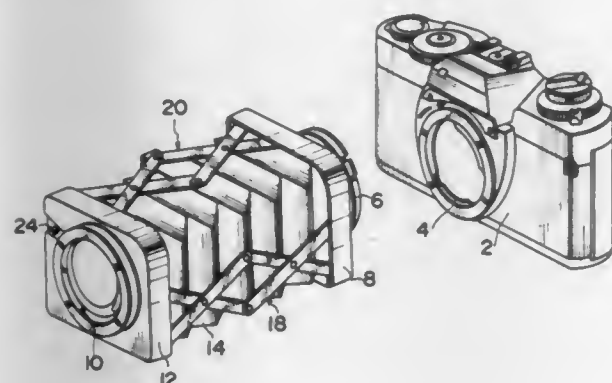
Filed Oct. 22, 1979, Ser. No. 86,898

Claims priority, application Japan, Oct. 26, 1978, 53-132286

Int. Cl.<sup>3</sup> G02B 7/22; G03B 17/04

U.S. Cl. 350—255

14 Claims



1. An extension bellows device detachably mountable on an interchangeable lens camera, comprising:

a camera mount housing to be detachably mounted on said camera;

a lens support housing on which an interchangeable lens is detachably mounted;

a collapsible bellows extending between said camera mount housing and said lens support housing for establishing a light tight chamber between said camera mount housing and said lens support housing;

a support linkage movable between fully extended and fully retracted conditions for movably supporting said lens support housing in parallel relation to said camera mount housing, said support linkage comprising two similar extendable and contractable link assemblies located along two planes substantially normal to each other, each link assembly including a plurality of link bars having overlapping portions movably connected with each other for enabling relative movement of said link bars; and

locking means provided on said support linkage for releasably fastening said overlapping portions of said link bars for releasably locking said support linkage in any condition continuously between the linkage fully extended and fully retracted conditions.

4,337,997

## ENERGY REFLECTOR AND METHOD OF MAKING

Joseph Sadoune, Massy, France, and Pierre Laroche, Nalines, Belgium, assignors to BFG Glassgroup, Paris, France

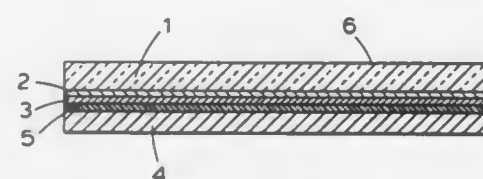
Filed Feb. 5, 1980, Ser. No. 118,790

Claims priority, application United Kingdom, Feb. 9, 1979, 7904667

Int. Cl.<sup>3</sup> G02B 5/10; C03B 23/04

U.S. Cl. 350—310

45 Claims



1. A flexible radiant energy reflector including a laminate comprising a metal ply, a glass ply having a front face and a rear face and having a thickness between 0.6 and 1.0 mm, means bonding said glass ply over the entire area of its rear face to said metal ply in an inter-ply bond and means associated with one of the plies and providing a radiant-energy reflecting surface, wherein said metal and glass plies are given relative thicknesses and moduli of elasticity such, and said bonding means provides an inter-ply bond of such efficiency, that the rear face of said glass ply is not subjected to tensile stresses when the laminate is flexed, within the elastic limit of said metal ply, to give the front face of said glass ply a concave curvature of a radius of 10 meters.

4,337,998

## VARIABLE TRANSMITTANCE WINDOW

Algerd Basiulis, Redondo Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 15, 1980, Ser. No. 140,528

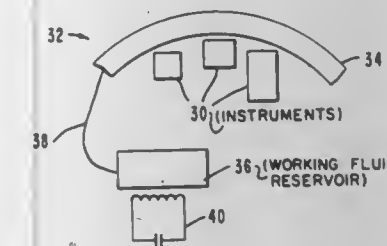
Int. Cl.<sup>3</sup> G02B 5/24; G05D 25/00

U.S. Cl. 350—312

10 Claims

1. A variable transmittance window for controlling passage of energy therethrough comprising an enclosure positioned in the path of the energy, a reservoir spaced from said enclosure and containing a working fluid which is capable of being transported to and from the window to vary its transmittance, a transport tube coupled between said enclosure and said reser-

voir for transporting said working fluid therebetween, and means for applying and withdrawing thermal energy to and



from said working fluid to transport it between said reservoir and said enclosure.

4,337,999

## FLUORESCENT LIQUID CRYSTAL DISPLAY COMPOSITIONS AND DEVICES

Fumiaki Funada, Yamatokooriyama; Masataka Matsuura, Tenri, and Tomio Wada, Nara, all of Japan, assignors to Sharp Corporation, Osaka, Japan

Filed Aug. 17, 1978, Ser. No. 934,349

Claims priority, application Japan, Aug. 29, 1977, 52-104040;

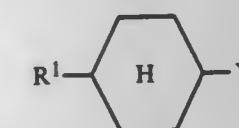
May 19, 1978, 53-60358; Jun. 23, 1978, 53-76743

Int. Cl.<sup>3</sup> G02F 1/13; C09K 3/34

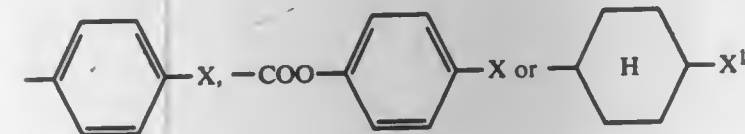
U.S. Cl. 350—345

12 Claims

2. A fluorescent liquid crystal composition comprising a liquid crystal material and a coumarin fluorescent dye capable of emitting fluorescence and soluble in said liquid crystal material, said liquid crystal material comprising at least one compound of the formula (I)



wherein R<sup>1</sup> is alkyl having 3 to 9 carbon atoms; and Y is a group of the formula



X being cyano, alkyl having 3 to 9 carbon atoms, alkoxy having 3 to 9 carbon atoms or alkylcarbonyloxy having 4 to 10 carbon atoms, X<sup>1</sup> being cyano.

4,338,000

## ELECTROCHROMIC LIGHT CONTROLLING PANEL

Tadatoshiki Kamimori, Tokyo, and Mamoru Mizuhashi, Yokohama, both of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

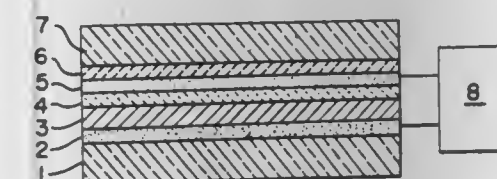
Filed Sep. 11, 1980, Ser. No. 186,124

Claims priority, application Japan, Oct. 25, 1979, 54-137050

Int. Cl.<sup>3</sup> G02F 1/17

U.S. Cl. 350—357

5 Claims



1. An infra-red reflecting and electrochromic light controlling panel which comprises a first transparent plate (1) made of

glass or plastic; a transparent electroconductive film (2); an interlayer film made of a polyelectrolyte; a first tungsten oxide film (4), an infra-red reflecting and electroconductive metal film (5), a second tungsten oxide film (6) and a transparent plate (7) made of glass or a plastic which are laminated in said order; and a device for applying potential between said transparent electroconductive film and said infra-red reflecting and electroconductive metal film whereby light transmission is controlled by applying positive or negative potential to said first tungsten oxide film.

4,338,001

## TELEPHOTO LENS SYSTEM

Sei Matsui, Chiba, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

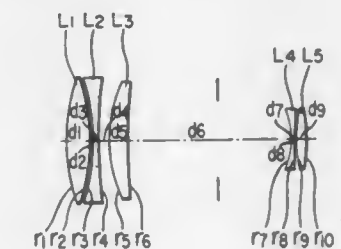
Filed May 27, 1980, Ser. No. 153,787

Claims priority, application Japan, Jun. 6, 1979, 54/69871

Int. Cl.<sup>3</sup> G02B 9/60, 13/02

U.S. Cl. 350—455

5 Claims



1. A telephoto lens system having a convergent forward group including a first lens which is a biconvex lens having its surface of greater curvature facing the object side, a second lens which is a biconcave lens having its surface of greater curvature facing the object side, and a third lens which is a positive meniscus lens having its convex surface facing the object side, and a divergent rearward group including a fourth lens which is a concave lens having its surface of greater curvature facing the object side, and a fifth lens which is a biconvex lens, said lens system satisfying the following conditions:

$$0.75f < f_1 < 0.85f \quad (I)$$

$$0.8f < |f_2| < 1.2f$$

$$0.55f < l < 0.6f$$

$$1 < |r_2/r_3| < 1.1 \quad (II)$$

$$d_2 < 0.015f$$

$$n_1 < 1.54, v_1 > 65 \quad (III)$$

$$n_2 > 1.7, v_2 < 40$$

$$1.6 < n_3 < 1.7, 50 < v_3 < 60$$

where f<sub>1</sub> represents the focal length of said forward group, f<sub>2</sub> represents the focal length of said rearward group, f represents the focal length of the entire system, l represents the spacing between the principal points of the two groups, r<sub>1</sub>—r<sub>10</sub> represent the curvature radii of the successive lenses, d<sub>1</sub>—d<sub>9</sub> represent the center thicknesses and air spaces of the successive lenses, and n<sub>1</sub>—n<sub>5</sub> and v<sub>1</sub>—v<sub>5</sub> represent the refractive indices and Abbe numbers, respectively, of the successive lenses.



4,338,002

# METHOD OF DETERMINING THE PROPER INDIVIDUALLY GIVEN POSITIONS OF DIOPTRIC PORTIONS ON EYEGLASSES

Heinz-Joachim Gafert, Breissacher Str. 46, D-7800 Freiburg i.Br., Fed. Rep. of Germany

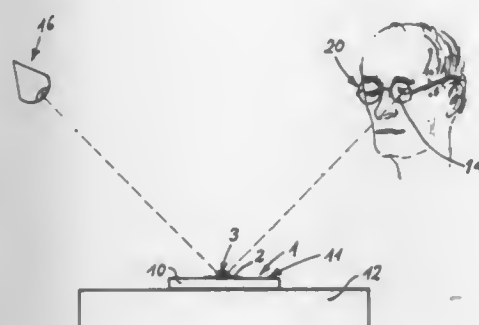
Filed Jun. 4, 1979, Ser. No. 45,229

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842133

Int. Cl.<sup>3</sup> A61B 3/00, 3/10

U.S. Cl. 351—39

5 Claims



1. A method of determining the proper individually given positions of dioptric portions on eyeglasses, especially on pantoscopic eyeglasses for the close-range positions of the eyes of an examinee, comprising the steps of illuminating the eyes of the examinee by light rays emanating from a source situated at a close-range point to form light-reflection images of the source on the eyes; and marking the course of each straight line connecting the light source with the respective image, at a distance from the respective eye corresponding to that of the respective eyeglass.

4,338,003

# ANTI-GLARE SPECTACLES

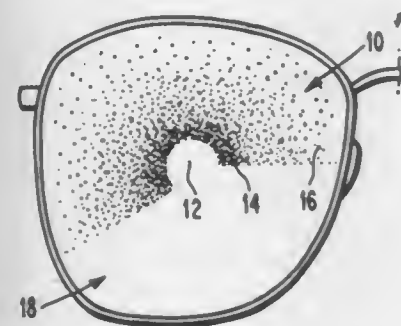
Werner Adrian, 301 Shakespeare Dr., Waterloo, Ontario, Canada (N2L 2T9)

Filed Jul. 14, 1980, Ser. No. 168,546

Int. Cl.<sup>3</sup> G02C 7/10, 7/16

U.S. Cl. 351—45

9 Claims



1. Anti-glare spectacles comprising a frame and lenses, wherein each lens comprises a substantially circular central zone of substantially complete transparency, an adjacent light-absorbing annular zone over an angular range of substantially 45° in which the absorption increases sharply from the inside of the annulus and drops towards the periphery by the square of the angle, said angle being that between the viewed object and the center of the source of glare, and an outer zone having a low absorption.

4,338,004

# SNAP-IN LENS FOR GLASSES

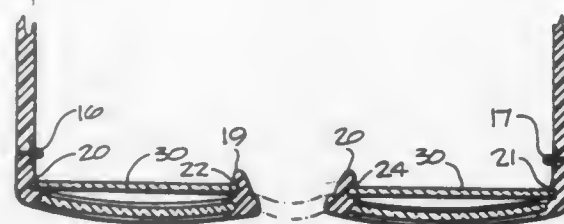
George W. Vosper, 149 Earl St., Kingston, Ontario, Canada (K7L 2H3)

Filed Nov. 9, 1979, Ser. No. 92,742

Int. Cl.<sup>3</sup> G02C 9/00, 7/08, 1/00

U.S. Cl. 351—47

1 Claim



1. In spectacle frames having a nose piece with nose pads on each side thereof that curve rearwardly from the frame, means for mounting a pair of lenses in the frame and a pair of legs each hingedly connected to a stub leg that projects rearwardly from the frame portion that receives the lenses, the improvement comprising a groove in the rearwardly curved nose pads on the side thereof remote from the nose contacting surface and a groove in respective ones of the pair of stub legs, the respective grooves in the nose pads facing respective ones of the grooves in the stub legs for detachably snap fittingly receiving therein respective ones of a pair of resiliently, flexible, coloured transparent plates at a position behind the lens receiving portion of the frame whereby the plates are hidden from the view of other by the frame, a pair of resilient flexible coloured transparent plates, each said plate having a pair of notches in the peripheral edge thereof, one such notch receiving the stub leg portion of the frame and the other providing a ledge bearing against the nose piece preventing upward displacement of the flexible plate relative to the spectacle frame when mounted thereon.

4,338,005

# MULTIFOCAL PHASE PLATE

Allen L. Cohen, 10108 Windsong Terrace, Richmond, Va. 23233

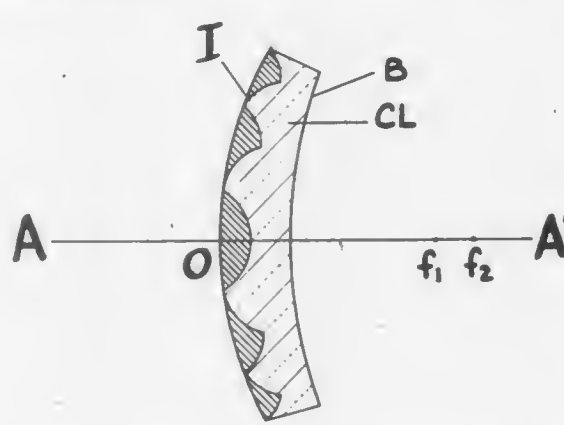
Continuation-in-part of Ser. No. 970,751, Dec. 18, 1978, Pat. No. 4,210,391. This application Apr. 21, 1980, Ser. No. 142,005

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> G02B 3/08, 17/00; G02C 7/04, 7/06

U.S. Cl. 351—161

12 Claims



1. A multiple focal power optical device comprising: body means having a plurality of alternating annular, concentric zones, bounded on the outside by radii  $r_n$ , with  $n = 1, 2, 3, \dots$ ; first focal power means within at least some of the zones for directing incident parallel light to a first focal point  $+d/N$ , with  $N$  an integer; second focal power means within at least some of the zones for directing incident parallel light to a second focal point  $-d/N$ ;

wherein the radii  $r_n$  of said zones are substantially proportional to the square root of  $n$ ; and wherein the absolute value of  $r_1$  is set equal to  $\sqrt{\lambda d}$ , with  $\lambda$  equal to the wavelength under consideration, and  $d$  is chosen arbitrarily.

4,338,006

# OVERHEAD PROJECTOR

Jiro Ozeki, Tokyo, Japan, assignor to Slidex Corporation, Tokyo, Japan

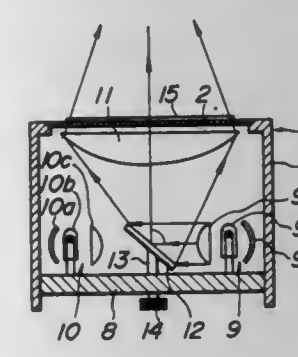
Filed Jan. 15, 1980, Ser. No. 112,353

Claims priority, application Japan, Jan. 17, 1979, 54-4095

Int. Cl.<sup>3</sup> G03B 21/20, 21/132

U.S. Cl. 353—85

2 Claims



1. An overhead projector comprising a projector body having a housing with a plurality of light source systems disposed in a light source plane therein, a condenser lens disposed at a level above the plane and having an optical axis perpendicular to the light source plane, a stage glass attached to said housing so as to close a top opening of said housing, a projecting lens disposed outside said housing at a point above said stage glass, a projecting reflective mirror reflecting light coming through said projecting lens toward a screen, and a light-upward-directing reflective mirror disposed in the light source plane within said housing and having a mirror plane crossing the optical axis of said condenser lens at an angle for reflecting light from said light source systems toward said condenser lens, elements constituting at least a part of said light source systems being radially disposed around said optical axis of the condenser lens so that optical axes of said light source systems intersect at a point on said optical axis of the condenser lens, said light-upward-directing reflective mirror and said part of the light source systems being movable relative to each other, and said projecting lens being vertically movable and being replaceable, wherein said light source systems are fixed and said light-upward-directing reflective mirror is located on and rotatable about the axis of said condenser lens, each of said light source systems comprising a concave reflective mirror, a light source lamp of a given luminous intensity, and a light source lens of a given focal length, wherein said given luminous intensity of each said light source lamp differs from the given luminous intensities of the other said light source lamps, and said given focal length of each said light source lens differs from the given focal lengths of the other said light source lenses, the light-upward-directing reflective mirror being rotatable about the axis of said condenser lens to direct light from any one of said light source systems upwardly to said condenser lens, whereby said projector is selectively usable for different sizes of transparent positive film slides and projects an image of substantially fixed magnitude and constant brightness throughout the screen, regardless of the size of the transparent positive film slide placed on the projector.

4,338,007

# APPARATUS AND PROCESS FOR MAKING LITHOGRAPHIC PRINTING PLATE WITH REINFORCED IMAGE

Howard A. Fromson, 15 Rogues Ridge Rd., Weston, Conn. 06880, and Robert F. Gracia, Seituante, Conn., assignors to Howard A. Fromson, Weston, Conn.

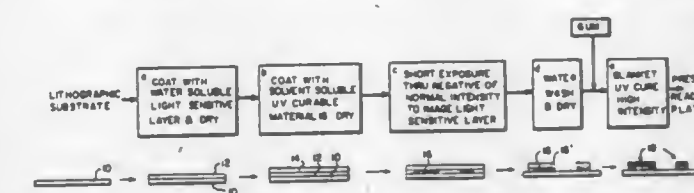
Continuation of Ser. No. 972,561, Dec. 22, 1978, abandoned.

This application Apr. 21, 1980, Ser. No. 142,507

Int. Cl.<sup>3</sup> G03B 27/30; B41M 5/00; G03F 7/02; G03C 1/76

U.S. Cl. 355—100

2 Claims



1. Apparatus for making a lithographic printing plate which comprises:

- means for applying a water soluble light sensitive coating to a lithographic plate and for applying a coating of a solvent soluble UV curable material thereover;
- means for exposing to actinic light the lithographic plate having the water soluble light sensitive layer thereon and the overcoating of a solvent soluble UV curable material, the intensity of said means being sufficient to form an image in the light-sensitive layer and to adhere the image to the overlying portions of the UV curable material without curing the UV curable material;
- means for developing the plate with water to remove light sensitive layer and overlying UV curable material in the non-image area; and
- means for exposing the plate to a UV source having an intensity greater than the imaging light means of paragraph (b), said UV source having an intensity sufficient to cure the UV material to form a press-ready plate having a durable, reinforced cured image thereon.

4,338,008

# SWITCHING ARRANGEMENT FOR AUTOMATICALLY EFFECTING SELECT PHOTOGRAPHIC FUNCTIONS

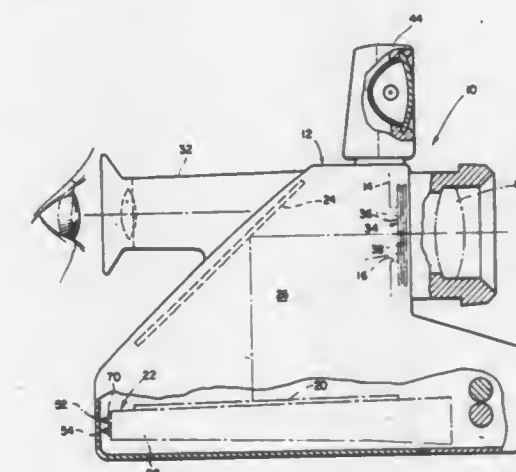
Donato F. Pizzuti, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 9, 1980, Ser. No. 214,476

Int. Cl.<sup>3</sup> G03B 7/24

U.S. Cl. 354—21

7 Claims



1. In a photographic apparatus having means operable for effecting a photographic function, means for defining a receiving chamber capable of removably receiving one of a plurality of selectively dimensioned film containers, means associated with said chamber for sensing different coding arrangements carried on the containers, the coding arrangement being indicative of a particular characteristic of the film contained within



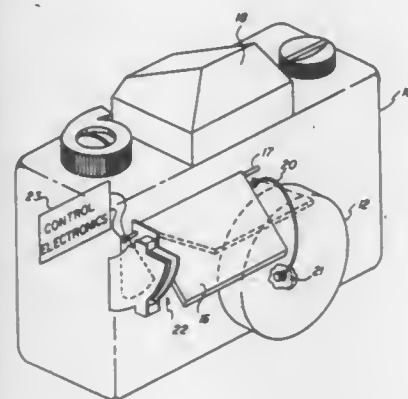
the container, and means responsive to said sensing means for controlling said operable means so as to effect a select photographic function corresponding to the characteristic of the film, the improvement wherein:

said sensing means includes a plurality of sensing arrangements operable between different sensing states, which number of states is in excess of the number of sensing arrangements, responsive to different coding arrangements on respectively different film containers; and said sensing arrangements include a stationary switching member and a pair of movable switching members, each of said movable switching members being independently movable into and out of engagement with said stationary switching member so that individually each of said movable switching members has two states of operation and collectively provide four states of operation, and said means for controlling said operable means includes means for identifying each of said four states and altering said photographic function in accordance therewith.

**4,338,009**  
**BISTABLE ACTUATING MECHANISM FOR OPTICAL APPARATUS**  
James K. Lee, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 8, 1981, Ser. No. 271,151  
Int. Cl.<sup>3</sup> G03B 19/12  
U.S. Cl. 354—152

5 Claims



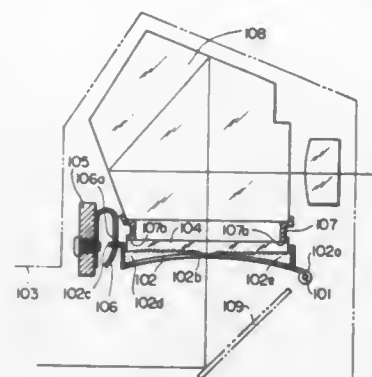
1. In a reflex camera having a viewing mirror moveable about an axis between a viewing position and a taking position, a mirror actuating mechanism, comprising:
  - a. bistable toggle means for (1) urging the mirror toward the viewing position when closer to the viewing position, and (2) urging the mirror toward the taking position when closer to the taking position;
  - b. electromagnetic motor means connected to the mirror axis and responsive to pulses of electrical energy for moving the mirror against the urging of said toggle means to the taking position from the viewing position and to the viewing position from the taking position; and
  - c. drive circuit means responsive to control signals for supplying said pulses of electrical energy to said motor means.

**4,338,010**  
**FOCUSING SCREEN MOUNTING DEVICE**  
Norimichi Takahashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan  
Filed Jan. 22, 1981, Ser. No. 227,559  
Claims priority, application Japan, Feb. 14, 1980, 55-17483[U]  
Int. Cl.<sup>3</sup> G03B 13/00, 19/12  
U.S. Cl. 354—152

5 Claims

1. A focusing screen mounting device for a camera for positioning a focusing screen below a pentaprism comprising: a focusing screen holder secured with a hinge at a rear portion thereof, said focusing screen holder having a locking member at a front portion thereof, said focusing screen being replaceable

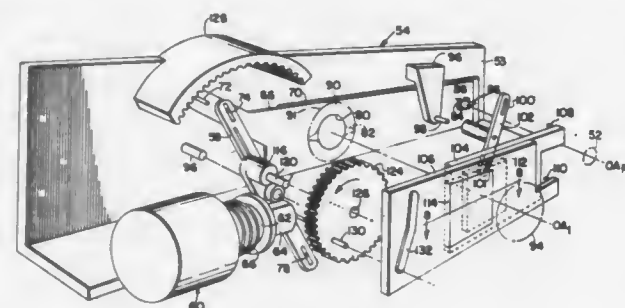
through a camera body mounting opening by releasing said locking member, and at least two entire sides of said focusing



screen holder being flexible to urge said focusing screen towards said pentaprism.

**4,338,011**  
**PHOTOGRAPHIC CAMERA APPARATUS**  
Donato F. Pizzuti, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.  
Filed Mar. 3, 1981, Ser. No. 240,003  
Int. Cl.<sup>3</sup> G03B 3/00  
U.S. Cl. 354—196

23 Claims

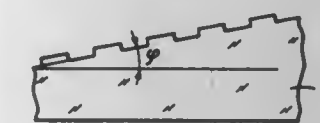


1. Photographic camera apparatus for use in a camera of the type having means for facilitating the positioning of film in a plane for exposure and an optical path along which light from a scene can travel to expose the film, said apparatus comprising:
  - blade apparatus;
  - means for mounting said blade apparatus for displacement between a first arrangement in which said blade apparatus blocks scene light from traveling along the camera optical path thereby precluding scene light from reaching the film plane and a second arrangement in which said blade apparatus unblocks the camera light path, said blade apparatus being structured to define an aperture, aligned with the camera optical path, which varies in size in a predetermined manner during displacement of said blade apparatus between its first and second arrangements;
  - drive means actuable for displacing said blade apparatus between its first and second arrangements to define an exposure interval;
  - variable focus optical means structured to continuously focus scene light from a predetermined range of subject distances onto the film plane, said optical means comprising a pair of optical elements having refractive surfaces configured such that changes in focus are effected by displacing said elements relative to one another in a direction transverse to the optical axes of said elements; and
  - means for coupling said optical means with said blade apparatus so that said optical means changes focus in a predetermined manner in response to the displacement of said blade apparatus between its first and second arrangements, said coupling means and said blade apparatus cooperating so that said optical means focuses at predetermined

subject distances for predetermined sizes of said blade apparatus aperture.

**4,338,012**  
**FOCUSING SCREEN**  
Susumu Matsumura, Kawasaki; Takashi Suzuki, Yokohama; Kazuya Matsumoto, Yokohama, and Kikuo Momiyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan  
Filed Oct. 31, 1980, Ser. No. 204,009  
Int. Cl.<sup>3</sup> G02B 5/04; G03B 13/28  
U.S. Cl. 354—200

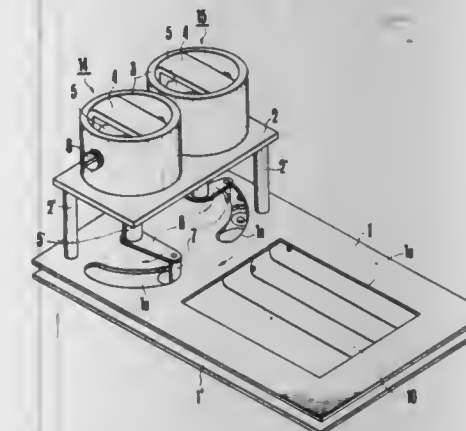
19 Claims



1. In a split-image type range finder system having an objective lens for forming an image plane, a focusing screen comprising:
  - a plurality of light deflecting portions in each of which members of prism-like unit structure are arranged with a period "P" in a direction different from the other, said prism-like unit structure, in the cross-section thereof, having the surface thereof formed by a plurality of inclined surfaces having different angles of inclination with respect to the image plane, said period "P" being greater than 10  $\mu$ m and less than 50  $\mu$ m.

**4,338,013**  
**ELECTROMAGNETICALLY DRIVEN SHUTTER**  
Fumio Shimada, and Nobuaki Date, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Canon Den-shi Kabushiki Kaisha, Saitama, both of, Japan  
Filed Jan. 5, 1981, Ser. No. 222,736  
Claims priority, application Japan, Jan. 10, 1980, 55-1568  
Int. Cl.<sup>3</sup> G03B 9/08; H02K 33/16, 33/18; H01F 7/14  
U.S. Cl. 354—234

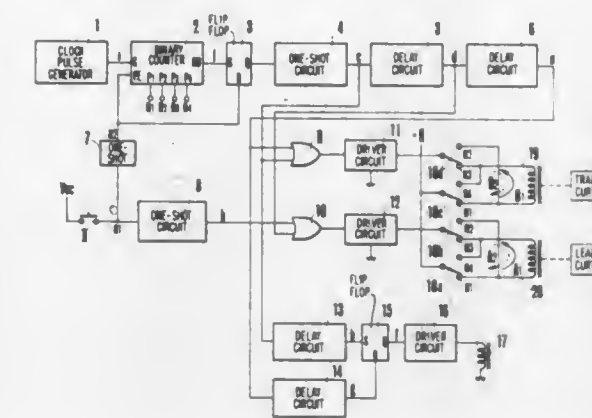
6 Claims



1. An electromagnetically driven shutter, comprising:
  - shutter blades capable of reciprocative movements between positions to start running for an exposure and positions to complete running;
  - electromagnetic driving sources of a reciprocative rotating type for actuating the shutter blades, said driving sources having stators and rotors coupled with the shutter blades; and
  - magnetic members positioned on the stators to face positions of the rotors corresponding to the positions of the shutter blades to start running for holding the rotors at said positions with the attracting power between the rotors and the magnetic members, said magnetic members being operable for regulating gaps between themselves and the rotors.

**4,338,014**  
**ELECTROMAGNETICALLY DRIVEN SHUTTER**  
Syozo Yoshida, Machida, and Yoichi Tosaka, Shakuji, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan  
Filed May 28, 1980, Ser. No. 153,860  
Claims priority, application Japan, May 29, 1979, 54-67161  
Int. Cl.<sup>3</sup> G03B 9/08  
U.S. Cl. 354—234

5 Claims

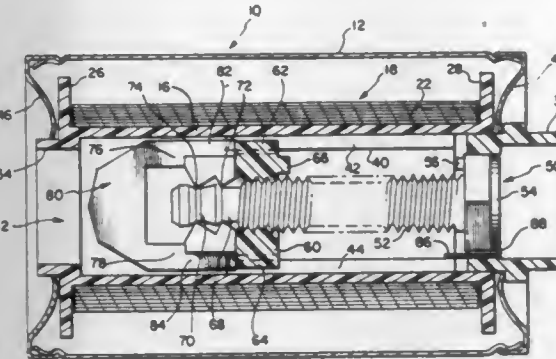


1. An electromagnetically driven shutter apparatus for a camera comprising:
  - (a) a leading shutter member and a trailing shutter member;
  - (b) a first electromagnetic device for driving the leading shutter member, said device having a first electromagnetic coil;
  - (c) a second electromagnetic device for driving the trailing shutter member, said device having a second electromagnetic coil;
  - (d) first and second changeover switches connected to one end and an opposite end of said first electromagnetic coil, said first and said second changeover switches being switchable between a first position in which said first electromagnetic coil can be supplied with electric current flowing in one direction therethrough to effect movement of said leading shutter member for an exposure purpose, and a second position in which said first electromagnetic coil can be supplied with electric current flowing in an opposite direction therethrough to effect return movement of said leading shutter member;
  - (e) third and fourth changeover switches connected to one end and an opposite end of said second electromagnetic coil, said third and fourth changeover switches being switchable between a first position in which said second electromagnetic coil can be supplied with electric current flowing in one direction therethrough to effect movement of said trailing shutter member for completion of an exposure, and a second position in which said second electromagnetic coil can be supplied with electric current flowing in an opposite direction therethrough to effect return movement of said trailing shutter member;
  - (f) connecting means connectable to an electrical power source having a positive pole and a negative pole, said connector means being arranged for connecting the positive pole to said first and said third changeover switches, and connecting the negative pole to said second and said fourth changeover switches; and
  - (g) a circuit arrangement, said circuit arrangement including an electromagnetic relay for controlling the movement of said changeover switches from one of said positions to the other and a control circuit responsive to the completion of an exposure for causing said relay to move the changeover switches to the second position after completion of an exposure and thereafter moving all of said changeover switches to the first position.



**4,338,015**  
**35 MM CASSETTE WITH FILM REWIND LIMIT, EXPOSURE INDICATOR, AND FILM RELEASE**  
 William A. Holmes, Marblehead, Mass., assignor to Polaroid Corporation, Cambridge, Mass.  
 Filed Mar. 3, 1981, Ser. No. 240,014  
 Int. Cl.<sup>3</sup> G03B 17/26; B65H 75/28  
 U.S. Cl. 354—275

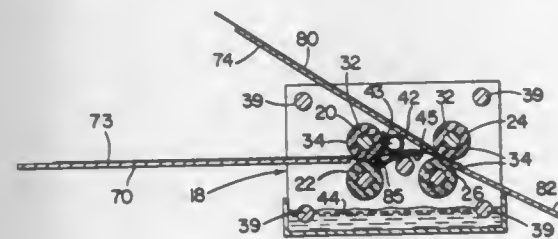
22 Claims



20. A photographic film assemblage comprising: a film cassette including means defining an exit through which a strip of film may pass; means for supporting a strip of film, said supporting means being rotatably supported within said film cassette; a strip of film coiled about said supporting means with a first end thereof being adapted to extend to the exterior of said film cassette via said exit and a second end thereof releasably coupled to said supporting means; exposure indicating means mounted for movement between a first position which indicates that said strip of film has not been completely exposed, and a second position which indicates that said strip of film has been completely exposed; and means, responsive to the uncoiling of said strip of film during exposure thereof, for moving said exposure indicating means into said second position subsequent to the last frame in said strip of film being exposed.

**4,338,016**  
**DIFFUSION-TRANSFER PROCESSOR**  
 Gene E. Peck, Sun Valley, and Bruce Cooperberg, North Hollywood, both of Calif., assignors to Insta-Print, Incorporated, North Hollywood, Calif.  
 Filed Jun. 29, 1981, Ser. No. 278,723  
 Int. Cl.<sup>3</sup> G03B 9/00  
 U.S. Cl. 354—303

15 Claims

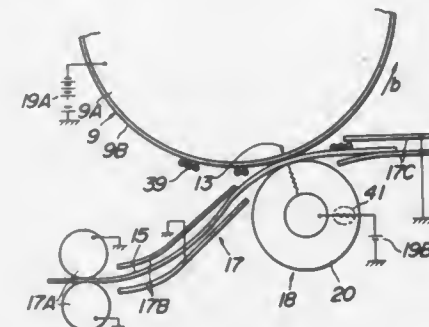


1. An improved diffusion-transfer processor for photomechanical reproduction of artwork and like mediums, comprising: a first pair of rollers positioned in parallel engagement with each other, and adapted to receive a negative paper; a second pair of rollers positioned in parallel engagement with each other, and spaced rearwardly of said first pair of rollers, said second pair of rollers being adapted to receive said negative paper and a receiver paper simultaneously therebetween; means for continuously supplying an activator solution so as to bathe said negative and receiver papers in said activator solution, prior to said papers passing between said second pair of rollers;

a first drive means coupled to at least one of said rollers of said first pair of rollers; a second drive means coupled to at least one of said rollers of said second pair of rollers; and means connected to said second drive means to control the starting time of said second drive means relative to the starting of said first drive means, whereby said negative and said receiver papers will engage in a selected alignment with each other.

**4,338,017**  
**ELECTROPHOTOGRAPHIC APPARATUS**  
 Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan  
 Filed Jan. 9, 1981, Ser. No. 223,692  
 Claims priority, application Japan, Feb. 7, 1980, 55/13063  
 Int. Cl.<sup>3</sup> G03G 15/00  
 U.S. Cl. 355—3 TR

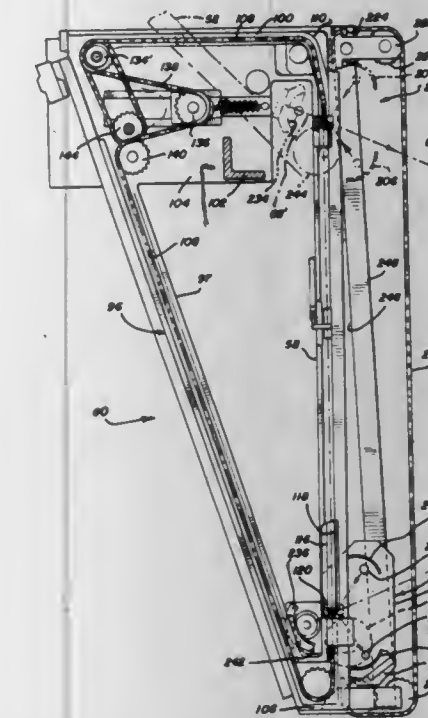
3 Claims



1. In an electrophotographic apparatus comprising an electric charge holding member supported by at least an electrically conductive body, a developing device for developing an electrostatic latent image produced on said electric charge holding member into a visible image, a transfer device including a transfer roller arranged in contact with said electric charge holding member, and an image receiving paper feed means for feeding the image receiving paper through a toner image transfer portion where said electric charge holding member makes contact with said transfer roller, and operative to repeat developing and transfer steps with respect to the electrostatic latent image once produced on said electric charge holding member and to form the same picture image on a plurality of image receiving papers, the improvement comprising a main transfer bias electric source connected between said electrically conductive body and ground and having a terminal for applying a bias voltage having a polarity which is the same as a toner charging polarity to said electrically conductive body, an auxiliary transfer bias electric source connected between said transfer roller and ground and having a terminal for applying a bias voltage having a polarity which is opposite to the toner charging polarity, and an image receiving paper feed path member for constituting said image receiving paper feed means, at least one portion of said image receiving paper feed path member being connected to ground, whereby said transfer bias voltage is automatically lowered when the resistance value of said image receiving paper is decreased due to its humid absorption property under a high humid condition or the like so as to prevent an undesired electric charge from injecting onto a non-picture image portion of said electrostatic latent image.

**4,338,018**  
**LIGHT SCANNING ASSEMBLY FOR ELECTROPHOTOGRAPHIC PRINTING PLATE MAKING APPARATUS**  
 Manfred R. Kuehnle, New London, N.H., and James C. Compton, Marlborough, Mass., assignors to Coulter Systems Corporation, Bedford, Mass.  
 Filed Apr. 11, 1980, Ser. No. 139,465  
 Int. Cl.<sup>3</sup> G03G 15/28  
 U.S. Cl. 355—8

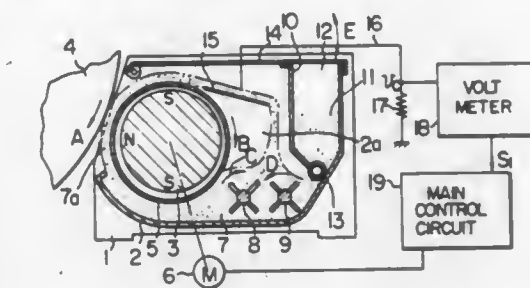
17 Claims



1. In apparatus, including a chassis enclosure in which a copyboard and a platen is arranged, for producing a toned image on an electrophotographic member carried by the platen for the purpose of making said member into a graphic arts printing plate directly from a pattern carried by the copyboard, the electrophotographic member being mountable on the platen with the photoconductive coating surface exposed, the copyboard being arranged for progressive illumination thereacross cooperating with a fixed optical system for directing radiant energy in the form of light from the pattern to the exposed photoconductive coating surface continuously and in synchronism with the movement of a carriage in one direction wherein the carriage carries charging means, a slit and toning means arranged in that order, the carriage constructed to obstruct the exposed photoconductive coating surface from said radiant energy when moving in said one direction but for the slit; light scanning assembly means for progressively illuminating the pattern on the copyboard with radiant energy; the improvement comprising first and second illuminating lamp means, a bracket plate assembly for mounting said first and second illuminating lamp means transverse to the copyboard superposed, aligned, spaced one above the other and in scanning condition relative to the pattern carried by said copyboard and drive means for progressively moving said bracket plate assembly and lamp means synchronously with the carriage, each said lamp means having reflector means associated therewith and arranged in relationship thereto so as to form a beam of radiant energy directed toward the said pattern, the pair of resulting beams intersecting at the pattern for illuminating same, said lamp and reflector means being pivotably mounted for limited rotation along a predetermined arc during movement of said assembly and lamp means transverse the pattern whereby to maintain the intersecting relationship for the full traversal of said copyboard, with the beam of radiant energy formed thereby directed along a line of sight which is the shortest distance from the lamp to the said central axis continuously intersecting the same point on the central axis of the fixed optical system throughout travel of said assembly across the copyboard.

**4,338,019**  
**METHOD FOR OPERATING ELECTROPHOTOGRAPHIC COPYING APPARATUS**  
 Isamu Terashima, Shigeru Uchida, and Eiichi Senba, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
 Filed Nov. 20, 1980, Ser. No. 208,580  
 Claims priority, application Japan, Nov. 26, 1979, 54/151972  
 Int. Cl.<sup>3</sup> G03G 15/00  
 U.S. Cl. 355—14 D

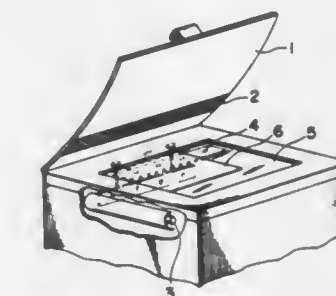
7 Claims



1. In a method for operating an electrophotographic copying apparatus having a latent image forming unit for forming an electrostatic latent image on a recording medium, a development unit for visualizing the electrostatic latent image with a developer containing toner and carrier to produce a visible toner image, and a fixing unit for fixing the toner image, said method comprising the steps of: racing said development unit prior to the normal developing operation until the amount of charge on the toner in the developer reaches a predetermined level; and thereafter commencing the electrophotographic copying procedure.

**4,338,020**  
**DEVICE FOR DETECTING THE SIZE OF THE MATERIAL TO BE COPIED IN COPYING MACHINES**  
 Koji Yukawa, Hachioji; Masayuki Miyazaki, Tam, and Takashi Murahashi, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan  
 Filed Jul. 28, 1980, Ser. No. 172,821  
 Claims priority, application Japan, Aug. 1, 1979, 54-97400  
 Int. Cl.<sup>3</sup> G03B 27/52  
 U.S. Cl. 355—41

8 Claims



1. A device for determining the size of an original or material to be copied in the copying machine so that appropriately sized transfer paper can be selected and fed in the copying machine comprising a colored member having a certain color and which is used as means for detecting the size of the original; a light emitting member for throwing light upon the colored member; and a light receiving member responsive to said certain color for receiving light which has impinged upon the colored member; whereby at least a part of the light irradiated from the light emitting member to the light receiving member is intercepted by the original placed on the copy board so as to cause the light receiving member to provide an output signal indicative of the size of the original.



4,338,021

## IMAGING APPARATUS

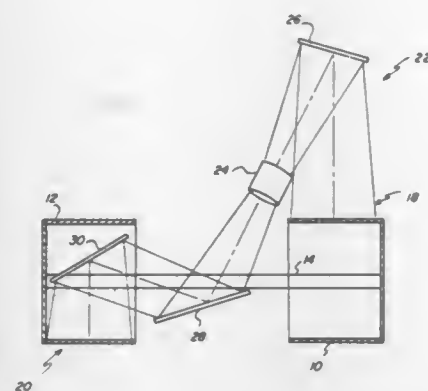
Pierce B. Day, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 6, 1981, Ser. No. 232,086

Int. Cl.<sup>3</sup> G03B 27/48

U.S. Cl. 355—49

4 Claims



1. A migration imaging copier/duplicator comprising: a document drum having a generally cylindrical outer surface for receiving a document to be copied; a transparent imaging drum having a generally cylindrical outer surface; a shaft coupled to said document drum and said imaging drum for simultaneously rotating said drums, said drums being coaxial with each other and with said shaft; and an optical system for imaging a rectangular area of a document on the document drum through the imaging drum and onto the outer surface of the imaging drum, the optical system being offset from the shaft so that the shaft is outside the path of the principal light rays through the optical system.

4,338,022

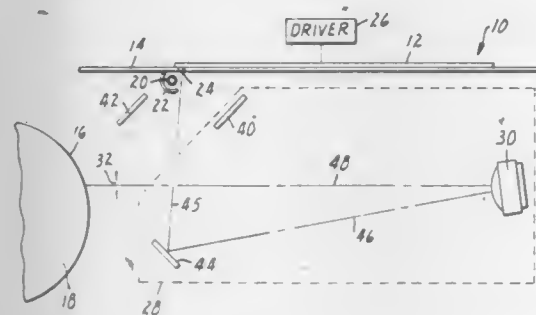
MULTIPLE MAGNIFICATION OPTICAL ASSEMBLY  
Laszlo D. Farago, Afton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 22, 1980, Ser. No. 218,846

Int. Cl.<sup>3</sup> G03B 27/50, 27/70

U.S. Cl. 355—60

4 Claims



1. A variable magnification optical assembly for use in a scanning type reproduction device comprising: a housing member having an object window and an image window fixed thereon; a carriage member; means mounting said members for relative linear movement between a first and a second position; and light path means for defining a first light path between said windows when said members are in their first position, and for defining a second light path between said windows when said members are in their second position; said first light path and said second light path having different magnification ratios and having a common light path portion; and light path means comprising a reflex lens fixed on said carriage member and positioned to receive and reflect light along said common light path portion in both of said positions, and a plurality of mirrors compris-

ing a first mirror mounted on said carriage, and a second mirror mounted on said housing, said first mirror being spaced from said first light path when said members are in their first relative position, and intercepting said first light path to direct light along said second light path via said second mirror when said members are in said second position.

4,338,023

JOB RECOVERY HIERARCHY IN A REPRODUCTION MACHINE

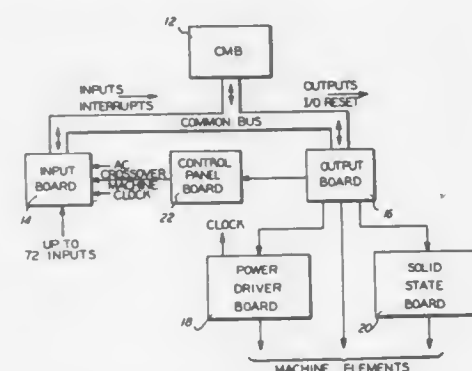
Gary M. McGibbon, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 28, 1980, Ser. No. 115,970

Int. Cl.<sup>3</sup> G03G 15/00

U.S. Cl. 355—14 SH

11 Claims



1. In a reproduction machine having resources including a processor, a main tray paper feeder, a recirculating document handler tray, a duplex tray, an output tray and a control, a method of job recovery comprising the steps of detecting malfunctions, determining the resources affected by the malfunction, deciding a recovery procedure to minimize loss of copy sheets related to the resources pointing to an appropriate boundary, recovering from the malfunction and continuing operation.

4,338,024

FLOW ANALYZER AND SYSTEM FOR ANALYSIS OF FLUIDS WITH PARTICLES

Gunner Bolz, Del Mar, and Sherman E. DeForest, Encinitas, both of Calif., assignors to International Remote Imaging Systems, Inc., Chatsworth, Calif.

Filed May 2, 1980, Ser. No. 146,064

Int. Cl.<sup>3</sup> G01N 33/48, 21/05

U.S. Cl. 356—23

16 Claims

1. Apparatus for analysis of particles in a fluid which comprises a flow chamber having an inlet and an outlet and shaped to convey fluid from the inlet to the outlet with particles in the fluid suspended in a path, a portion of said path having a width substantially greater than its thickness; said path shaped to convey said fluid such that said particles are aligned in the flow stream substantially with their minimum cross-sectional area extended transverse to their direction of flow and their maximum cross-sectional area extended substantially parallel to said width; microscopic means adapted to be focused on the path includ-

ing an area of the path substantially greater than the area of the largest of the particles, and

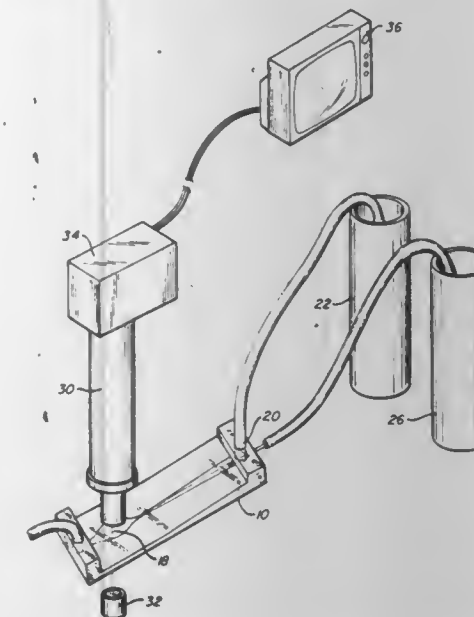


image pick-up means for picking up substantially still frame images of particles in the path through the microscopic means.

4,338,025

IDENTIFICATION CARD, SENSOR, AND SYSTEM

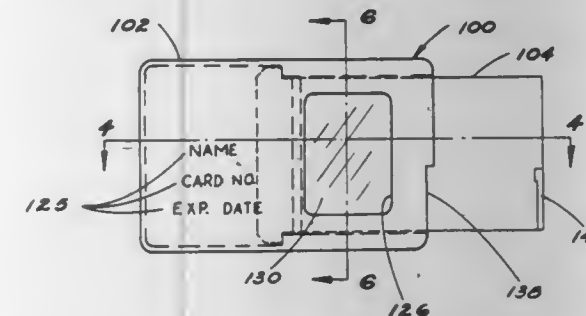
Elton D. Engel, 34005 LaMoyn, Livonia, Mich. 48154  
Division of Ser. No. 895,011, Apr. 10, 1978, Pat. No. 4,202,120.

This application Mar. 3, 1980, Ser. No. 126,409

Int. Cl.<sup>3</sup> G06K 9/00; B42D 15/02; G03B 23/00

U.S. Cl. 356—71

1 Claim



1. In a thumbprint or fingerprint identification system wherein a user first manually associates his own identification card with a sensor assembly to initiate an identification transaction and then places his thumbprint or fingerprint on a transparent area of the card so that the sensor can scan the print, the improvement comprising means for preventing the user from disassociating the card from the sensor until the residual print is wiped from the transparent area.

4,338,026

APPARATUS FOR DETERMINING PROPERTIES OF MATTER

Wolfgang N. Garwoll, North Balwyn, Australia, assignor to The State of Victoria, Victoria, Australia

Filed Oct. 9, 1979, Ser. No. 83,108

Claims priority, application Australia, Oct. 9, 1978, PD6290; Oct. 9, 1978, PD6291; Oct. 9, 1978, PD6292; Oct. 9, 1978, PD6293

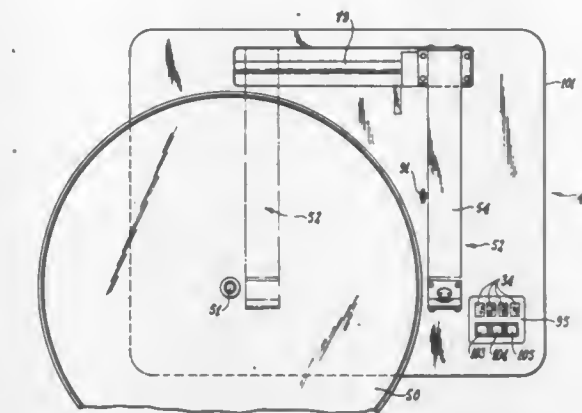
Int. Cl.<sup>3</sup> G01B 11/04, 11/08

U.S. Cl. 356—73

9 Claims

1. Apparatus for scanning and measuring physical characteristics of a plant root sample comprising a scanning zone in which the root sample, which has been cut indiscriminantly into discrete lengths, may be uniformly distributed and randomly orientated; scanning means; transport means for producing relative movement between said scanning zone and said

scanning means, said transport means defining a substantially spiral primary scan path between said scanning zone and said scanning means, said scanning means including at least one irradiation means arranged to irradiate a portion of said scanning zone, and at least one radiation detector responsive to the



irradiation from said irradiation means for producing an output indicating the presence or otherwise of a discrete length of root in said portion; and processing means for processing the output of said detector to provide a measure of at least one characteristic of the sample.

4,338,027

LINE OF SIGHT WHEEL ALIGNMENT APPARATUS FOR VEHICLES

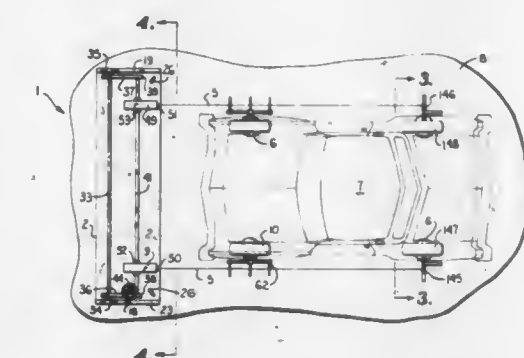
Leonard F. Eck, McPherson, Kans., assignor to Kansas Jack, Inc., McPherson, Kans.

Continuation-in-part of Ser. No. 940,823, Sep. 8, 1978, abandoned. This application Oct. 15, 1979, Ser. No. 84,873

Int. Cl.<sup>3</sup> G01B 11/26

U.S. Cl. 356—155

28 Claims



1. Apparatus for checking wheel alignment of a wheeled vehicle comprising:

- (a) a base structure having a surface supporting a wheeled vehicle for alignment checks thereof;
- (b) target structure mountable on the wheels of a vehicle and having scaled targets located thereon in diametrically opposed relation and laterally outwardly of the wheels;
- (c) laterally spaced laser beam projecting members spaced longitudinally from and aligned with the target structure and spaced generally laterally from the longitudinal axis of the vehicle;
- (d) a support structure for said laser beam members having spaced apart standards and a shaft member extending therebetween; said shaft having spaced arms;
- (e) means rotatably mounting said spaced arms on said standards with said shaft radially outwardly from said rotatable mounting means;
- (f) means adjustably rotating said arms for raising and lowering said arms and the shaft thereon to vary the spacing from the base surface;
- (g) means pivotally mounting the shaft on the arms for ad-



justing the angle of said laser beams relative to the base surface;  
 (h) means movably mounting the laser beam members on the shaft for adjusting the lateral spacing thereof; and  
 (i) means for positioning the vehicle and laser beam members relative to the base surface for the laser beam members to project laser beams parallel to the longitudinal axis of said vehicle and spaced therefrom for impingement on the scaled targets on the respective wheels of said vehicle.

4,338,028

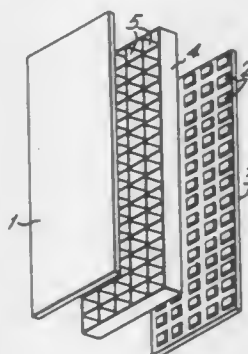
# APPARATUS FOR INSPECTING TRANSLUCENT ARTICLES FOR FAULTS

Andre Tailleux, Gennevilliers, France, and Brendan F. O'Connor, Dublin, Ireland, assignors to Udaras Na Gaeltachta, Furbo, Ireland and Societe Generale pour l'Emballage, Paris, France

Filed Feb. 25, 1980, Ser. No. 124,020

Claims priority, application Ireland, Feb. 26, 1979, 320/79  
 Int. Cl.<sup>3</sup> G01N 21/90

U.S. Cl. 356—240



1. In an apparatus for detecting the presence of faults in an article of translucent material, the apparatus comprising means for generating a spot beam of light and causing it to repeatedly scan in a first direction, means for transporting the translucent material of the article past the spot beam of light in a second direction non-parallel to the first direction so that the surface of the translucent material is repeatedly scanned by the beam in a direction non-parallel to the direction of motion of the material, and a light collection apparatus arranged to receive light from the beam after passing through the translucent material, the improvement wherein the light collection apparatus comprises a light-diffusing screen having a front surface positioned to receive light from the translucent material and a rear surface facing a matrix of photosensitive devices each arranged to provide an electric output signal dependent upon the amount of light emerging substantially only from the rear surface of a respective elemental area of the screen, the apparatus further comprising electrical circuit means for detecting substantially non-occlusive refractive faults in the article by selectively examining different combinations of the output signals of the photosensitive devices in dependence upon the position of the beam.

4,338,029

# MINERAL EXPLORATION

Denis J. C. Macourt, 73 Dickson Ave., Artarmon, New South Wales, Australia

Filed Nov. 28, 1978, Ser. No. 964,121

Int. Cl.<sup>3</sup> G01N 21/62, 31/12, 33/24

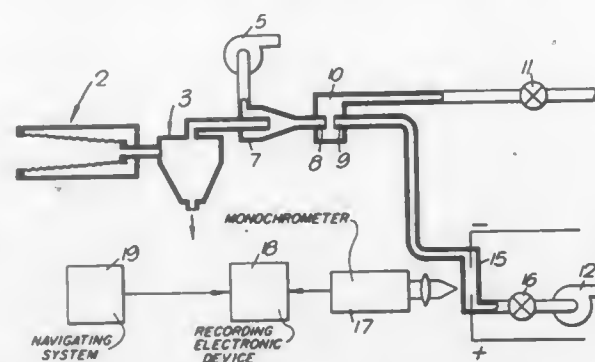
U.S. Cl. 356—311

21 Claims

1. A method of mineral exploration which comprises the steps of: traversing an area to be explored; sampling atmospheric air while conducting such traverse; separating charged molecules and charged clumps of molecules from such sampled air; determining the extent to which substances indicative of a mineral deposit are present in such charged molecules and charged clumps of molecules and determining

whether such substances are present to an anomalous extent indicative of a mineral deposit.

15. Apparatus for use in mineral, in particular hydrocarbon, exploration by traversing an area to be explored, such apparatus comprising means defining an intake for sampling air; a centrifuge to concentrate charged molecules and charged



11 Claims

clumps of molecules occurring in the sampled air and to reject extraneous matter from the air; means to separate the concentrated charged molecules and charged clumps of molecules from such sampled air; and means for determining the extent to which substances indicative of a mineral deposit are present in such charged molecules and charged clumps of molecules.

4,338,030

# DISPERSIVE INSTRUMENT FOR MEASUREMENT OF PARTICLE SIZE DISTRIBUTIONS

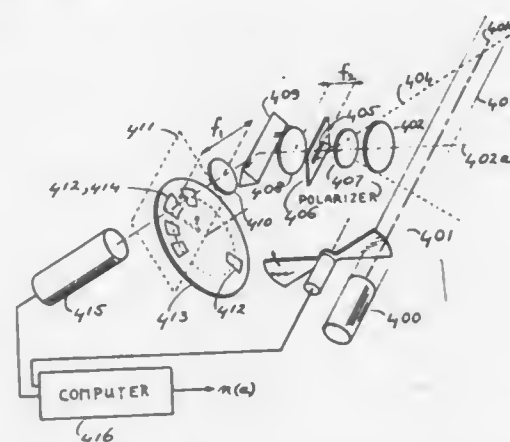
Hendricus G. Loos, 3019 Cresta Way, Laguna Beach, Calif. 92651

Continuation-in-part of Ser. No. 919,281, Jun. 26, 1978, Pat. No. 4,245,909, and a continuation-in-part of Ser. No. 113,673, Jan. 21, 1980. This application Mar. 18, 1980, Ser. No. 131,414

Int. Cl.<sup>3</sup> G01N 15/02

U.S. Cl. 356—336

47 Claims



1. A method for measurement of the size distribution of particles suspended in a gas or a liquid, comprising: passing into the particle suspension an illuminating beam comprising a substantially collimated beam of substantially white light; with a lens collecting part of the light scattered by the particles; passing the collected light through a slit in an opaque screen located in the focal plane of said lens; passing the light transmitted by said slit through a dispersive element such as to produce, in the exit plane of the dispersive element, a spectral decomposition in a direction perpendicular to said slit, and such that a monochromatic point source in said slit produces a sharp image in said exit plane; sequentially placing the members of a set of spatial filters in an image window located in said exit plane; collecting the light transmitted by each of said spatial filters sequentially by a photodetector to produce a signal sub-

stantially proportional to light transmitted by respective filters; acting on the resulting photodetector signal sequence by a linear transformation; and using the resulting data sequence a coefficients in a linear combination of basis functions to yield the particle size distribution.

4,338,031

# LASER GRADE, ELEVATION, CURVE SURVEYING SYSTEM

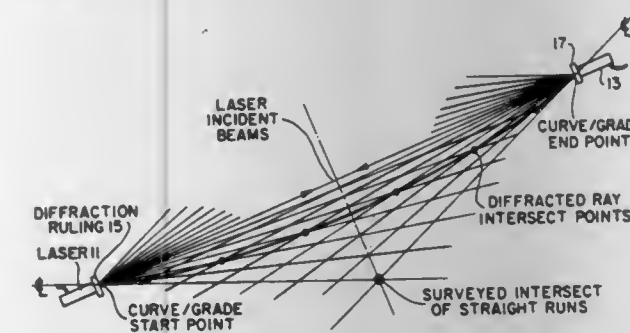
John M. Miller, Huntington Station, and Richard O. Barton, Levittown, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 4, 1980, Ser. No. 137,367

Int. Cl.<sup>3</sup> G01B 9/02, 11/02, 11/26

U.S. Cl. 356—356

8 Claims



1. A laser surveying method for defining the path of a curved track, said method comprising: projecting a first diffracted fan of laser beams from a first point along the track, projecting a second diffracted fan of laser beams from a second point along the track as to traverse said first fan of laser beams, marking selected points at which said first and second fans of laser beams intersect, connecting said selected points as to define a curved track.

4,338,032

# DETECTION OF FAULTS IN SHEET AND LIKE MATERIALS

Harold B. Bardsley, Euxton; Edward C. Lear, Turton, near Bolton, and J. Robert Jones, Chadderton, all of England, assignors to Spencer Wright Industries, Inc., Chattanooga, Tenn.

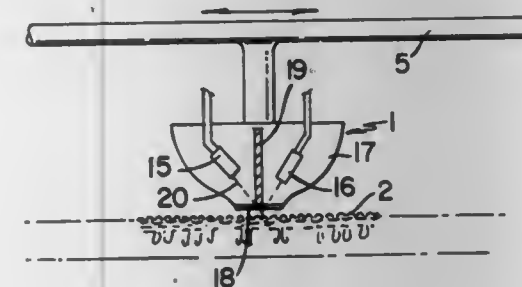
Filed Jan. 31, 1980, Ser. No. 117,019

Claims priority, application United Kingdom, May 18, 1979, 7917452

Int. Cl.<sup>3</sup> G01N 21/19

U.S. Cl. 356—431

6 Claims



1. Apparatus for detecting faults in an advancing sheet of fabric material comprising a radiation transmitter, means mounting said transmitter for directing radiation at one surface of said material, a plurality of detectors sensitive to the radiation transmitted by said transmitter for generating an electrical output representative thereof, mounting means including a support carrying said detectors for receiving radiation from said material, rigid cam drive means for drivingly oscillating

said support a predetermined distance continuously in a linear path in a first transverse direction relatively to the direction of advancement of the material and then in the reverse direction, and monitoring means connected to said detectors for monitoring said electrical output to detect deviations from a norm, said cam drive means comprising a cam plate constrained for linear movement and a follower channel including first and second opposed cam surfaces, said surfaces being substantially transverse to said linear path, a rotatable disc, a follower eccentrically fastened to said disc and disposed in said channel, means for rotating said disc to force said follower successively against said first cam surface and then against said second cam surface to drive said cam plate, and means connecting said cam plate to said support.

4,338,033

# DENSITOMETER

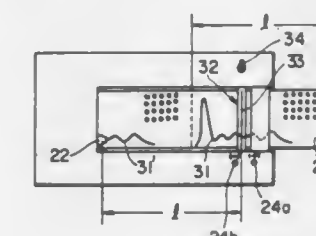
Yutaka Kato, Tamo, and Ryo Fujimori, Hachioji, both of Tokyo, Japan, assignors to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jun. 2, 1980, Ser. No. 155,383

Claims priority, application Japan, Jun. 8, 1979, 54-78001[U]  
 Int. Cl.<sup>3</sup> G01N 21/01; G01J 1/42

U.S. Cl. 356—444

1 Claim



1. A densitometer comprising a recorder so adapted as to be capable of recording two analog densitograms on the basis of a single set of analytical data at a definite recording interval, an index arranged at a position apart by a distance equal to said recording interval from the recording pen of said recorder, a first pushbutton for setting boundary point on said analog densitogram recorded for the second time and a second pushbutton for commanding erasure of boundary point on said analog densitogram, said densitometer being so adapted as to process analytical data while processing a point as a boundary point when the first pushbutton is depressed the moment that said point becomes coincident with said index and while erasing a valley on said densitogram traced for the second time when said second pushbutton is depressed before said valley on the first densitogram becomes coincident with said index.

4,338,034

# PRINT WHEEL POSITIONING MEANS

Egon S. Babler, Northbrook, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 18, 1980, Ser. No. 141,445

Int. Cl.<sup>3</sup> B41J 1/24

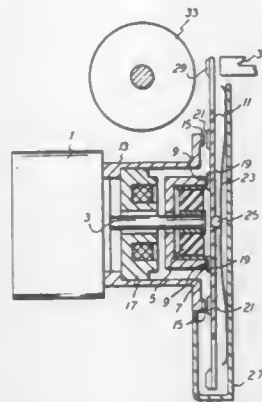
U.S. Cl. 400—144.2

4 Claims

1. A print wheel aligning apparatus comprising a print wheel mounted for rotation, said print wheel having coarse alignment means and fine alignment means thereon, drive means for rotating said print wheel, said drive means mounted for movement into and out of contact with said coarse alignment means, means for moving said drive means into and out of contact with said coarse alignment means, fixed fine alignment means positioned to contact said fine alignment means on said print wheel and provide fine alignment thereof, a housing structure, said fixed fine alignment means being fixed in both axial and



rotative directions relative to said housing, and means to urge said print wheel fine alignment means into contact with said



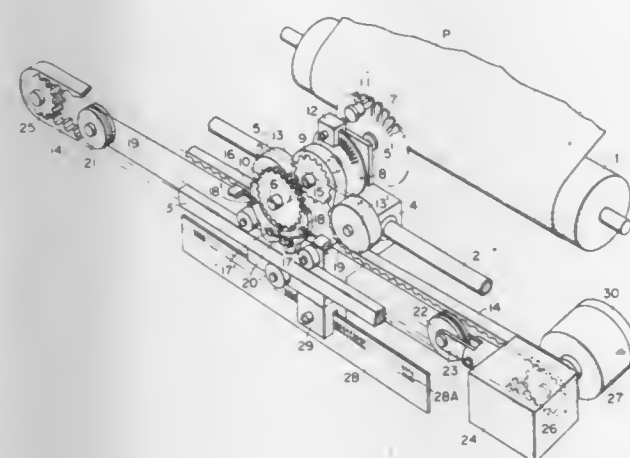
fixed fine alignment means when said drive means is moved out of contact with said coarse alignment means.

#### 4,338,035 PRINTER

Hiroatsu Kondo, Zushi; Toshiaki Ozawa, Chiba, and Yasuaki Yamada, Funabashi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 176,794  
Int. Cl.<sup>3</sup> B41J 1/08

U.S. Cl. 400—144.2



1. A printer provided with a carriage movable parallel with an axis of a platen for advancing a recording medium, comprising:

- a shaft rotatably mounted on said carriage;
- a character wheel fixed on said shaft;
- a pulley fixed on said shaft; and
- means having a first state for inhibiting rotation of said shaft and thereby causing movement of said carriage and having a second state for inhibiting movement of said carriage and thereby causing rotation of said shaft; said means comprising
- a guide member parallel with said axis of said platen for guiding said carriage, a rotatable member fixed on said shaft and an engaging member for engaging said rotatable member in said first state and for engaging said guide member in said second state.

#### 4,338,036 TAPERED BUSHING AND HUB ASSEMBLY FOR SHEAVES, GEARS, SPROCKETS, COUPLINGS AND SIMILAR MACHINE ELEMENTS

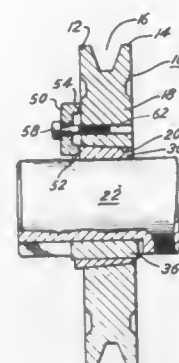
Robert P. DeLeu, South Bend, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.

Filed Dec. 31, 1979, Ser. No. 108,635

Int. Cl.<sup>3</sup> F16D 1/06; F16B 3/00

U.S. Cl. 403—16

9 Claims



1. A tapered bushing and hub assembly for mounting sheaves, gears, sprockets, couplings and similar machine elements on shafts, comprising a hub with a shaft bore having an annular tapered inner surface, a split bushing disposed in said hub and having an annular tapered outer surface for face-to-face contact with the tapered surface on said hub, a plurality of threaded holes spaced outwardly from said bushing and extending parallel with the axis of said bore, separate lugs for said holes having opposite ends, one end of which seating on the large end of said bushing and the other end of which seating on said hub, each of said lugs having a hole between the ends thereof, and screws extending through said holes in said lugs and threadedly received in said holes for pressing said lugs against said hub and bushing and thereby urging said bushing into said bore for contracting said bushing onto the shaft, the holes in said lugs being sufficiently larger than the respective screw to permit tilting of the lug relative to the screw as the screw presses the bushing into the hub.

#### 4,338,037 MULTIPLE JACKSCREW ROD TO CROSSHEAD MOUNTING

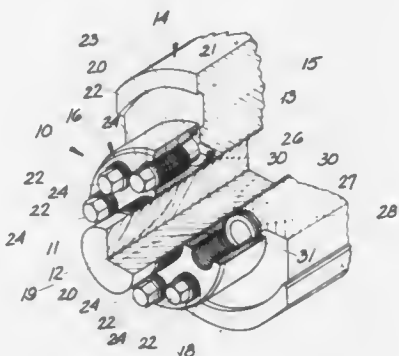
Richard M. Deminski, Mt. Vernon, Ohio, assignor to The Yorde Machine Products Company, Nelsonville, Ohio

Filed Aug. 8, 1980, Ser. No. 176,490

Int. Cl.<sup>3</sup> F16D 1/00

U.S. Cl. 403—24

12 Claims

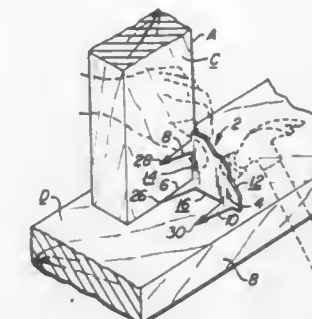


1. A piston rod to crosshead mounting for use in reciprocating compressors having a generally cylindrical piston rod threadedly engaging a crosshead, said mounting comprising:

- a crosshead nut including spaced inner and outer faces, a centrally located threaded through bore for threadedly engaging a cooperating threaded portion of the piston rod, and a plurality of threaded spaced bores spaced from and surrounding said through bore; and

a jackscrew threadedly engaged in each of said spaced bores, each of said jackscrews including means positioned on one end thereof for tightening said jackscrew to a predetermined torque value and a bearing pad having means swivelably connecting said pad to the other end of said jackscrew, said pad having a bearing surface configured to seat against the adjacent crosshead surface, said bearing pad being free to adjust itself to any out-of-squareness of the adjacent crosshead surface.

relationship relative to each other to terminate at an apex thereof, and



#### 4,338,038 BALL-AND-SOCKET JOINT FOR MULTIARTICULATE ARM

Laurent Cloarec, Noisy-le-Roi, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

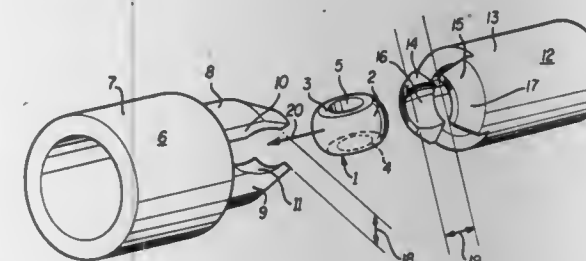
Filed Jan. 11, 1980, Ser. No. 111,347

Claims priority, application France, Jan. 17, 1979, 79 01070

Int. Cl.<sup>3</sup> F16C 11/06, 11/00; F16D 1/12

U.S. Cl. 403—56

6 Claims



1. A ball-and-socket joint assembly for a disassemblable type multiarticulate arm, comprising:

- a ball of a first predetermined diameter having a partially spherical shape limited by two parallel planar surfaces a first predetermined distance apart and equidistant from the center of said ball and having a center bore of a second smaller diameter perpendicular to said parallel planar surfaces;

first and second tubular elements, each having a fork formed by a pair of circumferentially curved arms extending parallel to the axis of said tubular elements from adjacent outer ends and meshing with each other so as to enclose said ball, wherein the distance between the extreme ends of said pair of curved arms is less than said first predetermined diameter and at least equal to said first distance; and each of said pair of curved arms including concave inner spherical surfaces forming a socket within which said ball is disposed, said concave inner spherical surfaces having a diameter corresponding to said first predetermined diameter such that the center of each of said concave inner spherical surfaces and the center of said ball coincide when assembled and said concave inner spherical surfaces of said pair of curved arms are elastically maintained in contact with said ball in opposition to longitudinal dislodging forces.

a plurality of laterally spaced and generally parallel shanks extending away from said bearing surfaces and said head surface.

#### 4,338,040 WHALER RETAINER

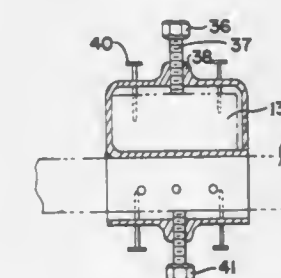
James H. Hawkins, 27796 Seco Canyon, Saugus, Calif. 91350

Filed Jan. 30, 1981, Ser. No. 230,128

Int. Cl.<sup>3</sup> F16B 2/02; E04G 7/12

U.S. Cl. 403—385

4 Claims



1. A whaler retainer for temporarily supporting a pair of overlapping beams at a predetermined angle with respect to each other, the combination comprising:

- a box-like housing having a pair of open-ended passageways extending normal with respect to each other so as to insertably receive the opposing and adjacent ends of said beams;
- said housing being provided with a plurality of holes in the top and a side wall of each of said housing passageways; impact fasteners adapted to be forcibly urged into each of said beams via said plurality of holes;
- said housing passageways being disposed over each other so that inserted beams overlap;
- adjustable fastening means operably carried on the opposite top walls of said housing passageways for movement into and out of each of said passageways to releasably retain said beams in their respective passageways;
- said adjustable fastening means includes a pair of rotary members threadably engaged with each of said opposite top walls of said housing passageways, and with all the walls of one of said housing passageways being part of a unitary piece.

#### 4,338,041 GLAREFOIL ASSEMBLY

Donald W. Schimanski, P.O. Box 1298, Carson City, Nev. 89701

Filed Jan. 12, 1981, Ser. No. 224,261

Int. Cl.<sup>3</sup> E01F 9/00

U.S. Cl. 404—9

16 Claims

1. A glarefoil assembly for mounting to a median barrier along a divided highway, comprising:

- at least one elongated base runner section having a bottom face for attachment to said median barrier and a top face opposing said bottom face, said base runner section having sufficient length to accept a substantial transfer of vibrational energy from an attached external source;

#### 4,338,039 TOENAIL

Guillermo A. Demonty, 119 Nova Albion Way, San Rafael, Calif. 94903

Filed Mar. 3, 1980, Ser. No. 126,500

Int. Cl.<sup>3</sup> F16B 1/00

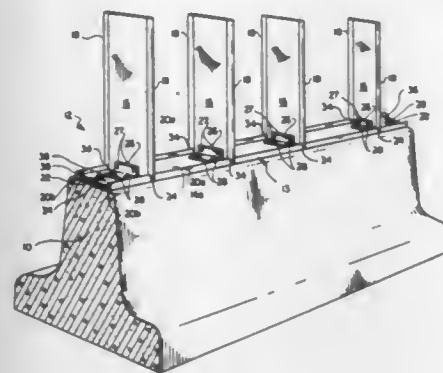
U.S. Cl. 403—230

33 Claims

31. A flat one-piece nail comprising a head defining a head surface and a pair of bearing surfaces extending away from said head surface in converging



at least two elongated glare blades adapted for reducing headlight glare from oncoming traffic along said divided highway; and rigid attachment means coupled to one end of each of said glare blades and to said top face of said base runner section such that said glare blades are in upright light blocking



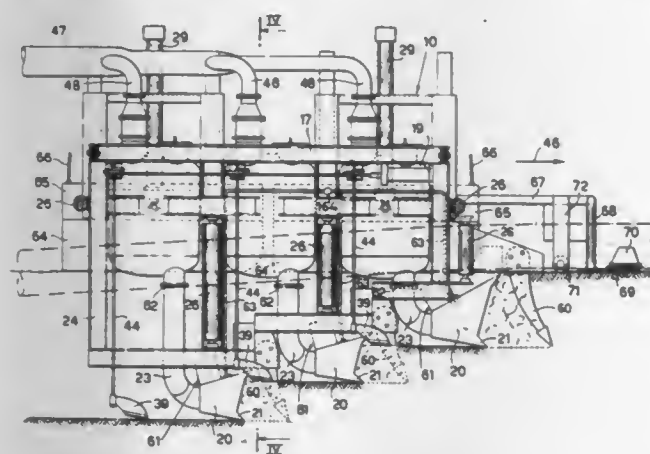
orientation with respect to a projected median barrier location, said glare blade, said base runner section and said attachment means having material compositions whose physical characteristics permit transfer of substantial vibrational energy from said glare blades into said base runner section to assist in dissipation of said vibrational energy.

#### 4,338,042 APPARATUS FOR THE SUBAQUEOUS ENTRENCHING OF PIPES

Giovanni Faldi, Firenze, Italy, assignor to Epi Pneuma Systems S.p.A., Firenze, Italy  
Continuation of Ser. No. 22,649, Mar. 21, 1979, abandoned. This application Oct. 27, 1980, Ser. No. 201,306

Claims priority, application Italy, Mar. 22, 1978, 21459 A/78; Jun. 14, 1978, 24581 A/78

Int. Cl.<sup>3</sup> F16L 11/00; B63B 35/04  
U.S. Cl. 405—161 43 Claims



1. Apparatus for the subaqueous entrenching of pipes, of the type generally comprising a framework, which can be positioned across the pipe to be entrenched, excavating means mounted to the framework and adapted to act along both sides of the pipe already laid onto the bed at least at the position of the framework, so as to form two trenches of predetermined depth, adjacent and parallel to the pipe itself, rippers or ploughs, adapted to disgregate the bed zone directly under the pipe, and a pump for the removal of the material excavated by the excavating means, wherein the framework comprises at least two skid members for the side support and the adjustment of the maximum excavating depth, said skid members being of adjustable height with respect to that of the excavating or dredging means; a first series of disgregating rippers, mounted to vertical rods, driven by levers actuated by ram units and movable between a rest position, in which the rippers are essentially parallel and laterally displaced with respect to the pipe, and an operating position in which the rippers engage the

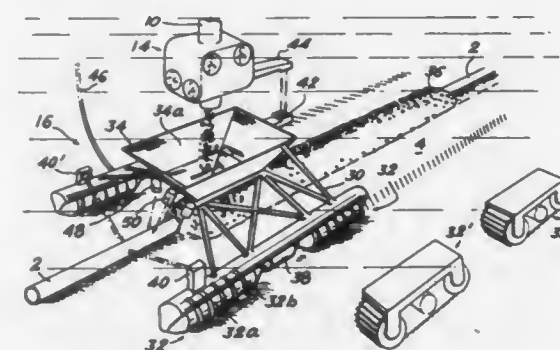
bed zone immediately below the pipe to be entrenched; excavating shovels, forming said excavating means, which are mounted in pairs symmetrically with respect to the framework and in the number of two or more shovels for each side of the framework, each shovel having an excavating edge at a level predetermined and lower with respect to the level of the excavating edge of the next preceding shovel with respect to the dragging direction of the framework; means for the adjustment of the distance between the two internal sides of the framework, said adjustment depending on the diameter of the pipe to be entrenched; a second series of disgregating rippers, which are provided at least in the fore part of the framework and protrude downwardly, in order to engage the bed before the dredging shovels.

#### 4,338,043 METHOD FOR DEPOSITING MATERIAL ON THE OCEAN BED AND APPARATUS FOR PERFORMING THE SAME

Pierre Biancale, Gif-sur-Yvette; Yves-Paul Corfa, Nantes; Pierre Lemerrier, Grenoble, all of France; Jean-Pierre Moreau, De Panne, Belgium, and Jean Vertut, Issy les Moulineaux, France, assignors to Commissariat à l'Energie Atomique, Paris, France

Filed Dec. 20, 1978, Ser. No. 971,193  
Claims priority, application France, Dec. 23, 1977, 77 39060  
Int. Cl.<sup>3</sup> E02D 15/10 13 Claims

U.S. Cl. 405—172



1. A method of depositing materials on an ocean bed by a given line, in which an autonomous vehicle is displaced on the ocean bed by accurately following said line and the vehicle is provided with a hopper, a ship is moved on the surface of the ocean roughly in accordance with said line, the materials are discharged from said ship towards the hopper and are guided by means of a pipe suspended beneath the ship and whose lower end is separate from the hopper, wherein the presence of the hopper is detected by detection means disposed at the lower end of the pipe, the lower end of the pipe being moved by its own propulsion means controlled by said detection means so that the lower end of the pipe is forced to remain above the hopper without mechanical connection with the latter.

#### 4,338,044 PREVENTION OF SLIDING OF A WEIGHT JACKET OVER THE CORROSION COATING OF A PIPE LINE

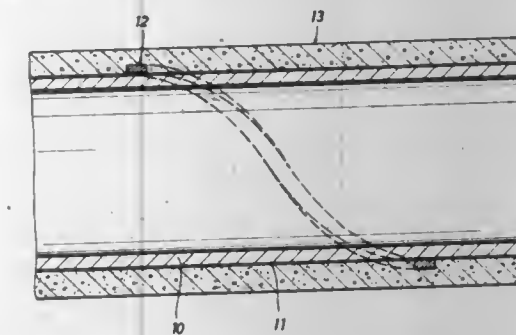
Paul E. Titus, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 972,840, Dec. 26, 1978, abandoned. This application Mar. 27, 1980, Ser. No. 134,357  
Int. Cl.<sup>3</sup> F16L 1/04 7 Claims

U.S. Cl. 405—172

1. A method for laying offshore a metal pipe having a corrosion coating and preventing sliding of a weight jacket on the pipe during tensioning of the pipe, comprising:  
disposing at least one spirally wound bar gripping means about the coated pipe;  
attaching the gripping means to each end of the coated pipe;

applying the weight jacket about the coated pipe and gripping means; and



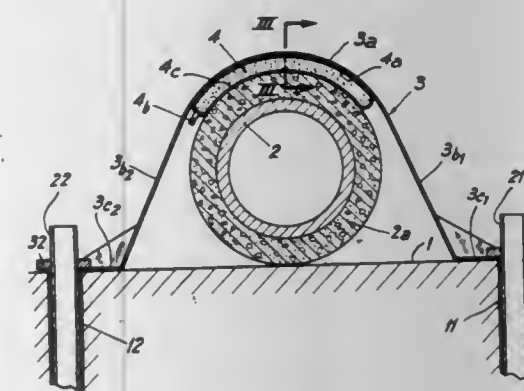
laying the pipe offshore under tension applied to the weight jacket.

#### 4,338,045 METHOD AND APPARATUS FOR ANCHORING A LINE, SUCH AS A PIPELINE, TO A SUPPORT, AND IN PARTICULAR A SEA-BED

Francis R. Cour, Maisons-Lafitte, France, assignor to Coyne et Bellier, Bureau d'Ingenieurs Conseils, Paris, France

Filed May 20, 1980, Ser. No. 151,635  
Claims priority, application France, May 23, 1979, 79 13123; Oct. 29, 1979, 79 26736; Nov. 7, 1979, 79 27459

Int. Cl.<sup>3</sup> F16L 1/00 23 Claims  
U.S. Cl. 405—172



1. A method of anchoring a line, such as a pipeline, to a support, in particular a sea bed, including the steps at each anchoring point, of:  
drilling anchorage holes in said support on both sides of the line;  
bedding piles in said holes;  
passing a central curved part of at least one saddle clamp having lateral connecting parts around at least a portion of the periphery of the line and arranging an inflatable body in its deflated state between the line and said curved part of each said saddle clamp;  
securing said lateral connecting parts of said saddle clamp to said piles; and  
injecting a filling material into said inflatable body to provide a jacking effect displacing the line, with respect to said support, piles and saddle clamp, to its anchored position.

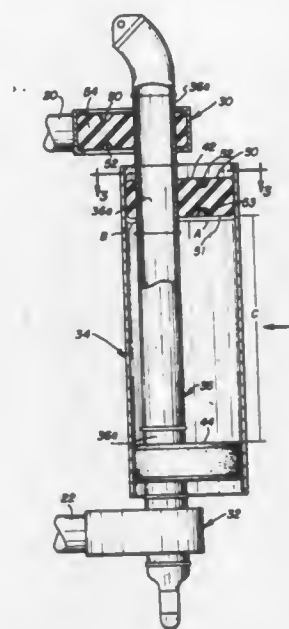
#### 4,338,046 BUMPER RING WITH RELIEF GROOVE

Clarence Thomerson, Navarro, Tex., assignor to Regal International, Inc., Corsicana, Tex.

Filed Feb. 19, 1980, Ser. No. 117,712  
Int. Cl.<sup>3</sup> E02B 3/22, 17/00; B63H 21/04 8 Claims

1. A bumper assembly for protecting an offshore member from contact by vessels such as boats and barges, comprising: upper and lower support arms for connection to said offshore member; a vertically extending cylindrical tubular contact member having sufficient length to span an area of contact and

an outer surface of engaging approaching vehicles; a support member extending axially through said contact member and supported by said support arms; and a pair of axially spaced ring means resiliently supporting said contact member from said support member for absorbing shocks applied by a vessel engaging said contact member, said axially spaced ring means being positioned on said support member such that the axis of said contact member is radially spaced from and extending

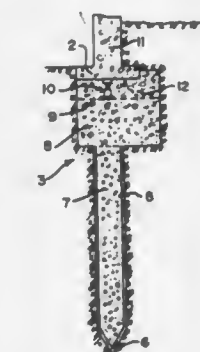


parallel to the axis of said support member, with each said shock absorbing ring means including a body with a periphery of circular-cross-section and upper and lower surfaces, upper and lower coincident grooves disposed a substantially equal distance away from the periphery of the body and extending into the body from the upper and lower surfaces by a distance sufficient to approximate a uniform spring rate in the body when a vessel engages said contact member.

#### 4,338,047 SYSTEM FOR PIER UNDERPINNING OF SETTLING FOUNDATION

Lloyd M. David, St. Louis, Mo., assignor to E. F. David, Inc., St. Louis, Mo.

Filed Sep. 15, 1980, Ser. No. 187,402  
Int. Cl.<sup>3</sup> E02D 27/48, 35/00 6 Claims  
U.S. Cl. 405—230



1. In a system for pier underpinning of settling foundations wherein each pier comprises providing a column of pipe section perpendicularly downwardly aligned directly and centrally underneath the foundation footing and in the vicinity of its settling, said pipe sections driven into the earth being axially aligned, positioning means provided upon each pipe section to facilitate its alignment and retention upon the axially arranged pipe section therebelow, said pipe sections being forced into the earth and to bedrock through the application of force from a hydraulic jack means arranged intermediate the central underside of the footing and the top edge of the upper pipe section.



tion being forced into the earth, with the first earth inserted pipe section having a pointed downward end to facilitate its movement into the ground, said column extending substantially into contact with the earth's bedrock, said pipe sections having sufficient interior diameter to accommodate the insertion and retention of concrete therein, a supply of concrete filling the said pipe sections and forming a cap thereon of sufficient thickness, a mechanical jack means arranged intermediate and centrally of the under side of the footing and upon the top of the concrete cap and tightened therebetween to support the footing thereon to alleviate foundation settling, a concrete support poured around the said jack means encasing the same therein and filling between the footing and cap for forming the concrete pier and for adding support to the said foundation and footing, said concrete formed cap and the concrete support having a width at least equal to the width of the existing footing.

4,338,048

## CARTRIDGE FOR ROCK-BOLTING

John M. Murphy, Mansfield, and Robert H. Spensley, Swanwick, both of England, assignors to Exchem Holdings Limited, London, England

Filed May 22, 1979, Ser. No. 41,502

Claims priority, application United Kingdom, May 31, 1978, 25270/78; May 31, 1978, 25272/78

Int. Cl.<sup>3</sup> E21D 20/00, 20/02

U.S. Cl. 405—261

12 Claims

1. A cartridge for anchoring a reinforcing element in a borehole, comprising

an outer tubular frangible casing having disposed therein within separate compartments

(A) an aqueous liquid and an alkali metal silicate, and

(B) a gelling agent for the alkali metal silicate, said gelling agent being capable of forming a gel from the alkali metal silicate when brought into contact therewith as a result of the cartridge being broken by the reinforcing element whereby the constituents (A) and (B) are mixed in the borehole so as to form around the reinforcing element a rapidly hardening grout to anchor the reinforcing element in the borehole, constituent (B) optionally containing an hydraulic substance;

constituent (A), when no hydraulic substance is present in constituent (B), consisting essentially of 10-40 parts by weight of aqueous liquid, 10-25 parts of alkali metal silicate, 0-15 parts of alkali metal silicate, 0-10 parts of water-soluble additives, and 0-50 parts of water-insoluble additives;

and when said hydraulic substance is present in constituent (B), said constituent (A) consists essentially of 20-80 parts of aqueous liquid, 25-60 parts of alkali metal silicate, 0-30 parts of alkali metal silicate, 0-15 parts of water-soluble additives, and 0-100 parts of water-insoluble additives;

constituent (B), when it does not contain said hydraulic substance, consisting essentially of 0.1-20 parts of gelling agent, 0-10 parts of water-soluble additives, and 0-60 parts of water-insoluble additives;

constituent (B), when it contains said hydraulic substance, consisting essentially of 0.1-50 parts of gelling agent, 0-40 parts of non-aqueous liquid vehicle, 10-85 parts of said hydraulic substance, 0.20 parts of water-soluble additives and 0-40 parts of water-insoluble additives;

constituent (B) being in paste form, said gelling agent having a flash point in excess of 100° C., said gelling agent being inert with respect to the hydraulic substance and also being compatible with the hardening process involving the hydraulic substance when said hydraulic substance comes into contact with the aqueous liquid present in constituent (A),

and said constituent (B) including as said non-aqueous liquid vehicle or water-soluble additives a substance capable of reducing the exudation of liquid from the mixed composition on setting.

12. A process of anchoring a reinforcing element in a borehole, comprising:

providing a cartridge in accordance with one of claims 1 or 6;

placing at least one said cartridge in a borehole; and inserting a reinforcing element in said borehole and thereby breaking said cartridge and causing the contents thereof to become mixed, thereby rapidly forming a gel of said alkali metal silicate to anchor said reinforcing element in the borehole.

4,338,049

## HIGH PRESSURE FEEDER PIVOTAL CENTER SCREEN

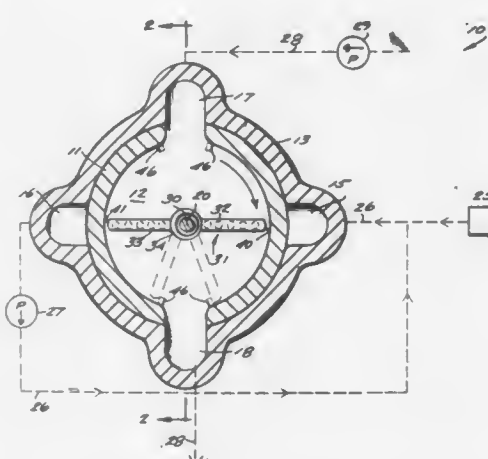
Johan C. F. C. Richter, Nice, France, and Michael I. Sherman, Glens Falls, N.Y., assignors to Kamy, Inc., Glens Falls, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,518

Int. Cl.<sup>3</sup> B65G 53/30, 53/46

U.S. Cl. 406—63

17 Claims



1. A high pressure transfer device including a pocketed rotor containing a pair of diametrically through-going pockets perpendicular to each other and rotatable about an axis; a housing enclosing said rotor, said housing having four ports spaced around the periphery thereof for registry with inlets to and outlets from said through-going pockets; means for rotating said rotor in said housing with respect to said ports in a given direction of rotation; and a screen disposed interiorly of each of the through-extending pockets between the inlet and outlet of each pocket; and

means for mounting said screen within each said pocket interior so that as liquid under pressure enters said pocket through the inlet thereof the screen will move to enlarge the volume between the inlet and the screen.

4,338,050

## METHOD AND TOOL FOR GENERATING HOLES IN COMPOSITE MATERIALS

Theodore Ozer, Alexander Yankovoy, both of Wallingford, and James Imbessi, Morton, all of Pa., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 7, 1980, Ser. No. 166,868

Int. Cl.<sup>3</sup> B23B 51/00

U.S. Cl. 408—1 R

17 Claims

1. A tool, having an axis, for generating a hole in a composite of at least a first material and a second material having a higher modulus of elasticity than the first material when the tool, relative to the composite, is rotated about its axis in a first direction of rotation and is moved in an axial direction against the composite, the tool being in the form of a generally cylindrical rod, portions of which are removed to form an axially extending flute, and comprising:

a planar end surface;

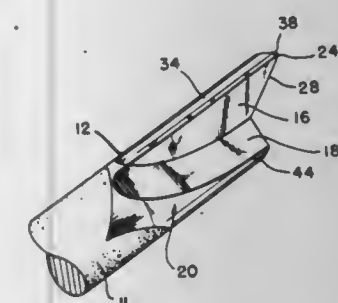
a generally semi-cylindrical outer surface which determines a maximum radial dimension of the tool; and

first and second flute side surfaces which extend radially

inward from the outer surface and axially from the end surface to define the flute;

wherein the first flute side surface intersects the end surface to form a first cutting edge and intersects the outer surface to form a second cutting edge, the end surface intersects the outer surface to form a third edge, the three edges intersecting at a common cutting single end point, with the first and second cutting edges intersecting at an acute angle at the single end point and with the third edge intersecting the first and second cutting edges at respective acute angles at the single end point.

15. A method of generating a hole in a composite of at least



a first material and a second material having a higher modulus of elasticity than the first material, the hole being generated having a circumferential surface limit and a longitudinal axis, the method comprising the steps of:

cutting and continuously penetrating the composite at the circumferential surface limit of the hole and at a point which travels about the circumferential surface and in the direction of the longitudinal axis of the hole being generated; and

simultaneously cutting the composite continuously about the circumferential surface and along a revolving radius of the hole being generated, wherein the revolving radius is inclined relative to the longitudinal axis of the hole.

4,338,051

## PROFILE CUTTING MACHINE

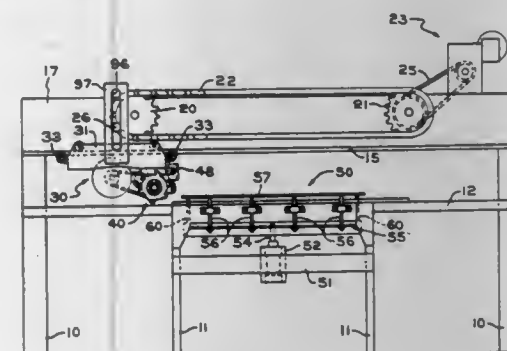
Richard F. Garver, and Srbo M. Stevanovich, both of Akron, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 2, 1980, Ser. No. 155,730

Int. Cl.<sup>3</sup> B23C 3/30, 5/12

U.S. Cl. 409—184

2 Claims



1. A bladder cutting apparatus having a support frame, a support table mounted on said support frame, a pair of laterally spaced vertically moveable bars for clamping a workpiece positioned for movement toward said support table, means connected to said bars for selectively moving said bars between a raised and a lowered position, guideways mounted above said support table, a carriage mounted on said guideways for reciprocal movement, power operated means mounted on said guideways interconnected to said carriage for reciprocating said carriage, a pair of laterally spaced lugs mounted on said carriage, a housing having one end pivotally mounted on said lugs, a pneumatic cylinder having a head end and a piston rod extending therefrom, said head end of said

cylinder pivotally connected to the other end of said housing, said piston rod connected to said carriage, said housing supporting a profile cutter for rotation about a horizontal axis, drive means connected to said profile cutter for rotating said cutter, said power operated means connected to said carriage for reciprocating said carriage includes an endless chain mounted on said guideways for movement in an endless path, a pin mounted on said chain for orbital movement therewith, a cam bracket mounted on said carriage for movement therewith, a vertical slot in said cam bracket receiving said pin for moving said carriage and bracket in a reciprocating action, said profile cutter has a plurality of cutters, each cutter having a plurality of circumferentially spaced cutting edges, the profile of said cutting edges defining a pair of spaced inclined edges interconnected by a stepped horizontal edges to provide an interlocking profile.

4,338,052

## VARIABLE GEOMETRY ROUTER

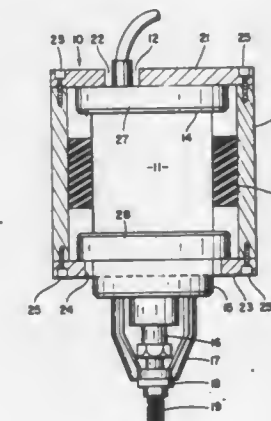
James H. Lockett, San Pedro, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Mar. 31, 1980, Ser. No. 135,542

Int. Cl.<sup>3</sup> B23C 1/06

U.S. Cl. 409—206

3 Claims



1. A router for machining curved surfaces in plates or the like, comprising:

(a) a cylindrical housing including upper and lower end plates,

(b) a router motor enclosed longitudinally in said cylindrical housing;

(c) resilient means supporting said router coaxially within said housing, and positioned midway between the ends of said router;

(d) collar means located on each end of said router motor adapted to prevent longitudinal movement of said router motor within said housing, said resilient means permitting controlled lateral movement in any radial direction of said router motor within the housing.

4,338,053

## CARGO RETAINER

Alan S. Abel, Appleton, Wis., assignor to N P Marketing Corporation, Neenah, Wis.

Filed Jul. 17, 1980, Ser. No. 169,848

Int. Cl.<sup>3</sup> B61D 45/00

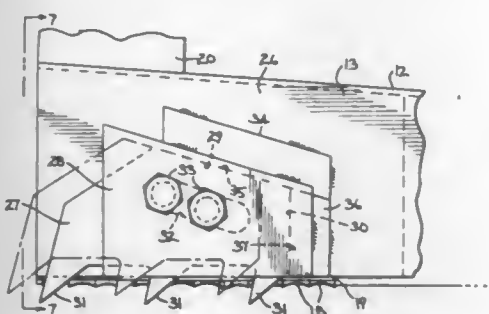
U.S. Cl. 410—94

10 Claims

1. In a cargo retainer having a lower floor contacting member provided with an upwardly facing load bearing surface and an upright member secured adjacent to the rear end of the floor contacting member, a floor piercing element movably mounted on the cargo retainer adjacent to the juncture between the floor contacting member and the upright member, said element being movable relative to the cargo retainer between a position of relatively shallow floor piercing engagement and a position of substantially deeper floor piercing engagement, and means on the cargo retainer adjacent to the juncture between the floor contacting member and the upright



member to drive the floor piercing element from one engagement position to a deeper engagement position with rearward

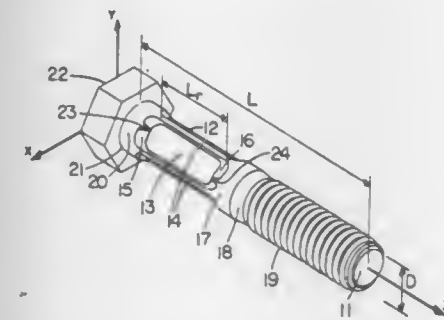


movement of the cargo retainer and thereby limit such movement in service.

**4,338,054**  
**SOLID EXTERNALLY THREADED FASTENERS**  
**HAVING GREATLY INCREASED DUCTILITY**  
Norman C. Dahl, 40 Fern St., Lexington, Mass. 02173  
Filed Nov. 19, 1979, Ser. No. 95,165  
Int. Cl.<sup>3</sup> F16B 35/00

U.S. Cl. 411-424

19 Claims



1. A metal fastener characterized by a sharp yield point and improved elongation beyond the yield point and a tensile strength (force) at least as large as the specified minimum for the grade, size, and threads of said metal fastener, which metal fastener is a bolt of nominal diameter D and is heat treated after forming and comprises:

- a head component for the application of torque to the fastener;
- an externally threaded component having threads of nominal diameter D with a stress area  $A_s$ ;
- a nonthreaded shank component having a diameter  $D_s$  equal to or substantially equal to the nominal diameter D axially extending between the head and threaded components and integrally therewith, the shank component characterized by a reduced portion of axial length  $L_r$  with a first transition portion at the one end and a second transition portion at the other end of the reduced portion, and wherein within the reduced portion the maximum axially transverse cross-sectional area  $A_{rmax}$  is not larger than the stress area  $A_s$  of the threaded component and the minimum cross-sectional area  $A_{rmin}$  ranges from about  $0.97A_s$  to  $(\sigma_{tsmin}/\sigma_{tsmax})A_s$ , where, for the given grade and size of fastener,  $\sigma_{tsmin}$  is the specified minimum allowable tensile strength (stress) and  $\sigma_{tsmax}$  is the tensile strength (stress) corresponding to the specified maximum allowable core hardness, and the axial length  $L_r$  ranges from about  $\sqrt{A_{rmin}}$  to the maximum length that can be accommodated within the shank component and wherein the axially transverse cross-sectional area  $A_r$  is noncircular in shape over substantially the axial length  $L_r$ ; and
- means with the reduced portion, extending axially along substantially the axial length  $L_r$  of the reduced portion and the axial lengths of the first and second transition portions, to align the reduced portion of the metal fastener in a passageway in which the metal fastener is to be used and wherein said means to align the fastener includes a plurality of metal, generally parallel, raised, rib means extending

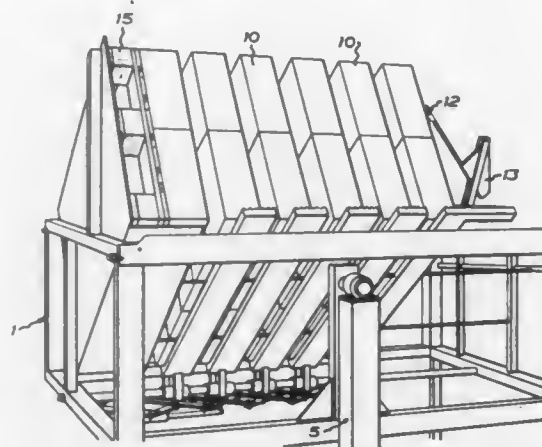
generally axially and extending outwardly to the shank diameter  $D_s$  of the fastener.

**4,338,055**  
**APPARATUS FOR HANDLING PALLETIZED GOODS**  
**STACKED IN TIERS**

Tomas Petersson, Helsingborg, Sweden, assignor to Frigos-candia AB, Sweden  
Filed Jun. 18, 1980, Ser. No. 160,710  
Claims priority, application Sweden, Jun. 20, 1979, 7905450  
Int. Cl.<sup>3</sup> B65G 57/28

U.S. Cl. 414-114

8 Claims



1. Apparatus for handling palletized goods and the like stacked in tiers, said apparatus consisting of a pivoted cradle (1) having two supports (2, 3) for the goods substantially perpendicular to each other, one of said supports normally constituting a horizontal loading plane (2) and the other a vertical supporting plane (3), said planes being adapted alternately to support the goods due to the pivoting movement of said cradle (1), characterized in that said supporting plane (3) is composed of a plurality of parts in the form of carriages (9) which are movable towards and away from said loading plane (2) in such a way that the various tiers (10) are separable from each other when supported by the supporting plane formed of the carriages (9), said carriages (9) cooperating with a drive mechanism (16-18) which is adapted to impart to said carriages (9) such a displacing movement that the relative distance between said carriages (9) is always the same, the supporting plane of said carriages (9) comprising two legs (21, 22) directed at right angles to each other, one (22) of which makes  $30^\circ$ - $45^\circ$  with the axis of rotation (4) or the like of said cradle (1).

**4,338,056**  
**SYSTEM FOR LOADING AND UNLOADING A KILN**  
Daniel P. Abrahamson, Phoenix, and Paul M. Thomas, Paradise Valley, both of Ariz., assignors to Builders Equipment Company, Phoenix, Ariz.

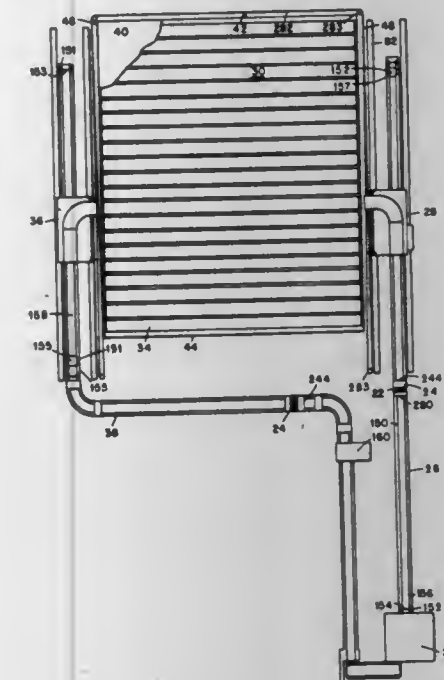
Filed May 1, 1980, Ser. No. 145,701  
Int. Cl.<sup>3</sup> F26B 3/18

U.S. Cl. 414-152

9 Claims

1. In a system for curing concrete blocks carried on pallets comprising a kiln including a front end wall and a rear end wall, a plurality of guideways in said kiln, each of said guideways having an infeed end at said front end wall and a discharge end at said rear end wall, each of said guideways being proportioned to receive a plurality of said pallets, and said guideways being arranged in a grid wherein said guideways are disposed in horizontally aligned layers and vertically aligned tiers, means for inserting said pallets into a selected guideway of a selected tier and a selected layer, comprising a laterally movable main frame having an upper end and a lower end, a vertically movable subframe supported on said main frame, means for delivering pallets to said subframe, a conveyor mounted on said subframe for receiving said pallets and for inserting said pallets into the infeed ends of said guideways,

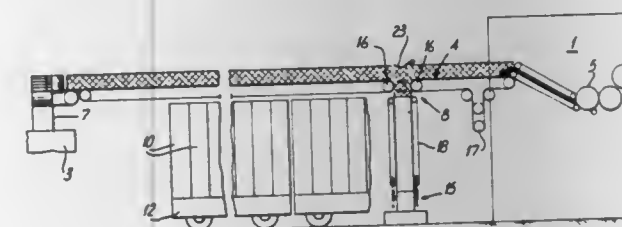
and means for aligning said conveyor with said selected guideway including vertical indexing means corresponding to the height of each layer in said tier, means on said subframe for sensing a predetermined one of said vertical indexing means to position said subframe in vertical alignment with a selected guideway regardless of variations in the vertical position of



said selected guideway relative to said main frame, lateral indexing means for each guideway, sensing means connected to said conveyor for engaging said lateral indexing means and means for laterally moving said conveyor relative to said main frame to engage said sensing means with said lateral indexing means to laterally align said conveyor with the inlet end of a selected guideway.

**4,338,057**  
**HANDLING ROD-LIKE ARTICLES**  
Desmond W. Molins, London, England, assignor to Molins Limited, London, England  
Filed Nov. 1, 1979, Ser. No. 90,434  
Claims priority, application United Kingdom, Nov. 1, 1978, 42709/78; Apr. 4, 1979, 7911868  
Int. Cl.<sup>3</sup> B65G 11/33, 47/52  
U.S. Cl. 414-417

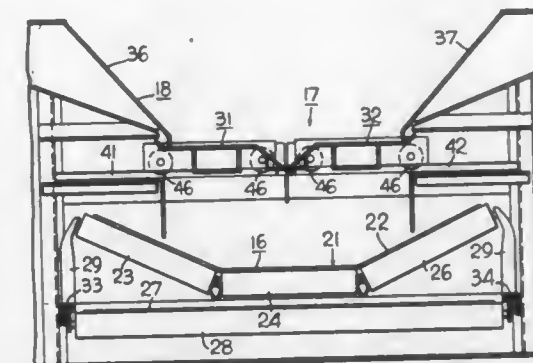
15 Claims



14. A conveyor system for rod-like articles, including first and second conveyors for conveying streams of rod-like articles in directions transverse to their lengths, a junction between said conveyors, a path extending from said junction in a direction generally transverse to said conveyors, gate means for selectively closing said path, means for successively positioning compartments adjacent said path, and reversible intermittently-movable means for transferring a batch of articles between a compartment and said junction along said path.

**4,338,058**  
**SYNCHRONIZED HOPPER GATE**  
Joseph P. Davenport, Picton, Canada, assignor to Allis-Chalmers Canada Inc., Quebec, Canada  
Filed Jun. 2, 1980, Ser. No. 155,548  
Int. Cl.<sup>3</sup> B65G 67/58  
U.S. Cl. 414-144

3 Claims



1. A bulk cargo ship having a plurality of longitudinally spaced gated hoppers in the bottom of its holds for gravity discharge of bulk material onto an endless belt moving lengthwise of the ship characterized by:

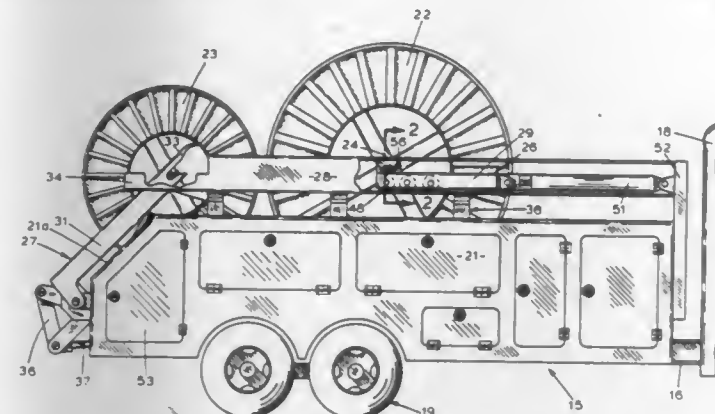
- a gate mechanism for each hopper for metering discharge of material therefrom including
- a pair of horizontally disposed closure panels at said discharge opening selectively shiftable between open and closed positions,
- support means for supporting said pair of panels for translational movement in opposite horizontal directions between said open and closed positions including horizontal tracks along opposite sides of said discharge opening supporting opposite end portions of said closure panels and vertical support columns supporting the outboard ends of said tracks and the associated hopper, and
- control means for simultaneously displacing said closure panels in opposite directions toward one another to their closed positions and for simultaneously displacing said closure panels away from one another to their open positions, said control means including
- a first pair of sprockets rotatably mounted on said support means by a first shaft means supported at least in part by said vertical support columns on a pair of parallel horizontal axes extending transverse to the direction of movement of said panels,
- a second pair of sprockets rotatably mounted on said support means by a second shaft means supported at least in part by said vertical support columns on a pair of parallel horizontal axes extending transverse to the direction of movement of said panels,
- first chain means lying alongside one of said support means and operatively engaging said first pair of sprockets so as to form an endless loop with a pair of runs which move, respectively, in said opposite horizontal directions,
- second chain means lying alongside the other of said support means and operatively engaging said second pair of sprockets so as to form an endless loop with a pair of runs which move, respectively, in said opposite horizontal directions,
- a first pair of fastening means connecting opposite end portions of one of said panels to one set of corresponding runs of said first and second chain means,
- a second pair of fastening means connecting opposite end portions of the other of said panels to the other set of corresponding runs of said first and second chain means, and
- torque transmitting means interconnecting one of said first pair of sprockets to one of said second pair of sprockets whereby corresponding runs of said first and second chain means move in the same direction at the same speed thereby effecting synchronized translational movement of said closure panels.



4,338,059  
**CABLE REEL HANDLING APPARATUS FOR A VEHICLE**  
 James E. Anderson, West Des Moines, Iowa, assignor to Mid-America Body & Equipment Co., Des Moines, Iowa  
 Filed Jul. 24, 1980, Ser. No. 171,732  
 Int. Cl.<sup>3</sup> B60P 1/48

U.S. Cl. 414—501

1 Claim



1. A cable reel handling apparatus for a vehicle wherein the cable reel has an axle member, comprising:

- a vertically movable reel lifting means mounted at the rear end of the vehicle,
- a pair of longitudinally extended upright transversely spaced side frames mounted on said vehicle, said side frames spaced a distance apart greater than the axial length of a cable reel,
- a linear track means carried on and extended longitudinally of each side frame adjacent the upper end thereof,
- a reel supporting carriage structure extended between and within the vertical confines of said track means,
- means guidably supporting said carriage structure on said track means,
- linearly extendible and retractable power means mounted on said vehicle in linear alignment with said track means for moving said carriage structure to a rear reel loading position and a forward reel transport position,
- said carriage structure having a generally U-shape in plan view with a forward transverse base section and rearwardly extended leg sections movable longitudinally of an adjacent associated track means,
- means connecting said power means to said base section,
- said base section and power means when the power means is retracted, being located forwardly of a reel in the forward transport position therefor,
- said reel lifting means, when the carriage structure is in the reel loading position therefor, being movable to engage a reel on the ground rearwardly of the vehicle for transfer to an axle supported position on said carriage structure for movement therewith to the reel transport position,
- each of said leg sections of the carriage structure having a rear terminal portion supported for rolling engagement on an associated track means, and
- a pair of longitudinally spaced upright stop members on each of said terminal portions for receiving the reel axle member therebetween, when the carriage structure is in the reel loading position therefor.

4,338,060  
**BUNDLING OF METAL STOCK**  
 Harold Swaby, Rotherham, England, assignor to British Steel Corporation, England  
 Filed Jun. 10, 1980, Ser. No. 158,217  
 Claims priority, application United Kingdom, Jun. 12, 1979, 7920384

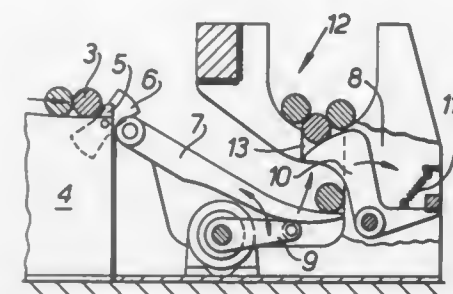
U.S. Cl. 414—748

Int. Cl.<sup>3</sup> E21B 19/14

8 Claims

1. A method of bundling together elongated metal stock, comprising laterally transporting said stock separately and successively from a support table to a position on a first pivotal

member below a common retaining pocket having a bottom opening provided with a pivotal closure member, lifting said stock upwardly by said first pivotal member against said closure member to force said pivotal closure member to be laterally displaced by movement around its pivotal axis to thereby provide access to the bottom of said pocket, forcibly lifting said stock into the pocket by continued pivotal action of said first pivotal member against any bundled stock in situ, and retracting said pivotal members in such manner that the pivotal closure member is operative to close the pocket and seal the escape of stock before the return movement of the first pivotal member.

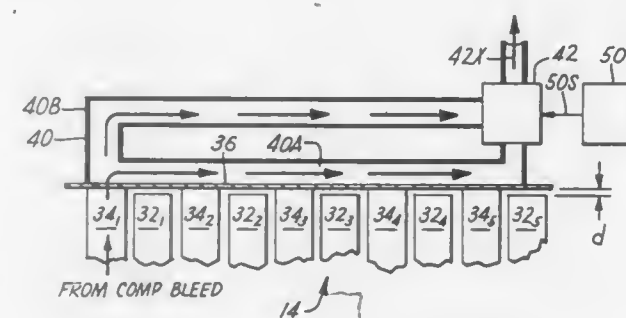


3. Apparatus for bundling together elongated metal stock in a pocket, comprising a mechanism for separately and successively receiving said stock, said mechanism comprising first and second pivotally mounted members and including motive means operable on the first member to lift the stock against the second member whereby to move the second member laterally from a position of rest in which it seals the bottom of the pocket to another position such as to afford access to the pocket for the stock, the second member returning to its rest position to seal the pocket before retraction of the first member.

4,338,061  
**CONTROL MEANS FOR A GAS TURBINE ENGINE**  
 Richard S. Beitler, Frederick J. Sellers, and George W. Bennett, all of Cincinnati, Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.  
 Filed Jun. 26, 1980, Ser. No. 163,122  
 Int. Cl.<sup>3</sup> F01D 25/08

U.S. Cl. 415—1

12 Claims



1. In a gas turbine engine of the type including a plurality of radially extending blades rotatably disposed within a relatively stationary blade casing and including clearance control means for controlling an airflow to the casing to control the clearance between the blades and the casing, wherein the clearance control means comprises:

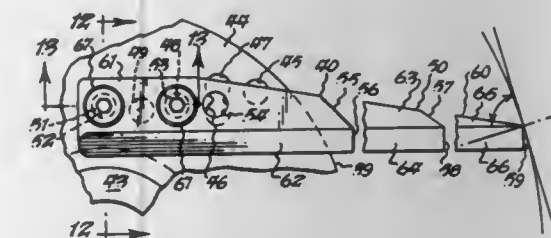
- means for developing a first signal representative of the actual temperature of said casing;
- means for developing a second signal representative of the gas temperature within said casing and proximate to said blades;
- means for developing a third signal representative of the rotational speed of said blades;

- schedule means for receiving said second and third signals and developing a schedule output signal representative of a reference casing temperature at which a predetermined clearance is provided;
- means for comparing said first signal and said schedule output signal and developing a clearance control signal representative of the difference therebetween; and
- valve means coupled to receive said clearance control signal for controlling said airflow to said casing.

4,338,062  
**ADJUSTABLE VORTEX PUMP**  
 Maynard J. Neal, North Tonawanda, N.Y., assignor to Buffalo Forge Company, Buffalo, N.Y.  
 Filed Apr. 14, 1980, Ser. No. 140,161  
 Int. Cl.<sup>3</sup> F04D 29/24

U.S. Cl. 415—213 A

14 Claims



1. An impeller for a vortex pump comprising a hub, a plurality of first sets of holes spaced circumferentially on said hub in fixed relationship to each other with each set including a component extending in a radial direction and extending in a generally straight line, a plurality of vanes each having a blade portion and a root portion, a plurality of second sets of holes in each of said root portions extending lengthwise to said vanes, one of said sets having at least two holes and the other of said sets having at least three holes, and a pair of bolts for extending through two holes of said first set aligned with two holes of said second set for fastening said vanes in different positions wherein said vanes have been moved bodily in the generally straight line direction having a radial component as prescribed by the alignment of said pairs of bolts with different pairs of said holes of said first and second sets whereby each of said vanes may be mounted in a plurality of positions on said hub to thereby vary the diameter of said impeller while maintaining the discharge angle of said vanes within a relatively small predetermined range in said plurality of positions.

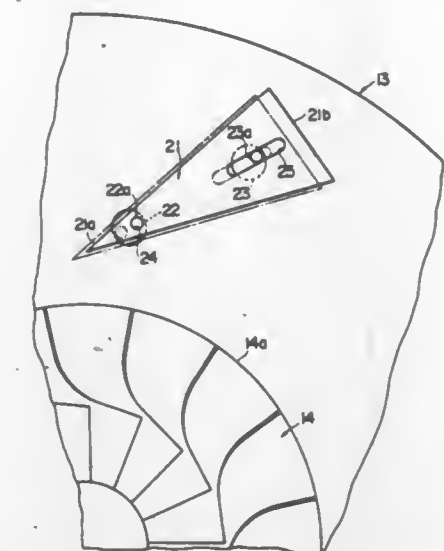
4,338,063  
**DIFFUSER OF CENTRIFUGAL COMPRESSOR**  
 Keiichi Nakanishi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan  
 Filed Nov. 7, 1980, Ser. No. 204,932  
 Claims priority, application Japan, Nov. 30, 1979, 54/154231  
 Int. Cl.<sup>3</sup> F01D 17/12

U.S. Cl. 415—164

2 Claims

1. A centrifugal fluid compressor including a fluid impeller rotatable about its center axis and a fluid diffuser comprising a plurality of diffuser vanes positioned around said impeller, each of said diffuser vanes being formed with a circular hole and an elongated slot which are spaced apart from each other longitudinally of said diffuser vane, said elongated slot extending in the longitudinal direction of said diffuser vane, said diffuser further comprising two stationary support plates which are spaced apart from each other in an axial direction of said diffuser and which have said diffuser vanes movably interposed therebetween, and two eccentric pins provided in association with each of said diffuser vanes, said pins being supported on one of said support plates respectively through openings formed therein and being rotatable independently of each other about axes of rotation offset from respective center axes of said eccentric pins which are substantially parallel with the

center axis of said impeller, said pins axially projecting into and being rotatable in said hole and said slot, respectively, whereby

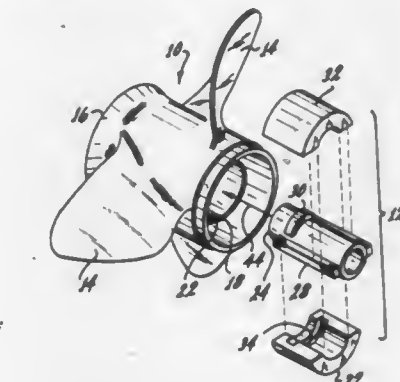


said angular position and said distance can be varied by turning at least one of said pins with respect to said support plates.

4,338,064  
**CLUTCH ASSEMBLY**  
 Fred Carmel, 2710 Merlin Pl., Oceanside, Calif. 92054  
 Filed Mar. 31, 1980, Ser. No. 135,728  
 Int. Cl.<sup>3</sup> B63H 23/30; F16D 7/02

U.S. Cl. 416—134 R

7 Claims



1. In a propeller mounting assembly comprising a drive shaft, a drive clutch assembly engaging the drive shaft and a propeller having a bore surrounding said clutch assembly, the improvement wherein said clutch assembly comprises:

- a generally tubular rigid bushing having an interior adapted to locking engagement with said drive shaft;
- at least one outwardly extending longitudinal ridge on said bushing;
- at least one radial flange on said bushing spaced from the bushing ends;
- the diameter of said flange being (substantially) less than the diameter of said bore; and
- at least one elastomeric cushion having the general configuration of a tube segment, said at least one cushion having a radial outer surface area less than the radial inner surface area of said bore;
- said cushion being sized to fit snugly against said bushing with longitudinal cushion edges having only an abutting engagement with said at least one ridge;
- said cushion including an internal radial groove adapted to mate with said flange;
- the diameter of said assembly being somewhat greater than the internal diameter of said bore;
- whereby the outer surface of said cushion is in tight frictional contact with said bore when said assembly is installed in said bore.



4,338,065

## THERMO-PNEUMATIC PUMP

Gerhard Desor, Bad Homburg, Fed. Rep. of Germany, assignor to Hauser Verwaltungs-Gesellschaft mit beschränkter Haftung, Oberursel, Fed. Rep. of Germany

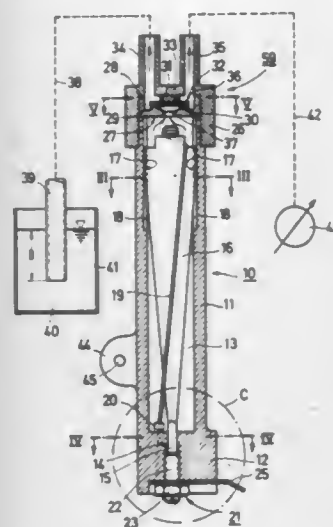
Filed Oct. 25, 1978, Ser. No. 954,688

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 2750051

Int. Cl.<sup>3</sup> F04B 19/24

U.S. Cl. 417-207

13 Claims



1. A thermo-pneumatic pump, comprising: an elongated housing forming a pump chamber and having at least one outlet valve for controlling the flow of pumped fluid therefrom; an elongated heating conductor capable of expanding longitudinally when heated and configured to be disposed in the pump chamber; a metallic supporting element extending longitudinally through the pump chamber substantially parallel to the heating conductor and connected at one end to one end of the heating conductor; actuatable switching means for connecting heating current to the heating conductor by way of the supporting element including an actuating element connected to the other end of the heating conductor for actuating and deactuating the switching means in response to the expansion and contraction of the heating conductor; and means mounting the supporting element for longitudinal displacement in the pump chamber to adjust the switching point of the actuating element.

4,338,066

## GREASE GUN

Graham J. Luker, 79 Inverness Ave., Penshurst, Sydney, N.S.W., Australia (2222)

Filed Feb. 11, 1980, Ser. No. 120,636

Claims priority, application Australia, Jan. 25, 1979, PD7476

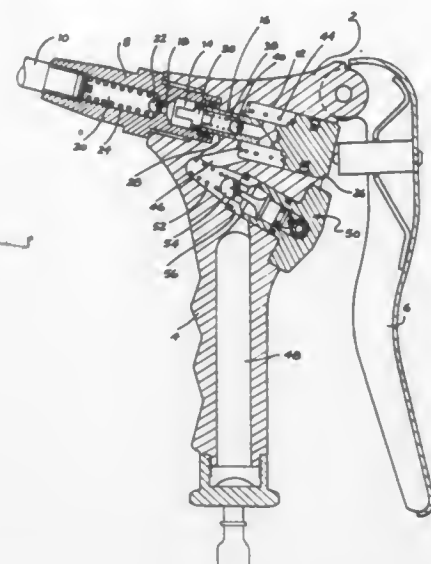
Int. Cl.<sup>3</sup> F04B 3/00

U.S. Cl. 417-259

8 Claims

1. An ejector head for greasing apparatus which holds a grease supply under predetermined pressure; said ejector head comprising:  
a pair of interconnecting cylinders of different diameters, plungers movable in said cylinders,  
a system of control valves connecting said cylinders with each other and with a grease supply,  
a changeover valve selectively operable to alternatively render only one or both plungers operative, actuating means common to both plungers to eject grease at a low pressure and large volume or at high pressure and small volume depending upon the setting of the changeover valve,  
a barrel extending forwardly of the cylinders, a one-way valve forming part of said system located between the barrel and the cylinders and means extending forwardly

of the plungers and lying between the foremost cylinder and said one way valve for causing grease to pass



through said valve when the actuating means actuates said plungers.

4,338,067

## ALTERNATING PISTON MACHINE WITH ROTATING END WALLS AND CHAIN DRIVE

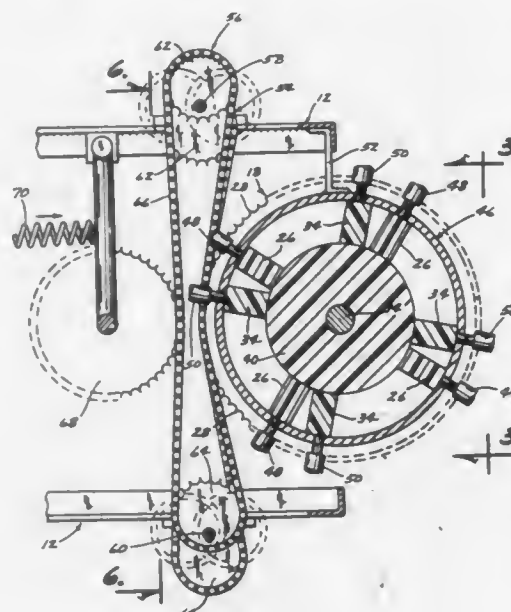
Stuart T. Greenfield, R.R. 2, Ellsworth, Iowa 50075

Filed Feb. 14, 1980, Ser. No. 121,498

Int. Cl.<sup>3</sup> F01C 1/063; F03C 2/00; F04C 2/063, 18/063

U.S. Cl. 418-37

3 Claims



1. A rotating piston machine comprising:  
a cylindrical shaped housing having first and second circular end walls spaced apart from and parallel to one another, an outer annular wall extending axially between said first and second end walls, and an inner annular wall extending axially between said first and second end walls in concentric spaced relation to said outer annular wall whereby an annular chamber is formed by said inner and outer walls and said first and second end walls,  
a support frame,  
pivot means pivotally mounting said first and second circular end walls to said frame for rotational movement about a rotational axis, said first end wall being rotatable about said axis independently of said second end wall;  
first and second groups of piston blades within said annular chamber, said blades being positioned to partition said annular chamber off into a plurality of circumferentially arranged compartments, said blades of said first group being positioned alternatively with said blades of said

second group, said blades of said first group being connected to said first end wall for movement in unison therewith and said blades of said second group being connected to said second end wall for movement in unison therewith;  
a group of inlet valves spaced circumferentially around said outer annular wall and providing communication from the exterior to the interior of said annular chamber,  
a group of outlet valves spaced circumferentially around said outer annular wall and providing communication from the interior to the exterior of said annular chamber,  
a first drive mechanism connected to said first end wall for rotating said first end wall about said rotational axis in a first predetermined pattern of increasing and decreasing rotational speed;  
a second drive mechanism connected to said second end wall for rotating said second end wall about said rotational axis in a second predetermined pattern of increasing and decreasing rotational speed;  
said first and second patterns of said first and second drive mechanisms being substantially the same and being out of phase with one another whereby the relative rotational speeds of said first and second end plates vary with respect to one another during at least a portion of each revolution thereof,  
a drive shaft,  
a counter shaft parallel and spaced from said drive shaft;  
said first drive mechanism comprising a first pair of drive sprockets, one of said sprockets of said first pair being fixed to said drive shaft and the other of said sprockets of said first pair being fixed to said counter shaft; at least one of said sprockets of said first pair being mounted for rotation about an axis eccentrically located with respect to the geometric center thereof;  
said second drive mechanism having a second pair of drive sprockets of identical construction to said first pair of sprockets, said second pair of sprockets being fixed to said drive and countershafts in the same manner as said first pair of sprockets and in a rotational position which is out of phase with said first pair of drive sprockets;  
a first sprocket chain trained around said first pair of sprockets;  
a second sprocket chain trained around said second pair of sprockets;  
said first circular end wall having a circular pattern of teeth thereon drivingly engaging said first chain between said first pair of sprockets and  
said second circular end wall having a circular pattern of teeth thereon drivingly engaging said second chain between said second pair of sprockets.

4,338,068

## INJECTION MOLDING DEVICE AND METHOD

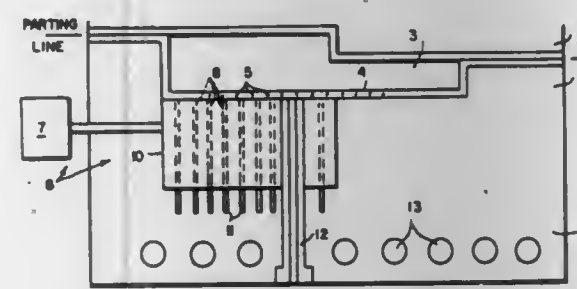
Nam P. Suh, Sudbury, and James R. Rinderle, Watertown, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 22, 1980, Ser. No. 152,493

Int. Cl.<sup>3</sup> B29F 1/08

U.S. Cl. 425-144

16 Claims



1. A mold for making injection molded parts comprising: at least one mold piece, which mold piece defines at least in part a mold cavity;

means for injecting molding material into said mold cavity;  
means for heating at least a portion of the mold cavity surface of said mold during the injection of said molding material to maintain the temperature of said injected material at a sufficient level to prevent the molecules of said injected material from solidifying into a specific orientation;  
means for cooling at least a portion of the mold cavity surface of said mold;  
means for controlling the rate of cooling of at least one portion of the mold cavity surface of said mold independently from at least one other portion of the mold cavity surface of said mold so as to maintain selected properties of said injected material substantially uniform throughout said mold cavity, said means for controlling the rate of cooling including at least one heat pipe which has housing means forming a sealed chamber, fluid contained within said sealed chamber, wicking means within said sealed chamber for transporting the liquid phase of said fluid, and control means for controlling the thermal conductance of said heat pipe.

4,338,069

## TIRE PRESS

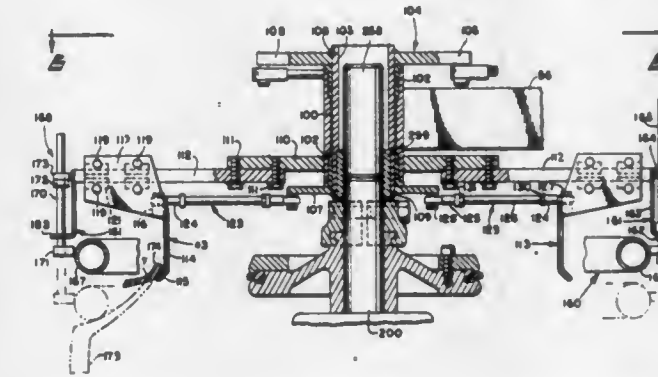
Anand P. Singh, Youngstown, Ohio, and Daniel Shichman, Trumbull, Conn., assignors to NRM Corporation, Akron, Ohio

Continuation-in-part of Ser. No. 138,658, Apr. 9, 1980, abandoned. This application Apr. 20, 1981, Ser. No. 255,733

Int. Cl.<sup>3</sup> B29H 5/02

U.S. Cl. 425-38

58 Claims



1. A tire loader in combination with a tire curing press, said press comprising a bottom press half, a top press half movable vertically to open and close said press, and a center mechanism in said bottom press half, said center mechanism including a shaping and curing bladder; and said loader comprising bead grip means for engaging and lifting the upper bead of a green tire and for positioning the green tire in said press, and register means for engaging the green tire in the area of the tread and cooperating with said bead grip means to identify positively the transaxial center plane of symmetry of the tire for insertion of the bladder into the green tire in the press.

4,338,070

## APPARATUS FOR MOLDING REINFORCED RESIN PRODUCTS

Pier L. Nava, Verderio Superiore (Como), Italy

Filed Dec. 12, 1980, Ser. No. 215,881

Claims priority, application Italy, Dec. 20, 1979, 28274 A/79

Int. Cl.<sup>3</sup> B29D 3/00; B29C 1/12; B29D 9/04

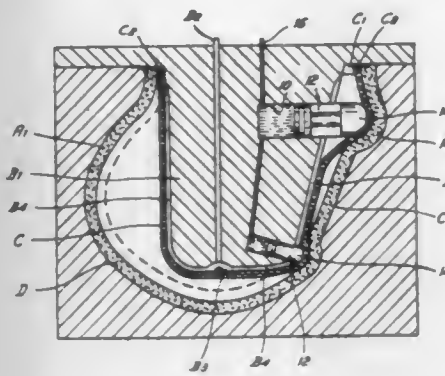
U.S. Cl. 425-112

4 Claims

1. Apparatus for molding reinforced resin products, comprising: a female mold part having a shaped inner surface complementary to the outline of a product to be molded, which outline includes at least one localized projection reproduced in the negative by said shaped surface of said female mold part, said female mold part having adjacent to and coextensive with its shaped inner surface a textile reinforcement for



the product to be molded; and a male mold part movable in and out of said female mold part with substantial clearance and having a shaped outer surface dissimilar to said product outline, said male mold part being encompassed by an attached elastic element which, in use, is outwardly deformable by a pressurized fluid introduced between it and said male mold part in order to force liquid resin occupying said substantial clearance into said textile reinforcement and produce tension in said textile reinforcement by pressing against it, said male mold part including a slidable pusher operable to outwardly



deform a portion of said elastic element adjacent the shaped inner surface region of said female mold part where said localized projection of the product to be molded is reproduced in the negative, said pusher having a working end generally corresponding in shape to said projection and being effective to augment the tension produced in said textile reinforcement by the pressurized fluid-induced deformation of said elastic element at said shaped inner surface region, said pusher being slidably mounted in guides provided in said male mold part and being operatively linked to a movable control rod extending out of said male mold part.

4,338,071

#### APPARATUS FOR THE MANUFACTURE OF HOLLOW BODIES FROM A THERMOPLASTIC BY THE BLOW-MOULDING PROCESS

Werner Daubenbüchel, Bensberg-Refrath, and Alfred Thomas, Dambroich, both of Fed. Rep. of Germany, assignors to Kautex-Maschinenbau GmbH, Bonn-Holzlar, Fed. Rep. of Germany

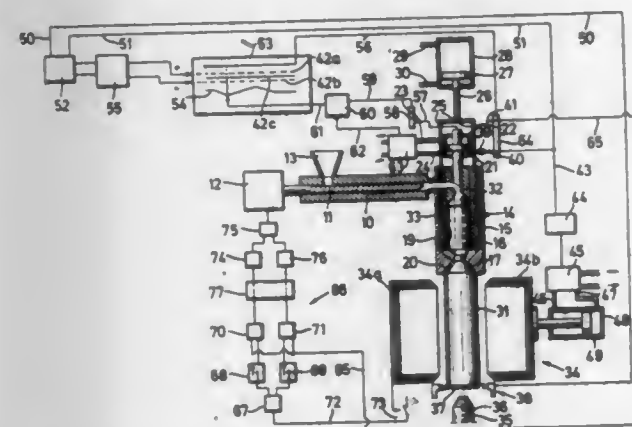
Continuation of Ser. No. 728,620, Oct. 1, 1976, abandoned. This application Jan. 22, 1980, Ser. No. 114,244

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1975, 2544609

Int. Cl.<sup>3</sup> B29C 17/07

U.S. Cl. 425-140

6 Claims



1. Blow-moulding apparatus for the manufacture of hollow bodies from parisons formed from a thermoplastic material, said apparatus comprising in combination:

- (a) a screw extruder receiving and extruding a charge of thermoplastic material at a controllable rate;
- (b) an extrusion head having an accumulator chamber of pre-

- determined size having an inlet positioned to receive thermoplastic material from the screw extruder and means indicating said accumulator is filled;
- (c) a gap-like outlet orifice for passing said material from the accumulator chamber;
- (d) a piston within said chamber movable to discharge through said outlet orifice a batch of the thermoplastic material of substantially predetermined size for forming a parison;
- (e) means to move the piston in the chamber to force thermoplastic material therein through said outlet orifice to form a parison while said screw extruder is extruding material into said head and out of said outlet orifice along with the material accumulated in said chamber to form the parison;
- (f) a blow-mould consisting of at least two openable parts, the open mould encompassing the parison;
- (g) means for sensing the length of each parison;
- (h) means responsive to change in parison length sensed by (g) for adjusting the width of the gap-like outlet orifice to correct for changes in length of the parisons; and
- (i) control means responsive to said means indicating the accumulator chamber is filled for controlling the rate of extrusion of the material from the extruder during formation of a parison to affect the amount of material per unit time extruded into the accumulating chamber and parison by the extruder and keep the time for producing the parison substantially constant.

4,338,072

#### APPARATUS FOR CRUSING PARTIALLY CURED FREELY RISEN FOAM

Alan H. Milford, Hamden, and Oliver J. Proulx, Wallingford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 932,246, Aug. 9, 1978, Pat. No. 4,134,945, which is a continuation-in-part of Ser. No. 738,262, Nov. 2, 1976.

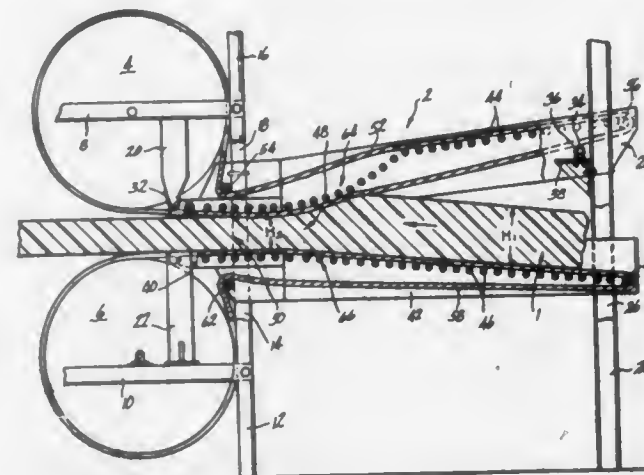
This application Nov. 1, 1979, Ser. No. 90,200

The portion of the term of this patent subsequent to Jan. 16, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> B29D 27/04

U.S. Cl. 425-371

5 Claims



1. In an apparatus for making flexible densified polyurethane foam from a polyurethane foam-forming reaction mixture that is allowed to rise to a free risen height and is crushed before being completely cured, the improvement comprising: crush conveyor means for crushing said partially cured freely risen foam as said foam is being conveyed, said conveyor means including an upper arcuate crushing portion having a radius of a dimension such that the ratio of the arc radius to height of the freely risen foam is greater than 1.1 to 1.0, and a bottom crushing portion oppositely disposed from the upper arcuate crushing portion, said bottom crushing portion comprising a planar section.

4,338,073

#### APPARATUS FOR APPLYING POLYMERIC MATERIAL TO A WORKPIECE

Aleksander Wielesniuk, Swavesey, England, assignor to Barwell Machine and Rubber Group Limited, Cambridge, England

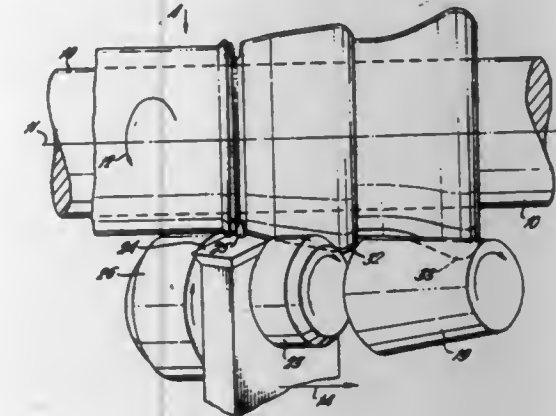
Filed Apr. 10, 1981, Ser. No. 253,153

Claims priority, application United Kingdom, Apr. 11, 1980, 8012052; Jan. 3, 1980, 8018061

Int. Cl.<sup>3</sup> B29C 15/00

U.S. Cl. 425-115

18 Claims



1. An apparatus for applying a polymeric covering to a workpiece comprising means to support and rotate a workpiece about an axis thereof, main rolling means having a rolling surface for forming a nip with the workpiece surface to render plastic, compound and masticate polymeric material previously applied to a workpiece to form a homogeneous layer of the material around the workpiece surface, advanced rolling means having a rolling surface for forming a nip with the workpiece to apply polymeric material to the workpiece surface prior to action thereon by the main rolling means, final rolling means having a rolling surface for forming a nip with the workpiece surface for finish rolling the polymeric material after operation thereon by the main rolling means and means to guide the three rolling means in a direction parallel to said axis to apply a polymeric coating along the length of the workpiece supported and rotating in said workpiece support means.

4,338,074

#### FLUIDIZED BED COMBUSTION CHAMBERS

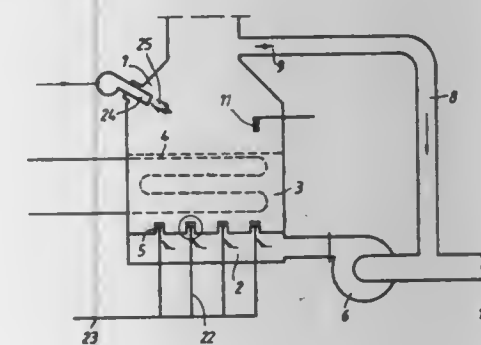
Lars-Göran Johansson, Finspong, Sweden, assignor to Stal-Laval Turbin AB, Finspong, Sweden

Continuation of Ser. No. 916,039, Jun., 1978, abandoned. This application Feb. 4, 1980, Ser. No. 118,010

Int. Cl.<sup>3</sup> F23D 19/00

U.S. Cl. 431-6

6 Claims



1. A method of initially heating a fluidized bed combustion chamber to a temperature sufficient to promote ignition and combustion of a fuel introduced into the fluidized bed combustion chamber, comprising the steps of: circulating a superheated fluid through a heat exchange conduit having a portion immersed in a material forming a fluidized bed in said fluidized bed combustion chamber; circulating a gas in a substantially vertically upward direc-

tion through said fluidized bed and into a bypass conduit in fluid communication with said fluidized bed combustion chamber; circulating said gas through said bypass conduit and into a separate chamber positioned substantially beneath said fluidized bed; forcing said gas from said separate chamber into a vertically lower portion of said fluidized bed in said fluidized bed combustion chamber to complete a closed cycle; and introducing a quantity of fuel into said fluidized bed adjacent said gas.

4,338,075

#### COMBINATION CAMPSTOVE AND LANTERN

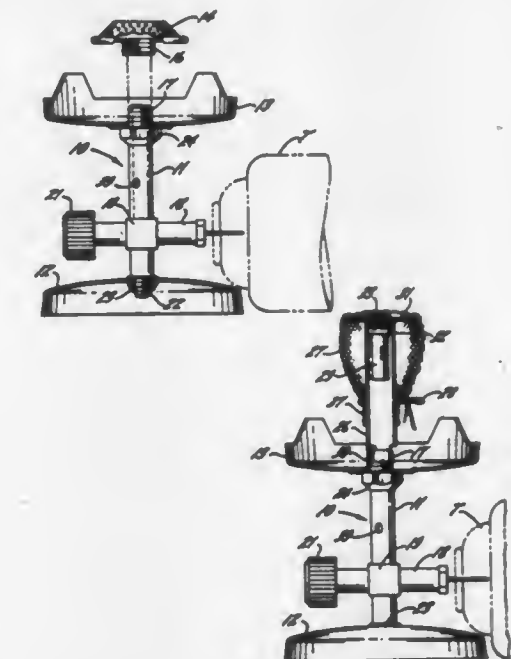
Robert A. Bemm, 1241 Swainwood Dr., Glenview, Ill. 60025

Filed Dec. 26, 1979, Ser. No. 106,870

Int. Cl.<sup>3</sup> F23D 13/04

U.S. Cl. 431-344

11 Claims



1. A collapsible campstove and lantern apparatus comprising a stand for supporting said apparatus in an upright position, a burner base mounted in upstanding relation on the stand and having a gas tube with an upper outlet end and a gas inlet end, a stove burner attachment removably mountable on said gas tube outlet end so that when gas is supplied through said gas tube and ignited said apparatus functions as a campstove, a lantern subassembly including a mantle support deflector plate and flame distributor member, said flame distributor member being removably mountable on said gas tube outlet end upon removal of said stove burner attachment, said deflector plate being mounted transversely on and extending radially outwardly from an upper end of said flame distributor member when said member is in mounted position on said gas tube, a cloth mantle positionable in inverted fashion over said mantle support deflector plate and flame distributor member with said deflector plate holding said mantle in a substantially open condition, said mantle having means for securing a lower end thereof about said flame distributor member so that when gas is supplied through said gas tube and member and ignited the mantle is illuminated and said apparatus functions as a lantern, and said stand, burner base, stove attachment, and lantern subassembly, all being disassemblable from each other whereby said burner base, stove attachment, and lantern subassembly may be contained in said stand for compact storage and transport.



4,338,076

**OIL BURNER FOR LOW HEATING CAPACITIES**

Fritz Straumann, Hauptstrasse, Waldenburg, and Franz Sutter, Bannwilerstrasse, Niederdorf, both of Switzerland  
PCT No. PCT/EP78/00028, § 371 Date Aug. 30, 1979, § 102(e)  
Date Jul. 27, 1979, PCT Pub. No. WO79/00468, PCT Pub. Date Jul. 26, 1979

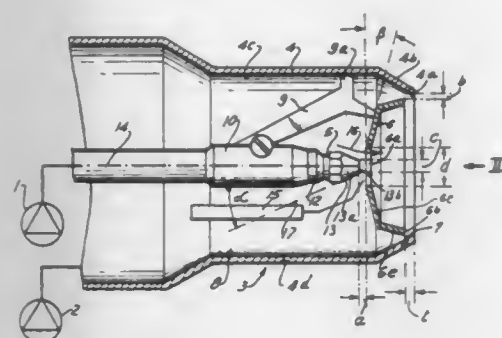
PCT Filed Dec. 29, 1978, Ser. No. 61,202

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759004

Int. Cl.<sup>3</sup> F23Q 3/00

U.S. Cl. 431—351

16 Claims



1. An oil burner including an oil conveying device, an air blower and a burner head, said burner head comprising:  
a substantially cylindrical burner tube having an outlet orifice at one end, said burner tube tapering towards the orifice,

a burner nozzle situated in said burner tube, said burner nozzle having a plurality of supporting arms and being tapered towards said outlet orifice of said burner tube thereby to have a frustoconical end zone at a front end thereof, and

a baffle plate attached to and supported by the supporting arms of said burner nozzle, said baffle plate having a cup shape and being arranged in said burner tube in front of said burner nozzle with the interior bottom of the cup shape facing the outlet orifice of said burner tube, the cup shape of said baffle plate including a bottom zone conically widening towards the outlet orifice of said burner tube and having a central opening with a diameter equal to or larger than that of the burner nozzle and a plurality of passage slots radially outwardly extending from the central opening, said passage slots being recessed by bends in the bottom zone forming strip zones extending angularly towards the outlet orifice of said burner tube, and an edge shell around the bottom zone widening towards the outlet orifice of said burner tube so that an annular gap is defined between a front end of the edge shell of said baffle plate and the inner face of said burner tube,

whereby primary air in the burner head is conducted over said frustoconical end zone of said burner nozzle mainly into the central opening of said baffle plate to flow substantially parallel to an axis of said burner tube in at least the edge zone of said central opening of said baffle plate for imparting thorough mixing of air and oil, and secondary air in the burner head is ejected through said annular gap for complete combustion of oil.

4,338,077

**METHOD FOR CONTROLLING TEMPERATURE OF MULTI-ZONE HEATING FURNACE**

Hiroshi Shibayama, Tokyo; Shinya Tanifuji, Hitachi; Yasuo Morooka, Hitachi; Kozo Nakai, Hitachi, and Nobuyuki Togashi, Ibaraki, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha and Hitachi, Ltd., both of Tokyo, Japan

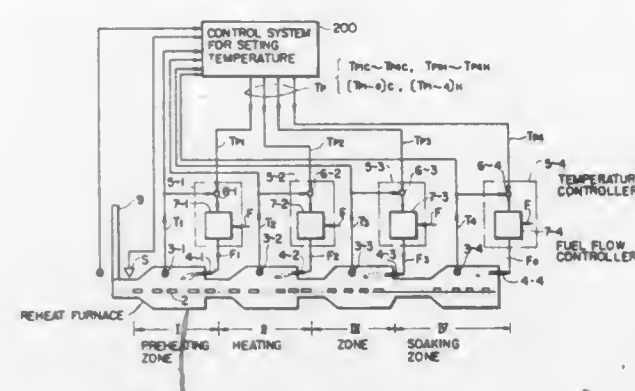
Filed Nov. 26, 1980, Ser. No. 210,830

Claims priority, application Japan, Nov. 26, 1979, 54/182098

Int. Cl.<sup>3</sup> F27D 3/00

U.S. Cl. 432—11

11 Claims



1. In a method of controlling the temperature inside a heating furnace having at least one furnace zone capable of being controlled by heating means and while conveying and heating therein materials to be heated that are introduced thereinto, withdrawing said materials to be heated after they are heated to a predetermined temperature, a method of controlling the temperature of a heating furnace comprising:

memorizing sequentially specific data of said materials to be rolled that are introduced into said heating furnace;  
shifting and memorizing said memory values in accordance with the conveying operation of conveyor means inside said heating furnace;

setting a furnace zone temperature in accordance with movement of said materials to be heated;

attaining said furnace zone temperatures set in the preceding temperature setting step by controlling the furnace zone temperatures with said heating means of said furnace zones;

changing the set temperature of said furnace zones in accordance with the position of a leading boundary material of plural materials having different temperature elevation patterns from those of said plural materials to be heated that are sequentially introduced; and

attaining the changed furnace zone temperatures set in the preceding temperature set changing step by controlling the furnace zone temperatures with said heating means of said furnace zones.

4,338,078

**HEATED CONVEYOR SYSTEM**

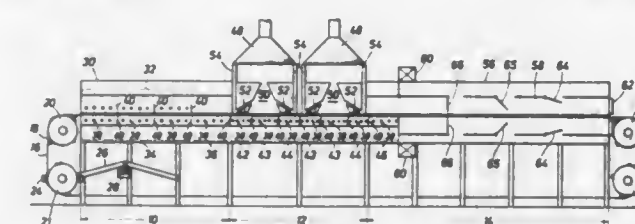
Curtis M. Lampkin, El Paso, Tex., assignor to Photon Power, Inc., El Paso, Tex.

Filed Nov. 24, 1980, Ser. No. 209,723

Int. Cl.<sup>3</sup> F27D 3/00

U.S. Cl. 432—11

26 Claims



20. As a sub-assembly, a system for driving an output signal functionally related to surface temperature of a sheet of substrate material being heated by radiative heaters, comprising:  
a first thermocouple affixed to said radiative heaters, and

a second thermocouple insertable to a preselected location intermediate of said first thermocouple and said substrate.

in rubbing contact therewith and including an annular array of graphite elements in contact with one another along generally radial sides, and tensioned elongate flexible clamping means

4,338,079

**METHOD AND APPARATUS FOR SUBJECTING MINERAL PARTICLES TO GAS FLOW**

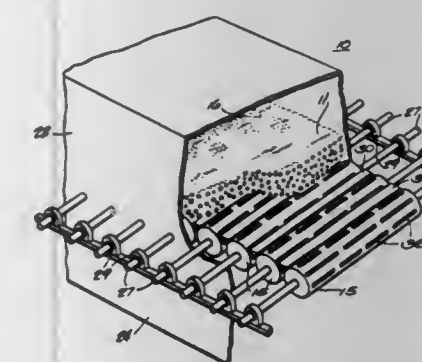
Bobby P. Faulkner, New Berlin; George T. Lee, West Allis; Peter L. Schumacher, Oak Creek, and Michael H. Weinecke, Greenfield, all of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 105,982, Dec. 21, 1979, Pat. No. 4,270,899. This application Dec. 23, 1980, Ser. No. 219,998

Int. Cl.<sup>3</sup> F27B 15/00; F26B 3/00

U.S. Cl. 432—14

22 Claims



11. The method of subjecting solid mineral particles to a gas flow comprising the steps of:

continuously delivering said particles onto parallel horizontal cylindrical apertured rollers having elongated filler members in the nip between adjacent rollers,

forming a bed of said particles on said rollers and filler members having a depth several times greater than the average diameter of said particles,

simultaneously agitating said particles and transporting said bed along a path of travel transverse to the axes of said rollers by rotating said rollers to frictionally engage the cylindrical surfaces thereof with and continually transfer said particles in the lowermost course of said bed onto and across said filler members, and

passing a gas stream in a generally vertical direction through the apertures in said rollers and through said bed as it is being so transported and said particles are being agitated, said roller rotating step being at a circumferential velocity substantially higher than the velocity of said bed along said path of travel and said filler members providing resistance to the flow of said bed so that said bed is transported relatively slowly past said gas stream.

4,338,080

**SEAL ASSEMBLY FOR A ROTARY KILN**

Jean Grandcolas, Marseilles; Guy Harmelin, Martigues; Roger Lazzarini, Marseilles, and Bernard Reverchon, Bouc Bel Air, all of France, assignors to Lafarge Conseils et Etudes, Paris, France

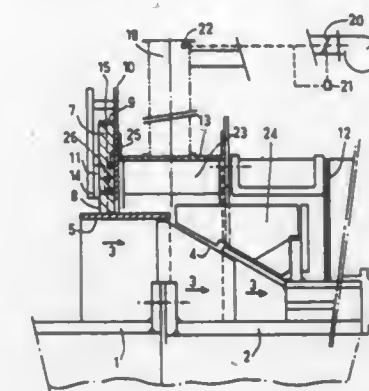
Filed Dec. 23, 1980, Ser. No. 220,169

Claims priority, application France, Dec. 24, 1979, 79 31603  
Int. Cl.<sup>3</sup> F27B 7/24; F27D 1/18; F26B 25/00

U.S. Cl. 432—115

4 Claims

1. A seal assembly for a rotary kiln of the type having a rotating cylinder, a first part fixed for rotation with the rotating cylinder and having an outer cylindrical surface; flexible means for flexibly connecting said first part to said rotary kiln in spaced relation thereto, whereby the cylindrical geometrical form of the cylindrical surface of said first part is maintained despite deformation of said rotating cylinder; a second stationary part having a cylindrical surface approximately coaxial with the rotating cylinder and said first part and lying in spaced relation thereto; a seal assembly interposed between the first and second parts, said seal assembly comprising a liner disposed outwardly of the cylindrical surface of said first part



bearing against the outer surfaces of said graphite elements for clamping said graphite elements against said cylindrical surface.

4,338,081

**TORQUE TRANSMISSION BELT MEANS**

Yoshiyuki Hattori, Toyooka; Kazuma Matsui, Toyohashi, and Hiroji Kinbara, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

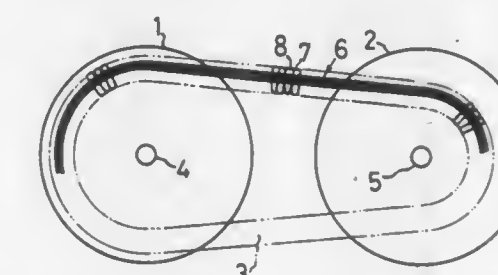
Filed May 19, 1980, Ser. No. 151,155

Claims priority, application Japan, Jun. 8, 1979, 54/72785

Int. Cl.<sup>3</sup> F16G 5/00

U.S. Cl. 474—201

5 Claims



1. A torque transmission belt extending between a drive pulley and a driven pulley and movable to transmit a driving force from said drive pulley to said driven pulley, comprising:  
a plurality of metallic strips superimposed on each other to form at least one ring;

a series of blocks arranged along said ring and shiftably engaged therewith;

said series of blocks being composed of two kinds of blocks alternately arranged along said strips;

one kind of blocks being made of metal and having opposed side surfaces extending in the direction of movement of the belt, said surfaces including portions which are substantially parallel to one another and remaining portions which are inclined so as to contact surfaces of V-shaped grooves of said pulleys;

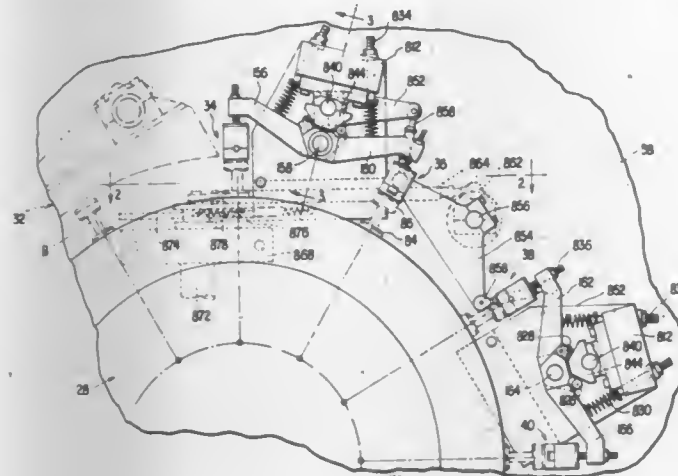
the other kind of blocks being made of a non-metallic compression-resistant material which is lighter than that of said one kind blocks and having opposed side surfaces extending transversely of the direction of movement of the belt, said surfaces including portions which are inclined so that the distance therebetween is decreased toward the inside surface of said belt, said blocks having additional opposed side surfaces extending in the direction of movement which do not contact said surfaces of the V-shaped grooves of said pulleys.



**4,338,082**  
**POSITIONING MECHANISM FOR SUPPORT ARM OF**  
**HEAT SEALING AND COOLING DEVICES**  
 Jack R. Evers, Torrance, Calif., assignor to Developak Corporation, Redondo Beach, Calif.

Filed May 23, 1980, Ser. No. 152,715  
 Int. Cl.<sup>3</sup> B31B 1/64  
 U.S. Cl. 493—190

9 Claims

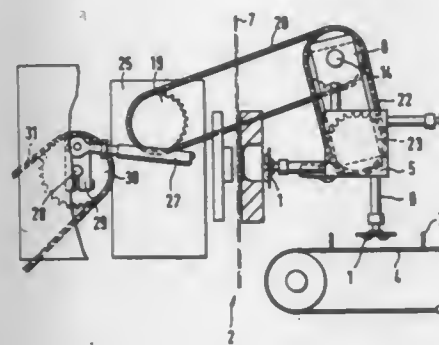


1. A mechanism comprising a pair of pivotally mounted arms, and a drive mechanism for sequentially moving said arms to operative and inoperative positions, said drive mechanism including each of said arms having a control portion, a drive shaft, and a cam carried by said drive shaft, said cam having separate segments cooperating with said control portions, there are two sets of said arms each having one of said drive mechanisms, a control shaft mounted between said sets of arms, and control means carried by said control shaft and connected to said drive shafts for simultaneously actuating said drive shafts, said control means including a double ended lever carried by said control shaft and a single lever carried by each drive shaft.

**4,338,083**  
**APPARATUS FOR TRANSFERRING TABLET STRIP**  
**PACKAGES**  
 Rolf Andrae, Fellbach, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany  
 Filed May 13, 1980, Ser. No. 149,366  
 Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922171

Int. Cl.<sup>3</sup> B31B 1/16  
 U.S. Cl. 493—239

4 Claims



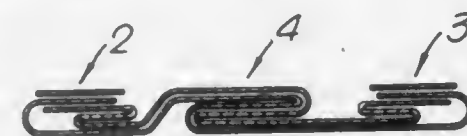
1. An apparatus for processing strip packages, having:  
 a horizontally operating stamping device to stamp out strip packages;  
 a horizontal conveyor belt to transport the strip packages;  
 a plurality of suction devices to grip the strip packages and to transfer the strip packages from the stamping device to the conveyor belt;  
 a transfer head on which the plurality of suction devices are

mounted, wherein the transfer head is moved in a swinging manner;  
 a swing which supports the transfer head, wherein the swing moves and carries the transfer head through one swinging movement for each stamping stroke of the stamping device, and wherein the swing is connected to pivot the transfer head 90° for each swinging movement such that the pivot of the transfer head is partially superimposed on the swinging movement of the transfer head.

**4,338,084**  
**METHOD FOR PILING OR STACKING SACKS OR BAGS**  
 Ernst R. Berthelsen, Terndrup, Denmark, assignor to Bates Ventilsaekke Co. A/S, Norresundby, Denmark  
 Filed May 1, 1980, Ser. No. 145,855  
 Claims priority, application Denmark, Jun. 25, 1979, 2651/79  
 Int. Cl.<sup>3</sup> B31B 1/00

U.S. Cl. 493—244

3 Claims

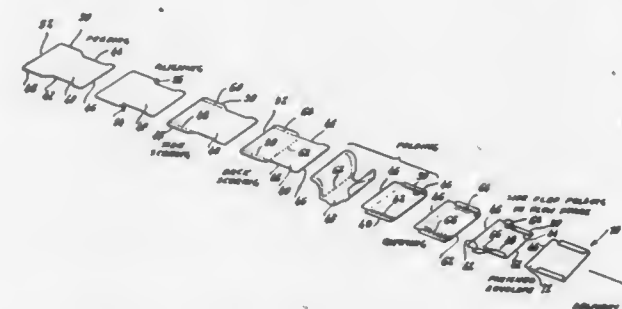


1. A method of stacking elongated valve bags having closed opposite ends each formed by a thickened reinforced folded and sized portion, one of which contains a valve opening, comprising the steps of  
 placing each bag in flat condition with the sized end portions thereof folded flatly against the body of the bag and facing upwardly, and with the folds at each end portion presenting a multi-ply formation of greater thickness than the intermediate portion of the bag between said folds,  
 folding said intermediate portion of the bag between said folded end portions along spaced fold lines transverse to the longitudinal axis of said bag into a multi-ply formation having a thickness substantially equal to the thickness of the folded formations at the ends of the bag, and  
 stacking said folded bags in horizontal flat condition, one upon another, with the folded and sized end portions facing in the same direction, the valve openings registering with each other, and the edges of the bags in alignment.

**4,338,085**  
**APPARATUS FOR MANUFACTURING ENVELOPES**  
 John Sullivan, San Jose, and Harold R. Lillibridge, Burlingame, both of Calif., assignors to Champion International Corporation, Stamford, Conn.  
 Filed Apr. 3, 1980, Ser. No. 136,493  
 Int. Cl.<sup>3</sup> B31B 21/26

U.S. Cl. 493—254

20 Claims



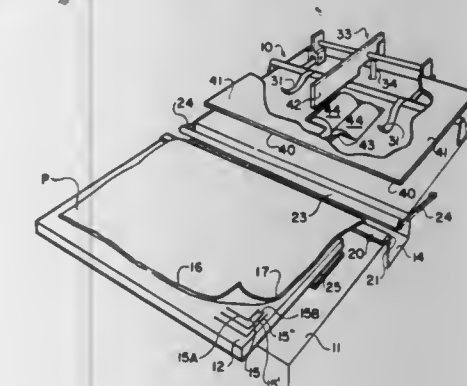
1. In an apparatus for manufacturing envelopes from substantially planar envelope blanks having a leading and trailing edge connected by a pair of spaced side edges, said apparatus including successively, a first and second scoring station, a first folding station, a gum applying station, and a second folding station:  
 means for feeding said blanks in tandem to said stations including at least one upper and lower blank contacting

belt for supporting and feeding each blank through said gum applying and second folding stations,  
 means for spacing said blanks from each other and aligning the blanks with said stations,  
 means at said first scoring station for scoring the blanks along line spaced from but parallel to the side edges thereof,  
 means at said second scoring station for scoring the blanks substantially perpendicular to the first score lines intermediate the leading and the trailing edges of each blank,  
 means at said first folding station for folding said blanks substantially in half about said intermediate score line so that the leading edge of each blank overlaps the trailing edge thereof to form a lower and upper folded half,  
 means at said gum applying station including a pair of spaced gum applying dies in the feed path of each of said blanks for transferring gum from a gum pot to said blanks along spaced areas adjacent the longitudinal edges of the upper half of each of said folded blanks,  
 said lower belt having adjacent portions spaced substantially below said gum applying dies and the feed path of each blank at said gum applying station so as not to contact said dies between successive blanks,  
 means at said second folding station disposed in the path of movement of said blanks for folding the opposite longitudinal edges on said lower half of each of said blanks 180 degrees about an adjacent score line to overlie a gummed area on the upper half of said blank, and  
 means for conveying said folded and gummed blanks to a collection point.

**4,338,086**  
**MACHINE FOR MAKING LONGITUDINAL AND**  
**TRANSVERSE FOLDS IN FABRIC**  
 Charles P. Heater, Boys Camp Rd., Lake Lure, N.C. 28746  
 Filed Aug. 29, 1980, Ser. No. 182,269  
 Int. Cl.<sup>3</sup> B65H 45/14

U.S. Cl. 493—419

7 Claims

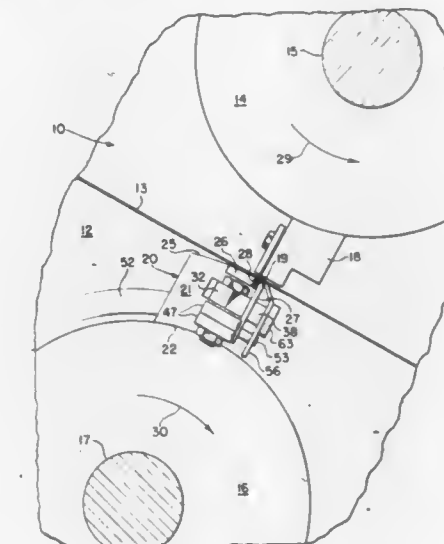


1. In a machine for folding fabric articles having in opposed relationship a leading edge and a trailing edge and said machine having a substantially horizontal frame extending between the rear and front of the machine, a first folding station including the combination of a feed table at the rear of the frame, an abutment spaced forwardly of the feed table a distance less than the corresponding dimension of an article to be folded, means for positioning an article to be folded at a predetermined position on the feed table with the trailing edge of the article at a predetermined position on the feed table and with the leading edge of the article overlying the abutment, a stationary fold plate having a rear edge spaced forwardly from the abutment a desired distance to provide an edge about which the article is folded, a pivotal rod movable between a first position against the abutment and a second position located forwardly of the rear edge of the stationary fold plate, means for moving the pivotal rod to the first position to clamp against the abutment the leading edge of an article occupying said predetermined position, means for folding the article about a first fold line to position the trailing edge of said article in overlying relation to its leading edge and for positioning said article in overlying relation to the pivotal rod while the pivotal

rod clamps the leading edge of the article against the abutment, and means for moving the pivotal rod and the overlying trailing and leading end portions of the article to said second position thereby folding the article about the rear edge of the stationary fold plate.

**4,338,087**  
**COMBINED WEB JAW AND BIGHT STRIPPER**  
 Clyde G. Gregoire, Bensenville, Ill., assignor to Baldwin-Gregg, Inc., Lyons, Ill.  
 Filed Jan. 12, 1981, Ser. No. 224,624  
 Int. Cl.<sup>3</sup> B65H 45/16  
 U.S. Cl. 493—425

4 Claims



1. A combination web gripper and bight stripper for use in a web folder comprising a frame structure, a roller journaled for rotation in said frame structure, a working box carried transversely on the outer surface of said roller, the working box having a stationary jaw and a transversely endwise movable actuator, cam means on said frame structure for effecting endwise sliding of said actuator, a moving jaw, means guiding said moving jaw relative to said stationary jaw in a straight in movement toward said stationary jaw and a straight out movement away from said stationary jaw, a plurality of angularly disposed cam elements interposed between said moving jaw and said actuator to effect a movement of said moving jaw toward and away from said stationary jaw upon endwise movement of said actuator, a web bight stripper movable with said moving jaw toward and away from said stationary jaw, means guiding said bight stripper relative to said stationary jaw in a straight up and down movement separate from said movable jaw, a plurality of angularly disposed cam elements interposed between said bight stripper and said actuator to effect the separate movement of said bight stripper from a position substantially level with said moving jaw to a position spaced above said moving jaw upon endwise movement of said actuator.

**4,338,088**  
**FOLDING MACHINE**  
 Randall D. Buss, and Benjamin A. Buss, both of 1315 23rd Ave. Ct., East Moline, Ill. 61244  
 Filed Aug. 29, 1977, Ser. No. 828,302  
 Int. Cl.<sup>3</sup> B65H 45/04

U.S. Cl. 493—445

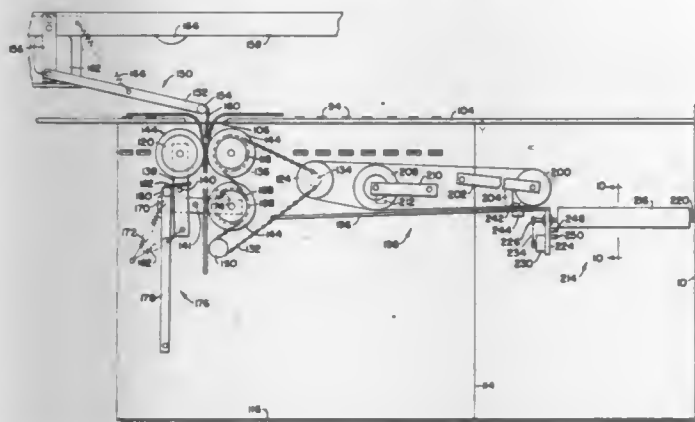
19 Claims

1. A material-folding machine comprising: a frame; a pair of cooperating folding rolls rotatably supported on the frame with a first of the pair rotatable about a fixed axis and a second of the pair rotatable about an axis mounted for movement in an arcuate path toward and away from the first; means yieldably biasing the second of the pair of folding rolls toward the first thereof; oscillatory blade means supported on the frame for movement into engagement with material between the blade means and the pair of folding rolls to move the material be-



tween the pair of folding rolls; and a single positive drive means for the pair of folding rolls including a transversely grooved pulley mounted on each of the pair of folding rolls at common ends thereof, an idler pulley mounted on the frame for rotation in a fixed position and in alignment with the grooved pulleys and on the side of the grooved pulley mounted on the second of the pair of folding rolls opposite from the pulley mounted on the first of the pair of folding rolls, a drive pulley mounted on the frame in alignment with and spaced from the first three mentioned pulleys for rotation in a fixed position, and a flexible dual grip drive belt having cogs on the opposite sides thereof spaced to engage in the grooves of the pulleys trained about the pulleys and about the pulley mounted on the one of the pair of folding rolls in a direction opposite from which it trained about the other pulleys.

7. In a material-folding machine having frame means supporting a plurality of pairs of cooperating folding rolls and a plurality of oscillatable blade means for introducing material to be folded between the cooperating folding rolls, a stacking mechanism comprising: a smooth-surfaced table having receiving and discharge ends supported by the frame with the receiving end in a position to receive the folded material emerging from the last pair of cooperating folding rolls; a roller mounted



on the frame at each of the receiving and discharge ends of the table in parallelism to the last pair of cooperating folding rolls and slightly above the table; means for driving one of the rollers; belt means trained about the rollers to frictionally engage the folding material fed onto the receiving end of the table from the last pair of cooperating folding rolls and move the material to and beyond the discharge end of the table; a pair of drop door means supported on the frame adjacent the discharge end of the table to receive the folded material from the table, each of the pair of door means being mounted for movement between open and closed positions about a generally horizontal axis parallel to the direction of movement of the folded material on the table and outside the area covered by the material when on the door means, and the pair of door means each extending from its respective axis inwardly and upwardly to an inner edge positioned adjacent to the other door means when in the closed position; motor means controlling the door means and normally holding them in the (a) closed position; sensor means on the discharge end of the table for sensing the passage of material thereover to activate the

motor means and drop the door means when the material has completely passed off the table; and platform means supported on the frame below the door means to receive the folded material dropped by the door means.

4,338,089

**PROCESS FOR PREPARATION OF HYDROCARBONS**  
Lambert Schaper, and Swan T. Sie, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 31, 1980, Ser. No. 174,066

Claims priority, application Netherlands, Aug. 6, 1979, 7906003

Int. Cl.<sup>3</sup> C07C 1/04

U.S. Cl. 518—707

15 Claims

1. A process for the preparation of a hydrocarbon mixture, from a feed mixture of carbon monoxide and hydrogen with an H<sub>2</sub>/CO molar ratio of less than 1.0 which comprises contacting said feed at a temperature of 200°–500° C., a pressure of 1–150 bar and a space velocity of 50–5000 Nl gas/l catalyst/h in a first contact zone with a trifunctional catalyst combination containing: (a) at least one metal component with catalytic activity for the conversion of an H<sub>2</sub>/CO mixture into acyclic hydrocarbons and/or acyclic oxygen-containing hydrocarbons, (b) at least one metal component with catalytic activity for the conversion of an H<sub>2</sub>/CO mixture into an H<sub>2</sub>/CO<sub>2</sub> mixture, and (c) a crystalline silicate with catalytic activity for the conversion of acyclic hydrocarbons and acyclic oxygen-containing hydrocarbons into aromatic hydrocarbons, which silicate has the following properties:

- thermally stable up to a temperature above 600° C.,
- an X-ray powder diffraction pattern showing, inter alia, the reflections given in Table A of the specification,
- a composition which includes oxides of hydrogen, alkali metal and/or alkaline-earth metal and silicon, and at least one oxide of a trivalent metal, A, selected from the group formed by aluminum, iron and gallium, wherein A<sub>2</sub>O<sub>3</sub>/SiO<sub>2</sub> molar ratio(m) is less than 0.1; and

contacting at least the C<sub>2</sub>– fraction of the reaction product from the first contact zone in a second contact zone at a temperature of 125°–350° C. and a pressure of 1–150 bar with a catalyst containing at least one metal component with catalytic activity for the conversion of an H<sub>2</sub>/CO mixture into acyclic hydrocarbons, which metal components have been selected from the group formed by cobalt, nickel and ruthenium, with the proviso that (a) if the feed to the second contact zone has an H<sub>2</sub>/CO molar ratio of less than 1.5, water is added to this feed in an amount determined by the H<sub>2</sub>/CO molar ratio of the feed for the first step, the activity of the catalyst combination in said first step for converting an H<sub>2</sub>O/CO mixture into an H<sub>2</sub>/CO mixture and the desired H<sub>2</sub>/CO molar ratio of the first step reaction product, and (b) that said catalyst is a bifunctional combination which also contains at least one metal component with catalytic activity for the conversion of an H<sub>2</sub>O/CO mixture into an H<sub>2</sub>/CO<sub>2</sub> mixture.

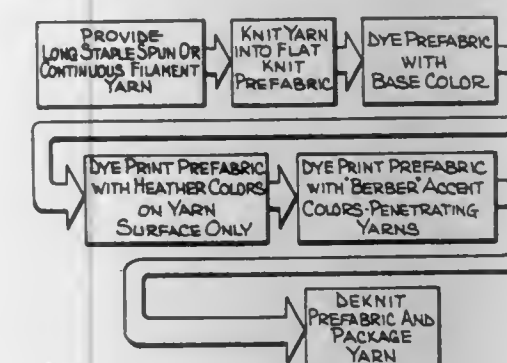
4,338,090

**SIMULATED BERBER YARN AND PROCESS OF PRODUCING SAME**

William F. Hutcheson, Lookout Mountain, Tenn., assignor to Rossville Yarn Processing Company, Rossville, Ga.  
Division of Ser. No. 41,183, May 21, 1979. This application Apr. 10, 1980, Ser. No. 138,827

Int. Cl.<sup>3</sup> D04B 19/00; D06P 3/70, 5/15, 7/00  
U.S. Cl. 8—478

4 Claims



1. A yarn formed of synthetic continuous filaments or long staple spun synthetic fibers and characterized by having an appearance simulating the natural aesthetic appearance of "Berber" wool yarns, said yarn having varying size areas of at least one heather color randomly located along the length of the yarn and at various angular locations around the peripheral surface of the yarn, said heather color areas residing on surface portions only of the yarn without penetrating all the way through the yarn, and said yarn also having areas of at least one accent color randomly located along the length of the yarn and penetrating all the way through the yarn.

4,338,091

**PROCESS FOR LOWERING THE VISCOSITY OF SULFONATED LIGNINS**

Peter Dilling, Isle of Palms, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 13, 1981, Ser. No. 292,629

Int. Cl.<sup>3</sup> D06P 67/02; C07S 1/00

U.S. Cl. 8—524

10 Claims

1. A process for preparing sulfonated lignins possessing low viscosity which comprises the steps of:

- treating an aqueous lignin solution obtained from an alkaline wood pulping process with from about 1 percent to about 10 percent of sodium dithionite, based on the weight of lignin; and
- subsequently reacting the sodium dithionite treated lignin with a water soluble sulfite (or bisulfite) in combination with an aldehyde.

4,338,092

**DISAZO COMPOUNDS HAVING A 4,6,8-TRISULFONAPHTHYL DIAZO COMPONENTS RADICAL AND A 2-AMINO OR SUBSTITUTED AMINO-4-CHLORO-1,3,5-TRIAZIN-6-YL-AMINO SUBSTITUENT**

Lukas Schneider, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Dec. 17, 1980, Ser. No. 217,530

Claims priority, application Switzerland, Dec. 21, 1979, 11411/79

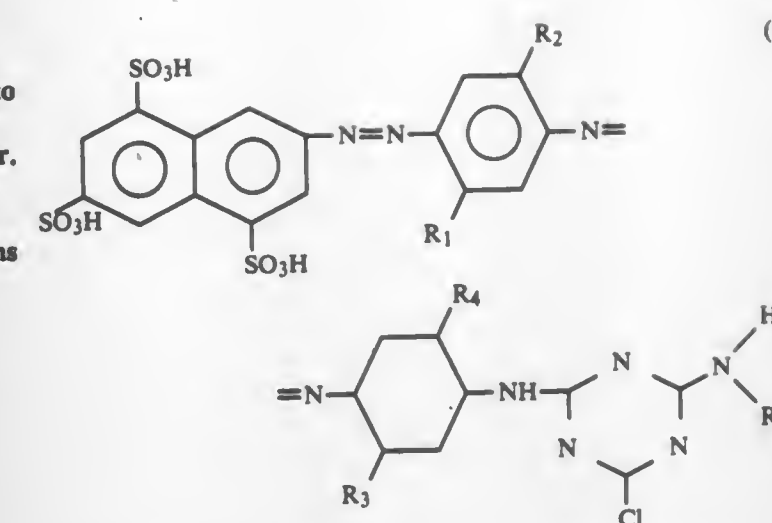
Int. Cl.<sup>3</sup> C09B 62/00

U.S. Cl. 8—549

20 Claims

1. A compound of the formula

## CHEMICAL



or a salt thereof each cation of which is non-chromophoric, wherein

each of R<sub>1</sub> and R<sub>3</sub> is independently hydrogen, methyl, methoxy or —NHCOR<sub>6</sub>, wherein R<sub>6</sub> is methyl or amino, each of R<sub>2</sub> and R<sub>4</sub> is independently hydrogen, methyl or methoxy, with the proviso that at least one of R<sub>1</sub>–R<sub>4</sub> is hydrogen, and R<sub>5</sub> is hydrogen, 2-, 3- or 4-hydroxy(C<sub>2</sub>-alkyl), carboxy(C<sub>1</sub>-alkyl), sulfo(C<sub>1</sub>-alkyl), sulfophenyl or carboxyphenyl, or a mixture of such compounds in free acid or salt form.

4,338,093

**PROCESS FOR DYEING WITH REACTIVE DYESTUFFS**  
Dietrich Hildebrand, Odenthal, and Wolfgang Lohnert, Leichlingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 1, 1981, Ser. No. 279,375

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1980, 3027546

Int. Cl.<sup>3</sup> C09B 62/00; D06P 3/66

U.S. Cl. 8—549

10 Claims

1. Process for dyeing cellulose fibres and fibre mixtures containing cellulose fibres, characterised in that at least two different reactive dyestuffs which give dyeings of the same colour shade on cellulose and which have reactivities which differ by a factor of at least 10 are employed.

4,338,094

**MACROENCAPSULATED IMMUNOSORBENT ASSAY TECHNIQUE**

Nasik Elahi, 41-77 Frame Pl., Flushing, N.Y. 11355  
Continuation-in-part of Ser. No. 87,928, Oct. 25, 1979, Pat. No. 4,280,816. This application Apr. 7, 1980, Ser. No. 137,617

The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.  
Int. Cl.<sup>3</sup> G01N 33/54, 33/56

U.S. Cl. 23—230 B

7 Claims

1. In a method for determining the presence and concentration of an antigen in a liquid medium by immunoassay wherein a supported antibody to said antigen is brought into contact with said liquid medium in an amount and for a time sufficient to bind substantially all of said antigen to said supported antibody, and wherein antibody to said antigen which has been labelled to permit its detection is contacted with the supported antibody to which antigen has been bound so as to bring about binding of the labelled antibody to the antigen bound to the supported antibody, and thereafter determining by suitable detection means the amount of the labelled antibody either bound to said antigen bound to said supported antibody or the amount of the labelled antibody which is not bound to said antigen, the improvement comprising providing said supported antibody as an element comprising particulate supported antibody loosely encapsulated and confined within a rigid porous filter membrane having a pore size less than the size of said



particulates, said element being of a substantially fixed, predetermined volume such that said particulates agitate freely within said element.

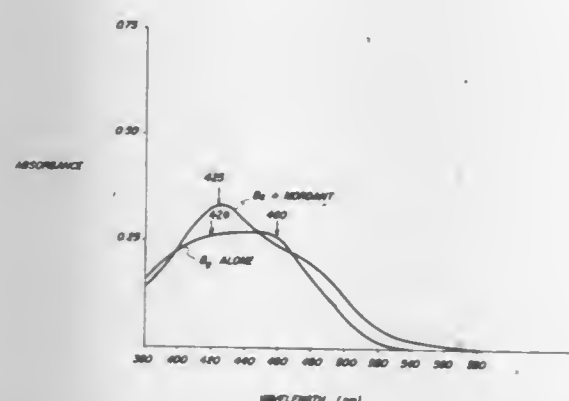
**4,338,095**  
**METHOD FOR SELECTIVE DETERMINATION OF CONJUGATED AND UNCONJUGATED BILIRUBIN**  
 Tai-Wing Wu, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 56,584, Jul. 11, 1980, abandoned. This application Jul. 14, 1980, Ser. No. 167,999. The portion of the term of this patent subsequent to Jan. 19, 1999, has been disclaimed.

Int. Cl.<sup>3</sup> G01N 33/72

U.S. Cl. 23—230 B

13 Claims



1. A method for the selective determination of the unconjugated bilirubin ( $B_u$ ) or conjugated bilirubin ( $B_c$ ), as well as the total bilirubin ( $B_T$ ), content of an aqueous liquid, containing  $B_c$  and  $B_u$ , said method comprising:

- (A) contacting together said aqueous liquid with an analytical element having an essentially dry reagent zone comprising an interactive mordant for bilirubin to mordant bilirubin, the mordanted bilirubin exhibiting a detectable absorption or emission spectrum containing the individual absorption or emission bands characteristic of each of the mordanted  $B_u$  and  $B_c$  components in said aqueous liquid;
- (B) detecting the absorption or emission spectra of said mordanted bilirubin at two absorption or emission wavelengths thereof,
- (1) one wavelength being at or near an absorption or emission maximum of mordanted  $B_u$ ,
- (2) one wavelength being at or near an absorption or emission maximum of mordanted  $B_c$ , and
- (3) the molar absorption or emission characteristics of mordanted  $B_u$  and mordanted  $B_c$  for each of these wavelengths having been predetermined based on a  $B_u$  molecular weight of 584 and a  $B_c$  molecular weight in the range from about 750 to 940; and
- (C) determining  $B_u$ ,  $B_c$  and/or  $B_T$  from said absorption or emission spectra and said molar absorption or emission characteristics.

**4,338,096**  
**METHOD AND APPARATUS FOR CONTROLLING THE FLOW OF MOLTEN REACTION MEDIA**  
 Warden W. Mayes, Dallas, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

Filed Oct. 6, 1980, Ser. No. 193,981

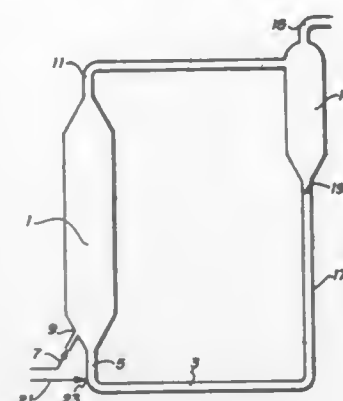
Int. Cl.<sup>3</sup> G05D 7/00; C10G 45/72

U.S. Cl. 23—230 A

86 Claims

1. A method of controlling the flow of a molten mass reac-

tion medium through a supply conduit to a reaction zone comprising introducing a control gas into said supply conduit



and apportioning the flow of control gas to the desired flow of molten medium.

**4,338,097**  
**CORROSION MONITORING PROCESS AND APPARATUS FOR USE THEREIN**  
 Mervyn E. D. Turner, Middlesbrough, and Joshua C. Quayle, Stockton-on-Tees, both of England, assignors to Imperial Chemical Industries Limited, London, England

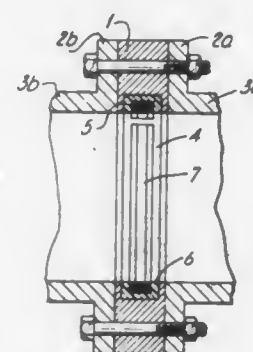
Filed Dec. 16, 1980, Ser. No. 217,151

Claims priority, application United Kingdom, May 8, 1980, 8015221

Int. Cl.<sup>3</sup> G01N 17/00

U.S. Cl. 23—230 C

12 Claims



1. A method of monitoring corrosion of the surface of a component subject to a corrosive environment comprising
- (i) forming an elongated strip test element from the material of said component,
- (ii) mounting said test element, out of contact with said component, in a surface in a housing so that one elongated surface of said test element and said surface of the housing are flush with said component surface, and are exposed to said corrosive environment, said one surface of the test element extending, in the direct of its length over substantially all of one dimension of said component surface, and
- (iii) monitoring the thickness of said test element.

**4,338,098**  
**SOLID HEAT-GENERATING COMPOSITION**  
 Teizo Yamaji, Yamaguchi, Japan, assignor to Teitin Limited, Osaka, Japan

Filed Apr. 1, 1980, Ser. No. 136,246

Claims priority, application Japan, Apr. 3, 1979, 54-39324; May 2, 1979, 54-53349; May 2, 1979, 54-53350; Jun. 13, 1979, 54-73480

Int. Cl.<sup>3</sup> F41C 7/00, 11/00; F24J 1/00; A61F 7/00

U.S. Cl. 44—3 A

10 Claims

1. A self-contained solid two-component heat-generating chemical system packaged in a form ready for use to generate heat in the form of heat of hydration of calcium oxide by

allowing said two-components to contact each other, the first of said two-components comprising granules or powder of calcium oxide, and the second of said two-components comprising granules or powder of a solid substance containing water of crystallization which substance supplies the water required for the hydration of calcium oxide exclusively of any externally supplied water, said ready for use package including at least one partition physically separating the calcium oxide from the solid substance to maintain the calcium oxide and the solid substance out of contact with each other until said at least one partition is removed just prior to use of said heat-generating chemical system.

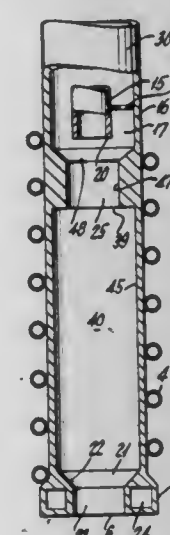
**4,338,099**  
**PROCESS FOR THE PARTIAL OXIDATION OF SLURRIES OF SOLID CARBONACEOUS FUELS**  
 William B. Crouch, Chappaqua, N.Y.; George N. Richter, San Marino, Calif.; Charles P. Marion, Mamaroneck, N.Y.; Blake Reynolds, Riverside, Conn.; Albert Brent, Huntington, and Edward T. Child, Tarrytown, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,215

Int. Cl.<sup>3</sup> C10J 3/46

U.S. Cl. 48—197 R

18 Claims



1. In a continuous process for the manufacture of gas mixtures comprising  $H_2$ ,  $CO$ ,  $CO_2$  and at least one material from the group  $H_2O$ ,  $N_2$ ,  $A$ ,  $CH_4$ ,  $H_2S$  and  $COS$  by the partial oxidation of a feedstream comprising a pumpable slurry of solid carbonaceous fuel in a liquid carrier, and optionally, a temperature moderator; said partial oxidation occurring in the reaction zone of a free-flow gas generator at an autogenous temperature in the range of about  $1700^\circ$  to  $3500^\circ$  F., and a pressure in the range of about 5 to 300 atmospheres, the improvement which comprises: passing said slurry feedstream of solid carbonaceous fuel in a liquid carrier in liquid phase and having a solids content in the range of about 30 to 75 weight % and being at a temperature in the range of about ambient to  $500^\circ$  F., a pressure in the range of about 76 to 4500 psia, and a velocity in the range of about 0.5 to 75 ft. per second through one passage of a burner and into an internal pre-mix zone in said burner, and wherein said burner comprises a central conduit coaxial with the central longitudinal axis of said burner and having a downstream exit orifice that discharges into said pre-mix zone, said central conduit providing a passage, an outer coaxial conduit providing a free-flow annular passage along the length of said central conduit between the inside diameter of said outer conduit and the outside diameter of said central conduit, an exit nozzle terminating said outer conduit at the downstream end of said burner comprising a converging frusto-conical rear portion and a right cylindrical front portion which terminates at the downstream face of the burner, an annular shaped face-cooling chamber surrounding said exit nozzle at the burner tip, and wherein the tip of said central conduit is retracted upstream from the face of said burner a distance of two or more

times the minimum diameter of said outer conduit converging exit nozzle to provide said pre-mix zone comprising at least two cylindrically shaped communicating pre-mix chambers in tandem and coaxial with the central longitudinal axis of said burner simultaneously passing through the other passage in said burner and into said pre-mix zone said feedstream of free-oxygen containing gas optionally in admixture with steam, at a temperature in the range of about ambient to  $1200^\circ$  F., a pressure in the range of about 76 to 4500 psia, and a velocity in the range of about 85 ft. per second to sonic velocity; intimately mixing together the two reactant streams and vaporizing without burning a controlled amount in the range of about 0 to 100 vol. % of the liquid carrier in said pre-mix zone to produce a multiphase mixture at a temperature below its autoignition temperature; and discharging the resulting multiphase mixture into the reaction zone of the partial oxidation gas generator at a discharge velocity which is greater than the flame propagation velocity and wherein each pre-mix chamber except for the first chamber in the line comprises a coaxial cylindrical body inlet portion and a coaxial at least partially converging frusto-conical outlet portion that may optionally develop into a straight cylindrical portion and the first pre-mix chamber in the line has a converging inlet portion, and a straight coaxial cylindrical body portion that discharges through a circular orifice directly into the next in line coaxial pre-mix chamber and the step of intimately mixing together said slurry of solid carbonaceous fuel with said free-oxygen containing gas occurs by passing said materials through said pre-mix zone and exit nozzle at the downstream end of the burner while repeatedly changing the velocity of the multiphase mixture.

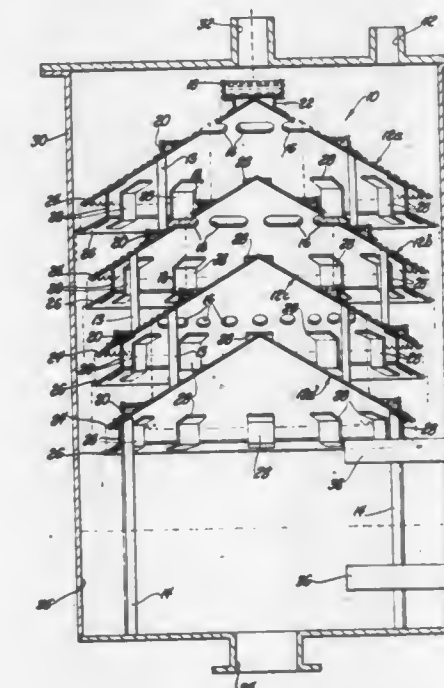
**4,338,100**  
**DEAERATOR ASSEMBLY**  
 John M. Wersosky, Dover, and Frederick I. Wakefield, Durham, both of N.H., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Oct. 28, 1980, Ser. No. 201,448

Int. Cl.<sup>3</sup> C02B 1/10

U.S. Cl. 55—18

22 Claims



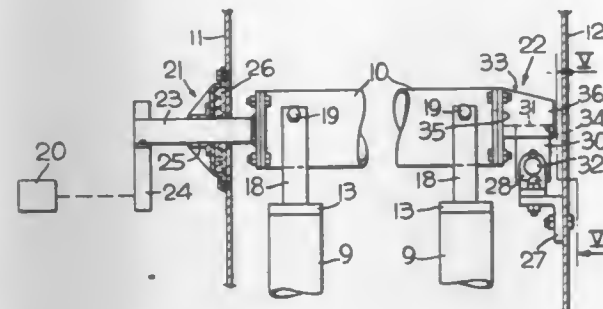
19. A method of deaerating a flow of liquid including the steps of: spreading the liquid over a plurality of downwardly sloping cone-shaped dispersion members (12a-d) stacked on top of each other and in spaced relationship to each other, dividing the flow of liquid through openings (16) extending through the dispersion members (12a-c) into respective flows over the respective dispersion members (12a-c) and over the respective edges (24) thereof whereby the liquid flow is spread into a thin film, allowing the entrapped fluids within the liquid to escape from the liquid film, and characterized by damming







a supporting member having an upwardly extending knife-edge portion generally aligned with the longitudinal axis of the shaft and pivotally connected to said mounting means for movement about a generally horizontal axis extending perpendicular to said axis of the shaft; and



a shaft supporting block affixed to the shaft having an inverted V-shaped notch sized to be received on said knife-edge portion of the supporting member to accommodate rotational oscillation of the shaft during cleaning operations.

#### 4,338,106 CANISTER FOR FUEL EVAPORATIVE EMISSION CONTROL SYSTEM

Junzi Mizuno; Akira Fukami, both of Okazaki; Hiroki Noguchi, Oobu, and Takeshi Ishii, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of, Japan

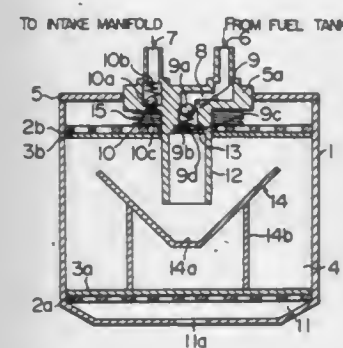
Filed Nov. 5, 1980, Ser. No. 203,570

Claims priority, application Japan, Nov. 9, 1979, 54-145802

Int. Cl.<sup>3</sup> B01D 53/04; F02M 37/00

U.S. Cl. 55—316

9 Claims



1. A canister for a fuel evaporative emission control system of an automotive vehicle, comprising:  
a vessel;

an adsorbent layer disposed in said vessel for adsorbing vaporized fuel;

a vaporized fuel inlet conduit mounted at one end of said vessel and having an end portion inserted in said adsorbent layer; and

a deflector of a conical frustum shape spreading toward an edge portion of one end of said vessel and having a bottom faced to an end of said vaporized fuel inlet conduit;

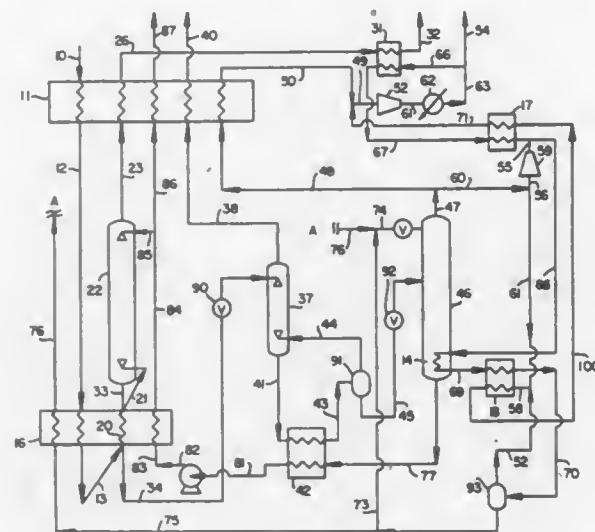
wherein the ratio (f/e) of the distance (f) between said end of said vaporized fuel inlet conduit and the surface of said bottom of said deflector to the inner diameter (e) of said end portion of said vaporized fuel inlet conduit is in the range between 0.7 and 1.4, the ratio (S1/S2) of the horizontal cross-sectional area (S1) of an upper end of said deflector having a maximum diameter (d1) to the horizontal cross-sectional area (S2) of said adsorbent layer having a diameter (d2) in said vessel is in the range between 0.4 and 0.6, and the ratio (a/b) of the distance (a) between the upper end of said deflector and an upper surface of said adsorbent layer to the distance (b) between an upper end

of said deflector and a side surface of said adsorbent layer is in the range between 0.8 and 1.5.

#### 4,338,107 WASH SYSTEM GAS SEPARATION

Brian R. Swallow, Grand Island, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.  
Filed Oct. 30, 1980, Ser. No. 202,238  
Int. Cl.<sup>3</sup> F25J 3/00; B01D 47/00  
U.S. Cl. 62—17

4 Claims



1. In a process for the separation of a gas mixture containing a high volatility component and a low volatility component comprising the steps of

(a) cooling said gas mixture;

(b) countercurrently contacting said cooled gas mixture with a wash liquid having a volatility below the low volatility component in a substantially adiabatic absorption zone to absorb the low volatility component and pass the high volatility as overhead product and the mixture of wash liquid and low volatility component as a bottoms liquid;

(c) reducing the pressure of the bottoms liquid from the absorption zone;

(d) fractionating the bottoms liquid recovered from the absorption zone in a fractionation zone to recover an overhead gas comprising the low volatility component and bottoms liquid comprising the wash liquid;

(e) recirculating at least part of the bottoms liquid recovered from the fractionation zone as the wash liquid for the absorption zone;

the improvement which comprises:

(i) passing the cooled gas mixture of step (a) upwardly through a plurality of passages of an isothermal absorption zone for removal of a major portion of the low volatility component prior to passage to said adiabatic absorption zone;

(ii) simultaneously passing the bottoms liquid of step (b) downwardly through the same passages of said isothermal absorption zone as is flowing the cooled gas mixture;

(iii) maintaining a relative flow velocity between the upward passing cooled mixture and the downwardly passing bottoms liquid so as to avoid liquid entrainment;

(iv) passing a refrigerant stream in indirect heat exchange relationship with the upwardly passing cooled mixture and the downwardly passing bottoms liquid whereby the unavoidable heat of absorption accompanying the gas-liquid in the isothermal absorption zone is removed prior to passage of said gas mixture to said adiabatic absorption zone.

#### 4,338,108 PROCESS FOR THE RECOVERY OF ARGON

Wieslaw H. Isalski, Sale, and Gregory J. Ashton, Stockport, both of England, assignors to Petrocarbon Developments Ltd., Manchester, England

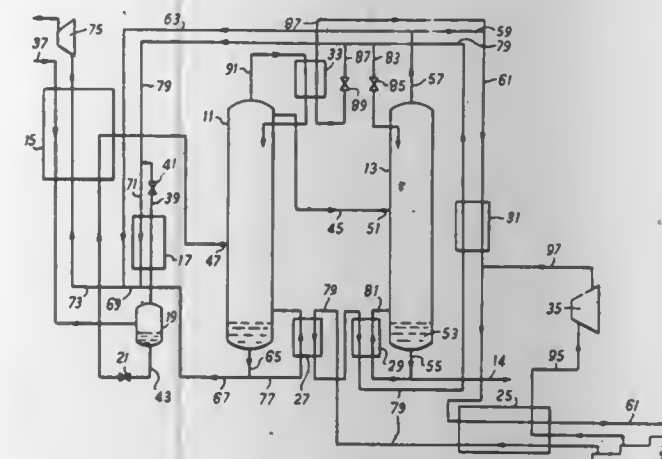
Filed Jul. 8, 1980, Ser. No. 166,834

Claims priority, application United Kingdom, Jul. 12, 1979, 7924348

Int. Cl.<sup>3</sup> F25J 3/02

U.S. Cl. 62—22

14 Claims



1. A process for the recovery of argon from a tail gas stream remaining after treating an ammonia synthesis purge gas for the recovery therefrom of hydrogen values, said tail gas stream being at super-atmospheric pressure and containing methane, argon and nitrogen and residual hydrogen and said process comprising:

(i) separating said tail gas stream by partial condensation into a condensate containing methane, argon and nitrogen and an uncondensed gas stream containing substantially all of the residual hydrogen in said tail gas stream, said separation being effected by cooling said tail gas stream in a plurality of heat exchange steps, in which condensed gas is separated out after at least the penultimate heat exchange step and thereafter the uncondensed gas is passed upwardly in the final heat exchange step with condensed material formed therein flowing downwards in contact with the rising gas stream and mixing with said condensed gas to form said condensate; and recovering said uncondensed gas stream containing substantially all of the residual hydrogen from said final heat exchange step

(ii) expanding and partially evaporating said condensate to produce a fractionating stream;

(iii) separating said fractionating stream by fractional distillation at sub-ambient temperature and superatmospheric pressure in two distillation columns in series, wherein in the first distillation column a liquid methane stream is separated as the bottoms product and a gaseous stream containing nitrogen and argon is recovered as the overhead product and passed without an intermediate pressure reduction step to the second distillation column in which it is fractionated to produce argon as the bottoms product and a gaseous nitrogen stream as overhead product; and wherein the heat for reboil and the cooling for reflux for the distillation columns are provided by a single heat pump cycle in which the heat transfer fluid is provided from the said gaseous nitrogen stream;

the cold requirements of the process are supplied by an open refrigeration cycle in which the refrigerant is provided from the said gaseous nitrogen stream;

and reflux in the final heat exchange step in (i) is provided by evaporation of a coolant passed in indirect counter-current heat exchange relationship with said rising gas, said coolant comprising a stream containing liquid nitrogen provided from said gaseous nitrogen stream and the bubble point of which has been lowered by combining it with a gas stream obtained by expanding gas

provided from the uncondensed gas stream obtained in step (i).

#### 4,338,109 COUNTER CURRENT CRYSTALLIZATION PROCESS

Henricus A. C. Tijssen, Son, and Bernardus G. M. van der Malen, Hagestein, both of Netherlands, assignors to Douwe Egberts Koninklijke Tabaksfabriek-Koffiebranders-Theehandel B.V., Utrecht, Netherlands

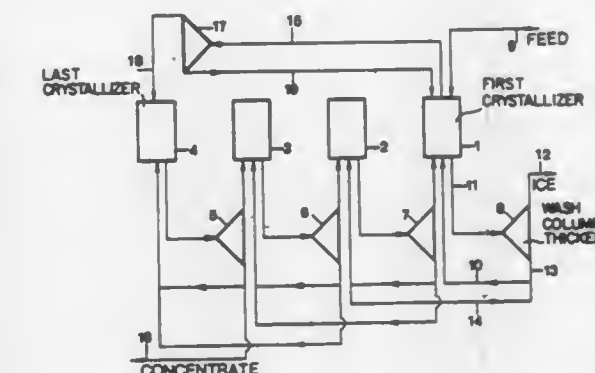
Filed Jan. 31, 1980, Ser. No. 117,213

Claims priority, application United Kingdom, Feb. 22, 1979, 7906342

Int. Cl.<sup>3</sup> B01D 9/04

U.S. Cl. 62—541

6 Claims



1. In a continuous multistage process whereby an aqueous solution is successively led through a number of succeeding stages to crystallize ice in each of said stages and the ice formed is led in reverse direction through said stages whereby the ice crystals are separated from the mother liquor in a final separation stage, the ice crystals being rejected and the mother liquor from the last stage being recovered as a product, the improvement comprising introducing in one stage a portion of the crystals formed in a preceding stage other than the immediately preceding stage, said portion having a mean crystal size larger than the mean crystal size of the crystals formed in said one stage without said introduction of said portion.

#### 4,338,110 BUSHING FOR PRODUCING GLASS FIBERS

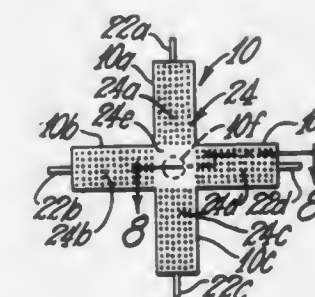
William M. Babbitt, Granville, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Continuation of Ser. No. 190,119, Sep. 24, 1980, abandoned. This application Apr. 6, 1981, Ser. No. 251,589

Int. Cl.<sup>3</sup> C03D 37/025

U.S. Cl. 65—1

3 Claims



1. A bushing (10) useful in the drawing of glass fibers from molten glass (14) and comprising a tubular inlet (10f) leading to a central supply space (10e) and a plurality of hollow bushing branches (10a, 10b, 10c, 10d) open to and extending radially from the supply space (10e).











**4,338,123**  
**METHOD AND APPARATUS FOR THE REDUCTION OF METAL ORES**

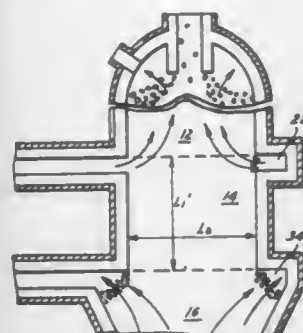
Juan L. San Jose-Alcalde, Monterrey, Mexico, assignor to Hylsa, S.A., Monterrey, Mexico

Filed Feb. 23, 1981, Ser. No. 237,446

Int. Cl.<sup>3</sup> C21B 13/02

U.S. Cl. 75—34

27 Claims



1. Apparatus for reducing metal ore to metal comprising a vertical shaft reactor adapted to contain a downwardly moving bed of particles of said metal ore said reactor comprising a reduction zone in the upper portion thereof and a cooling zone in the lower portion thereof, an intermediate zone extending from the top of the cooling zone to the bottom of the reduction zone, a first supply conduit connected to the reactor near one end of the reduction zone for feeding hot reducing gas to said bed at a first point of injection, first means connected to the reactor near the other end of the reduction zone for removing reducing gas from said bed at a first point of removal, a second supply conduit connected to the reactor near one end of the cooling zone for feeding cooling gas to said bed at a second point of injection, second means connected to the reactor near the other end of the cooling zone for removing cooling gas from said bed at a second point of removal, said intermediate zone having an equivalent height equal to the shortest distance along the vertical axis of the reactor between either the first point of injection or first point of removal, whichever is closest to the bottom of the reduction zone, and either the second point of injection or second point of removal, whichever is closest to the top of the cooling zone, and an equivalent diameter equal to the shortest distance between the effective walls of said intermediate zone, the ratio of said equivalent height to said equivalent diameter being in the range of 0.5 to 2.0.

**4,338,124**  
**METHOD OF PURIFICATION OF ALUMINIUM MELTS**

Jean D. Bornand, Stierre, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

PCT No. PCT/CH79/00145, § 371 Date Jul. 21, 1980, § 102(e) Date Jul. 17, 1980, PCT Pub. No. WO80/01082, PCT Pub. Date May 29, 1980

PCT Filed Nov. 19, 1979, Ser. No. 199,730

Claims priority, application Switzerland, Nov. 21, 1978, 11914/78

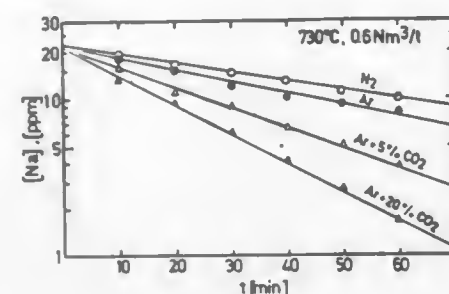
Int. Cl.<sup>3</sup> C22B 23/06

U.S. Cl. 75—68 R

7 Claims

1. A method of purifying a melt of aluminum and its alloys by introducing an active gas mixture into the melt at atmospheric pressure comprising feeding a gas mixture comprising at least one non-reactive gas as a carrier gas and from about 4

to 10% by volume carbon dioxide at a rate of from about 0.4 to 1.0 normal cubic meters per ton of melt treated at a melt tem-



perature of from about 730° to 780° C. for a melt contact time of from about 3 to 60 minutes.

**4,338,125**  
**METHOD FOR THE PREPARATION OF URANIUM COMPOUNDS VIA ELECTROLYTIC AMALGAMATION OF URANIUM ION DIRECTLY FROM AN AQUEOUS SOLUTION**

Chau-Ting Chang, Hsin Chu, Taiwan, assignor to Institute of Nuclear Energy Research, Taiwan

Continuation of Ser. No. 940,590, Sep. 8, 1978, abandoned, which is a continuation of Ser. No. 707,706, Jul. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 614,479, Oct. 15, 1974, Pat. No. 4,004,987. This application Aug. 28, 1979, Ser. No. 70,417

The portion of the term of this patent subsequent to Jan. 25, 1994, has been disclaimed.

Int. Cl.<sup>3</sup> C22B 60/02

U.S. Cl. 75—84

10 Claims

1. A method for the preparation of a uranium compound selected from the group consisting of uranium monocarbide, uranium dioxide and uranium nitride which comprises amalgamating uranium electrolytically from an aqueous solution in a cell having two compartments with an ion exchange membrane in between for the purpose of adjusting the pH during the course of the electrolysis, thermally decomposing the electrolytically obtained uranium amalgam in a vacuum or in an inert gas atmosphere and subsequently or simultaneously reacting the thermally decomposed electrolytically obtained uranium amalgam with a gas selected from methane, water vapor and nitrogen at a temperature below 1200° C. to form the desired compound.

**4,338,126**  
**RECOVERY OF TUNGSTEN FROM HEAVY METAL ALLOYS**

Clarence D. Vanderpool, Towanda, and Robert P. McClintic, Monroeton, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 9, 1980, Ser. No. 157,630

Int. Cl.<sup>3</sup> C22B 34/36

U.S. Cl. 75—84

3 Claims

1. A method for reclaiming tungsten metal from heavy metal alloys of the type having tungsten metal dispersed throughout a matrix material comprising treating a heavy metal alloy with zinc for a sufficient period of time at a sufficient temperature to form a molten mixture comprising tungsten metal, zinc and matrix material, and separating zinc from said molten mixture to form a powder containing tungsten metal, said heavy metal alloy consisting essentially of 80 to 95 percent tungsten metal and the balance a matrix material selected from the group consisting of chromium, iron, cobalt, nickel, copper, mixtures and alloys thereof.

**4,338,127**  
**ADDITION AND MEASUREMENT OF GASES DISSOLVED IN MOLTEN METALS**

Ties Allersma, Pittsburgh, and James E. Simpson, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

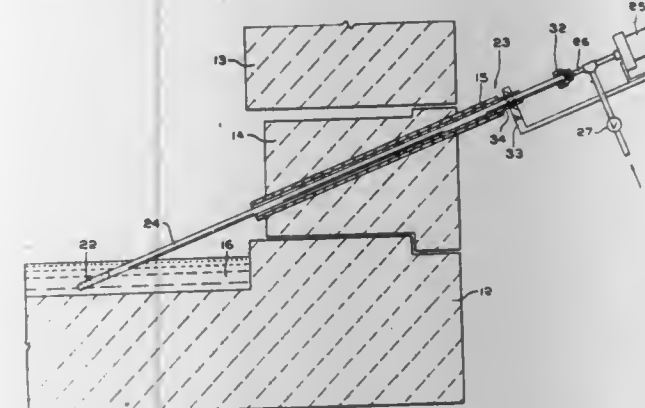
Division of Ser. No. 968,604, Dec. 11, 1978, Pat. No. 4,239,532.

This application May 27, 1980, Ser. No. 153,386

Int. Cl.<sup>3</sup> C22B 9/12

U.S. Cl. 75—93 R

10 Claims



1. A method of dissolving at least one gas in a liquid, comprising the steps of: providing a probe having a passageway defined by a continuous outer wall, the probe having a first outer wall portion with the remaining outer wall portion defined as a second outer wall portion, the first outer wall portion includes at least two components which make the first outer wall portion substantially impermeable to the liquid and to the at least one gas, and the second outer wall portion has one of the at least two components removed which makes the second outer wall portion substantially permeable with respect to the at least one gas and substantially impermeable with respect to the liquid; submerging at least the second outer wall portion of the probe in the liquid; and allowing the at least one gas to permeate through the second outer wall portion of the probe into the liquid.

**4,338,128**  
**LOW ALLOY WHITE CAST IRON**

Jean C. Farge, Montreal, and Robert Fortin, Mont Joli, both of Canada, assignors to Noranda Mines Limited, Toronto, Canada

Filed Apr. 9, 1980, Ser. No. 138,752

Claims priority, application Canada, Jun. 13, 1979, 329649

Int. Cl.<sup>3</sup> C22C 33/00

U.S. Cl. 75—123 CB

2 Claims

1. A low alloy white cast iron consisting, in weight percent, of about 2.5 to 4% carbon, 0.3 to 0.8% silicon, 0.3 to 1.0% manganese and 1.7 to 3.5% nickel, the rest being iron except for incidental impurities commonly found in cast iron, said alloy having a microstructure consisting essentially of martensite and carbide and a minimum hardness of 600 B.H.N.

**4,338,129**  
**PRODUCTION OF VERMICULAR GRAPHITE CAST IRON**

Joao D. Garcez, Sao Paulo, Brazil, and Michael D. Bryant, Bromsgrove, England, assignors to Fosco International Limited, Birmingham, England

Filed Dec. 5, 1980, Ser. No. 213,490

Claims priority, application United Kingdom, Dec. 19, 1979, 7943697

Int. Cl.<sup>3</sup> C22C 33/08

U.S. Cl. 75—130 R

14 Claims

1. A molten metal treatment agent formed by compacting a

mixture comprising particulate iron, magnesium, titanium and rare earth.

**4,338,130**  
**PRECIPITATION HARDENING COPPER ALLOYS**

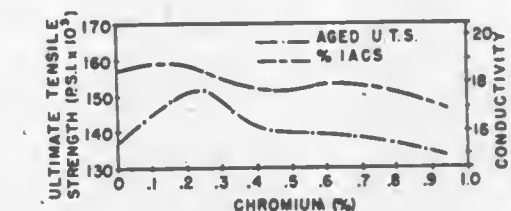
Richard A. Burkett, 1001 Rohlfing Rd., Rolling Meadows, Ill. 60008

Filed Nov. 20, 1980, Ser. No. 208,679

Int. Cl.<sup>3</sup> C22C 9/06

U.S. Cl. 420—486

5 Claims



1. A precipitation hardenable copper alloy consisting of 2 to 9 weight percent nickel, between 0.05 and 2 weight percent each of aluminum, and silicon, 0.18 to 0.50 chromium and balance copper.

**4,338,131**  
**NICKEL-BORON BINARY AMORPHOUS ALLOYS**

James E. Briggs, Jr., Budd Lake, and Ryusuke Hasegawa, Morristown, both of N.J., assignors to Allied Corporation, Morristown, N.J.

Filed Feb. 19, 1980, Ser. No. 122,547

Int. Cl.<sup>3</sup> C22C 19/03

U.S. Cl. 148—403

4 Claims

1. A binary metal alloy that is at least 50% amorphous having mechanical hardness ranging from about 950 to 1320 kg/mm<sup>2</sup> and melting temperatures ranging from about 1000°–1140° C., characterized in that the alloy consists of the binary composition Ni<sub>2</sub>B<sub>b</sub>, where "a" has values of about 81 to 82, 75 and 59 to 72, atom percent and "b" has values of about 18 to 19, 25 and 28 to 41.

**4,338,132**  
**PROCESS FOR FABRICATING FIBER-REINFORCED METAL COMPOSITE**

Hideho Okamoto, Toyonaka, and Ken-ichi Nishio, Ibaraki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

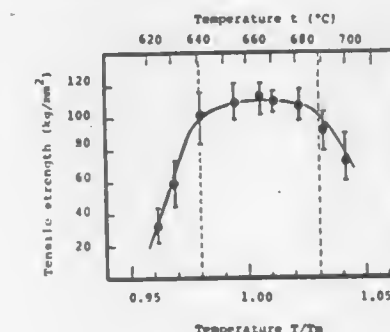
Filed Sep. 25, 1979, Ser. No. 78,896

Claims priority, application Japan, Sep. 27, 1978, 53-119716

Int. Cl.<sup>3</sup> B22F 3/00

U.S. Cl. 75—208 R

15 Claims



1. A process for fabricating a fiber-reinforced metal composite, which comprises laminating a plurality of sheet-like pre-composites comprising bundles of filaments of metal reinforcing fibers, among the filaments of which a matrix metal powder having an average particle size of not more than 1/2 of the diameter of the fiber is spread, and among the bundles of which a



matrix metal powder having an average particle size of 2 to 10 times the diameter of the fiber is spread, and hot-pressing the resulting laminate either in a vacuum or in an atmosphere of an inert gas.

4,338,133

## JET PRINTING INK COMPOSITION

Tsunehiko Toyoda, Yokohama; Tokio Matsumoto, Tokyo, and Toshiaki Arakawa, Yokosuka, all of Japan, assignors to Dai Nippon Teryo Co., Ltd., Osaka, Japan

Filed Apr. 28, 1981, Ser. No. 258,395

Claims priority, application Japan, Nov. 25, 1980, 55/165657  
Int. Cl.<sup>3</sup> C09D 11/02, 11/10

U.S. Cl. 106—22

10 Claims

1. A jet printing ink composition, which comprises:
  - (a) from 2 to 60 wt % of a binder precursor of an alkoxy-silane having the formula:  $R_4-nSi(OH)_n$ ; wherein n is 0 to 2 and R is a  $C_1$ - $C_4$  alkoxy group, methoxyethoxy, ethoxyethoxy or phenoxy; or an oligomer thereof;
  - (b) from 25 to 95 wt % of a solvent for said alkoxy-silane or oligomer thereof selected from the group consisting of a lower aliphatic alcohol, a glycol monoether and mixtures thereof;
  - (c) from 0.001 to 5 wt % of a solvent soluble acid selected from the group consisting of hydrochloric acid, hydrofluoric acid, sulfuric acid, boric acid, phosphoric acid, fumaric acid, benzenesulfonic acid, paratoluenesulfonic acid and mixtures thereof; and
  - (d) from 0.1 to 5 wt % of a solvent soluble dyestuff.

4,338,134

## PROCESS FOR BINDING WASTE LIQUOR OR SLUDGE

Ludbert Graf zu Münster, Munich, Fed. Rep. of Germany, assignor to Handelskontor Ludbert Graf zu Münster GmbH & Co., Munich, Fed. Rep. of Germany

Filed Jul. 28, 1980, Ser. No. 172,547

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930602

Int. Cl.<sup>3</sup> B09B 1/00; G21F 9/00; C04B 11/00, 7/34

U.S. Cl. 106—85

12 Claims

1. In the process for binding waste liquor or sludge comprising forming a mixture of hydraulic mortar and waste liquor or sludge in the presence of inhibiting zinc or phosphorus compounds and allowing said mixture to set, the improvement consisting of subjecting said mixture of hydraulic mortar and waste liquor or sludge to a milling operation before said mixture is allowed to set.

4,338,135

## MICROWAVE CURING OF CEMENTITIOUS MATERIAL

Hilbert F. Cook, Dallas, Tex., assignor to Texas Industries, Inc., Dallas, Tex.

Filed Apr. 6, 1981, Ser. No. 251,053

Int. Cl.<sup>3</sup> C04B 7/02

U.S. Cl. 106—97

11 Claims

1. A method of manufacturing cementitious product which comprises:
  - (a) forming the product from uncured cementitious material;
  - (b) moist curing the product while maintaining said product free of liquid water by one of low pressure steam, water vapor or autoclave curing for a period sufficient to achieve at least the substantial hydration of said cementitious material; and
  - (c) thereafter applying microwave radiation energy to said cementitious material for rapid cure completion and drying.

4,338,136

## METHOD OF MAKING FAST-BREAKING BITUMINOUS EMULSIONS

Pierre Goulet, and Pierre Scotte, both of Toulouse, France, assignors to APC-Azote et Produits Chimiques, S.A., Toulouse, France

Continuation-in-part of Ser. No. 832,852, Sep. 13, 1977,

abandoned. This application Mar. 15, 1979, Ser. No. 20,893

Claims priority, application France, Sep. 16, 1976, 76 27780

Int. Cl.<sup>3</sup> C09D 3/24

U.S. Cl. 106—273 N

18 Claims

1. In a fast-breaking bituminous emulsion which comprises water, a bituminous hydrocarbon binding agent and an emulsifying agent, the improvement wherein said emulsifying agent is a liquid emulsifying agent prepared by a process which comprises condensing diethylenetriamine and a  $C_{12-18}$  fatty acid having an iodine value of at least 25, at a temperature between 160° and 180° C., followed by at least partially cyclizing the condensation product at a temperature between about 190° and 240° C.; the initial molar ratio between the diethylenetriamine and the fatty acid being at least 5:1 and the final product having a total amine index of at least 5.6.

4,338,137

## ASPHALT COMPOSITION FOR AIR-BLOWING

Judson E. Goodrich, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 20, 1981, Ser. No. 285,248

Int. Cl.<sup>3</sup> C08L 95/00

U.S. Cl. 106—273 R

10 Claims

1. An asphalt composition comprising 0.01 weight percent to about 5 weight percent ferrous chloride and asphalt in an amount to equal 100 weight percent.

4,338,138

## PROCESS FOR FABRICATING A BIPOLAR TRANSISTOR

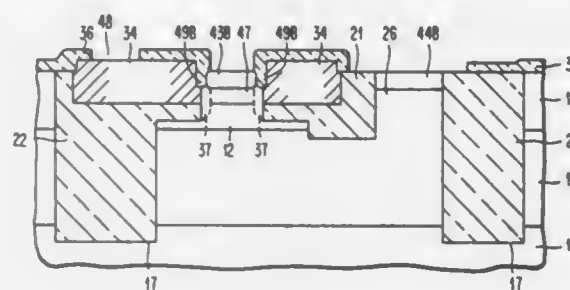
Joseph R. Cavaliere, Hopewell Junction, N.Y.; Cheng T. Horng, San Jose, Calif.; Richard R. Konian, Poughkeepsie; Hans S. Rupprecht, Yorktown Heights, both of N.Y., and Robert O. Schwenker, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 3, 1980, Ser. No. 126,611

Int. Cl.<sup>3</sup> H01L 21/263, 21/203, 21/22, 21/31

U.S. Cl. 148—1.5

4 Claims



1. In a process for fabricating an improved bipolar transistor in a silicon substrate of a first conductivity type, said substrate having a planar surface, a subcollector region of a second conductivity type formed in said substrate, an epitaxial layer of said second conductivity type formed on said planar surface of said substrate, and first, second and third spaced apart recessed oxide isolation regions extending through said epitaxial layer into said substrate, said process including the following steps:
  - a. forming a first oxide layer on said epitaxial layer;
  - b. utilizing a suitable block-out mask, ion implanting impurities of a second conductivity type into the epitaxial surface extending from said second recessed oxide region to said third recessed oxide region thereby forming a collector reach through region;
  - c. forming a first silicon nitride layer on said first oxide layer;

- d. forming a second oxide layer on said first silicon nitride layer;
- e. forming a mask having first and second spaced apart windows, said windows respectively exposing discrete regions of said second oxide layer, said first window extending over a portion of said first recessed oxide isolation region and a portion of said epitaxial layer in the direction of said second recessed oxide isolation region, said second window extending over a portion of said second recessed oxide isolation region and said epitaxial layer in the direction of said first recessed oxide isolation region;
- f. utilizing reactive-ion etch techniques and said first and second windows etching said second oxide layer, said first silicon nitride layer, said first oxide layer, the oxide isolation regions and said epitaxial layer to the surface of said subcollector region, whereby a narrow portion of the epitaxial layer remains between said first and second recessed oxide isolation regions, said narrow portion of the epitaxial layer having vertical sidewalls;
- g. removing said mask formed in step e;
- h. chemically vapor depositing (CVD) a second silicon nitride layer on the exposed surface of the substrate;
- i. utilize reaction ion etching (RIE) techniques removing predetermined portions of the second silicon nitride layer;
- j. forming an oxide layer over the exposed surface of the subcollector;
- k. removing the remaining portions of said second silicon nitride layer;
- l. forming a layer of doped polysilicon of said second conductivity type over the exposed surface of the substrate;
- m. utilizing photoresist planarizing the exposed surface of the substrate;
- n. utilizing reactive ion etch (RIE) techniques etching back said photoresist and polysilicon to stop at the surface of said second oxide layer;
- o. removing said second oxide layer; and
- p. forming by thermal oxidation an oxide coating on said polysilicon whereby, in addition to the forming of said oxide coating on said polysilicon, a thin sleeve shaped region having impurities of said first conductivity type is formed in said narrow portion of said epitaxial layer residing between said first and second recessed oxide isolation regions.

4,338,139

## METHOD OF FORMING SCHOTTKY-12L DEVICES BY IMPLANTATION AND LASER BOMBARDMENT

Kazuyoshi Shinada, Yokohama, Japan, assignor to VLSI Technology Research Association, Japan

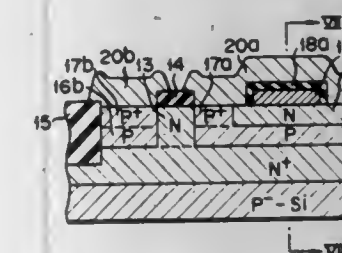
Filed Nov. 26, 1980, Ser. No. 210,749

Claims priority, application Japan, Nov. 29, 1979, 54-154600;  
Nov. 29, 1979, 54-154601

Int. Cl.<sup>3</sup> H01L 21/263, 29/48, 21/285

U.S. Cl. 148—1.5

11 Claims



1. A method for manufacturing a semiconductor device comprising:
  - the step of burying the first and second regions of a second conductivity type spaced from each other in a semiconductor body of a first conductivity type;
  - the step of locally disposing a first interconnection layer

made of a metal on a surface region of said semiconductor body facing said first region;  
the step of forming an insulating film on the surface of said first interconnection layer by subjecting said surface to anodic oxidation;  
the step of ion-implanting an impurity of said second conductivity type into said semiconductor body except a portion thereof under said first interconnection layer at such an energy level that said impurity may reach said first and second regions;  
the step of activating said ion-implanted layer by applying a laser beam thereto; and  
the step of forming a second interconnection layer connected with said activated layer by covering the whole surface of said semiconductor body with a metal and patterning said metal.

4,338,140

## COATING COMPOSITION AND METHOD

Gary A. Reghi, Sterling Hts., Mich., assignor to Hooker Chemicals & Plastics Corp., Warren, Mich.

Continuation-in-part of Ser. No. 879,648, Feb. 21, 1978,

abandoned. This application Jul. 14, 1980, Ser. No. 168,811

Int. Cl.<sup>3</sup> C23F 7/00, 7/08

U.S. Cl. 148—6.14 R

81 Claims

1. An acidic aqueous chromium-free composition of pH value less than 5 containing in dissolved form hafnium, fluoride and a vegetable tannin in amounts, at least 1 ppm of each, sufficient, when contacted with a metal surface, to impart corrosion resistance to the metal surface.
32. An acidic aqueous chromium-free composition of pH value less than 5 containing in dissolved form phosphate ions in an amount of about 10 up to about 200 ppm and zirconium, fluoride and a vegetable tannin in amounts, at least 1 ppm of each, sufficient, when contacted with a metal surface, to impart corrosion resistance to the metal surface.
64. An acidic aqueous chromium-free composition of pH value of about 3 to about 4.5 containing in dissolved form zirconium, fluoride and a vegetable tannin amounts, at least 1 ppm of each, sufficient, when contacted with a metal surface, to impart corrosion resistance to the metal surface.

4,338,141

## FORMATION OF ZINC PHOSPHATE COATING ON METALLIC SURFACE

Takashi Senzaki, Ryochi Murakami, both c/o Nippon Paint K.K., 19-17 Ikeda Nakamachi, Neyagawa-shi, Osaka; Kiyotada Yasuhara, and Masashi Takahashi, both c/o Nippon Paint K.K., 1-15 Minami Shinagawa 4-chome, Shinagawa-ku, Tokyo, all of Japan

Filed May 1, 1980, Ser. No. 145,587

Claims priority, application Japan, May 2, 1979, 54-54399

Int. Cl.<sup>3</sup> C23F 7/08

U.S. Cl. 148—6.15 Z

37 Claims

1. An acidic aqueous coating solution for forming a zinc phosphate coating on a metal surface consisting essentially of about 0.4 to about 1 g/l of zinc, about 5 to about 40 g/l of phosphate, about 0.01 to about 0.2 g/l of nitrite and about 2 to about 5 g/l of chlorate.

4,338,142

## MELTING FLUX COMPOSITION FOR SUBMERGED ARC WELDING

Naoki Okuda, Kamakura, and Kazuo Tanaka, Yokosuka, both of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Jan. 19, 1981, Ser. No. 226,090

Int. Cl.<sup>3</sup> B23K 35/34

U.S. Cl. 148—26

5 Claims

1. A melting flux composition for submerged arc welding comprising 6-15% by weight of  $MgO$ , 5-10% by weight of  $CaO$ , 10-20% by weight of  $CaF_2$ , 14-19% by weight of  $Al_2O_3$ ,



20-25% by weight of  $\text{TiO}_2$ , 15-20% by weight of  $\text{SiO}_2$ , and 5-10% by weight of  $\text{MnO}$ .

4,338,143

# NON-ORIENTED SILICON STEEL SHEET WITH STABLE MAGNETIC PROPERTIES

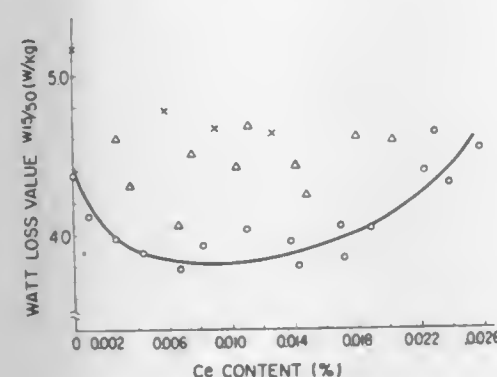
Yoshiaki Shimoyama; Shigenobu Koga, and Katsuyuki Ohba, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 27, 1981, Ser. No. 248,419

Int. Cl.<sup>3</sup> C04B 35/00

U.S. Cl. 148—31.55

3 Claims



1. A non-oriented silicon steel sheet having uniform magnetic properties characterized by possessing a watt loss value of 4.10 or less at 15000 gauss/50 cycle, and magnetic flux density B50 of at least 1.65 W/m<sup>2</sup>, said sheet consisting essentially of  $\leq 0.015\%$  C, 1.5-3.5% Si, 0.05-1.0% Mn, 0.005-0.08% acid-soluble Al,  $\leq 0.015\%$  S,  $\leq 0.010\%$  O,  $\leq 0.005\%$  N, B in such amount that the ratio of B to N is in the range of 0.4-2.0, 0.001-0.020% of at least one rare earth element, and the remainder of Fe and unavoidable impurities.

4,338,144

# METHOD OF PRODUCING SILICON-IRON SHEET MATERIAL WITH ANNEALING ATMOSPHERES OF NITROGEN AND HYDROGEN

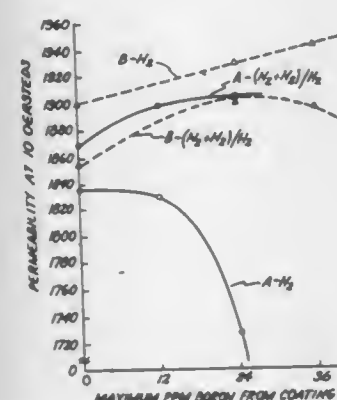
Howard C. Fiedler, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 133,322, Mar. 24, 1980, abandoned. This application Jan. 12, 1981, Ser. No. 223,963

Int. Cl.<sup>3</sup> H01F 1/04

U.S. Cl. 148—113

7 Claims



1. The method of producing grain oriented silicon-iron sheet comprising the steps of:

- providing fine-grained, decarburized, and primary recrystallized silicon-iron intermediate product sheet material, said material containing from about 2.2% to about 4.5% silicon, boron, manganese up to about 0.10%, said material having a manganese-to-sulfur ratio of at least 2.1 and less than about 20 parts per million solute nitrogen;
- covering said sheet with an electrically insulating boron-containing adherent coating;
- heating said coated sheet in a first atmosphere comprising

hydrogen and at least about 20 volume percent nitrogen to a first temperature developing thereby a cube-on-edge secondary recrystallization texture in said sheet; and

- increasing the temperature of said sheet to a second temperature and holding said sheet at said second temperature in a second atmosphere consisting essentially of hydrogen for a predetermined time effecting thereby substantial removal of carbon, sulfur and nitrogen.

4,338,145

# CHROME-TANTALUM ALLOY THIN FILM RESISTOR AND METHOD OF PRODUCING THE SAME

Nobuo Yasujima, Kawagoe; Natsuo Itokawa, Fujioka, and Seichiro Kobayashi, Yoshida, all of Japan, assignors to Taisei Kohki Co., Ltd., Saitama, Japan

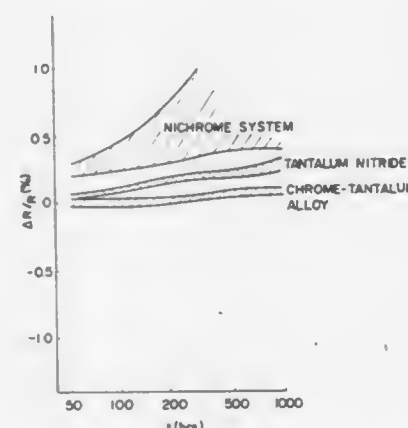
Filed Dec. 15, 1980, Ser. No. 216,640

Claims priority, application Japan, Dec. 27, 1979, 54-172418

Int. Cl.<sup>3</sup> H01C 1/012; C22C 27/02, 27/06

U.S. Cl. 148—133

9 Claims



2. A chrome-tantalum thin film resistor comprising a substrate and a chrome-tantalum alloy thin film consisting essentially of 10 to 95 atomic % of chrome and the balance being tantalum formed on said substrate preheated heated to a temperature selected to provide a temperature coefficient of resistance of the thin film near zero, but not higher than 900° C.

4,338,146

# METHOD OF MANUFACTURING EMULSION EXPLOSIVE INSENSITIVE TO A #8 DETONATOR

Lars A. Granlund, Nora, Sweden, assignor to Nitro Nobel AB, Gytterp, Sweden

Filed Oct. 15, 1979, Ser. No. 84,557

Claims priority, application Sweden, Oct. 23, 1978, 7811002

Int. Cl.<sup>3</sup> C06B 21/00

U.S. Cl. 149—109.6

8 Claims

1. A method of manufacturing an emulsion explosive which is insensitive to a no. 8 detonator and which comprises a water solution of at least one oxidizing salt dispersed in a fuel, an emulsifier, an emulsion stabilizer and a gas acting as an aid to detonation, the improvement comprising forming the water solution of the salt, heating the solution to a temperature of 70° to 100° C., thereafter adding gaseous particles both as an aid to detonation and as a co-emulsifier, then adding fuel with emulsifier dissolved therein and then effecting emulsification at a relatively low stirring speed due to said co-emulsifier of gaseous particles.

4,338,147

# METHOD AND APPARATUS FOR WINDING A WEB UPON A CORE HAVING A STRIPE OF HOT-MELT ADHESIVE

Per-Ole Bäckström, and Jorma Virolainen, both of Karhula, Finland, assignors to A. Ahlstrom Osaakeyhtio, Noormarkku, Finland

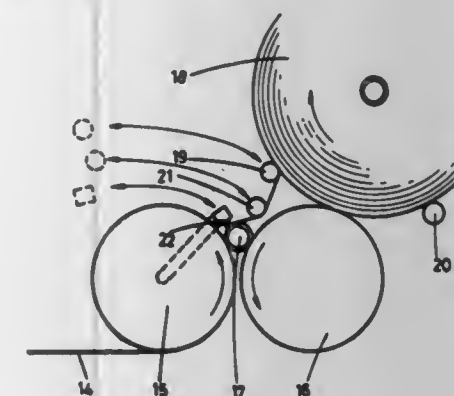
Division of Ser. No. 14,951, Feb. 26, 1979. This application Nov. 3, 1980, Ser. No. 203,528

Claims priority, application Finland, Jun. 21, 1978, 781977; Sep. 20, 1978, 782865

Int. Cl.<sup>3</sup> B65H 81/00

U.S. Cl. 156—187

2 Claims



1. In the method of winding a web of material into a web roll upon a rotatably driven core having a hot-melt adhesive deposited upon an outer surface of the core, and wherein the web being wound is fed from a supply thereof and is secured to the core by said hot-melt adhesive, and there is maintained an infeed length of web extending from said supply to the tangential winding point of the web being currently wound, and a new core is positioned in tangential contact with said infeed length of web, the improvement which comprises the steps of supporting the new core on a pair of rotatably driven parallel rollers that drivingly engage the new core for winding the infeed web thereupon; concurrently applying heat and a pressing force to and through the infeed web at the zone of tangential contact thereof with the new core to heat the hot-melt adhesive on the new core and set such adhesive in its active state, and to press the infeed web securing the infeed web to the new core along said zone of tangential contact; and severing the infeed web at a location between the tangential winding point of the web roll currently being wound and the zone of tangential contact with the new core to allow removal of the currently wound web roll and to allow rotatable driving of the new core for continual winding of the infeed into a web roll upon the new core.

2. In an apparatus for winding a web of material onto a web roll upon a core having a hot-melt adhesive deposited upon an outer surface of the core, and including means to rotatably drive said core and web roll, and web feeding means operable to feed the web from a supply thereof, said web being secured to the core by the hot-melt adhesive, said web feeding means maintaining an infeed length of web extending from said supply to the tangential winding point of the web roll being currently wound, and including means operable to position a new core in tangential contact with said infeed length of web, the improvement which comprises a pair of rotatably driven parallel rollers that support the new core and drivingly engage same for winding the infeed web thereupon; means operable to concurrently apply heat and a pressing force to and through the infeed web at the zone of tangential contact thereof with the new core to heat the hot-melt adhesive on the new core and set such adhesive in its active state, and to press the infeed web against said hot-melt adhesive thereby securing the infeed web to the new core along said zone of tangential contact; and means operable to sever the infeed web at a location between the tangential winding point of the web roll currently being wound and the zone of tangential contact with the new core to allow removal of the currently wound web roll and the rotat-

able driving of the new core by said rollers for continued winding of the infeed web into a web roll upon the new core.

4,338,148

# METHOD OF MANUFACTURING A DOOR EDGE GUARD

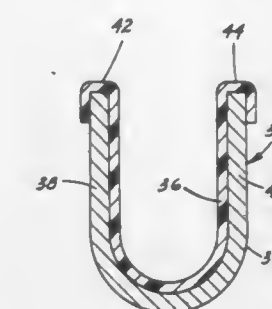
Robert Adell, Novi, Mich., assignor to U.S. Product Development Co., Novi, Mich.

Filed Oct. 7, 1980, Ser. No. 194,747

Int. Cl.<sup>3</sup> B32B 3/04

U.S. Cl. 156—222

11 Claims



1. A method for manufacturing a door edge guard of the type having a metal outer U-shaped channel element and a plastic U-shaped inner channel element within the outer channel, the method comprising the steps of:

- bonding the plastic material to form the inner channel element to at least a portion of the surface area of the metal element; and
- roll-forming the metal element into a U-shaped channel, the plastic material having the general shape of the inner surface of the U-shaped metal channel element, the bonding of at least a portion of the plastic material to the surface of the metal element occurring prior to completion of the roll-forming operation; including the step of applying plastic material to the inner and outer sides of the ends of the legs of the U-shaped metal channel element.

4,338,149

# PROCESS FOR MAKING CIRCUIT BOARDS HAVING RIGID AND FLEXIBLE AREAS

Wolfgang Quaschner, Geldern, Fed. Rep. of Germany, assignor to Kollmorgen Technologies Corporation

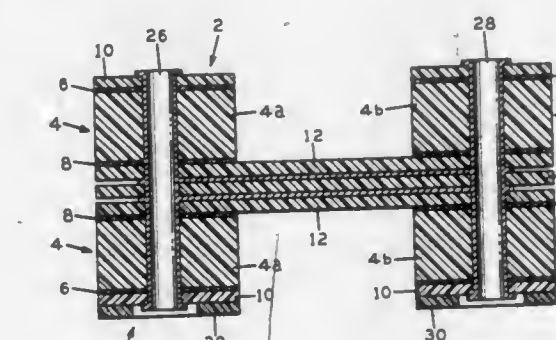
Filed Nov. 6, 1980, Ser. No. 204,660

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1979, 2946726

Int. Cl.<sup>3</sup> B32B 31/18

U.S. Cl. 156—248

12 Claims



1. A process for the production of laminated circuit boards having rigid and flexible areas the steps comprising, separating from the rigid layer to be laminated with covering layers to make up the circuit board a rigid board area corresponding to the circuit board area to be flexible, while maintaining the separated rigid board area coplanar and contiguous with the area of the rigid layer to be rigid in the completed circuit board, laminating covering layers to the opposite surfaces of the rigid layer but to only one of the surfaces of the separated



and coplanar rigid board area, severing said covering layer laminated to said one of the surfaces of said separated and coplanar rigid board area from the cover layer laminated to said rigid layer along the lines separating said rigid layer from said area to be flexible and removing from the laminated circuit board the separated rigid board area and the one covering layer laminated thereto, leaving in said laminated circuit board said rigid layer with the separated rigid board area removed therefrom and with the other covered layer laminated to the opposite side of said rigid layer and spanning the removed area forming therein a flexible board area.

4,338,150

# METHOD FOR MAKING ARTICLES BY RADIO FREQUENCY WELDING

Brian Weeks, Epsom, England, assignor to The British Petroleum Company Limited, London, England  
Filed Oct. 17, 1980, Ser. No. 197,789

Claims priority, application United Kingdom, Oct. 24, 1979, 7936835

Int. Cl.<sup>3</sup> B29C 19/02

U.S. Cl. 156—275.5

11 Claims

1. A method of joining together surfaces constituted by a blend comprising (1) unvulcanized chlorosulphonated polyethylene and/or chlorinated polyethylene, (2) a bituminous petroleum derivative of softening point in excess of 25% by weight, and (3) a long chain fatty acid amide as a non-interfering blocking agent, which comprises bringing the surfaces to be joined into contact and subjecting them to radio frequency dielectric welding.

4,338,151

# METHOD OF SECURING AN ADHESIVE ATTACHMENT ASSEMBLY TO A SUBSTRATE

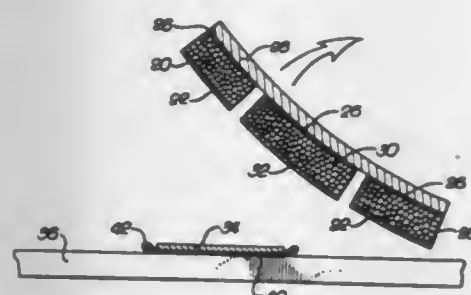
Charles G. Hutter, III, Carson City, Nev., assignor to Physical Systems, Inc., Carson City, Nev.

Continuation-in-part of Ser. No. 74,932, Sep. 13, 1979, Pat. No. 4,302,492. This application Sep. 19, 1980, Ser. No. 188,963

Int. Cl.<sup>3</sup> B32B 31/16, 7/06, 1/00

U.S. Cl. 156—344

21 Claims



1. The method of applying an attachment to a substrate, comprising the steps of:  
mounting the attachment upon a support member movable between two positions into and out of bearing engagement with the substrate;  
applying an adhesive to at least one of the mating surfaces of the attachment and the substrate;  
temporarily adhering the support member to the substrate;  
moving the support member to move the attachment into bearing engagement with the substrate;  
applying to the attachment a spring force reacting between the substrate and the side of the attachment opposite the substrate for urging the attachment toward the substrate; and  
thereafter removing the support member from the substrate and the attachment while leaving the attachment in engagement with the substrate.

4,338,152

# GRIPPING ARRANGEMENT FOR AN APPARATUS FOR AUTOMATICALLY LAMINATING CIRCUIT BOARDS

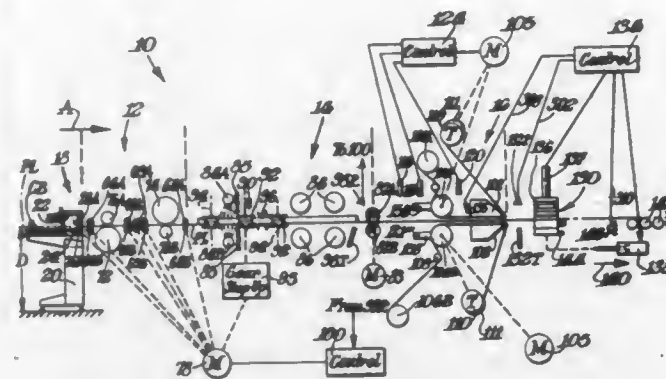
Matthew A. Del Bianco, Chesapeake Isle, North East, Md., and Henry J. Tancredi, Gwynedd, Pa., assignors to E. I. De Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 17, 1981, Ser. No. 235,414

Int. Cl.<sup>3</sup> B31B 1/00

U.S. Cl. 156—351

2 Claims



1. In an apparatus for applying a resist material to a planar member to form a laminate as the member is advanced there-through, the laminate being subjected to a restraining force within the apparatus, a gripping arrangement for removing the laminate from the apparatus comprising:  
a carriage movable under the influence of a predetermined displacement force from a first to a second position;  
a first actuator for applying a predetermined displacement force on the carriage;  
a gripping element mounted to the carriage, the gripping element being movable from an open to a grasping position;  
a second actuator for moving the gripping element from the open to the grasping position;  
a detector for generating a signal representative of the emergence of the laminate from the apparatus; and,  
means responsive to the signal for simultaneously energizing the actuators to move the gripping element to the grasping position and initiating the application of the displacement force to the carriage, the magnitude of the displacement force being such that it is dominated by the restraining force until the laminate is advanced completely through the apparatus, the displacement force thereupon becoming dominant to apply a jerking force to free the laminate from the resist material and displace the carriage to the second position.

4,338,153

# WELDING PLASTIC TUBE LINING

Heinz A. R. Zimmerman, Bochum-Stiepel, Fed. Rep. of Germany, assignor to Ameron, Inc., Monterey Park, Calif.

PCT No. PCT/US80/00767, § 371 Date Feb. 23, 1981, § 102(e) Date Feb. 23, 1981, PCT Pub. No. WO81/00006, PCT Pub. Date Jan. 8, 1981

PCT Filed Jun. 20, 1980, Ser. No. 243,944

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1979, 2925417; May 14, 1980, 3018379

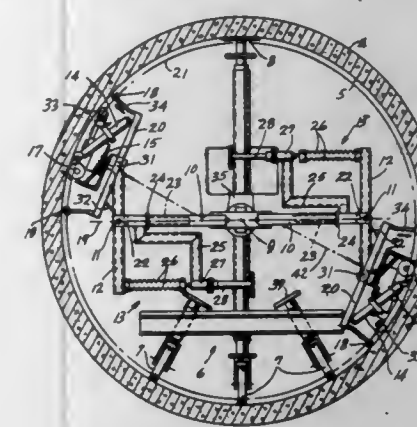
Int. Cl.<sup>3</sup> B65H 8/00

U.S. Cl. 156—391

46 Claims

1. Apparatus for welding plastic lining of tubing comprising:  
a carriage movable along the length of such tubing inside such tubing;  
means for fixing position of the carriage at a selected location in the tubing;  
at least one carrier arm mounted on the carriage for rotation about an axis coinciding with the axis of such tubing;  
a welding unit for welding plastic tubing lining mounted on an outer end of such a carrier arm remote from the axis of rotation;

drive means for propelling the welding unit and carrier arm around the interior of such tubing;  
means for resiliently biasing the welding unit outwardly towards the wall of the tubing;



guide means adjacent the welding unit for guiding the welding unit along a welding seam around the tubing; and  
means for accommodating translation of the welding unit along the length of the tubing in response to the guide means without moving the carriage.

4,338,154

# MACHINE FOR PRODUCING SINGLE-FACE CORRUGATED BOARD

Daniel Berthelot, Montluel, and Gerard Badin, Bourgoin-Jallieu, both of France, assignors to S. A. Martin, Villeurbanne, France

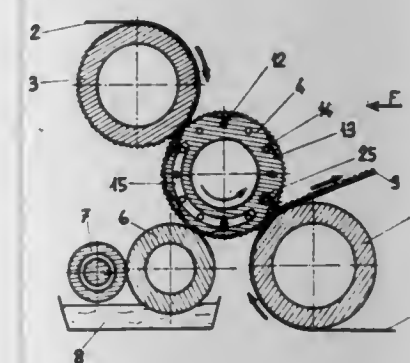
Filed Sep. 10, 1980, Ser. No. 186,006

Claims priority, application France, Sep. 14, 1979, 79 22960; Jun. 18, 1980, 80 13545

Int. Cl.<sup>3</sup> B29D 7/14; B31F 1/00

U.S. Cl. 156—462

12 Claims



1. Single-face corrugator for forming corrugated paper, comprising  
(a) an upper corrugated cylinder (3);  
(b) a lower corrugated cylinder (4) adapted to mesh with said upper corrugated cylinder;  
(c) said lower corrugated cylinder having a hollow inner space (11) for receiving saturated heating vapor;  
(d) means for applying suction for holding said paper against said lower corrugated cylinder, said suction means comprising orifices (13) opening into larger cavities (14) provided in the exterior of said lower corrugated cylinder (4).

4,338,155

# METHOD AND APPARATUS FOR INDEXING CONTAINERS TO BE LABELED

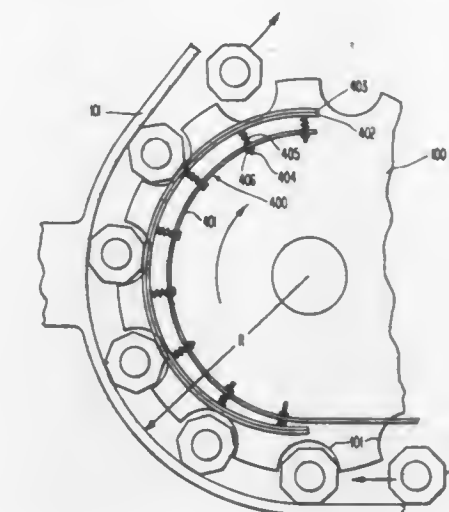
Byron D. Buchele, Muscatine, Iowa, assignor to H. J. Heinz Company, Pittsburgh, Pa.

Filed May 21, 1980, Ser. No. 151,800

Int. Cl.<sup>3</sup> B65C 9/02, 9/06

U.S. Cl. 156—539

3 Claims



1. An indexing device for use with a labeler employing a star-wheel feed mechanism, said feed mechanism comprising a star-wheel and a concentric arc-shaped retainer of radius "R," the improvement comprising an arc-shaped guideway of a radius less than "R" concentric with said retainer adapted to apply an outward pressure against containers passing through said feed mechanism, said pressure being sufficient to force said containers into contact with the inner-face of said retainer thereby causing multi-faced containers to maintain one face in sliding contact with said retainer, said container exiting the feed mechanism properly positioned for the application of labels.

4,338,156

# GLAZING STRIP APPLICATOR TOOL

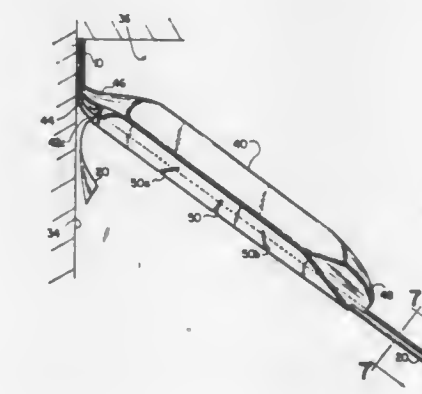
Robert H. Sand, 20 Trailsend Dr., Canton, Conn. 06019, and Martin Trachtenburg, 14 Candlewood Ln., Avon, Conn. 06001

Filed Apr. 16, 1981, Ser. No. 254,862

Int. Cl.<sup>3</sup> B32B 31/04; E04F 21/00

U.S. Cl. 156—574

7 Claims



6. A tool for applying a glazing strip to a corner or the like, said strip being of the type which includes a hollow thermoplastic carrier filled with glazing compound which compound can be extruded through a longitudinal slot in the carrier after peeling off a protective layer of paper and after the strip itself has been provided as a fillet in such a corner, said tool comprising an elongated member having an elongated cavity for slidably receiving the filled thermoplastic strip with the protective paper still applied to one face of the strip, said cavity being open to a front side of said member to expose a major portion of the paper layer covering the one face of the strip, said



member including opposed lips extending along a major portion of the marginal edges of the cavity's open side, said elongated member having a projecting portion at one end, said projecting portion defining a longitudinally extending and arcuately contoured continuation of the inner wall of said cavity to guide the strip as the member is moved relative to the strip, and said projecting portion having a tapered width which narrows toward the tip of said projecting portion to facilitate placement of the strip in a corner and movement of the member along the corner.

**4,338,157**  
**METHOD FOR FORMING ELECTRICAL CONNECTING LINES BY MONITORING THE ETCH RATE DURING WET ETCHING**

Kunihiko Kanda, Yokohama, Japan, assignor to Sigma Corporation, Tokyo, Japan

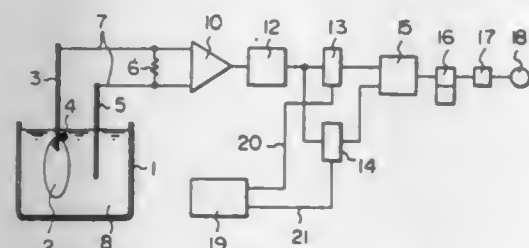
Filed Sep. 9, 1980, Ser. No. 185,439

Claims priority, application Japan, Oct. 12, 1979, 54/130749; Dec. 19, 1979, 54/164105; Dec. 19, 1979, 54/174803[U]; Jun. 18, 1980, 55/084241[U]

Int. Cl.<sup>3</sup> H01L 21/306

U.S. Cl. 156—627

10 Claims



1. A method of forming electrical interconnections, which comprises:

forming a number of semiconductor circuit elements on one semiconductor substrate, depositing an electrically conductive layer on substantially the entire surface of the semiconductor substrate, coating a photoresist on the electrically conductive layer, exposing the assembly to actinic rays, effecting development treatment so that an electrical interconnecting pattern is formed on the electrically conductive layer, placing one electrode composed of the electrochemically same material as that of the electrically conductive layer so that at least one contact portion of said one electrode is brought into contact with the electrically conductive layer,

dipping the assembly in an etching solution while using as the other electrode an electric conductor composed of a material electrochemically different from the material of the electrically conductive layer, performing wet chemical etching of the electrically conductive layer while measuring an electric current flowing between the two electrodes, and terminating etching of the electrically conductive layer when said current largely decreases, whereby electrical interconnections are formed for the respective semiconductor circuit elements on the semiconductor substrate.

5. An apparatus for forming electrical interconnections on a semiconductor substrate on which a number of semiconductor circuit elements are formed, comprising:

a vessel containing therein an etching solution for etching an electrically conductive layer formed on substantially the entire surface of said semiconductor substrate, a first electrode being composed of material which is electrochemically the same as that of said electrically conductive layer, which is brought into contact with a part of said electrically conductive layer, a second electrode being composed of a material electro-

chemically different from the material of said electrically conductive layer, which is dipped in said etching solution, means for measuring an electric current flowing between said two electrodes, electric current detecting means for detecting that said electric current is reduced below a timely determined level, time setting means and time measuring means, wherein said time measuring means is actuated for a time set by said time setting means after said electric current detecting means detects a decrease of said electric current below said timely determined level, whereby the progress of etching is detected, etching solution temperature measuring means, and computing means for calculating the etching rate from a temperature measured by said temperature measuring means.

**4,338,158**  
**PULPING IN THE PRESENCE OF A PROTECTOR**  
Jozef M. Bentvelzen, Sumner, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.  
Continuation of Ser. No. 764,097, Jan. 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 645,972, Jan. 2, 1976, abandoned. This application Jun. 17, 1981, Ser. No. 274,591  
Int. Cl.<sup>3</sup> D21C 3/00, 9/10

U.S. Cl. 162—37

4 Claims

1. A wood pulping and bleaching process comprising a pulping stage, in which wood chips are changed to wood pulp fibers and coloring matter associated with said fibers is partially removed, using wood pulping chemicals other than magnesium-based chemicals and other than oxygen, and a bleaching stage, in which said wood pulp fibers are caused to reflect with light more truly, using oxygen as a bleaching chemical, the improvement comprising adding a protector chemical in the amount of 0.01 to 2% based on the oven dry weight of the wood to said pulping stage only.

**4,338,159**  
**FINGER MECHANISM, WITH A CYCLIC MOVEMENT, FOR CONTROLLING A NUCLEAR REACTOR**  
Jean Martin, Chatillon, and Jacques Jolly, Igny, both of France, assignors to Framatome, Courbevoie, France  
Filed Jun. 17, 1980, Ser. No. 160,424  
Claims priority, application France, Jun. 18, 1979, 79 15572  
Int. Cl.<sup>3</sup> G21C 7/00

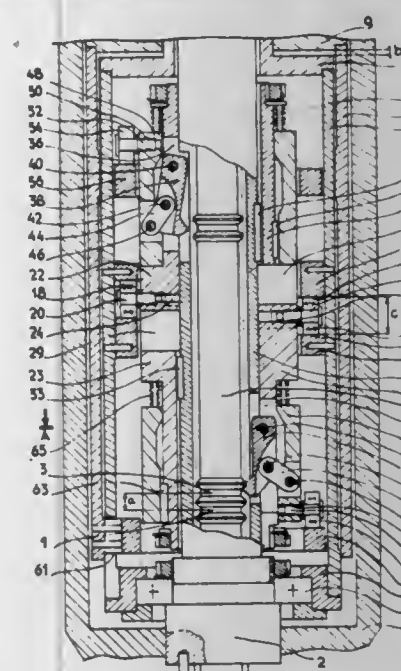
U.S. Cl. 376—228

4 Claims

1. A finger mechanism, with a cyclic movement, for controlling a nuclear reactor by displacing a neutron-absorbing assembly which is movable vertically in the reactor for power adjustment and emergency shut-down, said mechanism comprising:

a vertical control bar from the lower part of which the neutron-absorbing assembly is to be suspended and which is provided in its lateral surface with a plurality of circular notches at regular intervals in the vertical direction; two hooks each comprising a body supporting a set of fingers which are pivotable about horizontal axes between disengaged positions and engaged positions in which said fingers are engaged in a selected one of said plurality of notches in said vertical control bar; lifting and lowering means for the vertical displacement of said control bar and of the absorbing assembly when suspended therefrom, said lifting and lowering means comprising a first cam rotatable about the vertical axis of said control bar for simultaneously controlling vertical displacement of said two hook bodies for moving one of said hook bodies in an upwardly direction and the other of said hook bodies in a downwardly direction, the displacement of said hook bodies having an amplitude equal to  $n/2$

times the distance between adjacent notches in said control bar,  $n$  being an integer; means for causing rotation of said first cam; means for causing said pivotable fingers to move between said engaged and said disengaged positions comprising second cams which are rotatable about said vertical axis of said control bar by said means for causing said rotation of said first cam, and members in engagement with said second cams for controlling said pivotable fingers to cause said fingers of one of said sets to move to their disengaged position and to cause said fingers of the other of said sets to move to their engaged position in a notch in said control bar at the moment when said hook bodies end their



vertical displacements in one direction and the other, with inversion of said directions of said two hooks, so that in use said control bar and the absorbing assembly when suspended therefrom are displaced in a continuous movement by said hooks during rotation of said first and second cams; and

a supporting and holding device for maintaining said second cams in operating position for operating said sets of fingers, said supporting and holding device being instantly releasable for bringing said second cams to an inoperative position in which all said fingers are in their disengaged positions so that said control rod can drop the absorbing assembly suspended therefrom into a position of maximum engagement in the nuclear reactor core.

**4,338,160**  
**PROCESS FOR DRYING AND/OR PREHEATING COAL**  
Serge Delessard, Forbach, and Roger M. Puff, Freyming-Merlebach, both of France, assignors to Charbonnages de France, Paris, France  
Filed Jul. 28, 1980, Ser. No. 173,893  
Claims priority, application France, Jul. 30, 1979, 79 19531  
Int. Cl.<sup>3</sup> C10B 39/02, 45/00, 57/10

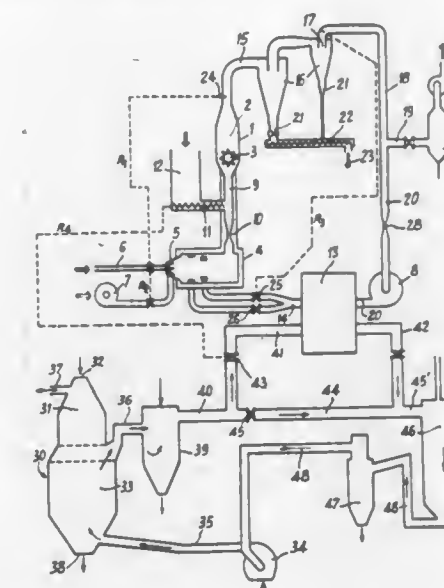
U.S. Cl. 201—1

4 Claims

1. In a process for at least one of drying and pre-heating coal to be coked, comprising the steps of:

(a) introducing said coal into a treatment chamber at a predetermined rate; (b) introducing a heat-conveying gas selected from the group consisting of neutral and reducing heat-conveying gases into the treatment chamber; (c) entraining and/or fluidizing the coal in said chamber by means of said gas so introduced; (d) entraining said dried or preheated coal by said gas and separating coal from gases; (e) recycling at least a part of said heat-conveying gas into the treatment chamber; (f) collecting said part of recycled gas and introducing that gas so collected into a heat exchanger;

(g) introducing hot dry-quenching fumes produced by dry quenching of hot discharged coke into the said heat exchanger; and (h) transferring heat in the heat exchanger from the hot dry-quenching fumes to the heat-conveying gas, the improvement consisting of:



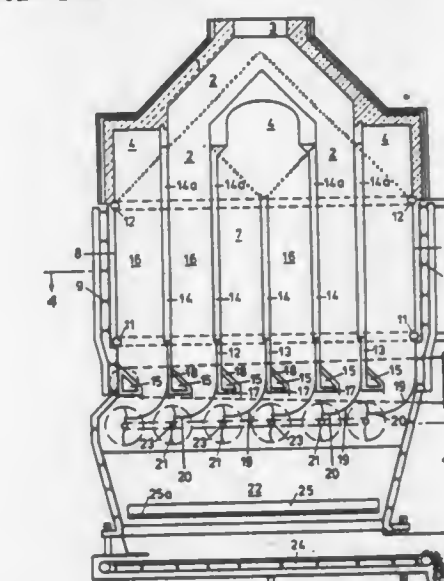
(1) utilizing as said heat-conveying gas a gas consisting essentially of water vapor maintained at a temperature of about 250° to about 650° C., and (2) recycling to the treatment chamber at least a portion of said heat conveying gas consisting essentially of water vapor.

**4,338,161**  
**DEVICE FOR DRY COOLING GLOWING COKE**  
Heinrich Weber, Recklinghausen; Kurt Lorenz, Hattingen, and Horst Dungs, Herne, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany  
Filed Mar. 30, 1981, Ser. No. 249,157  
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1980, 3013722

Int. Cl.<sup>3</sup> C10B 39/02, 45/00

U.S. Cl. 202—228

10 Claims



1. An apparatus for dry cooling coke, comprising: means defining a cooling chamber having a hot coke inlet; a plurality of cooling walls for conveying a cooling medium extending across said cooling chamber, dividing said cooling chamber into a plurality of parallel vertically extending cooling channels having a top inlet for hot coke from said hot coke inlet and a bottom outlet; a coke discharge mechanism at the bottom of each cooling channel for the controlled discharge of coke from each cooling channel;





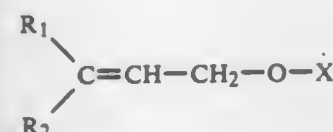


# 4,338,170 ISOMERIZATION OF $\beta$ - $\gamma$ -UNSATURATED ALCOHOL OR ITS ESTER

Atsuo Murata, Syuji Tsuchiya, and Hideo Suzuki, all of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed May 23, 1980, Ser. No. 152,819  
Claims priority, application Japan, Jun. 14, 1979, 54-74936;  
Nov. 2, 1979, 54-142419; Nov. 2, 1979, 54-142421  
Int. Cl.<sup>3</sup> B01J 19/08; C07C 35/00, 67/333, 69/76  
U.S. Cl. 204—158 R 5 Claims

3. In an isomerization of a cis  $\beta$ - $\gamma$ -unsaturated alcohol or its ester having the formula;



wherein

R<sub>1</sub> represents hydrogen atom or a C<sub>1</sub>-C<sub>5</sub> alkyl group;  
X represents hydrogen atom or —C(O)—R<sub>3</sub>;  
R<sub>2</sub> represents a hydrocarbon moiety or a hydroxy hydrocarbon moiety; and  
R<sub>3</sub> represents hydrogen atom or a hydrocarbon moiety, into a trans-form, the improvement characterized by isomerizing said cis  $\beta$ - $\gamma$ -unsaturated alcohol or ester in the presence of a mercaptan or disulfide which is a member selected from the group consisting of aromatic mercaptans, alkyl dithiols, dialkyl disulfides, thioglycol, mercaptoethanol, octylthiol, cyclohexanethiol, cyclopentanethiol, and mixtures thereof as a catalyst; wherein said isomerization is carried out under irradiation.

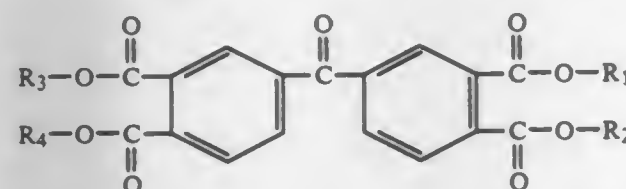
# 4,338,171 PHOTOPOLYMERIZABLE COMPOSITIONS

Walter P. Barie, Jr., Glenshaw, Pa.; Thomas F. Huemmer, and Pallavoor R. Lakshmanan, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

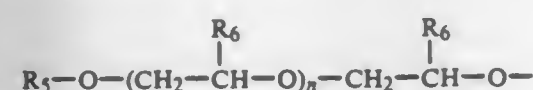
Filed Jun. 16, 1980, Ser. No. 159,755

Int. Cl.<sup>3</sup> C08F 2/50 8 Claims

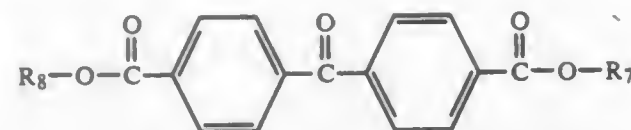
1. A photopolymerizable composition consisting essentially of about 50-90 weight % of a polymerizable unsaturated compound and, correspondingly, about 50-10 weight % of a photoinitiating ester selected from the group consisting of (a) an ester having the structure:



where each of R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, and R<sub>4</sub> is independently selected from the group consisting of a hydrogen atom and an alkoxy ether moiety having the structure:



where R<sub>5</sub> is an alkyl group containing up to about 18 carbon atoms, R<sub>6</sub> is hydrogen or a methyl group, and n is zero or a small integer, with the further provision that not more than 1 of R<sub>1</sub> and R<sub>2</sub> and not more than 1 of R<sub>3</sub> and R<sub>4</sub> is hydrogen, and (b) an ester having the structure:



where each of R<sub>7</sub> and R<sub>8</sub> is an alkoxy ether moiety of the structure described above.

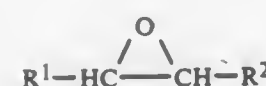
# 4,338,172 PHOTOPOLYMERIZABLE COMPOSITION STABILIZED WITH EPOXIDE COMPOUNDS AND PROCESS

Francis A. Via, Yorktown Hts., N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 1,110, Jan. 5, 1979, which is a division of Ser. No. 769,960, May 16, 1977. This application Sep. 15, 1980, Ser. No. 187,397

Int. Cl.<sup>3</sup> C08F 2/50 7 Claims

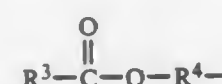
1. A photopolymerizable composition comprising at least one photopolymerizable ethylenically unsaturated compound containing a benzoin ether in an amount sufficient to initiate photopolymerization and a stabilizing amount of an epoxide having the formula:



wherein:

R<sup>1</sup> and R<sup>2</sup> are

(a) independently selected hydrogen, alkyl of 1 to 18 carbon atoms, aryl of 6 to 13 ring carbon atoms,



where R<sup>3</sup> is alkenyl of 2 to 6 carbon atoms and R<sup>4</sup> is alkylene of 1 to 4 carbon atoms or cycloalkenyl oxide of 5 or 6 ring carbon atoms, with the proviso that both R<sup>1</sup> and R<sup>2</sup> cannot be hydrogen; or  
(b) together with the adjacent epoxy carbon atoms form a cyclic hydrocarbon having a total of 5 to 7 ring carbon atoms.

# 4,338,173 CATALYTIC ISOMERIZATION PROCESS USING PHOTO-INDUCED DELIGANDATION

James T. Yardley, Morristown; Alan M. Rosan, Madison, and Eva L. Menger-Hammond, Madison, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 23, 1980, Ser. No. 161,998

Int. Cl.<sup>3</sup> C07C 5/23 19 Claims

U.S. Cl. 204—162 R

1. A process for inducing a catalytic isomerization reaction in a reactant gas comprising an unsaturated hydrocarbon, which comprises exposing the gas to optical radiation in the presence of a gaseous compound comprising a transition metal and a ligand.

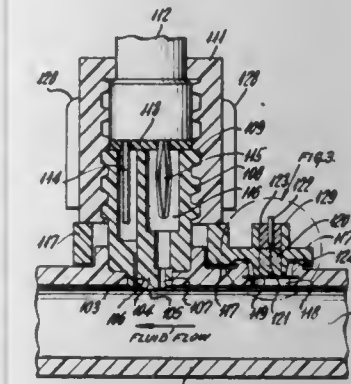
# 4,338,174 ELECTROCHEMICAL SENSOR WITH TEMPERATURE COMPENSATION MEANS

Paul S. Tamura, Irvine, Calif., assignor to McNeillab, Inc., Fort Washington, Pa.

Filed Jan. 8, 1979, Ser. No. 1,507

Int. Cl.<sup>3</sup> G01N 27/30 5 Claims

U.S. Cl. 204—195 P



1. An electrochemical sensor comprising:  
a housing defining a passageway for fluids to be monitored;  
at least one electrode;  
a membrane in said housing separating said electrode from fluid in said passageway;  
and characterized by temperature sensing means, proximate said membrane, penetrating said housing and being in direct thermal contact with fluid in said passageway, wherein said temperature sensing means comprises a removable collar carrying thermistor means, said collar being sealably matably received by said housing means to hold said thermistor means in direct thermal contact with said fluid, whereby said sensor is disposable but said temperature sensing means is reusable,  
wherein said electrode includes a disposable portion carried by said housing and a reusable portion contactable with said disposable portion, wherein said housing includes an outwardly raised boss surrounding said disposable electrode portion, wherein said reusable electrode portion includes a collar for matably sealing engagement with said boss, and wherein said thermistor means collar includes a protuberance removably held between said boss and said electrode collar.

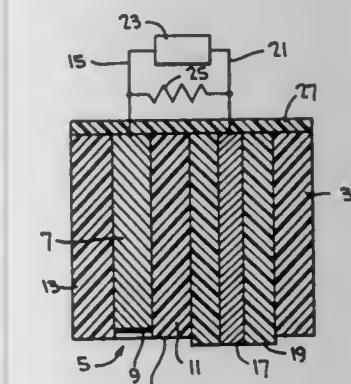
# 4,338,175 ALL SOLID STATE ELECTRODE SYSTEM

Ira Binder, New Rochelle, and Horace A. Teass, Jr., Armonk, both of N.Y., assignors to McNab, Incorporated, Mount Vernon, N.Y.

Continuation-in-part of Ser. No. 22,472, Mar. 21, 1979, abandoned. This application May 12, 1980, Ser. No. 149,119

Int. Cl.<sup>3</sup> G01N 27/30 2 Claims

U.S. Cl. 204—195 R



1. An all solid state electrode system for the measurement of the pH of a fluid stream including a cell body having a metal-

loid electrode composed of ultra-pure antimony combined with an insulated from an electrode of a noble metal of the platinum group of metals, said noble metal electrode being a reference electrode which is inert to chemical attack by the fluid stream of which the pH is being measured, said noble metal electrode having a body portion formed of a conducting material and a noble metal on and covering an end thereof and in contact with said body portion, the noble metal covered end of said noble metal electrode and said metalloid electrode being immersed in the fluid stream, leads connecting each electrode to low impedance electronic pH instrumentation, and an input resistor connected across said leads, the electrical path being completed and a voltage being produced proportional to the pH in the fluid stream for displaying on the electric low impedance pH instrumentation the measurement of the pH in the fluid stream, said metalloid electrode being composed of electronics antimony of 99.999% purity.

# 4,338,176 SYSTEM FOR GENERATING AND AUTOCONTROLLING THE VOLTAGE OR CURRENT WAVE FORM APPLICABLE TO PROCESSES FOR THE ELECTROLYTIC COLORING OF ANODIZED ALUMINIUM

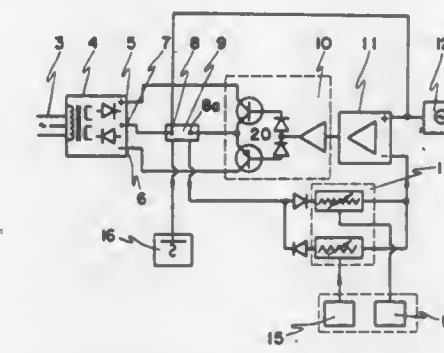
Jose' Garcia Pelaez, Alicante, Spain, assignor to Empresa Nacional del Aluminio, S.A. (ENDASA), Madrid, Spain

Filed Oct. 11, 1979, Ser. No. 83,943

Claims priority, application Spain, Oct. 31, 1978, 474,736

Int. Cl.<sup>3</sup> C25D 11/22; G05F 1/44 7 Claims

U.S. Cl. 204—228



1. A system for generating and controlling one of either the voltage and current waveform applied to a load having first and second terminals and applicable to a process for the electrolytic coloring of anodized aluminium, said system comprising:

a symmetric bipolar DC power supply having positive and negative output voltage terminals and a neutral terminal, said neutral terminal operatively connected to said first terminal of said load;  
a power control stage having at least two transistors operating in a linear mode, said power control stage operatively connected between said positive and negative output voltage terminals of said power supply and said second terminal of said load;  
an operational amplifier operatively connected to said power control stage for controlling said power control stage, said operational amplifier having a non-inverting input operatively connected to said neutral terminal of said power supply and having an inverting input operatively connected to said second terminal of said load;  
a negative feed-back means operatively connected between said inverting terminal of said operational amplifier and said second terminal of said load, said feed-back means comprising two unipolar electrical resistance paths connected in parallel, said electrical resistance paths separately controllable by a programming system;  
a signal generator operatively connected to said non-invert-



ing input of said operational amplifier for providing a periodic signal of predetermined characteristics; wherein said programming system controls said resistance paths of said feed-back means to control one of either the voltage or current waveform applied to said load.

4,338,177

# **ELECTROLYTIC CELL FOR THE PRODUCTION OF ALUMINUM**

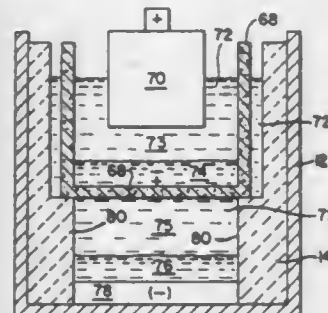
James C. Withers, Strongsville, and Gary V. Upperman, North Olmsted, both of Ohio, assignors to Metallurgical, Inc., Lakewood, Ohio

Continuation-in-part of Ser. No. 944,987, Sep. 22, 1978, abandoned, and Ser. No. 52,578, Jun. 27, 1979, abandoned. This application Jul. 30, 1979, Ser. No. 62,135

Int. Cl.<sup>3</sup> C25C 3/06; 3/12, 3/24, 7/02

U.S. Cl. 204—243 R

22 Claims



1. An electrolytic cell for the production of aluminum comprising in combination, a housing having first and second compartments, a molten electrolyte containing ions selected from the group consisting of chlorides, fluorides or mixtures thereof in said compartments, a cathode in one of said compartments for the formation of molten metallic aluminum, an anode in the other of said compartments comprising an oxygen containing compound of aluminum in an amount sufficient to provide aluminum ions during electrolysis and a reducing agent in intermixed contact with said oxygen containing compound of aluminum, said electrolyte being of a material in which said compound will not readily dissolve in substantial quantities when the temperature of the electrolyte is in the range of 650° to 900° C., a porous membrane separating said first and second compartments, said membrane being of a material having a connected pore size sufficiently small to screen out said intermixture of said compound of aluminum and said reducing agent and sufficiently large to pass said aluminum ions, and a layer of impure aluminum forming a bipolar electrode disposed within said other compartment positioned between said anode and said cathode and supported by said membrane.

4,338,178

# **APPARATUS FOR ELECTROCHEMICAL PURIFICATION OF CONTAMINATED LIQUIDS**

Vyacheslav T. Efimov, ulitsa Sumskaia, 59, kv. 2, Kharkov; Miron M. Nazarian, ulitsa Bljukhera, 13, kv. 138, Kharkov; Alexandr A. Axenko, ulitsa Bairona, 152, kv. 25, Kharkov; Vladimir A. Kolyada, ulitsa Petrozavodskaya, 91a, kv. 30, Kharkov; Anatoly X. Maskaev, ulitsa Studencheskaya, 12/14, kv. 25, Kiev; Ljudmila F. Shamsha, ulitsa Dinamovskaya, 3, kv. 23, Kharkov, and Vladimir I. Kostjuk, ulitsa Uritskogo, 23, kv. 51, Kiev, all of U.S.S.R.

Filed Jan. 12, 1981, Ser. No. 223,993

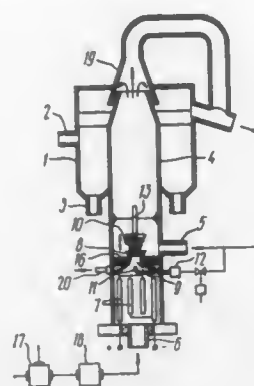
Int. Cl.<sup>3</sup> C25B 9/00, 15/08; C02F 1/46

U.S. Cl. 204—275

4 Claims

1. An apparatus for electrochemical purification of contaminated liquids, comprising:  
a settling chamber having an outlet pipe to discharge purified liquid;  
an electrocoagulation chamber having a system of soluble

electrodes, disposed in the bottom part of said electrocoagulation chamber;  
an inlet pipe to feed electrolyte, disposed below said system of soluble electrodes;  
an inlet pipe to feed contaminated liquid, disposed above said system of soluble electrodes;  
a separating partition with an aperture, interposed between said system of soluble electrodes and said inlet pipe to feed contaminated liquid and having



a check valve installed in said aperture in said partition;  
an injector to deliver a fluid under said check valve, installed so as to enable said check valve to move vertically under the action of the flow of the fluid delivered by the injector and of the flow of a gas-liquid mixture, ascending from the system of soluble electrodes of said electrocoagulation chamber.

4,338,179

# **ELECTRODE**

Ronald Dickson, Bridgnorth, and Michael R. Hampson, Brewood, both of England, assignors to Marston Excelsior Limited, Wolverhampton, England

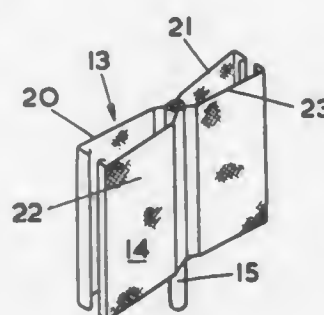
Filed Jun. 20, 1977, Ser. No. 808,430

Claims priority, application United Kingdom, Jun. 21, 1976, 25637/76

Int. Cl.<sup>3</sup> C25B 11/03, 11/10

U.S. Cl. 204—284

7 Claims



1. An anode for use in a diaphragm or membrane cell comprising an elongate current feeder post and a pair of spaced electrode sheets disposed on either side of the current feeder post and being directly welded to the post along their center lines, the sheets being resiliently movable toward one another and resiliently springable outwardly, each of the electrode sheets comprising a central web portion and an integral substantially planar portion on each side of the web portion, an anodically active outer layer on at least part of the surface of the planar portions, the two web portions being directly attached to opposite sides of the current feeder post and each including two flange portions which are splayed outwardly from the current feeder post and are integral with the substantially planar portions of the electrode sheets, in the unconstrained condition the two adjacent free edges of the substantially planar portions of the two sheets being spaced wider

apart than the parts of the planar portions closest to the connection line with the flanges.

4,338,180

# **PHOTOELECTRODES FOR PHOTOELECTROCHEMICAL CELLS**

Michihiro Nakamura, Kurashiki, Japan, assignor to Kuraray Co., Ltd., Kurashiki, Japan

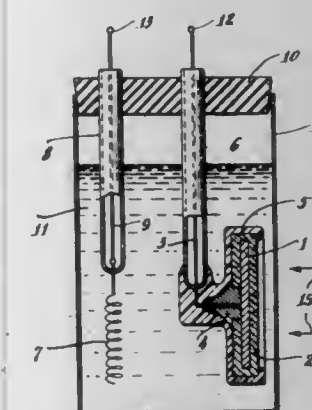
Filed Nov. 25, 1980, Ser. No. 210,161

Claims priority, application Japan, Nov. 28, 1979, 54/154709; Jan. 24, 1980, 55/7552; Feb. 19, 1980, 55/19907; Jun. 16, 1980, 55/81794; Jul. 2, 1980, 55/90923

Int. Cl.<sup>3</sup> C25B 11/04; H01M 6/36

U.S. Cl. 204—290 R

3 Claims



1. A photoelectrode for a photoelectro-chemical cell, which is essentially composed of a surface-chalcogenated molybdenum or tungsten metal, wherein the chalcogenated layer is doped with at least one element selected from Group III<sub>b</sub>, IV<sub>a</sub> or IV<sub>b</sub> of the Periodic Table.

4,338,181

# **ELECTRODE CONTAINING EXTRACTION TREATED PARTICLES**

Frank Solomon, Great Neck, N.Y., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 31, 1980, Ser. No. 202,584

Int. Cl.<sup>3</sup> C25B 11/12; C08K 5/02; C08J 3/00

U.S. Cl. 204—294

7 Claims

1. A process of treating polytetrafluoroethylene particles containing small amounts of wetting agent in admixture with carbon particles comprising contacting said mixture with chloroform to extract said wetting agent.

4,338,182

# **MULTIPLE-STAGE HYDROGEN-DONOR COAL LIQUEFACTION**

Lonnie W. Vernon, and Peter S. Maa, both of Baytown, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 13, 1978, Ser. No. 950,951

Int. Cl.<sup>3</sup> C10G 1/00

U.S. Cl. 208—8 LE

15 Claims

1. A process for liquefying normally solid carbonaceous materials comprising the steps of:

- slurrying a particulate solid carbonaceous material with a suitable solvent such that the solvent/solid carbonaceous material weight ratio is within the range from about 0.5:1 to about 3:1;
- subjecting the resulting slurry to liquefaction in a first liquefaction stage wherein the temperature at the outlet of

said stage is higher than the temperature at the inlet of said stage;

- separating at least 50 weight percent of the total liquid boiling within the range from about 400° to about 1000° F. from the effluent of the first liquefaction stage;
- slurrying at least a portion of the effluent remaining after the separation of step (c) with a suitable solvent such that the solvent/unconverted solid carbonaceous material weight ratio is within the range from about 0.5:1 to about 3:1;
- subjecting the resulting slurry of solvent and unconverted solid carbonaceous material to liquefaction conditions in a second liquefaction stage or zone; and
- recovering a liquid product from the second liquefaction stage.

4,338,183

# **METHOD OF SOLVENT EXTRACTION OF COAL BY A HEAVY OIL**

John G. Gatsis, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 14, 1980, Ser. No. 196,428

Int. Cl.<sup>3</sup> C10G 1/06

U.S. Cl. 208—10

7 Claims

1. A process for the production of hydrogen-enriched hydrocarbonaceous products from hydrocarbonaceous materials which comprises:

- commingling coal and a crude petroleum oil containing asphaltenes and heavy oils in amount such that at least 80% of the crude boils above 650° F.;
- subjecting the resultant mixture to conversion together with a hereinafter described liquid recycle stream containing finely divided, unsupported metal catalyst in which the metal is selected from the group consisting of the elements from Groups IVB, VB, VIB, VIIB and VIII of the Periodic Table of Elements and mixtures thereof in a reaction zone at a temperature from about 55° F. to about 950° F. and a hydrogen pressure from about 500 psig to about 10,000 psig to liquefy at least a portion of said coal and to reduce the asphaltene content of said oil;
- separating gas from the resultant reaction zone effluent;
- then solvent deashing at least a portion of the reaction zone effluent with a relatively low molecular weight hydrocarbon solvent to separate therefrom a heavy liquid phase containing substantially all of the ash, unconverted coal, asphaltenes, relatively high molecular weight hydrocarbons and finely divided, unsupported metal catalyst; and
- supplying at least a portion of said heavy liquid phase to the reaction for use as said liquid recycle stream in the aforesaid step (b).

4,338,184

# **COAL CONVERSION IN THE PRESENCE OF ADDED ALKALI METAL COMPOUNDS**

Peter S. Maa, Baytown; Lavanga R. Veluswamy, and Charles J. Vadovic, both of Houston, all of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 27, 1980, Ser. No. 200,710

Claims priority, application Japan, Oct. 26, 1979, 54-139028  
Int. Cl.<sup>3</sup> C10G 1/00, 1/06; B01J 37/00

U.S. Cl. 208—10

28 Claims

1. A process for converting coal or similar liquefiable carbonaceous solids into liquid hydrocarbons which comprises contacting said carbonaceous solids with molecular hydrogen under liquefaction conditions in a liquefaction zone in the presence of an added alkali metal compound, and in the absence of externally added hydrocarbon liquids and externally added water other than the inherent moisture in said carbonaceous solids.



4,338,185

## RECOVERY OF OIL FROM OIL SANDS

Calvin D. Noelle, 1900 South Ocean Blvd., #14D, Pompano Beach, Fla. 33062

Filed Jan. 2, 1981, Ser. No. 222,129

Int. Cl.<sup>3</sup> C10G 1/04

U.S. Cl. 208—11 LE

4 Claims

1. In the method of recovering oil from oil sand wherein the oil sand is tumbled in an aqueous alkaline solution to form a floating mass in which the oil is dispersed and the oil then recovered from the mass, the step of including in the aqueous alkaline solution 0.3 to 100 parts per million of a water-soluble low molecular weight anionic compound selected from the group consisting of alginic acid, mannuronic acid and the sodium salts thereof.

4,338,186

## SHALE OIL PROCESS

Henry E. Reif, Bryn Mawr, and Jeffrey P. Schwedock, Aston, both of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Filed Nov. 17, 1980, Ser. No. 207,537

Int. Cl.<sup>3</sup> C10G 65/04, 65/12, 67/08

U.S. Cl. 208—89

4 Claims

1. A process for preparing hydrocarbon aviation fuels from a raffinate of an HCl-treated shale oil which comprises hydro-treating said raffinate, removing ammonium chloride by water quenching the hydrotreated bottoms liquid product, separating hydrocracker feed consisting of said water-quenched stream which is essentially free of sulfur and nitrogen materials, hydrocracking said separated stream and distilling said hydrocarbon fuels from said hydrocracked product.

4,338,187

## SOLIDS FEEDING DEVICE AND SYSTEM

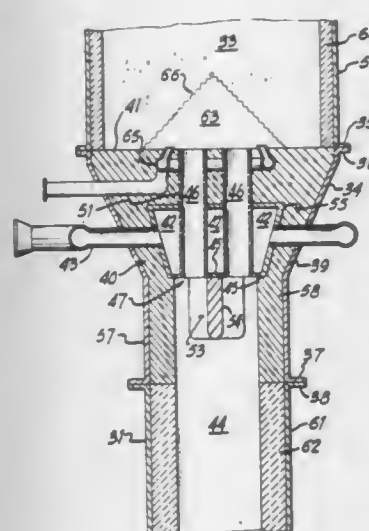
Robert J. Gartside, Auburndale, Mass., and Herman N. Woebcke, Stamford, Conn., assignors to Stone &amp; Webster Engineering Corporation, Boston, Mass.

Filed Oct. 22, 1979, Ser. No. 86,951

Int. Cl.<sup>3</sup> C10G 9/30

U.S. Cl. 208—127

6 Claims



1. A process for continually feeding particulate solids to a reaction chamber comprising the steps of:

- providing a bed of solids in a non-fluidized state;
- delivering aeration gas under pressure to a localized section of the bed of solids immediately above a conduit extending from the bed of solids to a reaction zone, said aeration gas having a flow rate less than a rate necessary for incipient fluidization of the bed of solids such that only the solids proximate to said conduit are fluidized; and
- passing the fluidized solids downwardly by gravity through the conduit to the reaction chamber.

4,338,188

## COAL CLEANING PROCESS

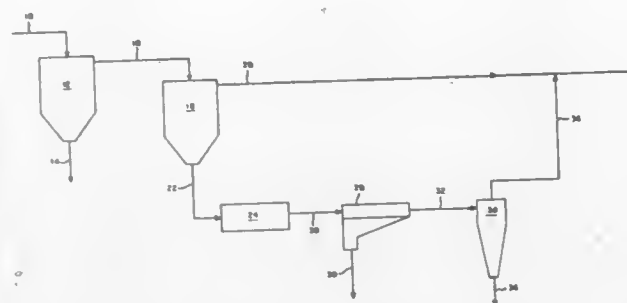
Robert P. Guerre, Seabrook, Tex., assignor to Exxon Research &amp; Engineering Co., Florham Park, N.J.

Filed Jul. 13, 1979, Ser. No. 57,250

Int. Cl.<sup>3</sup> B03B 7/00

U.S. Cl. 209—2

14 Claims



1. A process for cleaning carbonaceous solids of varying densities which contain inorganic, ash-forming constituents comprising:

- removing from said carbonaceous solids substantially all particles having a specific gravity greater than a predetermined value thereby producing a fraction of solids comprised of particles having a specific gravity less than said predetermined value;
- crushing or grinding substantially all of said particles having a specific gravity less than said predetermined value to produce smaller particles;
- separating said smaller particles into a high density fraction and a low density fraction; and
- recovering said low density fraction produced in step (c) as clean carbonaceous solids.

4,338,189

## OIL RECONDITIONING DEVICE

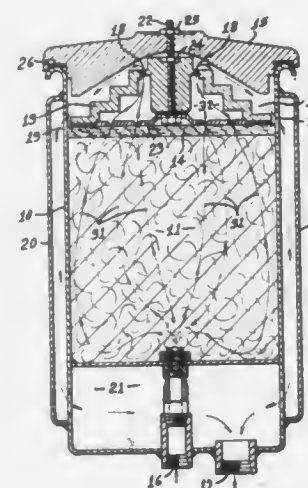
Lester L. Johnson, Sr., 5181 River Bluff La., Jacksonville, Fla. 32211

Filed Mar. 23, 1981, Ser. No. 246,684

Int. Cl.<sup>3</sup> B01D 27/08, 35/18

U.S. Cl. 210—180

13 Claims



8. In an oil reconditioning device including a housing, an inlet at the lower end of the housing leading into a filter chamber in the central portion of and extending across the internal dimension of said housing for removing solid contaminants, and an upper chamber extending across the internal dimension of said housing for receiving oil from said filter chamber and cascading the oil over tiers on the outside heated surface of a hollow, convex frustoconical element where liquid contaminants in said oil are vaporized and vented to the atmosphere through a vent in said device; the improvement which comprises a purified oil receiving chamber extending across the

internal dimension of said housing located below said filter chamber, a plurality of spaced conduits about said housing communicating between said upper chamber and said purified oil receiving chamber, and an outlet in said purified oil receiving chamber for delivering purified oil therefrom, each of said conduits being sufficiently large in cross sectional area to conduct all of the oil flowing from said upper chamber to said purified oil receiving chamber without reducing the overall flow rate of the oil passing through said device thereby to inhibit oil buildup in said upper chamber to minimize oil leakage out of said vent.

4,338,190

## PERITONEAL ARTIFICIAL KIDNEY

Menahem A. Kraus, and Moshe A. Frommer, both of Rehovot, Israel, assignors to A. T. Ramot Plastics Ltd., Tel Aviv, Israel

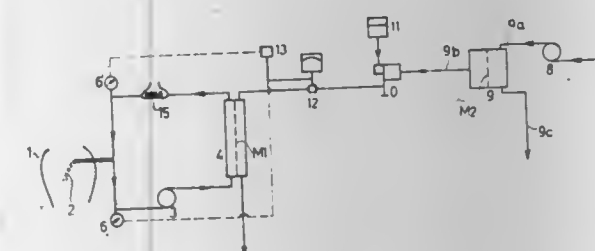
Filed Feb. 8, 1977, Ser. No. 766,581

Claims priority, application Israel, Feb. 13, 1976, 49031

Int. Cl.<sup>3</sup> B01D 31/00

U.S. Cl. 210—195.2

2 Claims



1. An artificial kidney including a peritoneal dialysis system which prevents protein loss, permits the peritoneal fluid to be circulated through the peritoneal cavity at a high circulation rate, and obviates the need for heat sterilization, comprising: a closed-loop peritoneal circuit including means for introducing a prepared solution into the peritoneal cavity to draw toxic metabolites therefrom into the fluid, the fluid exiting from the cavity as peritoneal fluid, a separator containing a selective membrane having a high permeability to low molecular weight toxic metabolites but a low permeability to high molecular weight protein, and means for circulating the peritoneal fluid through the separator on one side of the selective membrane, the fluid exiting from that side of the membrane being returned to the peritoneal cavity; and a single-pass reconstitution circuit including a hyperfilter impermeable to ions and to organic matter, and having an inlet, a permeate outlet, and a residue outlet, means for introducing tap water into the inlet of the hyperfilter, means for introducing a concentrate including sugar and salts into the water exiting from the permeate outlet of the hyperfilter to form a water concentrate solution, and means for utilizing the resulting water-concentrate solution for maintaining substantially constant the original concentration of sugar and salt in the peritoneal fluid as the waste metabolites, passing through said separator, are moved from the peritoneal fluid, said separator being a dialyser, and said last-named means introducing said water-concentrate solution into the dialyser on the other side of the selective membrane.

4,338,191

## APPARATUS FOR TREATING FLUIDS

Edward J. Jordan, Willoughby, Ohio, assignor to Jet Aeration Company, Cleveland, Ohio

Filed Jun. 20, 1977, Ser. No. 807,930

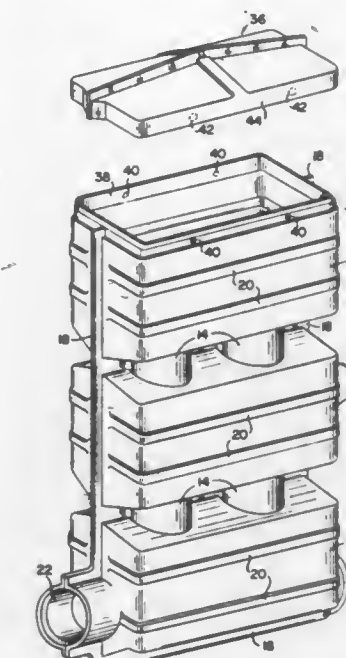
Int. Cl.<sup>3</sup> B01D 57/00; C02B 3/06

U.S. Cl. 210—199

19 Claims

1. Apparatus for treating a fluid with a treating agent comprising a container having at least three vertically spaced chambers, the lowermost one of said vertically spaced chambers having an inlet for introducing fluid thereinto and an outlet for discharging fluid therefrom, vertically spaced support means in said container, treating agent holding means removably insertable into said container and being supported

in a generally vertical position by said vertically spaced support means, said vertically spaced support means comprising wall means defining generally vertically aligned openings communicating adjacent chambers with each other, said



aligned openings receiving said treating agent holding means therethrough in the assembled condition of the latter with said container, said container being of a large enough size to completely receive said treating agent holding means therein.

4,338,192

## CLARIFIER BUBBLE GENERATION AND DISTRIBUTION NOZZLE

Eugene L. Krasnoff, and Oscar Luthi, both of Nashua, N.H., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

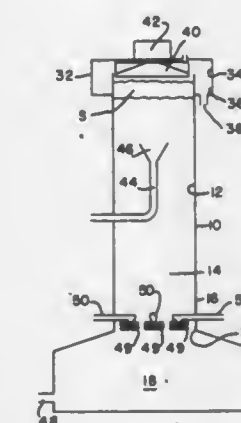
Continuation of Ser. No. 970,552, Dec. 18, 1978, abandoned.

This application Jun. 16, 1980, Ser. No. 159,869

Int. Cl.<sup>3</sup> B03D 1/00

U.S. Cl. 210—221.2

6 Claims



1. A liquid purifier for removing contaminants from a liquid, comprising: a vessel; conduits for conducting pressurized dissolved gas in water into the vessel; a first member connected to each conduit and having a hole through which the dissolved gas in water flows; a solid member normally axially-spaced a predetermined distance from the first member to provide empty space between the first member and the solid member, said solid member having a bore extending upwardly from its lower end; and means including a post extending snugly into said bore for normally supporting said solid member away from said first member while permitting axial movement only of said solid member toward said first member in response to the flow of water outwardly through said empty space, one of said first member and said solid member having a recess formed on the surface facing the other member, said hole in the



first member being dimensioned and said recess being shaped so that the axial pressures and the radial velocities of the water flowing outwardly through said empty space are such that the solid member moves axially toward the first member and floats a predetermined distance from the first member, said predetermined distance being such that the surface forming the edge of the recess is no more than about 0.02 inches from the opposing surface of the other member so that bubbles are formed with most bubbles exiting from between the first member and the solid member having a diameter less than 100 microns.

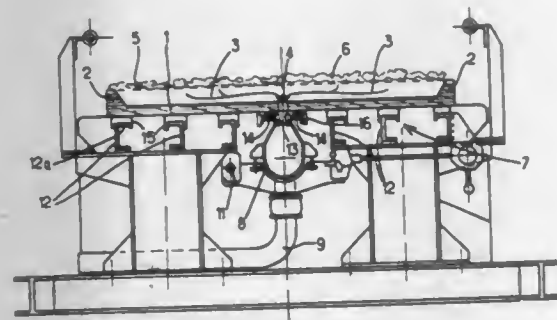
4,338,193

**HORIZONTAL ENDLESS BELT VACUUM FILTER**  
Jean-Claude Lautrette, St. Crepin-Ibouville, and Christian A. Queyroy, Maisons Laffitte, both of France, assignors to F. Aoustin et Cie, Darnetal, France

Filed Nov. 21, 1980, Ser. No. 209,013  
Claims priority, application France, Nov. 29, 1979, 79 29383  
Int. Cl.<sup>3</sup> B01D 33/04

U.S. Cl. 210—401

11 Claims



1. A vacuum filter comprising a driven continuous conveyor belt having openings therein allowing liquid flow there-through;

- a continuous filtering belt above said conveyor belt;
- a table supporting said conveyor belt;
- a vacuum chamber forming part of said table;
- said chamber having an inlet in its upper part below said openings and upper flanges extending outwardly from both sides of said inlet;
- said table including also horizontal longitudinal supports on each side of said chamber;
- said supports terminating at their upper ends in horizontal flanges; and
- plastic guide strips for said conveyor belt frictionally engaged with said upper flanges of said chamber and with said flanges of said longitudinal supports in abutting contact therewith.

4,338,194

**METHOD OF PRODUCING SOLUTE-REJECTING DYNAMIC MEMBRANE FILTERS AND FILTERS INCLUDING SUCH MEMBRANES**

Gerald Tanny, Ann Arbor, Mich., assignor to Yeda Research & Development Company Ltd., Rehovot, Israel.

Filed Jun. 5, 1978, Ser. No. 912,549  
Int. Cl.<sup>3</sup> B01D 31/00

U.S. Cl. 210—490

24 Claims

15. A solute-rejecting dynamic membrane filter, comprising: a porous substrate having a pore size of 0.025–3 microns, and a bed of silica particles deposited thereon, said silica particles being substantially spherical and uniform, and having a nominal particle diameter of 20–80 Å.

4,338,195

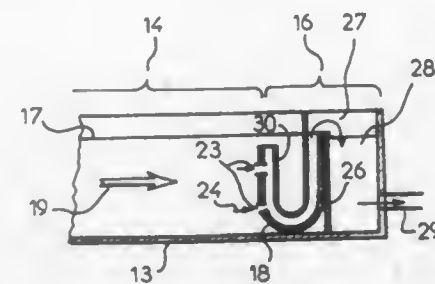
**LIQUID TREATMENT APPARATUS**

Georges Treysac, Marq-en-Baroeul, France, assignor to Societe Anonyme d'Etudes de Recherches et de Productions d'Agents Chimiques ERPAC, France

Filed Nov. 3, 1980, Ser. No. 203,256  
Int. Cl.<sup>3</sup> B01D 21/24

U.S. Cl. 210—519

8 Claims



1. Apparatus for the treatment of a liquid comprising: a tank defining an inlet area and an outlet area, which are located on opposed sides of a treatment area, the liquid entering the tank into the inlet area, passing through the treatment area and being discharged from the outlet area; a set of discrete tubes extending substantially vertically and disposed in a row extending over the width of said area transversely with respect to the direction of flow of the liquid in one of said areas other than said treatment area, the tubes being isolated from one another and extending vertically substantially from the bottom of the tank to the upper surface of the liquid, each of said tubes being U-shaped with a first side which ascends to at least the intended level of the upper surface of liquid in said tank and a second side which ascends at most to said upper surface of the liquid, said second side having at least one orifice for connection with said treatment area to define a stream of liquid in said treatment area, the orifices in different tubes being located at different levels and being of variable but predetermined different dimensions according to their locations and the rate of flow to be imposed on the streams which they respectively define, said first side of each tube also having an opening for connection to the outside of said tank located at the level of the intended upper surface of liquid in the tank and separated from the latter in a liquid-tight manner except for connection through said tube.

4,338,196

**BIOLOGICAL TREATMENT OF A FORMALDEHYDE-CONTAINING WASTE WATER CONTACTED WITH A BIOMASS TOGETHER WITH A NITROGEN COMPOUND**

Leanne Mayerle, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Jul. 5, 1979, Ser. No. 54,767  
Int. Cl.<sup>3</sup> C02F 3/28, 3/30

U.S. Cl. 210—610

7 Claims

1. In a process which comprises introducing into a biological digester (a) a nitrogen compound which is a member of the group consisting of ammonia, ammonium salts, amides, and primary and secondary amines along with (b) a waste water stream containing formaldehyde for the purpose of biologically decomposing said formaldehyde by the action of microorganisms contained in said digester, the improvement which comprises:

introducing said nitrogen compound into said digester in a nitrogenous stream which is separate from said formaldehyde-containing waste water stream, whereby mixing of the nitrogen compound with the formaldehyde-containing waste water is prevented until both the nitrogenous stream and the formaldehyde-containing waste water

stream have become admixed into the liquid contents of the biological digester.

4,338,197

**METHOD AND APPARATUS FOR THE TREATMENT OF WASTEWATER**

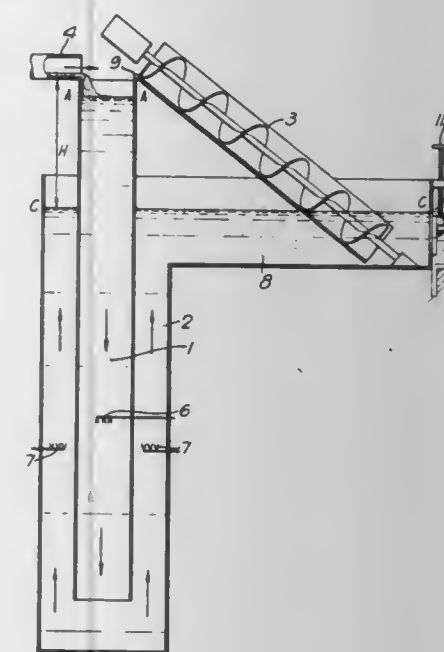
David H. Bolton, Linthorpe, England, assignor to Imperial Chemical Industries Limited, London, England  
Filed Mar. 23, 1981, Ser. No. 246,434

Claims priority, application United Kingdom, Apr. 3, 1980, 8011384

Int. Cl.<sup>3</sup> C02F 3/22

U.S. Cl. 210—621

10 Claims



1. In a method for the treatment of wastewater which comprises the steps of introducing wastewater into, and circulating it around, a system comprising a downcomer and a riser in direct communication with each other at their lower ends, the level of the wastewater in the downcomer being maintained above the level of the wastewater in the riser to provide a hydrostatic pressure head which causes circulation of the wastewater around the system, supplying a gas containing free oxygen to the wastewater as it passes through the downcomer, pumping the wastewater from, or from near, the top of the riser back into the downcomer at or near the top thereof, and removing treated wastewater from the riser at substantially the same rate as wastewater is introduced into the system, the improvement which comprises increasing the height at which treated wastewater is removed from the riser thereby increasing the level of wastewater in the riser when operating under conditions that are less onerous than the design conditions in order to provide a reduction in the energy required for pumping the waste water from the riser into the downcomer.

4,338,198

**TWO STAGE FLUID BED REGENERATION OF SPENT CARBON**

George N. Brown, Lexington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 22, 1980, Ser. No. 199,583

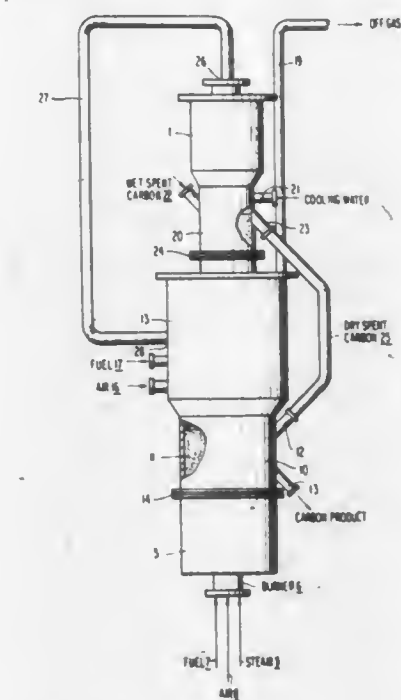
Int. Cl.<sup>3</sup> B01J 20/34; B01D 53/08; C02F 1/28; C01B 31/10  
U.S. Cl. 210—673

12 Claims

1. In a method for regenerating wet spent carbon containing organic volatile impurities comprising the steps of (a) heating the wet spent carbon in a drying zone at a temperature wherein volatilization of the impurities in the carbon is minimized utilizing a hereinafter specified drying gas to form dried spent carbon containing volatile impurities,

(b) passing the dried spent carbon to a reactivation zone, (c) contacting the dried spent carbon in the reactivation zone

with combustion gases at pyrolysis conditions which liberate the volatile impurities therefrom, to produce reactivated dried spent carbon and reactivation zone gaseous effluent including liberated volatile impurities, (d) passing the reactivation zone gaseous effluent to an incineration zone, the incineration zone being contiguous and in open communication with the reactivation zone, and (e) burning the combustible components in the reactivation zone gaseous effluent in the incineration zone to form an incineration zone gaseous effluent, the incineration zone being intermediate between the drying zone and the reactivation zone,



the improvement which comprises passing a first portion of the incineration zone gaseous effluent to the drying zone as the drying gas in step (a) producing a drying zone gaseous effluent containing a minimum amount of volatile impurities, the drying zone gaseous effluent being recycled to the incineration zone, and passing a second portion of the incineration zone gaseous effluent directly to a scrubber for removal of particulates and oxidized forms of inorganics prior to exhausting clean gas to the atmosphere.

11. The method of claim 1 wherein the wet spent carbon is recovered from a liquid or gaseous stream, processed according to claim 1 and reused.

4,338,199

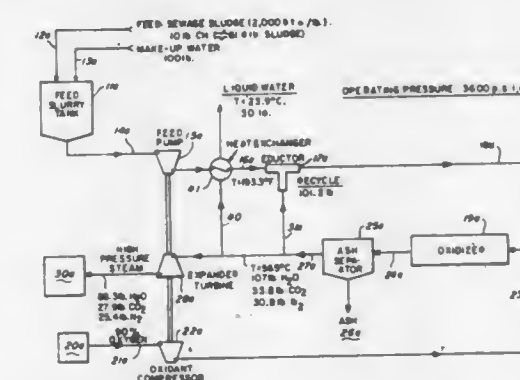
**PROCESSING METHODS FOR THE OXIDATION OF ORGANICS IN SUPERCRITICAL WATER**

Michael Modell, Cambridge, Mass., assignor to Modar, Inc., Natick, Mass.

Filed May 8, 1980, Ser. No. 147,946  
Int. Cl.<sup>3</sup> C02F 1/72

U.S. Cl. 210—721

29 Claims



1. A method of obtaining useful energy and oxidizing or



ganic materials in an oxidizer, said method comprising forming a reaction mixture of said organic material, water and oxygen, and reacting said mixture in a single homogeneous fluid phase under conditions characterized by a temperature of at least 377° C. and a pressure of at least 220 atmospheres to cause said organic materials to be oxidized thereby raising the temperature of said water and oxidation products.

4,338,200

# PROCESS FOR THE REMOVAL OF HEAVY METALS FROM AQUEOUS LIQUIDS

Foeke Zeijlstra, Oss, Netherlands, assignor to Akzo N.V., Netherlands

Continuation of Ser. No. 16,170, Feb. 28, 1979, abandoned. This application Jul. 30, 1980, Ser. No. 173,632

Claims priority, application Netherlands, Feb. 25, 1978, 7802123

Int. Cl.<sup>3</sup> C02F 1/52

U.S. Cl. 210—724

7 Claims

1. A process for homogeneously precipitating heavy metal ions selected from the group consisting of chromium ions, zinc ions, and lead ions from aqueous liquids containing same consisting essentially of

separately but simultaneously adding (1) an aqueous liquid containing said heavy metal ions in the form of a heavy metal salt selected from the group consisting of chromium sulphate, zinc sulphate, and lead sulphate and (2) an aqueous liquid containing a base that precipitates the heavy metal ion of said heavy metal salt in the form of its hydroxide or basic salt to a quantity of water that (a) is being stirred, (b) has a pH between 5 and 10, and (c) is at a temperature ranging from about 60° C. to about 100° C. to cause homogeneous precipitation of the heavy metal hydroxide or basic salt, wherein the pH of the resulting solution is maintained between 6 and 8 by adjusting the rates of addition of aqueous liquid (1) and aqueous liquid (2) and wherein the temperature is held within the range from about 60° C. to about 100° C. during the homogeneous precipitation, and separating the precipitated heavy metal hydroxide or basic salt from the resulting solution.

4,338,201

# CONTINUOUS SEPARATION SYSTEM

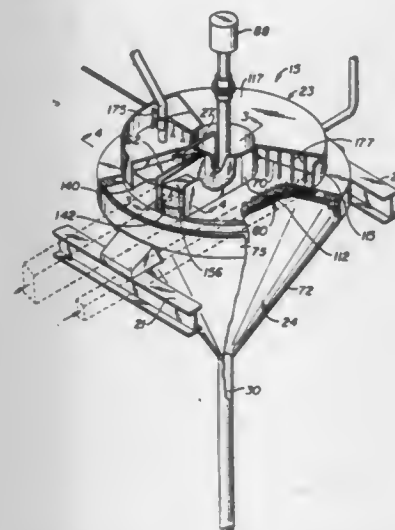
Joseph C. V. Ducasse, Martinez, Calif., assignor to Fabcon, San Francisco, Calif.

Division of Ser. No. 66,712, Aug. 15, 1979, Pat. No. 4,256,582, which is a continuation-in-part of Ser. No. 906,078, May 15, 1978, abandoned. This application Dec. 5, 1980, Ser. No. 213,290

Int. Cl.<sup>3</sup> B01D 33/24, 37/00

U.S. Cl. 210—771

11 Claims



1. A method of separating solid and liquid material in a slurry layer on a screen comprising the steps of:

continuously depositing said slurry on a moving liquid pervious member to form a slurry layer thereon; introducing a condensable vapor at a first surface of said layer; reducing the pressure at a second surface of said layer with respect to the pressure at said first surface in order to cause liquid to flow through said liquid pervious member so that the liquid content of said slurry layer becomes progressively lower as said layer is carried on said moving liquid pervious member; withdrawing liquid from said second surface of said layer, said vapor passing through said layer and becoming superheated upon such passage therethrough, said superheated vapor evaporating further liquid from said solids to dry them; directing a stream of gas at said slurry layer at a point where it consists essentially of solids to entrain said solids and remove them from said liquid pervious member; and separating said entrained solids from said gas stream.

4,338,202

# WATER TREATMENT PROCESS AND APPARATUS AND DEVICE FOR THE DISTRIBUTION OF WATER TO BE TREATED INTO AND FOR THE RECOVERY FROM WASHING LIQUID FROM A WATER TREATMENT FILTER APPARATUS

Robert Louboutin, La Celle-Saint-Cloud, France, assignor to Degremont, Rueil-Malmaison, France

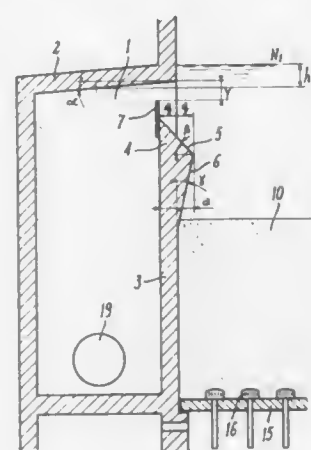
Filed Mar. 4, 1981, Ser. No. 240,362

Claims priority, application France, Mar. 26, 1980, 80 06665

Int. Cl.<sup>3</sup> B01D 23/24

U.S. Cl. 210—795

24 Claims



19. A water treatment process comprising:

providing a water treatment filter apparatus including a tank containing therein filter material, a channel coupled to and extending along the length of said tank, said channel having an opening into said tank at a level above said filter material, said opening being defined at the lower portion thereof by an overflow including a first inclined plane inclined downwardly and inwardly into said tank and a second inclined plane inclined downwardly and outwardly of said tank from said first inclined plane, and the upper end of said channel being closed;

conducting a water treatment operation comprising: introducing water to be treated into said channel; distributing said water to be treated to said tank by passing said water to be treated through said opening and over said overflow into said tank; passing said water to be treated downwardly through said filter material, said filter material filtering out matter from said water to be treated and retaining said matter as clogging material, thereby forming treated water; and removing said treated water from said tank at a location below said filter material; and periodically terminating said water treatment operation and

conducting a washing operation to remove said clogging material from said filter material, said washing operation comprising:

passing washing liquid and gas upwardly through said filter material to loosen therefrom said clogging material, while maintaining said channel under hydrostatic pressure, a portion of said filter material being entrained by and lifted upwardly within said tank by said washing liquid and gas, contacting said entrained and lifted filter material adjacent said channel against said second inclined plane and thereby deflecting said filter material away from said opening, and allowing said entrained and lifted filter material to settle, while contacting said settling filter material adjacent said channel against said first inclined plane and thereby deflecting and guiding said settling filter material away from said opening; thereafter passing washing liquid only as a rinsing liquid upwardly through said filter material, thereby removing said loosened clogging material from said filter material; passing said rinsing liquid and said clogging material through said opening into said channel; and discharging said rinsing liquid and said clogging material from said channel.

4,338,203

# PROCESS FOR SECONDARY RECOVERY

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Division of Ser. No. 75,635, Sep. 14, 1979, abandoned, and a continuation-in-part of Ser. No. 916,985, Jun. 19, 1978, abandoned. This application Feb. 5, 1981, Ser. No. 231,647

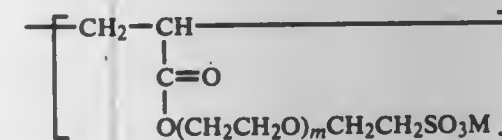
Int. Cl.<sup>3</sup> E21B 43/22

U.S. Cl. 252—8.55 D

9 Claims

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:

(A) injecting into the formation via an injection well a drive fluid comprising water having dissolved therein about 0.01 to about 5.0 weight percent of a sulfonated, ethoxylated, acrylic acid polymer having recurring units of the formula:



wherein m is an integer of from 1 to 4 and M is selected from the group consisting of hydrogen, sodium, potassium and ammonium, and wherein the number average molecular weight of said sulfonated, ethoxylated, acrylic acid polymer is about 3,000 to about 50,000,

(B) forcing the said fluid through the formation, and

(C) recovering hydrocarbons through the production well.

4,338,204

DETERGENT SOFTENER CONTAINING ANIONIC, AMINE, AND WATER SOLUBLE CATIONIC

Gianfranco L. Spadini, Cincinnati, Ohio; Peter N. Crisp, Gateshead, and Allan C. McRitchie, Whitley Bay, both of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 22, 1980, Ser. No. 189,413

Claims priority, application United Kingdom, Sep. 29, 1979, 7933869

Int. Cl.<sup>3</sup> C11D 1/65; D06M 13/46

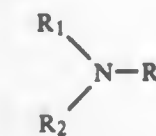
U.S. Cl. 252—8.75

25 Claims

1. A textile softening and cleaning composition consisting essentially of

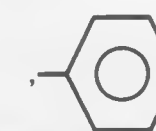
(a) from about 3% to about 30% of an anionic surfactant

(b) from about 1% to about 25% of a water-insoluble tertiary amine having the general formula



wherein R<sub>1</sub> is selected from C<sub>10</sub>–C<sub>26</sub> alkyl and alkenyl groups, R<sub>2</sub> is selected from C<sub>10</sub>–C<sub>26</sub> alkyl and alkenyl groups, or if R<sub>1</sub> is selected from C<sub>20</sub>–C<sub>26</sub> alkyl and alkenyl groups, R<sub>2</sub> is also selected from C<sub>1</sub>–C<sub>7</sub> alkyl groups.

R<sub>3</sub> has the formula —CH<sub>2</sub>Y where Y is selected from hydrogen, C<sub>1</sub>–C<sub>6</sub> alkyl



—CH<sub>2</sub>OH, —CH=CH<sub>2</sub>, —CH<sub>2</sub>CH<sub>2</sub>OH, —CH<sub>2</sub>CN, —CH<sub>2</sub>CO(R<sub>4</sub>), —CH<sub>2</sub>CO(N(R<sub>5</sub>))<sub>2</sub> and —CH<sub>2</sub>CH<sub>2</sub>N(R<sub>6</sub>)<sub>2</sub>

wherein R<sub>4</sub> is a C<sub>1</sub>–C<sub>4</sub> alkyl group, each R<sub>5</sub> is independently selected from hydrogen and C<sub>1</sub>–C<sub>4</sub> alkyl and each R<sub>6</sub> is independently selected from hydrogen and C<sub>1</sub>–C<sub>20</sub> alkyl and

(c) from about 0.5% to about 10% of a water soluble cationic compound selected from the group consisting of

(i) quaternary ammonium compounds of formula



wherein R<sub>7</sub> is C<sub>8</sub>–C<sub>16</sub> alkyl, and each of R<sub>8</sub>, R<sub>9</sub> and R<sub>10</sub> is independently selected from C<sub>1</sub>–C<sub>4</sub> alkyl, C<sub>1</sub>–C<sub>4</sub> hydroxyalkyl, benzyl and —(C<sub>2</sub>H<sub>4</sub>O)<sub>x</sub>H where x has a value of from about 2 to about 5, not more than one of R<sub>8</sub>, R<sub>9</sub> and R<sub>10</sub> being benzyl, and wherein X is an anion; and

(ii) aliphatic amines of formula



wherein R<sub>11</sub> is C<sub>8</sub>–C<sub>18</sub> alkyl, R<sub>12</sub> and R<sub>13</sub> are independently selected from hydrogen, C<sub>1</sub>–C<sub>4</sub> alkyl, C<sub>1</sub>–C<sub>4</sub> hydroxyalkyl, benzyl, —(C<sub>2</sub>H<sub>4</sub>O)<sub>x</sub>H, where x has a value of from about 2 to about 5, and water soluble salts thereof,

provided that the molar ratio of component (c) to component (a) does not exceed 1:1.

4,338,205

# LUBRICATING OIL WITH IMPROVED DIESEL DISPERSANCY

Max J. Wisotsky, Highland Park, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 25, 1980, Ser. No. 181,150

Int. Cl.<sup>3</sup> C10M 1/54, 1/44, 1/40

U.S. Cl. 252—32.5

9 Claims

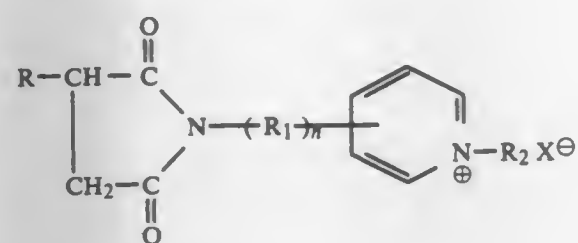
1. A lubricating oil composition exhibiting improved dispersancy in a diesel engine comprising a hydrocarbon lubricating oil and an acid-treated, oil-soluble borated alkenyl succinimide dispersant, said dispersant being acid treated after boration by having incorporated therein, per mole of said succinimide, about 0.1 to 0.5 mole of an oil-soluble organic acid having a pK of —10 to +5 containing a C<sub>9</sub>–C<sub>70</sub> hydrocarbyl group, said organic acid being a sulfonic acid, a hydrocarbyl substituted derivative of H<sub>3</sub>PO<sub>4</sub>, HP(O)(OH)<sub>2</sub> or H<sub>2</sub>P(O)(OH) which has at least one free acidic hydrogen, a hydrocarbyl mono or di-substituted thiophosphoric, thiophosphonic or thiophosphonic acid, a hydrocarbyl substituted maleic acid, a hydrocarbyl substituted sulfuric acid, or a mono- or di-alpha-substituted hydrocarbyl carboxylic acid, the alpha-substituent being hydrogen, nitrilo, nitro, halo or cyano.



4,338,206  
QUATERNARY AMMONIUM SUCCINIMIDE SALT  
COMPOSITION AND LUBRICATING OIL CONTAINING  
SAME

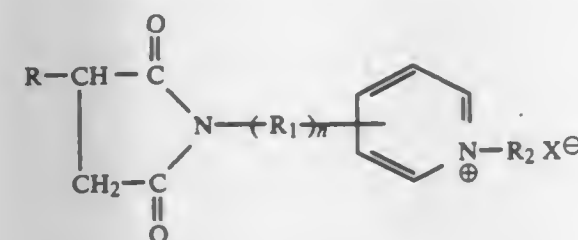
Kenneth G. Hammond, and Harry Chafetz, both of Poughkeepsie, N.Y., assignors to Texaco Inc., White Plains, N.Y.  
Filed Mar. 23, 1981, Ser. No. 246,512  
Int. Cl.<sup>3</sup> C10M 1/32

U.S. Cl. 252-34 11 Claims  
1. A quaternary ammonium succinimide salt composition represented by the formula:



in which R is a hydrocarbyl radical having from 25 to 200 carbon atoms, R<sub>1</sub> is a divalent hydrocarbon radical having from 1 to 10 carbon atoms, R<sub>2</sub> is a hydrocarbyl radical having from 1 to 10 carbon atoms, n has a value of 0 or 1, and X is a halide radical.

7. A lubricating oil composition comprising a major portion of a mineral lubricating oil and a minor dispersant amount of a quaternary ammonium succinimide salt composition represented by the formula:



in which R is a hydrocarbyl radical having from 25 to 200 carbon atoms, R<sub>1</sub> is a divalent hydrocarbon radical having from 1 to 10 carbon atoms, R<sub>2</sub> is a hydrocarbyl radical having from 1 to 10 carbon atoms, n has a value of 0 or 1, and X is a halide radical.

4,338,207  
ADDITIVE COMPOSITION FOR TURBINE OIL  
J. Howard Adams, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.  
Continuation-in-part of Ser. No. 70,574, Aug. 29, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 235,256  
Int. Cl.<sup>3</sup> C10M 1/26, 1/34, 1/42

U.S. Cl. 252-47.5 3 Claims  
1. A lubricating oil additive composition containing 0.05 to 1 parts diisobornyldiphenylamine and 0.05 to 1 parts of benzyl (4-hydroxy-3,5-di-t-butyl)dithiobenzoate.

4,338,208  
HYDRATED MGCL<sub>2</sub> REVERSIBLE PHASE CHANGE  
COMPOSITIONS  
George A. Lane, and Harold E. Rossow, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.  
Filed Dec. 22, 1980, Ser. No. 219,010  
The portion of the term of this patent subsequent to Jun. 9, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> C09K 5/06; F24J 3/02  
U.S. Cl. 252-70 15 Claims  
1. A reversible liquid/solid phase change composition comprising hydrated MgCl<sub>2</sub> and as a nucleating additive, one or more of the group of CaO, Ca(OH)<sub>2</sub>, Mg(OH)<sub>2</sub>, MgO or CaC<sub>2</sub>O<sub>4</sub> added to the composition in an amount effective to sup-

press average supercooling of the MgCl<sub>2</sub> liquid phase to about 2° C. or less.

4,338,209  
METAL CORROSION INHIBITOR  
Isao Manabe, and Akiyoshi Inubushi, both of Tokushima, Japan, assignors to Otsuka Chemical Co., Ltd., Osaka, Japan  
Continuation of Ser. No. 943,968, Sep. 20, 1978, abandoned. This application Mar. 31, 1980, Ser. No. 135,451  
Claims priority, application Japan, Oct. 1, 1977, 52-118368  
Int. Cl.<sup>3</sup> C09K 5/00; C23F 11/18

U.S. Cl. 252-75 3 Claims  
1. A metal corrosion inhibitor consisting essentially of per 100 parts by weight of a compound (a) selected from the group consisting of benzoic acid, sodium benzoate, and potassium benzoate, 1.3 to 20 parts by weight of a compound (b) selected from the group consisting of nitrous acid, sodium nitrite and potassium nitrite, 3.8 to 120 parts by weight of a compound (c) selected from the group consisting of phosphoric acid, sodium dihydrogenphosphate, disodium hydrogenphosphate, trisodium phosphate, potassium dihydrogenphosphate, dipotassium hydrogenphosphate and tripotassium phosphate, and 1 to 20 parts by weight of a compound (d) selected from the group consisting of mercaptobenzothiazole, its salts, benzotriazole and tolyltriazole, the amount of sodium benzoate and potassium benzoate being calculated as benzoic acid, the amount of sodium nitrite and potassium nitrite being calculated as nitrous acid, the amount of sodium dihydrogenphosphate, disodium hydrogenphosphate, trisodium phosphate, potassium dihydrogenphosphate, dipotassium hydrogenphosphate and tripotassium phosphate being calculated as phosphoric acid, and the amount of mercaptobenzothiazole salts being calculated as mercaptobenzothiazole.

4,338,210  
BLEACH COMPOSITION  
Anthony H. Clements, Clwyd, Wales, and Leigh, Arthur G., Merseyside, England, assignors to Lever Brothers Company, New York, N.Y.  
Continuation of Ser. No. 176,959, Aug. 11, 1980, abandoned. This application Feb. 24, 1981, Ser. No. 237,792  
Claims priority, application United Kingdom, Aug. 16, 1979, 7928589  
Int. Cl.<sup>3</sup> C11D 9/42

U.S. Cl. 252-96 14 Claims  
1. A bleach composition consisting essentially of (a) a peracid precursor compound which on hydrolysis or perhydrolysis forms an organic peracid, in an amount equivalent to 0.1-40 parts by weight of organic peracid produced therefrom, and (b) 0.1-40 parts by weight of a water soluble bromide salt which delivers bromide ions in aqueous media, the theoretical molar equivalent ratio of said organic peracid to said bromide salt being not more than 5:1, in the substantial absence of aldehydes, ketones and materials which yield aldehydes or ketones in aqueous solution.

4,338,211  
LIQUID SURFACTANT SKIN CLEANSER WITH LATHER  
BOOSTERS  
Paul Stiros, Maineville, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio  
Continuation-in-part of Ser. No. 164,702, Jun. 30, 1980, abandoned. This application Apr. 9, 1981, Ser. No. 252,691  
Int. Cl.<sup>3</sup> C11D 1/831, 3/20, 3/46, 17/08

U.S. Cl. 252-142 12 Claims  
1. A liquid skin cleanser composition comprising:  
(A) about 5-30 weight percent anionic surfactant selected from the group consisting of fatty alkyl sulfates, fatty alkyl ether sulfates and mixtures thereof;  
(B) about 0.5-12 weight percent of a lather boosting mixture consisting essentially of free fatty acids, fatty alkylol amide having a ratio of about 1:3 to about 3:1; and

(C) water;  
wherein said free fatty acids have a carbon atom chain length of from 8 to 18 and wherein said fatty acids consist of at least about 25% of carbon chain lengths of less than 14, and wherein said lather boosting mixture is present in an amount equal to about 10% to about 40% of the weight to the surfactant, and wherein said composition has a pH of from about 4.0 to about 7.0.

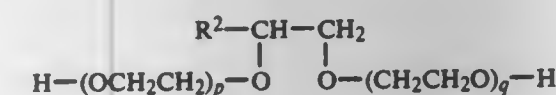
4,338,212  
MIXED NONIONIC DETERGENT COMPOSITION  
Ingo Wegener, Dusseldorf; Johann Glasl, Solingen, and Achim Werdehausen, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany  
Filed Nov. 10, 1980, Ser. No. 205,244  
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1979, 2948100  
The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.  
Int. Cl.<sup>3</sup> C11D 1/825

U.S. Cl. 252-174.22 2 Claims  
1. A mixed nonionic detergent composition having a reduced viscosity at room temperature and whose aqueous solution has a substantially reduced viscosity at room temperature consisting essentially of:  
(a) from 40% to 60% by weight of at least one compound of the formula:



wherein R<sup>1</sup> represents the hydrocarbon moiety of a fatty alcohol having from 6 to 18 carbon atoms and n is a number from 4 to 15, and

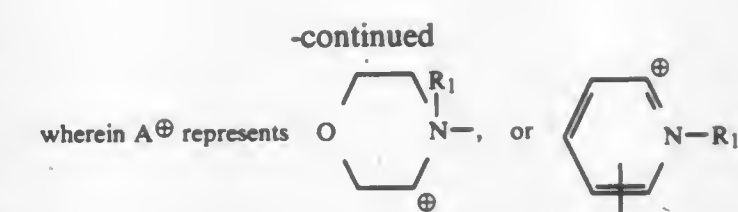
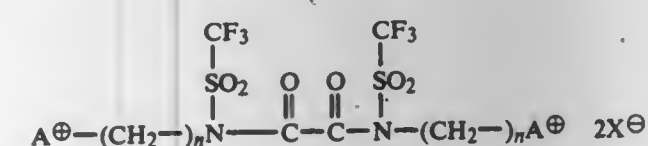
(b) from 60% to 40% by weight of at least one compound of the formula:



wherein R<sup>2</sup> represents an alkyl having from 8 to 14 carbon atoms and p and q are each a number from 0 to 15, the sum of p+q being a number from 4 to 15.

4,338,213  
AQUEOUS CHEMILUMINESCENT SYSTEMS  
Shin-Shyong Tseng, and Michael M. Rauhut, both of Bridge-water, N.J., assignors to American Cyanamid Company, Stamford, Conn.  
Division of Ser. No. 122,621, Feb. 19, 1980, Pat. No. 4,282,357, which is a continuation-in-part of Ser. No. 956,567, Nov. 1, 1978, Pat. No. 4,226,738. This application Apr. 13, 1981, Ser. No. 253,327  
Int. Cl.<sup>3</sup> C09K 3/00

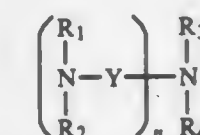
U.S. Cl. 252-188.2 CL 14 Claims  
1. A composition for generating chemiluminescent emission comprising an aqueous solution of a water-soluble organic fluorescer having spectral emission in the range from about 330 to about 1000 nanometers and a water-soluble amide of oxalic acid represented by the formula:



wherein R<sub>1</sub> represents hydrogen, or alkyl (C<sub>1</sub>-C<sub>6</sub>), n is an integer from 2 to 6, and X<sup>⊖</sup> is an anion in proportions capable of producing chemiluminescence on reaction with hydrogen peroxide.

4,338,214  
MILD-TO-THE-SKIN ANIONIC TENSIDES OF BASIC  
PROTEIN AMINOLYSATES PREPARATIONS  
CONTAINING THEM, AND THEIR USE  
Herbert Fischer; Fanny Schuenemann, both of Dusseldorf; Christian Hase, Erkrath, and Horst-Jürgen Krause, Dusseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany  
Filed Oct. 16, 1980, Ser. No. 197,650  
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 2945100  
Int. Cl.<sup>3</sup> C07G 7/00; C11D 1/32

U.S. Cl. 252-545 13 Claims  
1. Mild-to-the-skin salts of anionic tensides of the sulfonic acid and sulfuric acid half ester type containing as the ion of opposite charge for salt formation, a highly basic protein aminolysate obtained by aminolysis of at least one protein with at least one aliphatic polyamine, said protein aminolysate having the formula



wherein R<sub>1</sub> is a peptide radical when n is 1 and, when n is 2 or 3, R<sub>1</sub> is a member selected from the group consisting of hydrogen and a peptide radical with a proviso that at least one peptide radical is present, said peptide radical being connected to nitrogen atom by a carboxyl group of a peptide radical having a molecular weight of from 200 to <5,000;

R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> are members selected from the group consisting of hydrogen, alkyl having 1 to 4 carbon atoms, alkylol having 2 to 4 carbon atoms, and alkylazaalkyl having 3 to 6 carbon atoms;

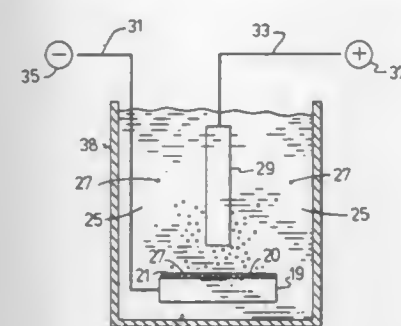
Y is an alkylene having from 1 to 4 carbon atoms, and n is an integer from 1 to 3.

4,338,215  
CONVERSION OF RADIOACTIVE WASTES TO STABLE  
FORM FOR DISPOSAL  
Peter T. B. Shaffer, Grand Island, N.Y.; Rustum Roy, and Norman H. Macmillan, both of State College, Pa., assignors to Kennecott Corporation, Stamford, Conn.  
Filed Sep. 24, 1979, Ser. No. 78,119  
Int. Cl.<sup>3</sup> G21F 9/34

U.S. Cl. 252-628 23 Claims  
1. A method for converting radioactive waste material into a stable article for disposal or storage which comprises electrolyzing a bath containing ions of a corrosion-resistant electrode-positive metal or of a plurality of materials including at least one such metal, in the presence of a solid state radioactive waste material which contains a radionuclide selected from the group consisting of strontium 90 and cesium 137 and mixtures



thereof in one or more oxide and/or oxyhydroxide and/or hydroxide forms so that the metal or materials including metal



is/are deposited on a cathode and bind(s) the radioactive waste thereto.

#### 4,338,216 STABILIZATION OF AQUEOUS TERTIARY DI-β-HYDROXY AMINE OXIDES

Gary W. Earl, Bexley, and Howard M. Hickman, Worthington, both of Ohio, assignors to Sherex Chemical Company, Inc., Dublin, Ohio

Filed Dec. 26, 1979, Ser. No. 106,747  
Int. Cl.<sup>3</sup> B01J 13/00; B01F 17/16; C11D 1/75

U.S. Cl. 252-311 26 Claims

1. A method for stabilizing an aqueous tertiary di-β-hydroxy organo) amine oxide blend, comprising between 10% and 70% by weight of a tertiary di-β-hydroxy organo) amine oxide, and between 20% and 80% by weight water which splits into layers upon standing, which method comprises incorporating therein a stabilizing proportion of an amine oxide salt which is the reaction product of a tertiary amine oxide and a protic acid, provided that when the tertiary amine oxide of the salt is the same as the tertiary amine oxide of the blend, then the tertiary amine oxide of the stabilized blend is between 0% and 70% by weight of said blend.

15. A stabilized aqueous tertiary amine oxide blend consisting essentially of:

- between 10% and 70% by weight of a tertiary di-β-hydroxy organo) amine oxide;
- a stabilizing proportion of an amine oxide salt which is the reaction product of a tertiary amine oxide and a protic acid; and
- between 20% and 80% by weight of water, provided that when the tertiary amine oxide of said salt (b) is the same tertiary amine oxide of (a), then said amine oxide (a) is between 0% and 70% by weight of said blend.

#### 4,338,217 ANTI-FOAMS

Ewald Pirson, Burghausen; Jakob Schmidkofer, Mehring-Öd, and Ernst Innertsberger, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 24, 1980, Ser. No. 115,162

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1979, 2903725

Int. Cl.<sup>3</sup> B01D 19/04

U.S. Cl. 252-358 2 Claims

1. An antifoam consisting essentially of an organopolysiloxane consisting of units of the formula



in which R is an alkyl radical having from 1 to 4 carbon atoms, n has an average value of from 0.5 to 1.4 and a viscosity of from 5 to 40 mm<sup>2</sup>·s<sup>-1</sup> at 25° C. and from 0.1 to 30 percent by weight based on the weight of the organopolysiloxane of a solid dispersed in said organopolysiloxane.

#### 4,338,218 DEVICE FOR ELIMINATION OF FOAM

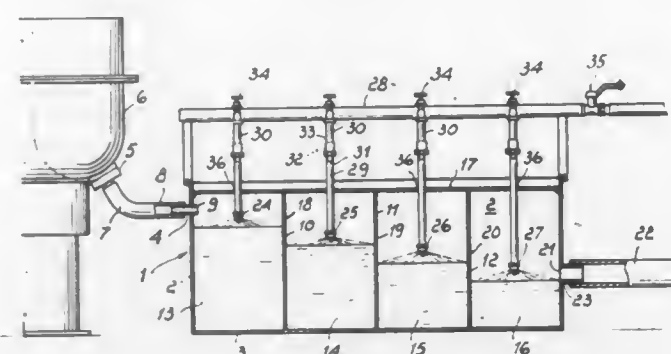
Angelo Spinazzi, Landriano, Italy, assignor to Rollwash Italiana S.p.A., Milan, Italy

Filed Dec. 18, 1978, Ser. No. 970,770

Claims priority, application Italy, Dec. 19, 1977, 42913 A/77

Int. Cl.<sup>3</sup> B01D 19/00

U.S. Cl. 252-361 3 Claims



1. A device for elimination of foam which forms on the surface of a liquid comprising, a tank with a bottom wall and side walls and having an inlet for the liquid and, in a position remote from said inlet, an outlet opening into a discharge pipe, a plurality of spaced partition walls arranged between said inlet and said outlet to provide a succession of compartments, overflow passages in each of said compartments arranged at consecutively decreasing levels to provide a cascading flow of said liquid from said inlet towards said outlet, atomized spray generating nozzle means above each said compartments, adjusting means for adjusting the vertical distance of said nozzle means from the overflow levels of each compartment, means for supplying water under pressure connected to and communicating with each of the nozzle means.

#### 4,338,219 CATALYST COMPOSITIONS USED FOR COPOLYMERIZATION OF ISOMONOOLEFINS WITH CONJUGATED DIENES

Floyd E. Naylor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 446,427, Feb. 27, 1974, Pat. No. 4,105,845.

This application May 26, 1978, Ser. No. 910,040

Int. Cl.<sup>3</sup> C08F 4/26, 4/82, 4/80, 36/06

U.S. Cl. 252-428 14 Claims

1. A catalyst comprising effective ratios of (A) a nickel source complex and (B) a titanium or vanadium compound, wherein said (A) nickel source complex is represented by Ni(L)<sub>n</sub> wherein n is an integer of 1 to 4 inclusive, L represents a ligand, and is phosphoryl, nitrosyl, or mixture, and wherein said (B) titanium or vanadium compound is represented by TiY<sub>4</sub>, VY<sub>4</sub>, or VOY<sub>3</sub>, wherein Y is acetylacetonate or -OR' wherein R' is a hydrocarbyl radical of 1 to 8 carbon atoms.

2. The catalyst composition according to claim 1 wherein said L is said phosphoryl, said phosphoryl is alkyl or aryl phosphines or alkyl or aryl phosphites wherein the carbon atoms per alkyl or aryl group does not exceed 12.

9. A catalyst comprising effective ratios of (A) a nickel source complex and (B) a titanium or vanadium compound, wherein said (A) nickel source complex is represented by Ni(L)<sub>n</sub> wherein n is an integer of 1 to 4, inclusive, and L represents a ligand selected from the group consisting of hydrocarbyl olefinic, halo-substituted hydrocarbyl olefinic, phosphoryl, and nitrosyl, such that at least one L is nitrosyl and

wherein said (B) titanium or vanadium compound is represented by TiY<sub>4</sub>, VY<sub>4</sub>, or VOY<sub>3</sub>, wherein Y is chlorine, fluorine, bromine, acetylacetonate, or -OR' in which R' is a hydrocarbyl radical of 1 to 8 carbon atoms.

#### 4,338,220 PYROPHOSPHATO TITANATE ADDUCTS

Gerald Sugerman, Allendale, N.J., and Salvatore J. Monte, Staten Island, N.Y., assignors to Kenrich Petrochemicals, Inc., Bayonne, N.J.

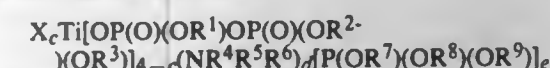
Division of Ser. No. 70,907, Aug. 29, 1979, Pat. No. 4,277,415.

This application Jan. 12, 1981, Ser. No. 224,055

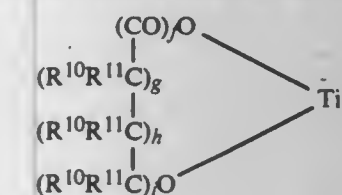
Int. Cl.<sup>3</sup> B01J 31/02

U.S. Cl. 252-430 6 Claims

1. A composition comprising an inorganic solid and a titanate having the formula



wherein c is 1 or 2; d is 0, 1 or 2; e is 0, 1 or 2; with the proviso that d plus e must be 1 or 2; with the proviso that if c is 1, X must be RO—; and with the proviso that when c is 2, X is either RO— or a group which taken together with the Ti to which it is attached forms a ring having the formula



wherein each of f, g, h and i is 0 or 1, with the proviso that at least one of f, g, h and i is 1 and that the sum of f, g, h and i is 2 or 3; and wherein each R is independently selected from C<sub>1</sub> to C<sub>10</sub> alkyl, C<sub>3</sub> to C<sub>10</sub> alkenyl, C<sub>7</sub> to C<sub>10</sub> dioxyalkylene; R<sup>1</sup>, R<sup>2</sup>, R<sup>4</sup>, R<sup>7</sup>, each R<sup>10</sup> and each R<sup>11</sup> are independently selected from hydrogen, C<sub>6</sub> to C<sub>10</sub> aryl, C<sub>7</sub> to C<sub>20</sub> aralkyl, C<sub>1</sub> to C<sub>20</sub> alkyl, C<sub>3</sub> to C<sub>20</sub> alkenyl, C<sub>2</sub> to C<sub>20</sub> oxyalkylene and C<sub>3</sub> to C<sub>20</sub> oligooxyalkylene, with the proviso that one and only one of R<sup>1</sup> and R<sup>2</sup> is hydrogen; R<sup>5</sup>, R<sup>6</sup>, R<sup>8</sup> and R<sup>9</sup> are independently selected from the same groups as R<sup>1</sup>, R<sup>2</sup>, R<sup>4</sup>, R<sup>7</sup>, each R<sup>10</sup> and each R<sup>11</sup>, except that R<sup>5</sup>, R<sup>6</sup>, R<sup>8</sup> and R<sup>9</sup> may not be hydrogen, and, in addition, R<sup>5</sup> and R<sup>6</sup> are independently selected from C<sub>1</sub> to C<sub>10</sub> alkanol, C<sub>2</sub> to C<sub>6</sub> alkandiol, C<sub>7</sub> to C<sub>10</sub> aralkanol, substituted and unsubstituted C<sub>1</sub> to C<sub>10</sub> alkyl, substituted and unsubstituted C<sub>3</sub> to C<sub>10</sub> aralkyl, these last four groups being optionally substituted with 1 to 3 carboxylate groups or from 1 to 3 carboxamide groups, each such carboxylate group and each such carboxamide group being saturated or unsaturated and having from 1 to 5 carbon atoms; with the proviso that when aromatic carbons are present in any one of R, R<sup>2</sup>, R<sup>4</sup>, R<sup>7</sup>, R<sup>10</sup> or R<sup>11</sup>, each of said carbons is optionally substituted with 1 or 2 independently selected halogen atoms.

#### 4,338,221 CATALYST FOR THE REDUCTION OF UNSATURATED ORGANIC ACIDS

Gail M. Qualeatti, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 11, 1981, Ser. No. 233,416

Int. Cl.<sup>3</sup> B01J 23/06, 23/36, 23/60, 23/64

U.S. Cl. 252-455 R 8 Claims

1. A catalyst composite for the reduction of an unsaturated acid to an unsaturated alcohol or ester which comprises from about 1% to about 10% by weight of cadmium in the oxide form, and from about 0.5% to about 5% by weight of rhenium in an oxide form, both being composited upon a high surface area solid support.

#### 4,338,222 SEMICONDUCTIVE ORGANIC COMPOSITIONS

William W. Limburg, Penfield; Damodar M. Pai, Fairport, and James M. Pearson, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 11, 1980, Ser. No. 139,312

Int. Cl.<sup>3</sup> A01B 1/00

U.S. Cl. 252-500 15 Claims

1. An electrically conducting composition comprising an

organic hole transporting compound selected from the group consisting of N,N'-diphenyl-N,N'-bis(phenylmethyl)-[1,1'-diphenyl]-4,4'-diamine; N,N'-diphenyl-N,N'-bis(2-methylphenyl)-[2,2'-dimethyl-1,1'-diphenyl]-4,4'-diamine; N,N,N',N'-tetraphenyl-[2,2'-dimethyl-1,1'-diphenyl]-4,4'-diamine; 1,4-bis-bis-4'-phenylmethylamino-2'-methylphenyl)methyl] benzene N,N'-diphenyl-N,N'-bis(3-methylphenyl)[p-terphenyl]-4,4'-diamine; 2,5-bis(4'-dimethylaminophenyl)-1-ethyl-1,3,4-triazole; 2,5-bis(4'-dimethylaminophenyl)-1,3,4-oxadiazole; poly(N-vinylcarbazole) and poly-1-vinylpyrene and the cation radical oxidation reaction product of a selected organic hole transporting compound and an oxidizing agent capable of accepting one electron from the hole transporting compounds, said cation radical oxidation reaction product being present in said composition in an amount sufficient to increase the conductivity of the organic hole transporting compound.

#### 4,338,223 METHOD OF MANUFACTURING A VOLTAGE-NONLINEAR RESISTOR

Yuji Yokomizo; Kiyoshi Minami, both of Nagai; Noboru Ichinose, Yokohama, and Yoshikazu Tanno, Ayase, all of Japan, assignors to Marcon Electronics Co., Ltd., Nagai and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, both of, Japan

Filed May 7, 1980, Ser. No. 147,526

Claims priority, application Japan, May 30, 1979, 54/66125; May 30, 1979, 54/66126; May 30, 1979, 54/66127; May 30, 1979, 54/66128

Int. Cl.<sup>3</sup> H01B 1/06

U.S. Cl. 252-519 17 Claims

1. A method of manufacturing a voltage-nonlinear resistor comprising:

- providing a starting composition comprising 0.01 to 10 mol % of a first additive selected from the group consisting of nickel oxide and its precursor, 0.01 to 10 mol % of a second additive selected from the group consisting of zirconium oxide or its precursor, yttrium oxide or its precursor, hafnium oxide or its precursor, and scandium oxide or its precursor, 0.01 to 10 mol % of metal zinc and the remainder being zinc oxide;
- shaping said starting composition to provide a desired molded body;
- sintering said starting composition at a temperature of at least about 1,100° C. to form a sintered body having a voltage-nonlinear resistance characteristic; and
- providing said sintered body with electrodes on both major surfaces.

#### 4,338,224 WATER PROOFING COMPOSITIONS FOR CEMENT MORTAR OR CONCRETE

Toshihiro Fujii, Fukuyama, and Sekiji Yokota, Hiroshima, both of Japan, assignors to Hayakawa Rubber Co., Ltd., Japan

Continuation of Ser. No. 928,658, Jul. 27, 1978, abandoned, which is a division of Ser. No. 846,051, Oct. 27, 1977, Pat. No. 4,193,831, which is a continuation of Ser. No. 668,114, Mar. 18, 1976, abandoned, which is a continuation of Ser. No. 537,014, Dec. 27, 1974, abandoned. This application Mar. 31, 1981, Ser. No. 249,554

Claims priority, application Japan, Jun. 15, 1974, 49/68453

Int. Cl.<sup>3</sup> C08L 17/00

U.S. Cl. 523-177 1 Claim

1. A water-proofing adhesive to be used in contact with wet cement mortar or wet concrete and having a viscosity (Brookfield viscometer) at 25° C. or 100-2,000 cps, which comprises 10-20% by weight of reclaimed butyl rubber, 5-15% by weight of and inorganic filler or blown asphalt, 1-15% by weight of at least one thermoplastic resin selected from the group consisting of terpene polymerized resin, hydrogenated rosin, cumarone resin, xylene resin and polyisobutylene having a molecular weight of 5-300 and a solvent.



4,338,225

# HIGH PERFORMANCE RESIN REACTION PRODUCTS OF CARBOXYL TERMINATED 1,2-POLYBUTADIENE WITH EPOXIDES AND ACID TERMINATED DIFUNCTIONAL ALIPHATIC ALCOHOLS

Clyde H. Sheppard, Bellevue, Wash., assignor to The Boeing Company

Filed Aug. 4, 1980, Ser. No. 175,259

Int. Cl.<sup>3</sup> C08F 283/10; C08G 59/14

U.S. Cl. 525—122

13 Claims

1. A hard thermoset resin which is a reaction product of: one mole of 1,2-polybutadiene having more than one carboxyl terminal group; one mole of the reaction product of two moles of a difunctional aliphatic carboxylic acid or two moles of its anhydride, and one mole of a difunctional aliphatic alcohol; a minimum of 4 moles of an at least difunctional epoxide selected from the group consisting of epoxy novolacs, epichlorohydrin/bisphenol A-type, bis-epoxydicyclopentyl ether of ethylene glycol, 1-epoxyethyl-3,4-epoxycyclohexane, dicyclopentadiene dioxide, limonene dioxide, bis (2,3-epoxypropoxy) benzene, vinylcyclohexane dioxide, 3,4-epoxy-6-methylcyclohexylmethyl-3,4-epoxy-6-methylcyclohexanecarboxylate, zeaxanthin diepoxide, and 9,10-epoxy-12-hydroxyoctadecanoic acid triester of glycerol; an epoxide hardener to connect the polymer chains and produce an adequately crosslinked and satisfactorily thermoset resin; and a peroxide free radical initiator homogeneously dispersed throughout the reaction product.

4,338,226

# PROCESS FOR THE STABILIZATION OF POLYVINYL CHLORIDE AND STABILIZER COMPOSITIONS

Kurt Worschech, Loxstedt; Peter Wedl, Loxstedt-Bexhövede; Frido Löffelholz, Bremerhaven; Bernd Wegemund, Haan, and Werner Erwied, Langenfeld, all of Fed. Rep. of Germany, assignors to Neynaber Chemie GmbH, Loxstedt, Fed. Rep. of Germany

Filed Oct. 7, 1980, Ser. No. 194,851

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1979, 2941597; Austria, Jun. 16, 1980, 3168/80

Int. Cl.<sup>3</sup> C08K 5/09

U.S. Cl. 524—302

26 Claims

1. A process for stabilizing polyvinyl chloride molding mixtures, which comprises admixing (a) from about 0.2 to 5 parts by weight of a synthetic, crystalline sodium zeolite A of small particle size and containing from about 13 to 25 percent by weight of water of crystallization, which has the composition



- with respect to the anhydrous form;
  - (b) from about 0.05 to 1.5 parts by weight of one or more calcium salts of fatty acids with from 8 to 22 carbon atoms;
  - (c) from about 0.05 to 0.5 parts by weight of one or more zinc salts of fatty acids with from 8 to 22 carbon atoms;
  - (d) from about 0.2 to 2.0 parts by weight of partial esters of polyols with from 2 to 6 carbon atoms and from 2 to 6 hydroxyl groups and fatty acids with from 8 to 22 carbon atoms, which contain an average of at least one free polyol-hydroxyl group per molecule and have an OH-number of from about 140 to 580; and
  - (e) from about 0.1 to 10 parts by weight of thioglycolic acid esters of polyols with from 2 to 6 hydroxyl groups and/or thioglycolic acid esters of monofunctional alcohols with from 8 to 22 carbon atoms
- with 100 parts by weight of polyvinyl chloride or copolymer of vinyl chloride.

4,338,227

# ETHYLENE COPOLYMER BLENDS AND ADHESIVES BASED THEREON

Edward C. Ballard, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 184,547, Sep. 5, 1980, abandoned. This application Apr. 24, 1981, Ser. No. 257,112

Int. Cl.<sup>3</sup> C08L 23/08, 23/16, 33/02, 33/04

U.S. Cl. 524—143

18 Claims

1. A composition consisting essentially of a homogeneous blend of at least one non-crosslinked ethylene copolymer (A) and at least one non-crosslinked ethylene copolymer (B), each copolymer having at least one polar comonomer selected from the group consisting of vinyl esters of saturated, carboxylic acids wherein the acid moiety has up to 4 carbon atoms, unsaturated mono- or dicarboxylic acids of 3 to 5 carbon atoms, and esters of said unsaturated mono- or dicarboxylic acids wherein the alcohol moiety has 1 to 8 carbon atoms, copolymer (A) having a polar comonomer content of from about 25 to about 50 percent by weight, an ethylene content of from about 50 to about 75 percent by weight and a melt index of from about 3 to about 200, and copolymer (B) having a polar comonomer content of from about 10 to about 33 percent by weight, an ethylene content of from about 67 to about 90 percent by weight and a melt index of from about 1 to about 100, provided that the polar comonomer content of copolymer (A) is at least 5 percent by weight higher than the polar comonomer content of copolymer (B), copolymer(s) (A) being present in an amount of from about 10 to about 90 percent based upon the weight of total copolymer and copolymer(s) (B) being present in an amount of from about 10 to about 90 percent based upon the weight of total copolymer, said homogeneous blend of copolymers (A) and (B) having been mildly cross-linked to reduce the melt index of said blend by a factor of from about 2 to about 150.

4,338,228

# POLYOLEFIN COMPOSITION CONTAINING (A) FILLER (B) NUCLEATING AGENT AND (C) HEAT DETERIORATION INHIBITOR

Hiroshi Inoue, Ooi; Masaaki Isol, Ogose; Makoto Yoda, Kawagoe, and Masato Komatsu, Ooi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1980, Ser. No. 194,732

Claims priority, application Japan, Oct. 12, 1979, 54-130836

Int. Cl.<sup>3</sup> C08L 91/00; C08K 3/40, 5/09, 5/49

U.S. Cl. 524—120

9 Claims

1. A polyolefin composition comprising: (a) a modified polyolefin obtained by adding an unsaturated carboxylic acid or anhydride thereof to a polyolefin, or a mixture of said modified polyolefin and an unmodified polyolefin;
- (b) an inorganic filler;
- (c) at least one nucleating agent which is a metal salt of aliphatic carboxylic acid, aliphatic dicarboxylic acids, aromatic carboxylic acids, aromatic dicarboxylic acids or alkyl-substituted derivatives thereof, or dibenzylidenesorbitol; and
- (d) and at least one heat deterioration inhibitor.

4,338,229

# HOT MELT ADHESIVE COMPOSITIONS

Pawan K. Agarwal, Westfield, N.J., and Henry S. Makowski, deceased, late of Scotch Plains, N.J. (by Patricia Helen Makowski, executrix), assignors to Exxon Research & Engineering Co., Florham Park, N.J.

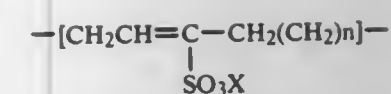
Filed Oct. 14, 1980, Ser. No. 196,211

Int. Cl.<sup>3</sup> C08L 95/00

U.S. Cl. 524—399

11 Claims

1. A hot melt adhesive composition which comprises: (a) a neutralized sulfonated elastomeric polymer having the formula



wherein  $n=2, 3, 4, 5$  or  $6$ , wherein  $X$  is a counterion, said neutralized sulfonated elastomeric polymer having about 5 to about 100 meq. of neutralized sulfonated groups per 100 grams of said neutralized sulfonated elastomeric polymer; and (b) about 25 to about 200 parts by weight of a hydrocarbon tackifying resin based on a petroleum or coal tar distillate per 100 parts by weight of said neutralized sulfonated elastomeric polymer.

4,338,230

# EMULSIFIABLE POLYOLEFIN WAXES PREPARED BY REACTING PIVALOLACTONE AND A POLYOLEFIN WAX CONTAINING CARBOXYL GROUPS

William A. Ames, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 22, 1981, Ser. No. 276,272

Int. Cl.<sup>3</sup> C08L 23/26, 23/30, 23/36, 91/06

U.S. Cl. 549—263

20 Claims

1. An emulsifiable low viscosity modified polyolefin wax prepared by partially or completely neutralizing a low viscosity carboxyl group containing polyolefin wax having a melt viscosity of 50 to 3,000 centipoise at 150° C. and an acid number of at least 14 with at least one tetra lower alkyl ammonium hydroxide thereby converting carboxyl group of said polyolefin wax to carboxylate anions, and reacting the partially or completely neutralized modified polyolefin wax with pivalolactone in an amount of from about 5 to about 40 percent based on the weight of the low viscosity carboxyl group containing polyolefin wax to provide modified polyolefin wax having good emulsifiability and higher softening point.

4,338,231

# MODIFIED ASPHALT COMPOSITIONS

Alfred Marzocchi, Newark; Charles E. Bolen, Heath; Edward R. Harrington, Newark, and Michael G. Roberts, Heath, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 158,966, Jun. 12, 1980. This application Oct. 27, 1980, Ser. No. 200,724

Int. Cl.<sup>3</sup> C08L 95/00

U.S. Cl. 523—214

15 Claims

1. An asphalt-polyester composition comprising the reaction product of (1) a polyester resin prepared by reaction of an unsaturated polycarboxylic acid or anhydride and an organic polyalcohol, (2) a polymerizable vinyl monomer, and (3) a chemically-modified asphalt, said chemically-modified asphalt having been prepared by reaction of an asphalt, a polyester-forming polycarboxylic acid or anhydride and a polyester-forming organic polyalcohol.

4,338,232

# RADIATION-CURABLE RESINS

Robert F. Harris; Dwight K. Hoffman, both of Midland, Mich., and Richard A. Hickner, Freeport, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 864,421, Dec. 27, 1977, abandoned. This application Apr. 7, 1980, Ser. No. 137,706

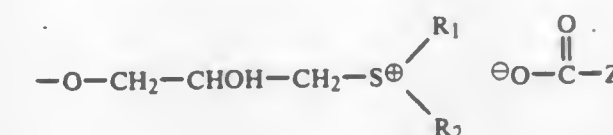
Int. Cl.<sup>3</sup> C08L 63/02, 63/04, 63/10

U.S. Cl. 523—414

11 Claims

1. A sulfonium-stabilized, water-compatible, radiation curable, water-in-oil emulsion of a resinous composition comprising (1) molecules containing ester groups resulting from the esterification of an epoxy compound having an epoxy equivalent weight of up to 500 and an unsaturated monocarboxylic acid having a dissociation constant of at least  $1 \times 10^{-7}$  and (2) molecules containing sufficient sulfonium groups to make said resinous composition water compatible, said molecules being

the reaction product of essentially equivalent amounts of a glycidyl ether and an unsaturated acid reacted in the presence of an organic sulfide, said sulfonium groups having the structure:



wherein  $\text{R}_1$  and  $\text{R}_2$  are hydrocarbyl or inertly substituted hydrocarbyl groups of from 1 to 24 carbon atoms or  $\text{R}_1$  and  $\text{R}_2$  together with the sulfur form a 5- or 6-membered heterocyclic ring and  $\text{Z}$  is the noncarboxylic portion of the same unsaturated monocarboxylic acid as in the ester (1) when said ester is the mono- ester of a mono-glycidyl ether and  $\text{Z}$  is the noncarboxylic portion of a saturated or unsaturated monocarboxylic acid when (1) is a polyester of a polyglycidyl glycidyl ether.

4,338,233

# AQUEOUS SIZING COMPOSITION AND SIZED GLASS FIBERS AND METHOD

Balbadra Das, and L. Dow Moore, both of Allison Park, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 15, 1981, Ser. No. 273,791

Int. Cl.<sup>3</sup> C08K 5/54

U.S. Cl. 523—410

23 Claims

1. An aqueous sizing composition for treating glass fibers to produce sized glass fiber strands for use in reinforcing polymeric materials, comprising: (a) a major amount of the solids of the sizing composition being one or more cross-linkable film forming polymers compatible with the polymeric matrix to be reinforced with the glass fibers;
- (b) one or more organo-silane coupling agents in an amount up to about 20 weight percent of the solids of the sizing composition;
- (c) an interaction product of an epoxidized polar thermoplastic copolymer and an unhydrolyzed or partially hydrolyzed amino-containing organo-silane coupling agent in an amount of about 10 weight percent up to about 50 weight percent of the solids of the sizing composition, wherein the interaction product is formed by contacting the epoxidized copolymer which has about 2 to about 12 parts of epoxidized monomer per 100 parts of copolymer and which has a glass transition temperature from about  $-10^\circ\text{C}$ . to about  $70^\circ\text{C}$ . with the amino-containing organo-silane coupling agent wherein the amount of the amino silane coupling agent is in the range of about 0.1 to about 1.2 weight percent of an aqueous mixture having at least 20 weight percent of the epoxidized copolymer, and
- (d) an amount of water sufficient to make the percent solids of the sizing composition in the range of about 2 to about 30 weight percent.

4,338,234

# SIZING COMPOSITION AND SIZED GLASS FIBERS AND STRANDS PRODUCED THEREWITH

L. Dow Moore, and Balbadra Das, both of Allison Park, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 4, 1980, Ser. No. 156,460

Int. Cl.<sup>3</sup> C08K 5/54

U.S. Cl. 523—206

30 Claims

1. An aqueous sizing composition for treating glass fibers to produce sized glass fiber strands for use in reinforcing polymeric materials, comprising: (a) a major amount of the solids of the sizing composition being one or more cross-linkable film forming polymers compatible with the polymeric matrix;
- (b) one or more organo-silane coupling agents in an amount



- up to about 20 weight percent of the solids of the sizing composition,
- (c) an epoxidized polar thermoplastic copolymer selected from the group consisting of epoxidized polyvinylacetate, epoxidized polyacrylate, epoxidized polyurethanes, and epoxidized polyamides, all of which are thermoplastic and have epoxy functionality in an amount of about 3 to about 12 parts per 100 parts of the copolymer in an amount of about 10 weight percent to about 50 weight percent of the nonaqueous solids of the sizing composition, wherein the copolymer has a T<sub>g</sub> from about ambient temperature to about 70° C.;
- (d) urea formaldehyde condensate polymer in an amount in the range of about 2 to about 14 weight percent of the nonaqueous solids in the aqueous sizing compounds; and
- (e) an amount of water sufficient to make the percent solids of the sizing composition in the range of about 2 to about 30 weight percent.

**4,338,235**  
**ELECTROCOATING COMPOSITION WITH POLYHYDROXYAMINE AND ACRYLIC OR METHACRYLIC POLYMERS**

Isidor Hazan, Clementon, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
 Continuation-in-part of Ser. No. 106,256, Dec. 21, 1979, abandoned. This application Dec. 29, 1980, Ser. No. 220,952  
 Int. Cl.<sup>3</sup> C08L 29/00, 39/00

U.S. Cl. 524—504

13 Claims

1. An aqueous cathodic electrodeposition coating composition comprising a dispersion of a first polymer, a second polymer, enough of an organic acid to give the composition a pH about in the range of 6 to 7, and optionally a nitrogen resin crosslinker, said coating composition containing, by weight based on the first and second polymers, about 20–70% of a first polymer which is a copolymer comprising a backbone and a graft pendent to the backbone, said backbone containing amine functional groups and hydroxy functional groups, characterized in that said backbone contains at least about 0.13 equivalent of amine groups per 100 grams of first polymer and at least about 0.03 equivalent of hydroxyl groups per 100 grams of first polymer, and containing, by weight, the equivalent of about:

- (a) 35–90% amine functional monomers,  
 (b) 10–60% hydroxy functional monomers,  
 (c) 0–40% nonfunctional acrylic or methacrylic monomers, and  
 (d) 0–5% chain-terminating monomers  
 the total of (a), (b), (c) and (d) being 100% of said backbone,

said graft comprising a monoglycidyl ester of at least one tertiary carboxylic acid containing 9–20 carbon atoms and being grafted to said amine groups in said backbone, said copolymer containing about 1–30% by weight of said graft, and, by weight based on the first and second polymers, about 80–30% of a second polymer which is acrylic or methacrylic polymer resulting from polymerization with the vinyl unsaturation of acrylic or methacrylic acid ester, said polymer having an acid number of about zero and containing hydroxy functionality.

**4,338,236**  
**POLYHYDROXYAMINE DISPERSANT USEFUL IN ELECTRODEPOSITION**

Isidor Hazan, Clementon, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
 Continuation-in-part of Ser. No. 106,259, Dec. 21, 1979, abandoned. This application Dec. 29, 1980, Ser. No. 220,956  
 Int. Cl.<sup>3</sup> C08L 29/00, 39/00

U.S. Cl. 524—320

8 Claims

1. An aqueous cathodic electrodeposition coating composition comprising a dispersion of a copolymer and an organic acid, enough of said acid being present to give the composition a pH about in the range of 6 to 7, said copolymer comprising

a backbone and a graft pendent to the backbone, said backbone comprising amine functional groups and hydroxy functional groups, characterized in that said backbone contains at least about 0.13 equivalent of amine groups per 100 grams of backbone and at least about 0.03 equivalent of hydroxyl groups per 100 grams of backbone, and containing, by weight, the equivalent of about:

- (a) 35–90% amine functional monomers,  
 (b) 10–60% hydroxy functional monomers,  
 (c) 0–40% nonfunctional acrylic or methacrylic monomers, and  
 (d) 0–5% chain-terminating monomers,  
 the total of (a), (b), (c) and (d) being 100% of said backbone, said graft comprising a monoglycidyl ester of at least one tertiary carboxylic acid containing 9–20 carbon atoms and being grafted to said amine groups in said backbone, said copolymer containing about 1–30% by weight of said graft.

**4,338,237**  
**PROCESS FOR THE PREPARATION OF AQUEOUS, COLLOIDAL DISPERSIONS OF COPOLYMERS OF THE TETRAFLUOROETHYLENE/ETHYLENE TYPE**

Reinhard A. Sulzbach, and Robert Hartwimmer, both of Burg-hausen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany  
 Filed Jun. 22, 1981, Ser. No. 275,881

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024450

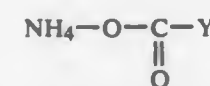
Int. Cl.<sup>3</sup> C08K 5/32

U.S. Cl. 524—777

4 Claims

1. A process for preparing a stable, aqueous, colloidal dispersion of a copolymer containing as comonomers in copolymerized form at most 60 mole percent of tetrafluoroethylene, from 60 to 40 mole percent of ethylene, and from 0 to 15 mole percent of at least one additional  $\alpha$ -olefinic comonomer copolymerizable with tetrafluoroethylene and ethylene, by copolymerization of said comonomers in an aqueous medium having dissolved therein a fluorinated emulsifying agent and a catalyst selected from the group of acids of manganese, their salts, and manganese compounds capable of being converted into said manganese acids or salts thereof under copolymerization conditions, which comprises copolymerizing in the presence of

- (a) a chain transfer agent of the general formula  $X-CH_2-COOR$  wherein X is Cl, Br, COOH, COOR, COCH<sub>3</sub>, CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub>, or C<sub>3</sub>H<sub>7</sub>; and R is an alkyl group having from 1 to 4 carbon atoms; or a mixture thereof, and  
 (b) a dispersion-stabilizing compound of the general formula



wherein Y is COONH<sub>4</sub>, COOH, CH<sub>3</sub>, CH<sub>2</sub>OH, CH<sub>2</sub>COOH, or CH<sub>2</sub>COONH<sub>4</sub>, including hydrates and mixtures of said compounds, said dispersion-stabilizing compound being present in an amount of at least 0.001 mole/l aqueous medium.

**4,338,238**  
**PROCESS FOR THE PRODUCTION OF POLYCHLOROPRENE LATICES RICH IN SOLID MATTER**

Wilfried Nolte, Leverkusen; Wilfried Keller, Dormagen, and Heinz Esser, Burscheid, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 29, 1980, Ser. No. 201,760

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944152

Int. Cl.<sup>3</sup> C08L 00/00

U.S. Cl. 524—706

2 Claims

1. A process for polymerising chloroprene which may contain as much as 50% by weight of a copolymerisable monomer; in an alkaline aqueous emulsion, of which the alkali ions at least partially consist of potassium, into a latex rich in solid matter having a solid content of from 50 to 65% by weight in the presence of an alkali salt of disproportionated abietic acid and a formaldehyde condensate with naphthalene sulphonic acid and also an alkali hydroxide, whereby polymerisation is carried out until there is a conversion of more than 90% characterised in that

- (a) the aqueous phase contains from 2.8 to 3.8 parts by weight of an alkali salt of disproportionated abietic acid, from 0.3 to 2.0 parts by weight of a formaldehyde condensate of a naphthalene sulphonic acid and from 0.25 to 0.75 parts by weight of an alkali phosphate and/or polyphosphate, based on 100 parts by weight of monomer, and  
 (b) polymerisation is initiated with an initiator consisting of formamidine sulphonic acid.

**4,338,239**  
**POLYACRYLATE THICKENING AGENTS**  
 Laurence G. Dammann, Crestwood, Ky., assignor to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 196,009, Oct. 10, 1980, abandoned. This application Mar. 30, 1981, Ser. No. 248,164

Int. Cl.<sup>3</sup> C08F 220/06; C08L 33/02

U.S. Cl. 524—549

17 Claims

1. An interpolymer of monomers comprising (1) at least 60 weight percent of acrylic acid or methacrylic acid; (2) between about 0.2–20 weight percent of a glyceryl ether derivative in which one hydroxyl group is in the free form, one hydroxyl group is in the form of an allyl ether substituent, and the other hydroxyl group is in the form of an ether or ester substituent, wherein said glyceryl ether derivative is prepared by reacting allyl glycidyl ether with a monohydric alcohol or a monocarboxylic acid in the mole ratio of allyl glycidyl ether to alcohol or acid of 1:1 to 1:0.5 and wherein the monohydric alcohol is an alkyl alcohol which contains from one to 20 carbon atoms, an arylalkyl alcohol which contains from 7 to 20 carbon atoms, or an alkenyl alcohol which contains from 12 to 20 carbon atoms, or glycol or polyglycol monoethers having the formula



wherein R is an alkyl group which contains from 1 to 10 carbon atoms or an aryl group which is phenyl or alkyl substituted phenyl wherein the alkyl group contains from 1 to 12 carbon atoms and wherein n has a value of 1 to about 40, and wherein the monocarboxylic acid is an alkyl monocarboxylic acid which contains from 2 to 20 carbon atoms, an aryl monocarboxylic acid which contains 7 to 20 carbon atoms, or an alkenyl monocarboxylic acid which contains from 5 to 20 carbon atoms; and (3) between about 0–20 weight percent of another olefinically unsaturated monomer copolymerizable therewith.

13. A thickened liquid composition which contains an effective quantity of a thickening agent which is an interpolymer of monomers comprising (1) at least 60 weight percent of acrylic acid or methacrylic acid; (2) between about 0.2–20 weight percent of a glyceryl ether derivative in which one hydroxyl group is in the free form, one hydroxyl group is in the form of an allyl ether substituent, and the other hydroxyl group is in

the form of an ether or ester substituent wherein said glyceryl ether derivative is prepared by reacting allyl glycidyl ether with a monohydric alcohol or a monocarboxylic acid in the mole ratio of allyl glycidyl ether to alcohol or acid of 1:1 to 1:0.5 and wherein the monohydric alcohol is an alkyl alcohol which contains from one to 20 carbon atoms, an arylalkyl alcohol which contains from 7 to 20 carbon atoms, or an alkenyl alcohol which contains from 12 to 20 carbon atoms, or glycol or polyglycol monoethers having the formula



wherein R is an alkyl group which contains from 1 to 10 carbon atoms or an aryl group which is phenyl or alkyl substituted phenyl wherein the alkyl group contains from 1 to 12 carbon atoms and wherein n has a value of 1 to about 40, and wherein the monocarboxylic acid is an alkyl monocarboxylic acid which contains from 2 to 20 carbon atoms, an aryl monocarboxylic acid which contains 7 to 20 carbon atoms, or an alkenyl monocarboxylic acid which contains from 5 to 20 carbon atoms; and (3) between about 0–20 weight percent of another olefinically unsaturated monomer.

**4,338,240**  
**CURABLE MATERIAL AND PROCESS FOR PRODUCTION THEREOF**

Kiyokazu Mizutani, Inazawa, and Takahisa Ogasawara, Tohkal, both of Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan

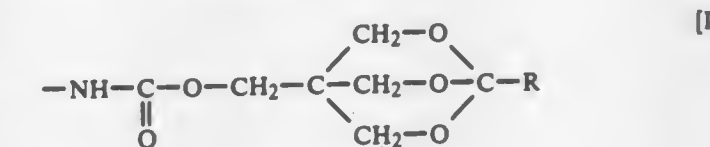
Filed Jun. 23, 1981, Ser. No. 276,488

Claims priority, application Japan, Jul. 16, 1980, 55/96175  
 Int. Cl.<sup>3</sup> C08G 18/30

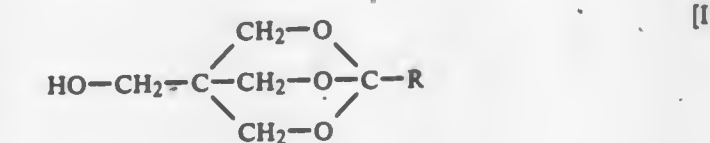
U.S. Cl. 524—284

8 Claims

1. A curable material comprising urethanes having as the terminal group and/or as the side-chain group at least one urethane group containing a bicyclic ortho-ester ring and represented by the formula



wherein R is a lower alkyl group, the urethanes being the reaction product formed by reacting (A) at least one polyisocyanate compound having at least two isocyanate groups, (B) at least one polyhydroxy compound having at least two hydroxyl groups and (C) at least one 1-alkyl-4-hydroxymethyl-2,6,7-trioxabicyclo[2,2,2]octane of the formula



wherein R is as defined above.

**4,338,241**  
**SYNTHETIC RESIN COMPOSITION**  
 Hideo Ito; Issei Ueda, both of Onomichi; Yasuo Morinibu, Hiroshima, and Michitomo Takeyasu, Fukuyama, all of Japan, assignors to Onomichi Kumika K.K., Hiroshima, Japan

Filed Sep. 6, 1979, Ser. No. 73,141

Claims priority, application Japan, Jul. 4, 1979, 54-085313  
 Int. Cl.<sup>3</sup> C08L 75/04

U.S. Cl. 523—200

15 Claims

1. A synthetic resin composition which comprises a urethane resin and a filler, wherein each particle in said filler is prepared by layering an outer coat of a fine clay mineral on an inner core of a blowable mineral, and sintering the resulting particle.



4,338,242

## URETHANE MODIFIED POLYMERS HAVING HYDROXYL GROUPS

Bruce L. Burton, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 19, 1980, Ser. No. 188,810

Int. Cl.<sup>3</sup> C08L 63/10

U.S. Cl. 523—436

7 Claims

1. A curable reaction product of a vinyl ester resin having secondary hydroxyl groups and from 0.05 to 1 equivalent based on said secondary hydroxyls of isocyanatoethyl methacrylate.

4,338,243

## POLYETHYLENE TEREPHTHALATE BLENDS

James L. Hecht, and Paul C. Yates, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 7, 1980, Ser. No. 148,183

Int. Cl.<sup>3</sup> C08L 67/02

U.S. Cl. 524—287

13 Claims

1. A molding blend consisting essentially of
- 20-90% by weight of blend of polyethylene terephthalate having an inherent viscosity of at least 0.4,
  - 0-50% by weight of blend of a reinforcing or filling material,
  - 1-12% by weight of blend of a sodium or potassium salt of a hydrocarbon carboxylic acid of 9-25 carbon atoms or a sodium or potassium salt of an ionic hydrocarbon copolymer of an  $\alpha$ -olefin of 2-5 carbon atoms and an  $\alpha,\beta$ -ethylenically unsaturated carboxylic acid of 3-5 carbon atoms in which the carboxyl groups have been at least partially neutralized with  $\text{Na}^+$  or  $\text{K}^+$  cations, provided the amount of copolymer present is sufficient to provide a  $\Delta H_H/\Delta H_C$  ratio of less than 0.25 to the blend,
  - 1-12% by weight of blend of a low molecular weight organic compound that is an ester, ketone, sulfone, sulfoxide, nitrile or amide of no more than 30 carbon atoms, provided the amount of the compound is sufficient to lower the Tpk of the blend by at least about 4° C.,
  - a halogenated flame-retardant consisting of an aromatic organic compound having at least one aromatic ring in which the compound has sufficient halogen bonded directly to the aromatic ring carbons to provide flame-retardant properties, said flame-retardant present in said blend in an amount sufficient to provide an amount of halogen to the blend of between about 2 and 20% by weight based on weight of blend,
  - 0.5-10% by weight of blend of an antimonate of a metal of Groups I, II or VIII of the Periodic Table.

4,338,244

## BENZOFURAN(2)ONE OR INDOLIN(2)ONE COMPOUNDS USEFUL AS STABILIZERS FOR ORGANIC MATERIALS

Hans Hinsken, Kander, Fed. Rep. of Germany; Horst Mayerhoefer, Oberwil; Wolfgang Mueller, Allschwil, both of Switzerland, and Hermann Schneider, Grenzach-Wyhlen, Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

Filed Feb. 4, 1980, Ser. No. 118,011

Claims priority, application Switzerland, Feb. 5, 1979, 1104/79; Sep. 28, 1979, 8793/79

Int. Cl.<sup>3</sup> C08K 5/15, 5/34

U.S. Cl. 524—109

24 Claims

1. A process for stabilising organic polymeric materials comprising incorporating therein a benzofuran(2)one compound or indolin(2)one compound containing at least two benzofuran(2)one or indolin(2)one nuclei.

4,338,245

## INTUMESCENT FLAME RETARDANT THERMOPLASTIC POLYESTER COMPOSITIONS

Yuval Halpern, Skokie, Ill., assignor to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Aug. 12, 1981, Ser. No. 292,118

Int. Cl.<sup>3</sup> C08K 3/32; C08J 9/00

U.S. Cl. 524—100

6 Claims

1. Thermoplastic saturated aromatic polyester compositions comprising (a) thermoplastic polyester, (b) a flame-retarding amount of an intumescent additive selected from the group consisting of melammonium pentate, the pentate salt of ammelide, and mixtures thereof, and (c) a polyol.

4,338,246

## INTUMESCENT FLAME RETARDANT THERMOPLASTIC POLYMETHACRYLATE COMPOSITIONS

Yuval Halpern, Skokie, Ill., assignor to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Aug. 21, 1981, Ser. No. 295,163

Int. Cl.<sup>3</sup> C08K 3/32; C08J 9/00

U.S. Cl. 524—100

6 Claims

1. Thermoplastic polymethacrylate compositions comprising (a) thermoplastic polymethacrylate, (b) a flame-retarding amount of an intumescent additive selected from the group consisting of melammonium pentate, the pentate salt of ammelide, and mixtures thereof, and (c) a polyol.

4,338,247

## POLYESTER COMPOSITIONS HAVING IMPROVED RESISTANCE TO RADIATION DETERIORATION

Joseph S. Zannucci, and Bobby J. Sublett, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

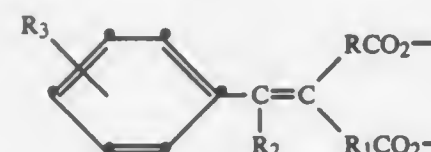
Filed Jun. 2, 1980, Ser. No. 155,047

Int. Cl.<sup>3</sup> C08K 9/00; C08G 63/76

U.S. Cl. 528—307

4 Claims

1. A copolyester having an inherent viscosity of at least 0.4 and containing in copolymerized form from about 0.3 to about 5.0% by weight of one or more of the stabilizing moieties having the general formula



where R and R<sub>1</sub> are each a chemical bond or an alkylene group of 1-6 carbons; R<sub>2</sub> is alkyl, cycloalkyl, or aryl; R<sub>3</sub> represents 1-5 groups each independently selected from H, Cl, F, alkyl, cycloalkyl, alkoxy, aryl or aryloxy; wherein all of the above alkyl and alkylene moieties comprising or being part of the R<sub>2</sub> or R<sub>3</sub> groups contain from 1-8 carbons, and wherein all of the above alkyl, alkylene, aryl and cycloalkyl moieties may be substituted with up to three substituents selected from halogen, alkyl of 1-8 carbons, alkoxy of 1-8 carbons, aryl, cycloalkyl and CN.

4,338,248

## 2-OXOPROPIONALDEHYDE BIS(THIOSEMICARBAZONE) PROTEIN DERIVATIVES, AND THEIR PRODUCTION AND USE

Akira Yokoyama, Otsu, and Yasushi Arano, Mie, both of Japan, assignors to Nihon Medi-Physics Co., Ltd., Hyogo, Japan Division of Ser. No. 113,341, Jan. 18, 1980, Pat. No. 4,287,362.

This application Aug. 14, 1980, Ser. No. 177,947

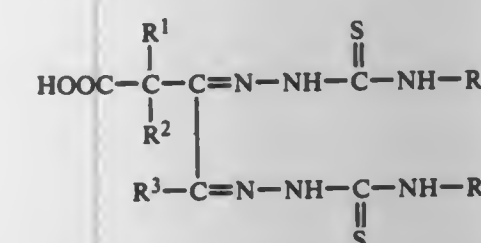
Claims priority, application Japan, Aug. 29, 1979, 54-110821; Aug. 29, 1979, 54-110822

Int. Cl.<sup>3</sup> C07G 7/00, 7/04

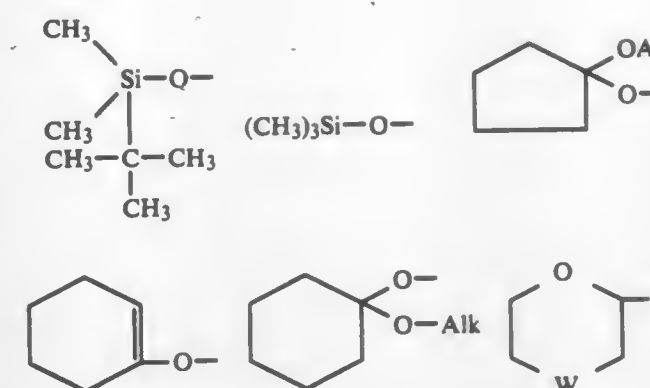
U.S. Cl. 260—112 R

12 Claims

1. A protein-combined compound comprising: a bifunctional chelating compound of the formula:



wherein R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are each a hydrogen atom or a C<sub>1</sub>-C<sub>3</sub> alkyl group and a protein bound therewith by a peptide bond.



in which

W is —O— or —CH<sub>2</sub> and Alk is a lower alkyl group or, when Z is >C=O, R<sub>4</sub>''' and R<sub>5</sub>''' taken together, may also be an oxo group;  
Y is hydroxy or said protecting group bound to the ring by an ethereal oxygen atom;  
n is zero, or an integer of 1 to 6;  
R<sub>6</sub> is hydrogen, methyl or fluorine; and  
R<sub>7</sub> is methyl, cycloalkyl containing 3 to 7 ring carbon atoms, phenyl or phenyl substituted by at least one substituent selected from halogen, C<sub>1</sub>-C<sub>6</sub> alkoxy and trihalomethyl.

4,338,249

## CYCLOPENTA[B]FURAN-2-ONE AND -2-OL INTERMEDIATES FOR

16-FLUORO-13,14-DIDEHYDRO-PROSTAGLANDINS Renato Pellegata, and Carmelo Gandolfi, both of Milan, Italy, assignors to Farmitalia Carlo Erba, Milan, Italy

Division of Ser. No. 944,614, Sep. 21, 1978, which is a continuation of Ser. No. 779,632, Mar. 21, 1977, abandoned, which is a division of Ser. No. 667,261, Mar. 15, 1976, abandoned. This application Apr. 7, 1980, Ser. No. 137,233

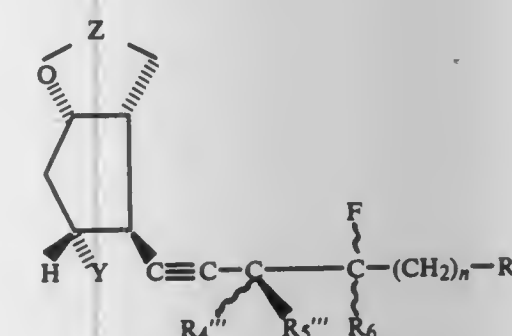
Claims priority, application Italy, Mar. 21, 1975, 21493 A/75

Int. Cl.<sup>3</sup> C07D 307/935

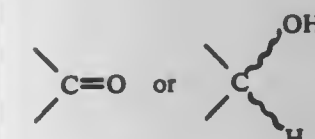
U.S. Cl. 549—214

1 Claim

1. A compound of the formula



wherein  
Z is



one of R<sub>4</sub>''' and R<sub>5</sub>''' is hydrogen and the other is hydroxy or a known protecting group bound to the chain by an ethereal oxygen atom selected from

4,338,250

## 1-HYDROXYLATION PROCESS

Hector F. DeLuca; Heinrich K. Schnoes, both of Madison, Wis.; David E. Hamer, Hyattsville, Md., and Herbert E. Paaren, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

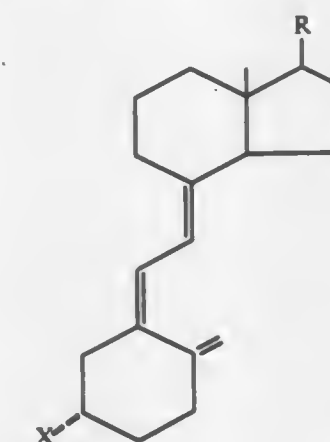
Filed Apr. 27, 1981, Ser. No. 258,125

Int. Cl.<sup>3</sup> C07J 9/00

U.S. Cl. 260—397.2

21 Claims

1. A process for preparing 1 $\alpha$ -hydroxy-5,6-trans-vitamin D compounds which comprises, treating a 5,6-cis-vitamin D compound having the formula



wherein X is selected from the group consisting of hydrogen, hydroxy and protected-hydroxy, and R is any side-chain substituent desired in the 1 $\alpha$ -hydroxy-5,6-trans-vitamin D product,

with iodine and a mixture of SeO<sub>2</sub> and a hydroperoxide in the presence of organic nitrogenous base, and recovering the desired 1 $\alpha$ -hydroxy-5,6-trans-vitamin D product.



4,338,251  
TWO-FUNCTIONAL-GROUP-CONTAINING  
TERPENOID, PROCESSES FOR THE PREPARATION  
OF THE SAME, AND ANTI-ULCER AGENTS  
CONTAINING THE SAME

Akio Sato, Yatabe; Kenji Nakajima, Sakuramura; Yoshimasa Takahara, Narashino; Shizumasa Kijima, Niiza; Noriaki Kuwana, Aichi; Shinya Abe, Kawagoe, and Kouzi Yamada, Tokyo, all of Japan, assignors to Eisai Co., Ltd. and Agency of Industrial Science and Technology, both of Tokyo, Japan, a part interest to each

Filed Dec. 29, 1980, Ser. No. 221,163

Claims priority, application Japan, Jan. 12, 1980, 55-2395  
Int. Cl.<sup>3</sup> C09E 5/00

U.S. Cl. 260—405.5

4 Claims

1. The compound 12-hydroxy-2,6,10-trimethyl-2,6,10-dodecatricarboxylic acid

4. The compound 24-hydroxy-2,6,10,14,18,22-hexamethyl-2,6,10,14,18,22-tetracosahexanoic acid.

4,338,252  
1-DESCARBOXY-1-KETOESTER  
(KETOACID)-PROSTAGLANDINS  
Middleton B. Floyd, Jr., Suffern, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

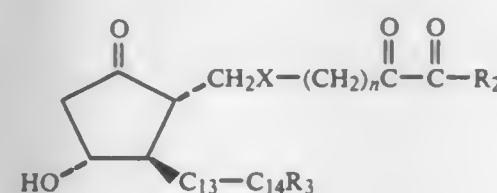
Continuation of Ser. No. 79,626, Sep. 27, 1979, abandoned. This application Feb. 26, 1981, Ser. No. 238,370

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 260—408

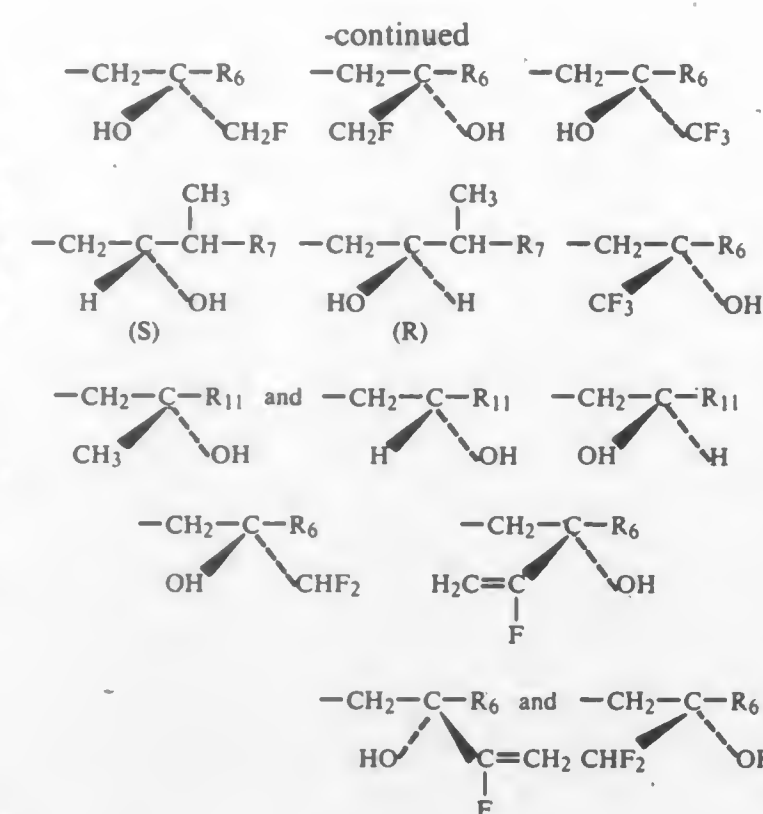
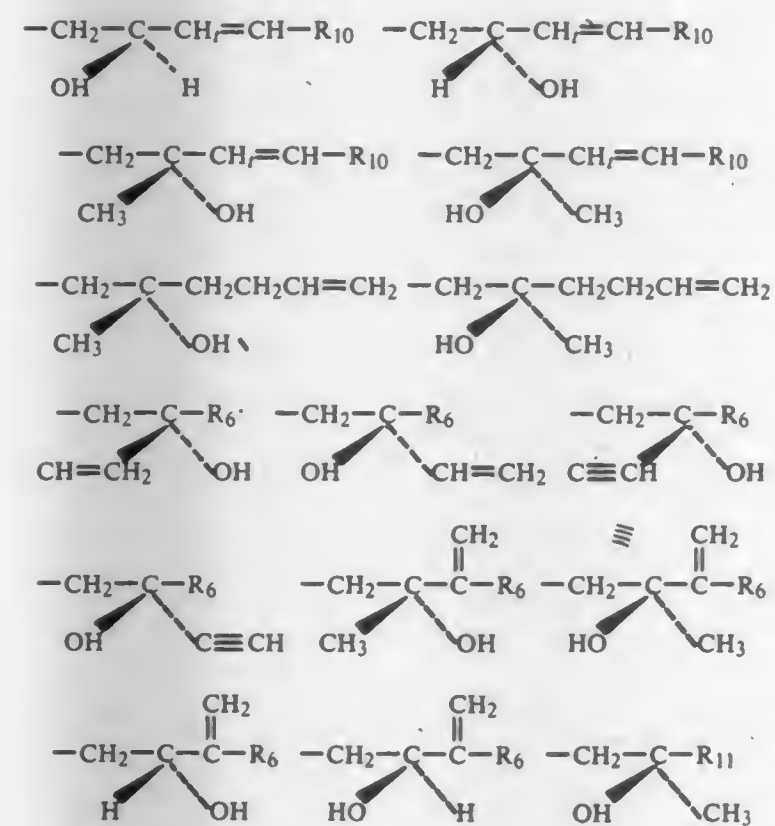
144 Claims

1. An optically active compound of the formula



wherein

R<sub>2</sub> is selected from the group hydroxy and C<sub>1</sub> to C<sub>7</sub> alkoxy; X is selected from the group cis or trans —CH=CH—; C<sub>13</sub>—C<sub>14</sub> is the substituent trans —CH=CH—; n is the integer 2, 3 or 4; and R<sub>3</sub> is selected from the group consisting of:



wherein R<sub>6</sub> is C<sub>3</sub> to C<sub>5</sub> alkyl, R<sub>7</sub> is C<sub>2</sub> to C<sub>4</sub> alkyl, R<sub>10</sub> is C<sub>1</sub> to C<sub>4</sub> alkyl and R<sub>11</sub> is C<sub>3</sub> to C<sub>7</sub> alkyl, the racemic mixtures thereof, the mirror images thereof and where R<sub>2</sub> is hydroxy, the pharmaceutically acceptable salts thereof.

4,338,253  
FLUORINATED AROMATIC POLYENES  
Ka-Kong Chan, Hopatcong, and Beverly A. Pawson, Monclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 206,197, Nov. 12, 1980, which is a division of Ser. No. 96,362, Nov. 21, 1979, Pat. No. 4,266,073, which is a division of Ser. No. 37,798, May 10, 1979, Pat. No. 4,201,727, which is a division of Ser. No. 952,416, Oct. 18, 1978, Pat. No. 4,169,100, which is a division of Ser. No. 809,738, Jun. 24, 1977, Pat. No. 4,137,246, which is a continuation-in-part of Ser. No. 722,939, Sep. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 632,028, Nov. 14, 1975, abandoned. This application Jun. 25, 1981, Ser. No. 277,569

Int. Cl.<sup>3</sup> C07C 59/00; C09F 7/06

U.S. Cl. 260—408

11 Claims

1. Ethyl-3-[4-methoxy-2,3,6-trimethylphenyl]-2-fluoro-2(Z,E)-propenoate.

4,338,254  
PROCESS FOR THE PREPARATION OF COBALT (III)  
ACETYLACETONATE

Hendrikus J. H. van der Maas, Zuilichem, Netherlands, assignor to Chemische Fabriek Zaltbommel, Zaltbommel, Netherlands

Filed Oct. 16, 1980, Ser. No. 197,462

Claims priority, application Netherlands, Oct. 19, 1979, 7907742

Int. Cl.<sup>3</sup> C07F 15/06

U.S. Cl. 260—439 R

12 Claims

1. In a process for the preparation of cobalt (III) acetylacetonate by oxidation of cobalt (II) acetylacetonate by contacting the same with hydrogen peroxide in the presence of a the stoichiometrically required amount of acetylacetonate in an organic solvent, the improvement wherein the organic solvent used is a solvent that is miscible with water and is inert to hydrogen peroxide, and in which the cobalt (II) acetylacetonate was prepared and is present in solution and carrying out the process at a temperature between 40° and 110° C.

4,338,255  
MODIFIED LITHIUM ALUMINUM HYDRIDES  
Shiro Terashima; Norihiko Tanno, and Kenji Koga, all of Tokyo, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 25, 1981, Ser. No. 238,136

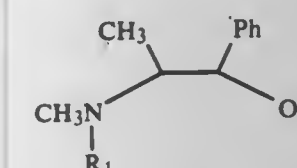
Claims priority, application Japan, Mar. 4, 1980, 55-27673; Jul. 18, 1980, 55-98956

Int. Cl.<sup>3</sup> C07F 5/06

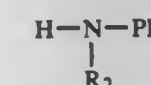
U.S. Cl. 260—448 AD

9 Claims

1. A novel modified lithium aluminum hydride type reducing agent obtained by reacting one equivalent of lithium aluminum hydride with one equivalent of an optically active N-substituted ephedrine of the formula,



(wherein R<sub>1</sub> is a C<sub>1</sub>—C<sub>4</sub> alkyl or benzyl group and Ph is phenyl group) and two equivalents of an N-substituted aniline of the formula,



(wherein R<sub>2</sub> is a C<sub>1</sub>—C<sub>4</sub> straight-chain alkyl or phenyl group and Ph is phenyl group).

4,338,256  
TRIISOCYANATES  
Kimiya Fujinami, Takarazuka; Ichiro Minato, Kobe, and Koichi Shibata, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed May 29, 1980, Ser. No. 154,135

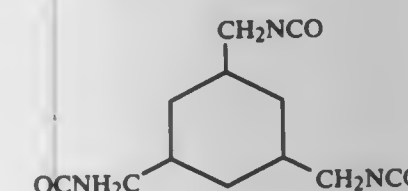
Claims priority, application Japan, May 29, 1979, 54-67171

Int. Cl.<sup>3</sup> C07C 119/045

U.S. Cl. 260—453 A

1 Claim

1. A compound of the formula:



4,338,257  
BENZOYL ARYLTHIOUREAS AND USE AS PLANT  
GROWTH REGULATORS

Natu R. Patel, Overland Park, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

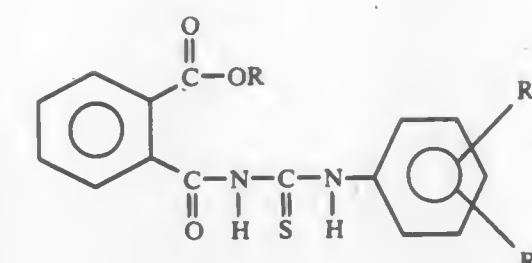
Division of Ser. No. 121,542, Mar. 4, 1980, abandoned. This application Feb. 26, 1981, Ser. No. 238,338

Int. Cl.<sup>3</sup> C07C 161/02, 161/04, 149/40

U.S. Cl. 260—454

38 Claims

1. The compound having the structural formula:



in which R is H or an agriculturally acceptable salt thereof, or C<sub>1</sub> to C<sub>4</sub> alkyl and R<sup>1</sup> and R<sup>2</sup> are hydrogen or C<sub>1</sub> to C<sub>4</sub> alkyl, alkoxy or carbalkoxy, halogen, thiocarbonyl, hydroxy, phenoxy, or methylthio.

4,338,258  
FLUORESCENT DYESTUFFS, PROCESSES FOR THEIR  
PREPARATION AND THEIR USE AS LASER  
DYESTUFFS

Wolfgang Brinkwerth, Berg-Gladbach; Wolfgang Hüffer, Cologne; Roderich Raue, Leverkusen; Rudolf Schieder, Huerth, all of Fed. Rep. of Germany, and Helmut Telle, Toronto, Canada, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 184,695

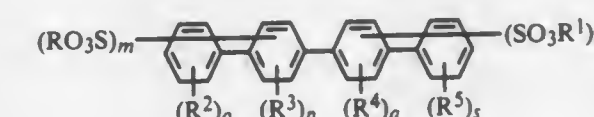
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2938132

Int. Cl.<sup>3</sup> C07C 143/68, 143/40, 143/525, 143/52

U.S. Cl. 260—456 A

6 Claims

1. Fluorescent dyestuffs of the general formula



wherein

R and R<sup>1</sup> independently of one another represent hydrogen, a salt-forming cation, an alkyl radical with 1 to 16 C atoms or an aryl or aralkyl radical which is optionally substituted by non-chromophoric groups,

R<sup>2</sup> to R<sup>5</sup> independently of one another represent hydrogen, alkyl, trifluoromethyl, alkoxy, aralkoxy, alkenoxy, arylalkoxy, halogen or a carboxyl, cyano, alkyl sulphone, aryl sulphone, aralkyl sulphone, carboxamide, sulphonamide or carboxylic acid ester group,

o, p, q and s independently of one another represent 1 or 2 and

m and n independently of one another denote 0, 1 or 2, the sum of m and n being 2 to 4.

4,338,259  
ALPHA-HALOGENO-BETA-AMINOPROPIONITRILES  
OR THE MINERAL ACID SALTS THEREOF, AND  
PROCESSES FOR PRODUCTION THEREOF

Ryuichi Mita, Kawasaki; Akihiro Yamaguchi, Kamakura; Toshio Kato, Kawasaki; Chojiro Higuchi, Kamakura, and Hisamichi Murakami, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,715

Claims priority, application Japan, Aug. 3, 1979, 54/98633; Aug. 10, 1979, 54/101184; Aug. 14, 1979, 54/102735

Int. Cl.<sup>3</sup> C07C 121/43, 120/00

U.S. Cl. 260—465.5 R

15 Claims

1. A process for producing a mineral acid salt of alpha-halogeno-beta-aminopropionitrile comprising reacting alpha-beta-dihalogenopropionitrile with at least two moles of ammonia per mole of alpha-beta-dihalogenopropionitrile in water, in an organic solvent, or in a mixture of water and an organic solvent at a temperature of —40° C. to +30° C., and then reacting the reaction product with a mineral acid selected from



the group consisting of hydrochloric acid, sulfuric acid, nitric acid, and phosphoric acid to convert said reaction product to said salt.

4,338,260

## PREPARATION OF PERCARBOXYLIC ACIDS

Jean-Pierre Schirmann, Oullins, France, assignor to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France  
Filed Aug. 27, 1980, Ser. No. 181,830

Claims priority, application France, Sep. 7, 1979, 79 22398  
Int. Cl.<sup>3</sup> C07C 179/10

U.S. Cl. 260—502 R

9 Claims

1. A process for the preparation of percarboxylic acid which comprises reacting hydrogen peroxide and a water miscible aliphatic carboxylic acid between about 40° C. and 100° C. and at a pressure between about 20 and 100 mm of mercury in the presence of a catalytic amount of orthoboric or metaboric acid and a solvent capable of forming a heteroazeotrope with the water, and continuously eliminating the water which may have been introduced with the hydrogen peroxide as well as the water formed during the reaction by azeotropic distillation.

4,338,261

## PROCESS FOR THE PREPARATION OF 1-NAPHTHYLAMINE-4,6-DISULPHONIC ACID AND 1-NAPHTHYLAMINE-2,4,6-TRISULPHONIC ACID

Heinz U. Blank, Odenthal; Horst Behre, Odenthal-Eikamp; Hans W. Linden, Leverkusen, and Werner Mentzel, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Filed Mar. 25, 1981, Ser. No. 247,416

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013275  
Int. Cl.<sup>3</sup> C07C 143/60

U.S. Cl. 260—508

6 Claims

1. In the process for the preparation of 1-naphthylamine-4,6-disulphonic acid by sulphonating 1-naphthylamine-6-sulphonic acid with oleum, working up the sulphonation mixture by introducing it into water, and isolating the 1-naphthylamine-4,6-disulphonic acid, the improvement comprising

- adding the oleum at a temperature of 10° to 70° C., either simultaneously with the 1-naphthylamine-6-sulphonic acid to initially introduced sulphuric acid, or to 1-naphthylamine-6-sulphonic acid, which is dissolved or suspended in sulphuric acid, and
- using such a molar ratio of sulphur trioxide to 1-naphthylamine-6-sulphonic acid that 1.2 to 3 mols of sulphur trioxide are present per mol of 1-naphthylamine-6-sulphonic acid.

4,338,262

## CARBOXYLIC ACID DERIVATIVES

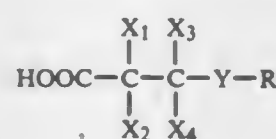
Otto Schallner; Siegfried Oeckl, both of Cologne, and Karl H. Schünderhütte, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Filed Aug. 21, 1980, Ser. No. 180,275

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2935682  
Int. Cl.<sup>3</sup> C07C 147/02, 147/06

U.S. Cl. 260—544 S

5 Claims

1. An acid halide or anhydride of an acid of the formula:



wherein

X<sub>1</sub> to X<sub>4</sub> is independently hydrogen or halogen, at least one of these radicals being a halogen radical,

Y equals SO<sub>2</sub>, and  
R equals C<sub>1</sub>-C<sub>4</sub> alkyl or phenyl.

4,338,263

## TIRE CORD ADHESIVES

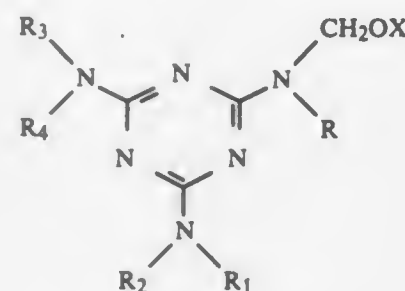
Otto C. Elmer, Akron, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 36,112, May 4, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 179,187  
Int. Cl.<sup>3</sup> C08K 3/36; C08L 7/00, 61/06

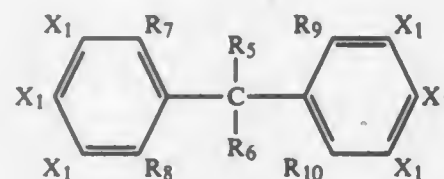
U.S. Cl. 260—762

2 Claims

1. In a vulcanizable rubber composition comprising rubber and a silica filler, the improvement which is characterized by incorporating into the rubber composition an effective adhesion promoting amount of a liquid reaction product of an N-(substituted oxymethyl) melamine having the general formula:



and a bisphenol of the formula:



wherein X is hydrogen or lower (C<sub>1</sub>-C<sub>8</sub>) alkyl; R, R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> are individually hydrogen, lower (C<sub>1</sub>-C<sub>8</sub>) alkyl or the group —CH<sub>2</sub>OX, X being as defined hereinabove, one X<sub>1</sub> per phenyl group is hydroxyl and the remaining are hydrogen, R<sub>5</sub> and R<sub>6</sub> are hydrogen or a lower alkyl having one to three carbon atoms, and R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub> and R<sub>10</sub> are hydrogen or a lower (C<sub>1</sub>-C<sub>8</sub>) alkyl group.

4,338,264

## WATER DISTRIBUTION MEANS FOR AN EVAPORATIVE AIR COOLER

Frederic F. Seeley, St. Marys, Australia, assignor to F. F. Seeley Nominees Pty. Ltd., St. Marys, Australia

Filed Mar. 26, 1980, Ser. No. 134,058

Claims priority, application Australia, Mar. 26, 1979, PD8219

Int. Cl.<sup>3</sup> B01F 3/04

U.S. Cl. 261—29

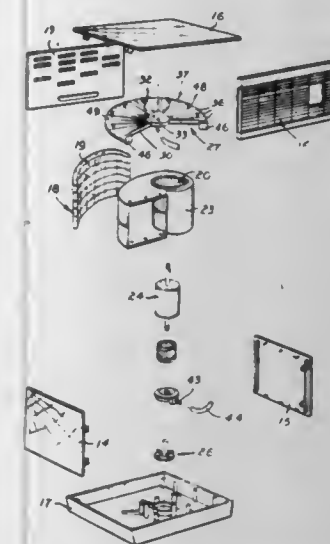
8 Claims

1. An evaporative air cooler comprising a cooler body including a top panel and side panels, a cooler pad assembly adjacent at least one of the side panels, a blower which, in use, draws air through said cooler pad assembly, a pump which, in use, delivers water to said cooler pad assembly, a motor to operate said blower and said pump,

water distribution means comprising a tray-like water distributing member supported with respect to said cooler body adjacent the underside of said top panel and having upstanding ribs defining a plurality of outwardly extending water flow channels, and a wall defining a water receiving area, said water flow channels radiating outwardly away from and sloping downwardly away from said water receiving area and being in water flow communication therewith so that water, when the cooler is in use, flows from said area into the channels and outwardly therealong,

a water inlet to said water receiving area, said water inlet

being connected to a water delivery line leading from the outlet side of said pump,  
the relative locations of said tray-like water distributing



member and said cooler pad assembly being such that water issuing from the water flow channels runs downwardly over a peripheral edge of the tray-like member and through said cooler pad assembly.

4,338,265

## ALTITUDE COMPENSATION DEVICE

Hisaharu Arai, Nagoya, Japan, assignor to Aisan Industry Co., Ltd., Aichi, Japan

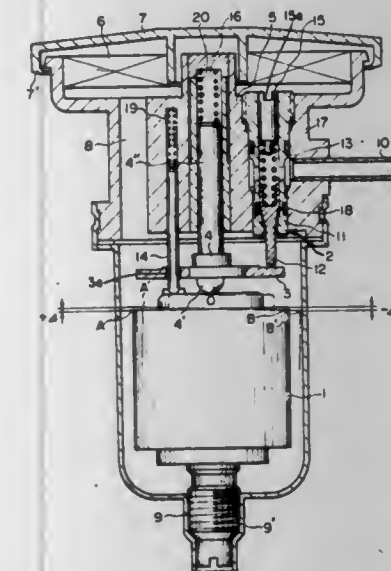
Filed Jul. 17, 1980, Ser. No. 169,700

Claims priority, application Japan, Aug. 8, 1979, 54/109102[U]

Int. Cl.<sup>3</sup> F02M 7/24

U.S. Cl. 261—39 A

7 Claims



1. In an altitude compensation device comprising a body, a bellows in said body adapted for detecting the altitude, and a plurality of valve mechanisms actuated in accordance with an expansion or contraction of said bellows to adjust compensation air, the improvement comprising  
a disc mounted in said body and adapted to be moved up and down maintaining a horizontal disposition,  
said disc being mounted on said bellows making a point contact with the center of an upper face of said bellows, said valve mechanisms each having an operative valve member being engaged at free ends thereof on an upper surface of said disc so that said valve mechanisms are simultaneously operated by the up and down movements of said disc,  
each of said valve mechanisms having a valve seat adjustably screwed into said body and a pin acting as a spring retainer, said valve seat being formed with a flow opening, a spring engaging between said pin and said valve mem-

ber, the latter being displaceably mounted in said flow opening in said valve seat and cooperatively for opening and closing said flow opening depending on the up and down movements of said disc,  
said pin being formed with a screwdriver groove at an upper end thereof and being press-fitted to be formed integrally with the valve seat of said valve mechanism.

4,338,266

## DEVICE FOR CONDITIONING AIR WITH IMPROVED GAS-LIQUID CONTACT PAD

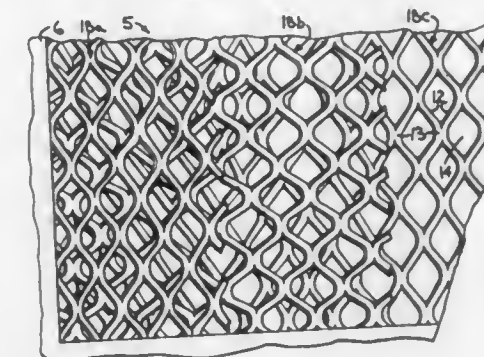
John W. Flower, Madison, Wis., assignor to Research Products Corporation, Madison, Wis.

Filed Apr. 8, 1981, Ser. No. 251,998

Int. Cl.<sup>3</sup> B01F 3/04

U.S. Cl. 261—94

7 Claims



1. For use in conjunction with a device for conditioning air wherein said device has a means for providing air flow there-through at an operative velocity in excess of about 400 feet per minute, a gas-liquid contact pad being adapted for downward gravity flow of water therethrough and comprising:

- a body formed of a plurality of vertical layers of generally flat planular sheets the planes of which are all parallel to each other, and with said layers being slit and planularly expanded to form a multiplicity of inclined baffles and connecting webs forming cell-like openings,
- said pad having a plurality of discrete groups of individual layers therein,
- all the layers within each discrete group of layers being expanded in the same planular direction so that they are identically oriented,
- the baffles in all the layers within each discrete group of layers being oriented to face in the same direction and being generally parallel to each other,
- each said group of layers being oriented to face in the opposite direction from its directly adjacent group so that the baffles of one said group face oppositely to the baffles of the next adjacent group.

4,338,267

## MEDICAL GAS HUMIDIFIER WITH AUDIBLE PRESSURE RELIEF VALVE AND METHOD OF USE

Arduino E. Riuli, Wayne, N.J.; Robert W. Anastasia, Flushing, N.Y., and Bernard F. Kopacz, Little Falls, N.J., assignors to Becton, Dickinson and Company, Paramus, N.J.

Continuation of Ser. No. 69,037, Aug. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 820,628, Aug. 1, 1977, abandoned. This application Nov. 17, 1980, Ser. No. 207,502

Int. Cl.<sup>3</sup> A61M 11/06

U.S. Cl. 261—121 R

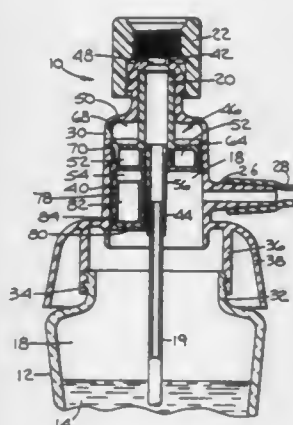
9 Claims

1. A method of administering a moisturized medical gas to a mammal in need of such therapy, which comprises: providing apparatus for moisturizing medical gases and which comprises:

- a portable housing having an upper portion and a lower portion;
- a reservoir chamber within the lower portion of said hous-



- ing adapted for holding a column of water and having an upper and a lower zone;
- (8c) a gas chamber within the upper portion of said housing and in gas communication with said reservoir chamber;
- (d) a first passage communicating between the lower zone of said reservoir chamber and the outside of said housing, said passage having a first open end in the lower zone of the reservoir chamber and a second open end on the outside of the housing and adapted for connection to a source of said medical gases whereby medical gases may be introduced into the reservoir chamber and moisturized by contact with water held therein;
- (e) a second passage communicating between said gas chamber and the outside of said housing, said second passage having a first open end in said gas chamber and a second open end on the outside of said housing and adapted to connect with a means of delivering moisturized medical gases passed from said gas chamber to a patient in need of receiving said moisturized gases;
- (f) a whistle attached to the upper portion of said housing, and which comprises a whistle reed, a nozzle directing gases toward the reed, and a resonating chamber;
- (g) a decompression chamber communicating with said nozzle; and
- (h) valve means between said decompression chamber and said gas chamber, said valve means comprising a valve casing, a valve seat in the bottom of said casing surrounding a valve



orifice defining an inlet into the valve casing, said valve orifice opening into said gas chamber, a lightweight poppet adapted to seat in said valve seat under the force of gravity of close the valve orifice and to lift out of said valve seat under a predetermined pressure of gas exerted on the seated poppet through the orifice, and a plurality of relatively narrow bypass channels extending longitudinally through said casing and disposed around said poppet which communicate between said decompression chamber and said valve orifice as soon as said poppet is lifted out of said valve seat, said valve means being adapted to rapidly open fluid communication between said decompression chamber and said gas chamber in response to a predetermined gas pressure in said gas chamber, said valve means closing said fluid communication when less than said predetermined gas pressure is in said gas chamber;

disposing water in the reservoir chamber;

connecting the first passage with a source of medical gas, under pressure;

providing a means of administering said gas to the nasal passage of the mammal;

connecting said second passage to said means of administering; and

introducing the medical gas into said first passage; whereby the medical gas passes through the water and is humidified and thence passes through the second passage, the means for administering and is received by the mammal through the mammal's nasal passages.

4,338,268

## OPEN CYCLE THERMAL BOOSTING SYSTEM

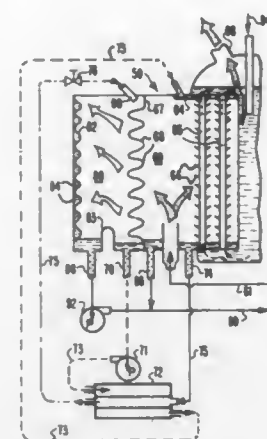
William H. Wilkinson, Columbus, and William T. Hanna, Gahanna, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Aug. 13, 1980, Ser. No. 177,660

Int. Cl.<sup>3</sup> B01F 3/04

U.S. Cl. 261-140 A

13 Claims



1. Open cycle thermal boosting apparatus comprising, a pressurized housing having an inner chamber and at least one annular outer chamber around said inner chamber; said inner chamber including inlet means for supplying high pressure refrigerant vapor, inlet means for supplying a heat exchange fluid, means for contacting said refrigerant vapor with a first working solution of absorbent and refrigerant to absorb at least a portion of said vapor into solution whereby heat at an elevated temperature level is given off to said heat exchange fluid, said inner chamber including inlet means for said first working solution and outlet means for said heat exchange fluid associated with said contacting means, means for collecting said first working solution leaving said contacting means, the outer wall of said inner chamber providing a heat exchange surface for condensing refrigerant vapor, and means for collecting the condensed refrigerant; said annular outer chamber including means for supplying a second working solution of absorbent and refrigerant to the inner wall of said outer chamber, said inner wall being in heat exchange communication with the outer wall of said inner chamber and serving as a desorber means to desorb refrigerant as vapor from said second working solution, and means to collect said refrigerant vapor and said second working solution as they leave said desorber means.

4,338,269

## METHOD OF FORMING AN ABRASION-RESISTANT COATING ON MOLDED ARTICLES

Raymond J. Russell, Lincoln Park, N.J., assignor to Panelgraphic Corporation, West Caldwell, N.J.

Filed Dec. 5, 1980, Ser. No. 213,479

Int. Cl.<sup>3</sup> C08F 2/48

U.S. Cl. 264-22

9 Claims

1. A method of forming an abrasion-resistant coating on molded polymeric articles formed by curing a polymerizable monomer-containing molding composition in a mold comprising:

- applying to said mold a coating composition curable by actinic radiation comprising a pentaerythritol-based polyacrylate or polymethacrylate and a cellulose ester or a vinyl chloride-vinyl acetate containing copolymer;
- exposing said coating composition to actinic radiation to form a cured coating on said mold;
- adding to the mold a heat polymerizable monomer-containing molding composition; and
- polymerizing said molding composition in the form of a molded article, said cured coating transferring to the surface of said molded article.

4,338,270

## METHOD OF FABRICATING A COMPOSITE FOAM HAND HELD IMPLEMENT GRIP

Paul J. Uffindell, Morrow, Ohio, assignor to 'Totes', Incorporated, Loveland, Ohio

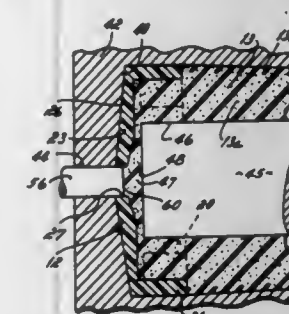
Division of Ser. No. 47,221, Jun. 11, 1979, Pat. No. 4,261,567.

This application Oct. 3, 1980, Ser. No. 193,544

Int. Cl.<sup>3</sup> B29D 27/00

U.S. Cl. 264-46.4

3 Claims



1. A method of fabricating a grip for a hand held implement, said implement including a handle shaft section adapted to receive said grip thereon, said method comprising the steps of providing a pre-formed rigid cap having an end wall, an outer annular flange, an inner annular flange, and a bore in said end wall coaxially disposed relative to said cap's inner and outer flanges, said annular flanges extending from the same side of said cap's end wall, positioning said cap in a mold cavity, an inlet port to said mold cavity being aligned with said cap's bore when said cap is located in said mold cavity, orienting a mandrel in the seat defined by said inner annular flange and said cap's end wall, said cap supporting said mandrel at one end in spaced relation relative to said cavity, and said mandrel being supported at the other end by said mold, injecting reactants into said mold cavity in liquid form through said cap's bore, said reactants reacting interiorly of said mold cavity to provide a foamed sleeve in structural combination with said pre-foamed cap, said foamed sleeve extending into the annular area of said cap defined by said inner and outer annular flanges, and said cap's outer annular flange and end wall being exposed on the outside surfaces thereof after withdrawal of said grip from said mold.

4,338,271

## METHOD FOR MANUFACTURING A LOW DENSITY SYNTHETIC RESIN BODY

Sadao Kumasaka, Tanashi; Satomi Tada, Tokyo; Shigeo Horikoshi; Tokio Tsuchiya, both of Kawagoe, and Masashi Numabe, Saitama, all of Japan, assignors to Toyo Rubber Chemical Industrial Corp., Tokyo, Japan

Filed May 23, 1980, Ser. No. 152,784

Claims priority, application Japan, May 28, 1979, 54-65843; Dec. 24, 1979, 54-167772; Dec. 27, 1979, 54-171406; Dec. 27, 1979, 54-171407; Dec. 27, 1979, 54-171408

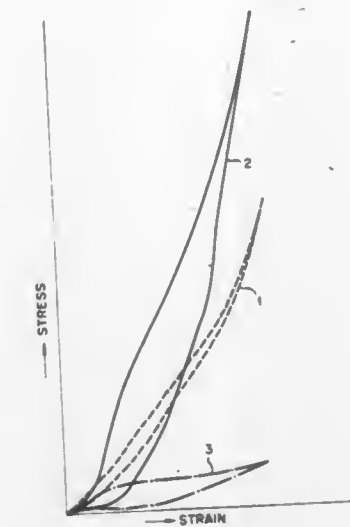
Int. Cl.<sup>3</sup> B29D 27/00

U.S. Cl. 264-54

14 Claims

1. A method for manufacturing a low density synthetic resin foamed body comprising the steps of forming a mixture of 100 parts by weight of an ethylene-vinyl acetate copolymer, 20-80 parts by weight of a foaming agent, and 1.0-5.0 parts by weight of a crosslinking agent into a sheet, positioning said sheet in a mold, closing the mold with a lid, heating the mold to heat said sheet and to decompose said foaming agent and cross-linking agent to form an integral foamed body from said sheet and forcibly cooling said foamed body as it is kept in the mold with

the lid closed, and opening the lid of the mold to remove said cooling integral low density foamed body which has a density



4,338,272

## SLIP-CASTING SYSTEM

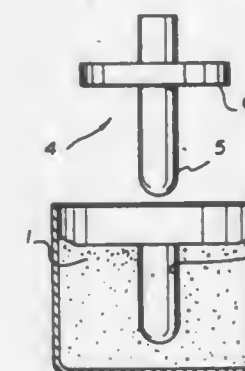
Arthur D. Pelton, St. Laurent, Canada, and Michel Rivier, Palo Alto, Calif., assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Jan. 11, 1979, Ser. No. 2,736

Int. Cl.<sup>3</sup> B29C 1/02

U.S. Cl. 264-86

4 Claims



1. A system for slip-casting, comprising: providing a powder of ceramic material, said powder having a particle size sufficiently small to provide shape retention upon compaction, and to retain suspended particles of a slip, and said powder being inert to the slip; shaping an compacting the powder to provide a mold cavity that conforms in shape to that of a desired casting; introducing a slip into said shaped and compacted powder mold cavity, retaining the slip for a time sufficient to form the desired thickness of the casting, and removing the remaining slip; allowing at least partial drying of the casting; and separating the casting from the powder.

4,338,273

## PROCESS FOR THE PRODUCTION OF ALVEOLAR MODULES

Guy Schnedecker, Paris, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 26, 1980, Ser. No. 181,409

Claims priority, application France, Sep. 6, 1979, 79 22310

Int. Cl.<sup>3</sup> B29D 23/04

U.S. Cl. 264-167

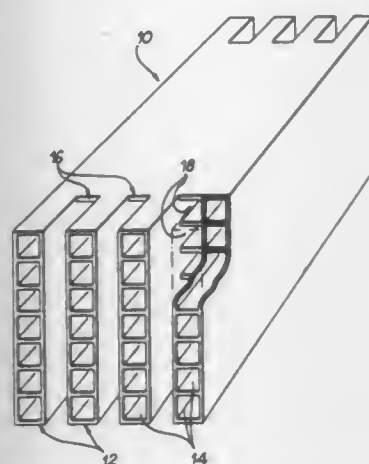
7 Claims

1. A process for the production of alveolar modules comprising rows of parallel channels, certain of which issue onto



the sidewalls of the module, wherein it consists of producing the module by extrusion using at least two independent systems, each producing rows of identical channels, whereby the formation of one of the systems is interrupted when the rows of channels being produced is to issue onto the sidewalls of the module.

5. An apparatus for producing alveolar modules having rows of parallel channels, certain of which issue onto the sidewalls of the module, comprising a first extrusion system

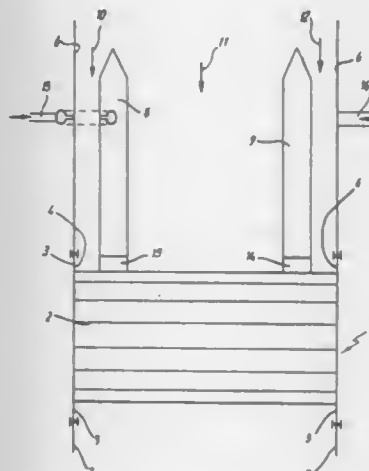


incorporating first extrusion material supply means and a first spinneret complementary of the cross-section of the rows of channels issuing onto the sidewalls of the module, a second extrusion system complementary of the cross-section of the other rows of channels, the first and second supply means being controlled independently of one another, and means for interrupting extrusion by one of said extrusion systems when the rows of channels being produced by said one extrusion system are to issue onto the sidewalls of the module.

#### 4,338,274 METHOD AND APPARATUS FOR THE INCORPORATION OF ADDITIVES INTO PLASTICS MATERIALS

Alan H. Hill, Bury, England, assignor to General Engineering Radcliffe 1979 Limited, Radcliffe, England  
Filed Oct. 10, 1980, Ser. No. 195,766  
Claims priority, application United Kingdom, Oct. 12, 1979, 7935441

Int. Cl.<sup>3</sup> B29F 3/12  
U.S. Cl. 264—171



1. A method of incorporating an additive into a stream of homogenized plastics material in a predetermined location or locations and thereafter confining the additive substantially to that location or those locations including the steps of feeding a homogenized plastics material towards a gear pump, dividing the stream into at least two parts and maintaining the division at least until the plastics material enters the teeth of the gear

pump, introducing an additive into the plastics material before or at the gear pump and in such a manner that the additive passes through an end region or the end regions of the gears of the gear pump and thereafter re-combining the parts of the stream prior to extrusion through a die to produce a product with at least one localized longitudinally extending modified plastics material region therein.

9. Apparatus for incorporating an additive into a stream of homogenized plastics material in a predetermined location or locations comprising a gear pump, a plastics material supply to the gear pump, formed so as to divide an incoming stream of plastics material into at least two stream parts and means for supplying additive to at least one of those parts such that the additive supplied contacts and flows along the external surface of the part.

#### 4,338,275 PROCESS FOR THE MANUFACTURE OF POLYESTER YARNS

Paul L. I. Carr, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England  
Continuation of Ser. No. 934,917, Aug. 18, 1978, abandoned.  
This application Jul. 24, 1980, Ser. No. 171,672  
Claims priority, application United Kingdom, Aug. 19, 1977, 34904/77

Int. Cl.<sup>3</sup> D01D 1/04

U.S. Cl. 264—176 F 5 Claims  
1. A draw spinning process for the manufacture of polyester filaments comprising directly extruding molten polyester filaments into a first fluid environment heated to a temperature above the melting point of the filaments and subsequently passing said filaments through a second fluid environment heated to a temperature above the glass transition temperature but below the melting temperature of the filaments, said fluid environments being separate from one another a distance sufficient to cool the filaments below the temperature of the second fluid environment, and withdrawing and winding up the filaments at a speed in excess of 5500 meters/minute.

#### 4,338,276 PROCESS FOR THE MANUFACTURE OF POLYAMIDE YARNS

Paul L. I. Carr, Harrogate, England, assignor to Imperial Chemical Industries, Ltd., London, England  
Continuation of Ser. No. 934,916, Aug. 18, 1978, abandoned.  
This application Jul. 24, 1980, Ser. No. 171,671  
Claims priority, application United Kingdom, Aug. 19, 1977, 34906/77

Int. Cl.<sup>3</sup> D01D 1/04

U.S. Cl. 264—176 F 6 Claims  
1. A draw spinning process for the manufacture of filamentary polyamide yarns comprising directly extruding molten polyamide filaments into a first fluid environment heated to a temperature above the melting point of the filaments and subsequently passing said filaments through a second fluid environment heated to a temperature of 80° C. to 250° C., said fluid environment being separated from one another a distance sufficient to cool the filaments below the temperature of the second fluid environment, and withdrawing and winding up said filaments at a speed in excess of 5500 meters/minute.

#### 4,338,277 PROCESS FOR PRODUCING HIGH KNOT STRENGTH POLYAMIDE MONOFILAMENTS

Isoo Saito, Okazaki, and Kotaro Fujitoka, Nagoya, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan  
Filed Aug. 20, 1980, Ser. No. 179,703  
Claims priority, application Japan, Aug. 20, 1979, 54-104963  
Int. Cl.<sup>3</sup> B29C 17/02

U.S. Cl. 264—235.6 17 Claims  
1. In a process for producing a polyamide monofilament having high knot strength, the steps which comprise:

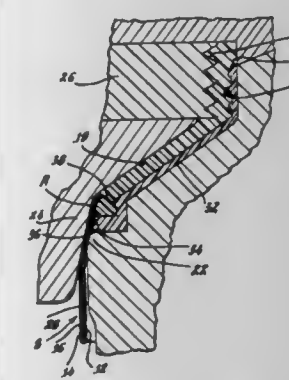
- (A) drawing melt spun undrawn polyamide monofilament (M<sub>1</sub>) at a ratio of about 3–5.5 to produce a partially oriented monofilament (M<sub>2</sub>) having a diameter of about 0.05–2 mm;  
(B) subjecting said monofilament (M<sub>2</sub>) to saturated steam having a pressure not less than about 1 kg/cm<sup>2</sup>.G for about 0.05–5 seconds while relaxing to produce a monofilament (M<sub>3</sub>) relaxed to about 0.7–1.0 times the length of said partially oriented monofilament (M<sub>2</sub>); and  
(C) heating said monofilament (M<sub>3</sub>) in the presence of  
(a) a gas at about 200°–800° C. and  
(b) a liquid at about 150°–265° C., said gas and said liquid being inert to said monofilament (M<sub>3</sub>) for about 0.05–5 seconds and drawing said relaxed monofilament (M<sub>3</sub>) at a ratio of about 1.2–2.5 to produce a drawn monofilament (M<sub>4</sub>).

#### 4,338,278 METHOD FOR MAKING A COLLAPSIBLE DISPENSING TUBE HAVING AN ANCHORED BARRIER MEMBER

Robert S. Schultz, 7 Heusted Dr., Old Greenwich, Conn. 06870  
Division of Ser. No. 814,323, Jul. 8, 1977, Pat. No. 4,185,757.  
This application Jan. 21, 1980, Ser. No. 113,608

Int. Cl.<sup>3</sup> B29D 3/00, 23/08; B29F 1/00

U.S. Cl. 264—261 7 Claims



1. A method of making a collapsible container having a flexible tubular body and provided with a thermoplastic headpiece comprising: inserting a flexible tube over a tapered mandrel having a conical taper of a certain angle, moving a die having an angled portion corresponding to said taper of said mandrel against said tube to thereby push the same into engagement with the conical taper of said mandrel whereby said top of said tube is bent inwardly and a portion of said tube immediately below said top is further bent into a conical shape having an angle substantially corresponding to the angle of the conical taper of said mandrel, said top portion and top edge of said tube being spaced from said mandrel and therefore not engaged thereby, moving thread plates in a direction toward said tube to engage the neck portion thereof and form threads therein, and forcing a thermoplastic material through a molding gate located in the top area of said assembly to injection mold said headpiece between the mandrel and die to thereby secure said headpiece to said tubular body whereby said thermoplastic material flows into said space between the inner wall of said top portion and the adjacent surfaces of said mandrel to firmly adhere the top wall of said tubular body to said headpiece.

#### 4,338,279 AUTOMATIC ANALYZING APPARATUS

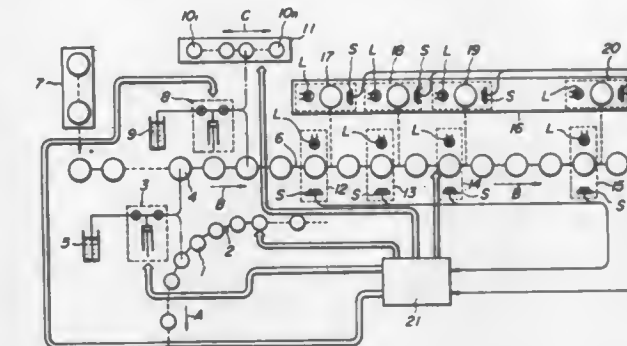
Ryoichi Orimo, Ohme; Masahiko Sakurada, Machida; Taiichi Banno, Hachioji; Sugio Manabe, Kodaira, all of Japan, and Kevin Galle, New York, N.Y., assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Apr. 11, 1980, Ser. No. 139,470

Claims priority, application Japan, Apr. 14, 1979, 54-44911

Int. Cl.<sup>3</sup> G01N 35/04, 35/06

U.S. Cl. 422—64 50 Claims



1. An apparatus for effecting automatic analysis for sample liquids comprising:  
means for successively feeding reaction vessels, each containing respective sample liquid to be analyzed, along a given reaction line;  
means for delivering a given amount of a given reagent, corresponding to a test item to be measured, into a reaction vessel on the reaction line to form a test liquid which is a mixture of the sample liquid and reagent;  
first photometering means arranged at a reaction-condition-monitoring-section, provided along the reaction line, for monitoring a reaction condition of the test liquid in the vessel;  
second photometering means arranged along the reaction line for effecting quantitative analysis for the given test item; and  
means for discharging the reaction vessels out of the reaction line after the quantitative analysis for the given test item has been done, the improvement comprising in said second photometering means having a plurality of measuring positions arranged in a precise photometering section which is provided separately from the reaction line, said discharging means being in the precise photometering section, and comprising further means for transporting the reaction vessel from the reaction-condition-monitoring-section into any desired measuring position in the precise photometering section after the test liquid contained in the relevant reaction vessel has been confirmed to reach a predetermined reaction condition.

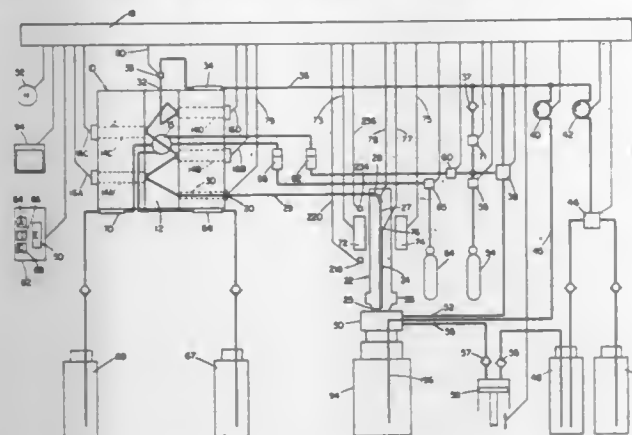
#### 4,338,280 FLUID SAMPLING

Paul J. Ambers, Westwood, and R. Barry Stevens, Chelmsford, both of Mass., assignors to Instrumentation Laboratory Inc., Lexington, Mass.  
Filed Apr. 2, 1981, Ser. No. 250,438  
Int. Cl.<sup>3</sup> G01N 1/14, 1/18

U.S. Cl. 422—68 21 Claims  
1. A liquid sample analyzer of the type having an analysis chamber adapted to receive sample material to be analyzed, sensor means coupled to said analysis chamber for providing an output signal related to a constituent of the sample material, sampler apparatus including structure defining a sample intake flow path that has an inlet port and is connected to said analysis chamber,  
rinse apparatus for communication with a waste system, said sample intake port and said rinse apparatus being movable relative to one another between a first position in which said inlet port is exposed to the operator and a



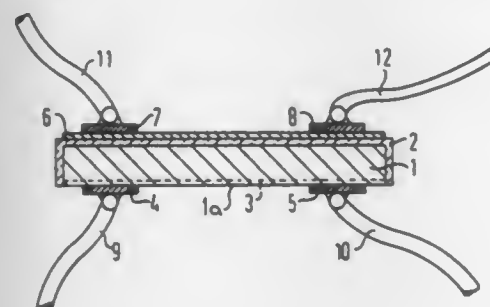
second position in which said inlet port is aligned with said rinse apparatus,  
drive means for moving said sample inlet port and said rinse apparatus between said first and second positions, and a sampler control arrangement including means operative when said sample inlet port is in said first position for flowing sample material through said inlet port into said sample intake flow path defining structure,



sensor means responsive to flow of a predetermined quantity of sample material into said sample flow path defining structure for terminating intake of sample material and energizing said drive means to move said inlet port and said rinse apparatus to said second position, and means operative when said sample inlet port is in said second position for flowing cleaning fluid through said sampler apparatus.

**4,338,281**  
**THIN FILM SEMICONDUCTOR GAS SENSOR HAVING AN INTEGRATED HEATING ELEMENT**  
Ludwig Treitinger, Munich; Peter Tischer, Strasslach, and Brigitte Schneider-Gmelch, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany  
Filed Apr. 16, 1981, Ser. No. 254,855  
Claims priority, application Fed. Rep. of Germany, May 21, 1980, 3019387

Int. Cl.<sup>3</sup> G01N 27/04  
U.S. Cl. 422-98 9 Claims

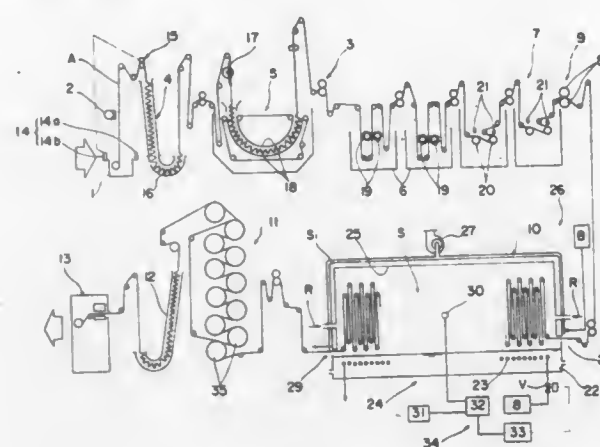


1. In a thin film semiconductor gas sensor including a metal oxide semiconductor sensor layer wherein the electrical resistance of the metal oxide semiconductor layer changes in dependence upon the nature and concentration of a gas being detected, said sensor having a heating element required for its function integrated therewith; the improvement comprising wherein:

said sensor comprises a semiconductor body having a shell zone located relatively close to an outer surface of such body, said zone being highly doped to the point of degeneration and two metal contact strips positioned on said zone and apart from one another for a heating connection to said sensor.

**4,338,282**  
**SELECTIVE COLLECTING SYSTEM OF WASHINGLY TREATED ARTICLES**  
Setsuzo Motooka, Toyonaka; Yukihiro Karigane, Osaka; Osamu Yamazaki, Kishiwada, and Osamu Ochiai, Habikino, all of Japan, assignors to Duskin Franchise Co., Ltd., Osaka, Japan  
Filed Jul. 14, 1980, Ser. No. 167,765  
Claims priority, application Japan, Jan. 18, 1980, 55/4690; Jan. 19, 1980, 55/4693

Int. Cl.<sup>3</sup> B08B 3/04; A61L 2/06  
U.S. Cl. 422-105 6 Claims



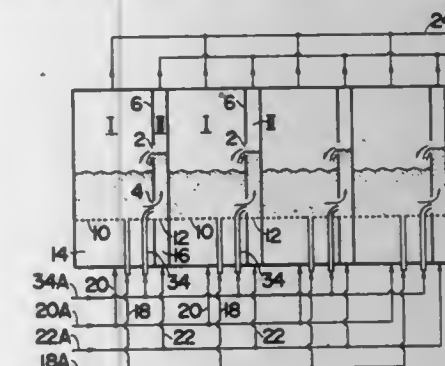
1. A selective collecting system for washed articles comprising:  
means for washing said articles;  
means for conveying said articles in a predetermined path through said washing means;  
first detector means located along said path for detecting damaged articles, said first detector means including a first light source and first light receiving means for generating a first detection signal responsive to variations in light transmission through said articles received by said first light receiving means, which variations in light transmission have been predetermined to be indicative of damage to the articles;  
second detector means located along said path for detecting results of the washing treatment of said articles, said second detector means including a second light source and second light receiving means for generating a second detection signal responsive to variations in light refraction, from at least one surface of said articles, received by said second light receiving means;  
means for comparing said first and second detection signals to a first and second predetermined set of values, respectively, and for generating a control signal in response to variations of said first and second detection signals from first and second set values;  
control means for controlling the conditions of the washing treatment in response to said control signal;  
winding means for winding said articles washed by said washing means into a roll; and  
distributing means disposed to receive said article rolls from said winding means for selectively distributing and sorting said article rolls in response to said control signal.

**4,338,283**  
**FLUIDIZED BED COMBUSTOR**  
Koya Sakamoto; Yutaka Yoneda; Naoki Fujiwara, and Shigehito Takamoto, all of Kure, Japan, assignors to Babcock Hitachi Kabushiki Kaisha, Tokyo, Japan  
Filed Apr. 4, 1980, Ser. No. 137,529  
Int. Cl.<sup>3</sup> G05D 16/00; F27B 15/00; F23C 11/02  
U.S. Cl. 422-112 6 Claims

1. A fluidized bed combustor which comprises:  
a hollow body containing a combustion chamber and regenera-

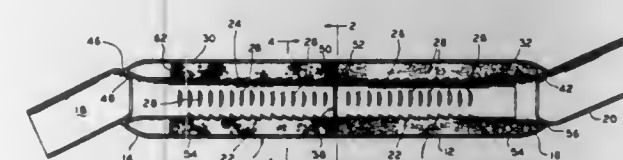
tion chamber formed by vertically partitioning said hollow body by a partition wall;  
a perforated plate provided at the bottom of said combustion chamber and a perforated plate provided at the bottom of said regeneration chamber;  
a particulate solid heat transfer medium containing a combustion gas desulfurizing agent means that will associate with the sulfur of sulfur oxide gas to produce a sulfur-containing medium, said medium to be fluidized and arranged on each of said perforated plates;  
means for feeding fuel to said combustion chamber;  
means for feeding air for combustion of the fuel and fluidization of said heat transfer medium to said combustion chamber to form a fluidized bed of said heat transfer medium in said combustion chamber;  
means for feeding a gas that will cause disassociation of said combined sulfur from said medium and produce a sulfur-containing gas for regeneration of said heat transfer medium and fluidization of said heat transfer medium to said regener-

ation chamber formed by vertically partitioning said hollow body by a partition wall;  
a plurality of small passages in said core means for passage of exhaust gases between said core means and said casing, a transverse wall dividing said annular space into an upstream segment and a downstream segment, a gas permeable body of catalyst for purifying said hot exhaust gases positioned in said upstream segment of said annular space and surrounding said small passages within said upstream segment, and said transverse wall having a plurality of apertures therein and through which said exhaust gases can flow from said annular space of said upstream segment to the downstream segment, said tubular core being divided into an upstream part extending from the gas entrant end of said casing to one side of said transverse wall and a downstream part extending from the opposite side of said transverse wall to the gas exit end of said casing, said upstream and downstream parts being divided by a part of said transverse wall, which part also has a plurality of small passages for passage of part of the exhaust gases through from said upstream part directly into said downstream part.



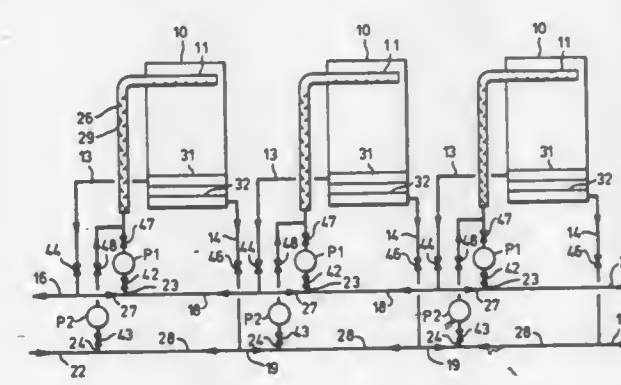
ating chamber to form a fluidized bed of said heat transfer medium in said regeneration chamber;  
gas-discharging port means provided at the upper part of said combustion chamber for discharging products of combustion of said fuel and gas-discharging port means provided at the upper part of said regeneration chamber for discharging said sulfur-containing gas;  
said partition wall having an upper opening and a lower opening;  
said lower opening being located in the vicinity of said perforated plates;  
means for transferring said heat transfer medium from said combustion chamber through said lower opening to said regeneration chamber; and said upper opening being located above the level of said fluidized bed formed in said combustion chamber and below the level of said fluidized bed in said regeneration chamber so that said heat transfer medium containing desulfurizing agent means can overflow through said upper opening and recycle from said regeneration chamber to said combustion chamber.

**4,338,284**  
**EXHAUST GAS PURIFIER**  
Vincent E. Ignoffo, Chicago, Ill., assignor to Vinco Sales Corp., Inc., Chicago, Ill.  
Filed Sep. 4, 1979, Ser. No. 71,857  
Int. Cl.<sup>3</sup> F01N 3/28, 7/00  
U.S. Cl. 422-171 11 Claims



1. An automotive exhaust gas purifier which comprises a tubular core means for conveying hot exhaust gases from an entrant opening to an exit opening in a casing surrounding said core means and defining the outer side of an annular space

**4,338,285**  
**LIQUID-LIQUID CONTACT APPARATUS**  
Donald H. Eberts, Scarborough, Canada, assignor to A. H. Ross & Associates, Toronto, Canada  
Continuation of Ser. No. 966,881, Dec. 6, 1978, abandoned. This application Apr. 23, 1981, Ser. No. 256,685  
Int. Cl.<sup>3</sup> B01D 11/04 10 Claims



1. Liquid-liquid contacting apparatus comprising a first stage, at least one intermediate stage, and a last stage, each stage comprising:  
(a) a first and second pumps for pumping respectively a first liquid having a first characteristic density and a second liquid having a second characteristic density greater than said first density, each pump having an outlet and an inlet;  
(b) a liquid-liquid mixer apparatus connected in common to the outlets of said pumps, and having an outlet for a liquid-liquid mixture;  
(c) a separator vessel having an inlet connected to the outlet of said mixer apparatus for receiving a liquid-liquid mixture from said mixer apparatus and having a first vessel outlet for a disengaged liquid phase of said first characteristic density and a second vessel outlet for a disengaged liquid phase of said second characteristic density;  
(d) first and second outlet conduits connected to said first and second vessel outlets, respectively, and  
(e) a first auxiliary conduit connected between the first outlet conduit and the inlet to the first pump and a second auxiliary conduit connected between the second outlet conduit and the inlet to the second pump; said liquid-liquid contact apparatus also including sources of supply of said first and second liquids, respectively, a first supply conduit connecting the source of supply of said first liquid to the inlet of said first pump in said last stage, a second supply conduit connecting the source of supply of said second liquid to the inlet of said second pump in said first stage, said first outlet conduit in the last stage and said first outlet conduit in said at least one intermediate stage also con-



necting said first vessel outlet in each stage to the inlet of the first pump in the preceding stage, said second outlet conduit in the first stage and said second outlet conduit in said at least one intermediate stage connecting said second vessel outlet in each stage to the inlet of the second pump in the succeeding stage, a first discharge conduit connected to the first outlet conduit in the first stage, and a second discharge conduit connected to the second outlet conduit in the last stage; and said first pump in said last stage having a valve interposed between it and a point of connection between the first supply conduit and the first auxiliary conduit in said last stage; said first pump in said at least one intermediate stage and in said first stage having a valve interposed between it and a point of connection between the first auxiliary conduit of said stage and the first outlet conduit of the succeeding stage; said second pump in said first stage having a valve interposed between it and a point of connection between the second supply conduit and the second auxiliary conduit in said first stage; and said second pump in said at least one intermediate stage and in said last stage having a valve interposed between it and a point of connection between the second auxiliary conduit of said stage and the second outlet conduit of the preceding stage, whereby said pumps can be isolated from the supply, outlet and auxiliary conduits, permitting bypass of selected stages.

4,338,286

#### PROCESS FOR RECOVERING URANIUM AND/OR THORIUM FROM A LIQUID CONTAINING URANIUM AND/OR THORIUM

Eiichiro Nakai, Urawa; Hiroshi Kojima, Hasuda; Shoichi Tanaka, Musashino; Toshiyuki Kai, and Shinichi Hasegawa, both of Tohokai, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1980, Ser. No. 143,116

Claims priority, application Japan, Feb. 1, 1980, 55-11191

Int. Cl.<sup>3</sup> C01G 56/00; C01F 15/00

U.S. Cl. 423—12

2 Claims

1. A process for recovering a metal selected from the group consisting of uranium, thorium and mixtures thereof, from a liquid containing said metal comprising the steps of adding water glass to said liquid in the presence of ammonia water and an aqueous material selected from the group consisting of fluorine, nitric acid radical and chlorine to cause a precipitate composed mainly of amorphous silica to be formed, whereby said metal is absorbed, filtering said precipitate therefrom, treating said filtered precipitate with acid to cause said absorbed metal to be eluted therefrom, filtering said precipitate to recover said eluted metal as an acidic filtrate therefrom, adding ammonia water to an acidic solution of said filtrate containing said eluted metal to cause a precipitate composed of ammonium salt of said metal to be formed, and filtering said ammonium salt precipitate therefrom.

4,338,287

#### PROCESS FOR CONDITIONING TUNGSTEN CONCENTRATES

Robert F. Hogsett, Arvada; Dale K. Huggins, Golden, and Leo W. Beckstead, Arvada, all of Colo., assignors to Amax Inc., Greenwich, Conn.

Filed Jan. 19, 1981, Ser. No. 225,912

Int. Cl.<sup>3</sup> C01G 41/00

U.S. Cl. 423—53

7 Claims

1. A process for conditioning a tungsten concentrate selected from the group consisting of scheelite and wolframite concentrates and combinations thereof and containing sulfur as sulfide, and calcite to fix at least a portion of the sulfur as calcium sulfate by reaction with the calcite, which comprises providing a tungsten concentrate having a calcite content such that less than about 15 wt. % calcium sulfate based on the weight of the tungsten in the concentrate as WO<sub>3</sub> will be formed and heating the concentrate to a temperature of at least

about 500° C. in an oxidizing atmosphere to oxidize substantially all the sulfur in the concentrate to provide a conditioned concentrate having a calcium sulfate content less than about 15% based on the weight of the tungsten as WO<sub>3</sub>, provided that when the tungsten concentrate is scheelite it is heated so as to provide the conditioned concentrate with a free lime content less than about 15% based on the weight of the tungsten as WO<sub>3</sub>, whereby the conditioned concentrate can be efficiently leached with alkali metal carbonates or hydroxides and the resulting alkali metal tungstate solution can be effectively treated to recover an ammonium tungstate solution.

4,338,288

#### SORBENT FOR REMOVING METALS FROM FLUIDS

Louis D. Rollmann, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 64,694, Aug. 8, 1979, abandoned, which is a division of Ser. No. 942,252, Sep. 14, 1978, Pat. No. 4,222,897. This application Feb. 3, 1981, Ser. No. 231,077

Int. Cl.<sup>3</sup> B01D 53/34, 15/00

U.S. Cl. 423—210

7 Claims

1. A process for removing a metal from a fluid, said metal being one which forms a sulfide that has a solubility product constant of less than about 10<sup>-20</sup> at about 25° C., which comprises contacting the fluid under sorption conditions including a temperature of about 0° C. to about 120° C. with a particulate solid composition comprising manganese nodules and from 0.1 wt. % to about 60 wt. % of said nodules of added elemental sulfur, said added sulfur being occluded in said nodules.

4,338,289

#### PREPARATION OF DECABORANE (14) THROUGH HYDRIDE ION ABSTRACTION REACTIONS

Sheldon G. Shore, Columbus; Mark A. Toft, Amlin, both of Ohio, and Francis L. Himpel, Matawan, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 10, 1981, Ser. No. 291,713

Int. Cl.<sup>3</sup> C01B 35/18

U.S. Cl. 423—294

4 Claims

1. A method for the preparation of decaborane-14 (B<sub>10</sub>H<sub>14</sub>) through the conversion of B<sub>5</sub>H<sub>9</sub> to [N(CH<sub>3</sub>)<sub>4</sub>][B<sub>9</sub>H<sub>14</sub>], the hydride ion abstraction reaction of [N(CH<sub>3</sub>)<sub>4</sub>][B<sub>9</sub>H<sub>14</sub>], by a boron trihalide to form B<sub>10</sub>H<sub>14</sub>, and the separation and recovery of B<sub>10</sub>H<sub>14</sub>, in pure form by a sublimation process, said method comprising completing steps (i-IX) as set forth hereinbelow and relating to said conversion, completing steps (X-X-III) as set forth hereinbelow and relating to said hydride ion abstraction reaction, and completing steps (XIV-XV) as set forth hereinbelow and relating to said separation and recovery as follows:

- adding to a first reaction vessel provided with a means for stirring and while maintained in a dry box of N<sub>2</sub> atmosphere, a predetermined weight of NaH and [(CH<sub>3</sub>)<sub>4</sub>N][Cl] to provide a 1:1 molar ratio of said NaH and said [(CH<sub>3</sub>)<sub>4</sub>N][Cl];
- removing said first reaction vessel from said dry box and attaching said first reaction vessel to a vacuum means for removing of dry box N<sub>2</sub>;
- condensing a predetermined volume of dry tetrahydrofuran into said first reaction vessel maintained at about -78° C. while condensing of said dry tetrahydrofuran into said first reaction vessel to form a reaction mixture;
- subjecting said first reaction vessel and said reaction mixture to a liquid N<sub>2</sub> Dewar container for cooling prior to condensing a predetermined volume of B<sub>5</sub>H<sub>9</sub> measured at 0° C. into said reaction mixture, said predetermined volume of said B<sub>5</sub>H<sub>9</sub> providing a 2 molar ratio of said B<sub>5</sub>H<sub>9</sub> to said 1:1 molar ratio of said NaH and [(CH<sub>3</sub>)<sub>4</sub>N][Cl];
- warming said first reaction vessel and said reaction mixture to a room temperature of about 26° C.-27° C. and

stirring said reaction mixture vigorously for about 12 hours to complete a reaction period to form the solid reaction products [N(CH<sub>3</sub>)<sub>4</sub>][B<sub>9</sub>H<sub>14</sub>] and NaCl in said reaction mixture;

- cooling said first reaction vessel and said solid reaction products to -196° C. and removing hydrogen and other volatiles;
- warming said first reaction vessel and said solid reaction products to about 0° C. while removing said solvent under vacuum from said solid reaction products [N(CH<sub>3</sub>)<sub>4</sub>][B<sub>9</sub>H<sub>14</sub>] and NaCl;
- transferring said solid reaction products to a second reaction vessel in a dry box, said second reaction vessel having a smaller capacity than said first reaction vessel;
- removing said second reaction vessel from dry box and evacuating said second reaction vessel of dry box N<sub>2</sub>;
- condensing a predetermined molar volume of a boron trihalide selected from BCl<sub>3</sub> freed from HCl or BBr<sub>3</sub> freed from HBr into said second reaction vessel maintained at -196° C., said predetermined molar volume of said boron trihalide being in ratio of 1:2 to said condensed B<sub>5</sub>H<sub>9</sub>;
- warming contents of said second reaction vessel to about 11° C. to room temperature and reacting while stirring said contents of said second reaction vessel for a predetermined time period of about 4 hours to form reaction products including B<sub>10</sub>H<sub>14</sub> by hydride ion abstraction;
- cooling said second reaction vessel and said reaction products including B<sub>10</sub>H<sub>14</sub> and removing hydrogen;
- warming said second reaction vessel to a room temperature range of about 26° C.-27° C. and removing trace of volatile products by vacuum pumping;
- transferring said second reaction vessel to a dry box; and
- separating said B<sub>10</sub>H<sub>14</sub> by sublimation from said second reaction vessel and recovering said B<sub>10</sub>H<sub>14</sub> in pure form.

4,338,291

#### PROCESS FOR PRODUCING HYDROGEN WITH VIOLOGEN CATION RADICAL USING METAL COMPLEX OF MACROCYCLIC POLYDENTATE COMPOUND AS CATALYST

Akira Yamada, Kamifukuoka; Takashi Tanno, Asaka; Dieter Wehle, and Masao Kaneko, both of Wako, all of Japan, assignors to Rikagaku Kenkyusho, Japan

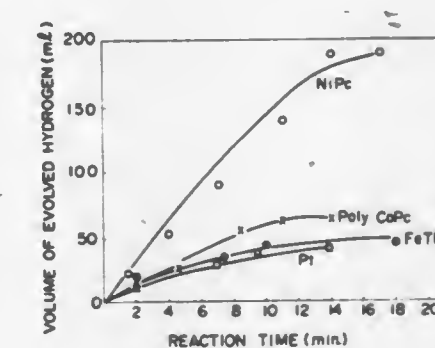
Filed Apr. 22, 1981, Ser. No. 256,554

Claims priority, application Japan, Aug. 29, 1980, 55-119415

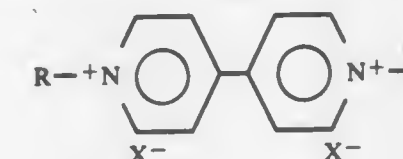
Int. Cl.<sup>3</sup> C01B 1/18

U.S. Cl. 423—648 R

13 Claims



1. A process for producing hydrogen by reducing proton (H<sup>+</sup>) in a solution by adding metal complex composed of complexing agent selected from the group consisting of phthalocyanine, tetraphenylporphyrin, tetraazaannulene, hemiporphyrine, salicylaldehyde, ethylenediamine, acetylacetone ethylenediamine and derivatives thereof and ion of metal selected from the group consisting of metals included in the groups IB, IIA, IIB, IIIA, IVA, IVB, VIB, VIIIB and VIII of the periodic table as catalyst to said solution containing reduced type of viologen (viologen cation radical), said viologen having a general formula:



wherein R is an alkyl group having 1 to 6 carbon atoms or a benzyl group and X<sup>-</sup> is a halogen ion.

4,338,292

#### PRODUCTION OF HYDROGEN-RICH GAS

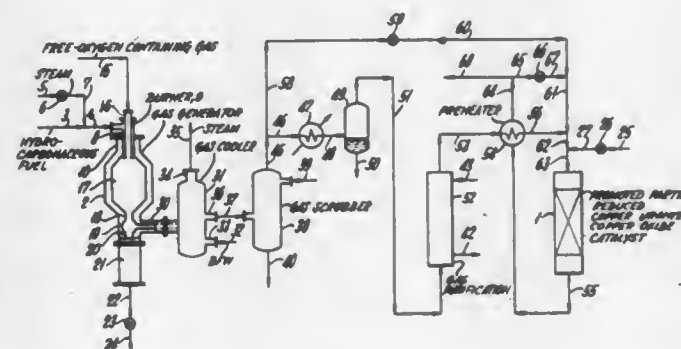
Roger G. Duranleau, Georgetown, Tex., and Walter C. Gates, Jr., Carmel, N.Y., assignors to Texaco, Inc., White Plains, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,374

Int. Cl.<sup>3</sup> C01B 1/08, 2/10

U.S. Cl. 423—656

30 Claims



1. A process for the production of a hydrogen-containing gas comprising:

- introducing a feed gas mixture comprising CO and H<sub>2</sub>O at a temperature in the range of about 375° to 1500° F. and

#### 4,338,290 HYDROLYSIS OF HALOHYDRIN OR DIHALIDE WITH HI CATALYST

Jawad H. Murib, and John M. Inskeep, both of Cincinnati, Ohio, assignors to National Distillers & Chemical Corp., New York, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,979

Int. Cl.<sup>3</sup> C07C 31/20; C01B 7/01

U.S. Cl. 423—481

16 Claims

1. A process for preparing glycols which comprises reacting a compound of the general formula



in which X is a halogen atom, Y is a halogen atom or a hydroxyl group and R is an unbranched alkylene or cycloalkylene group of from 2 to about 12 carbon atoms or a branched alkylene or cycloalkylene group of from 2 to about 12 carbon atoms in the main chain and containing one or more alkyl, cycloalkyl, aryl, alkaryl or aralkyl groups of a total of from 1 to about 12 carbon atoms, with water in the presence of a catalytically effective amount of a catalyst composition consisting of hydriodic acid to provide a glycol of the general formula



in which R has the same meaning given above, and haloacid.



a pressure in the range of about 1 to 300 atmospheres into a reaction zone containing an unsupported catalyst comprising an alkali-metal promoted partially reduced mixture of at least one copper uranate and at least one oxide of copper; wherein at least 30 to about 80 weight percent of the copper in the catalyst is present in the metallic state and of the remainder of the copper 85 to 100 weight % is in the form of copper uranate and the balance of the copper if any is present in the form of copper oxide; and the total weight percent of uranium present in said catalyst basis total weight of said catalyst composition is in the range of over 50 to about 90 weight percent;

- (2) converting CO in said gas mixture into  $H_2 + CO_2$  by reacting CO in said reaction zone with  $H_2O$ ; and
- (3) removing a  $H_2$ -rich gas from said reaction zone.

4,338,293

## SUNSCREENING AGENT

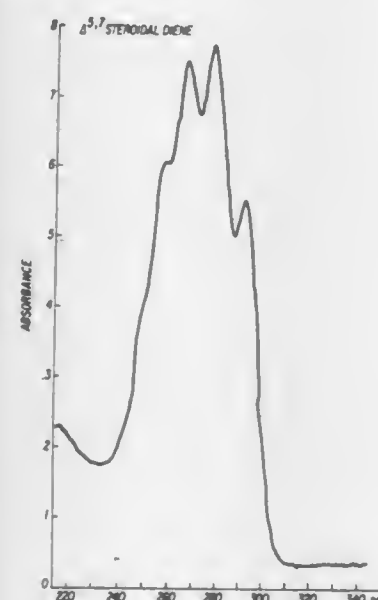
Michael F. Hollick, Sudbury, Mass., assignor to Massachusetts General Hospital, Boston, Mass.

Filed Feb. 25, 1981, Ser. No. 238,075

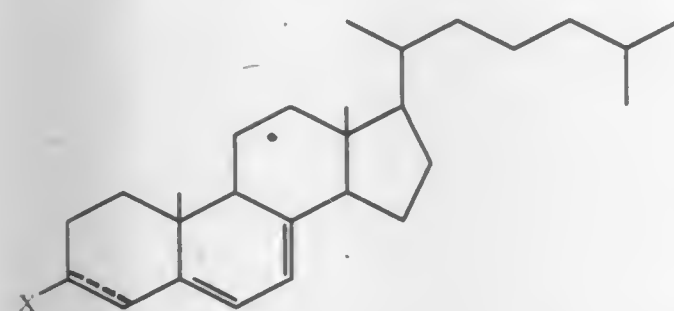
Int. Cl.<sup>3</sup> A61K 7/42

U.S. Cl. 424—59

11 Claims

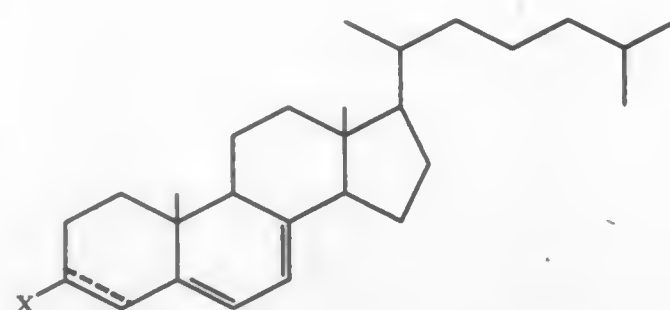


1. A sunscreen composition which comprises a suncreening amount of a substituted or unsubstituted  $\Delta^{5,7}$  steroidal diene capable of blocking UVB radiation and having the formula



wherein X is H or  $R^1O$ ; where  $R^1$  is  $C_1$ - $C_{12}$  alkyl, aryl or  $R^1$  is  $R^2CO$ , where  $R^2$  is  $C_1$ - $C_{12}$  alkyl or aryl; and a topical carrier; with a proviso that said  $\Delta^{5,7}$  steroidal diene is not a precursor to a biologically active vitamin D compound.

7. A method for protecting the human skin from ultraviolet radiation which comprises applying to said skin a substituted or unsubstituted  $\Delta^{5,7}$  steroidal diene capable of blocking UVB radiation and having the formula



wherein X is H or  $R^1O$ , where  $R^1$  is  $C_1$ - $C_{12}$  alkyl, aryl or  $R^1$  is  $R^2CO$ , where  $R^2$  is  $C_1$ - $C_{12}$  alkyl or aryl; with the proviso that said diene is not a precursor to a biologically active vitamin D compound.

4,338,294

## ANTIPERSPIRANT COMPOSITIONS AND METHODS FOR THEIR PREPARATION

Rolf Mast, Scottsdale, Ariz., assignor to Armour-Dial, Inc., Phoenix, Ariz.

Filed Dec. 17, 1975, Ser. No. 641,445

Int. Cl.<sup>3</sup> A61K 7/34, 7/36, 7/38

U.S. Cl. 424—68

14 Claims

1. An antiperspirant composition comprising an aluminum salt in an amount of from 1 to 50 percent, a smectite mineral in an amount of from 0.5 to 10.0 percent, polyethylene glycol having a molecular weight of from 100 to 10,000 and in an amount of from 0.5 to 10.0 percent and water in an amount of from 20 to 97 percent, said percentages being by weight based on the total weight of the composition.

4,338,295

## HAIR SETTING AND BODYING COMPOSITION AND METHOD

Derek R. Highley, North Weymouth, and Jayant N. Sane, Framingham, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Nov. 12, 1980, Ser. No. 206,126

Int. Cl.<sup>3</sup> A61K 7/09, 7/11

U.S. Cl. 424—71

10 Claims

1. In a hair treating composition for imparting improved setting properties comprising an aqueous solution containing about 0.5 to 20% by weight of a mixture of glyceraldehyde, resorcinol, and an oligomeric precondensate of glyceraldehyde and resorcinol, said composition being prepared by heating an aqueous mixture containing glyceraldehyde, resorcinol, and an acid selected from the class consisting of boric acid and silicic acid, the molar ratio of glyceraldehyde to resorcinol being about 19:1 to 1:19 and the molar ratio of glyceraldehyde to said acid being about 4:1 to 1:1.5; wherein the improvement comprises including in said composition about 0.1% to 20% by weight of urea.

4,338,296

## INFLUENZA VIRUS AND PROCESS OF PRODUCING A VACCINE THEREFROM

Michele Löbmann, Bierges, and Gerard Florent, Genval, both of Belgium, assignors to SmithKline-RIT, Belgium

Division of Ser. No. 85,437, Oct. 16, 1979, Pat. No. 4,278,662.

This application Feb. 4, 1981, Ser. No. 231,528

Int. Cl.<sup>3</sup> A61K 39/12; C12N 7/00

U.S. Cl. 424—89

4 Claims

1. The recombinant influenza virus strain CNCM No. I-099.  
2. A process of producing a live influenza virus vaccine which comprises growing the influenza virus strain of claim 1 in the allantoic cavity of embryonated chicken eggs for a period of time sufficient to permit production of a large amount of said virus, harvesting the resulting virus material and combining it with a pharmaceutical diluent.

4,338,297

## POLYPEPTIDE ACTIVE POLLEN IMMUNOSUPPRESSANT FRACTION

Jacob G. Michael, 418 Chisholm Trail, Cincinnati, Ohio 45215, and Amadeo J. Pesce, 5769 White Chapel Dr., Cincinnati, Ohio 45236

Filed Apr. 14, 1980, Ser. No. 139,881

Int. Cl.<sup>3</sup> A61K 39/36; C07G 7/00

U.S. Cl. 424—91

1 Claim

1. A safe and effective pollen desensitizing product from ragweed pollen produced by:

- (a) subjecting said ragweed pollen to controlled proteolytic enzymatic digestion using an enzyme selected from the group consisting essentially of nagarase, pepsin and immobilized pepsin to produce a specific degraded substance defined by a molecular weight of less than about 10,000, said substance being free of disulfide bonds and rich in tyrosine and possessing residuum active antigens, and
- (b) removing said residuum reactive antigens by reacting said degraded substance with a skin-sensitizing antipollen antibody to produce said pollen desensitizing product, which is non-reactive with said antipollen antibodies.

4,338,298

## VACCINE FOR PASSIVE IMMUNIZATION AGAINST ENTERIC COLIBACILLOSIS AND METHOD OF USE

Lyle L. Myers, Bozeman, Mont., assignor to Endowment and Research Foundation at Montana State University, Bozeman, Mont.

Filed Apr. 4, 1980, Ser. No. 137,311

Int. Cl.<sup>3</sup> A61K 39/108, 39/116

U.S. Cl. 424—92

22 Claims

1. A vaccine for the passive immunization of a newborn food animal against *E. coli*-caused diarrheal disease, said animal being susceptible to diarrheal disease caused by enterotoxigenic *E. coli* that contain K antigen 30, 35, 85 or 99, said vaccine consisting essentially of:

- (a) four *E. coli* K antigens, these antigens being K30, K35, K85 and K99; the concentration of all of said antigens per ml of said vaccine and of each of said antigens per ml of said vaccine being sufficient to effect said passive immunization by the stimulation of colostral antibodies reactive with *E. coli* K antigens 30, 35, 85, and 99, when the dam of said animal is injected prior to giving birth to said animal with a quantity of said vaccine that produces said passive immunization; and
- (b) a physiologically acceptable aqueous carrier.

4,338,299

## VACCINE AGAINST PERTUSSIS

Chrisso K. Vessellnova-Jenkins, Blackwood, Wales, assignor to DSO "Pharmachim", Sofia, Bulgaria

Filed Nov. 17, 1980, Ser. No. 207,434

Int. Cl.<sup>3</sup> A61K 39/10

U.S. Cl. 424—92

5 Claims

1. A pertussis vaccine which comprises live pertussis bacteria of the *Bordetella pertussis* strain EM 1964 in a pertussis immunization dosage.

4,338,300

## USE OF PURIFIED CLOSTRIDIAL COLLAGENASE IN THE TREATMENT OF PEYRONIE'S DISEASE

Martin K. Gelbard, Van Nuys, Calif., assignor to The Regents Of The University Of California, Berkeley, Calif.

Filed Feb. 5, 1981, Ser. No. 231,731

Int. Cl.<sup>3</sup> A61K 37/48

U.S. Cl. 424—94

7 Claims

1. The method of treating Peyronie's disease in mammals which comprises administering an effective amount of the enzyme collagenase directly into the plaques which form in the course of the disease.

4,338,301

## LUNG TISSUE EXTRACT USEFUL FOR TREATING HYALINE-MEMBRANE DISEASE AND METHOD FOR PRODUCING THE EXTRACT

Fujiwara Tetsuro, Akita; Tanaka Yuji, Toda, and Takei Tsunetomo, Kuki, all of Japan, assignors to Tokyo Tanabe Co., Ltd., Japan

Filed May 21, 1980, Ser. No. 152,048

Claims priority, application Japan, Jun. 2, 1979, 54-68211

Int. Cl.<sup>3</sup> A61K 35/12

U.S. Cl. 424—95

23 Claims

1. Surface active material containing phospholipid, neutral lipid, total cholesterol, carbohydrate, protein and water, which material is obtained from lung tissue of a mammal with or without further phospholipid, characterized in that the phospholipid content is 75.0-95.5%, the neutral lipid content is 1.8-14.0%, the total cholesterol content is 0.0-3.0%, the carbohydrate content is 0.1-1.5%, the protein content is 0.5-5.0% and water content is 1.7-6.0%, all based on the dried weight of said material, the minimum and maximum surface tension ranges of the material estimated by Wilhelmy's method wherein the material is added dropwise to the surface of physiological saline in an amount of 0.3-0.8  $\mu$ g per square centimeter of surface area thereof being 2.1-8.6 dynes/cm and 48.2-58.0 dynes/cm when surface areas are 21.0  $cm^2$  and 45.6  $cm^2$  respectively.

13. A method of producing a surface active material containing phospholipid, neutral lipid, total cholesterol, carbohydrate, protein and water, which material is obtained from lung tissue of a mammal with or without further phospholipid, characterized in that the phospholipid content is 75.0-95.5%, the neutral lipid content is 1.8-14.0%, the total cholesterol content is 0.0-3.0%, the carbohydrate content is 0.1-1.5%, the protein content is 0.5-5.0% and water content is 1.7-6.0%, all based on the dried weight of said material, the minimum and maximum surface tension ranges of the material estimated by Wilhelmy's method wherein the material is added dropwise to the surface of physiological saline in an amount of 0.3-0.8 g per square centimeter of surface area thereof being 2.1-8.6 dynes/cm and 48.2 to 58.0 dynes/cm when surface areas are 21.0  $cm^2$  and 45.6  $cm^2$  respectively, comprising the steps of:

- (a) mincing lung tissue of a mammal;
- (b) bringing the minced lung tissue into contact with an electrolyte solution and subjecting the resultant mixture to one of filtration under pressure and centrifugation at about 500-1,500 rpm to obtain an extract;
- (c) centrifuging the extract at about 12,000-16,000 rpm to obtain a crude sediment;
- (d) forming an aqueous suspension of the crude sediment and dissolving sodium chloride in the aqueous suspension of the crude sediment to obtain a density adjusted suspension and then centrifuging the adjusted suspension at about 4,000-10,000 rpm so as to divide it into three layers, the top layer being an emulsified scum layer which is then taken up;
- (e) forming an aqueous suspension of the top layer and dialyzing the aqueous suspension through a semi-permeable membrane to remove inorganic salts and water-soluble organic compounds of low molecular weight both having been remained in the top layer, whereby an aqueous suspension containing the non-dialyzing material is obtained;
- (f) centrifuging the resultant suspension at about 12,000-16,000 rpm to take up a pure sediment;
- (g) suspending one of the pure sediments and the aqueous suspension containing the non-dialyzing material, in an aqueous sucrose solution and centrifuging the suspension of aqueous sucrose solution at about 18,000-40,000 rpm to obtain another pure sediment;
- (h) drying the pure sediment and suspending the resultant dried pure sediment in acetone to take up an acetone-insoluble material which is then dried and suspended further in organic solvent mixture followed by filtration of the resultant suspension so as to obtain a purified filtrate; and
- (i) mixing the purified filtrate with sterile water and subject-



ing the resultant mixture to filtration, the filtrate of which is then concentrated under reduced pressure to obtain a solid residue, followed by one of lyophilization of the said solid residue so that the phospholipid content is 75.0-95.5% or adding further phospholipid solid residue to bring the phospholipid content to 75.0-95.5%.

**4,338,302**  
**HERBICOLIN AND MICROBIOLOGICAL METHOD FOR THE PREPARATION THEREOF**  
Günther Winkelmann, Marchensestr. 5, 7407 Rottenburg 4, Wendelsheim, Fed. Rep. of Germany  
Filed Sep. 22, 1980, Ser. No. 189,638  
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1979, 2938993

Int. Cl.<sup>3</sup> A61K 35/00; C12P 1/04; C12N 1/20  
U.S. Cl. 424-117 15 Claims  
1. Herbicolin A, characterized by the following properties:  
(1) characteristic IR bands in potassium bromide at 3200, 2900, 2830, 1730, 1650, 1530  $\text{cm}^{-1}$ , as shown in the attached FIG. 1;  
(2) solubility:  
very well soluble in:  
methanol  
ethanol  
1-propanol  
1-butanol  
well soluble in:  
ethylene glycol  
ethylene glycol monomethyl ether  
glycerin  
water  
sparingly soluble in:  
acetone  
ethyl acetate  
acetonitrile  
almost insoluble in:  
chloroform  
dichloromethane  
diethyl ether  
petroleum ether

wherein the term "well soluble" is understood to mean that sufficient herbicolin A is present in solution to attain the biological effect thereof;

- (3) elementary analysis: found: C 46.1; H 7.1; N 11.8; S 1.9; molecular mass 1500-3000;  
(4) characteristic reactions:  
ninhydrin—negative  
chlorine/4,4'-tetramethyldiaminodiphenylmethane—positive;  
(5) no absorption in the ultraviolet spectrum between 220 and 350 nm;  
(6) detectable amino acids:  
(6a) detectable fatty acids,  $\beta$ -hydroxy myricic acid

Amino Acids	Ratio (Approximation)
Glycine	2
L-Threonine	1
D-Allothreonine	1
D-Glutamic Acid	1
D-Leucine	1
L-Arginine	1

- (7)  $^{13}\text{C}$ -NMR spectrum with ppm ( $\delta$ ) values in  $^{12}\text{CD}_3\text{OD}$  of 177.7, 175.1, 174.5, 173.3, 172.9, 172.5, 171.2, 170.9, 170.8, 169.8, 167.9, 158.3, 132.5, 122.4, 97.9, 74.9, 73.8, 73.1, 72.0, 71.5, 69.7, 68.8, 62.5, 62.1, 57.4, 54.6, 53.8, 53.2, 44.8, 44.1, 42.7, 40.8, 38.4, 33.0, 32.4, 32.0, 30.7, 30.4, 26.6, 25.9, 23.6, 21.98, 17.6, 16.2, and 14.4, as shown in the attached FIGS. 2a and 2b;  
(8) the following  $R_f$ -values:

1-butanol/glacial acetic acid/water (4:1:1) =  $R_f$  0.06  
chloroform/methanol/glacial acetic acid/water (65:25:3:4) =  $R_f$  0.10; and  
(9) efficacy: strong fungitoxic effect at concentrations of 0.1 to 1  $\mu\text{g}/\text{ml}$ ;  
paramecia species (slipper animalcules) and amoeba are killed in concentrations of 1-2  $\mu\text{g}/\text{ml}$  in a few seconds; and  
erythrocytes are lysed in concentrations of about 10  $\mu\text{g}/\text{ml}$  (human blood).

**4,338,303**  
**TREATMENT OF PARASITIC DISEASES**  
Ronald L. Nagel, New York, and Carmen E. Raventos, New Rochelle, both of N.Y., assignors to Albert Einstein College of Medicine of Yeshiva University, Bronx, N.Y.  
Filed Feb. 4, 1980, Ser. No. 118,186  
Int. Cl.<sup>3</sup> A61K 33/00, 31/275

U.S. Cl. 424-129 9 Claims  
1. A method for treating a protozoal parasitic disease in an animal comprising exposing the protozoal parasitic infecting agents of said diseased animals to an effective amount of the compound which comprises  $R_1-[O-C=N]$  wherein  $R_1$  is one selected from the group consisting of alkali metals, ammonium and low molecular weight organo groups selected from the group consisting of alkyl, aryl, aroalky, and allyl groups.

**4,338,304**  
**COMPOSITE FOR TREATING DIABETES**  
Hiroshi Kamimae, Yokohama, and Tadashi Ishikawa, Sagami-hara, both of Japan, assignors to Nihon Nosan Kogyo Kabushiki Kaisha, Yokohama, Japan  
Filed Oct. 9, 1980, Ser. No. 195,638  
Claims priority, application Japan, Oct. 29, 1979, 54/138764  
Int. Cl.<sup>3</sup> A61K 33/18

U.S. Cl. 424-150 1 Claim  
1. A method of treating diabetic patients which comprises dosing said patient with one or more eggs containing from 300  $\mu\text{g}$  to 2,000  $\mu\text{g}$  of iodine so that the total dosage is from 300  $\mu\text{g}$  to 2,000  $\mu\text{g}$  of iodine.

**4,338,305**  
**USE OF LRH AND LRH AGONISTS**  
Alan Corbin, Radnor, Pa., assignor to American Home Products Corporation, New York, N.Y.  
Continuation-in-part of Ser. No. 561,524, Mar. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 523,302, Nov. 13, 1974, Pat. No. 4,272,432. This application Aug. 11, 1975, Ser. No. 602,152  
Int. Cl.<sup>3</sup> A61K 37/00

U.S. Cl. 424-177 24 Claims  
1. A method for preventing pregnancy in a menstruating mammal which comprises administering luteinizing hormone releasing hormone or an agonist thereof to said mammal for from three to about fourteen days, during the period extending from about three days prior to ovulation to the time of normal menses, in an amount sufficient to inhibit or terminate implantation of a fertilized ovum.

**4,338,306**  
**ADJUVANT FOR PROMOTING ABSORPTION OF PHARMACOLOGICALLY ACTIVE SUBSTANCES THROUGH THE RECTUM**  
Kazuhiko Kitao, and Ken-ichi Nishimura, both of Kyoto, Japan, assignors to Kyoto Yakuhin Kogyo Kabushiki Kaisha, Kyoto, Japan  
Filed May 12, 1980, Ser. No. 149,132  
Claims priority, application Japan, May 10, 1979, 54-57690; Mar. 19, 1980, 55-35128

Int. Cl.<sup>3</sup> A61K 31/43, 31/54, 37/26, 47/00  
U.S. Cl. 424-178 12 Claims  
1. A rectally-administrable pharmaceutical composition which comprises:  
(a) an effective amount of at least one pharmaceutically-active component selected from the group consisting of a penicillin, a cephalosporin and insulin and  
(b) a sufficient amount of an adjuvant selected from the group consisting of a fatty acid having from 8 to 12 carbon atoms, leucic acid and a nontoxic salt of either to promote absorption of the pharmaceutically-active component from the rectum into blood circulation.

**4,338,307**  
**2'-N-DES- $\beta$ -LYSYL ANTIBIOTIC AX-127B-1 AND 4-N-ACYL AND ALKYL DERIVATIVES THEREOF**  
Paul Kurath, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.  
Filed Nov. 10, 1980, Ser. No. 205,813  
Int. Cl.<sup>3</sup> A61K 31/71; C07H 15/22

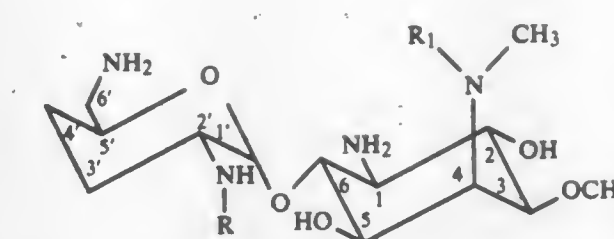
U.S. Cl. 424-180 15 Claims  
1. 2'-N-Des- $\beta$ -lysyl-antibiotic AX-127B-1 or a pharmaceutically acceptable salt thereof.  
15. A pharmaceutical composition comprising an antibacterially effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier or diluent.

**4,338,308**  
**4-N- $\beta$ -LYSYL-2'-N-DES- $\beta$ -LYSYL ANTIBIOTIC AX-127B-1 AND THE PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF**  
Paul Kurath, Waukegan, and Earl E. C. Fager, Lake Villa, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.  
Filed Nov. 10, 1980, Ser. No. 205,814  
Int. Cl.<sup>3</sup> A61K 31/71; C07H 15/22

U.S. Cl. 424-180 2 Claims  
1. 4-N- $\beta$ -Lysyl-2'-N-Des- $\beta$ -lysyl-antibiotic AX127B-1 or a pharmaceutically acceptable salt thereof.  
2. A pharmaceutical composition comprising an antibacterially effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier or diluent.

**4,338,309**  
**4',5'-DIHYDRO-ANTIBIOTIC AX-127B-1; 2'-N-DES- $\beta$ -LYSYL-4',5'-DIHYDRO-ANTIBIOTIC AX-127B-1; AND 4-N-DERIVATIVES THEREOF**  
Paul Kurath, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.  
Filed Nov. 10, 1980, Ser. No. 205,815  
Int. Cl.<sup>3</sup> A61K 31/71; C07H 15/22

U.S. Cl. 424-180 68 Claims  
1. An antibiotic AX-127B-1 derivative represented by the formula

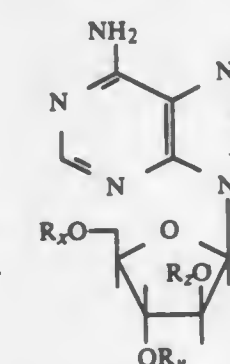


wherein: R is selected from the group consisting of hydrogen or  $\beta$ -lysyl;  $R_1$  is selected from the group consisting of hydrogen, acyl, aminoacyl, diaminoacyl, N-loweralkylaminoacyl, N,N-diloweralkylaminoacyl, hydroxy-substituted aminoacyl, loweralkyl, aminoloweralkyl, diaminoloweralkyl, hydroxy-loweralkyl, N-loweralkylaminoloweralkyl, N,N-diloweralkylaminoloweralkyl, N-loweralkylaminohydroxy-loweralkyl, and N,N-diloweralkylaminohydroxy-loweralkyl; and the pharmaceutically acceptable salts thereof.

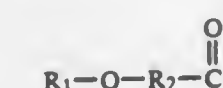
68. A method of treating mammalian patients suffering from infection by a susceptible organism comprising administering a therapeutically effective amount of a compound of claim 1 to said patient.

**4,338,310**  
**ALKOXYALKANOATE ESTERS OF ARABINOFURANOSYLADENINE**  
Robert Vince, St. Paul, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.  
Filed Jan. 16, 1981, Ser. No. 225,567  
Int. Cl.<sup>3</sup> A61K 31/70; C07H 19/16

U.S. Cl. 424-180 16 Claims  
1. A compound of the formula:



wherein  $R_x$ ,  $R_y$  and  $R_z$  are



or hydrogen and at least one of  $R_x$ ,  $R_y$  and  $R_z$  is



and  $R_1$  is a lower alkyl radical having 1 to 6 carbons and  $R_2$  is an alkylene radical having from 1 to 6 carbons.

9. A topical antiviral composition for treating susceptible viral infection comprising an antivirally effective amount of a compound of claim 1 in a topically acceptable vehicle.

11. A method of treating susceptible viral infections comprising applying to the infected area of a mammal a composition of claim 9.



# 4,338,311 HYDROPHILIC CHOLINE SALICYLATE FORMULATION

Ralph A. Heasley, Woodbury, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Filed Oct. 27, 1980, Ser. No. 201,175  
Int. Cl.<sup>3</sup> A61K 31/615

U.S. Cl. 424—233

5 Claims

1. A method for the preparation of a formulation comprising 25 to 60 parts by weight of hydrophilic silicon dioxide and 75 to 40 parts by weight of choline salicylate, the sum of the parts of hydrophilic silicon dioxide and choline salicylate being 100, which comprises the steps of:

- (1) suspending a choline salt in an inert solvent,
- (2) adding a metal salicylate salt,
- (3) mixing,
- (4) cooling the reaction mixture and filtering to remove the inorganic salt,
- (5) adding an amount of hydrophilic silica to provide a proportion of hydrophilic silicon dioxide to choline salicylate within the specified range,
- (6) evaporating the residual solvent, and
- (7) drying the recovered choline salicylate hydrophilic silica formulation.

# 4,338,312 METHOD FOR PREVENTING PARTURIENT PARESIS IN DAIRY CATTLE

Hector F. DeLuca; Heinrich K. Schnoes, both of Madison, and Neal A. Jorgensen, Middleton, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 11, 1981, Ser. No. 262,093

Int. Cl.<sup>3</sup> A01N 45/00; A61K 31/59

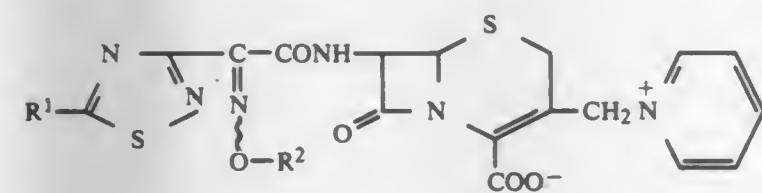
U.S. Cl. 424—236

11 Claims

1. The method for prophylactically treating dairy cattle for parturient paresis which comprises administering to the cattle a combination of a 25-hydroxylated form of vitamin D and a 1 $\alpha$ -hydroxylated form of vitamin D in an amount sufficient to induce said prophylaxis.

4,338,313  
CEPHEM COMPOUNDS  
Tsutomu Teraji, Osaka; Kazuo Sakane, Amagasaki, and Jiro Goto, Kashikiryama, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan  
Continuation-in-part of Ser. No. 160,904, Jun. 18, 1980, which is a continuation-in-part of Ser. No. 128,260, Mar. 7, 1980, which is a continuation-in-part of Ser. No. 116,984, Jan. 30, 1980, which is a continuation-in-part of Ser. No. 108,161, Dec. 28, 1979. This application Aug. 22, 1980, Ser. No. 180,295  
Claims priority, application United Kingdom, Oct. 12, 1979, 7935538

Int. Cl.<sup>3</sup> C07D 501/20  
U.S. Cl. 424—246  
8 Claims  
1. Cephem compounds comprising the syn isomer of the formula:



wherein:

- R<sup>1</sup> is amino or a protected amino group, and  
R<sup>2</sup> is lower alkyl of from 1 to 6 carbon atoms, and pharmaceutically acceptable salts thereof.

# 4,338,314 [1,2]ANELLATED-7-PHENYL-1,4-BENZODIAZEPINE AND PHARMACEUTICAL COMPOSITIONS THEREOF AND USE FOR TREATMENT OF ULCERS

Hans Liepmann; Rolf Hueschens, both of Hanover; Wolfgang Milkowski, Burgdorf; Horst Zeugner; Insa Heil, both of Hanover, and Klaus-Ulrich Wolf, Hainigsen, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

Filed Aug. 16, 1979, Ser. No. 67,146

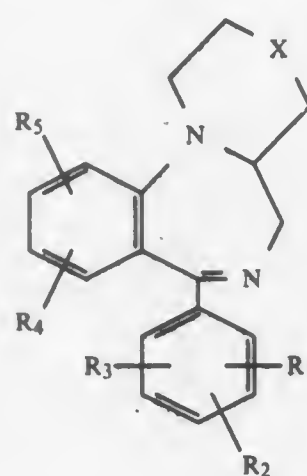
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835708

Int. Cl.<sup>3</sup> C07D 487/04, 489/04, 513/04; A61K 31/55

U.S. Cl. 424—246

22 Claims

1. A compound selected from the group of [1,2]anellated-7-phenyl-1,4-benzodiazepines having the Formula I



wherein

- X is oxygen, sulfur or NR;  
R is H,  
C<sub>1</sub>-C<sub>5</sub> alkyl,  
C<sub>1</sub>-C<sub>5</sub> alkyl, substituted with a terminal phenyl group, or a terminal phenyl group substituted with one or two methoxy groups, 3,4-methylenedioxy group or 3,4-ethylenedioxy group,  
C<sub>2</sub>-C<sub>5</sub> alkyl, substituted with terminal halogen, hydroxy or methoxy or,  
C<sub>3</sub>-C<sub>5</sub> alkenyl  
R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub> are the same or different and are H, halogen, trifluoromethyl, non-sterically hindering nitro, alkyl, or alkoxy wherein alkyl is non-sterically hindering C<sub>1</sub>-C<sub>4</sub> alkyl or two neighboring groups together represent methylenedioxy or ethylenedioxy group and the pharmaceutically acceptable acid addition salts thereof.

20. A method of treating a patient for relief of an ulcer condition comprising the step of administering to said patient an amount of the compound claimed in claim 1 effective to relieve said condition.

# 4,338,315 ANTIVIRAL METHOD EMPLOYING THIAZINYL BENZIMIDAZOLE DERIVATIVES

Charles J. Paget; James W. Chamberlin, both of Indianapolis, and James H. Wikel, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

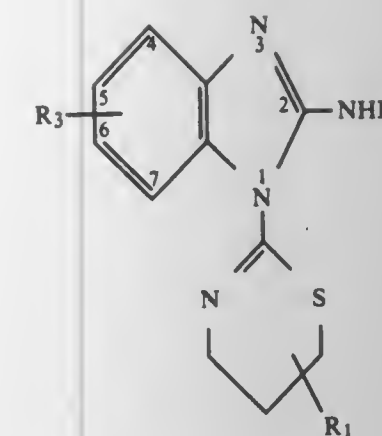
Division of Ser. No. 94,129, Nov. 14, 1979, Pat. No. 4,293,558, which is a division of Ser. No. 2,836, Jan. 12, 1979, Pat. No. 4,216,313, which is a division of Ser. No. 769,358, Feb. 16, 1977, Pat. No. 4,150,028, which is a continuation-in-part of Ser. No. 626,014, Oct. 28, 1975, abandoned. This application May 20, 1981, Ser. No. 265,480

Int. Cl.<sup>3</sup> A61K 31/54; A01N 43/86

U.S. Cl. 424—246

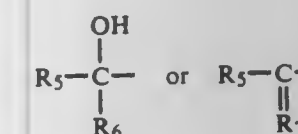
36 Claims

1. A method of suppressing the growth of a virus which comprises adding an antivirally effective amount of an active agent to a medium in which the virus is growing, said active agent being a compound of the formula

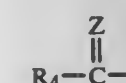


wherein

- R<sub>1</sub> is hydrogen, C<sub>1</sub>-C<sub>3</sub> alkyl, phenyl, or benzyl;  
R<sub>2</sub> is hydrogen, or C<sub>1</sub>-C<sub>4</sub> alkanoyl;  
R<sub>3</sub> is at the 5 or 6 position and is 1-(C<sub>1</sub>-C<sub>3</sub> alkyl)tetrazol-5-yl, 1,3-dithiolan-2-yl,



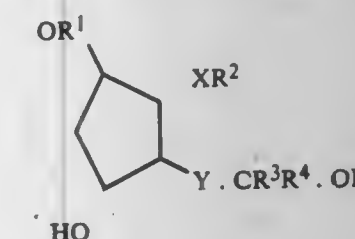
wherein R<sub>5</sub> is C<sub>1</sub>-C<sub>3</sub> alkyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, (C<sub>3</sub>-C<sub>7</sub> cycloalkyl)methyl, 1-(C<sub>3</sub>-C<sub>7</sub> cycloalkyl)ethyl, thienyl, or phenyl; R<sub>6</sub> is C<sub>1</sub>-C<sub>7</sub> alkyl; R<sub>7</sub> is C<sub>1</sub>-C<sub>7</sub> alkylidene; or



wherein R<sub>4</sub> is hydrogen, C<sub>1</sub>-C<sub>7</sub> alkyl, C<sub>3</sub>-C<sub>7</sub> cycloalkyl, (C<sub>3</sub>-C<sub>7</sub> cycloalkyl)methyl, 1-(C<sub>3</sub>-C<sub>7</sub> cycloalkyl)ethyl, thienyl, or benzyl, phenyl or mono substituted phenyl wherein said substituents are selected from the group consisting of C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, chloro, bromo, iodo, nitro or trifluoromethyl and Z is hydroxyimino, C<sub>1</sub>-C<sub>4</sub> alkoxyimino, C<sub>1</sub>-C<sub>4</sub> alkanoyloxyimino, hydrazono,  $\alpha$ -methoxycarbonylhydrazono,  $\alpha$ -hydroxycarbonylmethoxyhydrazono, ethoxycarbonylhydrazono, carbamylhydrazono or thiocarbamylhydrazono.

4,338,316  
9-ARYLOXY PROSTATE DERIVATIVES  
Peter R. Marsham, Poynton, England, assignor to Imperial Chemical Industries Limited, London, England  
Filed Sep. 26, 1979, Ser. No. 79,176  
Claims priority, application United Kingdom, Oct. 24, 1978, 41771/78

Int. Cl.<sup>3</sup> C07C 177/00; A61K 31/557  
U.S. Cl. 424—250  
6 Claims  
1. A prostate derivative of the formula:



wherein:

- R<sup>1</sup> is a phenyl or naphthyl radical optionally substituted by one or more halogen atoms, amino, carboxy, hydroxy, hydroxymethyl, nitro, phenyl or trifluoromethyl radicals, 1-4C alkyl, alkoxy, or alkanoylamino radicals, 2-5C alkoxy carbonyl or di(1-3C alkyl)amino radicals, or a pyridyl, quinolyl, indolyl, benzo[b]furanyl, benzo[b]thienyl, pyridazinyl, pyrimi-

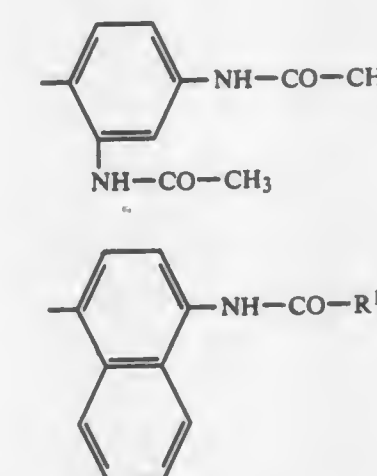
dinyl or pyrazinyl radical optionally substituted by one or more halogen atoms or 1-4C alkyl radicals;  
X is a hexa-1,6-diyl, hex-2-en-1,6-diyl, hexa-2,5-dien-1,6-diyl, hexa-3,5-dien-1,6-diyl, hex-3-en-1,6-diyl or hex-5-trans-en-1,6-diyl radical, in each of which C-1 of the hexyl radical is bonded to the cyclopentane ring;

R<sup>2</sup> is a carboxy, hydroxymethyl, 5-indanyloxy carbonyl, 4-biphenyloxy carbonyl or 5-tetrazolyl radical;  
a radical of the formula —CO—NHR<sup>5</sup> wherein R<sup>5</sup> is a 2-8C alkanoyl radical, a 4-8C cycloalkanoyl radical, a 7-11C aroyl or substituted aroyl radical in which the substituent is a halogen atom or a methyl or methoxy radical, a 1-7C alkylsulphonyl radical or an arylsulphonyl or substituted arylsulphonyl radical in which the substituent is a halogen atom or a methyl or methoxy radical;

a radical of the formula —CO. OR<sup>6</sup> wherein R<sup>6</sup> is a 1-8C alkyl radical, a 4-8C cycloalkyl radical, a phenyl or substituted phenyl radical in which the substituent is 1 to 3 chlorine atoms or 1-4C alkyl radicals, or an ethyl radical substituted in the  $\beta$ -position by 1 to 3 chlorine, bromine or iodine atoms; a radical of the formula —CO.O.CHR<sup>7</sup>.COR<sup>8</sup> wherein R<sup>7</sup> is a hydrogen atom or a benzyl radical and R<sup>8</sup> is a phenyl, 4-bromophenyl, 4-biphenyl, 4-nitrophenyl, 4-benzamidophenyl or 2-naphthyl radical;

a radical of the formula —CH<sub>2</sub>O.CO(NH)<sub>m</sub>R<sup>9</sup> wherein m is 0 or 1 and R<sup>9</sup> is a 1-10C alkyl or halogenoalkyl radical, a 2-10C alkoxyalkyl radical, a  $\omega$ -carboxy-1-6C-alkyl radical or a phenyl or naphthyl radical optionally substituted by one or more halogen atoms, nitro or phenyl radicals or 1-5C alkyl, alkoxy or halogenoalkyl radicals; or

a radical of the formula —COOR<sup>10</sup> wherein R<sup>10</sup> is:  
—W—NH—CO—CH<sub>3</sub>  
—W—NH—CO—Ph  
—W—NH—CO—W—NH—CO—CH<sub>3</sub>  
—W—NH—CO—W—NH—CO—Ph  
—W—NH—CO—NH<sub>2</sub>  
—W—Ph  
—W—C(Ph)<sub>3</sub>  
—W—CH<sub>2</sub>—CH(CONH<sub>2</sub>)—NH—CO—CH<sub>3</sub>  
—W—CH<sub>2</sub>—CH(CONH<sub>2</sub>)—NH—CO—Ph  
—W—CH=N—NH—CO—NH<sub>2</sub>  
—W—CO—CH<sub>3</sub>  
—W—CO—NH<sub>2</sub>  
—W—CO—NH—W—C(Ph)<sub>3</sub>  
—W—COO—CH<sub>3</sub>  
—W—OOC—Ph  
—W—OOC—W—NH—CH<sub>3</sub>



wherein W is a 1,4-phenylene radical and R<sup>11</sup> is a methyl, phenyl or amino radical;  
Y is an ethylene or trans-vinylene radical;  
R<sup>3</sup> is a hydrogen atom or a 1-4C alkyl radical;  
R<sup>4</sup> is a 3-8C alkyl radical;  
a phenyl, benzyl, phenyl(2-4C alkyl), or phenylethynyl radical optionally substituted in the phenyl ring by one or



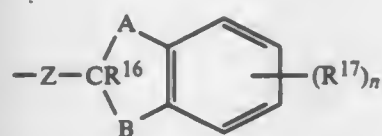
more halogen atoms, hydroxy, nitro or phenyl radicals, 1-4C alkyl, alkoxy, halogenoalkyl or alkanoylamino radicals, a 2-4C alkenyl or alkenyloxy radicals or di(1-3C alkyl)amino radicals;

a radical of the formula  $-\text{CR}^{12}\text{R}^{13}\text{OR}^{14}$  wherein  $\text{R}^{12}$  and  $\text{R}^{13}$  are each a hydrogen atom or a 1-4C alkyl radical, and  $\text{R}^{14}$  is a 1-4C alkyl radical or a phenyl or naphthyl radical optionally substituted as defined immediately above;

a radical of the formula  $-\text{CR}^{12}\text{R}^{13}\text{OR}^{15}$ , wherein  $\text{R}^{12}$  and  $\text{R}^{13}$  have the meanings stated above, or a radical of the formula  $-\text{R}^{15}$ , wherein  $\text{R}^{15}$  is a radical which is derived from an aromatic 5-membered ring containing one, or two non-adjacent, nitrogen heteroatoms or one nitrogen and one non-adjacent sulphur heteroatoms, or an aromatic fused benzohomologue thereof, or an aromatic 6-membered ring containing one, or two non-adjacent, heteroatoms or a fused benzo-homologue thereof, or from indoline, pyridazine, benzo[b]furan, thiophen or benzo[b]thiophen, which radical is optionally substituted by one or more halogen atoms or 1-4C alkyl radicals;

a radical of the formula  $-\text{CR}^{12}\text{R}^{13}\text{OR}^{14}$  wherein  $\text{CR}^{12}\text{R}^{13}$  together form a 4-6C cycloalkylene radical and  $\text{R}^{14}$  is a 1-4C alkyl radical or a phenyl or naphthyl radical as defined above; a 4-6C cycloalkyl radical bearing a 1-(2-7C alkyl) substituent; or

a radical of the formula:



is a direct bond or an alkylidene radical of 1 to 5 carbon atoms; either A is an alkylidene radical of 1 to 5 carbon atoms or an ethylene radical, and B is a direct bond, an oxygen or sulphur atom, or an alkylidene radical of 1 to 5 carbon atoms, or A is an oxygen atom and B is an oxygen atom, an alkylideneoxy radical of 1 to 5 carbon atoms wherein the oxygen atom is linked directly to the benzene ring, or an alkylidene(alkylimino) radical [alkylidene-N(alkyl)-] wherein the alkylidene radical is of 1 to 5 carbon atoms and the alkyl radical is of 1 to 4 carbon atoms, and wherein the nitrogen atom is linked directly to the benzene ring;  $\text{R}^{16}$  is a hydrogen atom or an alkyl radical of 1 to 4 carbon atoms, or  $\text{CR}^{16}$  together with an adjacent carbon atom of A or B forms a double bond;  $\text{R}^{17}$  is a halogen atom, or an alkyl, alkoxy or halogenoalkyl radical of 1 to 3 carbon atoms, and n is 0, 1 or 2;

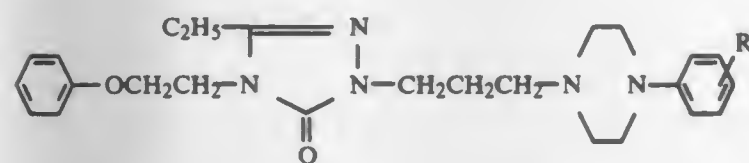
and for those compounds which contain a carboxy radical, the pharmaceutically acceptable salts thereof.

#### 4,338,317 PHENOXYETHYL-1,2,4-TRIAZOL-3-ONE ANTIDEPRESSANTS

Davis L. Temple, Jr., and Walter G. Lobeck, Jr., both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Mar. 16, 1981, Ser. No. 244,464  
Int. Cl.<sup>3</sup> C07D 249/00; A61K 31/41; C07D 249/12  
U.S. Cl. 424-250 9 Claims

1. A compound of Formula I



wherein R is halogen or a pharmaceutically acceptable acid addition salt thereof.

7. The pharmaceutical composition comprising an antidepressant amount of a compound of claim 1 or a pharmaceuti-

cally acceptable acid addition salt thereof and a pharmaceutically acceptable carrier.

#### 4,338,318 NOVEL COMPOSITIONS AND METHODS

Clive A. Henrick; Jeffrey N. Labovitz, both of Palo Alto, Calif.; Roland T. V. Fox, Crowthorne, England; William G. Rathmell, Wokingham, England, and Margaret C. Shephard, Maidenhead, England, assignors to Zeecon Corporation and ICI Ltd., both of Palo Alto, Calif.

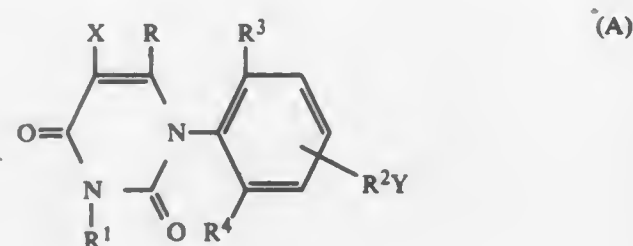
Division of Ser. No. 23,517, Mar. 23, 1979, Pat. No. 4,266,056, which is a continuation-in-part of Ser. No. 894,307, Apr. 7, 1978, abandoned, which is a continuation-in-part of Ser. No. 892,560, Apr. 3, 1978, abandoned. This application Jul. 18, 1980, Ser. No. 170,241

Int. Cl.<sup>3</sup> A01N 43/54

U.S. Cl. 424-251

18 Claims

1. A composition for the control of pathogenic diseases of plants which comprises a fungicidally effective amount or a bacteriocidally effective amount of a compound of formula (A)



wherein,

each of R and  $\text{R}^1$  is hydrogen, methyl or ethyl;  
 $\text{R}^2$  is lower alkyl, lower alkoxy, bromo, chloro, fluoro, lower haloalkyl, cyano, nitro, lower alkylthio, hydroxy, lower alkylcarbonyl, lower alkoxy, lower haloalkoxy, cycloalkyl, cycloalkylthio, lower haloalkylthio, lower alkenyl, or lower alkynyl;

$\text{R}^3$  is hydrogen or independently selected from the values of  $\text{R}^2$ ;

$\text{R}^4$  is hydrogen or independently selected from the values of  $\text{R}^2$ ; and

X is hydrogen, carbamoyl, or cyano; and  
Y is zero, one, two or three, together with a suitable solid or liquid carrier; and provided that:

(a) when X is cyano, R is hydrogen,  $\text{R}^1$  is hydrogen,  $\text{R}^2$  is bromo, and Y is one—then either  $\text{R}^3$  or  $\text{R}^4$  is other than hydrogen;

(b) when R is hydrogen or methyl, Y is zero; and each of  $\text{R}^3$  and  $\text{R}^4$  is hydrogen—then either X or  $\text{R}^1$  is other than hydrogen; and

(c) when X is cyano, R is hydrogen, and  $\text{R}^1$  is methyl—then either  $\text{R}^3$  or  $\text{R}^4$  is other than hydrogen, or Y is one, two or three.

#### 4,338,319

#### METHOD FOR THE TREATMENT OF CHRONIC OBSTRUCTIVE AIRWAY OR CARDIAC DISEASES

Per G. Kjellin, Lund, and Carl G. A. Persson, Löberöd, both of Sweden, assignors to Aktiebolaget Draco, Lund, Sweden

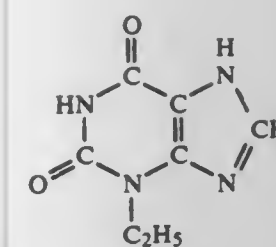
Filed Nov. 21, 1980, Ser. No. 209,007

Claims priority, application Sweden, Nov. 27, 1979, 7909780  
Int. Cl.<sup>3</sup> A61K 31/52

U.S. Cl. 424-253

3 Claims

1. A method for the treatment of chronic obstructive airway disease treatable by theophylline therapy, characterized in administering to a host suffering therefrom a therapeutically active dose of a compound of the formula



#### 4,338,320

#### ESTERS OF 6'-HYDROXYCINCHONINE, AND A METHOD OF TREATING ARRHYTHMIA WITH THEM

Harry Rosenberg, Omaha, and LaVerne D. Small, Lincoln, both of Nebr., assignors to The Board of Regents of the University of Nebraska, Nebr.

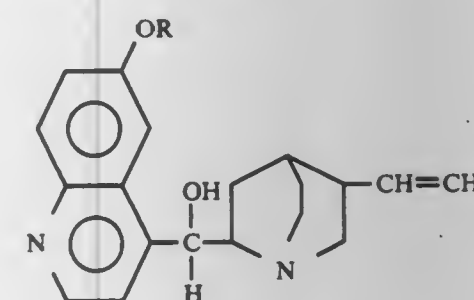
Filed Nov. 15, 1978, Ser. No. 960,934

Int. Cl.<sup>3</sup> A61K 31/49; C07D 453/04

U.S. Cl. 424-259

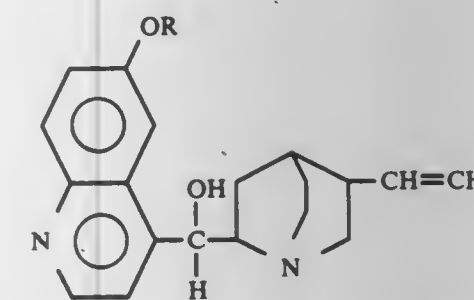
2 Claims

1. A compound of the formula:



wherein R is benzoyl, isovaleryl, cinnamoyl or acetyl.

2. A method of treating arrhythmia comprising: administering to the subject an effective dose of a compound selected from the group comprising:



where R is benzoyl, isovaleryl, cinnamoyl or acetyl.

#### 4,338,321

#### FORMULATIONS OF DIHALOBENZOYL-SUBSTITUTED-PYRIDINYLUREA INSECTICIDES

John L. Miesel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

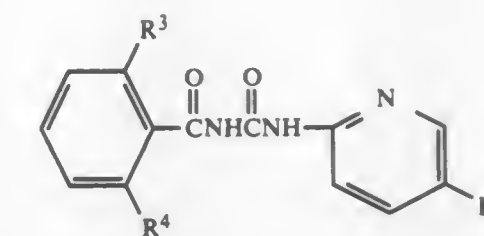
Division of Ser. No. 114,770, Jan. 23, 1980, Pat. No. 4,281,003, which is a continuation-in-part of Ser. No. 938,723, Aug. 31, 1978, Pat. No. 4,219,557. This application Feb. 11, 1981, Ser. No. 233,429

Int. Cl.<sup>3</sup> C07D 213/75; A01N 43/40

U.S. Cl. 424-263

9 Claims

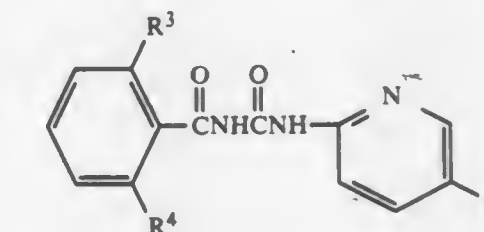
1. A feed premix for the control of manure-breeding insects comprising an edible physiologically-acceptable feed premix carrier and from about 1 to about 400 g./lb. of a compound of the formula



wherein

$\text{R}^3$  and  $\text{R}^4$  independently represent chloro or fluoro;  $\text{R}^5$  is chloro, bromo or trifluoromethyl; provided that, when  $\text{R}^3$  and  $\text{R}^4$  are both chloro,  $\text{R}^5$  is trifluoromethyl; or a physiologically-acceptable acid addition salt thereof.

4. A sustained release bolus for the control of manure-breeding insects comprising a polymeric substance and a compound of the formula



wherein  $\text{R}^3$  and  $\text{R}^4$  independently represent chloro or fluoro;  $\text{R}^5$  is chloro, bromo or trifluoromethyl; provided that, when  $\text{R}^3$  and  $\text{R}^4$  are both chloro,  $\text{R}^5$  is trifluoromethyl; or a physiologically-acceptable acid addition salt thereof, wherein the bolus releases from about 0.01 mg./day of the compound per kg. of body weight of the animal to which the bolus is administered, to about 2 mg./kg./day.

#### 4,338,322

#### 1,4-DIHYDROPYRIDINE DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING SAME AND METHODS OF EFFECTING VASODILATION USING SAME

Yoshinari Sato, Takaishi, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 39,752, May 17, 1979, Pat. No. 4,284,634, which is a continuation-in-part of Ser. No. 809,788, Jun. 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 701,994, Jul. 1, 1976, Pat. No. 4,145,432. This application Aug. 25, 1980, Ser. No. 180,905

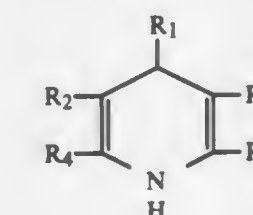
Claims priority, application United Kingdom, Jul. 2, 1975, 27945/75; Sep. 29, 1975, 39854/75; Dec. 16, 1975, 51524/75; Apr. 5, 1976, 13761/76; Dec. 17, 1976, 52720/76; Jun. 6, 1978, 26429/78; Oct. 10, 1978, 39978/78

Int. Cl.<sup>3</sup> C07D 213/55, 213/57; A61K 31/455

U.S. Cl. 424-266

27 Claims

1. A compound of the formula:



wherein

$\text{R}_1$  is unsubstituted phenyl or phenyl having one substituent selected from halogen, nitro, lower alkyl, halo(lower)alkyl, lower alkoxy, lower alkenyloxy, cyano, trifluoromethyl and lower alkoxy, carbonyl or phenyl having two substituents selected from chloro-nitro, dihalo or dimethoxy,

$\text{R}_2$  and  $\text{R}_3$  are each, same or different, esterified carboxy selected from lower alkoxy, carbonyl, hydroxy(lower)al-



koxycarbonyl, lower alkoxy(lower)alkoxycarbonyl, phenyl(lower)alkoxy(lower)alkoxycarbonyl, phenoxy(lower)alkoxycarbonyl, N,N-di(lower)alkylamino(lower)alkoxycarbonyl and N-lower alkyl-N-phenyl(lower)alkylamino(lower)alkoxycarbonyl, and R<sub>4</sub> or R<sub>5</sub> is cyano or cyano(lower)alkyl and the other is the same, hydrogen or lower alkyl.

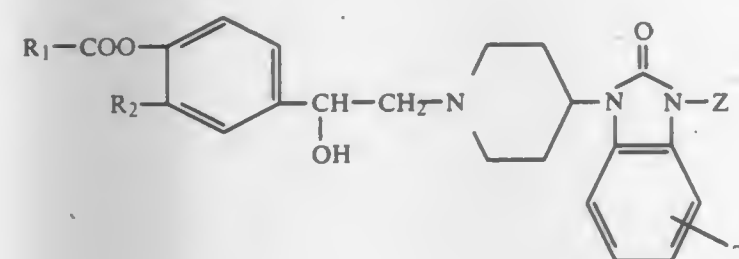
## 4,338,323

**PIPERIDYLBENZIMIDAZOLINONE DERIVATIVES**  
Gilbert Regnier, Chatenay Malabry; Alain Dhalnaut, Gennevilliers, and Jacques Duhaute, Croissy, Michelle Boulanger, Marly-le-Roi, all of France, assignors to Science Union et Cie, Suresnes, France

Filed Nov. 10, 1980, Ser. No. 205,725  
Claims priority, application France, Nov. 15, 1979, 79 28162  
The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> A61K 31/445; C07D 211/58

U.S. Cl. 424-266 9 Claims  
1. A compound selected from the group consisting of: piperidylbenzimidazolinone derivatives of the formula:



in which:

R<sub>1</sub> is selected from the group consisting of:  
alkyl having from 1 to 6 carbon atoms inclusive in straight and branched chain,  
unsubstituted phenyl and phenyl mono- and poly-substituted by a substituent selected from the group consisting of halogen, alkyl and alkoxy each having from 1 to 5 carbon atoms inclusive, methylenedioxy, and ethylenedioxy, and  
thienyl, furyl, and pyridyl;

R<sub>2</sub> is selected from the group consisting of:  
R'<sub>1</sub>-COO- and R'<sub>1</sub>-COO-CH<sub>2</sub>- in which R'<sub>1</sub> is a substituent selected from the meanings here-above given for R<sub>1</sub>, R<sub>1</sub> and R'<sub>1</sub> being the same or different, and  
R<sub>3</sub>-NH- in which R<sub>3</sub> is selected from the group consisting of formyl, acetyl, mesyl, carbamoyl, sulfamoyl, and ethoxalyl;

Z is selected from the group consisting of hydrogen, alkyl, and alkenyl each having from 1 to 5 carbon atoms inclusive in straight and branched chain, and  
T is selected from the group consisting of hydrogen, halogen, alkyl and alkoxy each having from 1 to 5 carbon atoms inclusive in straight and branched chain; and physiologically tolerable acid addition salts thereof.

9. A method for treating a living animal body afflicted with autoimmune, allergic or antiinflammatory diseases, asthmatic dyspnea or chronic bronchitis, comprising the step of administering an amount of a compound of claim 1 which is effective for the alleviation of the said condition.

## 4,338,324

**ANALGESIC POTENTIATION**

Joseph F. Gardocki, Doylestown, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

Filed Mar. 17, 1981, Ser. No. 244,562

Int. Cl.<sup>3</sup> A61K 31/40, 31/455

U.S. Cl. 424-266 7 Claims

1. A method for producing analgesia which comprises administering to a subject suffering from pain  
(1) as a primary agent from about 0.140 to 1.43 mg/kg of body weight of zomepirac or a pharmaceutically acceptable salt thereof, and  
(2) as potentiating agent from about 0.0028 to 0.029 mg/kg of body weight of butorphanol or a pharmaceutically acceptable salt thereof,  
said primary agent being administered orally, and said potentiating agent being administered parenterally, either simultaneously or sequentially.

## 4,338,325

**PGI<sub>2</sub> PHARMACOLOGICALLY ACCEPTABLE SALTS**

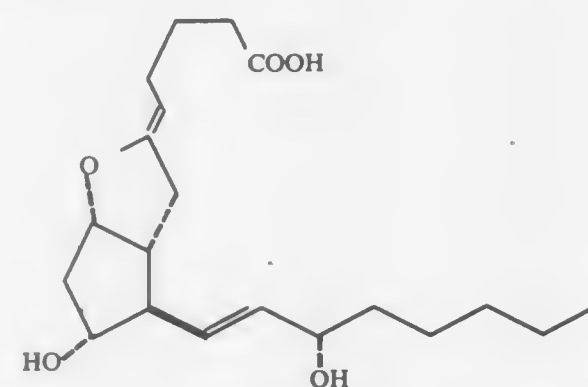
Roy A. Johnson, Kalamazoo; Frank H. Lincoln, Portage, and John E. Pike, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 819,940, Jul. 28, 1977, which is a continuation-in-part of Ser. No. 725,550, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,770, Aug. 23, 1976, abandoned. This application Oct. 27, 1980, Ser. No. 200,690

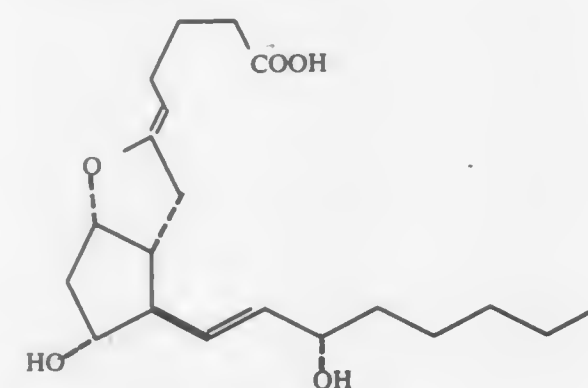
Int. Cl.<sup>3</sup> A61K 31/557; C07D 307/935

U.S. Cl. 424-285 6 Claims

1. A composition of matter consisting essentially of a pharmacologically acceptable salt of a compound of formula I



6. A parenteral pharmaceutical composition for inhibition of platelet aggregation characterized in being prepared from  
(1) a free flowing powder form of the sodium salt of PGI<sub>2</sub>, a compound of formula I



and

(2) a conventional pharmaceutical diluent for parenteral formulations, such that the sodium salt of PGI<sub>2</sub> is present in said composition at a concentration sufficient to inhibit platelet aggregation upon administration of a said compo-

sition in a predetermined volume or at a predetermined rate.

## 4,338,326

**PHENOXYPYRIDINEMETHYL ESTERS OF 4-ALKENOIC ACIDS**

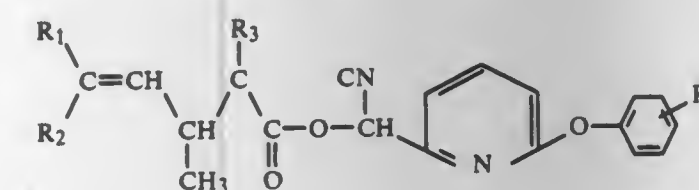
Paul A. Cain, Dunbar, and Thomas N. Wheeler, Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 27, 1979, Ser. No. 97,782

Int. Cl.<sup>3</sup> A01N 43/40; C07D 213/55, 213/57

U.S. Cl. 424-267 12 Claims

1. A compound of the formula:



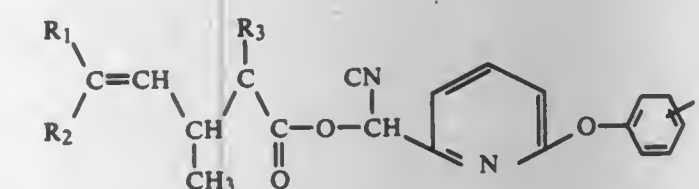
wherein

R<sub>1</sub> and R<sub>2</sub> are halogen;

R<sub>3</sub> may be an alkyl group having from 1 to 5 carbon atoms, branched alkyl, cycloalkyl, alkenyl, branched alkenyl, or cycloalkenyl; and

R<sub>4</sub> is hydrogen or halogen.

9. A method of controlling insects and mites which comprises subjecting them to a lethal amount of a compound of the formula:



wherein

R<sub>1</sub> and R<sub>2</sub> are halogen;

R<sub>3</sub> may be an alkyl group having from 1 to 5 carbon atoms, branched alkyl, cycloalkyl, alkenyl, branched alkenyl, or cycloalkenyl; and

R<sub>4</sub> is hydrogen or halogen.

## 4,338,327

**SUBSTITUTED****1-(2-ARYL-1,3-DIOXOLAN-2-YLMETHYL)-1H-1,2,4-TRIAZOLES**

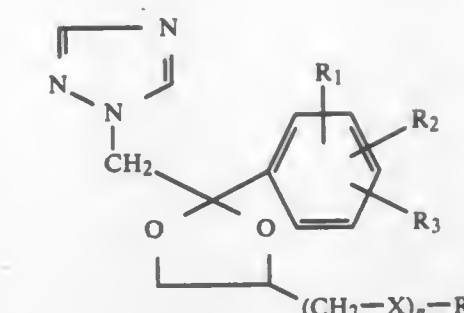
Jan Heeres, Vosselaar; Leo Backx, Arendonk, both of Belgium; Adolf Hubele, Magden, and Robert Nyfeler, Basel, both of Switzerland, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 949,329, Oct. 6, 1978, abandoned. This application Jun. 29, 1979, Ser. No. 53,640

Int. Cl.<sup>3</sup> C07D 405/06; A61K 31/40

U.S. Cl. 424-269 11 Claims

11. A composition for combatting a fungus comprising an inert carrier material and as an active ingredient an effective amount of a compound selected from the group consisting of a 1H-1,2,4-triazole derivative having the formula:



and the phytopharmaceutically acceptable acid addition salts and stereochemically isomeric forms thereof, wherein:  
R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each independently selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halo, nitro, cyano and trifluoromethyl;  
n is the integer 0 or 1;  
X is a member selected from the group consisting of O and S; and

R<sub>4</sub> is a member selected from the group consisting of alkyl, mono-, di- and trihalo-alkyl, lower alkoxy-lower alkyl, mono-, di- and trihalo-lower alkoxy-lower alkyl, lower alkenyl, 2-propynyl, 3-halo-2-propynyl, cycloalkyl, aryl, aryl-lower alkyl and aryl-lower alkenyl, wherein said aryl is selected from the group consisting of phenyl and substituted phenyl, said substituted phenyl having from 1 to 3 substituents each independently selected from the group consisting of lower alkyl, lower alkoxy, halo, nitro, cyano, trifluoromethyl, phenyl, phenoxy and phenylthio, provided that only one of the substituents may be selected from the group consisting of phenyl, phenoxy and phenylthio, and wherein said phenyl and the phenyl part of said phenoxy and phenylthio are optionally substituted with up to three substituents each independently selected from the group consisting of lower alkyl, lower alkoxy, halo, nitro, cyano and trifluoromethyl, provided that when n is 0 then R<sub>4</sub> is other than alkyl, and wherein said alkyl, used as such or as part of another substituent, is selected from straight and branched hydrocarbon radicals having from 1 to 12 carbon atoms and said cycloalkyl is selected from cyclopropyl, cyclobutyl, cyclopentyl, and cyclohexyl.

## 4,338,328

**SULPHOXIDES OF HETEROCYCLIC THIOALKYLTHIOUREAS, UREAS AND GUANIDINES**

George R. White, Harpenden, England, assignor to SmithKline & French Laboratories Limited, Welwyn Garden City, England

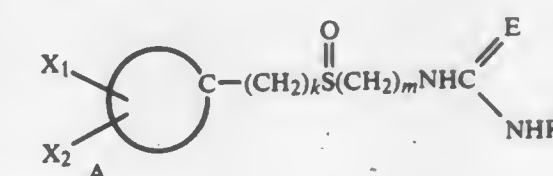
Division of Ser. No. 960,364, Nov. 13, 1978, Pat. No. 4,255,425, which is a division of Ser. No. 824,121, Aug. 12, 1977, Pat. No. 4,140,783, which is a division of Ser. No. 689,013, May 24, 1976, Pat. No. 4,056,620, which is a division of Ser. No. 627,418, Oct. 30, 1975, Pat. No. 3,979,398, which is a division of Ser. No. 436,285, Jan. 24, 1974, Pat. No. 3,932,443. This application Oct. 16, 1980, Ser. No. 197,430

Claims priority, application United Kingdom, Feb. 8, 1973, 6153/73; Oct. 23, 1973, 49257/73

Int. Cl.<sup>3</sup> A61K 31/41; C07D 231/12, 249/08, 285/12

U.S. Cl. 424-269 7 Claims

1. A compound of the formula:



wherein A is such that the heterocyclic nucleus formed is a



pyrazole, 1,2,4-triazole or 1,3,4-thiadiazole ring;  $X_1$  and  $X_2$ , which may be the same or different, are hydrogen, lower alkyl, trifluoromethyl, hydroxyl, halogen or amino;  $k$  is 0 to 2 and  $m$  is 2 or 3 provided that the sum of  $k$  and  $m$  is 3 or 4;  $E$  is oxygen, sulphur or  $NR_2$ ;  $R_1$  is hydrogen, lower alkyl, benzoyl or dimethylaminoethyl; and  $R_2$  is hydrogen, nitro, cyano, alkanesulphonyl having 1 to 3 carbon atoms, benzenesulphonyl, halo-benzenesulphonyl or toluenesulphonyl.

7. A pharmaceutical composition to inhibit histamine H-2 receptors comprising in an amount effective to inhibit said receptors a compound of claim 1 together with a pharmaceutically acceptable diluent or carrier.

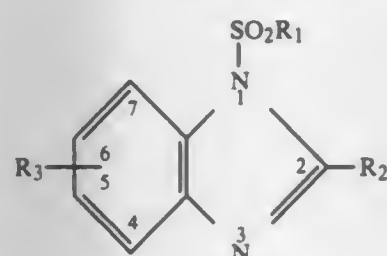
#### 4,338,329 ANTIVIRAL METHOD EMPLOYING 1-SULFONYLBENZIMIDAZOLES

Charles J. Paget; James W., both of Chamberlin, Indianapolis, and James H. Wikel, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 94,149, Nov. 14, 1979, Pat. No. 4,289,782, which is a division of Ser. No. 30,782, Apr. 17, 1979, Pat. No. 4,230,868, which is a division of Ser. No. 883,113, Mar. 3, 1978, Pat. No. 4,174,454, which is a division of Ser. No. 750,991, Dec. 15, 1976, Pat. No. 4,118,742, which is a continuation-in-part of Ser. No. 608,415, Aug. 28, 1975, abandoned. This application Apr. 20, 1981, Ser. No. 255,574

Int. Cl.<sup>3</sup> A61K 31/415, 31/42, 31/425; A01N 43/52  
U.S. Cl. 424—270 21 Claims

1. A method of suppressing the growth of a virus which comprises adding to a medium in which the virus is growing an antivirally effective amount of a compound of the formula

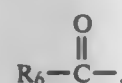


wherein:

$R_1$  is thiazol-2-yl, 2-acetamido-4-methylthiazol-5-yl, 1,3,4-thiadiazol-2-yl, 2-methyl-1,3,4-thiadiazol-5-yl, or 2-methylamino-1,3,4-thiadiazol-5-yl;

$R_2$  is amino, formamido, acetamido, propionamido or butyramido;

$R_3$  is hydroxy,  $C_2$ - $C_8$  alkanoyloxy, phenylacetoxo,  $\alpha$ - $C_1$ - $C_7$  alkyl- $\alpha$ -hydroxybenzyl or benzoyloxy; or 1,3-dithiolan-2-yl, 1,3-dithian-2-yl, tetrazol-5-yl, 1-( $C_1$ - $C_4$  alkyl) tetrazol-5-yl, 1,3,4-oxadiazol-2-yl, or 2-( $C_1$ - $C_4$  alkyl)oxadiazol-5-yl; or



wherein

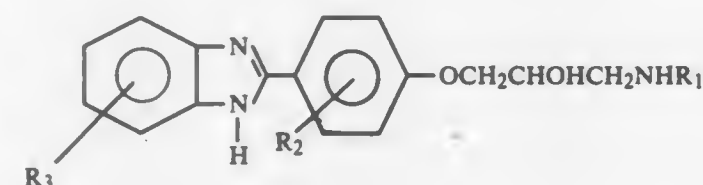
$R_6$  is hydrogen,  $C_1$ - $C_7$  alkyl,  $C_3$ - $C_7$  cycloalkyl, ( $C_3$ - $C_7$  cycloalkyl) methyl, 1-( $C_3$ - $C_7$  cycloalkyl) ethyl, benzyl, phenyl or phenyl substituted by  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  alkoxy, chloro, bromo, iodo, nitro or trifluoromethyl; or  $Z=C(R_6)-$ , wherein  $Z$  is hydroxyimino,  $C_1$ - $C_4$  alkoxyimino,  $C_1$ - $C_4$  acyloxyimino, benzoyloxyimino, benzoyloxyimino, hydrazono, thiocarbonylhydrazono, carboxymethoxyimino, methoxycarbonylhydrazono, ethoxycarbonylhydrazono, carbamylhydrazono,  $C_1$ - $C_4$  alkoxy-carbonylthylcarbonyloxyimino, benzoyloxy-carbonylaminomethylcarbonyloxyimino, p-nitrobenzoyloxy-carbonylthylcarbonyloxyimino, phthalimidomethylcarbonyloxyimino, 2-(2-benzoyloxy-carbonyl-5-oxoisox-

azolidin-4-yl)ethylcarbonyloxyimino or  $C_1$ - $C_7$  alkylidene; and  
 $R_3$  is at the 5 or 6 position.

4,338,330  
BENZIMIDAZOLE DERIVATIVES, THEIR USE, AND COMPOSITIONS CONTAINING THESE DERIVATIVES  
Claude L. Gillet, Blanmont; Joseph L. Roba, Dion-Le-Val; Michel Snyers, Brussels; William R. Van Dorsser, Brussels, and Georges E. Lambelin, Brussels, all of Belgium, assignors to Continental Pharma, Brussels, Belgium

Filed Apr. 30, 1980, Ser. No. 145,144  
Claims priority, application Luxembourg, May 4, 1979, 81225  
Int. Cl.<sup>3</sup> A61K 31/415; C07D 235/18, 405/12  
U.S. Cl. 424—273 B 13 Claims

1. A benzimidazole derivative of the formula:



wherein:

$R_1$  is a:

$C_1$ - $C_{18}$  straight or branched alkyl,

$C_3$ - $C_8$  cycloalkyl,

$C_1$ - $C_5$  straight or branched alkyl substituted by one or two phenyl, phenoxy, phenylthio, phenylsulfinyl groups, a

$C_1$ - $C_4$  straight or branched alkyl,  $C_1$ - $C_4$  straight or branched alkoxy, methylenedioxy or halogen-substituted phenyl, phenoxy, phenylthio or phenylsulfinyl group,

$C_1$ - $C_5$  straight or branched alkyl substituted by an optionally phenyl- or phenoxy substituted  $C_1$ - $C_6$  straight or branched alkylcarboxamido group, or a  $C_1$ - $C_5$  straight or branched alkyl substituted by a  $C_3$ - $C_8$  cycloalkyl-carboxamido group;

$R_2$  is:

hydrogen,

one or two  $C_1$ - $C_4$  straight or branched alkyl groups,

one or two  $C_1$ - $C_4$  straight or branched alkoxy groups,

one or two halogen atoms;

$R_3$  is:

hydrogen,

one or two  $C_1$ - $C_4$  straight or branched alkyl groups,

one or two  $C_1$ - $C_4$  straight or branched alkoxy groups,

one or two halogen or nitro groups, and the esters derived from aliphatic carboxylic acids having up to 20 carbon atoms or from aromatic carboxylic acids comprising up to 10 carbon atoms, or the acid addition salts thereof with a non-toxic pharmaceutically acceptable acid.

11. A method of treating hypertension comprising administering to a subject in need of same an effective amount of a compound of claim 1.

#### 4,338,331 ISOINDOLINE DERIVATIVE AND A THERAPEUTIC COMPOSITION THEREOF

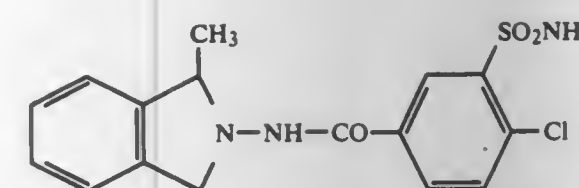
Juan B. A. Scalesiani, Buenos Aires, Argentina, assignor to Farmatis S.p.A., Milan, Italy

Division of Ser. No. 129,332, Mar. 11, 1980. This application Jan. 9, 1981, Ser. No. 223,798

Claims priority, application Italy, Mar. 15, 1979, 20991 A/79  
Int. Cl.<sup>3</sup> A61K 31/40; C07D 209/44

U.S. Cl. 424—274 2 Claims

1. 1-methyl-2-(3'-sulphamyl-4-chlorobenzamido)-isoindoline of formula



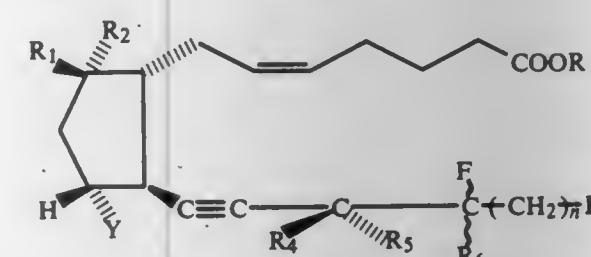
#### 4,338,332 FLUORO-PROSTAGLANDINS

Renato Pellegata, and Carmelo Gandolfi, both of Milan, Italy, assignors to Farmitalia Carlo Erba, Milan, Italy  
Division of Ser. No. 779,632, Mar. 21, 1977, abandoned, which is a continuation of Ser. No. 667,261, Mar. 15, 1976, abandoned.

This application Sep. 21, 1978, Ser. No. 944,614  
Claims priority, application Italy, Mar. 21, 1975, 21493 A/75  
Int. Cl.<sup>3</sup> C07C 177/00; A61K 31/557 12 Claims

U.S. Cl. 424—305

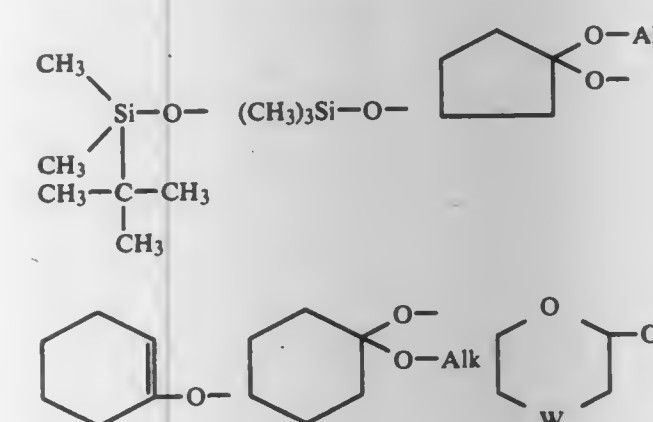
1. A compound of the formula:



wherein:

$R$  is hydrogen, a  $C_1$ - $C_{12}$  alkyl group or a cation of a pharmaceutically acceptable base; one of  $R_1$  and  $R_2$  is hydrogen and the other is hydroxy or an alkanoyloxy group containing up to 6 carbon atoms, a benzoyloxy or a p-phenylbenzoyloxy group, or  $R_1$  and  $R_2$  taken together from an oxo group;

$Y$  is an ether protecting group selected from:



wherein

$W$  is  $-O-$  or  $-CH_2-$  and  $Alk$  is lower alkyl; one of  $R_4$  and  $R_5$  is a protecting group as defined in  $Y$  and the other is hydrogen;  
 $R_6$  is hydrogen or fluorine;  
 $n$  is zero or an integer of 1 to 6; and  
 $R_7$  is methyl.

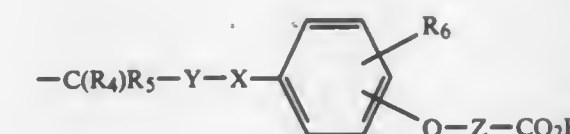
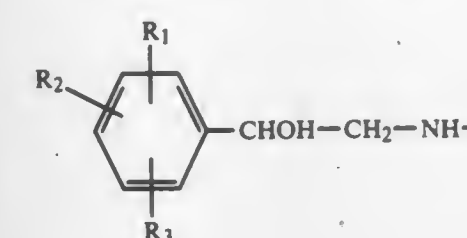
4,338,333  
ETHANAMINE DERIVATIVES THEIR PREPARATION AND USE IN PHARMACEUTICAL COMPOSITIONS  
Anthony T. Ainsworth, Cranleigh, and David G. Smith, Redhill, both of England, assignors to Beecham Group Limited, England

Filed Jun. 9, 1980, Ser. No. 157,555  
Claims priority, application United Kingdom, Jun. 16, 1979, 7921038

Int. Cl.<sup>3</sup> A61K 31/24; C07C 101/30

U.S. Cl. 424—309 16 Claims

1. A compound of the formula



or a pharmaceutically acceptable salt, ester or amide thereof, in which  $R_1$  is a hydrogen, fluoro, chloro, bromo, hydroxy, hydroxymethyl, methyl, methoxyl, amino, formamido, acetamido, methylsulphonylamido, nitro, benzyloxy, methylsulphonylmethyl, ureido, trifluoromethyl or p-methoxybenzylamino;  $R_2$  is hydrogen, fluoro, chloro bromo or, hydroxy;  $R_3$  is hydrogen, chloro bromo or hydroxy,  $R_4$  is hydrogen or methyl;  $R_5$  is hydrogen or methyl;  $R_6$  is hydrogen, fluoro chloro, methyl, methoxyl or hydroxy;  $X$  is an oxygen atom or a carbon-carbon bond;  $Y$  is alkylene of up to 6 carbon atoms or a bond; and  $Z$  is alkylene, alkenylene or alkynylene of up to 10 carbon atoms.

13. An antiobesity pharmaceutical composition comprising an effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier.

16. A method of treating obesity or hyperglycaemia in human or non-human animals which comprises administering to the animals an effective amount of a compound according to claim 1.

#### 4,338,334 1-[4-(4-SULFANYL)PHENYL] UREA AND DERIVATIVES IN COMPOSITIONS AND METHODS OF TREATING RHEUMATOID ARTHRITIS AND IMMUNE COMPLEX DISEASES

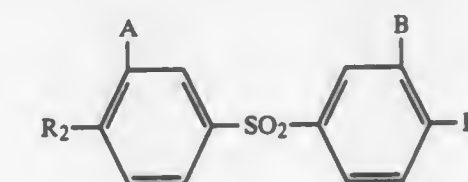
Norman P. Jensen, New Providence; David P. Jacobus, Princeton, and Howard Jones, Holmdel, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 865,560, Dec. 29, 1977, abandoned. This application Feb. 29, 1980, Ser. No. 126,045

Int. Cl.<sup>3</sup> A61K 31/16, 31/17, 31/275, 31/655

U.S. Cl. 424—322 6 Claims

1. A method of treating rheumatoid arthritis comprising administering to a patient in need of such treatment a therapeutically effective amount of a compound of the formula:



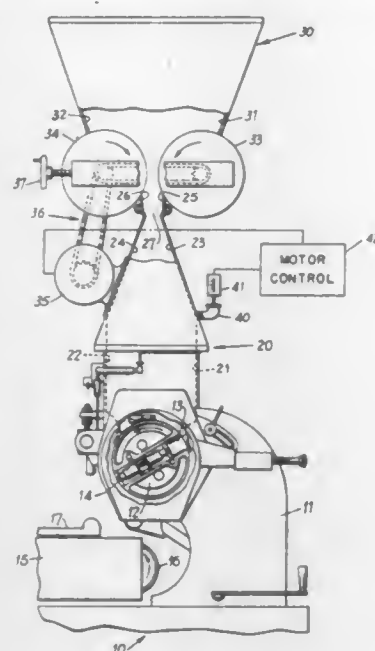
wherein:







rotating scaling drum having plural through cylinders and a double-acting piston in each of said cylinders, sensing pressure in said closed hopper and controlling pressure in said closed hopper by varying the rotation speed of said two rolls



in response to the sensed pressure in said closed hopper and maintaining the minimum pressure in said closed hopper necessary to keep said dough in contact with said scaling drum.

4,338,342

## SUCROSE ESTER TREATMENT OF BANANAS

Hong S. Tan, Bleiswijk, and Dirk A. Smink, Leiderdorp, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Continuation of Ser. No. 852,037, Nov. 11, 1957, abandoned.

This application Aug. 30, 1979, Ser. No. 71,273

Claims priority, application United Kingdom, Nov. 17, 1976, 47952/76

Int. Cl.<sup>3</sup> A23B 7/16

U.S. Cl. 426—308

4 Claims

1. A process for treating bananas to retard their ripening and to decrease their loss of moisture comprising contacting the bananas with an aqueous solution, suspension or emulsion consisting essentially of 0.2 to 5% by weight of at least one sucrose ester of higher fatty acids of 16 to 20 carbon atoms derived from a natural triglyceride by transesterification of the starting triglyceride with sucrose and mixed with 0.02-2% by weight of residual monoglyceride, 0.02-2% by weight of residual diglycerides and 0-2% by weight of residual triglycerides and optionally drying the fruits and vegetables before storage.

4,338,343

## LIQUID ANTI-MICROBIAL TREATMENTS FOR STORAGE GRAIN WITH AMMONIUM BISULFITE AND A DISPROPORTIONATION PRODUCT THEREOF

Frederick D. Vidal, Englewood Cliffs, and Anantharaman Jayaraman, Nutley, both of N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 156,501, Jun. 4, 1980, Pat. No. 4,309,451, and Ser. No. 38,739, May 14, 1979, abandoned, said Ser. No. 156,501, is a division of Ser. No. 50,162, Jun. 20, 1979, abandoned. This application Jun. 26, 1980, Ser. No. 163,413

Int. Cl.<sup>3</sup> A23B 9/00; A23L 3/34

U.S. Cl. 426—331

5 Claims

1. A method of preserving moist grain to prevent spoilage thereof, comprising the steps of:

- providing an aqueous ammonium bisulfite solution;
- adding to said solution an amount of at least one ammonium bisulfite disproportionation product effective to

improve the antimicrobial effect of said solution, to provide a preservative solution; and  
(c) applying said preservative solution to said grain in amounts effective to prevent spoilage of grain.

4,338,344

## PROCESS FOR PRODUCING A QUICK-COOKING RICE

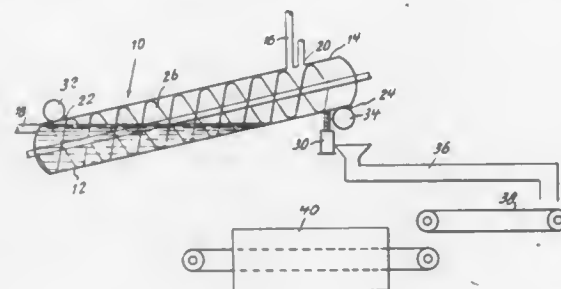
Arthur W. Brooks, Dover, Del.; Richard B. Stevenson, Englestown, N.J., and Leonard Bell, Allston, Mass., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jan. 18, 1980, Ser. No. 113,158

Int. Cl.<sup>3</sup> A23B 9/00; A23L 1/10

U.S. Cl. 426—461

24 Claims



1. An improved method for preparing a quick-rehydrating, fully gelatinized rice from raw, parboiled, brown, wild, or milled white rice where the rice is introduced into a 175° F. to 230° F., pH between 3 and 7, water bath inside an inclined, enclosed chamber that is between 40 and 90% filled with water and the rice conveyed through the water bath from the bottom to the surface within a time range of 10 to 50 minutes, with the rice being continuously agitated while it is being conveyed through the chamber, and upon the rice being conveyed through the surface of the water, the rice enters a steam atmosphere, said steam atmosphere conditions being controlled by the temperature of the water bath, and the rice is conveyed through the steam atmosphere with agitation in from 1 to 30 minutes after which the rice is removed from the cooking chamber at a moisture between 30 and 75% and thereafter dried to a moisture of less than 12%.

4,338,345

## SMOKED MEAT PRODUCTS WHICH INHIBIT THE GROWTH OF CLOSTRIDIUM BOTULINUM AND THE FORMATION OF ENTEROTOXIN

Joseph F. Jadlocki, Jr., Mount Holly, N.J., and John S. Thompson, Wayne, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 140,328, Apr. 14, 1980, Pat. No. 4,282,260.

This application Jan. 30, 1981, Ser. No. 229,707

The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> A23B 4/02; A23L 1/31

U.S. Cl. 426—532

11 Claims

1. A smoked meat product which inhibits the growth of *Clostridium botulinum* and the production of enterotoxin during storage containing an alkali metal nitrite salt, in an amount less than 120 ppm, and from about 1,000 ppm to about 3,000 ppm of a compound selected from the group consisting of hypophosphorous acid, sodium hypophosphite, potassium hypophosphite, calcium hypophosphite and manganese hypophosphite.

4,338,346

## NON-NUTRITIVE SWEETENER

Larry M. Brand, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 972,093, Dec. 21, 1978, abandoned.

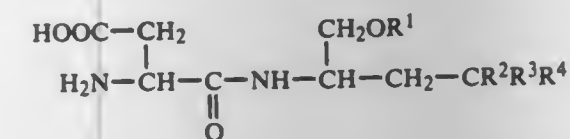
This application Aug. 14, 1980, Ser. No. 178,231

Int. Cl.<sup>3</sup> A23L 1/236

U.S. Cl. 426—548

8 Claims

1. A compound of the formula:



wherein said compound is in the L,L configuration; and wherein R<sup>1</sup>=H, R<sup>2</sup>=H or CH<sub>3</sub>; R<sup>3</sup>=H or CH<sub>3</sub>; and R<sup>4</sup>=CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub>, i-C<sub>3</sub>H<sub>7</sub> or t-C<sub>4</sub>H<sub>9</sub>; except that where R<sup>4</sup> is i-C<sub>3</sub>H<sub>7</sub> or t-C<sub>4</sub>H<sub>9</sub>, R<sup>2</sup> and R<sup>3</sup> are H; and toxicologically acceptable salts thereof.

5. A composition of matter for oral ingestion comprising an effective sweetening amount of a compound according to claim 1 and a carrier.

4,338,347

## POWDERED COMPOSITIONS FOR MOUSSE PRODUCTS

Moshe Trop, and Avinoam Livne, both of Beer Sheva, Israel, assignors to Ben-Gurion University of the Negev Research and Development Authority, Beer Sheva, Israel

Filed Sep. 24, 1980, Ser. No. 190,134

Claims priority, application Israel, Sep. 28, 1979, 58362

Int. Cl.<sup>3</sup> A23G 9/02

U.S. Cl. 426—565

16 Claims

1. A powdered composition suitable for mixing with a liquid, to obtain a mousse product, comprising, by weight proportions, about 30 to about 50 parts of a vegetable lipid whipping agent, about 5 to 15 parts milk powder, about 30-60 part sugar, about 3 to 10 parts of a texture stabilizer and about 0.05 to 10 parts flavor additives, wherein said lipid whipping agent comprises about 15 to 35% of sugar or corn syrup solids, about 6 to 11% sodium caseinate and about 50 to 70% of a lipid component, which lipid component comprises about 75 to 85% partially hydrogenated vegetable oil, about 10 to 12% lactylated fatty acid esters of glycerol and propylene glycol and about 8 to 10% of fatty acid mono or diglycerides or mixture of said mono and diglycerides.

4,338,348

## ISOMERIZATION OF ALPHA ACIDS

Adam Müller, St. Johann, Hallertau, Fed. Rep. of Germany

PCT No. PCT/DE79/00058, § 371 Date Oct. 31, 1979, § 102(e)

Date Oct. 31, 1979

PCT Filed Jun. 19, 1979, Ser. No. 194,120

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1978, 2827002; Jul. 4, 1978, 2829308; May 22, 1979, 2920765

Int. Cl.<sup>3</sup> C12C 3/00, 9/02; A23L 1/221

U.S. Cl. 426—600

14 Claims

1. A process for the isomerization of alpha acids contained in a hop extract which is obtained by extracting hops or hop products with liquid or fluid CO<sub>2</sub> or organic solvents which comprises mixing said extract with one or more adsorption agents selected from the group consisting of bentonite, fuller's earth and alkali and alkaline earth metal salts or oxides, treating the mixture so formed in a closed pressurized container with fluid CO<sub>2</sub> under a pressure of greater than 50 bars and at a temperature of greater than 33° C. whereby iso-alpha acids are formed with essentially no dissolving of the iso-alpha acids in the fluid CO<sub>2</sub> and removing from the pressurized container the iso-alpha-acids thus obtained as a dry substance.

4,338,349

## REINCORPORATION OF COCOA AROMA

James G. Franklin, Morges, and Bernhard Rütter, St. Erhard, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Aug. 12, 1980, Ser. No. 177,469

Int. Cl.<sup>3</sup> A23G 1/00

U.S. Cl. 426—631

4 Claims

1. A process for producing an aromatized agglomerated cocoa mix which comprises the steps of:  
(a) forming a ground cocoa powder mixture;  
(b) spraying a dilute aqueous solution of cocoa aroma onto the mixture in an amount below that which would impair its free flowing properties, immediately prior to the next step of agglomeration means of steam or water; and then  
(c) agglomerating the mixture by  
(d) drying the agglomerated aromatized cocoa powder mixture.

4,338,350

## CRYSTALLIZED, READILY WATER-DISPERSIBLE SUGAR PRODUCT

Andy C. C. Chen, Belle Mead, N.J.; Clifford E. Lang, Jr.; Charles P. Graham, both of Hicksville, N.Y., and Anthony B. Rizzuto, Piscataway, N.J., assignors to Amstar Corporation, New York, N.Y.

Filed Oct. 22, 1980, Ser. No. 199,551

Int. Cl.<sup>3</sup> C13F 1/02; A23G 1/00; A23F 1/00; A23G 1/187

U.S. Cl. 426—658

37 Claims

1. A method for preparing a crystallized sugar product containing a food ingredient, comprising:  
(a) concentrating a sugar syrup at a temperature in the range of about 250° F. to about 300° F. to a solids content of about 90% to 98% by weight, said sugar syrup containing no more than about 20% by weight of non-sucrose solids;  
(b) admixing the concentrated sugar syrup with a predetermined amount of the food ingredient;  
(c) subjecting the admixture to impact bearing within a crystallization zone until a crystallized sugar product is formed, said crystallized sugar product made up of aggregates of fondant-size sucrose crystals and the food ingredient and having a moisture content of less than 2.5% by weight; and  
(d) recovering said crystallized sugar product from said crystallization zone.

4,338,351

## APPARATUS AND METHOD FOR PRODUCING UNIFORM FIRED RESISTORS

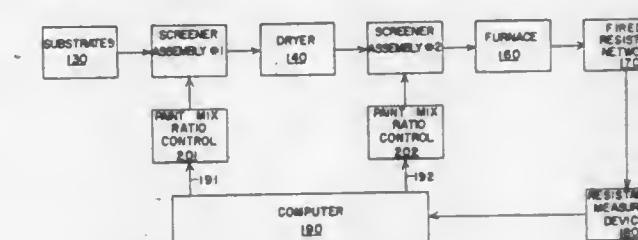
Terry R. Bloom, Middlebury, and Marion E. Ellis, Decatur, both of Ind., assignors to CTS Corporation, Elkhart, Ind.

Filed Sep. 10, 1980, Ser. No. 185,757

Int. Cl.<sup>3</sup> H01C 17/06

U.S. Cl. 427—8

21 Claims



11. A process for blending resistive materials and applying said blend onto substrates, comprising the steps of continuously supplying substrates to a means for applying said blend of resistive materials to said substrates, said applying means including a means for mixing at least two resistive materials, supplying at least two resistive materials to the means for mixing said resistive materials, mixing said resistive materials



to disperse one material in another, and applying the mixture onto each of said substrates.

#### 4,338,352 PROCESS FOR PRODUCING GUIDED WAVE LENS ON OPTICAL FIBERS

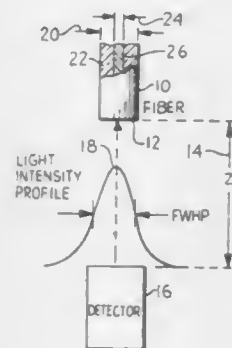
Philip D. Bear, Godfrey, Ill., and Gordon H. Burkhart, Florissant, Mo., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Feb. 23, 1981, Ser. No. 236,835

Int. Cl.<sup>3</sup> G02B 5/14, 3/00; B05D 1/18

U.S. Cl. 427-8

11 Claims



1. A process for use in an environment subjected to an acceleration force such as gravity for producing a lens on the first end of an optical fiber having first and second ends including the steps of:

- coupling light into the second end of the fiber;
- dipping the first end of the fiber into negative photoresist;
- maintaining the fiber in a position with the first end oriented toward the acceleration force until the photoresist dries; and
- repeating steps (b.) and (c.) until the desired lens is formed.

#### 4,338,353 METHOD FOR INCREASING THE STRENGTH OF A POROUS BODY

Bernd Melchior, Remscheid, Fed. Rep. of Germany, assignor to Imchemie Kunststoff GmbH, Wermelskirchen, Fed. Rep. of Germany

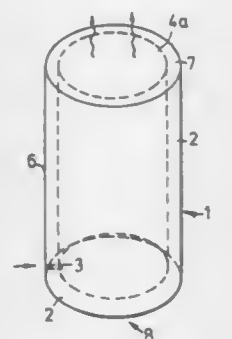
Continuation of Ser. No. 66,435, Aug. 14, 1979, abandoned. This application Jan. 2, 1981, Ser. No. 222,088

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726117

Int. Cl.<sup>3</sup> B05D 1/18, 3/00, 3/06, 3/12

U.S. Cl. 427-36

18 Claims



1. A method of increasing the strength of a porous body and its resistance to weathering comprising impregnating a portion of the outer layer of a porous body with an impregnating liquid that includes a hardenable resin and hardener to, upon the liquid hardening, form a sealed vessel-like packing, hardening the impregnating liquid in the outer layer, thereafter completely impregnating the interior of the body with an impreg-

nating liquid that includes a hardenable resin and hardener and hardening the impregnating liquid in the body interior.

2. The method according to claim 1, characterized in that, after impregnation and hardening of the liquid in the outer layer, at least one inlet for the hardenable liquid and/or at least one outlet for the gases and liquids issuing from the body are provided in said outer layer.

11. The method according to claim 2, 3, or 4, characterized in that the hardening of the resin introduced into the interior of the body is procured by shortwave, infrared radiation, microwaves, ultrasonic waves, or gamma radiation.

#### 4,338,354 COATING POWDERED MATERIAL

Eric L. Bush, Matching Green, Nr. Harlow, and Ernest J. Workman, Bishop's Stortford, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 28, 1980, Ser. No. 143,975

Int. Cl.<sup>3</sup> B05D 5/12

U.S. Cl. 427-80

6 Claims

1. A process for depositing a substantially uniform layer of tantalum or niobium on a particulate insulating substrate; the process including: substantially completely nucleating said substrate by exposing at a predetermined temperature between 600° C. and 1400° C. the substrate to a gaseous mixture of tantalum or niobium halide and a nucleating agent selected from the group consisting of ammonia, an ammonium halide, a hydrazine-hydrohalide, a hydroxylamine-hydrohalide, nitrogen, a boron halide, a sulphur halide, a phosphorous halide, a silicon halide, a boron hydride, a sulphur hydride, a phosphorous hydride or a silicon hydride, wherein the substrate is exposed to said mixture for a predetermined time to provide substantially complete nucleation of said substrate with a uniform layer of tantalum or niobium containing material via an irreversible reaction; and depositing tantalum or niobium on said nucleated substrate by then exposing at a predetermined temperature said nucleated substrate to a gaseous mixture of tantalum or niobium halide and hydrogen without the presence of a nucleating agent for a predetermined period of time sufficient to deposit by a reversible reaction a layer of tantalum or niobium not exceeding an average of 0.3 microns in thickness.

#### 4,338,355 PROCESS USING ACTIVATED ELECTROLESS PLATING CATALYSTS

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540  
Division of Ser. No. 105,865, Dec. 21, 1979, Pat. No. 4,273,804, which is a continuation-in-part of Ser. No. 820,904, Aug. 1, 1977, Pat. No. 4,131,699, which is a continuation of Ser. No. 625,326, Oct. 23, 1975, Pat. No. 4,048,354. This application May 20, 1981, Ser. No. 265,437

The portion of the term of this patent subsequent to Sep. 13, 1994, has been disclaimed.

Int. Cl.<sup>3</sup> C23C 3/02

U.S. Cl. 427-98

12 Claims

1. A process for the metallization of a non-conductor substrate comprising the steps:

- etching said substrate,
- contacting said substrate with a colloidal dispersion comprising a non-noble catalytic metal wherein said catalytic metal may be part of an elemental state, an alloy, or a compound and mixtures thereof and wherein said metal is catalytic to electroless plating initiation in one of its oxidation states and further wherein said colloidal composition contains a colloid stabilizer which renders said catalytic composition stable towards separation but weakly active towards electroless plating initiation,
- contacting the treated substrate with a composition comprising a reactivity modifier thereby further activating the treated substrate for greater catalytic activity in the initiation of the electroless plating process, and further wherein

said reactivity modifier is also a colloid stabilizer but is not the same as said colloid stabilizer, and thereafter  
(4) contacting the substrate with a compatible electroless plating bath to deposit the desired metal.

#### 4,338,356 METHOD OF PRODUCING FLAT SOLID ELECTROLYTE LAYER OF FLAT FILM TYPE OXYGEN SENSOR

Yoshio Akimune, Yokohama; Satoshi Ambe, Yokosuka; Hiroshi Takao, Kamakura, and Shinji Kimura, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

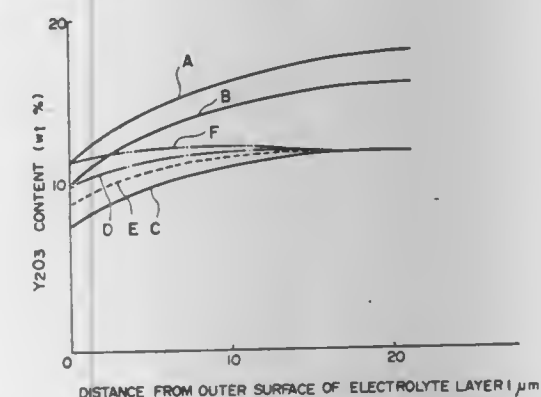
Filed Jul. 15, 1980, Ser. No. 169,031

Claims priority, application Japan, Jul. 16, 1979, 54-89243

Int. Cl.<sup>3</sup> B05D 5/12

U.S. Cl. 427-123

14 Claims



1. A method of producing a flat film type oxygen sensor including an oxygen ion conductive solid electrolyte layer, comprising the steps of:

- preparing an electrode layer which has been fired;
- preparing first and second electrolyte pastes each containing stabilizer, the amount of stabilizer in said first electrolyte paste being less than that in said second electrolyte paste;
- applying said first electrolyte paste onto said electrode layer and then applying said second electrolyte paste onto the outer surface of said first electrolyte paste to form a layered paste heap on said electrode layer; and
- air drying and then firing said layered paste heap to form a solid electrolyte layer on said electrode layer.

#### 4,338,357 METHOD OF COATING FIBROUS REINFORCEMENT MATERIAL

Herwig Pichler, Schwaz; Harald Helletsberger, Wattens; Ernst Geissler, Schwaz; Heinrich Ofer, Vomp, and Bernhard Fugenschuh, Rum, all of Austria, assignors to Tyrolit Schleifmittelwerke Swarovski K.G., Austria

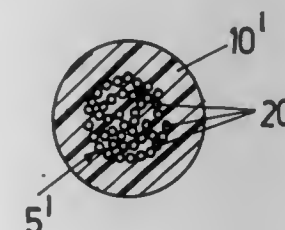
Continuation-in-part of Ser. No. 96,246, Nov. 20, 1979, abandoned, which is a continuation-in-part of Ser. No. 943,352, Sep. 18, 1978, abandoned. This application Nov. 26, 1980, Ser. No. 210,371

Claims priority, application Austria, Sep. 23, 1977, 6822/77

Int. Cl.<sup>3</sup> B05D 1/36, 3/02

U.S. Cl. 427-195

14 Claims



1. A method of coating fibrous reinforcement material com-

prising at least one fiber having multifilaments for objects under high strain, said method comprising the steps of:

depositing on said fibrous material and between said multifilaments, by soaking said fibrous material in a solvent solution of curable thermo-setting resin, an amount of resin equal to 5 to 50% of the weight of the total quantity of the resin to be deposited on the fibrous material; subsequently depositing on the wet fibrous material a powder comprising the remainder of the total quantity of thermo-setting resin which is soluble in the solvent on the fibrous material; and heating the coated fibrous material until it reaches a temperature at least sufficient to obtain sintering of the resin and at which the fibrous material is partially cured and tacky; the amount of solvent in said solution being sufficient so that the powder is fused by the solvent and at least 2% by weight of the solvent remains in the tacky fibrous material.

#### 4,338,358 METHOD OF PRODUCING CUVETTES FOR THE FLAMELESS ATOMIC ABSORPTION SPECTROSCOPY

Bernhard Lersmacher, Aachen, Fed. Rep. of Germany; Ludovicus W. J. van Kollenburg, Eindhoven, Netherlands; Leonardus C. Bastings, deceased, late of Valkenswaard, Netherlands, and Friedrich J. de Haan, administrator, Dommelen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 6, 1979, Ser. No. 45,909

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1978, 2825759

Int. Cl.<sup>3</sup> B05D 3/02

U.S. Cl. 427-227

8 Claims

1. A method of producing cuvettes for flameless atomic absorption spectroscopy comprising the steps of placing a plurality of carbon substrate in a loose heap in a pyrolysis apparatus, effecting a plurality of separate coatings of pyrolytic graphite on said substrata until an overall thickness of 20-80 μm is applied, and redistributing said plurality of carbon substrata in said apparatus between each coating of pyrolytic graphite.

#### 4,338,359 METHOD OF FACILITATING LOW TEMPERATURE DISCHARGE FROM A CONTAINER OF PARTICULATE MATERIAL

Mark O. Kestner, Mendham, N.J., assignor to Apollo Technologies, Inc., Whippany, N.J.

Filed Mar. 16, 1981, Ser. No. 243,752

Int. Cl.<sup>3</sup> B05D 7/22, 5/08

U.S. Cl. 427-230

11 Claims

1. The method of facilitating low temperature discharge of particulate material from a container having a wall with which said material makes contact and along which said material moves when being discharged from said container, which method comprises:

- applying to said wall an adherent coating comprising a water solution of (i) an inorganic freeze point depressant, said solution having a freezing point below about -20° C., and (ii) a thickening agent which is substantially compatible with said inorganic freeze point depressant and is present in an amount sufficient to produce in said solution a viscosity range in centipoise between about 50 and 1,500 at 70° F. and between about 500 and 20,000 at 0° F.,
- putting said material into said container to make contact with said wall, and
- when desired, discharging said material from said container, in the course of which said material moves along said wall.



# 4,338,360 METHOD FOR COATING POROUS METAL STRUCTURE

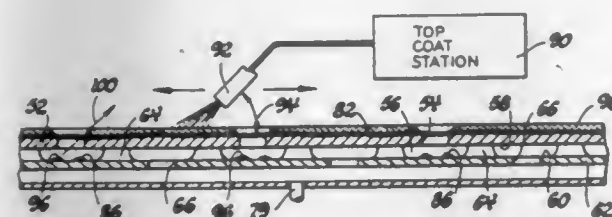
John R. Cavanagh, Brownsburg; Kenneth R. Cross, Lebanon; David L. Clingman, Carmel, and Berton Schechter, Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 1, 1980, Ser. No. 145,594

Int. Cl.<sup>3</sup> B05D 5/00

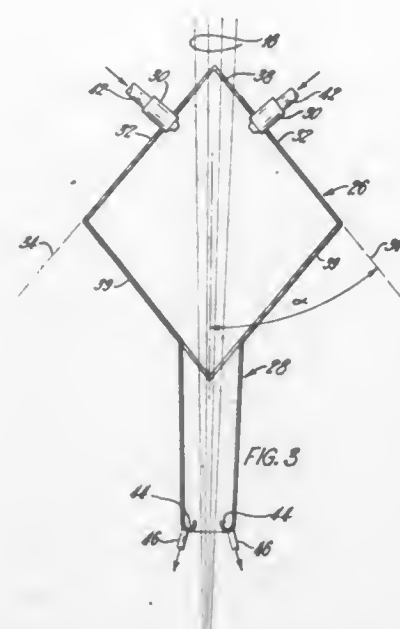
U.S. Cl. 427—247

4 Claims



1. A method for coating a heat resistant ceramic composition material on an exposed surface of an air cooled porous metal laminate having air flow exit holes therefrom formed in part by an internal surface of the laminate exposed in part through said exit holes comprising the steps of: roughening the exposed surface; backflowing inert gas through the laminate for exit through the exit holes continuously during the following steps of the process; directing a bond coat spray toward said exposed surface at a slant angle from an axis normal to the roughened exposed surface so as to coat a thin bond coat layer on all of the exposed surface and on a portion of the internal surface exposed through each exit hole at the slant angle of the directed bond coat; and thereafter directing a top coat spray of a ceramic coat requiring a bond coat layer thereunder for adhesion toward said exposed surface at a slant angle from said normal axis so as to coat all of said exposed surface with said top coat and a portion of the internal surface exposed through each exit hole at the slant angle of the directed top coat spray, the direction from which said top coat is sprayed being different than the direction from which said bond coat is sprayed so that the ceramic top coat is directed against a portion of the internal surface having only a limited bond coat deposit thereon so as to reduce bonding of the ceramic top coat in the exit holes thereby to minimize plugging of said exit holes during coating of the exposed surface of the laminate with heat resistant ceramic composition material.

stripper positioned immediately upstream from said nozzles, passing the array of fibers through a narrow, converging conduit positioned downstream from said nozzles, and recovering a portion of said size at the downstream end of said conduit.



duit positioned downstream from said nozzles, and recovering a portion of said size at the downstream end of said conduit.

# 4,338,362 METHOD TO SYNTHESIZE AND PRODUCE THIN FILMS BY SPRAY PYROLYSIS

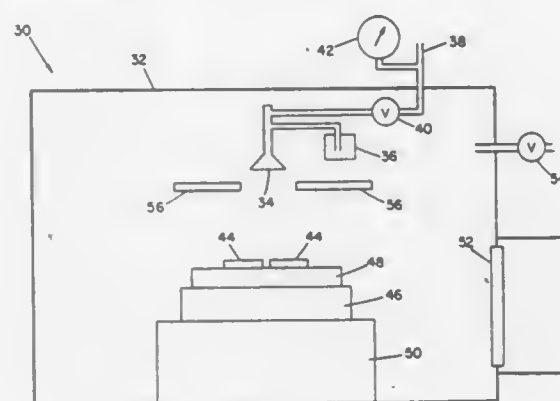
Richard L. Turcotte, Malden, Mass., assignor to Radiation Monitoring Devices, Inc., Watertown, Mass.

Filed Feb. 3, 1981, Ser. No. 231,138

Int. Cl.<sup>3</sup> B05D 1/02, 3/02; C03C 17/10, 17/22

U.S. Cl. 427—314

7 Claims



1. In the process of making a thin film comprising preparing a solution with solute elements including a salt of a first constituent element of said film and spraying said solution onto a heated substrate to form a film on said substrate, the solute and solvent elements not constituting said film forming volatile reaction products after contacting said heated substrate, said solution also including a reducing agent in sufficient amount to change the oxidation state of at least one said solute element after contacting said heated substrate, the improvement wherein the concentration of said reducing agent is greater than 1 M and greater than 10 times the stoichiometric amount necessary to react with said one solute element.

# 4,338,361 METHOD AND APPARATUS FOR APPLYING TEXTILE SIZES

Kings C. Lin, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 8, 1980, Ser. No. 213,966

Int. Cl.<sup>3</sup> B05D 1/02

U.S. Cl. 427—299

7 Claims

7. The method for applying a size to a converging array of mineral fibers of the type in which the array of mineral fibers is directed between a pair of nozzles adapted to spray a size onto the array of mineral fibers, wherein the improvement comprises removing the entrained gases flowing with the array of fibers by passing the array of fibers through an opening in a

# 4,338,363 METHOD FOR INHIBITING THE FORMATION OF SCALE

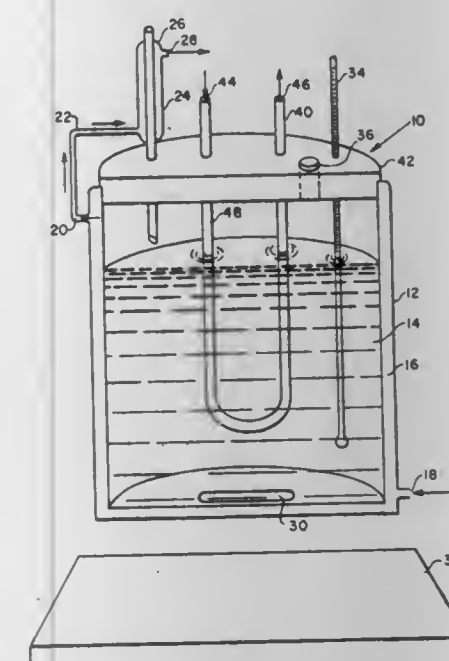
Jasbir S. Gill, Coraopolis, Pa., and George H. Nancollas, Williamsville, N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Feb. 17, 1981, Ser. No. 234,476

Int. Cl.<sup>3</sup> B05D 3/02

U.S. Cl. 427—387

14 Claims



1. A method for inhibiting the formation of scale upon metallic heat exchanger surfaces exposed to water solution containing a supersaturated concentration of at least one alkaline earth metal salt at the surface temperature of the heat exchanger, said method comprising utilizing, as the exchanger surface, a corrosion resistant metal surface coated with a film of methylene siliconedichloride.

2. The method of claim 1 wherein the metal surface is coated with said film by covering the surface with methylene siliconedichloride or a solution of the methylene siliconedichloride followed by removing all excess non-adherent methylene siliconedichloride from said surface.

3. The method of claim 2 wherein after coating, the coated metal surface is heated to from about 50° C. to about 200° C. for from about 5 to about 180 minutes.

# 4,338,364 CONTINUOUS COATER

James L. Kennon, Avon; Lawrence J. Macartney, Lorain; Gerald W. Crum, Elyria; John C. Dunn, Amherst, and Donald R. Hastings, Elyria, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Continuation of Ser. No. 111,666, Jan. 14, 1980, abandoned. This application Feb. 23, 1981, Ser. No. 237,525

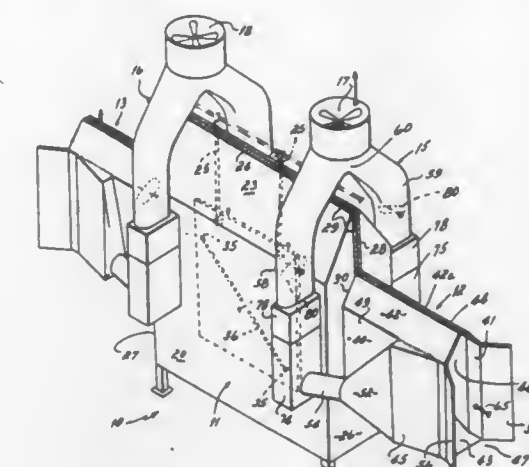
Int. Cl.<sup>3</sup> B05D 1/02

U.S. Cl. 427—424

23 Claims

1. A coater comprising, a coating chamber adapted to have an object conveyed through it, said coating chamber having side walls, end walls, a bottom and a ceiling, entrance and exit openings in said end walls through which objects may be introduced into and out of said chamber, means for coating an object with a sprayed material in the course of passage through said chamber, air flow control vestibules extending outwardly from each end of said chamber adjacent said entrance and exit openings, each of said vestibules having an outer opening longitudinally aligned with but remote from the associated entrance and exit openings of said chamber, means for drawing air from outside said vestibules through said vestibules' outer openings without simultaneously drawing any substantial quantity of air from inside said

chamber so as to create an air flow barrier to the escape from said chamber of airborne sprayed material, said last named means including at least one air collector slot located on opposite sides of each of said vestibules, exhaust fan means and duct means



connected each of said air collector slots to said exhaust fan means whereby air is caused by said exhaust fan to flow into each of said vestibules through said outer openings and to be exhausted from said vestibules through said collector slots and said ducts.

# 4,338,365 BOILABLE POUCH FOR FOODS

Robert V. Russo, Brooklyn, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,757

Int. Cl.<sup>3</sup> B65D 3/28

U.S. Cl. 428—35

2 Claims

1. A boilable bag structure of a two-ply laminate comprising an inner film layer of polyester and an outer layer of biaxially oriented polyacrylonitrile homopolymer film adhered thereto.

# 4,338,366 SURFACE WIPING IMPLEMENT

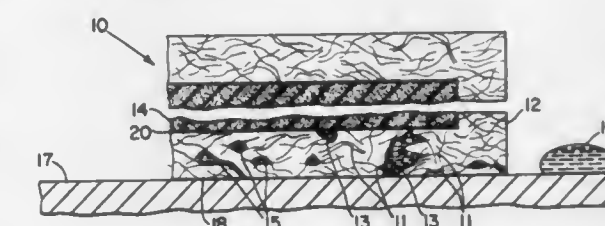
Stephen F. Evans; Raymond J. Ludwa, both of Cincinnati, Ohio, and Orr Adalsteinsson, Wilmington, Del., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 129,957, Mar. 13, 1980, abandoned, which is a continuation of Ser. No. 927,309, Jul. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 846,248, Oct. 28, 1977, abandoned. This application Mar. 17, 1981, Ser. No. 244,567

Int. Cl.<sup>3</sup> B32B 3/26, 33/00; A47L 13/16

U.S. Cl. 428—76

12 Claims



1. A semi-disposable flexible wiping implement for removing liquid from surfaces comprising an absorbent core (14) having at least one outer surface and an outer layer (12) on at least one of said outer surfaces, said implement being capable of repetitive use cycles comprising a wiping step to absorb liquid followed by a compressive wringing step to expel liquid, characterized in that the absorbent core (14) has a minimum wicking rate of at least 12.7 cms/min and said outer layer (12) is substantially non-collapsible and has a Liquid Removal Index of from 8 to 100 mm/g, said Liquid Removal Index being defined



by the term PT/39.37 R where P is the porosity index, T is the thickness of the outer layer in mm and R is the weight in grams of the liquid retained by the outer layer.

4,338,367

## MAGNETIC RECORDING TAPE

Yoshio Kawakami, Yoneo Matsuzawa, and Norifumi Kajimoto, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1980, Ser. No. 186,848

Claims priority, application Japan, Oct. 2, 1979, 54-126358  
Int. Cl.<sup>3</sup> G11B 5/70

U.S. Cl. 428-141

5 Claims

1. A magnetic recording tape, which comprises:  
a polyethylene terephthalate base film coated with magnetic particles in a binder in which said base film has an index given by the expression

$$1.5 > 19.00 - 0.406d_T - 0.016H - 0.553d_T$$

$$d_T \leq 18(\mu\text{m})$$

wherein  $d_T(\mu\text{m})$  designates the total thickness of the magnetic recording tape,  $d_B(\mu\text{m})$  designates the thickness of the base film and H designates the sum of numbers of interference rings ( $H_1, H_2, H_3 \dots$ ) per 1 mm<sup>2</sup> on the surface of the base film.

4,338,368

## ATTACHMENT SYSTEM FOR SILICA TILES

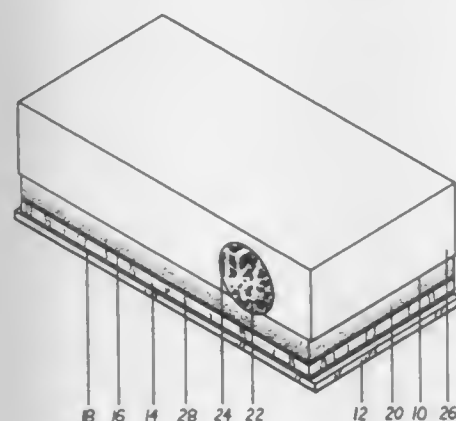
Alan M. Lovelace, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Robert L. Dotts, Seabrook, Tex., and Jack W. Holt, Walnut, Calif.

Filed Dec. 17, 1980, Ser. No. 217,336

Int. Cl.<sup>3</sup> B32B 5/14, 5/26, 7/02; B64C 1/38

U.S. Cl. 428-212

20 Claims



14. A lightweight insulating tile for attachment to a flexible nonuniform substrate by a thin layer of silicone adhesive, said tile comprising: a rigid porous block of refractory material, the refractory material being primarily a mixture of substantially chemically pure silica fibers rigidized by a high purity silica binder, the face portion of the attachment surface being densified by impregnation of a compatible refractory material having a particle size small enough to fill the interstices of the porous refractory material to provide a dense pavement for engagement of the silicone adhesive.

4,338,369

## FLOOR COVERING FOR STABLING

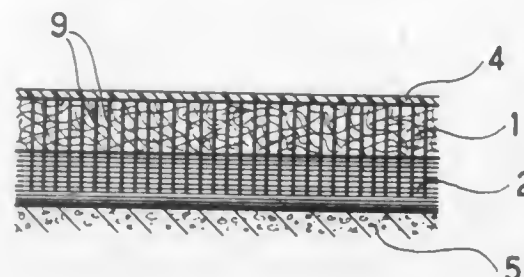
Pierre Foinard, Paris, France, assignor to Societe a Responsabilite Limitee: Societe de Developpement Pour l'Agriculture Sodelvage, Sainte Gauburge, France

Filed Jul. 7, 1980, Ser. No. 166,651

Claims priority, application France, May 30, 1980, 80 12061  
Int. Cl.<sup>3</sup> B32B 5/06

U.S. Cl. 428-235

7 Claims



1. Floor covering for stabling, the floor covering comprising at least two layers of textile material held together by multiple needle perforations, one of said layers being a top layer and another being a bottom layer, the top surface of the said top layer being impregnated with a substance suitable for forming a porous skin having a high degree of resistance to abrasion wherein the said impregnating substance comprises a heat shrinkable copolymer of styrene and acrylic ether and is impregnated into the said top surface in an amount lying between 500 gm and 1000 gm of impregnating substance per square meter of top surface.

4,338,370

## CHEMICALLY RESISTANT COATED FABRIC

Charles A. Suter, Stow, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Apr. 7, 1980, Ser. No. 137,946

Int. Cl.<sup>3</sup> B32B 7/00, 27/00, 25/04, 25/10

U.S. Cl. 428-250

8 Claims



1. A chemically resistant fabric laminate, comprising:  
a woven fabric layer, said fabric layer impregnated with a blend of a rubber and an adhesive system, said rubber made from compounds selected from the group consisting of natural cis-1,4-polyisoprene, a polymer made from a monomer of a conjugated diene having from 4 to 10 carbon atoms, nitrile rubber, and polychloroprene,  
a rubber layer, said rubber layer directly attached to and adhered to one side of said impregnated fabric, said rubber layer made from a compound selected from the group consisting of natural cis-1,4-polyisoprene, a polymer made from a monomer of a conjugated diene having from 4 to 10 carbon atoms, nitrile rubber, and polychloroprene,  
a substrate layer, said substrate layer comprising a blend of a rubber and a dry phenolic adhesive system, said substrate layer directly attached and adhered to the remaining side of said impregnated fabric layer, said rubber of said substrate layer made from a compound selected from the group consisting of natural cis-1,4-polyisoprene, a polymer made from a monomer of a conjugated diene having from 4 to 10 carbon atoms, nitrile rubber, and polychloroprene, and

a chemically resistant preformed film residing on said substrate layer, said substrate layer directly adhering said chemical resistant preformed film to said impregnated fabric layer.

4,338,371

## ABSORBENT PRODUCT TO ABSORB FLUIDS

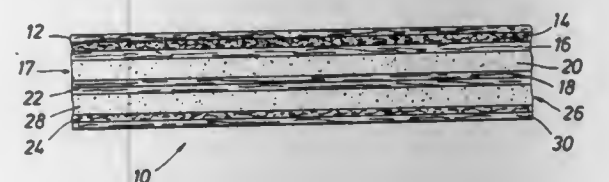
Frederic S. Dawn, Houston, and James V. Correale, Seabrook, both of N.Y., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 24, 1980, Ser. No. 219,681

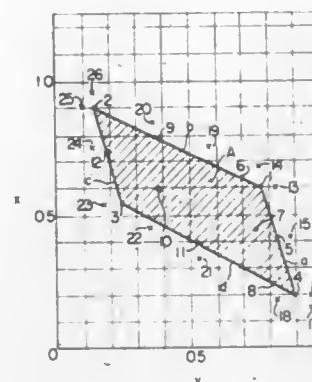
Int. Cl.<sup>3</sup> A61F 13/16

U.S. Cl. 428-283

12 Claims



1. A multi-layer, absorbent product for use in contact with the skin comprising:  
a. a water pervious facing layer for contacting the skin;  
b. a first fibrous, wicking layer contiguous said water pervious layer;  
c. a first container section having an inner layer and an outer layer forming a first absorbent container therebetween, said container section being comprised of a water pervious material, said inner layer being contiguous said first fibrous, wicking layer;  
d. a first absorbent mass disposed in said first absorbent container, said first absorbent mass comprising a super absorbent high molecular weight acrylic polymer containing hydrophilic carboxylate groups said polymer forming a gel upon contact with an aqueous medium;  
e. a second container section having an inner layer and said outer layer container therebetween, said second container section being comprised of a water pervious material, said inner layer of said second container being contiguous said outer layer of said first container section;  
f. a second absorbent mass disposed in said second absorbent container, said second absorbent mass comprising a hydrolyzed starch-acrylonitrile graft copolymer, said copolymer forming a gel upon contact with an aqueous medium; and  
g. a liquid impermeable/gas permeable layer contiguous said outer layer of said second container section.



0.90) and a point 3 (0.25; 0.55) and a segment d connecting said point 3 (0.25; 0.55) and said point 4 (0.90; 0.20) inclusively.

4,338,373

## COATING METHOD

Nobuyuki Ikeguchi, and Yasunori Osaki, both of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Dec. 18, 1980, Ser. No. 217,919

Claims priority, application Japan, Dec. 21, 1979, 54-166697  
Int. Cl.<sup>3</sup> B05D 5/12

U.S. Cl. 428-383

6 Claims

1. A method for coating an article which comprises coating the article first with (I) at least one imide resin selected from the group consisting of polyester imide resins, polyamideimide resins, polyhydantoin resins and mixtures thereof, and then with (II) cyanate ester resin which comprises as essential components (a) at least one cyanate compound selected from the group consisting of polyfunctional cyanate esters, prepolymer of said cyanate esters, copolymer of said cyanate esters and an amine and mixtures thereof and (b) at least one maleimide compound selected from the group consisting of polyfunctional maleimides, prepolymer of said maleimides, copolymer of said maleimides and an amine and mixtures thereof.

4,338,374

## FIREPROOF MATERIAL

Rudolf P. Naser, Ludwigshafen am Rhein, Fed. Rep. of Germany, assignor to Woellner-Werke, Rhein, Fed. Rep. of Germany

Division of Ser. No. 77,768, Sep. 21, 1979, abandoned. This application Dec. 18, 1980, Ser. No. 217,918

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1978, 2841623

Int. Cl.<sup>3</sup> B32B 9/04; C09D 1/02, 5/18; C09K 3/28

U.S. Cl. 428-411

25 Claims

13. A substrate for architectural use rendered protected from fire damage comprising a flammable substrate having thereon a coating of a coating composition based on an alkali metal silicate binder, said binder comprising an alkali metal silicate solution containing a water glass-soluble, non-ionic surfactant in solution and further comprising an alkali metal trisilicate powder.

4,338,372

## GARNET FILM FOR MAGNETIC BUBBLE DEVICE

Norio Ohta; Fumihiko Ishida, both of Hachioji; Tadashi Ikeda, Kodaira; Keikichi Ando, Musashino, and Yutaka Sugita, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 15, 1980, Ser. No. 187,136

Claims priority, application Japan, Sep. 17, 1979, 54-117986

Int. Cl.<sup>3</sup> G11B 5/64

U.S. Cl. 428-336

7 Claims

1. A garnet film for a magnetic bubble device, said garnet film being formed on a substrate of  $Gd_3Ga_5O_{12}$  and having a composition represented by a general formula of  $(YSm-LuCa)_3-xGd_x(Fe_{1-x}Ge_x)O_{12}$  where values of x and y are in a region enclosed by a segment a connecting a point 1 (0.78; 0.60) and a point 4 (0.90; 0.20) shown in the accompanying



4,338,375

## SURFACE COATING COMPOSITION

Kaname Hashimoto, Sakai, and Saizo Ikeda, Himeji, both of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed May 27, 1980, Ser. No. 153,242

Claims priority, application Japan, Jun. 6, 1979, 54-70740

Int. Cl.<sup>3</sup> B32B 27/36; B05D 3/02

U.S. Cl. 428—412

11 Claims

1. A coating composition comprising:
  - A. 100 parts by weight of partially hydrolyzed condensation product of from 60 to 100% by weight of organotrialkoxysilane having the formula



in which  $R^1$  is an aliphatic hydrocarbon containing from 1 to 4 carbon atoms or an aromatic hydrocarbon, and  $R^2$  is an aliphatic hydrocarbon having 1 to 4 carbon atoms, and from 0 to 40% by weight of tetraalkoxysilane of the formula  $Si(OR^3)_4$  wherein  $R^3$  is an aliphatic hydrocarbon having 1 to 6 carbon atoms;

B. from 10 to 100 parts by weight of an organic carboxylic acid having 1 to 5 carbon atoms; and

C. from 0.01 to 1.0 parts by weight of a fluorocarbon anionic surface active agent.

6. A coating composition as claimed in claim 1 containing an effective amount of an inorganic or organic alkaline hardening catalyst for cross-linking said partially hydrolyzed condensation product to form a coating film.

7. A coating solution consisting essentially of a coating composition as claimed in claim 6 dissolved in an inert organic solvent.

8. A coating process which comprises applying to a substrate a thin coating film of a coating solution as claimed in claim 7 and then heating the coated substrate, at a temperature below the thermal deformation temperature of said substrate, to form a hardened dry coating film on said substrate.

9. A coated product prepared by the process of claim 8.

4,338,376

## HIGH FLUOROCARBON CONTENT COATING COMPOSITION, METHOD OF APPLICATION, AND COATED ARTICLE

Steven Kritzer, Cronulla, Australia, assignor to Otis Elevator Company, Farmington, Conn.

Filed Oct. 20, 1980, Ser. No. 198,315

Claims priority, application Australia, Oct. 26, 1979, PE1089

Int. Cl.<sup>3</sup> B32B 17/10; B05D 3/02

U.S. Cl. 428—417

15 Claims

12. A composite article comprising a substrate having a lubricious surface layer characterized by a polytetrafluoroethylene fluorocarbon polymer component, an epoxy thermosetting resin component, an amine cross-linking agent, and a silane wetting agent, based on weight percent, the fluorocarbon:epoxy resin ratio is up to about 2:1, and the silane wetting agent is present in an amount up to about 1.5% by weight based on total weight of solids in the composition, the composition having a low coefficient of friction with high abrasion resistance and adhesion when applied to the substrate.

15. The article of claim 12 wherein the substrate is metal or glass.

4,338,377

## SULFONATO-ORGANOSILANOL COMPOUNDS AND AQUEOUS SOLUTIONS THEREOF

Boyd R. Beck, Spring City, Utah; Frank T. Sher, and George V. D. Tiers, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 83,465, Oct. 10, 1979, Pat. No. 4,267,213, which is a division of Ser. No. 895,528, Apr. 11, 1978, Pat. No. 4,235,638. This application Aug. 18, 1980, Ser. No. 179,178

Int. Cl.<sup>3</sup> B32B 9/00

U.S. Cl. 428—428

7 Claims

1. An article having a durable hydrophilic surface, thereon, said article comprising (a) a substrate having a siliceous surface and (b) a reversibly hydrophilic layer thereon, said layer comprising a sulfonato-organosilicon compound bound to said substrate, said compound having at least one sulfonato organic substituent therein wherein said sulfonato-organosilicon compound is a sulfonato-organosilanol compound having at least one sulfonato-organic substituent wherein the weight percentage of oxygen in said silanol compound is at least about 30%, and the weight percentage of silicon in said silanol compound is not greater than about 15%, said percentages being taken with reference to the water-free acid form of said silanol compound.

4,338,378

## FILM FOR HEAT SEALING AND PROCESS OF HEAT SEALING

Takeshi Nabeta; Takeshi Masui, and Tsuguo Hasegawa, all of Machida, Japan, assignors to Denki Kagaku Kogyo Kaishiki Kaisha, Tokyo, Japan

Division of Ser. No. 946,724, Sep. 28, 1978, Pat. No. 4,302,554.

This application Jul. 31, 1981, Ser. No. 289,091

Claims priority, application Japan, Jun. 29, 1978, 53-78058

Int. Cl.<sup>3</sup> B32B 15/08

U.S. Cl. 428—462

11 Claims

1. A laminate comprising:

(a) a first substrate comprising at least one member selected from the group consisting of plastic films, metallic foils and paper;

(b) a second substrate comprising a film for heat sealing which comprises a blend of:

(I) at least one member selected from the group consisting of (A) an elastomeric block copolymer containing 10 to 50% by weight of styrene and/or alpha-methyl styrene copolymerized with conjugated dienes, (B) a resinous block copolymer containing 50 to 95% by weight of styrene and/or alpha-methyl styrene copolymerized with conjugated dienes;

(II) a styrene-butadiene graft-copolymer, and

(III) at least one member selected from the group consisting of ethylene-alpha-olefin random copolymers, ethylene-vinyl acetate copolymers, ethylene-alkyl acrylate copolymers, polypropylene and ethylene-propylene elastomers; and

(c) an adhesive for bonding therebetween.

4,338,379

## HIGH-SOLIDS THERMOSETTING ENAMEL COATING COMPOSITION

Clifford H. Strolle, Springfield, Pa., and Glenn D. Thornley, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 13, 1981, Ser. No. 234,583

Int. Cl.<sup>3</sup> B32B 27/08

U.S. Cl. 428—520

12 Claims

1. A thermosetting enamel coating composition of a mixture of a polymer blend and a solvent for the polymer blend wherein the blend is 65-90% by weight of the mixture and consists essentially of

(a) 5-25% by weight, based on the weight of the blend, of a copolymer of

(1) a hydroxyalkyl ester of acrylic or methacrylic acid wherein the alkyl group has 2-10 carbon atoms and wherein the hydroxyalkyl ester is 25-35% by weight of the copolymer, and

(2) at least one other ethylenically unsaturated monomer selected from the group consisting of vinyl chloride, vinylidene chloride, ethylene, propylene, vinyl acetate, conjugated dienes, styrene, alkyl-substituted styrene, dibutyl maleate,  $C_1$ - $C_{12}$  alkyl esters of acrylic acid,  $C_1$ - $C_{12}$  alkyl esters of methacrylic acid, and mixtures of these

wherein the copolymer has a hydroxyl content of 2-6% by weight;

(b) 40-60% by weight, based on the weight of the blend, of a saturated polyester polyol that is the reaction product of

(1) pentaerythritol and at least one other branched-chain glycol wherein the molar ratio of glycol to pentaerythritol is from 2:1 to 6:1,

(2) and aromatic or saturated aliphatic monocarboxylic acid having no more than 18 carbon atoms, and

(3) a mixture of an aromatic and a saturated aliphatic acid wherein the molar ratio of aromatic acid to aliphatic acid is from 2:1 to 6:1

wherein the polyol has a hydroxyl content of 5-9% by weight; and

(c) 25-45% by weight, based on the weight of the blend, of an aminoplast resin.

4,338,380

## METHOD OF ATTACHING CERAMICS TO METALS FOR HIGH TEMPERATURE OPERATION AND LAMINATED COMPOSITE

Arnold R. Erickson, Orange; Carlino Panzera, Cromwell, and Robert P. Tolokan, Hamden, all of Conn., assignors to Brunswick Corporation, Skokie, Ill.

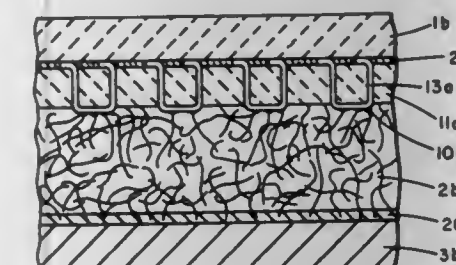
Division of Ser. No. 674,047, Apr. 5, 1976, Pat. No. 4,142,022.

This application Sep. 5, 1978, Ser. No. 939,888

Int. Cl.<sup>3</sup> B32B 7/00

U.S. Cl. 428—594

25 Claims



1. A method of making composite material comprising the steps of:

(1) providing a high temperature resistant metal alloy plate and a low modulus flexible low density metallic structural interface having first and second outer surfaces;

(2) bonding the alloy plate to the interface;

(3) providing a ceramic member; and,

(4) securing the second outer surface into the ceramic member so that thermal strains caused by temperature differentials between the ceramic member and the metallic plate are taken up without harmful effect by the interface.

4,338,381

## STRUCTURAL MEMBER

Frank A. Rogers, 4 Orville Pl., Hamersley, Western Australia, Australia (6022)

Filed Dec. 18, 1979, Ser. No. 104,840

Claims priority, application Australia, Dec. 22, 1978, PD7197

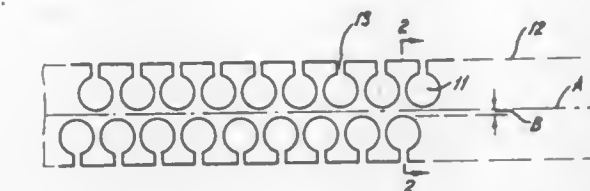
Int. Cl.<sup>3</sup> E04B 1/08

U.S. Cl. 428—575

9 Claims

1. A curved structural member formed from a flat strip of material having a plurality of slots formed at spaced intervals

opening through opposite edges of said strip, the inner portion of each slot being the greater dimension than the outer portion



prior to curvature of said strip, said strip being bent to the desired degree of curvature in the plane of said strip.

4,338,382

## BATTERY SAFETY TERMINAL

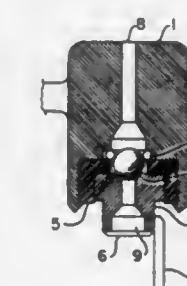
David H. Fritts, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 11, 1981, Ser. No. 242,815

Int. Cl.<sup>3</sup> H01M 2/12

U.S. Cl. 429—53

9 Claims



1. A safety terminal for a normally sealed electric device having a container subject to internal gas pressure, the terminal being incorporated in one outer wall of said container, wherein said terminal comprises:

an outer member separated by insulating means from an inner member which is electrically connected to current collector means within the device, the first and second members being electrically conductive, bridging means which is located to normally complete an electrical conducting circuit path between said outer member and said inner member, the bridging means being located in a chamber within said terminal, the chamber being normally sealed off from the interior of said container, pressure sensing means which is constructed to respond to excess gas pressure within the container to open said chamber to the interior of the container, and the resulting excess gas pressure entering said chamber being effective to force said bridging means to a position such that the electrical circuit path is broken between said outer member of the terminal and said inner member.

4,338,383

## CONTAINER FOR A MAINTENANCE-FREE BATTERY

Gottfried W. Jutte, Indianapolis, and John V. McHugh, Greenfield, both of Ind., assignors to Richardson Chemical Company, Des Plaines, Ill.

Continuation of Ser. No. 935,250, Aug. 21, 1978, Pat. No. 4,214,045. This application Jul. 21, 1980, Ser. No. 170,799

The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> H01M 2/12

U.S. Cl. 429—88

8 Claims

1. A battery container for a battery comprising, in combination:

a container base including side walls forming a compartment for the battery; means including a cover member having a top surface, a



bottom surface adapted for engaging the side walls of said container base, a recess on said top surface defining a first opposing surface, and at least one filler well portion extending from said recess to the interior of the battery container, for forming when installed on said base an enclosure for the battery;

a vent cover including a generally flat body portion seated within said recess and dimensioned to provide a gas escape gap between the side walls of said recess and the side walls of said vent cover, and a bottom surface defining a second opposing surface;

venting means including at least one vent plug portion pro-



jecting from said bottom surface of said body portion through said filler well into the interior of the battery container for establishing a first passageway for conveying gases egressing from said battery container, said vent plug portion being dimensioned for vapor-sealing engagement with the periphery of said filler well and said venting means including at least one axially-extending groove on the outside surface of said vent plug portion; and means including at least one rib portion on at least one of said opposing surfaces for spacing said bottom surface of said vent cover from said bottom surface of said recess to form a second passageway for conveying gases from said first passageway to said peripheral gas escape gap.

4,338,384

## BATTERY ACTIVATED BY SEA WATER

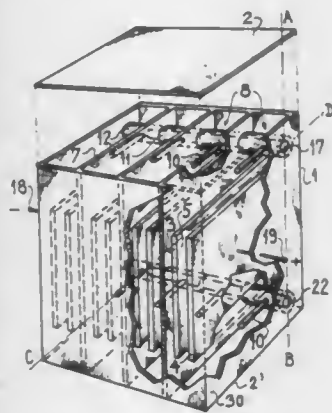
Jean Rouge, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 4, 1980, Ser. No. 204,053

Claims priority, application France, Nov. 5, 1979, 79 27221  
Int. Cl.<sup>3</sup> H01M 6/34

U.S. Cl. 429-119

8 Claims



1. A battery activated by immersion in sea water and constituted by a number of cells, each cell comprising two electrodes separated by tightly sealed partitions, comprising a first network of tubes for filling with sea water and a second network of tubes for discharging gases given off, wherein said first network and said second network each comprise a connecting tube which passes through said tightly sealed partition separating said cells, with one end of said connecting tubes communicating with the outside of the battery, said first and second networks each further comprising a series of tubes connected perpendicular to said connecting tube, one tube of each of said series ending in one of said cells.

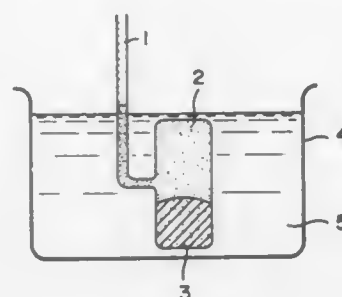
4,338,385  
DIVALENT SILVER OXIDE CELL CONTAINING  
CADMIUM AND TELLURIUM COMPONENTS  
Yoichi Ohya, Funabashi, and Tadayoshi Shimizu, Tokyo, both of Japan, assignors to Sumitomo Metal Mining Company, Ltd., Tokyo, Japan

Filed Jun. 5, 1981, Ser. No. 271,088

Claims priority, application Japan, Jun. 23, 1980, 55-83974; Jul. 22, 1980, 55-99418; Oct. 9, 1980, 55-140400; Dec. 25, 1980, 55-182846; Feb. 6, 1981, 56-15665; Feb. 6, 1981, 56-15666  
Int. Cl.<sup>3</sup> H01M 6/04

U.S. Cl. 429-206

39 Claims



1. In a divalent silver oxide cell containing an alkaline electrolyte and having a positive electrode formed mainly of divalent silver oxide, the improvement wherein a cadmium component and a tellurium component are contained in at least one of the divalent silver oxide and the alkaline electrolyte.

4,338,386

## MULTIPLE REPRODUCTION PROCESS AND APPARATUS INVOLVES TONED ELECTROPHOTOGRAPHIC IMAGE TRANSFER

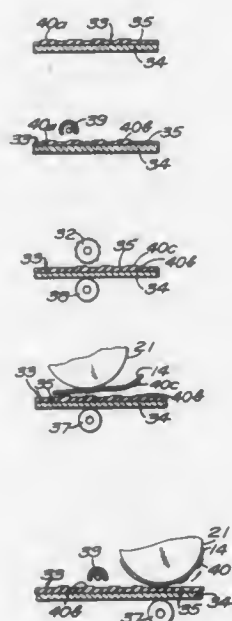
Yutaka Koizumi, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 18, 1980, Ser. No. 188,350

Claims priority, application Japan, Sep. 18, 1979, 54-119767  
Int. Cl.<sup>3</sup> G03G 13/16

U.S. Cl. 430-49

24 Claims



1. A process for making multiple copies comprising the steps of:  
forming a toner image on the surface of a photosensitive member through an electrophotographic process;  
transferring said toner image onto an image retention medium to form a transferred toner image;  
fixing said transferred toner image to said image retention medium to form a fixed toner image; and  
applying ink to said fixed toner image to form an ink image while transferring said ink image to a copy paper.  
10. Apparatus for making multiple copies comprising:

means for making a toner image;  
an image retention medium for receiving said toner image on its surface;  
means for temporarily fixing said toner image to said image retention medium;  
means for applying ink to said toner image thus fixed to said image retention medium; and  
means for transporting a copy paper to bring said copy paper in contact with said image retention medium.

4,338,387

## OVERCOATED PHOTORECEPTOR CONTAINING INORGANIC ELECTRON TRAPPING AND HOLE TRAPPING LAYERS

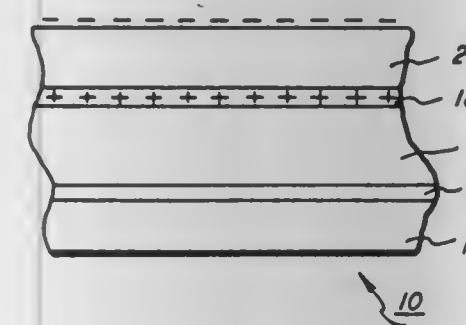
Harvey J. Hewitt, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 2, 1981, Ser. No. 239,240

Int. Cl.<sup>3</sup> G03G 5/14

U.S. Cl. 430-58

9 Claims



1. A layered inorganic photoresponsive device which comprises  
(a) a substrate;  
(b) a layer of electron trapping material, this layer being comprised of halogen doped selenium, halogen doped arsenic selenium alloys, and mixtures thereof;  
(c) a hole transport layer in operative contact with the electron trapping layer, this layer being comprised of a halogen doped selenium arsenic alloy wherein the percentage of selenium present by weight is from about 99.5 percent to about 99.9 percent, the percentage of arsenic present by weight is from about 0.5 percent to about 0.1 percent, and the halogen is present in an amount of from 10 parts per million to about 200 parts per million;  
(d) a charge generating layer overcoated on the hole transport layer; said layer being comprised of alloys of selenium-tellurium, or alloys of selenium, tellurium, and arsenic;  
(e) a hole trapping layer overcoated on the generating layer, said layer being comprised of a halogen doped selenium arsenic alloy wherein the amount of selenium present by weight ranges from about 95 percent to about 99.9 percent, the amount of arsenic present ranges from about 0.1 percent to about 5 percent, and the amount of halogen present ranges from about 10 parts per million to about 200 parts per million; and  
(f) a layer of insulating organic resin overlaying the hole trapping layer.

4,338,388

## ELECTROPHOTOGRAPHIC ELEMENT WITH A PHENYHYDRAZONE CHARGE TRANSPORT LAYER

Kiyoshi Sakai; Mitsuru Hashimoto, both of Numazu, and Tomiko Kawakami, Tokyo, all of Japan, assignors to Ricoh Company, Limited, Tokyo, Japan

Filed Oct. 10, 1979, Ser. No. 83,482

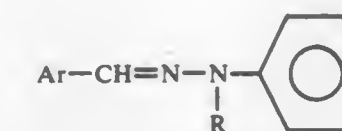
Claims priority, application Japan, Oct. 13, 1978, 53/125145  
Int. Cl.<sup>3</sup> G03G 5/06, 5/14

U.S. Cl. 430-59

23 Claims

1. An electrophotographic element comprising:  
an electroconductive support member,

a charge carrier producing layer,  
a charge transport layer adjacent the charge carrier producing layer, the charge transport layer comprising a hydrazone of the formula;



wherein Ar represents a substituted or unsubstituted fused polycyclic hydrocarbon ring system, and R represents a methyl group, an ethyl group, a benzyl group or a phenyl group; and  
a binder agent.

4,338,389

## CDS-BINDER MEMBER FOR ELECTROPHOTOGRAPHY WITH FE, CO, NI ADDITIVES

Kiyoshi Suzuki, Yokohama, and Kazumi Okano, Fuchu, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan  
Filed Sep. 24, 1980, Ser. No. 190,411

Claims priority, application Japan, Oct. 4, 1979, 54/128326  
Int. Cl.<sup>3</sup> G03G 5/087, 5/09

U.S. Cl. 430-94

3 Claims

1. A photosensitive member for electrophotography having a photoconductive layer formed by dispersing photoconductive cadmium sulfide particles in a binder, wherein said photoconductive layer further contains an additive selected from the group consisting of iron, nickel, cobalt and compounds thereof dispersed in said binder separately from said photoconductive cadmium sulfide particles in an amount of  $1 \times 10^{-5}$  to  $6 \times 10^{-4}$  parts by weight of said additive to 1 part by weight of the binder.

4,338,390

## QUARTERNARY AMMONIUM SULFATE OR SULFONATE CHARGE CONTROL AGENTS FOR ELECTROPHOTOGRAPHIC DEVELOPERS COMPATIBLE WITH VITON FUSER

Chin H. Lu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

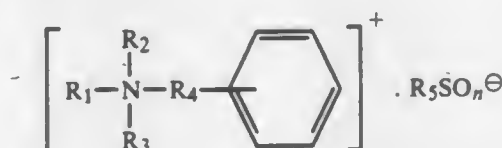
Filed Dec. 4, 1980, Ser. No. 212,969

Int. Cl.<sup>3</sup> G03G 9/08

U.S. Cl. 430-106

32 Claims

1. A dry electrostatic toner composition comprised of toner particles containing resin particles and pigment particles, and from about 0.1 to about 10 percent based on the weight of the toner particles of an organic sulfate or sulfonate composition of the following formula:

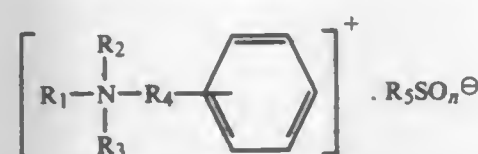


wherein R<sub>1</sub> is an alkyl radical containing from about 12 carbon atoms to about 22 carbon atoms, R<sub>2</sub> and R<sub>3</sub> are independently selected from alkyl groups containing from about 1 carbon atom to about 5 carbon atoms, R<sub>4</sub> is an alkylene group containing from about 1 carbon atom to about 5 carbon atoms, R<sub>5</sub> is a tolyl group or an alkyl group containing from about 1 carbon atom to about 3 carbon atoms and n is the number 3 or 4.

9. A method of imaging comprising forming a negative electrostatic latent image on a photoreceptor surface, contacting the resulting image with a developer composition comprised of positively charged toner particles and carrier particles, the toner particles being comprised of resin particles, pigment particles, and from about 0.1 to about 10 weight per-



cent based on the weight of the toner particles of an organic sulfate or sulfonate composition of the following formula:



followed by subsequently transferring the developed latent image to a substrate, and permanently affixing the image thereto, wherein  $R_1$  is an alkyl radical containing from about 12 carbon atoms to about 22 carbon atoms,  $R_2$  and  $R_3$  are independently selected from alkyl groups containing from about 1 carbon atom to about 5 carbon atoms,  $R_4$  is an alkylene group containing from about 1 carbon atom to about 5 carbon atoms,  $R_5$  is a tolyl group or an alkyl group containing from about 1 carbon atom to about 3 carbon atoms and  $n$  is the number 3 or 4.

#### 4,338,391 MAGNETIC RESIST PRINTING PROCESS, COMPOSITION AND APPARATUS

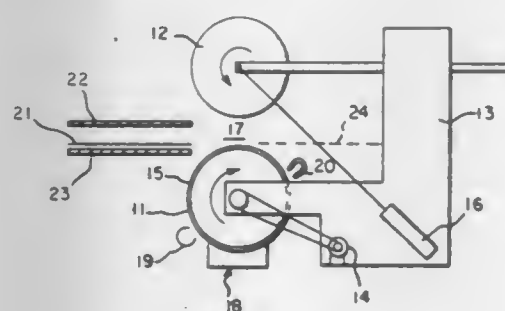
George R. Nacci, Wilmington, Del., and Donald G. Pye, deceased, late of Wilmington, Del. (by Sarah W. Pye, executrix), assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 15,799, Mar. 2, 1979, which is a continuation-in-part of Ser. No. 890,973, Mar. 25, 1978, abandoned. This application Jul. 30, 1980, Ser. No. 173,871

Int. Cl.<sup>3</sup> G03G 19/00

U.S. Cl. 430—122

21 Claims



1. A process for forming a resist on an interstices-free substrate surface comprising the sequential steps of:

- developing a latent magnetic image in a magnetic member with at least two layers of normally nontacky heat-coalescible magnetic toner particles to form a toner image;
- heating the surface on which the resist is to be formed to a temperature of 40°–150° C.;
- bringing the multilayered toner image into contact under pressure with the heated surface for sufficient time by which

- heat is transferred into the toner particles in such a manner that the interface temperature between the toner and substrate surface exceeds the tackification temperature of the toner and the interface between the toner and the magnetic member is below both the adhesion temperature of the toner to the magnetic member and the Curie temperature of the magnetic member; and
- the toner particles under contact pressure are transferred and adhered imagewise to the interstices-free surface;

- separating the magnetic member from the transferred image; and
- modifying the untuned areas of the substrate surface.

2. The resist process of claim 1 and stripping said resist image after the modifying step.

#### 4,338,392 CLASS OF E-BEAM RESISTS BASED ON CONDUCTING ORGANIC CHARGE TRANSFER SALTS

Edward M. Engler, San Jose, Calif.; John D. Kaptis; Robert G. Schad, both of Yorktown Heights, N.Y., and Yaffa Tomkiewicz, Katonah, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

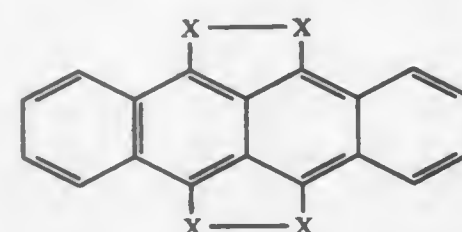
Continuation-in-part of Ser. No. 65,291, Aug. 9, 1979, abandoned. This application Jul. 28, 1981, Ser. No. 287,662

Int. Cl.<sup>3</sup> G03C 1/72

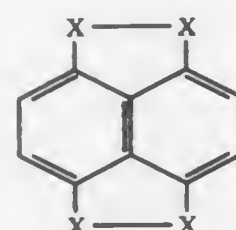
U.S. Cl. 430—270

27 Claims

1. An electron sensitive resist comprising a uniform sublimed solid film of a conducting organic charge transfer material selected from the group consisting of neutral halogen salts of each of the following donors; tetrathiafulvalene and its alkyl derivatives, tetraselenafulvalene and its alkyl derivatives, tetraheterotetracenes having the general structural formula:



where X is S and/or Se; tetraheteronaphthalenes having the general structural formula:



where X is S and/or Se; perylene, tetramethylphenylenediamines, phthalocyanines and porphyrins and wherein said halogen is selected from chlorine, bromine and iodine.

#### 4,338,393 HETEROCYCLIC MAGENTA DYE-FORMING COUPLERS

Joseph Bailey, Bushey Heath, and John Cook, Leighton Buzzard, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 4, 1981, Ser. No. 231,202

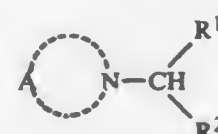
Claims priority, application United Kingdom, Feb. 26, 1980, 8006476

Int. Cl.<sup>3</sup> G03C 7/00, 1/40

U.S. Cl. 430—386

8 Claims

6. A process of forming a magenta dye image in a photographic element comprising a support and an imagewise exposed silver halide emulsion, comprising the step of developing the element with a developer composition containing a color developing agent in the presence of a magenta dye-forming coupler having the structure:



wherein:

A represents the atoms necessary to complete, with the nitrogen atom to which it is attached, a pyrazolotriazole, pyrazolobenzimidazole or indazolin-3-one magenta dye-forming coupler moiety whose coupling position is inactivated by the —CHR<sup>1</sup>R<sup>2</sup> group;

CHR<sup>1</sup>R<sup>2</sup> is a blocking group which, upon reaction with oxidized color developing agent, is detached from the magenta dye-forming coupler moiety to yield a mobile reaction product;

R<sup>1</sup> is alkyl—O—CO—, alkyl—CO—, aryl—O—CO—, aryl—CO—, —COOH, —NO<sub>2</sub> or —CN; and  
R<sup>2</sup> is a group specified for R<sup>1</sup> or aryl—NHCO—.

#### 4,338,394 PROCESS FOR HARDENING PHOTOGRAPHIC GELATIN

Wolfgang Himmelmann, Leverkusen; Peter Berghaller, Cologne, and Johannes Sobel, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

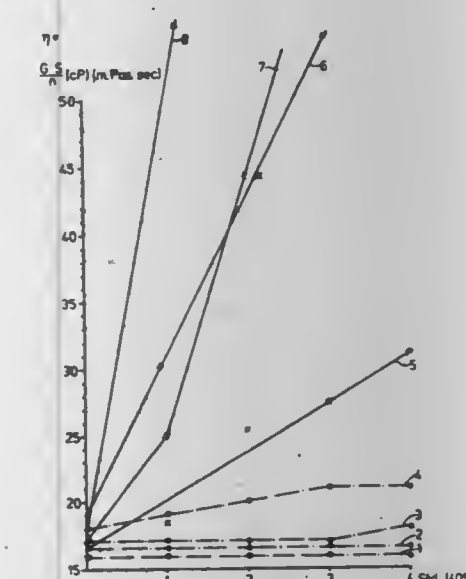
Filed Dec. 29, 1980, Ser. No. 220,756

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1980, 3000407

Int. Cl.<sup>3</sup> G03C 1/30

U.S. Cl. 430—621

5 Claims



1. A process for hardening a photographic silver halide material comprising of a support layer and at least one gelatin-containing layer applied thereto with a compound reacting with the amino groups of the gelatin as crosslinking agent, characterized in that a compound containing from 2 to 6 sulfonyl ethyl sulfate groups in the form of its salts is incorporated as crosslinking agent in the coating composition of the gelatin-containing layer(s) or the gelatin-containing layer(s) applied to the support layer, and in that the activity of the compound as a crosslinking agent is initiated by adjusting a pH-value in the range from 6.5 to 9 in the coating composition or in the range from 6.5 to 11 during the production process in the gelatin-containing layer.

#### 4,338,395 METHOD FOR THE ANALYSIS OF TRIGLYCERIDES

Luis P. Leon, Fairfield, Conn.; Chien-Kuo Yeh, Pleasantville, and Syed I. Ahmad, Orangeburg, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jul. 21, 1980, Ser. No. 171,112

Int. Cl.<sup>3</sup> C12Q 1/50, 1/48

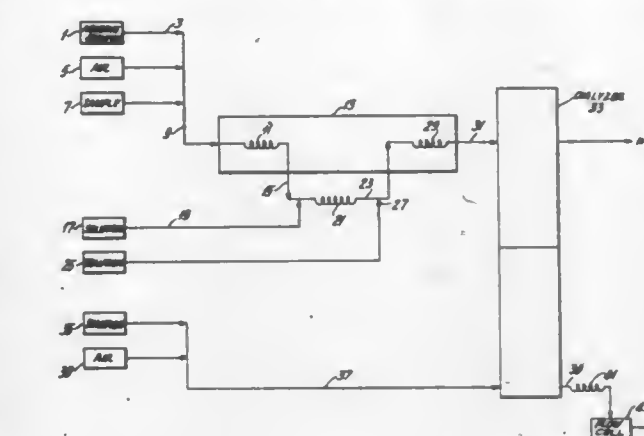
U.S. Cl. 435—17

28 Claims

1. A method for the analysis of triglycerides in a biological fluid which comprises:

- treating said biological fluid to remove endogenous glycerol and pyruvate by combining with said fluid, as a first component, adenosine triphosphate (ATP), enzyme glycerol kinase (GK) and a metal cation activator for said GK, as a second component, enzyme pyruvate kinase (PK) in the presence of substrate phosphoenol pyruvate (PEP) and an enzyme PK activator, and as a third component, glutamate and enzyme alanine aminotransferase (GPT);
- enzymatically hydrolyzing the triglycerides in the result-

ing fluid free of glycerol and pyruvate by combining said fluid with a mixture comprised of a microbial lipase, a surfactant selected from polyoxyethylene (POE) alkylamides, POE esters of fatty acids, POE mercaptans, POE



alkylamines, POE polyol esters, POE acetylenic glycols and POE phosphate esters, and an alkaline earth metal cation, in the form of a salt; and  
(c) determining the amount of glycerol produced from said enzymatic hydrolysis.

#### 4,338,396 HEART ATTACK SCREENING METHOD AND PROCESS

John Y. Kiyasu, 94 Meadow St., Garden City, N.Y. 11530

Continuation-in-part of Ser. No. 922,885, Jul. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 730,102, Oct. 6, 1976, Pat. No. 4,105,499. This application Aug. 13, 1980, Ser. No. 177,662

Int. Cl.<sup>3</sup> C12Q 1/50; B01D 15/08

U.S. Cl. 435—17

5 Claims

1. A process for identification and collection of the creatine phosphokinase-MB fraction from human blood serum, which comprises the steps of priming a chromatographic column having a packing consisting essentially of DEAE-dextran with a strongly anionic polymer as conditioner, introducing a green food marker dye, introducing a sample of human blood serum from a human patient into the primed column, permitting the absorbed fraction from said serum to move from the top of the column matrices through the column to the bottom of the column matrices, introducing about 1 ml. of a solution of 0.3 M NaCl and 0.05 M "Tris" at a pH of 6.9 and identifying by visual observation of the marker dye and collecting from the bottom of said column about 70% of the creatine phosphokinase-MB fraction present in said sample at 100% predictability and in concentrated form.

#### 4,338,397 MATURE PROTEIN SYNTHESIS

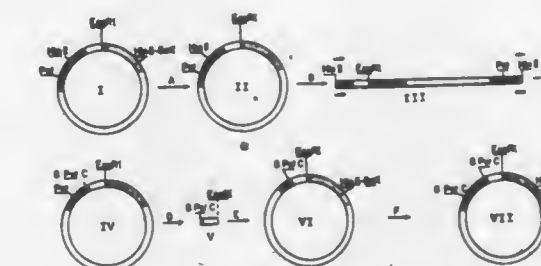
Walter Gilbert, and Karen Talmadge, both of Cambridge, Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Apr. 11, 1980, Ser. No. 139,225

Int. Cl.<sup>3</sup> C12P 21/00

U.S. Cl. 435—68

19 Claims



1. A method of synthesizing within a bacterial host, and secreting through the membrane of the bacterial host, a selected mature protein or polypeptide, which comprises:



- cleaving a cloning vehicle, comprising a plasmid, phage DNA or other DNA sequence which is able to replicate in the bacterial host, to form a cleavage site after a promoter of either (1) a bacterial or phage gene within the cloning vehicle or (2) a DNA fragment of the bacterial or phage gene;
- forming a hybrid gene by inserting into the cleavage site a non-bacterial DNA fragment which codes for a precursor of the selected protein or polypeptide, including the signal sequence of the selected protein or polypeptide;
- transforming the bacterial host with the cloning vehicle; and then
- culturing the transformed bacterial host to secrete the selected protein or polypeptide.

4,338,398

## IMMOBILIZATION OF STARCH DEGRADING ENZYMES

Masaru Yoneyama, Souja, Japan, assignor to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan  
Filed Mar. 13, 1980, Ser. No. 130,182  
Claims priority, application Japan, Mar. 20, 1979, 54-32874; Jan. 12, 1980, 55-2316

Int. Cl.<sup>3</sup> C12P 19/22; C12N 11/00

U.S. Cl. 435—95

10 Claims

1. In a process for preparing immobilized starch-degrading enzyme consisting essentially of immobilizing by physical adsorption a starch-degrading enzyme onto a water-insoluble carrier, thereby insolubilizing said enzyme, the improvement whereby the activity of the enzyme after physical adsorption is enhanced, comprising, prior to the physical adsorption step, modifying or cross-linking, in solution, the starch-degrading enzyme with a mono- or poly-functional reagent at a pH in the range of 3 to 10 and temperatures in the range of 0° to 80° C., in a manner that said enzyme is not substantially insolubilized.

4,338,399

## PROCESS FOR RECOVERING HYDROCARBONS FROM HYDROCARBON-CONTAINING BIOMASS

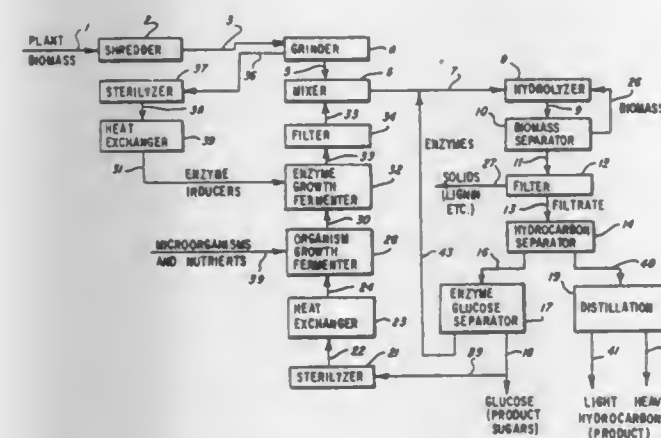
Thomas A. Weil, Naperville; Peter M. Dzadzic, Lisle, both of Ill.; Chien-Cheng J. Shih, Irvine, Calif., and Michael C. Price, West Chicago, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 15, 1980, Ser. No. 187,492

Int. Cl.<sup>3</sup> C12P 19/14, 19/02, 5/00, 5/02

U.S. Cl. 435—99

5 Claims



- A process using enzymes for enzymatically converting whole plant biomass containing hydrocarbon-containing plants selected from the Euphorbiaceae, Apocynaceae, Asclepiadaceae, Compositae, Cactaceae and Pinaceae families and mixtures thereof to soluble sugars and recovering hydrocarbons from said plants in increased yields which comprises:
  - hydrolyzing said whole plant biomass in the presence of enzymes selected from the group consisting of cellulase, hemicellulase and mixtures thereof under conditions which promote conversion of cellulose and hemicellulose to soluble sugars;
  - removing a stream of hydrolysis products comprising a

- liquid sugar-containing phase, a liquid hydrocarbon-containing phase and a solid phase containing unhydrolyzed spent solids, all phases containing enzymes selected from the group consisting of cellulase and hemicellulase enzymes and mixtures thereof from the hydrolysis stage;
- separating liquid phases and solid phases of step (b);
- continuously adding a stream to step (a) of fresh said whole plant biomass to replenish said whole plant biomass converted to hydrolysis products;
- separating said liquid phases from step (c) thereby recovering said enzymes present and said hydrocarbons present;
- recovering a stream of product sugar solution and enzyme solution from step (e);
- sterilizing a sugar product stream from step (f) to serve as sterile growth medium for microorganisms;
- adding the recovered solids from step (c) to the hydrolysis stage;
- providing a stream of makeup enzymes selected from the group consisting of cellulase, hemicellulase and mixtures thereof for the hydrolysis steps by the steps including:
  - in a first zone, growing in a suitable medium enzyme-synthesizing organisms selected from the group consisting of cellulase-synthesizing microorganisms, hemicellulase-synthesizing microorganisms and mixtures thereof, said microorganism-containing medium comprising minor portions of the product solutions;
  - in a second zone contacting said microorganism-containing medium with an amount of cellulosic and hemicellulosic materials in an amount sufficient to induce formation of cellulase and hemicellulase under conditions substantially non-supportive of growth of the cellulase and hemicellulase-secreting microorganisms.

4,338,400

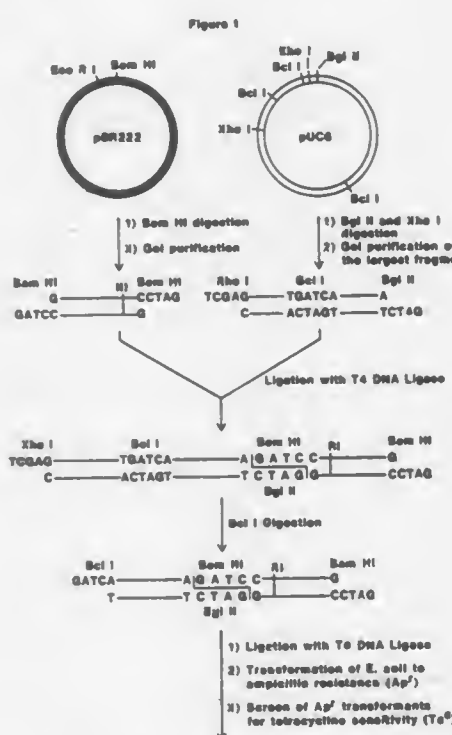
## CO-INTEGRATE PLASMIDS AND THEIR CONSTRUCTION FROM PLASMIDS OF ESCHERICHIA AND STREPTOMYCES

Jack J. Manis, and Sarah K. Highlander, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.  
Filed Jan. 26, 1982, Ser. No. 228,240

Int. Cl.<sup>3</sup> C12N 15/00; C12P 21/00; C12N 1/20, 1/00

U.S. Cl. 435—172

10 Claims



- A process for preparing recombinant plasmid pUC1026 which comprises:
  - digesting plasmid pBR322 with BamHI to obtain linear plasmid DNA;
  - purifying said linear plasmid DNA;

- digesting plasmid pUC6 with BglII and XhoI and purifying the resulting largest DNA fragment;
- precipitating said purified DNA's from steps (b) and (c) and ligating to obtain ligated DNA;
- deproteinizing said ligated sample and then digesting with BclI to obtain linear DNA; and,
- deproteinizing said linear DNA and ligating to obtain recombinant plasmid pUC1026.

4,338,401

## IMMOBILIZATION OF ENZYMES

Pietro Cremonesi, Milan, Italy, assignor to Italfarmaco S.p.A., Milan, Italy

Filed Aug. 4, 1980, Ser. No. 175,349

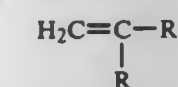
Claims priority, application Italy, Feb. 28, 1980, 20213 A/80

Int. Cl.<sup>3</sup> C12N 11/10, 11/04, 11/08

U.S. Cl. 435—178

14 Claims

1. A process for the preparation of a copolymer of a polysaccharide having enzymatic activity, which comprises adding to a suspension of a polysaccharide in an aqueous medium, a vinyl monomer and an enzyme, wherein the vinyl monomer is an N-acryloyl derivative of a nitrogenous heterocyclic compound or a monomer of the formula



in which R is hydrogen or methyl, R' is CN or COOR'', and R'' is lower alkyl, epoxy substituted lower alkyl or hydroxy substituted lower alkyl, then adding a catalyst which comprises a ferric salt and irradiating the resulting mixture with ultraviolet light to cause polymerization and form said copolymer.

4,338,402

## ARTIFICIAL INSEMINATION INSTRUMENT FOR LIVESTOCK

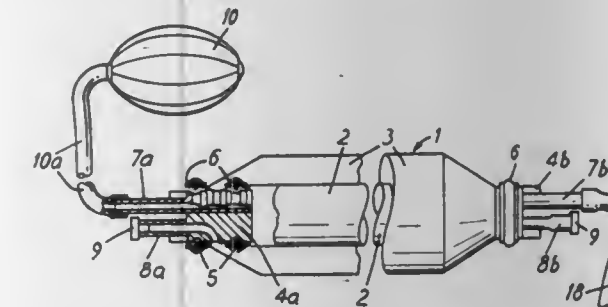
Teruaki Suzuki, Hamamatsu, Japan, assignor to Kabushikikisha Seisan Nipponsha Hamamatsu-Ko, Tokyo, Japan

Filed Jun. 2, 1980, Ser. No. 155,031

Int. Cl.<sup>3</sup> C12M 1/00

U.S. Cl. 435—287

4 Claims



- A storage device for semen, for use in artificial insemination of livestock, comprising a body including an internal space, a dialysis film sealed to the body within said space and dividing said space into a first chamber and a second chamber, two first conduits in said body communicating with said first chamber, at least one second conduit in said body communicating with said second chamber, and means for stoppering said at least one second chamber.

4,338,403

## DIELECTRIC CERAMICS

Syunichiro Kawashima, Nishinomiya; Masamitsu Nishida; Ichiro Ueda, both of Osaka, and Hiromu Ouchi, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 21, 1981, Ser. No. 265,708

Claims priority, application Japan, May 23, 1980, 55-69403; Jul. 17, 1980, 55-98375

Int. Cl.<sup>3</sup> C04B 35/46, 35/50; H01B 3/12

U.S. Cl. 501—136

2 Claims

1. A dielectric ceramic consisting essentially of 34.5 to 82 weight % of titanium oxide (TiO<sub>2</sub>), 9 to 63 weight % of praseodymium oxide (Pr<sub>6</sub>O<sub>11</sub>) and 2.5 to 23.5 weight % of barium oxide (BaO), at most 96 weight % of said praseodymium oxide being replaceable by neodymium oxide (Nd<sub>2</sub>O<sub>3</sub>).

4,338,404

## GEL PERMEATION CHROMATOGRAPHIC PACKING AND PROCESS FOR PRODUCING SAME UTILIZING SUSPENSION POLYMERIZATION

Yasuyuki Tanaka, Hachioji; Junichi Takeda, Tokyo, and Kohji Noguchi, Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 74,028, Sep. 10, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,505

Claims priority, application Japan, Sep. 9, 1978, 53-110211; Dec. 20, 1978, 53-156292

Int. Cl.<sup>3</sup> C08J 9/16

U.S. Cl. 521—52

15 Claims

1. A packing for high speed liquid chromatography prepared by the process which comprises suspending in water a mixture consisting of 65 to 90 parts by weight of at least one monovinylbenzene, 35 to 10 parts by weight of at least one polyvinylbenzene, the total amount of the monovinylbenzene and polyvinylbenzene being 100 parts by weight, and 30 to 200 parts by weight of a solvent capable of dissolving polystyrene, and free radical-polymerizing the monovinylbenzene and the polyvinylbenzene in suspension, said polymerization being carried out in the presence of 0.1 to 5.0 parts by weight of at least one free radical polymerization initiator having a half-life period of about 2 to 60 minutes at 70° C., and in such a manner that at least until the polymerization conversion reaches 50%, the polymerization is effected at a temperature at which the half-life period of the polymerization initiator is in the range of about 5 to 120 minutes to thereby provide a microporous, granular cross-linked monovinylbenzene-polyvinylbenzene copolymer having a volume average particle diameter of about 2 to 50 micrometers, an exclusive molecular weight for polystyrene of about 500 to 20,000, and the weight percent (X) of polyvinylbenzene units based on the total monomeric units in the copolymer and the gradient (α) of the calibration curve of the polystyrene are defined by the region bounded by and including the following three lines in rectangular coordinates (α, X):

$$\alpha = \frac{2}{15} X + \frac{4}{3}$$

$$\alpha = 2.5$$

$$X = 35$$



4,338,405

**PROCESS FOR CONTINUOUS CONTROLLED ALCOHOLYSIS OF POLYVINYL ACETATE**  
 Ronald L. Saxton, West Grove, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 12, 1980, Ser. No. 215,814  
 Int. Cl.<sup>3</sup> C08F 8/12

U.S. Cl. 525—62

13 Claims

1. In a continuous process for the partial alcoholysis of polyvinyl acetate homopolymer or copolymer which process comprises (1) rapidly premixing a methanol solution of polyvinyl acetate homopolymer or copolymer with a methanol solution of a basic catalyst in a mixing zone to form a uniform mixture of said solutions, (2) passing said mixture from the mixing zone into a reaction zone, (3) passing said mixture through said reaction zone while maintaining the temperature and residence time in said reaction zone such that the desired degree of alcoholysis is obtained, (4) continuously removing the resultant products of reaction from the reaction zone and (5) rapidly and uniformly neutralizing the basic catalyst in the resultant solid product by treating said product with an acidified liquid which is an inert non-solvent for the solid product, the improvement which comprises producing a partially alcoholized polyvinyl alcohol having a saponification number of up to about 145 and a maximum hot water insoluble fraction of about 1.1% by premixing catalyst and polymer solutions in a static mixer combined with using an intermeshing, self wiping, twin-rotor mixer, or mixing extruder to provide the reaction zone, and by adjusting the feed temperature, the shear rate in the premixer, and the catalyst concentration in the catalyst feed solution such that the ratio

$$\frac{kC_A(10^2)}{\dot{\gamma}_p}$$

is from about 0.5 to about 1.4

where k is the alcoholysis reaction rate constant in sec<sup>-1</sup>

C<sub>i</sub> is the catalyst feed solution concentration in weight %

$\dot{\gamma}_p$  is the shear rate in the premixer in sec<sup>-1</sup>

provided, that when the saponification number of the partially alcoholized polyvinyl alcohol approaches the maximum value of about 145 the ratio

$$\frac{kC_A(10^2)}{\dot{\gamma}_p}$$

does not exceed about 1.1.

4,338,406

**HIGH-IMPACT POLYAMIDE MOULDING COMPOSITIONS**

John R. Sanderson, Austin, Tex.; Rudolf Binsack; Friedrich Fahnler, both of Krefeld, Fed. Rep. of Germany, and Christian Lindner, Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
 Continuation of Ser. No. 194,772, Oct. 7, 1980, abandoned. This application Jul. 16, 1981, Ser. No. 283,824

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1979, 2941025

Int. Cl.<sup>3</sup> C08L 77/00

U.S. Cl. 525—66

5 Claims

1. A moulding composition comprising  
 I. from 50 to 99% by weight of polyamides having a relative viscosity (as measured on a 1% by weight solution in m-cresol at 25° C.) of from 2.5 to 5.0 and  
 II. from 1 to 50% by weight of graft product produced from (a) 70 to 95% by weight of a crosslinked polymer of butadiene and/or substituted butadiene, of which up to 5% by weight may optionally consist of styrene and/or an ester of (meth)acrylic acid, as the graft substrate and

(b) 5 to 30% by weight of (meth)acrylates as graft monomer, characterised in that the graft monomers are a mixture of (1) from 70 to 95% by weight of an ester of acrylic acid with a primary or secondary alcohol containing from 1 to 4 carbon atoms and

(2) from 5 to 30% by weight of the t-butyl ester of acrylic acid and/or methacrylic acid

the sum of I and II, the sum of (a) and (b) and the sum of (1) and (2) are to amount to 100% by weight.

4,338,407

**STABILIZATION OF HIGH RESILIENCE POLYURETHANE FOAM**

Kiran B. Chandalia, Cheshire, and Henry G. Barnowski, Durham, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 6,951, Jan. 25, 1979, Pat. No. 4,278,770, which is a continuation-in-part of Ser. No. 898,274, Apr. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 881,297, Feb. 27, 1978, abandoned. This application Mar. 2, 1981, Ser. No. 239,846

Int. Cl.<sup>3</sup> C08G 18/14

U.S. Cl. 521—99

29 Claims

1. In a process for preparing a high resilience polyurethane foam from a reaction mixture comprising:

(a) a polyether polyol having a molecular weight of at least about 1,500, a polyhydroxy alcohol nucleus having a functionality from about 2 to about 8, polyoxyalkylene chain segments attached to said nucleus, and a ratio of primary to secondary hydroxyl end groups ranging from about 1.5:1 to about 5.5:1;

(b) an organic polyisocyanate;

(c) a foaming agent; and

(d) a reaction catalyst;

said process including the steps of:

including in said reaction mixture a polyol containing a proportion of an effectively dispersed finely divided solid particulate material, said particulate material having, prior to dispersion in said polyol, an average primary particle size of about 0.007 to about 10 microns and a pH ranging from about 3 to about 5, and further having, in dispersion in said polyol, an effective maximum particle size of less than about 75 microns; and

adding to said reaction mixture an effective proportion of 1,4-cyclohexanedimethanol to stabilize said reaction mixture.

4,338,408

**POLYURETHANES USING BIS(AMINOETHYL)ETHER DERIVATIVES AS CATALYSTS**

Robert L. Zimmerman, Austin, and Ernest L. Yeakey, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

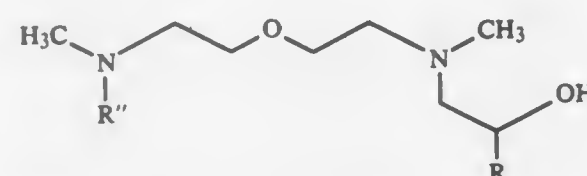
Filed Jul. 20, 1981, Ser. No. 284,900

Int. Cl.<sup>3</sup> C08G 18/18, 18/14

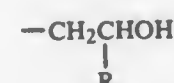
U.S. Cl. 521—115

11 Claims

1. A method for producing a polyurethane which comprises reacting an organic polyisocyanate with an organic polyester polyol or polyether polyol in the presence of a catalytic amount of an amine of the formula



where R is hydrogen or lower alkyl and R'' is methyl or



4,338,409

**ELASTOMERIC THERMOPLASTIC MOULDING COMPOSITIONS**

Ulrich Grigo; Friedrich Fahnler, both of Krefeld; Christian Lindner, Cologne, and Rudolf Binsack, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 13, 1981, Ser. No. 263,287

Claims priority, application Fed. Rep. of Germany, May 20, 1980, 3019233

Int. Cl.<sup>3</sup> C08L 77/00

U.S. Cl. 525—66

5 Claims

1. Elastomeric thermoplastic moulding compositions composed of:

(A) from 5 to 35%, by weight, of a polyamide; and

(B) from 95 to 65%, by weight, of a graft product produced from:

(1) from 70 to 95% by weight of a crosslinked polymer consisting of at least 95%, by weight, of optionally substituted butadiene as graft substrate; and

(2) from 5 to 30%, by weight of an ester of methacrylic acid and/or acrylic acid and an alcohol containing from 1 to 8 carbon atoms as graft monomer, the gel content of the graft base being >70%, as measured in toluene, the degree of grafting G being  $\geq 0.15$  and the average particle diameter of the graft base being from 0.2 to 0.6  $\mu\text{m}$  and the sum of (A) and (B), and (1) and (2) always being 100% by weight.

4,338,410

**PROCESS FOR PRODUCING GRAFT COPOLYMERS**

Katsuji Ueno, Hirakata, and Takashi Maruyama, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 11, 1980, Ser. No. 120,398

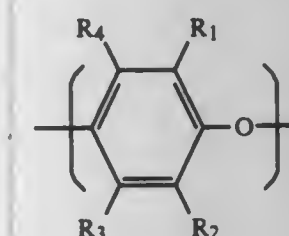
Claims priority, application Japan, Feb. 23, 1979, 54/20954

Int. Cl.<sup>3</sup> C08F 8/00

U.S. Cl. 525—132

10 Claims

1. A process for producing a graft copolymer, which comprises melt-blending 100 parts by weight of a resin mixture comprising 90 to 10% by weight of a polyphenylene oxide having a unit structure of



(wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> each represents hydrogen, a halogen atom, a hydrocarbon or substituted hydrocarbon radical) and 10 to 90% by weight of a styrene polymer in the presence of 0.01 to 5 parts by weight of an oxime compound, a nitroso compound or mixtures thereof.

4,338,411

**MODIFIED RESINS**

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 26, 1981, Ser. No. 238,339

Int. Cl.<sup>3</sup> C08L 23/26

U.S. Cl. 525—145

8 Claims

1. A thermoplastic modified ionomer resin prepared by reaction of an ionic copolymer of ethylene and ethenically unsaturated mono- or dicarboxylic acid of 3-8 carbon atoms in which the acid groups of copolymer are neutralized with metal

ions with 0.2-20 parts by weight of dimethylol phenolic compound per 100 parts by weight of said resin.

4,338,412

**INTUMESCENT COMPOSITIONS OBTAINED BY REACTING POLYISOCYANATES,**

**PHOSPHORUS-CONTAINING SUBSTANCES AND AROMATIC HYDROXY CARBOXYLIC ACIDS ON SALTS**

Wulf von Bonin, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 23, 1981, Ser. No. 276,559

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025309

Int. Cl.<sup>3</sup> C08G 18/14

U.S. Cl. 521—157

6 Claims

1. Intumescent compositions, which may be foamed, obtained by reacting:

(1) polyisocyanates,

(2) phosphorus-containing condensation products having at least one hydroxyl group and obtained by condensing (i) primary or secondary aliphatic, cycloaliphatic, aromatic, araliphatic or heterocyclic monoamines and/or polyamines, which mono- and polyamines may contain OH groups, (ii) carbonyl compounds, and (iii) dialkyl phosphites,

(3) aromatic hydroxy carboxylic acids or salts thereof, and (4) optionally, water and/or additional organic compounds containing isocyanate-reactive hydrogen atoms.

4,338,413

**POLYMER BLENDS**

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 16, 1980, Ser. No. 197,387

Int. Cl.<sup>3</sup> C08L 77/00

U.S. Cl. 525—179

15 Claims

1. A thermoplastic composition comprising a blend of about 20 to 98 parts by weight of plastic, and, correspondingly, about 80 to 2 parts by weight of cured particulate rubber wherein the plastic comprises about 10-90 parts by weight of crystalline polyolefin polymer, and, correspondingly, about 90-10 parts by weight of nylon, and the cured rubber comprises about 10-90 parts by weight of hydrocarbon rubber and, correspondingly, about 90-10 parts by weight of polar rubber, and at least 0.5 part by weight of a functionalized olefin polymer per 100 parts by weight of crystalline polyolefin polymer up to an amount where all of the polyolefin polymer is replaced by functionalized olefin polymer.

4,338,414

**HOT MELT ADHESIVE COMPOSITIONS CONTAINING A POLYSTYRENE RESIN**

Vikramkumar Acharya, and Pallavoor R. Lakshmanan, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 174,296, Jul. 31, 1980, abandoned. This application Jan. 28, 1981, Ser. No. 229,369

Int. Cl.<sup>3</sup> C08F 8/30; C08K 5/01; C08L 91/06

U.S. Cl. 525—193

9 Claims

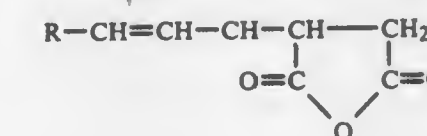
1. A hot melt adhesive composition consisting essentially of:

(a) 10-30 weight % of an alkenyl succinic anhydride,

(b) 20-60 weight % of an ethylene copolymer, and

(c) 10-40 weight % of a tackifying resin;

said alkenyl succinic anhydride having the structure:



where R is an alkyl group containing at least about 15 carbon

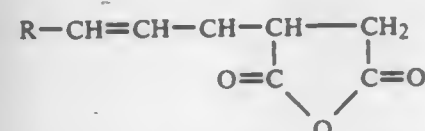


atoms; said ethylene copolymer having polymerized therein at least 40 weight % polymerized ethylene and the balance one or more polymerized monomers from the group consisting of vinyl acetate, acrylic and methacrylic acid and alkyl esters of acrylic and methacrylic acid; and said tackifying resin being a polystyrene resin having a Ring and Ball softening point of about 25°-125° C.

**4,338,415**  
**HOT MELT ADHESIVE COMPOSITIONS CONTAINING AN AROMATIC HYDROCARBON RESIN**  
Vikramkumar Acharya, and Pallavoor R. Lakshmanan, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 174,296, Jul. 31, 1980, abandoned. This application Jan. 28, 1981, Ser. No. 229,400  
Int. Cl.<sup>3</sup> C08F 8/30; C08K 5/01; C08L 91/06

U.S. Cl. 525-193 9 Claims  
1. A hot melt adhesive composition consisting essentially of:  
(a) 10-30 weight % of an alkenyl succinic anhydride,  
(b) 20-60 weight % of an ethylene copolymer, and  
(c) 10-40 weight % of a tackifying resin;  
said alkenyl succinic anhydride having the structure:

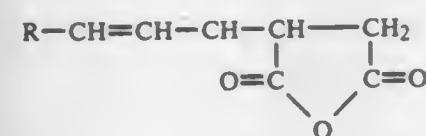


where R is an alkyl group containing at least about 15 carbon atoms; said ethylene copolymer having polymerized therein at least 40 weight % polymerized ethylene and the balance one or more polymerized monomers from the group consisting of vinyl acetate, acrylic and methacrylic acid and alkyl esters of acrylic and methacrylic acid; and said tackifying resin being an aromatic hydrocarbon resin having a Ring and Ball softening point of about 40°-160° C.

**4,338,416**  
**HOT MELT ADHESIVE COMPOSITIONS CONTAINING TERPENE RESINS**  
Vikramkumar Acharya, and Pallavoor R. Lakshmanan, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 174,296, Jul. 31, 1980, abandoned. This application Jan. 28, 1981, Ser. No. 229,401  
Int. Cl.<sup>3</sup> C08F 8/30; C08K 5/01; C08L 91/06

U.S. Cl. 525-193 9 Claims  
1. A hot melt adhesive composition consisting essentially of:  
(a) 10-30 weight % of an alkenyl succinic anhydride,  
(b) 20-60 weight % of an ethylene copolymer, and  
(c) 10-40 weight % of a tackifying resin;  
said alkenyl succinic anhydride having the structure:



where R is an alkyl group containing at least about 15 carbon atoms; said ethylene copolymer having polymerized therein at least 40 weight % polymerized ethylene and the balance one or more polymerized monomers from the group consisting of vinyl acetate, acrylic and methacrylic acid and alkyl esters of acrylic and methacrylic acid; and said tackifying resin being a terpene resin having a Ring and Ball softening temperature of about 10°-150° C.

**4,338,417**  
**METHOD OF PREPARING A POLYMER MIXTURE, FORMED PRODUCTS OBTAINED THEREFROM AND POLYMER ALLOY**

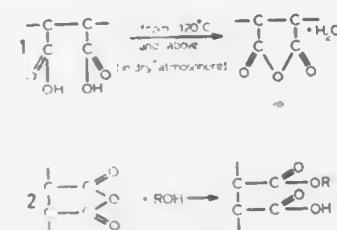
Adolf Heslinga, Hd Pijnacker, and Pieter J. Greidanus, Mk Leiden, both of Netherlands, assignors to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

Continuation-in-part of Ser. No. 105,750, Dec. 20, 1979. This application Jun. 16, 1980, Ser. No. 159,649

Claims priority, application Netherlands, Dec. 22, 1978, 7812529; Dec. 5, 1979, 7908799

Int. Cl.<sup>3</sup> C08L 33/02, 1/12; A61K 47/00; C08F 6/10  
U.S. Cl. 525-197 20 Claims

REACTION EQUATIONS



1. A polymer alloy comprising a first component which is at least one high molecular weight polymer having appendant anhydride groups, at least a portion of which have been protolyzed to form hydrogen atoms thereon, and a second component which is at least one high molecular weight polymer derived from a monomeric ester having vinyl unsaturation, and having reactive groups thereon, at least a portion of which are interacted with the aforementioned hydrogen atoms, so that the two components are linked by hydrogen bonds.

**4,338,418**  
**PROCESS FOR GRAFT COPOLYMERIZATION**  
Heinz Jost, Messel; Hellmuth Knoell, Reichenbach; Gerhard Markert, Ober-Ramstadt-Eiche, and Horst Pennewiss, Neu-Kranichstein, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 8,395, Feb. 1, 1979, Pat. No. 4,281,081. This application Dec. 15, 1980, Ser. No. 216,257

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805826

U.S. Cl. 525-281 6 Claims  
1. The method for making a lubricating-oil additive which improves the viscosity index and has a dispersing and detergent action, which method comprises graft copolymerizing from 0.5 to 10 percent of N-vinyl pyrrolidone together with 0.1 to 3 percent of N-vinyl imidazole onto an oil-soluble polyolefin base polymer, said percentages being by weight of said base polymer.

**4,338,419**  
**PROCESS FOR TREATMENT OF HYDROGEL LENS WITH THIOLS**

Donald R. Korb, Boston, and Paul M. Gallop, Chestnut Hill, both of Mass., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation of Ser. No. 10,991, Feb. 9, 1979, abandoned. This application Sep. 5, 1980, Ser. No. 184,596  
Int. Cl.<sup>3</sup> C08F 8/34; G02C 7/04

U.S. Cl. 525-350 4 Claims  
1. A method for reducing the irritant effect resulting when a hydrogel polymer in the shape of a contact lens and formed by the copolymerization of a major amount of a monoester of an olefinic acid selected from the group of acrylic and meth-

acrylic acids having a single olefinic double bond and a polyhydric lower alcohol, and a minor amount of a polymerizable diester of one of said acids, wherein said diester contains at least two olefinic double bonds, is placed in prolonged contact with the living tissue of the eye and eyelid, said method comprising contacting for a suitable period of time said polymer with a solution containing hydrogen sulfide or a salt thereof.

**4,338,420**  
**ENHANCED WETTABILITY OF HOPE FILMS**  
Harold A. Arbit, Highland Park, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,755  
Int. Cl.<sup>3</sup> C08F 8/00, 8/06

U.S. Cl. 525-388 2 Claims  
1. A method for enhancing wettability of high density polyethylene film, that comprises subjecting said film to plasma surface treatment using oxygen or argon gas atmosphere.

**4,338,421**  
**RESIN COMPOSITION**  
Takashi Maruyama, Toyonaka, and Katsuji Ueno, Hirakata, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 8, 1980, Ser. No. 166,783  
Claims priority, application Japan, Jul. 20, 1979, 54-92998  
Int. Cl.<sup>3</sup> C08L 77/02, 77/06, 71/04

U.S. Cl. 525-397 6 Claims  
1. A process for producing a resin composition which comprises melt-blending 30 to 95% by weight of a polyamide selected from the group consisting of 4-nylon, 6-nylon, 6,6-nylon, 12-nylon, and 6,10-nylon with 70 to 5% by weight of a polyphenylene oxide.

**4,338,422**  
**PREPARATION OF POLYESTERS AND POLY(ESTER-CARBONATES) BY ACIDOLYSIS OF AROMATIC POLYCARBONATES**  
Winston J. Jackson, Jr., Kingsport, Tenn., and William R. Darnell, Weber City, Va., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,289  
Int. Cl.<sup>3</sup> C08L 69/00; C08G 18/42

U.S. Cl. 525-461 9 Claims  
1. Process for the preparation of polyesters and poly(ester-carbonates) comprising preparing a reaction mixture of an aromatic or cycloaliphatic dicarboxylic acid and an aromatic polycarbonate in a molar ratio (r) of dicarboxylic acid/poly-carbonate of about 0.05 to about 0.5, heating the mixture to at least 250° C. for a period of time sufficient to form a hydroxy-terminated prepolymer, and then reducing pressure and distilling out aromatic diol to yield polymer having an inherent viscosity of at least 0.35.

**4,338,423**  
**ALKALINE RESISTANT ORGANIC COATINGS FOR CORROSION SUSCEPTIBLE SUBSTRATES I**  
Joseph W. Holubka, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 31, 1978, Ser. No. 938,671  
Int. Cl.<sup>3</sup> C08L 63/00

U.S. Cl. 525-511 6 Claims  
1. A solvent based, pigmented primer composition, especially suitable for use in retarding corrosion of susceptible substrates without requiring chromate inhibiting pigments, which is an intimate admixture of film forming ingredients which consist essentially of:

(A) A non-carboxy-ester linked epoxy reactant that has an average of at least about two epoxy groups per molecule;  
(B) An amine reactant selected from the group consisting of primary, secondary and primary and secondary amines having a total of up to about 20 carbons per amino nitro-

gen and comprising at least about 75 mole percent hydroxy amine containing one or more primary hydroxy groups removed at least one carbon from any amino nitrogen;

(C) Di or polyhydroxy compound having a boiling point exceeding about 150° C.;

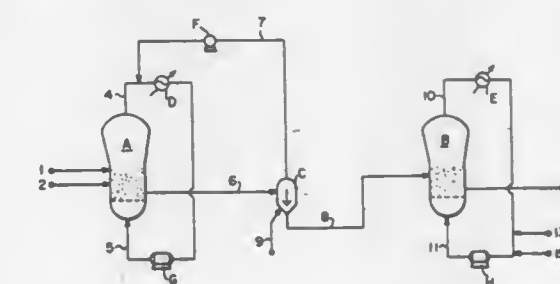
(D) An amine aldehyde resin at about 5-35% by weight of the combined weight of (A), (B) and (C) wherein the ratio of (A) to (B) is such that there is about 0.9-1 amine equivalent per 0.9-1 epoxy equivalent.

**4,338,424**  
**MULTI-STEP GAS-PHASE POLYMERIZATION OF OLEFINS**

Yoshinori Morita, Iwakuni; Akifumi Kato, Ohtake, and Ryoichi Yamamoto, Yamaguchi, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed May 22, 1981, Ser. No. 266,594  
Claims priority, application Japan, May 27, 1980, 55-69558  
Int. Cl.<sup>3</sup> C08F 2/34, 10/00

U.S. Cl. 526-65 8 Claims



1. In a process for polymerizing olefins in the gaseous phase in a first gas-phase polymerization zone and a second gas-phase polymerization zone, which are provided independently from each other, in the presence of a catalyst composed of a transition metal catalyst component and an organometallic compound of a metal of Groups I to III of the periodic table and in the co-presence of hydrogen gas while feeding the catalyst-containing polymer formed in the first zone to the second zone; the improvement wherein

(i) a dilution zone for diluting a feed flow from the first gas-phase polymerization zone which comprises a mixture of the polymer, the catalyst, the olefin gas and hydrogen gas by feeding a fresh supply of olefin gas thereto is provided in a feed passage for feeding said flow from the first gas-phase polymerization zone to the second gas-phase polymerization zone,  
(ii) a part of the gas phase in said feed flow diluted in the dilution zone is recycled to the first gas-phase polymerization zone, and remainder is fed into the second gas-phase polymerization zone, and  
(iii) in the second gas-phase polymerization zone, the hydrogen to olefin mole ratio is maintained lower than that in the first gas-phase polymerization zone.

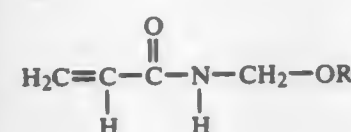
**4,338,425**  
**PROCESS FOR PREPARING DIENE-CONTAINING RUBBERS HAVING IMPROVED GREEN STRENGTH**  
David J. Dougherty, Akron; Binnur Günesin, Uniontown, both of Ohio, and John W. Spiewak, Webster, N.Y., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 24, 1980, Ser. No. 132,736  
Int. Cl.<sup>3</sup> C08F 212/08, 212/34, 220/58

U.S. Cl. 526-216 7 Claims  
1. A process for preparing a diene-containing synthetic rubber, via emulsion polymerization, having improved green strength wherein the improvement comprises:  
forming a copolymer of a conjugated diene monomer, having from about four to about 20 carbon atoms, and a vinyl monomer selected from the group consisting of monovinyl aro-



matic compounds having from eight to about 20 carbon atoms and acrylic compounds having from three to about five carbon atoms, in the presence of an N-(alkoxymethyl)acrylamide monomer having the formula



where R is selected from the group consisting of straight and branched alkyl chains having from 1 to about 20 carbon atoms, said monomers being polymerized at a temperature of from about 0° C. to about 30° C.,

to form a synthetic rubber wherein from about 0.5 to about 10 percent by weight thereof is derived from said N-(alkoxymethyl)acrylamide; from about 10 to about 90 percent by weight thereof is derived from said conjugated diene monomer and from about 1 to about 10 percent by weight thereof is derived from said monomer containing a vinyl group.

#### 4,338,426 INTERMEDIATE, COPOLYMER RESIN AND PRODUCTION THEREOF

Hidetaka Sato; Shunichi Uchimura; Hiroshi Suzuki, and Daisuke Makino, all of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

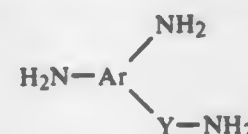
Filed Aug. 6, 1981, Ser. No. 290,566

Claims priority, application Japan, Aug. 27, 1980, 55-118946  
Int. Cl.<sup>3</sup> C08G 77/04

U.S. Cl. 528—26 16 Claims

1. A polyimide-isoindoloquinazolinone-silicone copolymer resin produced by reacting

(a) a diaminoamide compound of the formula:



wherein Ar is an aromatic residue, Y is SO<sub>2</sub> or CO, and one of amino groups and the Y—NH<sub>2</sub> group are positioned at ortho position each other,

(b) a diaminosiloxane,  
(c) a diamine, and  
(d) a tetracarboxylic acid dianhydride,  
to give a polyamide acid-silicone intermediate, which is then subjected to dehydration and ring closure.

4,338,427  
PROCESS FOR PRODUCING  
POLYIMIDE-AMIDE-CARBOXYLIC ACID  
Iwao Maekawa, and Daisuke Makino, both of Hitachi, Japan, assignors to Hitachi Chemical Company Ltd., Tokyo, Japan  
Filed Apr. 10, 1980, Ser. No. 138,976

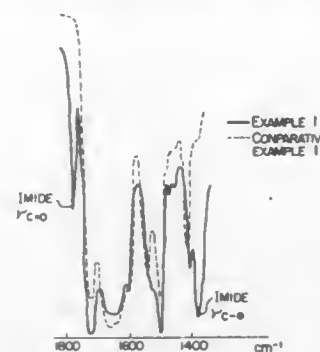
Claims priority, application Japan, Apr. 10, 1979, 54-43827  
Int. Cl.<sup>3</sup> C08G 18/32, 18/30

U.S. Cl. 528—53 10 Claims

1. A process for producing a polyimide-amide-carboxylic acid which comprises

(a) reacting an aromatic diamine with an aromatic tetracarboxylic acid dianhydride in amounts of 1.5 to 2.0 moles of the dianhydride per mole of the diamine in the presence of an inert solvent, and

(b) reacting the resulting intermediate reaction product with an aromatic diisocyanate in about equivalent amounts at a



temperature of 50° to 100° C. while removing generated carbon dioxide from the reaction system.

4,338,428  
NOVEL POLYAMIDES FROM KETENE-AMINALS  
Louis M. Alberino, Cheshire, and Dale F. Regelman, Wallingford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

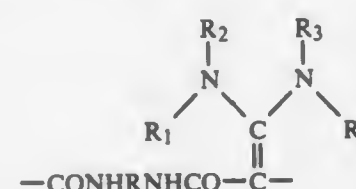
Filed Aug. 14, 1981, Ser. No. 292,872

Int. Cl.<sup>3</sup> C08G 18/32, 18/38, 69/08

U.S. Cl. 528—73

18 Claims

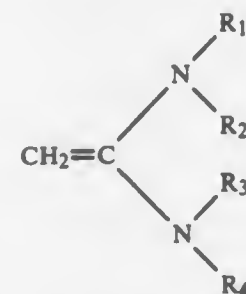
1. A polyamide having the recurring unit



wherein R is a divalent hydrocarbon radical, R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, and R<sub>4</sub> when taken separately are independently selected from the group consisting of lower alkyl, aralkyl, and cycloalkyl, and when taken together as R<sub>1</sub> with R<sub>2</sub> and R<sub>3</sub> with R<sub>4</sub> with the respective nitrogen atoms to which they are attached represent independently a heterocyclic group having from 5 to 7 ring atoms.

10. A process for the preparation of a polyamide as defined in claim 1 said process comprising bridging together under anhydrous conditions,

A. a ketene-aminal having the formula



wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, and R<sub>4</sub> when taken separately are independently selected from the group consisting of lower alkyl, aralkyl, and cycloalkyl and when taken together as R<sub>1</sub> with R<sub>2</sub> and R<sub>3</sub> with R<sub>4</sub> with the respective nitrogen atoms to which they are attached represent independently a heterocyclic group having from 5 to 7 ring atoms; and  
B. an organic diisocyanate R(NCO)<sub>2</sub> wherein R is a divalent hydrocarbon radical wherein said ketene-aminal and said diisocyanate are present in substantially stoichiometric proportions.

4,338,429  
PROCESS FOR WORKING UP POLYCARBONATES  
Volker Serini, Krefeld; John Goossens, Cologne; Ludwig Bottenbruch, Krefeld, and Dieter Freitag, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,015

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928444

Int. Cl.<sup>3</sup> C08J 3/10

U.S. Cl. 528—196

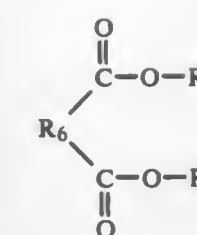
8 Claims

1. In the process for working up two-phase mixtures which are obtained in the course of the synthesis of polycarbonates by the two-phase boundary process, the improvement comprising one or more of the steps of

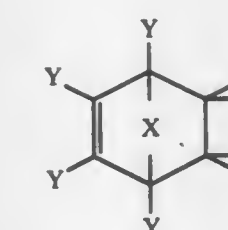
(i) promoting the separation of the acidic two-phase mixture resulting from the acidification of the organic phase obtained by separation from alkaline two-phase mixture into an organic phase and an aqueous phase by the addition of one or more cationic emulsifying agents and/or dispersing agents and, optionally, by the application of shear energy; and,

(ii) promoting the separation of the two-phase mixture resulting from water washing of the organic phase obtained by separation of the acidic two-phase mixture by adding one or more water-soluble organic anionic compounds to the wash water.

6. In the process for working up two-phase mixtures which are obtained in the course of the synthesis of polycarbonates characterized in that they contain at least 50% by weight units derived from 2,2-bis-(3,5-dimethyl-4-hydroxyphenyl)-propane, by the two-phase boundary process, the improvement in promoting the separation of the alkaline two-phase mixture, obtained upon completion of the synthesis reaction, into an organic phase and an aqueous phase consisting essentially of the addition of one or more cationic emulsifying agents and/or dispersing agents and optionally by the application of shearing energy.



wherein R<sub>4</sub> is selected from the group consisting of a lower alkyl radical having 1 to 4 carbon atoms, and hydrogen with one R<sub>4</sub> group being alkyl and one R<sub>4</sub> group being hydrogen, and R<sub>6</sub> is a divalent radical of the formula:



wherein Y, which is the same or different, is selected from the group consisting of hydrogen, and methyl and X is an alkylidene radical of from 1 to 6 carbon atoms; said reaction being conducted by the application of heat to the mixture of said monomers in two stages, wherein in the first stage the monomer mixture is heated at a temperature of from about 250° to about 350° F. for a period of from about 0.5 to about 3 hours to form a prepolymer, and in the second stage the prepolymer is heated to a temperature sufficient to cross-link said prepolymer to form a polyimide, the improvement which comprises incorporating into the mixture of said monomers prior to reaction at least one peroxide catalyst of the formula:

#### 4,338,430 PREPARATION OF POLYIMIDE COMPOSITIONS WITH CYCLIC PEROXYKETAL CATALYST

Robert Edelman, Staten Island, N.Y., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,701

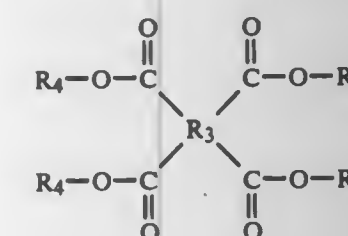
Int. Cl.<sup>3</sup> C08G 73/10

U.S. Cl. 528—222

17 Claims

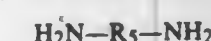
1. In a process for preparing a polyimide composition by reacting a mixture of monomers comprising:

(a) at least one ester of the formula:

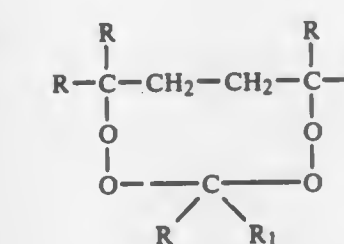


wherein R<sub>3</sub> is a tetravalent aryl radical, and R<sub>4</sub> is selected from the group consisting of a lower alkyl radical having 1 to 4 carbon atoms, and hydrogen, with two R<sub>4</sub> groups being alkyl and two R<sub>4</sub> groups being hydrogen;

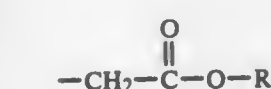
(b) at least one amine of the formula:



wherein R<sub>5</sub> is a divalent aryl radical; and  
(c) at least one ester of the formula:



wherein R, which is the same or different, is a lower alkyl group having from 1 to about 3 carbon atoms, and R<sub>1</sub> is an alkyl acetate group of the formula:



wherein R<sub>2</sub> is an alkyl group having from 1 to about 4 carbon atoms, in an amount of from about 0.5 to about 15%, by weight, based on the weight of the mixture of monomers.



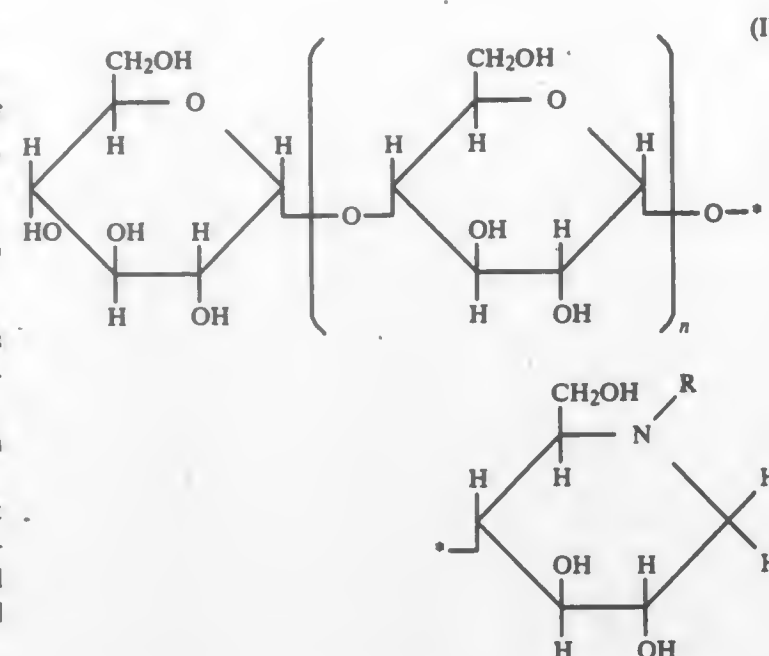
4,338,431  
**PROCESS FOR THE PREPARATION OF NEOPENTYL GLYCOL POLYESTERS AND CO-POLYESTERS**  
 Klaus König, Leverkusen; Wolfgang Reichmann, Duesseldorf, and Manfred Schönfelder, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
 Filed Feb. 15, 1980, Ser. No. 122,149  
 Claims priority, application Fed. Rep. of Germany, Mar. 1, 1979, 2907952

Int. Cl.<sup>3</sup> C08G 63/22

U.S. Cl. 528—272

11 Claims

1. A process for the preparation of neopentyl glycol polyesters and co-polyesters which comprises reacting:  
 (a) carboxylic acids, their anhydrides or their esters with monohydric alcohols; with  
 (b) neopentyl glycol and, optionally, other glycols boiling at higher temperatures than neopentyl glycol, wherein neopentyl glycol is present in an amount between 20 and 100% by weight based on the total weight of neopentyl glycol and the higher boiling glycols, accompanied by removal of the water of condensation or of the monohydric alcohol, characterized in that the reaction is carried out in the presence of from about 0.1–3% by weight, based on the polyester, of a glycol boiling at lower temperatures than neopentyl glycol.



wherein n is an integer of from 0 to 7, and R is H or lower alkyl.

4,338,432  
**INDICAN AND SUSPENSIONS AND GELS THEREOF AND THEIR USES**

Christopher J. Lawson, and Kenneth C. Symes, both of Reading, England, assignors to Talres Development (N.A.) N.V., Netherlands Antilles

Filed Feb. 29, 1980, Ser. No. 126,311

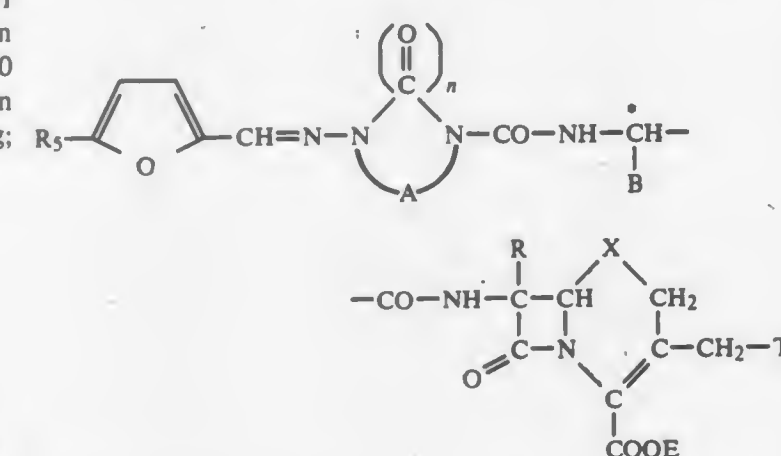
Claims priority, application United Kingdom, Mar. 6, 1979, 7907786

Int. Cl.<sup>3</sup> C12P 19/04

U.S. Cl. 536—123

3 Claims

1. Indican, a polysaccharide consisting essentially of (1→3) glucose, (1→4) mannose, (1→4) rhamnose and (1→3 or 4)-O-(1-carboxyethyl)rhamnose units in a molar ratio of about 2:1:1:2:1 respectively; containing 12–15% by weight acetyl units;  $[\alpha]_D^{20}$  about  $-61^\circ$ ; having principle absorption bands in the infra red band at 3390, 1735, 1615, 1375, 1250 and 1050  $\text{cm}^{-1}$ ; a solubility of at least 1% by weight in methanol and in ethylene glycol; and an inherent viscosity of about 33.5 dl/g; separated from the culture from which it was prepared.



4,338,433  
**MORANOLINE DERIVATIVES AND PROCESS FOR PREPARATION THEREOF**

Shingo Matsumura, Kyoto; Hiroshi Enomoto, Nagaokakao; Yoshiaki Aoyagi, Kyoto; Yoji Ezure, Otsu; Yoshiaki Yoshikuni, Kyoto; Masahiro Yagi, Kusatsu, and Nobutoshi Ojima, Kyoto, all of Japan, assignors to Nippon Shinyaku Co. Ltd., Japan

Filed Dec. 8, 1980, Ser. No. 214,009

Claims priority, application Japan, Dec. 8, 1979, 54-159417; Jun. 6, 1980, 55-76838; Sep. 22, 1980, 55-131949  
 Int. Cl.<sup>3</sup> C08B 37/16

U.S. Cl. 536—46

11 Claims

1. A moranoline derivative of the formula:

or a pharmaceutically usable salt thereof or a hydrate thereof, in which  
 R is hydrogen or lower alkoxy;  
 R<sub>5</sub> is hydrogen, lower alkyl, trifluoromethyl, halogen, amino, lower alkylamino, di-lower alkylamino, formylamino, acetylamino,  $\text{CH}_3\text{OCONH}$ ,  $\text{C}_2\text{H}_5\text{OCONH}$ ,  $\text{CH}_3\text{SO}_2\text{NH}$ , hydroxyl, methoxy, ethoxy, methylthio, ethylthio,  $\text{CH}_3\text{SO}_2$ ,  $\text{CH}_3\text{SO}$ ,  $\text{HOOC}$ ,  $\text{HO}_2\text{S}$ ,  $\text{HCO}$ , lower alkyl-CO, lower alkoxy-CO or CN;  
 A is  $-\text{CH}_2-\text{CH}_2-$ ;  $-\text{CH}_2-\text{CH}_2-\text{CH}_2-$  or

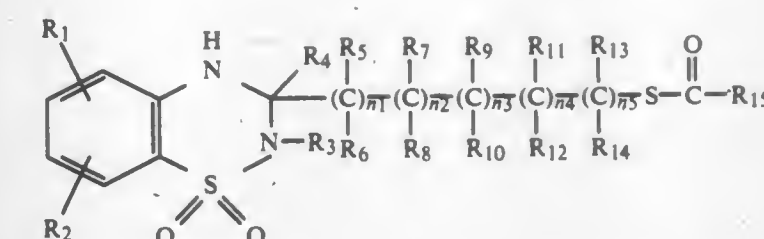


n is 1 or 2;

B is a heterocyclic group connected through one of its carbon atoms and selected from the group consisting of pyrazolyl, imidazolyl, oxazolyl, oxidazolyl, 2-amino- and 2-oxo- $\Delta^4$ -thiazolyl, tetrazolyl, sydnonyl, furyl, thienyl, pyrrolyl, thiazolyl, isothiazolyl, isoxazolyl, and thiadiazolyl, said heterocyclic group being unsubstituted or substituted by halogen,  $\text{C}_1$ - $\text{C}_6$ -alkyl, cyano, sulfo or methylsulfonyl;

X is S, O, SO,  $\text{SO}_2$  or  $\text{CH}_2$ ;

T is hydrogen,  $\text{C}_1$ - $\text{C}_4$ -alkyl-CO-O-, pyridinium, 4-carboxamidopyridinium, aminopyridinium, carbamoyloxy, azido, cyano or hydroxyl, or  $-\text{S}-$ phenyl or



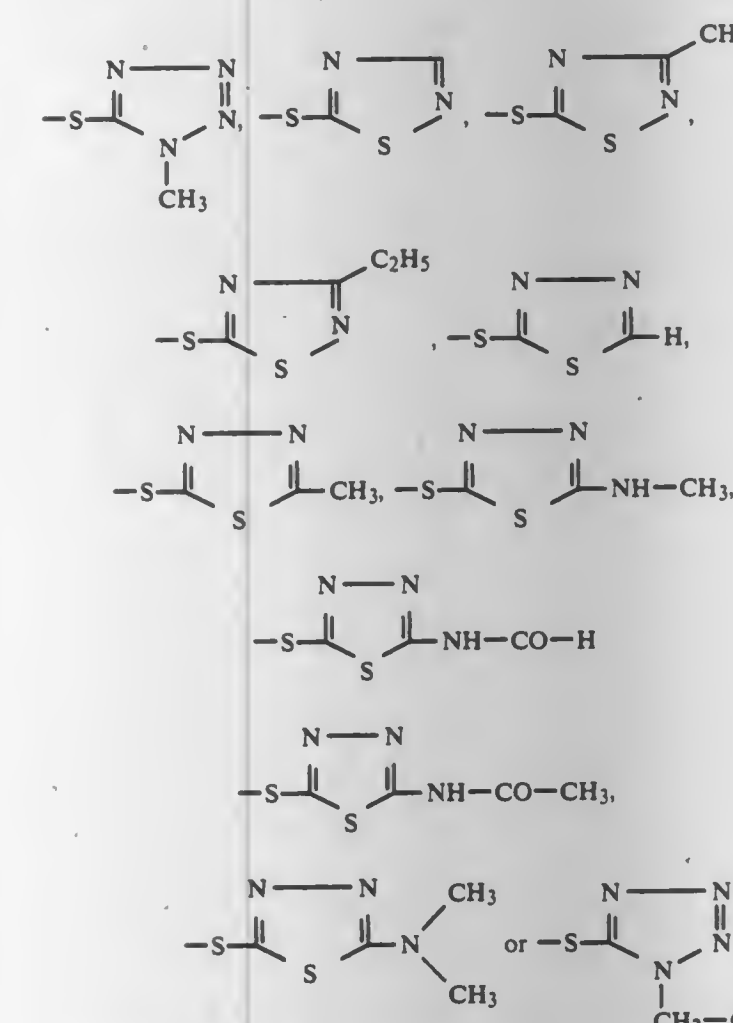
wherein R<sub>1</sub> and R<sub>2</sub> are each independently hydrogen, halogen, trifluoromethyl, aminosulfonyl, nitro, alkyl or alkoxy;

R<sub>3</sub> is hydrogen, alkyl, or phenylmethyl;

R<sub>4</sub> is hydrogen, alkyl, or phenyl, and R<sub>15</sub> is alkyl, phenyl or phenylmethyl, or R<sub>4</sub> and R<sub>15</sub> together are  $-(\text{CH}_2)_m-$  wherein m is 1 or 2;

R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub>, R<sub>11</sub>, R<sub>12</sub>, R<sub>13</sub> and R<sub>14</sub> are each independently hydrogen, halogen, alkyl or phenyl;

n<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>, n<sub>4</sub>, and n<sub>5</sub> are each independently 0 or 1; with the proviso that if R<sub>4</sub> and R<sub>15</sub> together are  $-(\text{CH}_2)_m-$ , the sum of n<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>, n<sub>4</sub>, n<sub>5</sub> and m is 2 or 3.



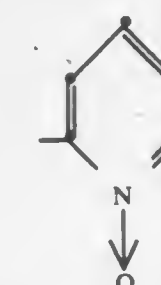
optionally substituted by halogen, amino, lower alkylamino, di-lower alkylamino, lower alkyl,  $\text{C}_3$ - $\text{C}_7$ -cycloalkyl, lower alkoxy, trifluoromethyl, phenyl, benzyl or carboxylic acid acylamino with 2 to 5 carbon atoms; and  
 E is hydrogen, a pharmaceutically usable salt-forming cation or a conventional protective group.

wherein  
 Q is chloro, bromo, methoxy or a group of the formula  $-\text{CH}_2\text{R}_2$

wherein  
 R<sub>2</sub> is  
 (a) carbamoyloxy or  $\text{C}_1$ - $\text{C}_4$  alkylcarbamoyloxy;  
 (b) chloro or bromo; or  
 (c) a group of the formula  $-\text{SR}_3$

wherein  
 R<sub>3</sub> is  $\text{C}_1$ - $\text{C}_4$  alkyl, phenyl or phenyl substituted with 1 or 2 groups selected from the group consisting of  $\text{C}_1$ - $\text{C}_4$  alkyl,  $\text{C}_1$ - $\text{C}_4$  alkoxy, halo, hydroxy, nitro, cyano, methanesulfonamido and trifluoromethyl;

or  
 R<sub>3</sub> is a group of the formula



4,338,435  
**BENZOTHIADIAZINES HAVING DIURETIC ACTIVITY**  
 Radiger D. Haugwitz, Titusville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 1, 1981, Ser. No. 268,944

Int. Cl.<sup>3</sup> C07D 285/30, 285/24

U.S. Cl. 544—13

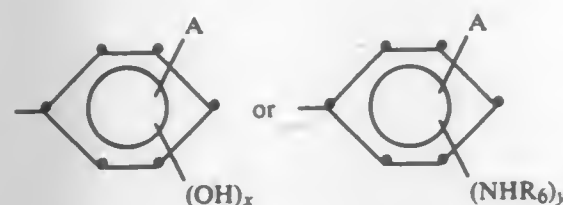
9 Claims

1. A compound having the formula

and R is cyclohexadienyl, phenyl or phenyl substituted with 1 or 2 groups selected from the group consisting of  $\text{C}_1$ - $\text{C}_4$  alkyl,  $\text{C}_1$ - $\text{C}_4$  alkoxy, halo, hydroxy, protected hydroxy, nitro, cyano,



methanesulfonamido and trifluoromethyl; or R is 2-thienyl, 3-thienyl, 2-furyl or 3-furyl; and R<sub>1</sub> is a group of the formula



wherein

X is 1, 2, or 3, and y is 1 or 2, and wherein A is a substituent selected from the group consisting of hydrogen, halo, C<sub>1</sub>-C<sub>4</sub> alkoxy, amino, protected amino, hydroxy, protected hydroxy, C<sub>1</sub>-C<sub>4</sub> alkyl, nitro, cyano, methanesulfonamido and trifluoromethyl, and R<sub>6</sub> is hydrogen or an amino protecting group; and R<sub>0</sub> is hydrogen, indanyl, phthalidyl or an acyloxymethyl group of the formula



wherein Y' is C<sub>1</sub>-C<sub>4</sub> alkyl or phenyl; and when R<sub>0</sub> is hydrogen, the pharmaceutical acceptable non-toxic salts of the acids represented thereby.

4,338,437

## CEPHALOSPORIN ANTIBIOTICS

Burton G. Christensen, Scotch Plains; Sandor Karady, Elizabeth; Lovji D. Cama, Edison, and Meyer Slettinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 149,364, Jun. 2, 1971, Pat. No. 4,297,488. This application Apr. 30, 1980, Ser. No. 145,113

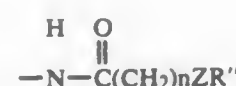
Claims priority, application United Kingdom, Jun. 16, 1970, 29158/70; Jul. 9, 1970, 33415/70; Sep. 3, 1970, 46556/70; Dec. 10, 1970, 58731/70; Jan. 27, 1971, 3296/71; Jan. 27, 1971, 3297/71; Jan. 27, 1971, 3298/71; Feb. 8, 1971, 4179/71; Feb. 11, 1971, 4479/71; Feb. 11, 1971, 4480/71; Feb. 26, 1971, 5588/71; Apr. 30, 1971, 29158/71

Int. Cl.<sup>3</sup> C07D 501/20

U.S. Cl. 544—021

10 Claims

1. The compound 3-A-7-loweralkyl-7-acylamido-3-cephem-4-carboxylic acid wherein A is methyl, hydroxymethyl, chloromethyl, bromomethyl, or fluoromethyl, mercaptomethyl, methoxymethyl, n-propoxymethyl, methylthiomethyl, acetoxymethyl, propionyloxymethyl, benzoyloxymethyl, (p-chlorobenzoyl)-oxymethyl, (p-methylbenzoyl)-oxymethyl, pivaloyloxymethyl, (1-adamantyl)carboxymethyl, butanoyloxymethyl, carbamoyloxymethyl, (N-methylcarbamoyl)-oxymethyl, (N-ethylcarbamoyl)-oxymethyl, [N-(2-chloroethyl)-carbamoyl]-oxymethyl, (N-phenylcarbamoyl)-oxymethyl, (N-p-sulfophenylcarbamoyl)-oxymethyl, p-carboxymethylphenylcarbamoyloxymethyl, methoxycarbonyloxymethyl, isobutanoyloxymethyl, cyclobutylcarbonyloxymethyl, carbamoylthiomethyl, (ethoxythiocarbonyl)thiomethyl, (n-propoxythiocarbonyl)thiomethyl, (cyclopentanoxythiocarbonyl)thiomethyl, N,N-diethylthiocarbonylthiomethyl, N-methylpiperazinium-1-thiocarbonylthiomethyl, N,N-dimethylpiperazinium-1-thiocarbonylthiomethyl, 2-furoylthiomethyl, isothiuroniummethyl, (5-methyl-1,3,4-thiadiazol-2-yl)-thiomethyl, p-tolylsulfonylthiomethyl, mesyloxymethyl, 1-methyl-1,2,3,4-tetrazolyl-5-thiomethyl, tosyloxymethyl, sulfamoyloxymethyl, 1-naphthoyloxymethyl, 2-furylacetoxy-methyl, cinnamoyloxymethyl, p-hydroxycinnamoyloxymethyl, p-sulfocinnamoyloxymethyl and 1R:2S-epoxypropylphosphonyloxymethyl, or pyridinium methyl; and acylamido is



wherein n is 0-4, Z is oxygen or sulfur, and R' is benzyl, p-hydroxybenzyl, 4-amino-4-carboxybutyl, methyl, cyanomethyl, 2-pentenyl, n-amyl, n-heptyl, ethyl, 3- or 4-nitrobenzyl, phenethyl, β,β-diphenylethyl, methylphenylmethyl, triphenylmethyl, 2-methoxyphenyl, 2,6-dimethoxyphenyl, 2,4,6-trimethoxyphenyl, 3,5-dimethyl-4-isoxazolyl, 3-butyl-5-methyl-4-isoxazolyl, 5-methyl-3-phenyl-4-isoxazolyl, 3-(2-chlorophenyl)-5-methyl-4-isoxazolyl, 3-(2,6-dichlorophenyl)-5-methyl-4-isoxazolyl, D-4-amino-4-carboxybutyl, D-4-N-benzoylamino-4-carboxy-n-butyl, p-aminobenzyl, o-aminobenzyl, m-aminobenzyl, (3-pyridyl)-methyl, 2-ethoxy-1-naphthyl, 3-carboxy-2-quinolalanyl, 3-(2,6-dichlorophenyl)-5-(2-furyl)-4-isoxazolyl, 3-phenyl-4-isoxazolyl, 5-methyl-3-(4-guanidinophenyl)-4-isoxazolyl, 4-guanidinomethylphenyl, 4-guanidinomethylbenzyl, 4-guanidinobenzyl, 4-guanidinophenyl, 2,6-dimethoxy-4-guanidinophenyl, o-sulfobenzyl, p-carboxymethylbenzyl, p-carbamoylmethylbenzyl, m-fluorobenzyl, m-bromobenzyl, p-chlorobenzyl, p-methoxybenzyl, 1-naphthylmethyl, 3-isothiazolylmethyl, 4-isothiazolylmethyl, 5-isothiazolylmethyl, 4-pyridylmethyl, 5-isoxazolylmethyl, 4-methoxy-5-isoxazolylmethyl, 4-methyl-5-isoxazolylmethyl, 1-imidazolylmethyl, 2-benzofuranyl-methyl, 2-indolylmethyl, 2-phenylvinyl, 2-phenylethynyl, 2-(5-nitrofuranyl)vinyl, phenyl, o-methoxyphenyl, o-chlorophenyl, o-phenylphenyl, p-aminomethylbenzyl, 1-(5-cyanotriazolyl)methyl, di-fluoromethyl, dichloromethyl, dibromomethyl, 1-(3-methylimidazolyl)methyl, 2- or 3-(5-carboxymethylthienyl)-methyl, 2- or 3-(4-carbamoylthienyl)methyl, 2- or 3-(5-methylthienyl)methyl, 2- or 3-(5-methoxythienyl)methyl, 2- or 3-(4-chlorothieryl)methyl, 2- or 3-(sulfothieryl)methyl, 2- or 3-(5-carboxythienyl)methyl, 3-(1,2,5-thiadiazolyl)methyl, 3-(4-methoxy-1,2,5-thiadiazolyl)methyl, 2-furylmethyl, 2-(5-nitrofuryl)methyl, 3-furylmethyl, 2-thienylmethyl, 3-thienylmethyl, and tetrazolylmethyl; and the pharmaceutically acceptable salts thereof, or the carboxylic acid protecting derivatives thereof wherein the derivative group is methyl, t-butyl, trichloroethyl, allyl, propargyl, benzyl, diphenylmethyl, o-nitrobenzyl, 3,5-dinitrobenzyl, p-methoxybenzyl, acetoxymethyl, pivaloyloxymethyl, phenacyl, trichloroethoxy carbonyl, trimethylsilyl or tributyltin.

4,338,438

## CEPHALOSPORIN ANTIBIOTICS

Burton G. Christensen, Scotch Plains; Sandor Karady, Elizabeth; Lovji D. Cama, Edison, and Meyer Slettinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 149,364, Jun. 2, 1971, Pat. No. 4,297,488. This application Apr. 30, 1980, Ser. No. 145,114

Claims priority, application United Kingdom, Jun. 16, 1970, 29158/71; Jul. 9, 1970, 33415/70; Sep. 3, 1970, 46556/70; Dec. 10, 1970, 58731/70; Jan. 27, 1971, 3296/71; Jan. 27, 1971, 3297/71; Jan. 27, 1971, 3298/71; Feb. 8, 1971, 4179/71; Feb. 11, 1971, 4479/71; Feb. 11, 1971, 4480/71; Feb. 26, 1971, 5588/71; Apr. 30, 1971, 29158/71

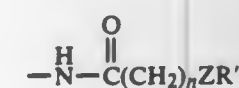
Int. Cl.<sup>3</sup> C07D 501/20

U.S. Cl. 544—21

10 Claims

1. The compound 3-A-7-loweralkylthio-7-acylamido-3-cephem-4-carboxylic acid wherein A is methyl, hydroxymethyl, chloromethyl, bromomethyl, or fluoromethyl, mercaptomethyl, methoxymethyl, n-propoxymethyl, methylthiomethyl, acetoxymethyl, propionyloxymethyl, benzoyloxymethyl, (p-chlorobenzoyl)-oxymethyl, (p-methylbenzoyl)-oxymethyl, pivaloyloxymethyl, (1-adamantyl)carboxymethyl, butanoyloxymethyl, carbamoyloxymethyl, (N-methylcarbamoyl)-oxymethyl, (N-ethylcarbamoyl)-oxymethyl, [N-(2-chloroethyl)-carbamoyl]-oxymethyl, (N-phenylcarbamoyl)-oxymethyl, (N-p-sulfophenylcarbamoyl)-oxymethyl, p-carbox-

ymethylphenylcarbamoyloxymethyl, methoxycarbonyloxymethyl, isobutanoyloxymethyl, cyclobutylcarbonyloxymethyl, carbamoylthiomethyl, (ethoxythiocarbonyl)thiomethyl, (n-propoxythiocarbonyl)thiomethyl, (cyclopentanoxythiocarbonyl)thiomethyl, N,N-diethylthiocarbonylthiomethyl, N-methylpiperazinium-1-thiocarbonylthiomethyl, N,N-dimethylpiperazinium-1-thiocarbonylthiomethyl, 2-furoylthiomethyl, isothiuroniummethyl, (5-methyl-1,3,4-thiadiazol-2-yl)-thiomethyl, p-tolylsulfonylthiomethyl, mesyloxymethyl, 1-methyl-1,2,3,4-tetrazolyl-5-thiomethyl, tosyloxymethyl, sulfamoyloxymethyl, 1-naphthoyloxymethyl, 2-furylacetoxy-methyl, cinnamoyloxymethyl, p-hydroxycinnamoyloxymethyl, p-sulfocinnamoyloxymethyl and 1R:2S-epoxypropylphosphonyloxymethyl, or pyridinium methyl; and acylamido is



wherein n is 0-4, Z is oxygen or sulfur, and R' is benzyl, p-hydroxybenzyl, 4-amino-4-carboxybutyl, methyl, cyanomethyl, 2-pentenyl, n-amyl, n-heptyl, ethyl, 3- or 4-nitrobenzyl, phenethyl, β,β-diphenylethyl, methylphenylmethyl, triphenylmethyl, 2-methoxyphenyl, 2,6-dimethoxyphenyl, 2,4,6-trimethoxyphenyl, 3,5-dimethyl-4-isoxazolyl, 3-butyl-5-methyl-4-isoxazolyl, 5-methyl-3-phenyl-4-isoxazolyl, 3-(2-chlorophenyl)-5-methyl-4-isoxazolyl, 3-(2,6-dichlorophenyl)-5-methyl-4-isoxazolyl, D-4-amino-4-carboxybutyl, D-4-N-benzoylamino-4-carboxy-n-butyl, p-aminobenzyl, o-aminobenzyl, m-aminobenzyl, (3-pyridyl)-methyl, 2-ethoxy-1-naphthyl, 3-carboxy-2-quinolalanyl, 3-(2,6-dichlorophenyl)-5-(2-furyl)-4-isoxazolyl, 3-phenyl-4-isoxazolyl, 5-methyl-3-(4-guanidinophenyl)-4-isoxazolyl, 4-guanidinomethylphenyl, 4-guanidinomethylbenzyl, 4-guanidinobenzyl, 4-guanidinophenyl, 2,6-dimethoxy-4-guanidinophenyl, o-sulfobenzyl, p-carboxymethylbenzyl, p-carbamoylmethylbenzyl, m-fluorobenzyl, m-bromobenzyl, p-chlorobenzyl, p-methoxybenzyl, 1-naphthylmethyl, 3-isothiazolylmethyl, 4-isothiazolylmethyl, 5-isothiazolylmethyl, 4-pyridylmethyl, 5-isoxazolylmethyl, 4-methoxy-5-isoxazolylmethyl, 4-methyl-5-isoxazolylmethyl, 1-imidazolylmethyl, 2-benzofuranyl-methyl, 2-indolylmethyl, 2-phenylvinyl, 2-phenylethynyl, 2-(5-nitrofuranyl)vinyl, phenyl, o-methoxyphenyl, o-chlorophenyl, o-phenylphenyl, p-aminomethylbenzyl, 1-(5-cyanotriazolyl)methyl, di-fluoromethyl, dichloromethyl, dibromomethyl, 1-(3-methylimidazolyl)methyl, 2- or 3-(5-carboxymethylthienyl)-methyl, 2- or 3-(4-carbamoylthienyl)methyl, 2- or 3-(5-methylthienyl)methyl, 2- or 3-(5-methoxythienyl)methyl, 2- or 3-(4-chlorothieryl)methyl, 2- or 3-(sulfothieryl)methyl, 2- or 3-(5-carboxythienyl)methyl, 3-(1,2,5-thiadiazolyl)methyl, 3-(4-methoxy-1,2,5-thiadiazolyl)methyl, 2-furylmethyl, 2-(5-nitrofuryl)methyl, 3-furylmethyl, 2-thienylmethyl, 3-thienylmethyl, and tetrazolylmethyl; and the pharmaceutically acceptable salts thereof, or the carboxylic acid protecting derivatives thereof wherein the derivative group is methyl, t-butyl, trichloroethyl, allyl, propargyl, benzyl, diphenylmethyl, o-nitrobenzyl, 3,5-dinitrobenzyl, p-methoxybenzyl, acetoxymethyl, pivaloyloxymethyl, phenacyl, trichloroethoxy carbonyl, trimethylsilyl or tributyltin.

4,338,439

## 7-[2-(SUBSTITUTED

BENZOYL]AMINO]ACETAMIDO]CEPHALOSPORINS  
David K. Herron, and William H. W. Lunn, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 717,774, Aug. 25, 1976, Pat. No. 4,319,028.

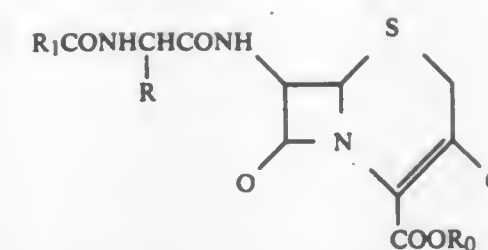
This application Dec. 7, 1978, Ser. No. 967,450

Int. Cl.<sup>3</sup> C07D 501/42

U.S. Cl. 544—24

14 Claims

1. A compound of the formula

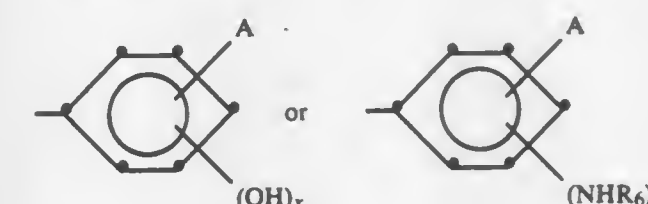


wherein Q is methyl or a group of the formula —CH<sub>2</sub>R<sub>2</sub> wherein

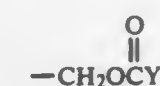
R<sub>2</sub> is

- (a) C<sub>2</sub>-C<sub>4</sub> alkanoyloxy;
- (b) C<sub>1</sub>-C<sub>4</sub> alkoxy; or
- (c) pyridinium or monosubstituted pyridinium wherein the substituent is selected from the group consisting of C<sub>1</sub>-C<sub>4</sub> alkyl, halo, hydroxy, hydroxymethyl, trifluoromethyl, carbamoyl, C<sub>1</sub>-C<sub>4</sub> alkylcarbamoyl, carboxy, cyano, and acetyl; and

R is cyclohexadienyl, phenyl or phenyl substituted with 1 or 2 groups selected from the group consisting of C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, halo, hydroxy, protected hydroxy, nitro, cyano, methanesulfonamido and trifluoromethyl; or R is 2-thienyl, 3-thienyl, 2-furyl or 3-furyl; and R<sub>1</sub> is a group of the formula



wherein X is 1, 2, or 3, and y is 1 or 2, and wherein A is substituent selected from the group consisting of hydrogen, halo, C<sub>1</sub>-C<sub>4</sub> alkoxy, amino, protected amino, hydroxy, protected hydroxy, C<sub>1</sub>-C<sub>4</sub> alkyl, nitro, cyano, methanesulfonamido and trifluoromethyl, and R<sub>6</sub> is hydrogen or an amino protecting group; and R<sub>0</sub> is hydrogen, indanyl, phthalidyl or an acyloxymethyl group of the formula



wherein Y' is C<sub>1</sub>-C<sub>4</sub> alkyl or phenyl; and when R<sub>0</sub> is hydrogen, the pharmaceutical acceptable nontoxic salts of the acids represented thereby.

4,338,440

## DIARYL PHOSPHATE MORPHOLINIUM SALTS

John J. Hawkins, Santa Ana, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Division of Ser. No. 107,031, Dec. 26, 1979, Pat. No. 4,271,002, which is a continuation-in-part of Ser. No. 52,639, Jun. 27, 1979, Pat. No. 4,276,141, which is a continuation-in-part of Ser. No. 880,908, Feb. 24, 1978, abandoned. This application Oct. 14, 1980, Ser. No. 196,717

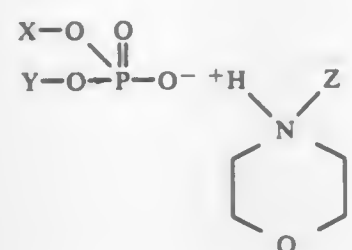
Int. Cl.<sup>3</sup> C07F 9/12

U.S. Cl. 544—110

7 Claims

1. A compound having a formula



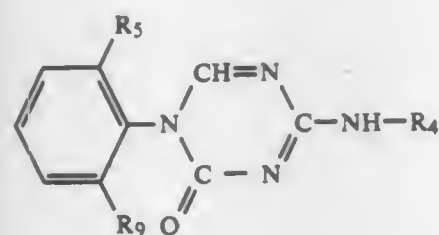


wherein

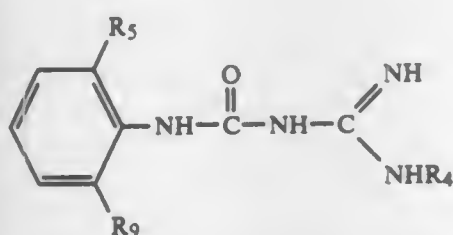
each X and Y is an alkyl(aryl), radical wherein said alkyl moiety consists of 1-12 carbon atoms; and said aryl moiety consists of 6, 10, 12 or 14 carbon atoms; and Z is selected from a group consisting of alkyl radicals containing 1-12 carbon atoms; alkenyl and alkynyl radicals containing 4-12 carbon atoms; and cycloalkyl and cycloalkenyl radicals containing 6 to 12 carbon atoms.

#### 4,338,441 TRIAZINONES

George H. Douglas, Malvern; William L. Studt, Harleysville; Chong M. Won, Warrington; Stuart A. Dodson, Lansdale, and Jerome J. Zalipsky, Melrose Park, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.  
Division of Ser. No. 959,611, Nov. 13, 1978, Pat. No. 4,246,409.  
This application Jan. 15, 1981, Ser. No. 225,198  
Int. Cl.<sup>3</sup> C07D 251/42, 401/04, 401/14, 403/04  
U.S. Cl. 544-211 37 Claims  
1. A process for preparing a 1,2-dihydro-1,3,5-triazin-2-one of the formula:



which comprises treating an amidinorea of the formula:



with an N,N-disubstituted alkanolic acid amide-acetal in the presence of hydrogen ion wherein R<sub>5</sub> and R<sub>9</sub> are each hydrogen, halo, lower alkyl, lower alkoxy or halo-lower alkyl; and R<sub>4</sub> is hydrogen, lower alkyl, lower alkoxy, or halo-lower alkyl.

#### 4,338,442 PREPARATION OF 1,5-METHYLENE-3,7-DINITRO-1,3,5,7-TETRAAZACYCLOOCTANE

Richard A. Strecker, Randolph, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.  
Filed Apr. 15, 1981, Ser. No. 254,567  
Int. Cl.<sup>3</sup> C07D 251/72

U.S. Cl. 544-215

6 Claims

1. A process for preparing 1,5-methylene-3,7-dinitro-1,3,5,7-tetraazacyclooctane (DPT) which comprises reacting nitrourea and formaldehyde in aqueous medium at a pH of about 2 to about 6-7 to cause the evolution of carbon dioxide gas and formation of an intermediate compound, and reacting the

intermediate compound with aqueous ammonia and formaldehyde at a pH of about 6 to 7 to form DPT.

#### 4,338,443

**SYNTHESIS OF N-(2-HYDROXYETHYL)PIPERAZINE**  
Michael E. Brennan, and George P. Speranza, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.  
Filed Aug. 15, 1980, Ser. No. 178,339  
Int. Cl.<sup>3</sup> C07D 295/08

U.S. Cl. 544-401

1 Claim

1. A method for the synthesis of N-(2-hydroxyethyl)piperazine which comprises the step of effecting a simultaneous reductive alkylation-cyclization reaction of monoethanolamine and diethanolamine at a temperature of 125°-250° C. and under a pressure range of 300-800 psig in presence of a hydrogen atmosphere and a hydrogenation-dehydrogenation catalyst comprising 60 to 85 mol percent nickel, 14 to 37 mol percent copper, and 1-5 mol percent chromium.

#### 4,338,444

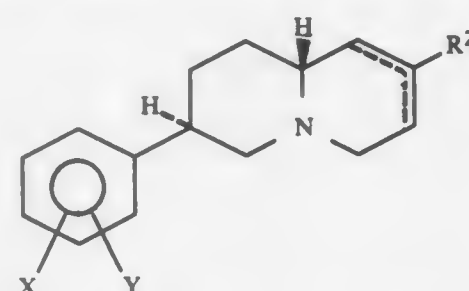
##### PHENYL-HEXAHYDRO-2H-QUINOLIZINES

Rene Imhof, Wittnau, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.  
Division of Ser. No. 148,646, May 12, 1980, Pat. No. 4,272,627, which is a division of Ser. No. 85,096, Oct. 15, 1979, Pat. No. 4,236,010. This application Dec. 18, 1980, Ser. No. 217,864  
Claims priority, application Switzerland, Oct. 13, 1978, 10654/78; Aug. 3, 1979, 7156/79  
Int. Cl.<sup>3</sup> C07D 455/02

U.S. Cl. 546-138

3 Claims

1. A compound of the formula



VI

wherein X is fluorine, chlorine or trifluoromethyl; Y is hydrogen; R<sub>2</sub> is phenyl; and the dotted line denotes a double bond in the 1,2- or 2,3-position, its racemate or an enantiomer thereof.

#### 4,338,445

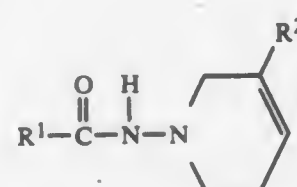
##### N-(CARBONYLAMINO)-TETRAHYDROPYRIDYL DERIVATIVES

Edward E. Knaus; Linda A. Corleto, both of Edmonton, Canada, and Kinfe Redda, San Juan, P.R., assignors to Canadian Patents & Development Limited, Ottawa, Canada  
Filed Aug. 18, 1980, Ser. No. 179,249  
Claims priority, application Canada, Aug. 31, 1979, 335090  
Int. Cl.<sup>3</sup> C07D 213/89

U.S. Cl. 546-270

9 Claims

1. A compound of the formula



and their non-toxic pharmaceutically-acceptable salts, wherein R<sup>1</sup> is selected from cycloalkyl having 3-7 carbon atoms, aralkyl having 1-6 carbon atoms in the alkyl group, phenoxymethyl having 1-6 carbon atoms in the alkyl group, phenyl when R<sup>2</sup> is CONH<sub>2</sub> or CON (lower alkyl)<sub>2</sub>.

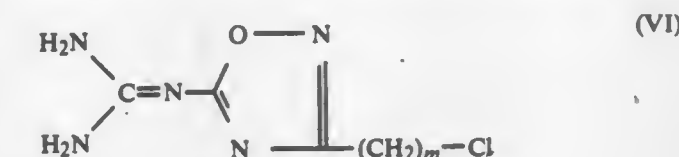
#### 4,338,448

**3-CHLOROALKYL-5-GUANIDINO-1,2,4-OXADIAZOLES**  
Tobias O. Yellin, Wallingford, Pa., and Derrick M. Mant, Bramhall, England, assignors to Imperial Chemical Industries Limited, London, England and ICI Americas Inc., Wilmington, Del.  
Continuation of Ser. No. 36,361, May 7, 1979, Pat. No. 4,242,351. This application Aug. 1, 1980, Ser. No. 174,495  
Claims priority, application United Kingdom, May 24, 1978, 21738/78  
Int. Cl.<sup>3</sup> C07D 271/06

U.S. Cl. 548-133

2 Claims

1. An oxadiazole derivative of the following formula (VI):



wherein  
m is 1 to 4.

#### 4,338,449

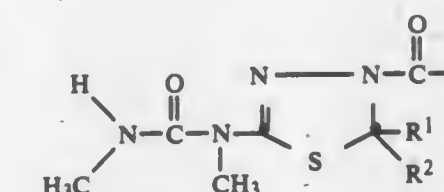
##### HERBICIDAL THIADIAZOLINES

Eddie V. P. Tao, and Gilbert S. Staten, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.  
Filed Jun. 15, 1981, Ser. No. 273,718  
Int. Cl.<sup>3</sup> C07D 285/12

U.S. Cl. 548-140

9 Claims

1. A compound of the formula



wherein R is C<sub>1</sub>-C<sub>4</sub> alkyl, 2-fluorophenyl, 2-chlorophenyl or 2-trifluoromethylphenyl;  
R<sup>1</sup> and R<sup>2</sup> are independently hydrogen or C<sub>1</sub>-C<sub>2</sub> alkyl, provided that no more than one of R<sup>1</sup> and R<sup>2</sup> is hydrogen.

#### 4,338,447

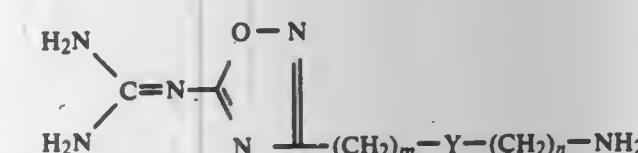
##### 5-GUANIDINO-1,2,4-OXADIAZOLES

Tobias O. Yellin, Wallingford, Pa., and Derrick M. Mant, Bramhall, England, assignors to Imperial Chemical Industries Limited, London, England and ICI Americas Inc., Wilmington, Del.  
Division of Ser. No. 36,361, May 7, 1979, Pat. No. 4,242,351.  
This application Aug. 1, 1980, Ser. No. 174,493  
Claims priority, application United Kingdom, May 24, 1978, 21738/78  
Int. Cl.<sup>3</sup> C07D 271/06

U.S. Cl. 548-133

2 Claims

1. An oxadiazole derivative of the following formula (III):



III

wherein

Y is an oxygen or sulphur atom, a direct bond or a methylene radical;  
m is 0 to 4;  
n is 1 to 4;  
provided that when Y is a sulphur or oxygen atom, m is 1 to 4, and when Y is an oxygen atom, n is 2 to 4.

#### 4,338,450

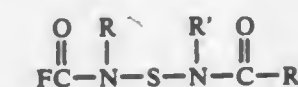
##### CARBAMATE-SULFENYL-CARBAMOYL FLUORIDE COMPOUNDS

Themistocles D. J. D'Silva, S. Charleston, W. Va., assignor to Union Carbide Corporation, Conn.  
Filed Dec. 1, 1975, Ser. No. 636,629  
Int. Cl.<sup>3</sup> C07D 307/77, 317/00; C07C 121/00, 121/50, 51/58, 69/00; C07D 279/10

U.S. Cl. 548-185

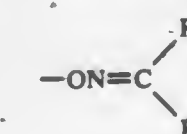
10 Claims

1. A compound of the formula:



wherein:

R and R' are the same or different and are alkyl groups having from one to four carbon atoms and R'' is

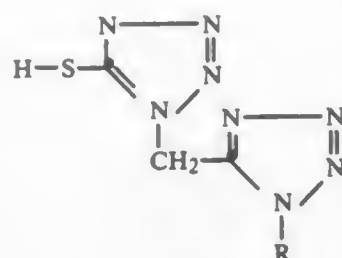


wherein:

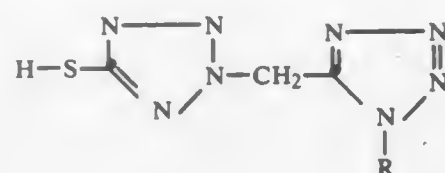
R<sub>1</sub> is hydrogen, alkyl, alkylthio or cyano; R<sub>2</sub> is alkyl,



alkylthio, alkoxy, alkanoyl or alkoxy carbonyl, amino carbonyl, alkylaminocarbonyl or dialkylaminocarbonyl, all of which may be unsubstituted or aliphatically substituted in any combination with one or more cyano, nitro, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy, aminocarbonyl, alkylaminocarbonyl, or dialkylaminocarbonyl groups; or R<sub>2</sub> is phenyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl or an R<sub>3</sub>CONH— or R<sub>3</sub>CON(alkyl)-group, where R<sub>3</sub> is hydrogen, alkyl or alkoxy.

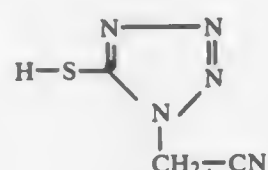


and a compound of the formula



wherein each R is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl.

7. The compound of the formula



4,338,451

#### 5-HYDROXYMETHYL OXAZOLIDINONES

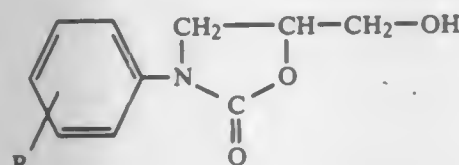
Philippe L. Dostert, Chaville; Colette A. Douzon, Paris; Guy R. Bourger, Colombes; Claude G. Gouret, Meudon; Gisele C. Mocquet, Paris, and Jean A. Coston, Garches, all of France, assignors to Delalande S.A., Courbevoie, France  
Division of Ser. No. 932,212, Aug. 9, 1978, Pat. No. 4,250,318.  
This application Aug. 1, 1980, Ser. No. 174,415  
Claims priority, application France, Aug. 26, 1977, 77 26105; May 23, 1978, 78 15342

Int. Cl.<sup>3</sup> C07D 263/24; A61K 31/42

U.S. Cl. 548—232

14 Claims

1. A compound having the formula



in which R is selected from the group consisting of:

- (1) p-SR<sub>1</sub> in which R<sub>1</sub> is alkyl having 5 carbon atoms or CH<sub>2</sub>COCH<sub>3</sub>;
- (2) p-OR<sub>2</sub> in which R<sub>2</sub> is selected from the group consisting of isopentyl, 3,3-dimethylbutyl, cycloalkylmethyl in which the cycloalkyl has from 3 to 7 carbon atoms, cycloalkylethyl in which the cycloalkyl has 5 to 6 carbon atoms, penten-4-yl, 1-cycloalkenemethyl having 6 or 7 carbon atoms, 1-methyl cyclopentylmethyl, 1,4-cyclohexadiene methyl, 1,3-oxathiolan-2-yl methyl, 1,3-dithiocyclohex-2-yl methyl, tetrahydropyran-2-yl methyl, tetrahydropyran-3-yl methyl and tetrahydropyran-4-yl methyl;
- (3) the group —O—CH<sub>2</sub>—CO—R<sub>7</sub> situated in meta or para position and in which R<sub>7</sub> is alkyl having 1 to 3 carbon atoms; and
- (4) the group —O—(CH<sub>2</sub>)<sub>n</sub>—CN situated in meta or para position and in which n is 1, 2, 3 or 4.

4,338,452

1-AND

#### 2-(1-ALKYL-1H-TETRAZOL-5-YL-METHYL)-1H-TETRAZOL-5-THIOLS AND 1-CYANOMETHYL TETRAZOLE-5-THIOL

Allen S. Katner, and Stephen J. Bogard, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 17, 1980, Ser. No. 187,861

Int. Cl.<sup>3</sup> C07D 257/04; A61K 31/43, 31/545

U.S. Cl. 548—251

7 Claims

1. A compound selected from the group consisting of a compound of the formula

4,338,453  
AMINOALKYL-1,2,4-TRIAZOLES  
Martin Gall, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

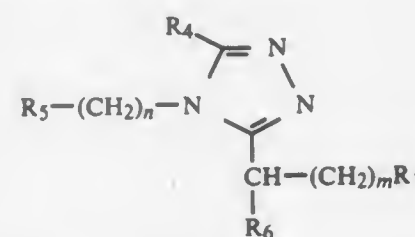
Filed Sep. 17, 1980, Ser. No. 187,920

Int. Cl.<sup>3</sup> C07D 249/08, 241/06, 233/10, 295/02

U.S. Cl. 548—263

16 Claims

1. A compound according to formula 1



or a pharmacologically acceptable salt thereof, wherein m is zero, one, 2 or 3; wherein n is zero, one or 2, wherein R<sub>1</sub> is:

- (a) 1-piperidinyl substituted at the 3 or 4 position by R<sub>15</sub>, wherein R<sub>15</sub> is defined as below;
- (b) —N(CH<sub>3</sub>)—(CH<sub>2</sub>)<sub>p</sub>—R<sub>15</sub>, wherein R<sub>15</sub> and p are defined as below and wherein p is 1, 2, or 3; or
- (c) —NH—(CH<sub>2</sub>)<sub>p</sub>—R<sub>15</sub> wherein R<sub>15</sub> is as defined as below and wherein p is 1, 2, or 3;

wherein R<sub>4</sub> is:

- (a) hydrogen;
- (b) alkyl of one to three carbon atoms, inclusive;
- (c) R<sub>54</sub>OCH<sub>2</sub>—, wherein R<sub>54</sub> is as defined below;
- (d) —CH(R<sub>35</sub>)(OH);
- (e) —R<sub>35</sub>;
- (f) —SH;
- (g) S(O)<sub>q</sub>R<sub>17</sub>, wherein q is zero, one or two; and R<sub>17</sub> is as defined below;
- (h) 1-hydroxy-1-cyclohexyl; or
- (i) 1-cyclohexen-1-yl;

wherein R<sub>5</sub>, R<sub>15</sub>, R<sub>25</sub>, and R<sub>35</sub> are the same or different and are

- (i) 2, 3, or 4 pyridinyl, or

- (ii) phenyl substituted by zero to 2 chloro, fluoro, bromo, alkyl of from one to 3 carbon atoms, or alkoxy of from one to 3 carbon atoms, or
- (iii) phenyl substituted by one trifluoromethyl and zero to one of the previous phenyl substituents;

wherein R<sub>6</sub> is:

- (a) hydrogen;
- (b) —OR<sub>54</sub>;
- (c) alkanoyloxy of from one to 3 carbon atoms; or
- (d) alkyl of from one to 3 carbon atoms; with the proviso that when m is zero, R<sub>6</sub> does not contain oxygen; and wherein R<sub>17</sub> is methyl, phenyl, benzyl, or 2-phenylethyl; and wherein R<sub>54</sub> is hydrogen or alkyl of one to 3 carbon atoms; or an enantiomer when R<sub>4</sub> is —CH(R<sub>35</sub>)OH or when R<sub>6</sub> is not hydrogen or diastereomer when R<sub>4</sub> is —CH(R<sub>35</sub>)OH and R<sub>6</sub> is not hydrogen of such compound.

4,338,454

#### PENTACHLOROPHENYL 3-(TRIETHOXSILYL) PROPYL ETHER

John P. Wesson, Croton-on-Hudson, N.Y.; Thomas C. Williams, Ridgefield, Conn., and Robert G. Eagar, Jr., Yorktown Heights, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sep. 30, 1980, Ser. No. 192,603

Int. Cl.<sup>3</sup> C07F 7/18

U.S. Cl. 556—445

1 Claim

1. The compound pentachlorophenyl 3-(triethoxysilyl)propyl ether.

4,338,455

#### NOVEL PROCESS AND INTERMEDIATES USEFUL IN THE PREPARATION OF SYMPATHOMIMETIC AMINES

Jacob A. Zupan, Lawrence, Kans., assignor to Merck & Co., Inc., Rahway, N.J.

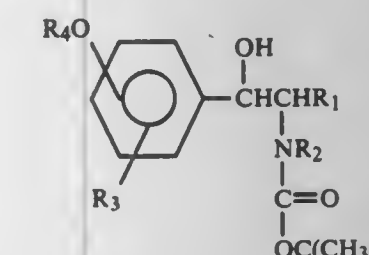
Filed Feb. 11, 1981, Ser. No. 233,457

Int. Cl.<sup>3</sup> C07C 125/065

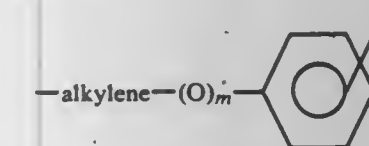
U.S. Cl. 560—29

18 Claims

1. A compound of the general formula



wherein R<sub>1</sub> is H or alkyl of 1 to 7 carbon atoms; R<sub>2</sub> is H, alkyl of 1 to 7 carbon atoms, or



wherein m is zero or one, the alkylene portion contains 1 to 5 carbon atoms, and X is H or —OR<sub>4</sub>' wherein R<sub>4</sub>' is identical to R<sub>4</sub> as defined below; R<sub>3</sub> is H, Cl, —CH<sub>2</sub>OH or —OR<sub>4</sub>' wherein R<sub>4</sub>' is identical to R<sub>4</sub> as defined below; and R<sub>4</sub> is an acyl radical.

4,338,456

#### METHOD OF PRODUCING BIPHENYLTETRACARBOXYLIC ESTERS

Hiroshi Itatani, Chiba; Akinori Shiotani, Ichihara, and Akiyoshi Yokota, Unokemachi, all of Japan, assignors to Ube Industries, Ltd., Chiba, Japan

Continuation-in-part of Ser. No. 151,818, May 21, 1980, Pat. No. 4,292,435. This application Feb. 18, 1981, Ser. No. 235,744

Int. Cl.<sup>3</sup> C07C 67/343

U.S. Cl. 560—96

24 Claims

1. A method for producing biphenyltetracarboxylic esters, comprising oxidative coupling, at a temperature of from 100° C. to 300° C., an orthophthalic diester by flowing a molecular oxygen-containing gas in the form of bubbles through a reaction mixture containing the orthophthalic diester and a catalyst which consists of at least one member selected from the group consisting of:

- (A) mixtures of one or more palladium salts with 2,2'-bipyridyl in a molar amount of 0.9 to 4 times that of said palladium salt, and;
- (B) chelating reaction products of one or more palladium salts with 2,2'-bipyridyl in a molar amount of 0.9 to 2.5 times that of said palladium salt.

4,338,457

#### COMPOSITION AND PROCESS

Paul A. Aristoff, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

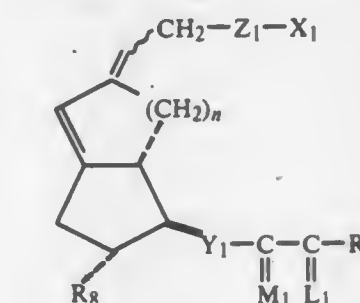
Filed Feb. 28, 1980, Ser. No. 125,608

Int. Cl.<sup>3</sup> C07C 177/00, 57/26

U.S. Cl. 560—119

2 Claims

1. A carbacyclin analog of formula VII



wherein n is the integer 1 or 2; wherein Y<sub>1</sub> is trans—CH=CH—, cis—CH=CH—, —CH<sub>2</sub>C—H<sub>2</sub>—, or —C=C—; wherein L<sub>1</sub> is α-R<sub>3</sub>:β-R<sub>4</sub>, α-R<sub>4</sub>:β-R<sub>3</sub>, or a mixture of α-R<sub>3</sub>:β-R<sub>4</sub> and α-R<sub>4</sub>:β-R<sub>3</sub>, wherein R<sub>3</sub> and R<sub>4</sub> are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R<sub>3</sub> and R<sub>4</sub> is fluoro only when the other is hydrogen or fluoro;

wherein Z<sub>1</sub> is

- (1) —(CH<sub>2</sub>)<sub>g</sub>—C(R<sub>2</sub>)<sub>2</sub>, wherein g is 0, 1, 2, or 3 and R<sub>2</sub> is hydrogen or fluoro, or
- (2) trans—CH=CH—;

wherein R<sub>7</sub> is

- (1) —(CH<sub>2</sub>)<sub>m</sub>—CH<sub>3</sub>, wherein m is an integer from one to 5, inclusive;
- (2) phenoxy;
- (3) phenoxy substituted by one, two or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;
- (4) phenyl;
- (5) phenyl substituted by one, two or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;
- (6) benzyl, phenylethyl, or phenylpropyl; or
- (7) benzyl, phenylethyl, or phenylpropyl substituted by



one, two or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;

- (8)  $\text{cis-CH=CH-CH}_2\text{-CH}_3$ ; or  
(9)  $\text{-(CH}_2\text{)}_2\text{-CH(OH)-CH}_3$ ;

with the proviso that  $R_7$  is phenoxy or substituted phenoxy, only when  $R_3$  and  $R_4$  are hydrogen or methyl, being the same or different; wherein  $R_8$  is hydroxy, hydroxymethyl, or hydrogen; wherein  $M_1$  is  $\alpha\text{-OH-}\beta\text{-R}_5$  or  $\alpha\text{-R}_5\text{-}\beta\text{-OH}$ , wherein  $R_5$  is hydrogen or methyl; and wherein  $X_1$  is

- (1)  $\text{-COOR}_1$ , wherein  $R_1$  is  
(a) hydrogen;  
(b) alkyl of one to 12 carbon atoms, inclusive;  
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive;  
(d) aralkyl of 7 to 12 carbon atoms, inclusive;  
(e) phenyl;  
(f) phenyl substituted with one, 2 or 3 chloro or alkyl of one to 3 carbon atoms;  
(g) phenyl substituted in the para position by  
(i)  $\text{-NH-CO-R}_{25}$ ,  
(ii)  $\text{-CO-R}_{26}$ ,  
(iii)  $\text{-O-CO-R}_{27}$ , or  
(iv)  $\text{-CH=N-NH-CO-NH}_2$  wherein  $R_{25}$  is methyl, phenyl, acetamidophenyl, benzamidophenyl, or  $\text{-NH}_2$ ;  $R_{26}$  is methyl, phenyl,  $\text{-NH}_2$ , or methoxy; and  $R_{27}$  is phenyl or acetamidophenyl; inclusive, or  
(h) a pharmacologically acceptable cation;

- (2)  $\text{-CH}_2\text{OH}$ ;  
(3)  $\text{-COL}_4$ , wherein  $L_4$  is

- (a) amino of the formula  $\text{-NR}_{21}\text{R}_{22}$ , wherein  $R_{21}$  and  $R_{22}$  are  
(i) hydrogen;  
(ii) alkyl of one to 12 carbon atoms, inclusive;  
(iii) cycloalkyl of 3 to 10 carbon atoms, inclusive;  
(iv) aralkyl of 7 to 12 carbon atoms, inclusive;  
(v) phenyl;  
(vi) phenyl substituted with one, 2 or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, carboxy, alkoxy, carbonyl of one to 4 carbon atoms, inclusive, or nitro;  
(vii) carboxyalkyl of 2 to 5 carbon atoms, inclusive;  
(viii) carbamoylalkyl of 2 to 5 carbon atoms, inclusive;  
(ix) cyanoalkyl of 2 to 5 carbon atoms, inclusive;  
(x) acetylalkyl of 3 to 6 carbon atoms, inclusive;  
(xi) benzoylalkyl substituted by one, 2 or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, alkoxy of one to 3 carbon atoms, inclusive, carboxy, alkoxy-carbonyl of one to 4 carbon atoms, inclusive, or nitro;  
(xiii) pyridyl;  
(xiv) pyridyl substituted by one, 2 or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive;  
(xv) pyridylalkyl of 6 to 9 carbon atoms, inclusive;  
(xvi) pyridylalkyl substituted by one, 2 or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy or alkyl of one to 3 carbon atoms, inclusive;  
(xvii) hydroxyalkyl of one to 4 carbon atoms, inclusive;  
(xviii) dihydroxyalkyl of one to 4 carbon atoms, or  
(xix) trihydroxyalkyl of one to 4 carbon atoms; with the further proviso that not more than one of  $R_{21}$  and  $R_{22}$  is other than hydrogen or alkyl;

- (b) cycloamino selected from the group consisting of  
(i) pyrrolidino,  
(ii) piperidino,  
(iii) morpholino,  
(iv) piperazino,  
(v) hexamethyleneimino,  
(vi) pyrrolino,  
(vii) 3,4-dihydropiperidino, or  
(viii) pyrrolidino, piperidino, morpholino, piperazino, hexamethyleneimino, pyrrolino, or 3,4-dihy-

- dropiperidino substituted by one or 2 alkyl of one to 12 carbon atoms, inclusive;  
(c) carbonylamino of the formula  $\text{-NR}_{23}\text{COR}_{21}$ , wherein  $R_{23}$  is hydrogen or alkyl of one to 4 carbon atoms and  $R_{21}$  is other than hydrogen, but otherwise as defined above;  
(d) sulfonylamino of the formula  $\text{-NR}_{23}\text{SO}_2\text{R}_{21}$ , wherein  $R_{21}$  and  $R_{23}$  are as defined in (c); and  
(4)  $\text{-CH}_2\text{NL}_2\text{L}_3$ , wherein  $L_2$  and  $L_3$  are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different, or the pharmacologically acceptable acid addition salts thereof when  $X_1$  is  $\text{-CH}_2\text{NL}_2\text{L}_3$ .

4,338,458

#### CYCLOPENTANE DERIVATIVES USEFUL AS PERFUMING AGENTS

Karl-Heinrich Schulte-Elte, Onex, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

Division of Ser. No. 104,404, Dec. 17, 1978, Pat. No. 4,280,934, which is a continuation of Ser. No. 808,688, Jun. 21, 1977, abandoned. This application Mar. 19, 1981, Ser. No. 245,519 Claims priority, application Switzerland, Jun. 30, 1976, 8343/76

Int. Cl.<sup>3</sup> C07C 69/608

U.S. Cl. 560-122

1 Claim

1. Allyl cyclopentylidene acetate.

4,338,459

#### USE OF ALKYLFORMAMIDE AND ACETAMIDE IN PREPARING $\alpha\text{-ACETYL-}\alpha\text{'-METHYLSUCCINATE ESTER}$

Francis L. Shenton, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 5, 1981, Ser. No. 240,721

Int. Cl.<sup>3</sup> C07C 67/00, 69/716

U.S. Cl. 560-176

8 Claims

1. A process for preparing an  $\alpha\text{-acetyl-}\alpha\text{'-methylsuccinate}$  diester which comprises reacting an ester of acetoacetic acid with an ester of  $\alpha\text{-halopropionic}$  acid wherein halo is chloro or bromo in a substantially anhydrous liquid solvent mixture of (a) a nonpolar, aprotic organic liquid having a dielectric constant below about 11 at 25° C. and (b) between about 1.7 to about 3.0 moles of a dipolar, aprotic organic liquid solvent selected from the group consisting of a di-C<sub>1</sub> to C<sub>4</sub>-alkylformamide and a di-C<sub>1</sub> to C<sub>4</sub>-alkylacetamide relative to the mole content of the acetoacetate ester in the mixture at a temperature of from about 50° C. to the reflux temperature of the mixture in the presence of a phase transfer agent, a catalytic amount of an iodide ion and a solid form deprotonating base for a time sufficient to form the diester.

4,338,460

#### PROCESS FOR PREPARING CHELATING AGENTS

Roger R. Gaudette, Hudson, N.H.; John L. Ohlson, Bedford, and Patricia M. Scanlon, Arlington, both of Mass., assignors to W. R. Grace & Co., New York, N.Y.

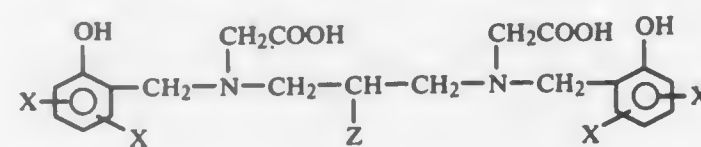
Continuation-in-part of Ser. No. 924,019, Jul. 12, 1978, abandoned, which is a continuation of Ser. No. 766,285, Feb. 7, 1977, abandoned, which is a division of Ser. No. 630,792, Nov. 11, 1975, Pat. No. 4,069,249. This application Aug. 20, 1980, Ser. No. 179,805

Int. Cl.<sup>3</sup> C07C 101/72

U.S. Cl. 562-448

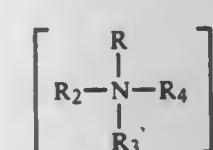
7 Claims

1. A process for preparing an ortho-substituted phenolic amino acid compound having the formula:



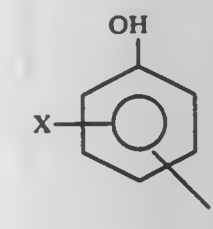
wherein:

- (a) Z is H or OH; and  
(b) each X is selected from a group consisting of hydrogen; an alkyl group having 1-4 carbon atoms;  $\text{-COOH}$ ; and  $\text{-SO}_3\text{M}$ , wherein M is selected from a group consisting of an alkali metal ion,  $\frac{1}{2}$  of an alkaline earth metal ion, and an ammonium ion having the formula

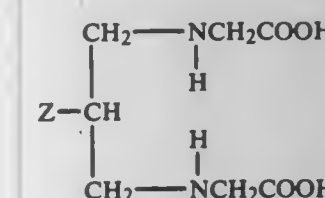


in which each of  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  is selected from a group consisting of hydrogen, an alkyl group having 1-4 carbon atoms, and a hydroxyalkyl group having 1-4 carbon atoms; said process comprising:

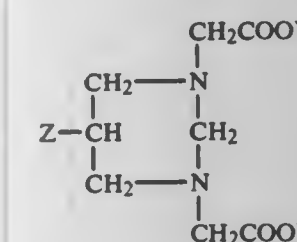
- (i) forming a resulting mixture by admixing:  
(a) an inert reaction medium selected from a group consisting of water, methyl alcohol, ethyl alcohol, isopropyl alcohol, n-propyl alcohol, an admixture of water and the alcohol, acetic acid, and an admixture of water and acetic acid;  
(b) a phenol or mixture of phenols, each having the formula



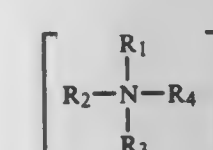
- (c) an acid having the formula



or a source of this acid, said source having the formula



in which Y is an alkali metal ion,  $\frac{1}{2}$  of an alkaline earth metal ion, or the ammonium ion having the formula



- (d) a formaldehyde source selected from a group consisting of an aqueous formaldehyde solution, trioxane, and paraformaldehyde; and  
(ii) maintaining the resulting mixture at a temperature and for a time effective for forming the compound, and at a pH of about 2 to about 6, the inert reaction medium

being provided in an amount effective for dissolving the phenol.

4,338,461

#### PROCESS FOR PRODUCING

D-2-AMINO-2-(1,4-CYCLOHEXADIENYL)ACETIC ACID  
Kunio Unuma; Hiroyasu Saito; Jihei Inomata, all of Iwaki, and Saburo Takizawa, Morioka, all of Japan, assignors to Nippon Kasei Chemical Co., Ltd., Fukushima, Japan

Filed Mar. 19, 1981, Ser. No. 245,437

Claims priority, application Japan, Apr. 21, 1980, 55-52590 Int. Cl.<sup>3</sup> C07C 99/00

U.S. Cl. 562-507

2 Claims

1. A process for producing D-2-amino-(1,4-cyclohexadienyl) acetic acid, comprising the steps of reducing D-2-amino-phenylacetic acid with metallic sodium in the presence of a mixture of liquid ammonia and water and adding an acidic substance to the resultant aqueous solution, the weight ratio of liquid ammonia to water in said mixture being in the range of 65:35 to 82:18.

4,338,462

#### SILVER-CATALYZED OXIDATION OF METHACROLEIN TO METHACRYLIC ACID

Gregory A. Wheaton, Swedesboro, N.J., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 9, 1980, Ser. No. 157,623

Int. Cl.<sup>3</sup> C07C 51/25, 57/045

U.S. Cl. 562-533

7 Claims

1. In the process for oxidizing methacrolein to a methacrylic acid salt with oxygen or oxygen mixed with an inert gas in a strongly alkaline medium at a temperature of 0° to 100° C. and in the presence of a finely divided silver catalyst and recovering methacrylic acid by acidification, the improvement which comprises carrying out said oxidation at a pH of greater than 12.5 in the presence of from 0.01 to 5 percent by weight of dissolved alkali metal carbonate based on the alkaline medium which has a hydroxide concentration of not more than 50 percent by weight.

4,338,463

#### PROCESS FOR THE PRODUCTION OF UNSATURATED ACIDS AND ESTERS

Wilfrid G. Shaw, Lyndhurst, and Christos Pappazios, Willowick, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

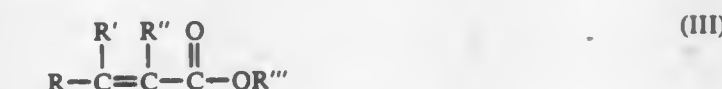
Filed Oct. 3, 1980, Ser. No. 193,784

Int. Cl.<sup>3</sup> C07C 51/377, 57/05, 67/317, 69/54

U.S. Cl. 562-599

11 Claims

1. A vapor-phase process for the production of a compound of the formula:



the process comprising contacting in the presence of molecular oxygen a compound of the formula:



where R-R''' are independently hydrogen or a C<sub>1</sub>-C<sub>4</sub> alkyl radical, with a catalytic amount of a catalyst of the empirical formula:



where



M is at least one of K, Rb and Cs;  
M' is a combination of Cu and V;  
X is at least one of Ba, Zn, Ga, Nb, Cd, Ti, Ca, Bi, Mg, Ta,  
Zr, Ce, Ni, Co, Cr, Fe and Tl when  $a > 0$ ;  
a is a number of 0 to about 2; and  
b is a number that satisfies the valence requirements of the  
other elements present.

4,338,464

# REMOVAL OF BROMOBUTANONE FROM ACETIC ACID

Jon J. Harper, and Martin A. Zeltin, both of Naperville, Ill.,  
assignors to Standard Oil Company (Indiana), Chicago, Ill.  
Filed Dec. 17, 1979, Ser. No. 104,088

Int. Cl.<sup>3</sup> C07C 51/43

U.S. Cl. 562—608

6 Claims

1. The method of decreasing the 3-bromo-2-butanone content of the debutanized liquid effluent containing mainly acetic acid and water obtained from the catalytic oxidation of liquid n-butane with oxygen at a temperature of from 120° C. up to 230° C. and a gauge pressure of from 50 up to 110 kg/cm<sup>2</sup> in the presence of catalysis provided by a combination of the bromide ion with a cobalt ion or a mixture of cobalt and manganese ions; which method comprises subjecting said debutanized liquid effluent as feed to a combination of fractional crystallizations and washing to remove mother liquor adhering to the crystalline product wherein the feed enters a crystallization zone cooled to the freezing point temperature of the acetic acid-water composition of the debutanized liquid effluent feed thereby forming in addition to acetic acid-water crystals a waste liquor having a 3-bromo-2-butanone content higher than in said feed, separating the waste liquor from the crystals and removing any of it adhering to the crystals by warming the crystals to partially melt them and permitting the remaining crystals to contact such melt before being separated from the melt.

4,338,465

# SYNTHESIZED SCENT

Arthur F. Isbell, Bryan, Tex., assignor to Melller Research, Inc.,  
College Station, Tex.

Division of Ser. No. 885,941, Mar. 13, 1978, Pat. No. 4,213,875.  
This application Aug. 28, 1979, Ser. No. 70,354

Int. Cl.<sup>3</sup> C07C 148/00, 149/08

U.S. Cl. 568—69

10 Claims

1. A method for synthesizing a scent substantially similar to that produced in the anal glands of skunks and useful to prevent wild animals from detecting the presence of a user in their natural environments, comprising the steps of:  
(a) providing a first component comprising an aqueous solution of a trans-crotyl isothiuronium salt;  
(b) providing a second component comprising an aqueous solution of a first base selected from the group consisting of sodium hydroxide, potassium hydroxide and lithium hydroxide and a second base selected from the group consisting of sodium carbonate and potassium carbonate, said second base present in an effective amount for increasing the degree and rate of production of the scent when said first component is mixed with said second component; and  
(c) contacting said first component with said second component, thereby producing trans-2-butene-1-thiol.

4,338,466

# PROSTAGLANDIN ANALOGS AND PROCESS OF PREPARATION THEREOF

George L. Nelson, Narberth, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1981, Ser. No. 250,366

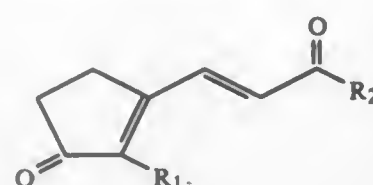
Int. Cl.<sup>3</sup> C07C 49/597, 45/45

U.S. Cl. 568—343

10 Claims

1. A prostaglandin analog for oligomerization to mixtures

exhibiting protection of oxidative phosphorylation of degenerated mitochondria of the formula:



wherein R<sub>1</sub> and R<sub>2</sub> are alkyls.

3. A process for preparation of prostaglandin analogs, comprising the steps of:

- O-alkylating a 2-alkylcyclopentane-1,3-dione to form an enol ether;
- reacting the enol ether with an effective amount of vinyl magnesium bromide in ether to form a vinyl compound;
- oxidizing the vinyl compound with effective amounts of osmium tetroxide and sodium periodate in aqueous ether to form an aldehyde; and
- reacting the aldehyde with an effective amount of a dimethyl (2-oxoalkyl)phosphonate to form a crude product containing the precursor.

4,338,467

# PROCESS FOR PREPARING ARYLACETALDEHYDES

Tetsuo Takano, Takatsuki; Gohu Suzukamo, Ibaraki; Masaru Ishino, Takatsuki, and Kiyoshi Ikimi, Kyoto, all of Japan,  
assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 10, 1981, Ser. No. 233,148

Int. Cl.<sup>3</sup> C07C 45/49

U.S. Cl. 568—428

13 Claims

1. A process for preparing an arylacetaldehyde by reacting the corresponding arylmethyl halide with carbon monoxide and hydrogen in the presence of a cobalt compound and a basic reagent in a liquid medium, and wherein:  
a. said basic reagent is an alkali metal compound;  
b. said liquid medium is a solvent system selected from the group consisting of nitriles and nitriles mixed with hydrocarbons;  
c. said arylmethyl halide is a monocyclic or polycyclic, condensed or non-condensed aromatic compound having at least one halomethyl group on the aromatic ring which may be substituted with one or more substituents selected from the group consisting of C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>1</sub>-C<sub>6</sub> alkoxy and halogen;  
d. said cobalt compound is elected from the group consisting of carboxylates, hydroxides, halides, oxides and nitrates of cobalt and cobalt complexes of carbon monoxide, having phosphine or amine as a ligand;  
e. said alkali metal compound is an oxide, hydroxide, carbonate, phosphate, silicate or borate of an alkali metal;  
f. said reaction is carried out under a pressure of 10 atm or more; and  
g. said reaction is carried out at a temperature range of from 50° to 200° C.

4,338,468

# α-PROP-1-YNYL-3-PHENOXYBENZYL ALCOHOLS

Saleem Farooq, Ettingen; Peter Ackermann, Reinach; Jozef Drabek, Oberwil; Laurenz Gsell, Basel; Odd Kristiansen, Möhlin, and Rudolf Wehrli, Rheinfelden, all of Switzerland,  
assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

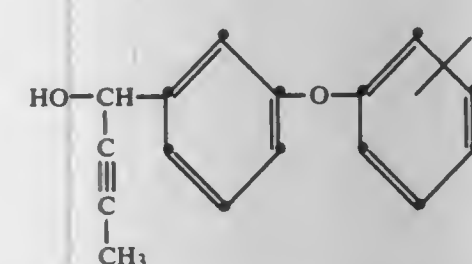
Continuation-in-part of Ser. No. 49,390, Jun. 18, 1979,  
abandoned. This application Dec. 9, 1980, Ser. No. 216,223  
Claims priority, application Switzerland, Jun. 27, 1978,  
6994/78; Apr. 19, 1979, 3681/79

Int. Cl.<sup>3</sup> C07C 43/263

U.S. Cl. 568—637

6 Claims

1. A α-prop-1-ynyl-3-phenoxybenzyl alcohol of the formula



wherein Y represents hydrogen, halogen, C<sub>1</sub>-C<sub>4</sub>alkyl or C<sub>1</sub>-C<sub>4</sub>alkoxy.

4,338,469

# 8-METHOXY-P-MENTHANE

James E. Lyons, and Peter Hosler, both of Wallingford, Pa.,  
assignors to Suntech, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 714,206, Aug. 23, 1976,  
abandoned. This application Dec. 22, 1977, Ser. No. 863,569

Int. Cl.<sup>3</sup> C07C 43/18

U.S. Cl. 568—666

1 Claim

1. The composition of matter, 8-methoxy-p-menthane.

4,338,470

# SOLID BISPHENOL F PARTICULATES

Robert Granjon, Roussillon, and Michel Fournier, Lyons, both of France,  
assignors to Rhone-Poulenc Industries, Paris, France

Filed Aug. 4, 1980, Ser. No. 175,008

Claims priority, application France, Aug. 3, 1979, 79 20347

Int. Cl.<sup>3</sup> C07C 39/16

U.S. Cl. 568—723

16 Claims

1. A process for the preparation of solid bisphenol F particulates, comprising dispersing droplets of technical grade bisphenol F in a chemically inert liquid medium having a boiling point in excess of 70° C. and having a temperature of at least 70° but less than the boiling point thereof, said liquid medium being maintained in a state of dispersing agitation, and then cooling the dispersion which results, while continuing to maintain said state of agitation, to a temperature such as to solidify the dispersed droplets of said bisphenol F into solid particles.

4,338,471

# PROCESS FOR PREPARING PHENOL

Sumio Umemura; Ryozi Kitoh, and Taizo Uda, all of Ube, Japan,  
assignors to Ube Industries, Inc., Ube, Japan

Filed Dec. 17, 1980, Ser. No. 217,116

Claims priority, application Japan, Dec. 19, 1979, 54-164022

Int. Cl.<sup>3</sup> C07C 37/58, 39/04

U.S. Cl. 568—802

12 Claims

1. In a process for preparing phenol wherein benzene is reacted in the vapor phase with oxygen at an elevated temperature in the presence of a catalyst, said improvement comprising effecting the oxidation of benzene in the presence of an alcohol and by using as the catalyst a composition consisting essentially of metal oxides and represented by the formula:



wherein M is an element selected from the group consisting of zinc, titanium, zirconium, tin, bismuth and vanadium, Ag is silver, P is phosphorus and O is oxygen, and each of the subscripts "b" and "c" is a positive number indicating an atomic ratio of the respective element to the element M and falling within the following ranges: b=0.005 to 5 and c=0 to 6, provided that a=1, and "d" is a positive number satisfying the average valency of the respective elements.

4,338,472

# CATALYTIC HYDROGENOLYSIS OF ALDITOLS TO PRODUCE POLYOLS

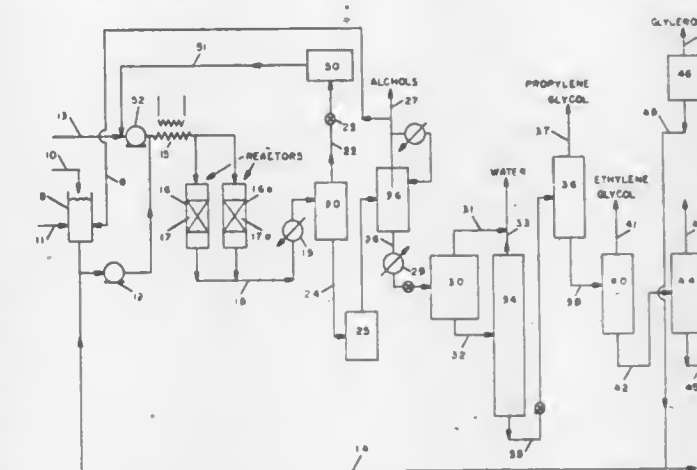
Amalish K. Sirkar, Lawrenceville, N.J., assignor to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Jan. 21, 1981, Ser. No. 227,000

Int. Cl.<sup>3</sup> C07C 31/22

U.S. Cl. 568—861

11 Claims



1. A process for metallic catalytic hydrogenolysis of an alditol solution to produce glycerol, comprising the steps of:

- providing a feedstream solution containing at least about 15 W % alditol and adding an alkaline promoter material to the feedstream sufficient to provide a pH within the range of 7-14;
- preheating the feed solution and hydrogen gas to at least about 200° F. temperature, and introducing the heated feedstream mixture into a fixed bed reaction zone containing a particulate high activity stabilized nickel catalyst containing 50-65 W % porous nickel on silica support and having 4-12 mesh (0.132-0.066 inch) particle size (U.S. Sieve Series);
- maintaining the reaction zone conditions within the range of 400°-510° F. temperature, 1200-2000 psig hydrogen partial pressure and 1.5-3.0 liquid hourly space velocity (LHSV), and containing the catalyst age by regeneration following at least about 20 hours use when said catalyst is washed with a water-methanol solution to remove deposits and then contacted with flowing hydrogen at 500°-650° F. temperature for at least about 2 hours for achieving at least about 30 W % conversion of the alditol to glycerol and glycol products;
- withdrawing from the reaction zone a stream containing glycerol and glycols and phase separating said stream into a gaseous portion and a liquid portion;
- distilling said liquid portion to remove alcohols and water;
- distilling the remaining stream at sub-atmospheric pressure to remove glycols and produce higher purity glycerol product, and a heavy bottoms liquid stream containing unconverted alditols; and
- recycling at least a portion of said bottoms stream to the reaction zone for further catalytic conversion of alditols to produce mainly glycerol product.



4,338,473  
**METHOD FOR REMOVING NITROSATION AGENT(S)  
 FROM A NITRATED AROMATIC COMPOUND**

Kurt Habig, Mörfelden; Konrad Baessler, Frankfurt am Main; Lothar Schulz, Eppstein, and Heinz Schütte, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 19, 1980, Ser. No. 151,286

Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920448; Mar. 4, 1980, 3008243

Int. Cl.<sup>3</sup> C07C 76/02, 79/10, 79/12

U.S. Cl. 568—933

11 Claims

1. A method for removing one or more nitrosation agents from 4-chloro-3,5-dinitrobenzotrifluoride by treatment with water, which comprises contacting water, without adding any other substance, with 4-chloro-3,5-dinitrobenzotrifluoride and one or more nitrosation agents, and removing water from the 4-chloro-3,5-dinitrobenzotrifluoride such that the removed water is at least partially in vapor form.

4,338,474  
**STABILIZATION OF DIBROMOSTYRENE**  
 Philip F. Jackisch, Royal Oak, Mich., assignor to Ethyl Corporation, Richmond, Va.

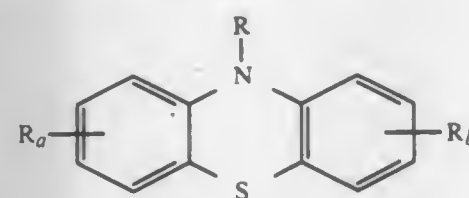
Filed Mar. 13, 1980, Ser. No. 130,186

Int. Cl.<sup>3</sup> C07C 17/42; C09K 15/26

U.S. Cl. 570—105

10 Claims

1. As a composition of matter, dibromostyrene containing a stabilizer amount of a compound having the formula



wherein each R is alike or different and is selected from the class consisting of hydrogen and lower alkyl groups of up to about 10 carbon atoms and a and b are independently equal to zero or a positive whole number of from 1 to 2.

4. A composition of claim 1 wherein said stabilizer is admixed with a stabilizer enhancing amount of a dihydroxyphenol



wherein R is a lower alkyl group of up to about 4 carbon atoms.

4,338,475  
**CONVERTING ALCOHOLS TO HYDROCARBONS**

Nicholas D. Pennington, Pennington, and James H. Haddad, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 89,705, Oct. 30, 1979, Pat. No. 4,251,484.

This application Oct. 3, 1980, Ser. No. 193,675

Int. Cl.<sup>3</sup> C07C 1/20

U.S. Cl. 585—408

8 Claims

1. A method for converting reactant materials selected from the group consisting of lower alcohols, ether derivatives thereof, oxygenates of synthesis gas and any one or a combination thereof which comprises,

passing the reactant material in vapor, liquid or a mixture thereof condition upwardly through a fluid bed of zeolite catalyst particles characterized as providing a silica/alumina ratio of at least 12, a pore opening of at least 5 Angstroms and a Constraint Index within the range of 1

to 12 at a temperature constrained within the range of about 600° F. to about 775° F. under pressure and space velocity conditions selected to achieve at least 95% conversion of a methanol feed to hydrocarbon products including gasoline boiling range products,

said temperature constrained limits achieved at least in part by a plurality of heat exchange tubes immersed in a fluid bed of said catalyst and providing high pressure steam as a result of said heat exchange, said reactant restricted in gasified bubble growth to less than 24 inch hydraulic diameter during contact with said bed of fluid catalyst particles by a plurality of vertical open ended baffle tubes slotted in the wall thereof for flow of catalyst and gasiform reactant material therethrough adjacently positioned in combination with said heat exchange tubes,

said reactant conversion exotherm further constrained by maintaining from 5 to 20% by weight of coke-like material on the zeolite catalyst in the reaction zone, maintaining a high rate of catalyst circulation from a dispersed catalyst phase above said fluid catalyst bed to a bottom portion of said bed following separation of reaction product from said catalyst passing into said dispersed phase, and recovering products of said conversion operation comprising gasoline boiling range hydrocarbons.

4,338,476  
**ALKYLAROMATIC HYDROCARBON  
 DEHYDROGENATION PROCESS**

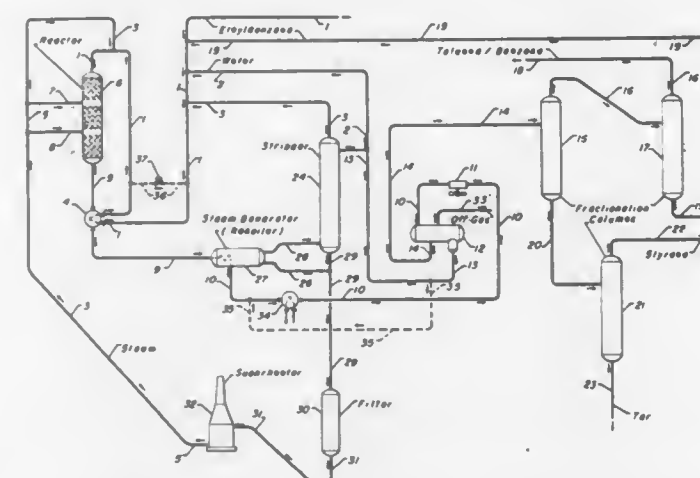
Anthony G. Vickers, Arlington Heights, and Robert F. Zabransky, Oak Brook, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 810,322, Jun. 27, 1977, abandoned. This application Dec. 14, 1978, Ser. No. 969,619

Int. Cl.<sup>3</sup> C07C 5/333

U.S. Cl. 585—440

1 Claim

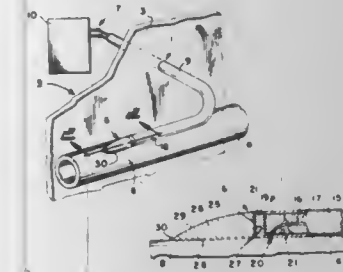




## ELECTRICAL

**4,338,479**  
**SURFACE THERMOCOUPLE ASSEMBLY AND**  
**METHOD OF MAKING SAME**  
 Ralph H. Bauman, Genoa City, Wis., assignor to Pneumo Corporation, Boston, Mass.

Filed May 8, 1980, Ser. No. 147,834  
 Int. Cl.<sup>3</sup> H01F 35/02  
 U.S. Cl. 136—229 17 Claims



1. A thermocouple assembly comprising:  
 a sheathed thermocouple cable including an elongate tubular metallic sheath having an axial end portion, a pair of axially extending thermocouple conductors in said sheath, and electrically insulating means in said sheath supporting said conductors in electrically insulated spaced relation from each other and from said sheath, said cable having a sensing end adjacent said axial end portion, said sheath terminating at said axial end portion in an end face, a measuring junction of said conductors within said sheath located axially inwardly a short distance from said end face, said electrically insulating means substantially filling said sheath between said measuring junction and said end face, a preformed segment of solid metal extending axially outwardly from said end face, said preformed segment having a contact face extending substantially parallel to said axial end portion of said sheath and adapted for contiguous intimate contact with a surface whose temperature is to be sensed when mounted thereon.

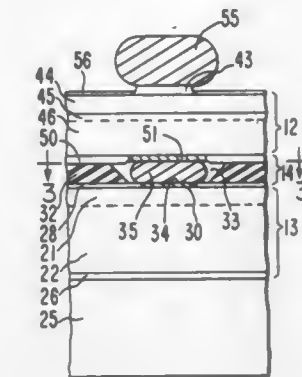
14. A method of fabricating a thermocouple assembly using a thermocouple cable portion including an elongate tubular metallic sheath, a pair of axially extending thermocouple conductors in said sheath, and electrical insulation in said sheath to support and space apart said conductors from each other and from said sheath, comprising the steps of removing a portion of the insulation from an end of such sheath to expose the ends of the conductors, moving such exposed conductor ends to the inside surface of the sheath wall, welding such conductor ends to such inside surface a short distance axially inwardly from the end face of such sheath end, repacking the open space surrounding the measuring junction with insulation and filling such sheath with insulation up to such sheath end, and attaching a preformed segment of solid metal to the end face of the sheath, such preformed segment having a contact face extending substantially parallel to the end portion of the sheath located on the same side as such measuring junction and adapted for contiguous intimate contact with a surface whose temperature is to be sensed when mounted thereon.

**4,338,480**  
**STACKED MULTI-JUNCTION PHOTOVOLTAIC CONVERTERS**

George A. Antypas, Los Altos; Ronald L. Bell, Woodside, and Ronald L. Moon, Atherton, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.  
 Filed Dec. 29, 1980, Ser. No. 221,100  
 Int. Cl.<sup>3</sup> H01L 31/04

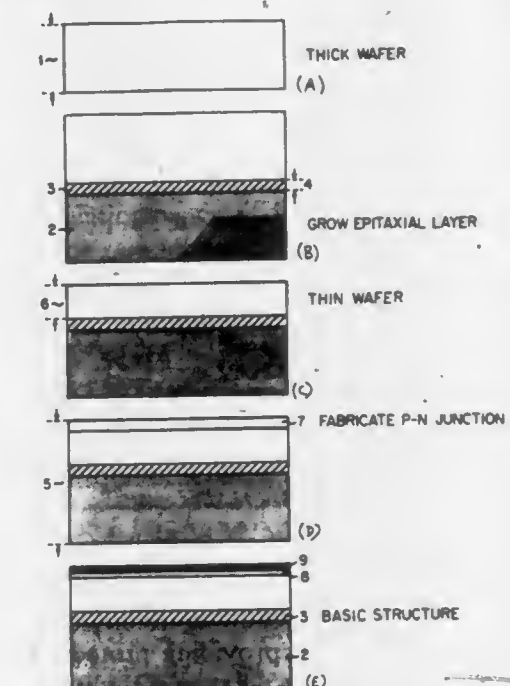
U.S. Cl. 136—249 8 Claims  
 1. A stacked photovoltaic converter comprising:  
 a first solar cell having a first contact surface;  
 a second solar cell having a second contact surface, said

solar cells being so stacked one on top of the other that said contact surfaces face each other; and



a sealing layer between said contact surfaces, said sealing layer comprising a glass layer and at least one electrically conductive inter-cell contact.

**4,338,481**  
**VERY THIN SILICON WAFER BASE SOLAR CELL**  
 Joseph Mandelkorn, Peretz 5, Rehovot, Israel  
 Filed Oct. 2, 1980, Ser. No. 176,709  
 Int. Cl.<sup>3</sup> H01L 31/06, 31/18  
 U.S. Cl. 136—255 10 Claims



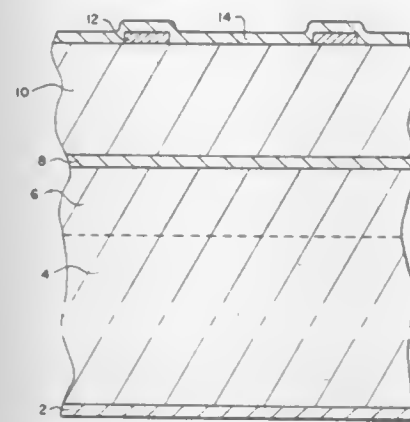
1. An improved silicon back surface field solar cell comprising a high quality very thin silicon single crystal wafer base 0.0005 to about 0.0004 inch thick, said base containing a back surface field region of the same type, P or N, as said base, said back surface field region having a thickness of about 1 μm and a dopant surface concentration of about 10<sup>19</sup> atoms/cm<sup>3</sup>, said cell having a substantially thicker epitaxial layer of silicon, doped with an impurity concentration which will provide the desired surface impurity concentration for the diffused back surface field region, interposed between the back surface field region and the cell back contact, said interposed layer having a thickness sufficient to provide required cell ruggedness.

**4,338,482**  
**PHOTOVOLTAIC CELL**  
 Roy G. Gordon, 22 Highland St., Cambridge, Mass. 02138, assignor to Roy G. Gordon, Cambridge, Mass.  
 Filed Feb. 17, 1981, Ser. No. 234,646  
 Int. Cl.<sup>3</sup> H01L 31/06

U.S. Cl. 136—256 15 Claims  
 1. In a photovoltaic cell structure containing a transparent, electrically conductive metal oxide layer overlying a light-



absorbing semiconductive photovoltaic layer, the improvement wherein a transparent, electrically conductive layer of



titanium dioxide is between said metal oxide layer and said photovoltaic layer.

4,338,483

# **ELECTRICAL POWER TRANSMITTING INSTALLATION INCLUDING A SAFETY DEVICE FOR PROVIDING PROTECTION AGAINST THE EFFECTS OF ELECTRIC ARCS**

Jean-Paul Euvrard, Tassin-la-Demi-Lune, and Gilles Voisin, Lyons, both of France, assignors to Alstom Atlantique, Paris, France

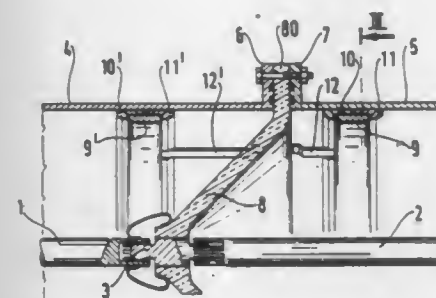
Filed Dec. 24, 1980, Ser. No. 219,653

Claims priority, application France, Dec. 28, 1979, 79 31981

Int. Cl.<sup>3</sup> H02G 5/06; H01B 9/04

U.S. Cl. 174—28

8 Claims



1. An installation for transmitting electrical power which includes a safety device for providing protection against the effects of electric arcs, said installation including a metal casing filled with a dielectric gas under pressure, and having a coaxial central conductor, said casing and said conductor being held in position relative to each other by a transverse insulator, said safety device comprising a tubular electrical and thermal insulator and a tubular electrode being situated axially close to the transverse insulator and upstream therefrom relative to the direction of electrical power transmission, said tubular electrode being held concentric with the casing and being separated therefrom by said tubular electrical and thermal insulator, and said tubular electrode being electrically connected to said casing by conductors distributed around the electrode at a small number of points and extending from the electrode towards the transverse insulator.

4,338,484

# **CABLE CARRYING FLOOR DUCT APPARATUS**

Gary L. Littrell, 302 Timbercrest Ct., Schaumburg, Ill. 60193

Filed Aug. 29, 1980, Ser. No. 182,642

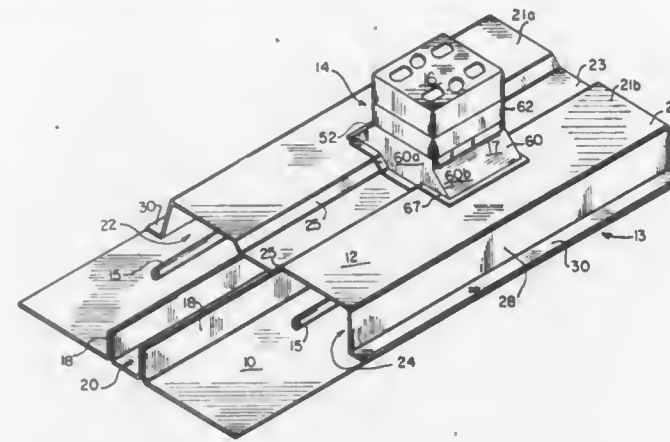
Int. Cl.<sup>3</sup> H02G 3/18

U.S. Cl. 174—48

18 Claims

1. An improved cable carrying floor duct apparatus comprising in combination: an elongated floor cell structure including a ceiling member, side walls and a bottom wall defining a

four-sided housing enclosure, interior walls defining multiple interior compartments extending lengthwise within the cell structure, the ceiling member having multiple apertured access ports therethrough providing access to the interior compartments and being selectively spaced along the elongated length thereof, and the ceiling member further having planar offset ceiling portions extending lengthwise thereof and inclined ceiling portion which interconnect between the planar offset ceiling portions, each of the spaced-apart multiple access ports being opened through a planar offset ceiling portion and an adjacently disposed inclined ceiling portion for providing a multiple planar access port, and multiple floor outlet units to be



connected to and disposed upon the ceiling member of the floor cell structure in registered alignment with selected ones of the multiple access ports, respectively, each of the outlet units having planar offset bottom wall portions and inclined bottom wall portions interconnecting therebetween and extending complementarily with the planar offset ceiling portions and inclined ceiling portions, respectively, with the floor outlet unit being in aligned registry with the selected access port, and further having a central opening defined therethrough which aligns with the selected access port for providing access therethrough into the communicating interior compartment of the floor cell structure.

4,338,485

# **HEADWALL UNIT FOR PATIENT SERVICING AND METHOD FOR INSTALLATION**

Eugene H. Fullenkamp; Francis J. Burst, both of Batesville; Cecil R. Lohrey, Brookville, and William D. Drew, Batesville, all of Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed Nov. 10, 1980, Ser. No. 205,186

Int. Cl.<sup>3</sup> H05K 5/00

U.S. Cl. 174—48

17 Claims

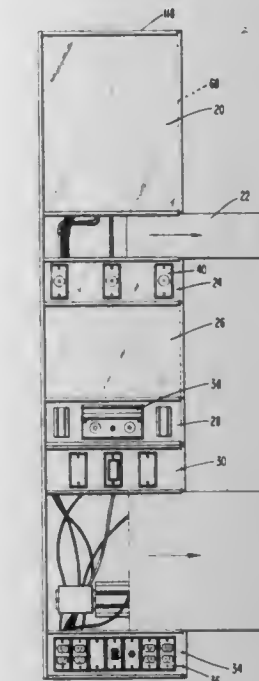
1. A headwall unit of the type adapted for connection to a wall of a patient's room to provide services to the patient, said headwall unit comprising:

a skeletal framework to which patient service components are connected, said framework having front and side portions and including pairs of vertically spaced horizontal track slots disposed along said front portion, the slots of each pair being open toward one another,

front cover panels disposed in said pairs of track slots for horizontal sliding movement therein,

said framework including a vertically elongate, releasably

attachable means at one side of said unit for preventing removal of said panels from said framework when attached



and for accommodating horizontal sliding movement of said panels from said framework when released.

4,338,486

# **HOUSING FOR ELECTRICAL AND ELECTRONIC COMPONENTS**

Klaus Mucke, Landshut, Fed. Rep. of Germany, assignor to Schott Glaswerke, Mainz, Fed. Rep. of Germany

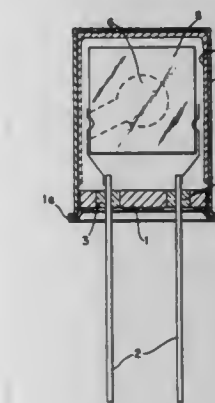
Filed Jun. 1, 1979, Ser. No. 44,760

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824426

Int. Cl.<sup>3</sup> H05K 5/06

U.S. Cl. 174—52 H

1 Claim U.S. Cl. 179—1 AL



1. A housing package for the encapsulation of electrical components comprising:

- (a) a base plate through which one or more electrical leads insulated from each other are led;
- (b) a cap attached to the base plate, the cap having walls with an inside surface and an outside surface;
- (c) electrical components which are encapsulated within the housing for protection against mechanical damage and ambient influences;
- (d) said cap being made of steel and having a coating of NiFe which restricts the diffusion of hydrogen through the cap.

4,338,487

# **CONDENSER BUSHING**

Junichi Matsuo, Chita, Japan, assignor to NGK Insulators, Ltd., Nagoya, Japan

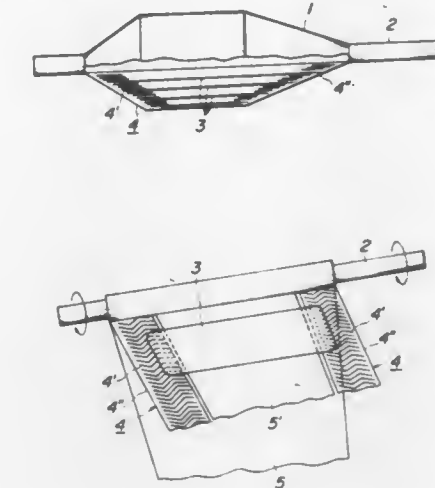
Filed Feb. 19, 1981, Ser. No. 236,063

Claims priority, application Japan, Mar. 7, 1980, 55-29441[U]

Int. Cl.<sup>3</sup> H01B 17/28

U.S. Cl. 174—143

4 Claims



1. A condenser bushing comprising an insulating paper wound around a center electrode and forming insulating layers of a condenser core, said insulating paper being provided at at least one of its side edge portions extending in a lengthwise direction thereof with an electrically conductive or semi-conductive linear electrode and being provided with a plurality of intermediate electrodes having end portions making contact with said linear electrode and extending in a widthwise direction of said insulating paper, said intermediate electrodes being inserted between said insulating layers and being spaced apart from each other by a given distance.

4,338,488

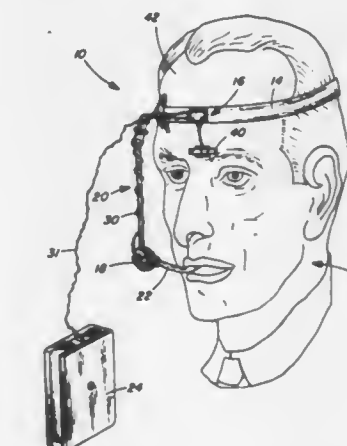
# **ELECTRONIC ARTIFICIAL LARYNX**

Thomas M. Lennox, Mentor, Ohio, assignor to Luminaud Company, Mentor, Ohio

Filed Aug. 29, 1979, Ser. No. 70,851

Int. Cl.<sup>3</sup> A61F 1/20

7 Claims



7. An apparatus for operating a tone generator of an electronic artificial larynx, comprising:

- (a) a headband for secure fitting around a human head adjacent the forehead;
- (b) a switch attached to the headband for operating the tone generator; and,
- (c) a switch actuator extending beyond the headband, movable relative to the headband to actuate the switch, and including paddle means adherable to the forehead for



movement therewith relative to the headband for actuating said switch and said tone generator.

4,338,489

## HEADPHONE CONSTRUCTION

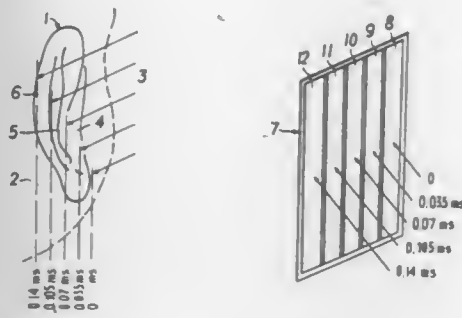
Rudolf Görike, Vienna, Austria, assignor to AKG Akustische u. Kino-Geräte Gesellschaft m.b.H., Austria

Filed Feb. 7, 1980, Ser. No. 119,497

Claims priority, application Austria, Feb. 12, 1979, 1029/79  
Int. Cl.<sup>3</sup> H04R 3/00, 9/06, 19/04

U.S. Cl. 179-1 R

14 Claims



14. A method of reproducing sound having a discernable front directional and distance quality, with respect to the user, with an audio signal comprising, positioning a diaphragm supported by a housing in a plane in close proximity to the external ear of a user, the diaphragm being divided into a plurality of adjacent coherent sections disposed in succession substantially along a path across the user's external ear from front to back, activating a first diaphragm section of the diaphragm along the path in alignment with the direction quality, activating a second immediately adjacent and successive diaphragm section along the path with the same audio signal which has been delayed by a selected time period, the total delay over all sections selected to be less than 0.3 ms, the housing being selected to be substantially sound permeable and there being substantially no reflecting surfaces when viewed from the user's ear behind the diaphragm, the audio signal propagating with delay unidirectionally from diaphragm section to diaphragm section along the path.

4,338,490

## SPEECH SYNTHESIS METHOD AND DEVICE

Sigeaki Masuzawa; Hiroshi Miyazaki, both of Nara, and Shinya Shibata, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

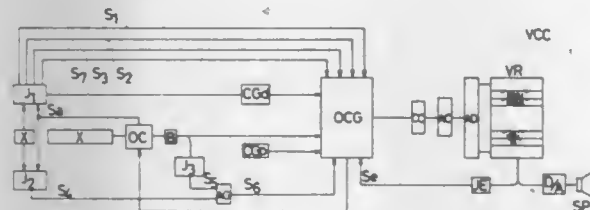
Filed Mar. 26, 1980, Ser. No. 134,318

Claims priority, application Japan, Mar. 30, 1979, 54-39050; Mar. 30, 1979, 54-39054

Int. Cl.<sup>3</sup> G10L 1/00

U.S. Cl. 179-1 SM

3 Claims





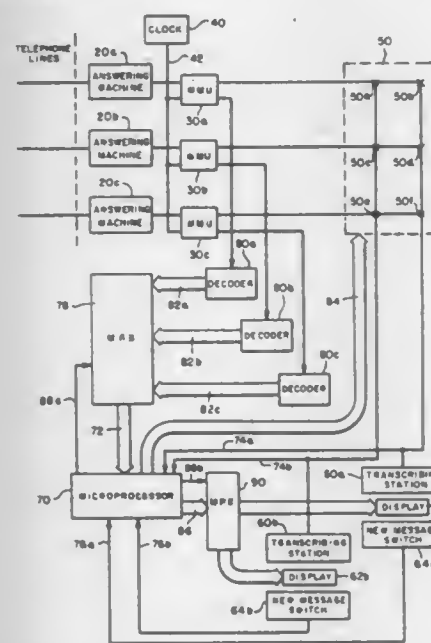
person at the dwelling unit actuates said device to signal a need for emergency assistance;

said communication means at said alarm location being responsive to the coded communication control signal from said alarm central for automatically establishing two-way voice communication between said alarm central and said alarm location via said communications means, whereby said alarm central can respond to an emergency call report by establishing voice communication with the person in need of emergency assistance, and doorbell response means for connection with a doorbell of the closed dwelling unit, and responsive to said coded preliminary signal (TKF) from said alarm central, and operable after receipt of said coded preliminary signal (TKF) to notify said alarm central when the doorbell is thereafter actuated, so that alarm central is notified when a person summoned to render assistance has actuated the doorbell, and

door access control means at said alarm location and automatically responsive to said coded door access signal from said alarm central for enabling access to the dwelling unit, whereby said alarm central has selective control of access to the dwelling unit and can authorize access after notification via the doorbell response means.

**4,338,494**  
**TELEPHONE CALL INVENTORING AND SEQUENCING SYSTEM AND METHOD**  
 Peter F. Theis, 3203 Bay View La., McHenry, Ill. 60050  
 Filed Jul. 11, 1980, Ser. No. 167,798  
 Int. Cl.<sup>3</sup> H04M 1/64, 11/10  
 U.S. Cl. 179—6.09

24 Claims



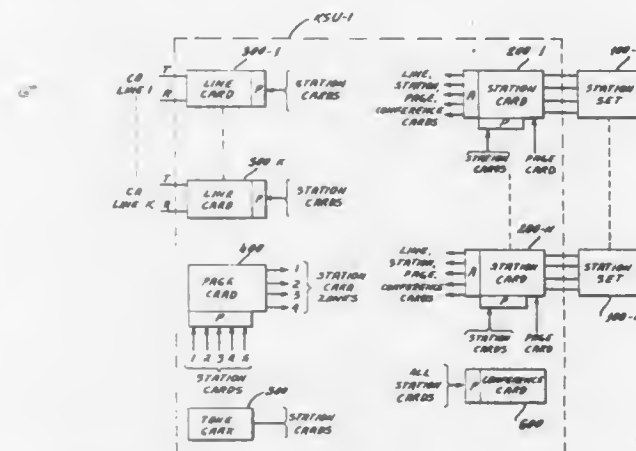
1. A telephone call inventorying apparatus comprising:  
 means for automatically recording a plurality of telephone messages transmitted over a plurality of telephone lines, said recording means including a plurality of recording units, each recording unit comprising a respective recording medium and adapted to be coupled to one of the telephone lines during the period of a call to record on the respective recording medium messages transmitted over the coupled telephone line;  
 means for recording a respective sequence signal for each of the messages, each sequence signal being recorded on the respective recording medium in physical association with the respective message, said sequence signals indicative of the sequence in which the plurality of messages were recorded by the plurality of recording units;  
 means for transmitting messages recorded by said recording means, said transmitting means including manually controlled means for generating a control signal;  
 means, responsive to the recorded sequence signals, for automatically determining a selected one of said plurality

of recording units, which selected recording unit contains a recorded message which has not yet been transcribed and which is associated with a recorded sequence signal indicative of an earlier message than the untranscribed messages recorded in a second one of said plurality of recording units; and  
 means, responsive to the control signal, for interconnecting said transcribing means with the selected one of said plurality of recording units to enable said transcribing means to transcribe from said selected recording unit.

**4,338,495**  
**ELECTRONIC KEY TELEPHONE SYSTEMS**  
 Alan Bloch, New York; Frank A. Coviell, Peekskill, both of N.Y.; Ira Guzik, Fairfield, and Candido Puebla, Bridgeport, both of Conn., assignors to TIE/Communications, Inc., Shelton, Conn.

Filed Mar. 6, 1979, Ser. No. 18,191  
 Int. Cl.<sup>3</sup> H04Q 5/20; H04M 1/00  
 U.S. Cl. 179—99 M

85 Claims



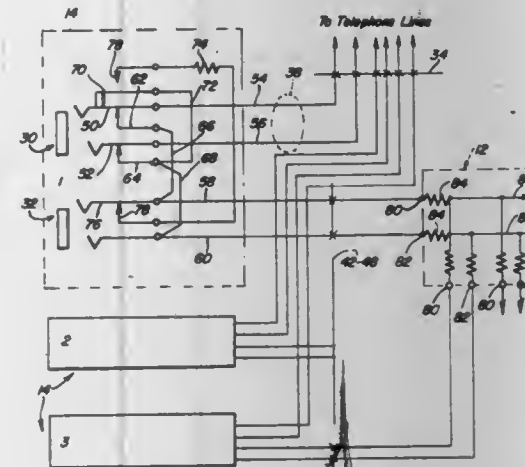
1. An electronic key telephone system, comprising:

- (1) a plurality of station set means, each including a plurality of switches and each operative to generate a continuous time-division-multiplexed digital data stream to indicate periodically the status of each of said plurality of switches, and further operative, in response to actuation of any one of said plurality of switches, to generate a service request signal as part of said continuous time-division-multiplexed digital data stream; and
- (2) a key service unit, comprising at least:
  - (a) a plurality of station circuit means, each operative to receive said continuous time-division-multiplexed digital data stream from one of said station set means, and to generate a continuous time-division-multiplexed digital data stream which is received by said station set means, to indicate periodically which internal connections are to be made in said station set means, each of said plurality of station circuit means including a plurality of active port means, each of which is connected to and operative to receive a status signal from a passive port means, and (i) when a service request signal is received from said station set means and (ii) if said status signal from said passive port means indicates that the service specified by said service request signal can be provided, said active port means is further operative to close a path to said passive port means and to generate a service signal to said passive port means;
  - (b) a plurality of line circuit means, each including a passive port means operative to generate a status signal indicating the status of the line circuit means, and further operative to receive a service signal from at least one of said plurality of station circuit means and, in response thereto, to cause the line circuit means to effect the requested service and to alter said status

signal to indicate the changed status of the line circuit means; and  
 (c) audible and visual signal generator means operative to provide a plurality of audible signals and visual indicator energizing signals to said electronic key telephone system.

**4,338,496**  
**TESTING FACILITY FOR TELEPHONE CONFERENCE BRIDGE**  
 Alfred W. Yakel, Edmond, Okla., assignor to Keltronics Corporation, Oklahoma City, Okla.  
 Filed May 19, 1981, Ser. No. 265,144  
 Int. Cl.<sup>3</sup> H04M 5/00  
 U.S. Cl. 179—175.1 R

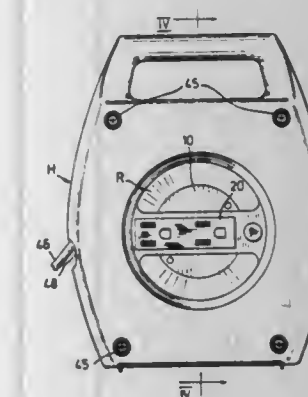
13 Claims



1. In combination with a passive bridge circuit having impedance legs through which conference call connections are established between associated network lines of a telephone communication system, apparatus for connecting said bridge circuit to the network lines while facilitating testing thereof by test equipment, comprising a housing internally mounting the bridge circuit, and a plurality of plug-in jack devices mounted in the housing for interconnecting the bridge circuit and the network lines, each of said jack devices including insertion activated means for alternatively connecting the test equipment to one of the legs of the bridge circuit in parallel with the network lines associated therewith and disconnecting said one of the legs from the associated network lines.

**4,338,497**  
**EXTENSION CORD REEL SET**  
 Douglas Drew, Toronto, Canada, assignor to Noma Canada Ltd., Scarborough, Canada  
 Filed May 7, 1980, Ser. No. 147,359  
 Int. Cl.<sup>3</sup> H02G 11/02  
 U.S. Cl. 191—12.4

5 Claims

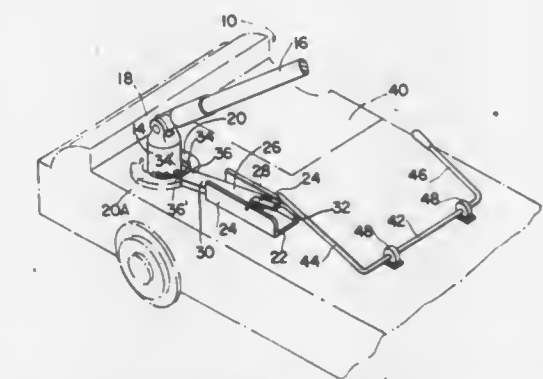


1. A reel-type extension cord set, comprising:  
 a flexible extension cord having an electrical outlet molded

onto one end thereof with all of its live elements embedded in the molding material;  
 a reel having a wide and deep peripheral groove within which said extension cord is coillable;  
 a housing for said reel within which it is rotatable for uncoiling and recoiling said extension cord and having an opening through which said extension cord is withdrawable for use;  
 a hub forming part of said reel having a compartment within which said outlet is captured and substantially contained against movement; the housing having a window affording use access to said outlet within said compartment;  
 said reel comprising two components with formations cooperating to provide said compartment and contain the outlet therein, and  
 one formation in one of said components comprising a channel within which the outlet is seatable; the other component having a floor disposed over said channel and barring it to prevent withdrawal of said outlet therefrom.

**4,338,498**  
**TROLLEY POLE LATCH FOR ELECTRIC MULES**  
 Monroe Murphy, P.O. Box 624, New Richmond, W. Va. 24867  
 Filed Oct. 30, 1980, Ser. No. 202,084  
 Int. Cl.<sup>3</sup> B60L 5/12  
 U.S. Cl. 191—66

5 Claims



1. In an electric mule trolley system:  
 (A) a trolley pole mounted for movement about horizontal and vertical axes to the remote side of the mule,  
 (B) the vertical axis mount comprising a cylindrical bearing carried on or adjacent to a top surface of the mule,  
 (C) a segmental plate rigidly affixed to said cylindrical bearing in acentric relation to its vertical axis,  
 (D) a detent horizontally pivoted to a fixed fulcrum proximate to said segmental plate in overlapping relation therewith,  
 (E) said segmental plate having relieved portions upon opposite sides of said vertical axis that conform, and engage, respectively, the proximal end and one included side of said detent when disposed in either of two preselected positions, and  
 (F) a lever bar mechanism for actuating said detent extending across said mule from its remote side to the opposite or near side thereof.

**4,338,499**  
**ANTI-PARALLELING APPARATUS FOR HIGH-VOLTAGE GEAR**  
 Leonard V. Chabala, Maywood, and Walter J. Hall, Evanston, both of Ill., assignors to S & C Electric Company, Chicago, Ill.  
 Filed Oct. 29, 1980, Ser. No. 201,684  
 Int. Cl.<sup>3</sup> H01H 9/20  
 U.S. Cl. 200—50 C

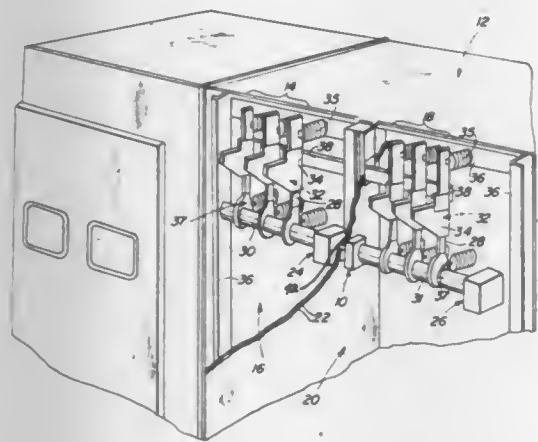
11 Claims

1. In high-voltage switchgear of the type having first and second switches which are each movable between a full open state and a full closed state by respective first and second operating mechanisms, improved apparatus for preventing one switch from residing in a selected one of its states at the same



time the other switch resides in a selected one of its states, which apparatus comprises:

- (a) first means for mimicking the state of the first switch, the first mimicking means having a normal first position when the first switch is in the other state, and being movable first to an intermediate position as movement of the first switch to the one state is initiated by its operating mechanism while the first switch remains in the other state and then to a second position when the first switch is in the one state;
- (b) second means for mimicking the state of the second switch, the second mimicking means having a normal first position when the second switch is in the other state, and being movable first to an intermediate position as movement of the second switch to the one state is initiated by its operating mechanism while the second switch remains in the other state and then to a second position when the second switch is in the one state;
- (c) interconnection means for preventing operation of either switch, the respective mimicking means of which is prevented from moving; and
- (d) sequencing means for
  - (i) permitting movement of each mimicking means be-



- between its first and intermediate positions regardless of the position of the other mimicking means,
- (ii) preventing movement of one mimicking means from its intermediate position to its second position whenever the other mimicking means is in its second position or is between its intermediate and second positions,
- (iii) permitting movement of each mimicking means from its first position through its intermediate position to its second position whenever the other mimicking means is in its first position,
- (iv) preventing movement of one mimicking means from its intermediate position to its second position whenever the other mimicking means is in its first position but the one mimicking means previously moved from its first position to its intermediate position and did not return to its first position while the other mimicking means was in its second position or was between its intermediate and second positions,
- (v) preventing simultaneous movement of the mimicking means out of their intermediate and toward their second positions, and
- (vi) permitting movement of each mimicking means from its second position through its intermediate position and to its first position.

**4,338,500**  
**DEVICE FOR SWITCHING IN A RESISTANCE WHEN A CIRCUIT BREAKER CLOSES A CIRCUIT**

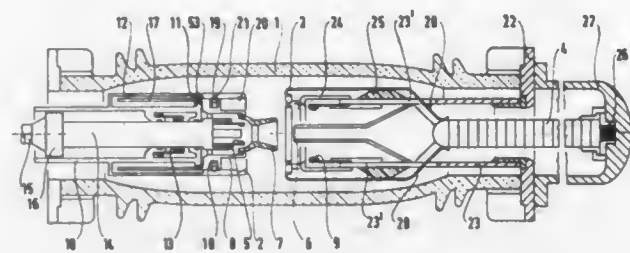
Doan Pham Van, and Dante Nicoloso, both of Meyzieu, France, assignors to Societe Anonyme dite: Delle-Alsthom, Villeurbanne, France

Filed Feb. 28, 1980, Ser. No. 125,601

Claims priority, application France, Mar. 2, 1979, 79 05478  
Int. Cl.<sup>3</sup> H01H 33/16, 9/42

U.S. Cl. 200—144 AP

11 Claims



1. A highly compact resistance switch-in device for switching in a resistance during closing but not during opening of a circuit breaker, said circuit breaker comprising an elongated cylindrical casing of insulating material defining an interrupter chamber, said switch-in device comprising a set of fixed concentric contacts within said cylindrical casing including firstly a main stationary contact, secondly a switch-in contact, and thirdly an arcing contact, a set of movable contacts including firstly a movable main contact, secondly a movable switch-in contact, and thirdly a movable arcing contact, means for mounting said sets in end-to-end relatively movable position axially disposed within said casing, and said resistance being disposed in said interrupter chamber in axial end-to-end connection to one of said fixed contacts remote from said movable set of contacts.

**4,338,501**  
**EXTINGUISHING CHAMBER FOR AN ELECTRIC ARC OF THE MAGNETIC BLOW-OUT TYPE**

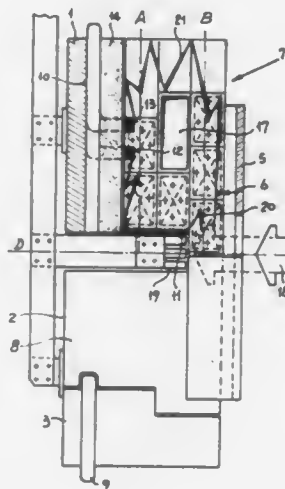
Ernesto Maggi, Viale V. Emanuele 69, 24100 Bergamo, Italy

Filed Mar. 20, 1979, Ser. No. 22,351

Claims priority, application Italy, Mar. 30, 1978, 21771 A/78  
Int. Cl.<sup>3</sup> H01N 33/18

U.S. Cl. 200—147 A

9 Claims



1. Extinguishing chamber for the electric arc of the magnetic blow-out type, comprising two symmetrical sections disposed in specular position in relation to an axis corresponding approximately to the path of the movable contact of the electric current circuit breaker, each section having a first yoke of metallic material of good magnetic permeability, permanent magnets coupled in pairs to said yoke to generate a constant magnetic field, said yoke adapted to conduct the magnetic return flux generated by the pairs of permanent magnets exter-

nally to said section, electrically insulating refractory walls positioned within each section defining a slit through which the arc passes, a second yoke within each section, electrically insulated windings wound around said second yoke and having connection horns at the end thereof properly shaped and arranged inside said slit to generate a supplementary variable magnetic field having the same direction as the constant field, said windings being run through by unidirectional currents proportional to the current to be interrupted and derived from the electric interruption arc itself when this latter, during its movement inside the slit of the section it occupies, produced by the constant magnetic field, skims over said properly shaped connection horns arranged inside said slit.

**4,338,502**  
**METALLIC HOUSING FOR AN ELECTRONIC APPARATUS WITH A FLAT KEYBOARD**

Shintaro Hashimoto, Shiki; Shigeki Komaki, Yamatokoriyama, and Akira Tanimoto, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

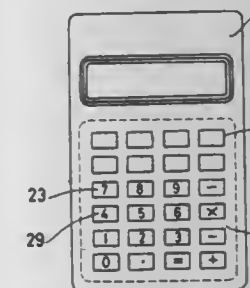
Division of Ser. No. 33,414, Apr. 26, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,379

Claims priority, application Japan, Apr. 27, 1978, 53-57240[U]; Apr. 28, 1978, 53-60096[U]

Int. Cl.<sup>3</sup> H01H 13/70

U.S. Cl. 200—159 B

2 Claims



1. A hand-held electronic calculator having a keyboard comprising:
  - a housing having an upper member and a lower member for said hand-held electronic calculator, said upper member being made of metallic material;
  - said upper metallic housing member of said housing constituting a plurality of key actuators, each of said key actuators being defined by a continuous slot which connects with itself and completely penetrates the upper metallic housing member;
  - a flexible sheet fixed to the rear surface of the upper metallic housing member in a manner to cover all of the key actuators, said flexible sheet carrying an electrically non-conductive silicon rubber sheet and a plurality of electrically conductive silicon rubber contacts forming the movable contacts for the keyboard; and
  - a plurality of stationary contacts including means for their support, disposed within said housing, said stationary contacts being positioned to correspond to said movable contacts, whereby a particular movable contact comes into contact with a particular stationary contact when a particular one of said key actuators is depressed;

**4,338,503**  
**INDUCTIVE HEATING APPARATUS**  
Susumu Ito, and Toshio Ogino, both of Fujishi, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 30, 1980, Ser. No. 173,745

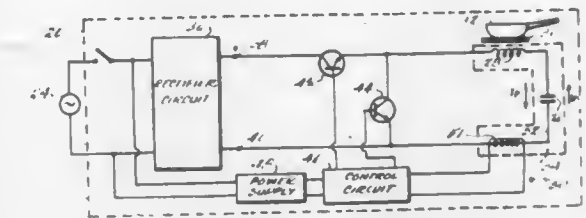
Claims priority, application Japan, Aug. 3, 1979, 54-99259  
Int. Cl.<sup>3</sup> H05B 5/04

U.S. Cl. 219—10.77

9 Claims

1. An inductive heating apparatus comprising:
  - a serially connected switching circuit including a first

switching element and a second switching element which alternately conduct in a given order;  
a resonant circuit including an inductive heating coil and a capacitor, parallelly connected to said second switching element;  
sensing means for sensing a first current flowing in said first switching element and a second current flowing in said second switching element and for producing first and second signals in response to said first and second currents reaching first and second predetermined magnitude levels respectively prior to becoming zero, and producing third



and fourth signals in response to said first and second currents reaching said zero magnitude level respectively; control means, responsive to said sensing means and connected to said first and second switching elements, for causing: (1) said first switching element to become conductive in response to said fourth signal, (2) said first switching element to become non-conductive in response to said first signal, (3) said second switching element to become conductive in response to said third signal, and (4) said second switching element to become non-conductive in response to said second signal.

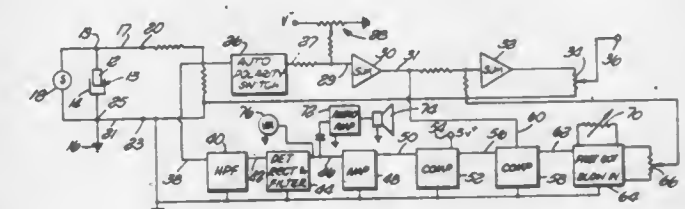
**4,338,504**  
**ARC PREVENTION AND DETECTION ELECTRICAL DISCHARGE MACHINE SERVO CONTROL SYSTEM**  
Samuel A. Gray, Sun Valley, Calif., assignor to Pacific Controls Incorporated, North Hollywood, Calif.

Filed Aug. 28, 1979, Ser. No. 70,298

Int. Cl.<sup>3</sup> B23P 1/02

U.S. Cl. 219—69 M

1 Claim



1. A method of preventing undesirable conditions in electric discharge energy across a gap between an electric discharge machining electrode and a workpiece, comprising the steps of: detecting the voltage across the gap and generating a first voltage signal representative of said voltage; generating a second voltage signal representative of a preselected desired voltage across the gap; comparing said first voltage signal to said second voltage signal and generating a servo control signal responsive to the difference between said first and second voltage signals, said servo control signal being applied to a servo control mechanism for withdrawing the electrode when said difference is of one polarity; sensing radio frequency energy within a preselected range of frequencies across the gap and generating a withdrawal signal in response to said radio frequency energy being below a preselected level, and adding said withdrawal signal to said servo control signal, said withdrawal signal being of said one polarity and of sufficient magnitude to cause said mechanism to rapidly withdraw the electrode, even though said servo control signal of said opposite polarity is present, the rate of speed of withdrawal respon-



sive to said withdrawal signal being greater than the rate of speed of withdrawal of the electrode when the radio frequency energy is above said preselected level, and in the absence of said withdrawal signal immediately reinserting the electrode, at a rate slower than the electrode was withdrawn, in order to reestablish a desired gap distance.

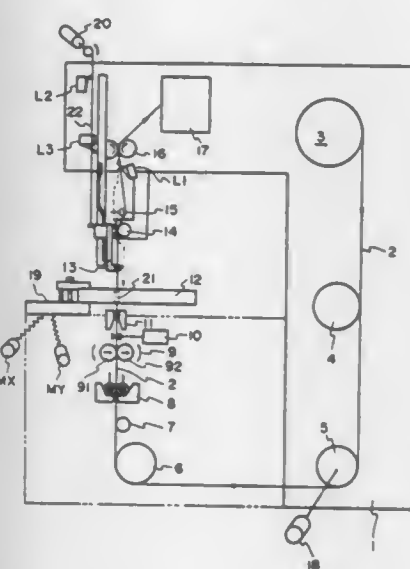
#### 4,338,505 METHOD AND APPARATUS FOR RESTORING A WIRE ELECTRODE

Hideo Katsube, Hachioji; Gotaro Gamo, Komae; Mitsuo Kinoshita, Hachioji; Yoshiyuki Nomura, and Kanemasa Okuda, both of Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,612  
Claims priority, application Japan, Aug. 3, 1979, 54-099347  
Int. Cl.<sup>3</sup> B23P 1/02

U.S. Cl. 219—69 M

12 Claims



1. A method of restoring a broken wire electrode in a wire electrode-type electric discharge machine for machining a workpiece into a desired shape by a wire electrode while the workpiece is moved relative to the wire electrode on the basis of machining command data, said method comprising the steps of:

- storing the relative machining starting position of the workpiece and the wire electrode at the machining starting point;
- machining the workpiece by creating an electrical discharge between the workpiece and the wire electrode while moving the workpiece relative to the wire electrode in accordance with the machining command data;
- monitoring the relative current position of the workpiece and the wire electrode;
- generating a wire breakage signal when the breakage of the wire electrode is detected;
- stopping the machining when the wire electrode breaks;
- storing the relative current position as a relative wire electrode breakage position of the workpiece and the wire electrode when the wire breakage signal is generated;
- bringing the relative position of the workpiece and the wire electrode into coincidence with said machining starting position by moving the workpiece relative to the wire electrode on the basis of information indicative of said machining starting position and said electrode wire breakage position after the wire electrode has broken;
- restoring the wire electrode, at the machining starting position, to the path along which the wire electrode travels;
- moving the workpiece again relative to the wire electrode from the machining starting point to the wire electrode breakage position on the basis of the machining command data;
- stopping the movement of the workpiece relative to the wire

electrode when the current position coincides with the wire electrode breakage position; and

starting electric discharge machining again after the relative position of the workpiece and the wire electrode has been brought into coincidence with said wire electrode breakage position.

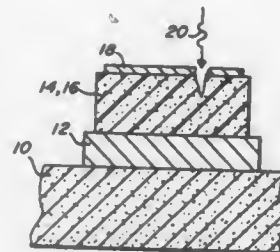
#### 4,338,506 METHOD OF TRIMMING THICK FILM CAPACITOR

Gary R. Geller, Plantation; Anthony B. Suppelsa, Coral Springs, and William J. Martin, Ft. Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 7, 1979, Ser. No. 73,404  
Int. Cl.<sup>3</sup> H01G 7/00

U.S. Cl. 219—121 Lj

5 Claims



1. The process for making a thick film capacitor including the steps of:
- screening a first layer of conductive paste on a substrate to form a capacitor electrode;
  - drying the first conductive paste layer;
  - screening a second dielectric paste layer over the first layer to form the capacitor dielectric;
  - drying the second dielectric paste layer;
  - screening a third layer of organo-metallic paste having molecules containing conductive particles over the second layer to form a second capacitor electrode;
  - drying the third organo-metallic paste layer;
  - firing the first, second and third layers, and continuing such firing until the third layer is reduced to a layer of conductive particles having a maximum thickness of 2 microns, and
  - trimming the third layer to adjust the size of the electrode formed thereby and the value of the capacitor.

#### 4,338,507 WATER-QUENCHED COLLECTION SYSTEM FOR USE WITH A PLASMA-ARC TORCH

William B. Scott, Rochelle, Ill., assignor to W. A. Whitney Corp., Rockford, Ill.

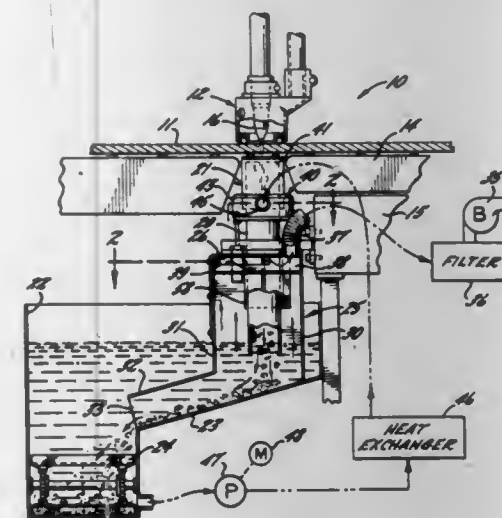
Filed Jan. 28, 1980, Ser. No. 116,319  
Int. Cl.<sup>3</sup> B23K 9/00

U.S. Cl. 219—121 PC

13 Claims

1. Apparatus for cutting a metal workpiece, said apparatus comprising a metal melting tool located above the workpiece and operable to emit downwardly directed energy for melting the workpiece, and an upright tubular duct located below the workpiece and aligned vertically with said tool whereby molten metal is directed downwardly into said duct, the improvement in said apparatus comprising, a tank of liquid located below the workpiece, the lower end of said duct being located in proximity to the liquid in said tank, a jacket surrounding the upper portion of said duct and providing a space for liquid in cooling relationship with the outside of said duct, means for pumping liquid from said tank and into said space provided by said jacket, and an annular outlet at the upper ends of said duct and said jacket and opening downwardly into the inside of said

duct whereby the liquid pumped into said jacket is discharged out of said outlet and streams downwardly along the inside of



the duct to cool the duct and to flush molten metal from the duct and into the tank.

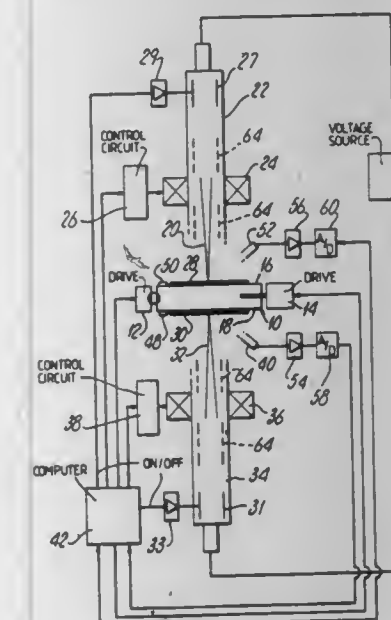
#### 4,338,508 INScribing APPARATUS AND METHODS

Geraint A. C. Jones, 54, Kelsey Crescent, Cherry Hinton, Cambridge, and Haroon Ahmed, 9, Owlstone Rd., Cambridge, both of England

Continuation-in-part of Ser. No. 80,034, Sep. 28, 1979, abandoned. This application Dec. 2, 1980, Ser. No. 212,246  
Claims priority, application United Kingdom, Oct. 2, 1978, 38953/78

Int. Cl.<sup>3</sup> G21K 5/10; B23K 26/02  
U.S. Cl. 219—121 EJ

17 Claims



1. Apparatus for scribing a workpiece surface comprising:
- a worktable for supporting a workpiece means, which has opposed parallel workpiece faces exposed to opposite directions;
  - means for generating a first beam;
  - means for directing the first beam towards the worktable for the controlled inscribing of a first of said workpiece faces;
  - means for generating a second beam;
  - means for directing the second beam on an axis effectively co-axial with the axis of the first beam but in the opposite direction towards the opposed worktable face;
  - position indicating means carried on the worktable;
  - means for deriving electrical position signals from impingement of the two beams with the indicator means;
  - comparator means for determining any offset between the axes of the two beams;
  - memory means for storing information relating to said offset;
  - means for moving a workpiece into position so that the two

beams impinge on opposite faces thereof, and so that the second beam can detect position control marks on the opposed face of the workpiece; and

means for controlling the relative positions of the first beam and the first of the workpiece faces to produce inscribing of said first face positionally controlled dependent on the position control marks on the opposed face and dependent on the stored information relating to the offset.

15. A method of scribing a workpiece surface comprising the steps of:
- supporting a workpiece means on a worktable with two parallel workpiece faces exposed to opposite directions;
  - generating a first beam;
  - directing the first beam towards the first of said workpiece faces to allow for controlled inscribing thereof;
  - generating a second beam;
  - directing the second beam on an axis effectively coaxial with that of the first beam but in the opposite direction onto the opposed workpiece face;
  - providing position control marks on the worktable;
  - deriving electrical position signals from impingement of the two beams with the indicator means;
  - determining any offset between the axes of the two beams by comparing the electrical position signals relating to the two beams;
  - storing information relating to any said offset in memory means;
  - moving a workpiece into position so that the two beams impinge on opposite faces thereof and detecting position control marks on the opposed face of the workpiece by the second beam; and
  - controlling the relative positions of the first beam and the first of the workpiece faces to produce positionally controlled inscribing of said first face dependent on the position control marks on the opposed face and dependent on the stored information relating to any offset in the axes of the beams.

#### 4,338,509 PROCESS OF AND APPARATUS FOR PRODUCING A HOMOGENEOUS RADIALY CONFINED PLASMA STREAM

Miloslav Bartuska; Karel Zverina; Josef Szabo; Borivoj Pospisil, and Petr Kroupa, all of Prague, Czechoslovakia, assignors to Vysoka skola chemicko-technologicka, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 144,169, Apr. 25, 1980, abandoned. This application Nov. 14, 1980, Ser. No. 206,979  
Int. Cl.<sup>3</sup> B23K 9/00

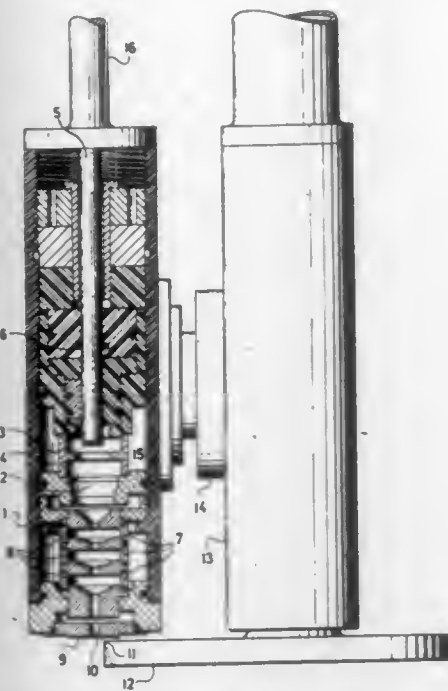
U.S. Cl. 219—121 PR

8 Claims

1. A process of radial stabilization and homogenization of a plasma stream with a concentration of charged particles between  $2.00 \times 10^{24}$  and  $0.3 \times 10^{23}$  per cubic centimeter in number and with a temperature between  $15,000^\circ \text{K}$  and  $60,000^\circ \text{K}$ , wherein the arc is created between the front surface of a rod cathode arranged in an arc chamber of a plasma burner and an anode arranged outside the arc chamber, the arc passes through at least two orifice plates, the arc is stabilized by a cooling eddy of liquid led in a tangential direction into at least one of the spaces between the orifice plates or the orifice plates



and the nozzle, the arc passes through the nozzle hole, and after leaving the nozzle hole the arc is bent in one direction



toward the perimetric anode surface lying out of the main outlet plasma stream emitted from the nozzle.

4,338,510

# **ELECTRODE TYPE STEAM VAPORIZER HAVING CORROSION RESISTANT NICKEL FERRITE ELECTRODES AND A PROTECTIVE COVER**

Masao Chihara, Shigeo Araki, and Kazuhiko Asakawa, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

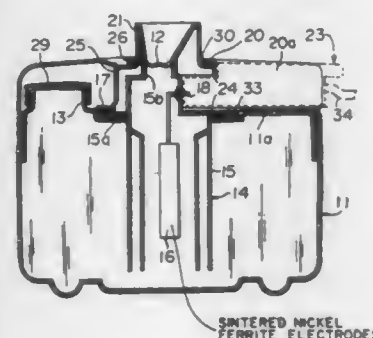
Filed Feb. 17, 1978, Ser. No. 878,787

Claims priority, application Japan, May 11, 1977, 52-58841[U]

Int. Cl.<sup>3</sup> H05B 3/60; F22B 1/30

U.S. Cl. 219-288

10 Claims



1. An electrode type steam vaporizer, comprising:
  - a container for water having an upper surface with a steam outlet; and
  - a plurality of spaced apart ferrite electrodes extending into the container and having electrode terminals extending through said upper surface of said container for connection to an AC voltage source to heat water therein and produce steam when AC voltage is applied to the electrodes, said electrodes each including a sintered body prepared by sintering a shaped body of a mixture of 60 mole percent  $\text{Fe}_2\text{O}_3$  with 40 mole percent divalent nickel oxide.

# **4,338,511 ELECTRONIC THERMOSTAT EQUIPPED WITH AN ENERGY-SAVING DEVICE**

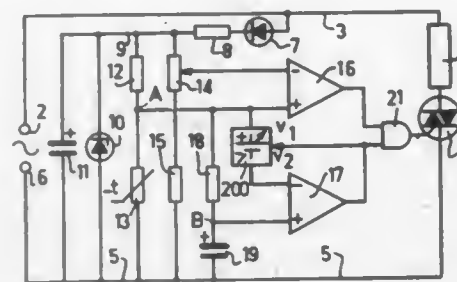
Jean-Claude G. Six, Versailles, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 13, 1979, Ser. No. 29,791

Claims priority, application France, Apr. 13, 1978, 78 10915 Int. Cl.<sup>3</sup> H05B 1/02

U.S. Cl. 219-497

16 Claims



1. An electronic thermostat equipped with an energy saving device comprising, a temperature probe, a static circuit breaker having a control electrode for controlling its operation, a first voltage comparator circuit having one input coupled to the temperature probe, a second input coupled to a source of reference voltage and an output, a pair of input terminals for connection to a source of electric power, a load, means connecting the circuit breaker in series with the load across said input terminals, switching means, a second voltage comparator circuit having a first input coupled to said one input of the first comparator circuit via a threshold voltage source and an output connected to the switching means, means coupling the output of the first comparator circuit to the control electrode of the static circuit breaker via said switching means, and means coupling a second input of the second voltage comparator circuit to said one input of the first comparator circuit via a network having a large time constant so that the switching means is controlled by a signal developed in response to a rapid decrease in the temperature of the probe.

4,338,512

# **TRUCK SAFETY RECORDER**

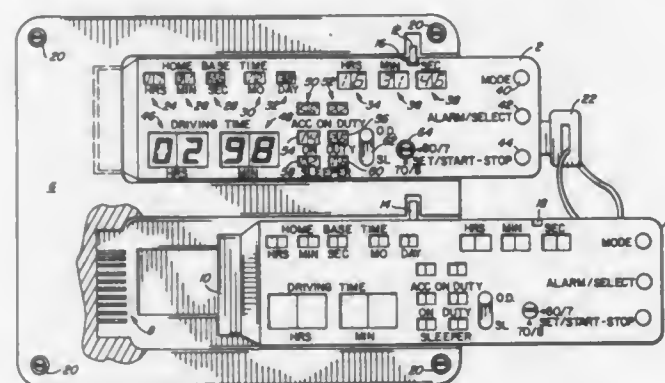
Walter F. Ludwig, 3434 E. Oregon, Phoenix, Ariz. 85018

Filed Dec. 8, 1980, Ser. No. 214,346

Int. Cl.<sup>3</sup> G07C 5/04

U.S. Cl. 235-92 T

16 Claims



1. A recording apparatus for use by a driver of a vehicle, the vehicle powered by an engine, said recording apparatus comprising in combination:
  - a. clocking means for generating a periodic time signal;
  - b. a sensor for sensing that the vehicle is in motion and generating a motion signal in response thereto;
  - c. first storage means for storing the amount of time that the driver has spent driving the vehicle;
  - d. display means coupled to said first storage means for displaying the time stored by said first storage means;

- e. control means responsive to the periodic time signal and responsive to the motion signal for incrementing the time stored by said first storage means upon an occurrence of said periodic time signal provided that the vehicle is in motion;
- f. second storage means coupled to said control means for storing the amount of time that the driver has spent on duty;
- g. third storage means coupled to said control means for storing the amount of time that the driver has spent off duty;
- h. switch means coupled to said control means and operated by the driver for indicating whether the driver is on duty or off duty;
- i. said control means incrementing said second storage means upon an occurrence of said periodic time signal provided that the driver is on duty and incrementing said third storage means upon an occurrence of said periodic time signal provided that the driver is off duty;
- j. a keyed switch coupled to said control means and operated by an insertable key;
- k. engine enable/disable means coupled to the engine of the vehicle and having an input for disabling the engine upon receiving a shut-down signal at the input; and
- l. said control means being coupled to the input of said engine enable/disable means for supplying the shutdown signal provided that said key is inserted within said keyed switch when said switch means indicates that the driver is off duty.

4,338,513

# **BISTABLE MAGNETIC WIRE BADGE READER**

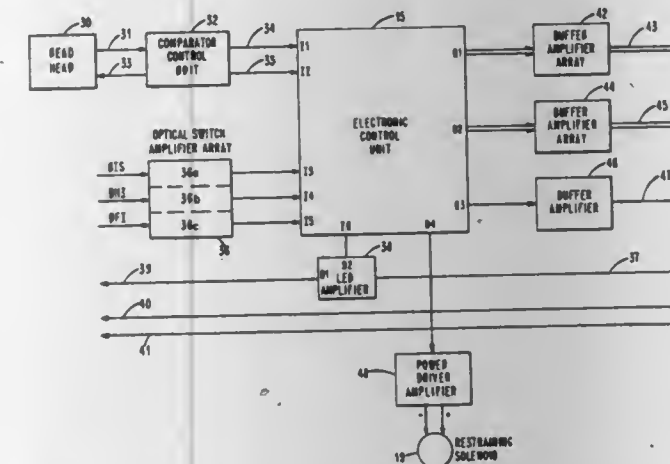
Richard G. Harris, Franklin; Robert J. Dalessio, and Nell W. Harman, both of Marlboro, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Aug. 5, 1980, Ser. No. 175,461

Int. Cl.<sup>3</sup> G06K 7/08, 19/06

U.S. Cl. 235-449

4 Claims



1. A bistable magnetic wire badge reading system for detecting coded patterns of bistable magnetic wires embedded in a user badge and forwarding information read from said badge to a local controller, which comprises:
  - (a) sensor means for detecting the presence of said badge at spaced apart stations along an insertion path into said reading system and issuing logic signals to signal the occurrence of initial, intermediate and full badge insertions;
  - (b) bistable magnetic wire detection means positioned in registration with said insertion path for generating logic pulse trains representative of said coded patterns;
  - (c) logic control means responsive to said logic signals, and receiving said logic pulse trains for validating said user badge and formatting said logic pulse trains into an information stream for validation by said local controller; and
  - (d) badge restraining means responsive to a valid badge signal received from said logic control means for gripping said badge upon the detection of a full badge insertion by

1020 O.G.-11

said sensor means, and thereafter releasing said badge in the event said local controller signals to said logic control means the detection of valid data in said information stream.

4,338,514

# **APPARATUS FOR CONTROLLING EXPOSURE OF A SOLID STATE IMAGE SENSOR ARRAY**

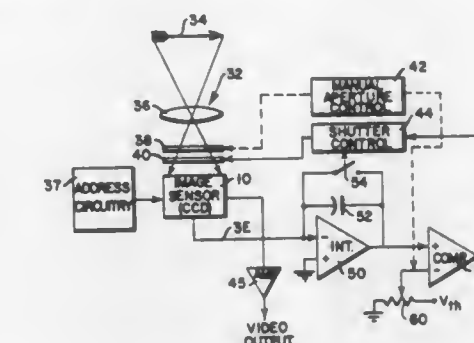
James A. Bixby, San Diego, Calif., assignor to Spin Physics, Inc., San Diego, Calif.

Filed Apr. 7, 1980, Ser. No. 138,024

Int. Cl.<sup>3</sup> G01J 1/20

U.S. Cl. 250-201

8 Claims



1. Apparatus for controlling the exposure of a solid state image sensor array of the type which includes a photosensitive semiconductive substrate having disposed on one surface thereof a plurality of photosites, said apparatus comprising means for producing a signal representative of the substrate current resulting from an imagewise exposure of said photosites, means for integrating said signal to provide a ramp signal having an instantaneous amplitude representative of the instantaneous average exposure of said photosites, and means responsive to said ramp signal for controlling the exposure of said sensor array.

4,338,515

# **ANALOG-DIGITAL CONVERTER FOR THE EVALUATION OF THE OUTPUT SIGNAL OF AN OPTOELECTRONIC SENSOR ELEMENT**

Heiner Herbst, Munich, and Hans-Jörg Pfleiderer, Zorneding, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

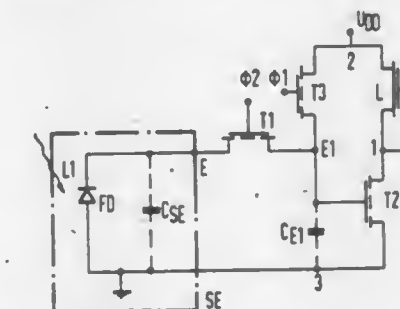
Filed Jul. 11, 1980, Ser. No. 168,647

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1979, 2936492

Int. Cl.<sup>3</sup> H01J 40/14

U.S. Cl. 250-214 R

12 Claims



1. Analog-digital converter system which evaluates an analog signal of an optoelectronic sensor element, comprising: an optoelectronic sensor element; an inverter having a switching transistor and series connected load element; a transistor connecting the sensor element with an input of the inverter; the inverter input being connected with a source lead of a reset transistor whose drain lead is at a constant voltage; and the transistor connecting the sensor element with the inverter input being designed as a potential barrier defining transistor.



# 4,338,516 OPTICAL CRYSTAL TEMPERATURE GAUGE WITH FIBER OPTIC CONNECTIONS

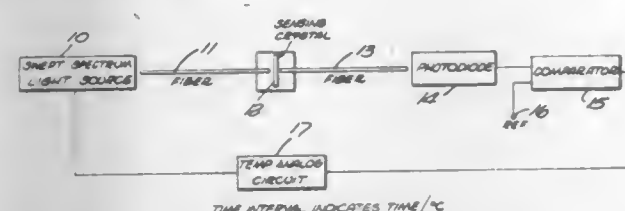
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Madan M. Sharma, Palos Verdes, Calif.

Filed Sep. 12, 1980, Ser. No. 186,881

Int. Cl.<sup>3</sup> G01J 3/34

U.S. Cl. 250—226

13 Claims



1. A temperature measuring device, comprising: a semiconductor crystal having, an optical high pass characteristic in wavelength terms, the band-edge wavelength between frequencies of maximum and minimum light transmission through said crystal being temperature dependent; a source of light energy of controllable wavelength; first light conducting means for conveying the light energy output of said source to said crystal; a light-to-electric transducer; second light conducting means for conveying light passing from said first light conveying means, through said crystal and to said transducer; scanning means for causing the wavelength of said light energy from said source to vary according to a predetermined function starting from an initial predetermined reference wavelength at least passing through said band-edge wavelength corresponding to all temperatures to be measured; and temperature analog means responsive to said source and said transducer and producing an output signal analogous to the temperature of said crystal as a function of the difference between said predetermined reference wavelength at said band edge.

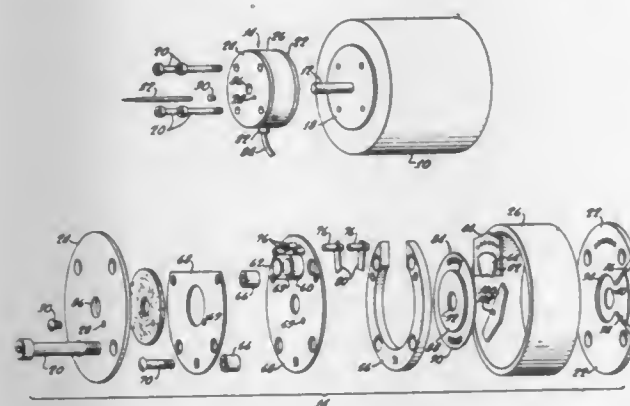
# 4,338,517 SHAFT ROTATION SENSOR

Warren L. Perrine, Paraiso Hot Springs, Soledad, Calif. 93960  
Continuation-in-part of Ser. No. 3,108, Jan. 15, 1979, abandoned. This application Apr. 28, 1980, Ser. No. 144,376

Int. Cl.<sup>3</sup> G01D 5/36; G01P 3/36

U.S. Cl. 250—231 SE

41 Claims



1. For use in a modular device for sensing rotation of a shaft journaled in a support, said device having no shaft of its own but being adapted to be mounted upon a shaft of which rotation is to be sensed, the combination comprising,  
a housing adapted to be fixed to said support and having a housing aperture, said housing being free of any shaft therein,  
a patterned disc assembly loosely positioned within said housing and having a mounting aperture dimensioned to be a press fit upon a shaft to be inserted therein, and means for loosely retaining said disc assembly within said housing with said mounting aperture substantially concentric with said housing aperture, whereby said shaft may be inserted into said housing aperture and pressed into said

mounting aperture to frictionally secure the disc assembly to the shaft for rotation therewith, and said housing may be secured to said shaft support.

# 4,338,518 POSITION ENCODER WITH COLUMN SCANNING AND ROW SENSING

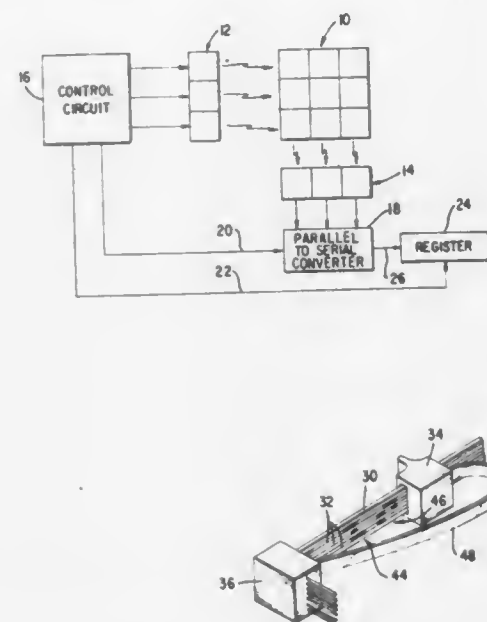
Michael J. Brienza, Ridgewood, and Richard C. Warner, Morris Plains, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Sep. 12, 1980, Ser. No. 186,822

Int. Cl.<sup>3</sup> H01J 3/14

U.S. Cl. 250—237 G

4 Claims



1. A position encoder comprising:  
a coding member defining a predetermined path and having coded indicia at a plurality of discrete positions along said path, the indicium at each of said positions comprising a rectangular array of code elements forming a first plurality of columns and a second plurality of rows;  
a member movable relative to said coding member to any of said plurality of discrete positions;  
interrogation means for sequentially scanning column by column the code elements at the position occupied by said movable member;  
sensing means associated with the rows of the code element array and operative in synchronism with said interrogation means for providing in sequence parallel groups of encoding signals, each group corresponding to a column scan of said code elements by said interrogation means; and  
means for assembling a usable data format from the parallel groups of encoding signals.

# 4,338,519 ADJUSTABLE BLIP SENSOR INTERFACE FOR MICROFILM READER AND MICROFILM READER PRINTERS

Stephen C. Horste, Pinckney, and Ronald B. Bergman, Ypsilanti, both of Mich., assignors to Visual Systems Corporation, Southfield, Mich.

Filed Jul. 31, 1980, Ser. No. 174,395

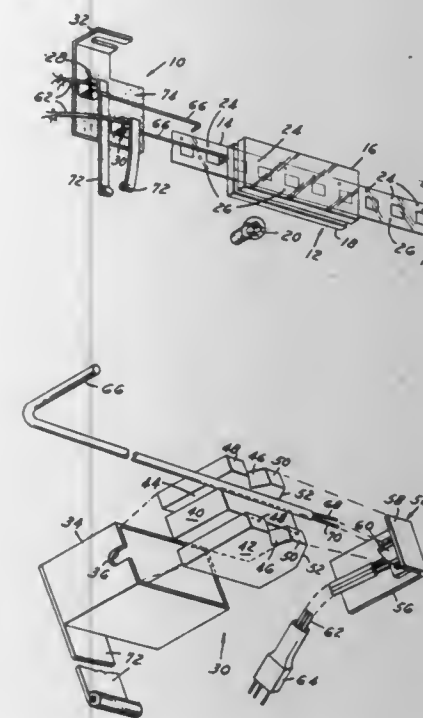
Int. Cl.<sup>3</sup> H01J 5/02

U.S. Cl. 250—239

10 Claims

1. An adjustable blip sensor interface for detecting blips on a strip of microfilm or the like said blips being recorded on at least one track on the microfilm, said sensor adapted to be mounted in the film gate area of a microfilm reader or microfilm reader printer, comprising:

a mounting plate adapted to be secured adjacent to the film gate area; and  
at least one sensor module magnetically mounted to said mounting plate;



said sensor module comprise a housing, magnetic means for positioning said sensor module, and detector means secured to said housing and positionable over the film gate area; and  
means for adjusting the position of said sensor module relative to said mounting plate.

# 4,338,520 METHOD OF AND APPARATUS FOR ANALYZING GAS FLOWS INSIDE HOLLOW BODIES

Peter A. E. Stewart, Bristol, England, assignor to Rolls Royce Limited, London, England

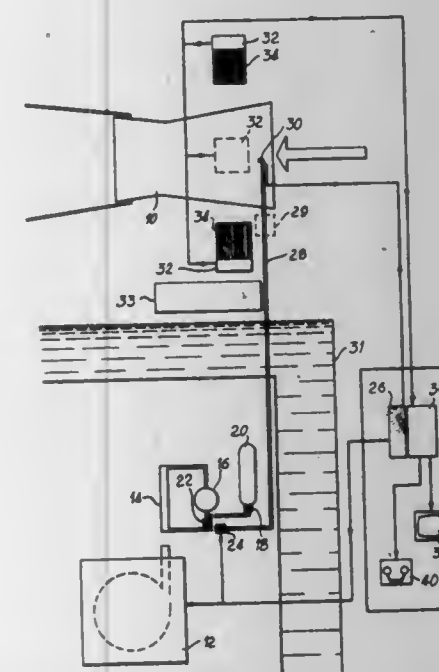
Filed May 5, 1980, Ser. No. 146,393

Claims priority, application United Kingdom, May 18, 1979, 7917336

Int. Cl.<sup>3</sup> G01F 1/00

U.S. Cl. 250—356

10 Claims



1. A method of visualizing the flow pattern of a gas flowing inside a hollow body comprising the steps of:  
irradiating a quantity of a suitable tracer fluid in a chamber with nuclear particles to produce a quantity of a radioactive isotope having a half-life in the range of three

seconds to two minutes, and which also emits radiation at an energy level of at least 100 Kev;  
injecting a quantity of irradiated tracer fluid directly from said chamber into said gas flow in the form of a thin filament;  
detecting the presence or absence of radio-activity from the filament of tracer fluid at a plurality of spacial positions within a specified volume inside the body by means of at least two arrays of collimated detectors mounted around the outside of the body and directed at the expected path of the gas flow;  
passing the outputs of the detectors to a computer programmed to determine the instantaneous spacial co-ordinates of the source of the radio-activity detected and, using an image reconstruction algorithm, to construct a visual image of the flow pattern in at least two dimensions; and  
making a record of the visual image for subsequent analysis and measurement.

# 4,338,521 MODULAR RADIATION DETECTOR ARRAY AND MODULE

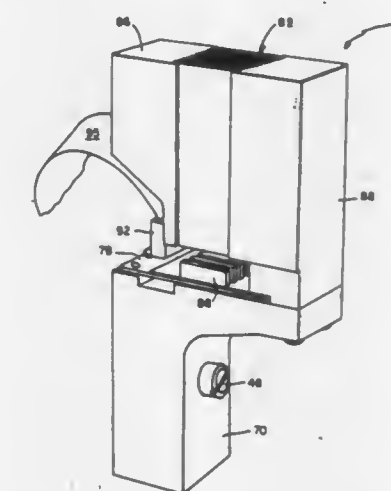
R. Howard Shaw, Palo Alto, and Charles C. Morehouse, Cupertino, both of Calif., assignors to General Electric Company, Milwaukee, Wis.

Filed May 9, 1980, Ser. No. 148,261

Int. Cl.<sup>3</sup> G01T 1/20

U.S. Cl. 250—366

19 Claims



1. A modular detector array for use in detecting radiation in tomographic apparatus and the like comprising a plurality of detector modules, each of said modules comprising a first portion including a plurality of photodiodes and a plurality of scintillator crystals with each of said scintillator crystals cooperatively arranged with one of said photodiodes whereby radiation received by a scintillator crystal generates photons in said scintillator crystal which are transferred to one of said photodiodes, and a second portion including a collimator for directing collimated radiation to a scintillator crystal, said first portion and said second portion being detachably assembled.



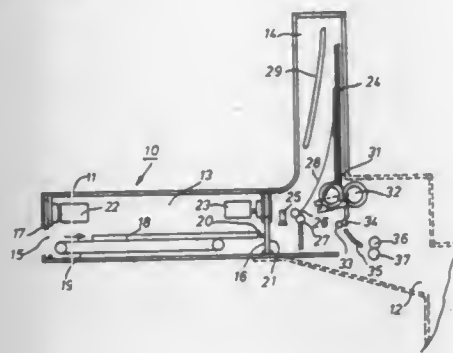
4,338,522  
**DEVICE FOR UNLOADING RADIOGRAPHIC CASSETTES IN DAYLIGHT**

Emile F. Stievenart, Hoboken; Hendrik S. Plessers, Wychmaal; Julianus J. Hellemans, Kontich, and Georges J. Neujens, Merksem, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Mar. 27, 1980, Ser. No. 134,552

Claims priority, application United Kingdom, Mar. 30, 1979, 7911117

Int. Cl.<sup>3</sup> G11B 1/00; G65H 5/22  
 U.S. Cl. 250—468 11 Claims



1. A daylight cassette unloading and radiographic film dispensing apparatus comprising a light-tight cassette unloading chamber, a light-tight film storage chamber having at one side of its lower end an entry opening adapted for communication with said unloading chamber and within which chamber exposed film sheets are accumulated as a stack for delivery one by one to a film processor for development of the latent radiographic images, said storage chamber being arranged in generally vertical orientation to hold the film stack therein in generally upright position and having at the opposite side of its lower end a film exit opening which can be placed in light-tight communication with the entrance to the film processor, means for locating a loaded cassette in a predetermined unloading position in said unloading chamber, mechanisms for automatically opening the thus-positioned cassette in said chamber and transferring a film sheet from the open cassette along a generally arcuate path upwardly through said entry opening into said film storage chamber against one side of said stack therein, and a dispensing mechanism operating independently of said transferring mechanism for dispensing film sheets from the stack in said storage chamber via said exit opening one by one and in the order in which they are received from said cassette unloading chamber, said dispensing mechanism comprising stack retaining means periodically projectable across said storage chamber exit opening for engagement with the lower edges of the sheets in said upright stack and associated sheet withdrawing means operative to engage said lower sheet edges when free of said retaining means for withdrawing from the stack the outermost sheet on the other side from the one side against which newly unloaded film sheets are stacked.

4,338,523  
**LOW COST DISPOSABLE RADIATION DETECTING APPARATUS**

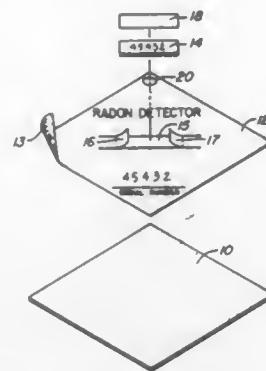
H. Ward Alter, Walnut Creek, Calif., assignor to Terradex Corporation, Walnut Creek, Calif.

Filed Apr. 11, 1980, Ser. No. 139,382

Int. Cl.<sup>3</sup> G01T 1/04  
 U.S. Cl. 250—472 25 Claims

1. A low cost disposable radiation detector comprising: a substantially flat layer providing a support surface; a strip of track registration material having the property of forming damage tracks therein along paths traversed by alpha particles encountering a surface thereof exposed directly to ambient; and a substantially flat top layer adhered to said substrate layer and cooperative therewith for removably securing said strip to said substrate layer, said top layer having an aperture formed therein in a predetermined location and at least one integral tab portion adjacent said aperture bendable out of the plane of said top layer and overlapping a portion of one edge of said strip of track registration

material for retaining said strip in said aperture, said aperture having a geometrical shape substantially coextensive with the perimeter of said strip, with the exception of the edge portion of said strip overlapped by said tab portion, to provide said exposed surface.

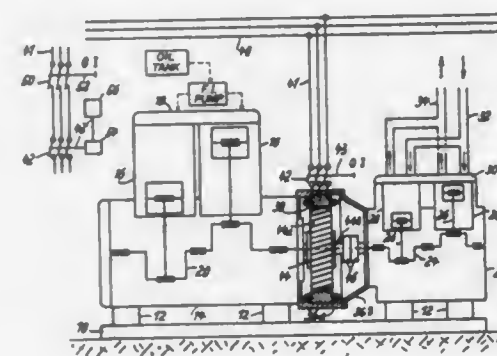


4,338,524  
**DRIVE UNIT FOR A COMPRESSOR OF A HEAT PUMP**  
 Ernst Hatz, and Heinz Eibl, both of Ruhstorf, Fed. Rep. of Germany, assignors to Motorenfabrik Hatz GmbH & Co. KG, Ruhstorf, Fed. Rep. of Germany

Filed Mar. 29, 1979, Ser. No. 25,199

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1978, 2814728

Int. Cl.<sup>3</sup> F01K 17/02; F02C 6/00; F02N 11/14; H02J 3/00  
 U.S. Cl. 290—2 7 Claims



1. In a heat pump apparatus for use as an auxiliary heater in a household heating system of the kind having an oil-fired furnace, the combination comprising:

- a heating oil supply and an oil-fired furnace;
- a support frame;
- a heat pump including cooling medium, an evaporator, a condenser and a compressor interposed therebetween, said heat pump further including a supply line connecting said condenser to said evaporator of the heat pump for drawing cooling medium therefrom, and a pressure line connecting said compressor to said condenser of the heat pump for supplying compressed cooling medium thereto, said compressor being supported on said frame;
- an internal combustion engine supported on said frame, said compressor and the engine being spaced and having coaxial shafts, said internal combustion engine being fuel injected and fueled by said heating oil supply of the furnace;
- a multi-phase AC power line connection;
- a multi-phase AC electric starter motor comprising a housing supported between and fixed to said engine and compressor, said starter motor having a stator fixed to said housing with multiple coil windings corresponding to the phases of said multi-phase power line connection, said motor having a rotor fixed to said engine shaft;

a centrifugal clutch connecting said rotor of said electric motor to said compressor shaft for driving said compressor only with said engine running at above a defined speed;

an operating switch and a start switch connected in series in a multi-phase current supply line connecting said motor to said AC power line connection;

a thermostat having a heat sensitive control portion responsive to the temperature of the heat transfer fluid in said household heating system and a relay responsive to sensing of a household heat transfer fluid temperature fallen below a minimum by said thermostat for closing said start switch and, with said operating switch closed, thereby applying multi-phase electric power to said starting motor and initiating operation of said heat pump.

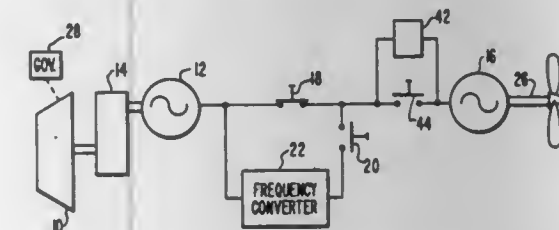
4,338,525

**MARINE PROPULSION SYSTEM**

Lee A. Kilgore, Murrysburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 5, 1981, Ser. No. 222,457

Int. Cl.<sup>3</sup> B60L 11/12; H02P 7/66, 1/52; H07P 3/24  
 U.S. Cl. 290—17 9 Claims



1. A marine propulsion system comprising:
- a prime mover;
  - means for controlling the speed of said prime mover;
  - an alternating-current generator, said generator connected to and driven by said prime mover;
  - a synchronous motor electrically connectable to an output of said generator;
  - a fixed pitch marine propeller connected to an output of said motor;
  - a solid state frequency converter whose input is the frequency of said generator and whose output is a lower frequency which is electrically connectable to said synchronous motor, said frequency converter being capable of maintaining said synchronous motor in synchronous operation when said motor is operating at a speed below that of said generator, said frequency converter being capable of supplying torque to said motor when the rotor of said motor is stationary;
  - a braking means;
  - switchgear means for electrically connecting said generator electrically to said motor; and
  - switchgear means for electrically connecting the output of said frequency converter to and between said generator and said motor.

4,338,526

**GARAGE DOOR OPERATOR WITH GAS SENSOR**  
 Richard G. Martin, West Bloomfield, and Maurice R. Brackney, Farmington Hills, both of Mich., assignors to Multi-Elmac, Novi, Mich.

Filed Apr. 14, 1980, Ser. No. 140,047

Int. Cl.<sup>3</sup> E05F 15/20  
 U.S. Cl. 307—116 11 Claims

1. An automatic garage door operating system comprising: door actuator means for automatically opening the garage door;

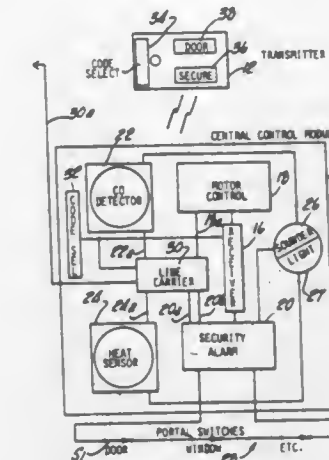
a sensor element having an electrical characteristic which is a function of the level of toxic gas in the garage;

toxicity detector means coupled to the output of said sensor element, operative to generate an output signal of a given

magnitude after a period of time associated with the level of toxic gas sensed by the sensor element;

comparator means having first and second inputs, and an output;

sensitivity reference means for providing a given threshold level;



means for coupling the output of said toxicity detector means to the first input of said comparator;

means for coupling the output of said sensitivity reference means to the second input of said comparator; and

wherein said comparator provides a given output signal for energizing said door actuator means when the output of said toxicity detector means exceeds said threshold level.

4,338,527

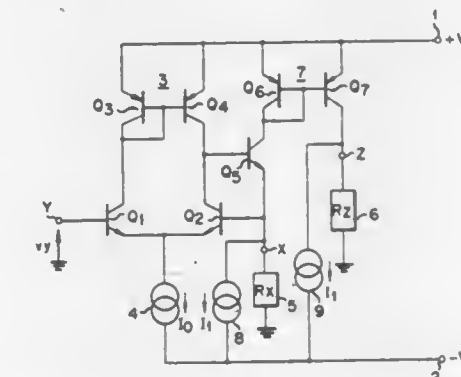
**VOLTAGE-CURRENT CONVERSION CIRCUIT**

Katsumi Nagano, Hiratsuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 11, 1980, Ser. No. 158,520

Claims priority, application Japan, Jun. 27, 1979, 54/81127  
 Int. Cl.<sup>3</sup> H03K 5/22 10 Claims

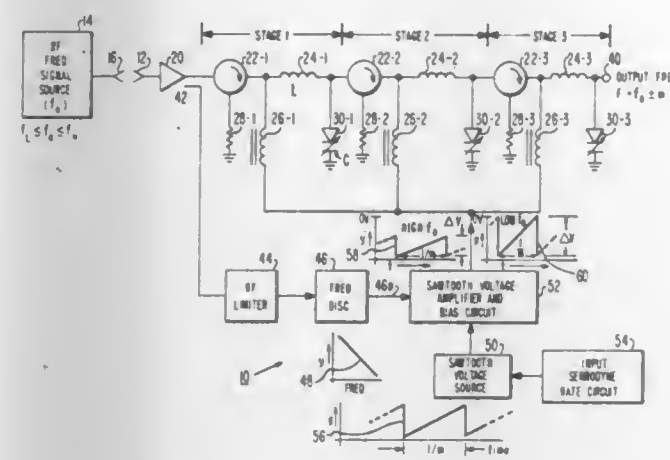
U.S. Cl. 307—494



1. A voltage-current conversion circuit with an input terminal, a conversion terminal and an output terminal comprising:
- first and second emitter-coupled transistors having their bases connected to said input terminal and said conversion terminal, respectively;
  - a load circuit connected between collectors of said first and second transistors and a first power supply terminal;
  - a constant current source connected between the emitters of said first and second transistors and a second power supply terminal;
  - a third transistor having its base connected to the collector of said second transistor, its emitter to said conversion terminal; and
  - a current mirror circuit connected to said first power supply terminal, the collector of said third transistor, and said output terminal.

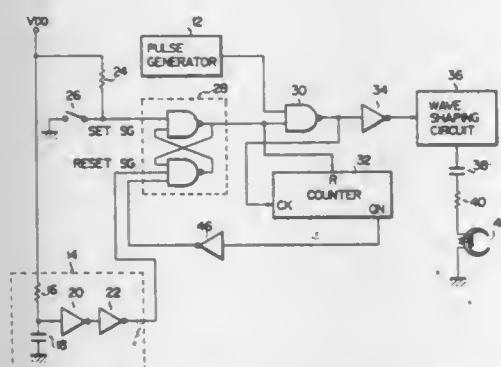


**4,338,528**  
**OPTIMIZATION CIRCUIT FOR A SERRODYNE FREQUENCY TRANSLATOR**  
 Herbert J. Wolkstein, Livingston, N.J., assignor to RCA Corporation, New York, N.Y.  
 Filed Jun. 23, 1980, Ser. No. 162,024  
 Int. Cl.<sup>3</sup> G01S 7/38; H03L 7/04  
 U.S. Cl. 307—511 9 Claims



1. A serrodyne circuit of the type which is receptive of an input signal of frequency  $f_0$  for producing an output signal of frequency  $F$  and which includes means producing a sawtooth waveform of repetition period  $1 \div m$  where  $F = f_0 \pm m$  and phase shifting means receptive of said input frequency signal and said sawtooth waveform for shifting the phase of said input frequency at a rate to produce said output frequency, comprising in combination:  
 means responsive to said input frequency signal for producing a signal having an amplitude proportional to the input frequency and wherein said means producing said sawtooth waveform includes means responsive to said proportional amplitude signal for producing said sawtooth waveform with a peak-to-peak amplitude proportional to said signal amplitude, said proportionality being such as to cause said phase shifting means to produce a  $360^\circ$  phase shift of the input frequency.

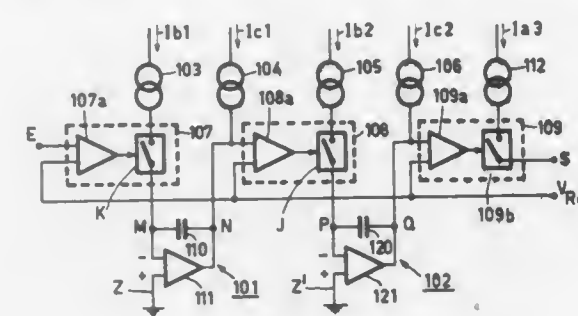
**4,338,529**  
**CUE SIGNAL GENERATING CIRCUIT**  
 Kenji Fujibayashi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan  
 Filed Apr. 24, 1980, Ser. No. 143,420  
 Claims priority, application Japan, May 9, 1979, 54-56449  
 Int. Cl.<sup>3</sup> H03K 21/00, 5/13  
 U.S. Cl. 307—518 8 Claims



1. A cue signal generating circuit comprising:  
 means for generating a pulse signal;  
 gate means coupled to said pulse signal generating means for selectively passing the pulse signal generated by said pulse signal generating means;  
 counter means coupled to said gate means for counting the pulses of said pulse signal passed through said gate means and for controlling said gate means to be nonconductive

when the count value reaches a predetermined count value; and  
 waveform converting means coupled to said gate means for converting the output pulse signal from said gate means into a signal having a prescribed waveform.

**4,338,530**  
**LOW-PASS FILTER FOR LOW-FREQUENCY SIGNALS**  
 Jean-Claude G. Six, Versailles, and Jean-Claude Kalre, Caen, both of France, assignors to U.S. Philips Corporation, New York, N.Y.  
 Filed Feb. 1, 1980, Ser. No. 117,718  
 Claims priority, application France, Feb. 2, 1979, 79 02759  
 Int. Cl.<sup>3</sup> H03F 3/72, 3/18, 3/183; H03L 7/00  
 U.S. Cl. 307—520 15 Claims

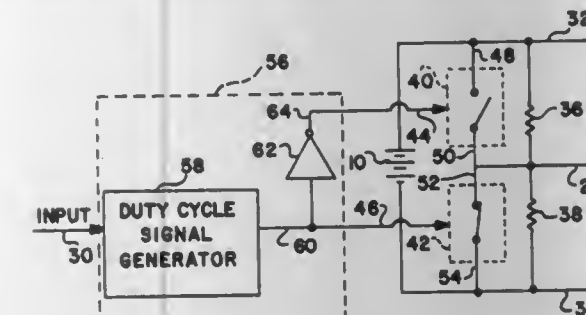


1. A low-pass filter for low-frequency signals having first signal portions situated on one side and second signal portions situated on the opposite side of an average value comprising:  
 a first and a second voltage inverting integrator connected in series with each other, said first integrator being mainly operative for said first portions and said second integrator for said second portions, each of said integrators comprising a voltage-inverting current amplifier between whose inverting input and output a capacitor is included, the non-inverting input being connected to a point of fixed voltage, said integrator further comprising an input threshold comparator and an output threshold comparator, and a constant-integration-current source connected to the output of said amplifier, said inverting input of said amplifier being connected to a constant-control-current source of said integrator via a switch controlled by said input threshold comparator, the input to said filter being connected to said input threshold comparator of said first integrator, said output of said first integrator being connected to said input threshold comparator of said second integrator, said output of said second integrator being connected to said output threshold comparator that is connected to the output of said filter, the capacitance values of said capacitors, the current gain factors of said amplifiers, the currents supplied by said current sources, the relative level of the input voltage and the threshold voltages of said threshold comparators are such that the integration time of each of said integrators is greater than 0.1 and smaller than 1 times the duration of the shortest of the signal portions for which said integrator is operative, and that the discharge time of each of said integrators is, at the most, equal to said integration time of said integrator.

**4,338,531**  
**SLIDE WIRE DEVICE SIMULATOR CIRCUIT AND METHOD**  
 Anthony B. Corso, Cincinnati, Ohio, assignor to Corporate Equipment Company, Cincinnati, Ohio  
 Filed Sep. 15, 1980, Ser. No. 187,257  
 Int. Cl.<sup>3</sup> G05F 1/44, 1/613  
 U.S. Cl. 307—540 10 Claims

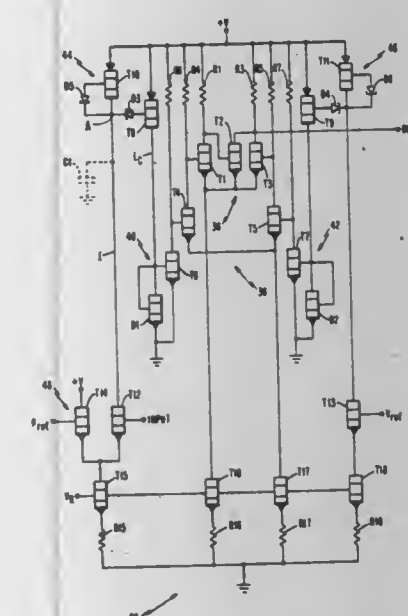
1. A circuit for simulating electrically a slide wire device

with the apparent setting of said slide wire device being dependent upon an input signal, comprising:  
 first and second electrical resistors, connected electrically in series,  
 first and second electrical switching means, each having a control input and a pair of switch terminals, and each providing electrical connection between said switch terminals in response to a switch control signal applied to said control input, said first electrical switching means connected electrically in parallel with said first electrical resistor, and said second electrical switching means connected electrically in parallel with said second resistor,



reference voltage means for applying a reference voltage across the series connection of said first and second resistors, and  
 means, responsive to said input signal, for providing switch control signals to said control inputs of said first and second switching means to actuate cyclically said first and second switching means to opposite switching states, whereby one of said first and second switching means is closed when the other of said first and second switching means is open such that said first and second resistors are alternately shorted electrically, and whereby outputs are provided across said first and second resistors which simulate a slide wire device in output impedance and output voltage levels.

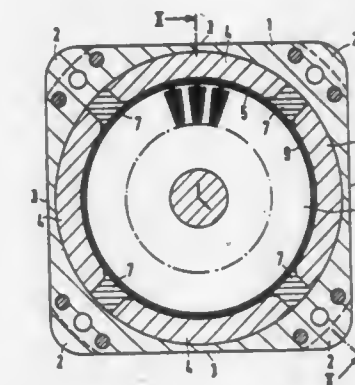
**4,338,532**  
**INTEGRATED DELAY CIRCUITS**  
 Russell J. Houghton, Essex Junction, Vt., assignor to International Business Machines Corp., Armonk, N.Y.  
 Filed Nov. 30, 1979, Ser. No. 99,148  
 Int. Cl.<sup>3</sup> H03K 5/13, 3/33  
 U.S. Cl. 307—590 14 Claims



1. A delay circuit comprising  
 a bipolar transistor including first and second electrodes and a base region having a given charge storage capacity, said first electrode being connected to a first point of fixed potential,

means for supplying current through said transistor to charge said base region,  
 means including a switching device coupled to said base region for controlling the current flow through said transistor,  
 and  
 means having an input connected to said second electrode and to a second point of substantially fixed potential responsive to a predetermined magnitude of said current, said switching device having a charge storage capacity substantially less than that of the base region of said transistor, a closed condition for sustaining said current in said transistor in a steady state and an open condition for interrupting current flow in said transistor, whereby the current flow through said transistor decreases exponentially when said switching device is in the open condition.

**4,338,533**  
**ELECTRIC MACHINE EXCITED BY PERMANENT MAGNETS**  
 Horst Gräferschnell, Bad Neustadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany  
 Filed Aug. 21, 1978, Ser. No. 935,101  
 Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738175  
 Int. Cl.<sup>3</sup> H02K 21/26  
 U.S. Cl. 310—154 4 Claims



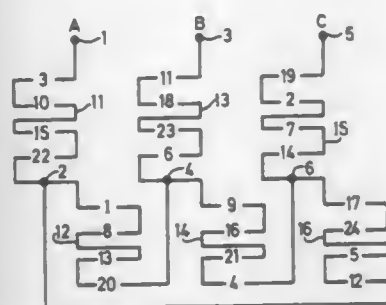
1. A permanent magnet excited electric machine including a stator which comprises:  
 a yoke frame of angular outside shape in which the number of corners thereof is even and greater than two and of circular inside shape, said yoke frame forming the magnetic return, and  
 a plurality of laterally spaced, arc-shaped permanent magnets secured to the inside of the yoke frame, each being disposed generally centered with respect to two adjacent corners.

**4,338,534**  
**POLE-AMPLITUDE MODULATION, POLE-CHANGING ELECTRIC MOTORS AND GENERATORS**  
 Alexander R. W. Broadway, Bristol, England; Gordon H. Rawcliffe, deceased, late of Bristol, England (by Sheila M. Rawcliffe, executrix), and by Caroline S. Rawcliffe, executrix, Norwich, England, assignors to National Research Development Corporation, London, England  
 Filed Apr. 9, 1980, Ser. No. 138,533  
 Claims priority, application United Kingdom, May 3, 1979, 7915458  
 Int. Cl.<sup>3</sup> H02K 3/00 6 Claims

1. A pole-amplitude modulation, pole-number changing electric machine having a three-phase stator winding comprising three phase-winding sections in delta connection and three other phase-winding sections in star connection, coils of the



delta-connected phase-windings and coils of the star-connected phase-windings following each other regularly and alternately around the winding periphery and pole-amplitude



modulation of the combined stator winding being effected by reversal, in current-carrying sense of the series-connected phase windings relatively to the delta-connected phase-windings.

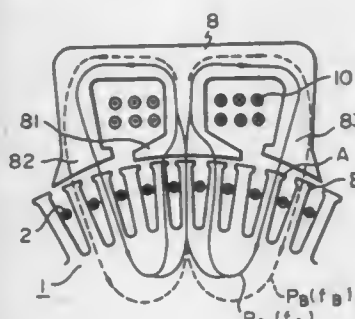
#### 4,338,535 DIRECT CURRENT MOTOR HAVING E-SHAPED INTERPOLES

Yoshinori Kohzai, Hino; Shigeaki Oyama, and Yukio Kat-suzawa, both of Hachioji, all of Japan, assignors to Fujitsu Fanuc Limited, Hino, Japan

Filed Mar. 13, 1980, Ser. No. 129,834  
Claims priority, application Japan, Mar. 24, 1979, 54/33804  
Int. Cl.<sup>3</sup> H02K 1/10

U.S. Cl. 310—186

3 Claims



1. A direct current motor comprising, an armature having armature windings wound thereon and rotating around the central axis thereof, a plurality of main magnetic poles disposed around said armature having field windings wound thereon, and a plurality of E-shaped interpoles disposed at an intermediate position along the outer circumference of said armature between the adjacent main magnetic poles, with a gap being formed between the outer circumference of said armature and said interpoles, each of said E-shaped interpoles consisting of a center pole having an interpole winding wound thereon and two side poles, characterized in that the width of the gap between the outer circumference of the armature and the end surface of each of said side poles increases from the portion of said gap which is remote from said center pole to the portion of said gap which is adjacent to said center pole.

#### 4,338,536 REVERSIBLE DIRECT CURRENT MACHINE WITH MOVABLE STATOR

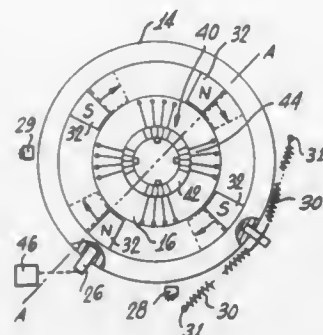
William M. Hallidy, 620 E. Laurel Ave., Glendora, Calif. 91740  
Filed Sep. 20, 1979, Ser. No. 77,324  
Int. Cl.<sup>3</sup> H02K 13/00

U.S. Cl. 310—191

1. A direct current, rotary, electromagnetic, energy conversion machine comprising:

a base;  
a stator supported by said base that is movable between angularly displaced first and second positions corresponding to first and second rotational modes of operation of

said machine, said stator remaining stationary during continuous operation of said machine in either mode; at least one magnet connected to said stator to establish a magnetic field orientation of said stator defined by angularly separated north and south poles disposed thereabout, said magnet being rotatably movable with said stator to change the orientation of said field, said first and second positions being so related to each other that the respective positions of said north and south poles are interchanged upon movement of said stator between said position;



a rotor having a segmented winding thereon supported by said base and rotatable within said stator to interact electromagnetically with said magnets; and commutator means having a predetermined orientation for determining the direction of current flow through segments of said winding in accordance with the positions of said segments, said commutator and stator orientations being oppositely related to each other depending upon whether said stator occupies said first or second position.

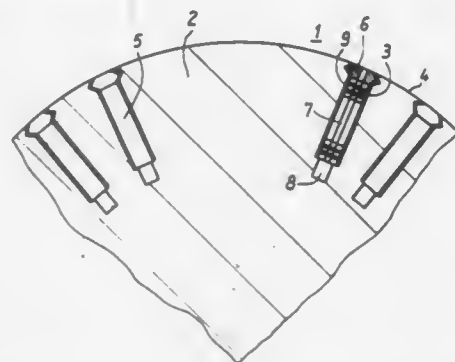
#### 4,338,537 SYNCHRONOUS TURBINE TYPE ELECTRIC MOTOR Joachim Eckert, and Franz Spirk, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 28, 1978, Ser. No. 937,200  
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1977, 2741362

U.S. Cl. 310—214

Int. Cl.<sup>3</sup> H02K 3/48

2 Claims



1. In a turbine type synchronous electric motor including a drum rotor of high mass made of solid magnetic material containing iron, having a plurality of unslotted poles, and a plurality of open radial slots between said poles; a plurality of field windings forming coils disposed in said open radial slots surrounding the poles with sections of reduced cross section at the ends of said ends to accommodate the coil heads of said coils; slot closing wedges radially outward of said winding closing said slots; and means for short circuiting said field winding during an asynchronous starting phase, the improvement comprising:  
said slot closing wedges being made of solid, non-magnetic steel;

means for insulating said slot closing wedges from said drum rotor;  
said field windings being the only windings on said rotor;  
a cap surrounding said coil heads at each end; and  
means for insulating said caps from said rotor.

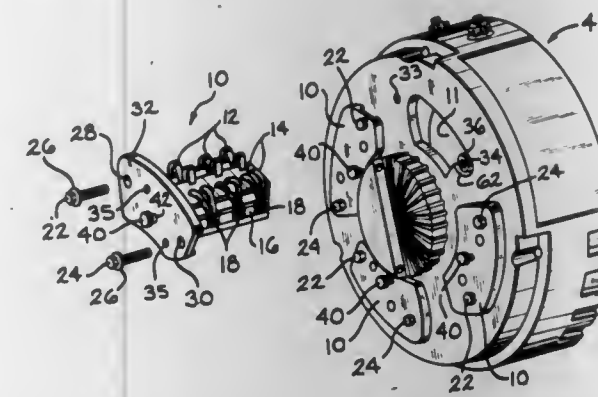
#### 4,338,538 REMOVABLE BRUSH HOLDER FOR DYNAMOELECTRIC MACHINE

Jeffrey T. Major, Cygnet, Ohio, assignor to Eltra Corporation, Toledo, Ohio

Filed Apr. 18, 1980, Ser. No. 141,738  
Int. Cl.<sup>3</sup> H02K 13/00

U.S. Cl. 310—242

4 Claims



1. In a dynamoelectric machine having an armature contact surface, and an end frame, the combination comprising:  
a plurality of separate removable brush holders adapted to be axially removable from the exterior of said machine, said end frame of said machine having apertures therein through adapted to receive each said brush holder therein; said end frame including means for receiving attachment means for attaching said brush holder to said end frame, said means for receiving attachment means including means for establishing electrical connection between said dynamoelectric machine and said removable brush holder; said means for receiving said attachment means being a bolt, said bolt having an axial threaded bore formed therein; said bolt having a first threaded portion and a second threaded portion of lesser diameter than said first portion, and separated therefrom by a shoulder; said bolt being adapted to receive a first nut on said first threaded portion, to retain said bolt to said end frame; said bolt being further adapted to receive a second nut on said second threaded portion to retain an internal connecting wire of said dynamoelectric machine to said bolt; each said brush holder including means adapted to contact said means for receiving treatment attachment means, to establish said electrical connection between said brush holder and said dynamoelectric machine; each said brush holder being adapted to be tilted to avoid contact with said armature contact surface while being passed through said aperture, said electrical connection to said brush holder being established by attaching said brush holder with said attachment means.

#### 4,338,539 GAS DISPLAY DEVICE WITH A PROFILED CATHODE Burkhard Littwin, Hohenschaeflarn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 2, 1980, Ser. No. 136,422  
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916368

U.S. Cl. 313—217

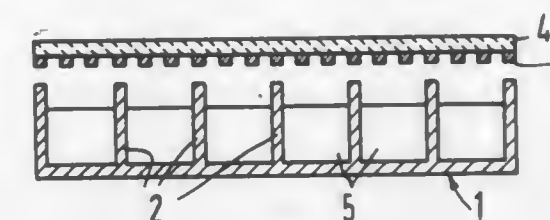
Int. Cl.<sup>3</sup> H01J 17/04

17 Claims

1. In a gas discharge display device having a hermetically sealed gas filled envelope with parallel front and rear plates, a perforated control plate disposed in said envelope between and

parallel to said front and rear plates carrying parallel conductor rows on a side nearest said rear plate and parallel conductor columns on a side nearest said front plate, said columns and rows forming a perpendicular matrix and intersecting at said perforations, said front plate carrying an anode layer and a luminescent screen, the improvement of:

a cathode plate carried on said rear plate having a plurality of spaced raised parallel projections extending in the direction of said control plate, at least some of said projec-



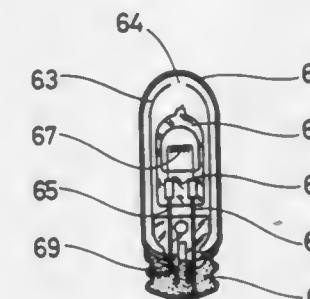
tions being aligned with said rows on said control plate and terminating a distance therefrom forming a periodically varying control plate-to-cathode profile, the spacing between said projections and said distance between said projections and said control plate being selected for generating localized discrete areas of gas discharge surrounding said projections upon energization of said cathode plate such that substantially no spreading of said gas discharge occurs through said control plate in order to avoid blurring of an image on the luminescent screen.

#### 4,338,540 INCANDESCENT LAMP Heinz Sovilla, 2, Terrailles, 1304 Cossonay, Switzerland Filed Feb. 12, 1980, Ser. No. 120,859

Claims priority, application Switzerland, Feb. 19, 1979, 1590/79; Fed. Rep. of Germany, May 12, 1979, 2919204  
Int. Cl.<sup>3</sup> H01J 17/16, 61/40

U.S. Cl. 313—220

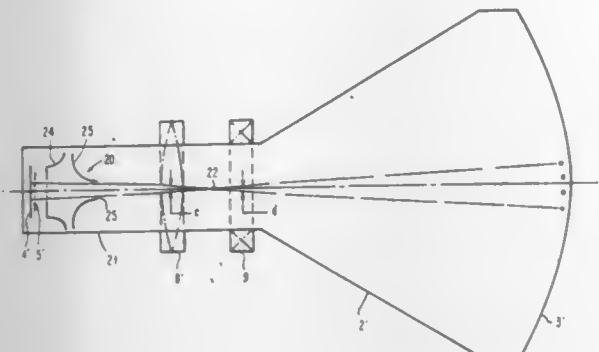
6 Claims



1. An incandescent lamp comprising an inner glass bulb defining and limiting an inner small space containing filament means, an intermediate glass bulb spaced from and surrounding the inner bulb and defining a first intermediate space and an outer glass bulb spaced from and surrounding said intermediate glass bulb and defining a second intermediate space, said inner glass bulb being a hermetically sealed thick-walled quartz glass bulb acting as heat storage and heat radiation reflecting means and closely surrounding said filament means and said intermediate and outer glass bulbs being of thinner glass, at least one of said intermediate spaces being under high vacuum.

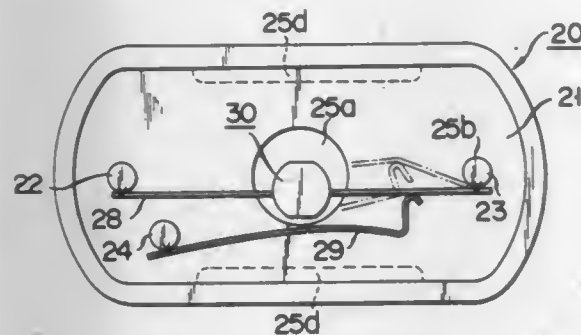


**4,338,541**  
**MULTIPLE BEAM CATHODE RAY TUBE HAVING REDUCED OFF-AXIS ABERRATIONS**  
 Vernon D. Beck, Ridgefield, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.  
 Filed Dec. 7, 1979, Ser. No. 101,338  
 Int. Cl.<sup>3</sup> H01J 29/51, 29/56  
 U.S. Cl. 313—411 12 Claims



1. A multiple beam cathode ray tube wherein a plurality of electron beams originated by an electron beam source means cross each other only once in said tube at a crossover point before being incident on said screen, said tube having reduced off-axis aberrations, comprising:  
 a cathode ray tube envelope having a longitudinal axis and having a screen at one end thereof,  
 an electron beam source means disposed in said envelope at the other end thereof for emitting a plurality of electron beams towards said screen, said electron beam source means being comprised of one or more flat or planar elements,  
 focussing means disposed between said electron beam source means and said screen for focussing said plurality of electron beams on said screen,  
 deflection means also disposed between said electron beam source means and said screen for deflecting said plurality of electron beams across said screen, and  
 means disposed between said electron beam source means and said deflection means for accelerating said electron beams while simultaneously causing them to converge towards each other, and to cross each other in their respective paths towards said screen at said single beam crossover point which is located further from the electron beam source end of the tube than the focussing means and not closer to said screen than said deflection means.

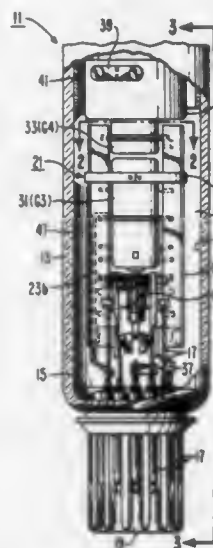
**4,338,542**  
**DIRECTLY HEATED CATHODE ASSEMBLY**  
 Yukio Takanashi, Hiratsuka; Shouji Nakayama, Yokosuka, and Toshiharu Higuchi, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan  
 Filed Jan. 25, 1980, Ser. No. 115,384  
 Claims priority, application Japan, Jan. 31, 1979, 54-9137  
 Int. Cl.<sup>3</sup> H01J 29/04  
 U.S. Cl. 313—446 12 Claims



1. A directly heated cathode assembly for a cathode ray tube

electron gun having an axis along which electrons are directed, comprising:  
 an insulating base plate;  
 first and second conductive support members attached to the insulating base plate;  
 a ribbon filament stretched lengthwise between the first and second conductive support members and oriented such that its width direction is parallel with the axis of the electron gun;  
 a cathode comprising a metal substrate covered with an electron emissive coating and a support portion integral with or fixed to the metal substrate, the coating layer being in a plane perpendicular to the axis of the electron gun and the cathode being mounted to a central portion of the filament via its support portion;  
 a spring support member attached to the insulating base plate; and  
 a spring member having a first free end resiliently abutting against the filament in a direction perpendicular to a plane including the axis of the electron gun and having a second end attached to the spring support member.

**4,338,543**  
**CRT WITH ARC SUPPRESSION MEANS THEREIN**  
 Richard R. Handel, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.  
 Filed Jun. 15, 1979, Ser. No. 48,827  
 Int. Cl.<sup>3</sup> H01J 29/46, 29/82  
 U.S. Cl. 313—457 3 Claims

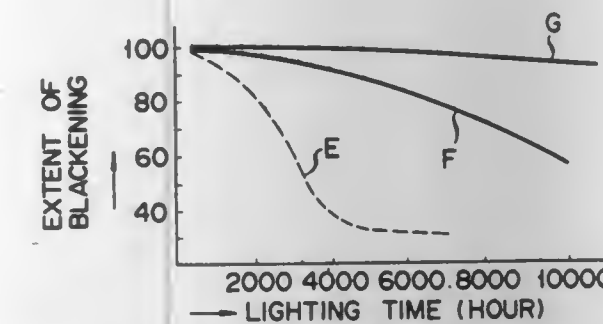


1. A cathode-ray tube comprising an evacuated envelope including an electrically-insulating neck, and an electron-gun mount assembly in said neck, said mount assembly comprising a plurality of electrodes including a screen grid electrode and a focus grid electrode closely spaced thereto, said electrodes being mounted on at least two electrically-insulating support rods, said assembly being closely spaced from the inner surface of said neck, and an electrically-conducting band part located against the surface of each of said support rods between said focus grid electrode and said neck, said band parts being electrically connected to and supported from said focus grid electrode.

**4,338,544**  
**FLUORESCENT LAMP**  
 Akitoshi Komiya, Odawara; Toshiharu Yagi, Hyogo, and Akiyoshi Kondo, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan  
 Filed Mar. 6, 1980, Ser. No. 127,549  
 Claims priority, application Japan, Mar. 14, 1979, 54/28601  
 Int. Cl.<sup>3</sup> H01J 61/54 3 Claims

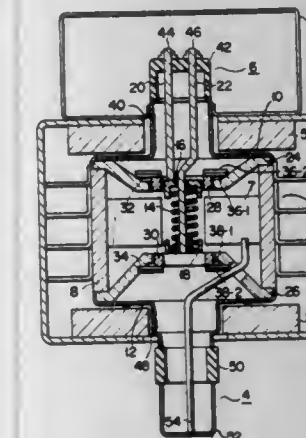
1. A fluorescent lamp, comprising:  
 a glass envelope containing a mercury gas and at least one other gas selected from neon, xenon and krypton;

**4,338,546**  
**LIQUID LEVEL DETECTION CIRCUIT FOR CONTROL OF LIQUID LEVEL RESPONSIVE DEVICE**  
 Gordon F. Ehret, Alhambra; William N. Rowley, Palos Verdes Estates, and Richard E. Mullen, Tustin, all of Calif., assignors to The Marley-Wyllain Company, Mission Woods, Kans.  
 Filed Nov. 25, 1980, Ser. No. 210,235  
 Int. Cl.<sup>3</sup> H05B 37/00 12 Claims



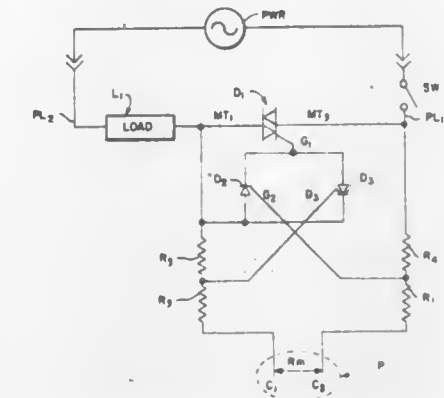
a phosphor film formed on the aluminum oxide film, in which the amount of said aluminum oxide film thickness is from 0.5  $\mu$ m to 2.0  $\mu$ m.

**4,338,545**  
**MAGNETRON UNIT WITH A MAGNETIC FIELD ADJUSTING MEANS**  
 Tokuju Koinuma, Kawasaki; Hisao Saito, Yokohama, and Heihachi Miura, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan  
 Filed Feb. 25, 1980, Ser. No. 123,949  
 Claims priority, application Japan, Feb. 28, 1979, 54-23193  
 Int. Cl.<sup>3</sup> H01J 25/50 7 Claims

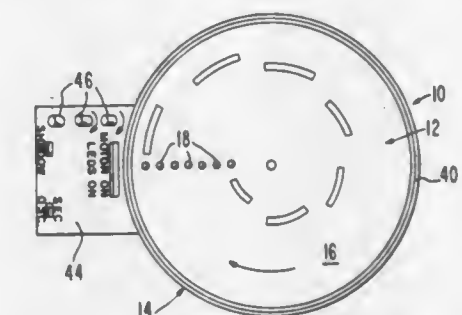


1. A magnetron unit comprising:  
 an anode cylinder provided with a number of resonance cavities defined therein;  
 a cathode disposed within the anode cylinder and along the axis of the anode cylinder, an interaction space being defined between the anode resonance cavities and the cathode;  
 at least one pole piece for supplying a magnetic field into the interaction space;  
 cover means for hermetically sealing the anode cylinder;  
 magnetic coupling means magnetically coupled with the pole piece;  
 at least one permanent magnet member magnetically coupled with the magnetic coupling means to supply magnetic energy to the pole piece, and disposed outside the anode cylinder, the permanent magnet member, the pole piece and interaction space being included in a magnetic circuit; and  
 at least one bimetallic member for adjusting the magnetic resistance of the magnetic circuit to keep the magnetic field intensity in the interaction space substantially constant irrespective of the temperature of the permanent magnet member.

**4,338,547**  
**APPARATUS AND METHOD FOR GENERATING LIGHT DESIGNS**  
 Robert E. McCaslin, 1227 Coldwater Canyon, Beverly Hills, Calif. 90210  
 Filed Jun. 19, 1980, Ser. No. 160,875  
 Int. Cl.<sup>3</sup> H05B 37/02 21 Claims



1. A liquid presence detection circuit for detecting the presence or absence of a liquid and controlling a load in response thereto, said circuit comprising:  
 a triggerable thyristor in series circuit with a load, said thyristor/load series circuit connectable across a source of alternating-current power, said thyristor triggerable into conduction to cause a flow of power through the load in response to a trigger signal applied to a trigger input thereof;  
 a trigger circuit for triggering said thyristor including first and second SCR's connected anode-to-cathode with a first of said anode-to-cathode connections connected to said trigger input and another of said anode-to-cathode connections connected to said thyristor/load series circuit, each of said SCR's including a gate input, the gate inputs of said SCR's connected, respectively, to first and second spaced apart contacts exposed to the liquid to effect detection thereof; and  
 resistance means connected to said thyristor/load circuit and said first and second contacts to provide a voltage potential thereacross;  
 whereby the presence of a liquid bridging said first and second contacts causes successive gating of the SCR's to thereby trigger the thyristor into conduction.



1. A light design apparatus comprising: a plurality of light emitting diodes; means mounting the diodes for movement along generally continuous paths with the paths being adjacent

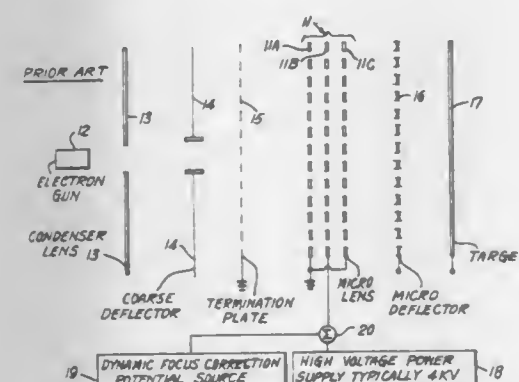


to each other; means coupled with each of the diodes, respectively, for providing a characteristic operating voltage for the diode; means coupled with said providing means for generating an input signal; and switch means coupled with the providing means of each diode, respectively, for applying the input signal to said diodes in a sequence and at a frequency as a function of the characteristic operating voltages of the diodes and as the diodes move along said paths.

**4,338,548**  
**UNIPOTENTIAL LENS ASSEMBLY FOR CHARGED PARTICLE BEAM TUBES AND METHOD FOR APPLYING CORRECTION POTENTIALS THERETO**  
 David C. Bono, Melrose; Marvin Fishbein, Brookline, and Kenneth J. Harte, Carlisle, all of Mass., assignors to Control Data Corporation, Minneapolis, Minn.  
 Filed Jan. 30, 1980, Ser. No. 116,895  
 Int. Cl.<sup>3</sup> H01J 29/58

U.S. Cl. 315—382

24 Claims



1. A unipotential electrostatic lens for charged particle beam tubes of the electron beam type which may lack coaxial symmetry about the lens axis, said unipotential lens comprising an assembly of axially aligned electrostatic lens elements wherein each lens element has an array of micro lenslet apertures formed therein and with each set of axially aligned micro lenslet apertures in the assembly forming a micro lenslet, means for applying a high voltage excitation potential to one of the electrostatic lens elements, and means for applying a dynamic focus correction potential derived from deflection potentials applied to the charged particle tube to a different electrostatic lens element of the axially aligned assembly from that to which the high voltage excitation potential is applied.

**4,338,549**  
**VERTICAL DEFLECTION CIRCUIT**  
 Peter E. Haferl, Adliswil, Switzerland, assignor to RCA Corporation, New York, N.Y.  
 Filed Feb. 24, 1981, Ser. No. 237,848  
 Claims priority, application United Kingdom, Mar. 20, 1980, 8009402

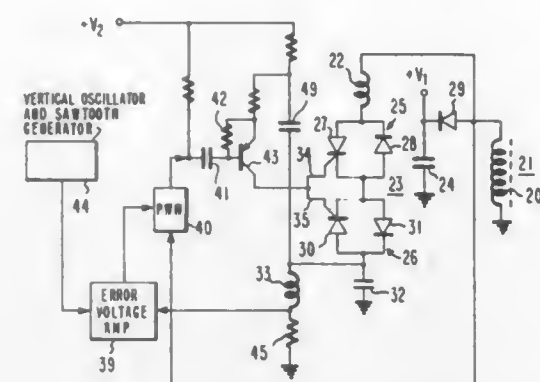
Int. Cl.<sup>3</sup> H01J 29/72

U.S. Cl. 315—393

11 Claims

1. A vertical deflection circuit for use in a television receiver, comprising:  
 first and second bidirectional switches, each comprising: a controllable switch element and a control terminal electrically connected thereto; said first and second bidirectional switches electrically connected in series with said controllable switch elements being coupled to conduct current in opposite directions through said switches;  
 a source of horizontal deflection rate energy coupled to one end of said bidirectional switches;  
 vertical deflection means including a vertical deflection coil coupled to the other end of said bidirectional switches; and  
 a source of pulse-width modulated signals, coupled to said control terminals of said first and second bidirectional switches, for controlling the conductivity of said control-

lable switch elements in such a manner as to permit conduction of said horizontal rate energy through said first

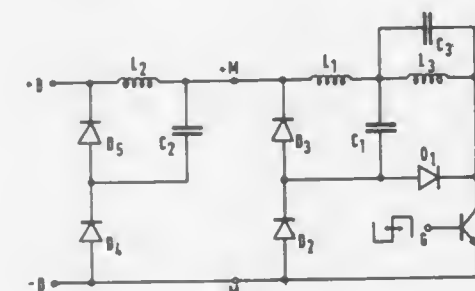


and second switches into said vertical deflection means for a predetermined duration of each vertical deflection interval.

**4,338,550**  
**CIRCUIT FOR OBTAINING SAW-TOOTH CURRENT IN A COIL**  
 Francesco Marino, Caserta, Italy, assignor to Indesit Industria Elettrodomestici Italiana, S.p.A., Italy  
 Filed Oct. 29, 1979, Ser. No. 89,582  
 Claims priority, application Italy, Oct. 30, 1978, 69486 A/78  
 Int. Cl.<sup>3</sup> H01J 29/70

U.S. Cl. 315—408

6 Claims



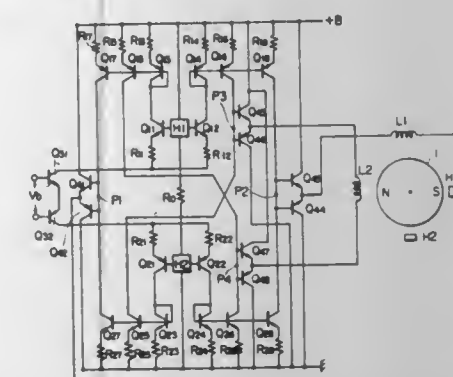
1. A circuit arrangement for driving a saw-tooth current in a coil, comprising: an oscillating circuit including a deflection coil; a trace capacitor and a retrace capacitor, said deflection coil being connected to said trace and retrace capacitors such that said oscillating circuit oscillates freely during the retrace interval; a first diode connected in parallel with the said oscillating circuit and adapted to conduct current during the first part of the trace interval; a controllable semi-conductor switch and a second diode connected in series with one another in a path parallel to said oscillating circuit, said second diode being conductive during a second part of the trace interval and said switch being conductive during part of the trace interval; a third diode; a supply source and an inductor connecting said switch to said supply source so that during that part of the trace interval in which the switch is conductive, energy is stored in the inductor, and such that a part of said energy stored in said inductor is subsequently transferred, during the period in which the switch is not conducting, to the said oscillating circuit via said third diode; said inductor producing a reduction of the voltage across said trace capacitor; means located between said supply source and said inductor for periodically varying, at a frequency substantially equal to that of said saw-tooth current, the voltage supplied to said inductor in a predetermined phase relationship with the conducting rate of said switch, so as to produce a further reduction of the voltage across the trace capacitor.

**4,338,551**  
**TWO-PHASE BRUSHLESS MOTOR DRIVING CIRCUIT**  
 Kazuji Mizumoto, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan  
 Filed Dec. 12, 1980, Ser. No. 215,768  
 Claims priority, application Japan, Dec. 15, 1979, 54/163182; Dec. 15, 1979, 163183

Int. Cl.<sup>3</sup> H02K 29/02

U.S. Cl. 318—254

6 Claims



1. A driving circuit for a two-phase brushless motor including a magnetized rotor, first and second magnetically sensitive elements disposed adjacent the magnetized rotor, and a pair of driving coils provided adjacent the rotor, comprising:  
 (a) biasing means for applying a predetermined bias voltage to said first and said second magnetically sensitive elements;  
 (b) a first differential pair of transistors coupled to be controlled in response to an output of said first magnetically sensitive element;  
 (c) a second differential pair of transistors coupled to be controlled in response to an output of said second magnetically sensitive element, said second differential pair being connected in series with said first differential pair, the polarity of said second differential transistors being opposite to that of said first differential transistors;  
 (d) constant current supplying means for supplying constant currents to said first and said second differential pairs;  
 (e) current mirror means for supplying currents in proportion to the currents flowing in the first and second differential pairs of the transistors; and  
 (f) driving means for energizing said pair of driving coils in response to currents supplied from said current mirror means.

**4,338,552**  
**AUTOMATIC CONTROL SYSTEM FOR D-C MOTOR**  
 Karl-Heinz Pilz, Baltmannswiller; Wolfgang Gräter, Stuttgart, and Hans-Dietrich Mayer, Baltmannswiller, all of Fed. Rep. of Germany, assignors to Richard Hirschmann, Radiotechnisches Werk, Esslingen, Fed. Rep. of Germany  
 Filed May 28, 1980, Ser. No. 154,092  
 Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922197

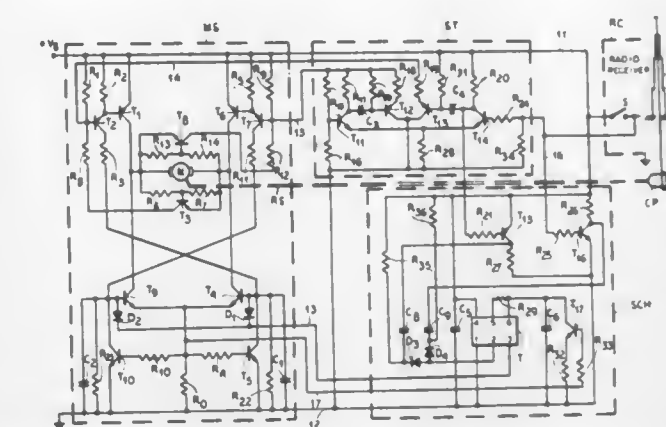
Int. Cl.<sup>3</sup> H02P 1/22

U.S. Cl. 318—266

7 Claims

1. A system for automatically controlling the operation of a direct-current motor having an armature winding in a magnetic stator field on a rotor adapted to be drivingly coupled to a load, comprising:  
 a supply of direct current;  
 manually operable start means;  
 electronic switch means activable by said start means to close an energizing circuit connecting said armature winding across said supply;  
 current-limiting means in said energizing circuit including an impedance element in series with said armature winding;  
 sensing means independent of said current-limiting means operatively coupled to said rotor for detecting the motor speed and opening said energizing circuit upon said motor speed dropping below a predetermined threshold, said

start means being effective to override said sensing means in an initial operating phase;  
 timing means triggerable by said start means to measure a maximum idling period for said motor; and

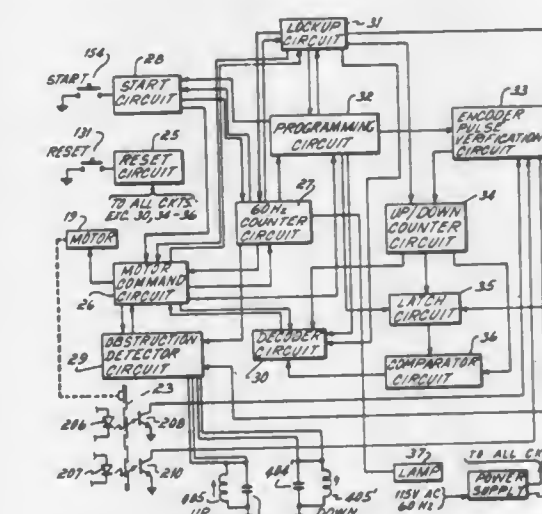


disabling means controlled by said impedance element for deactivating said timing means during flow of a predetermined minimum armature current.

**4,338,553**  
**CONTROL SYSTEM FOR A MOTOR ACTUATED DOOR OPERATING MECHANISM**  
 Waller M. Scott, Jr., Madison and Red Bank Rds., Cincinnati, Ohio 45227  
 Filed Dec. 4, 1979, Ser. No. 100,313  
 Int. Cl.<sup>3</sup> H02P 1/04

U.S. Cl. 318—266

30 Claims



1. A control system for a door operator, said door operator including an operating mechanism connected to a door and a motor for actuating said operating mechanism for moving said door in either direction between a closed position and an open position, said control system comprising:  
 a selectively actuatable start switch means;  
 control circuitry connected to said start switch means and to said motor for selectively controlling energization of said motor for moving said door in either direction from one of said closed and open positions to the other of said positions in response to actuation of said start switch means; and  
 an encoder driven by said motor during movement of said door;  
 said control circuitry including circuit means associated with said encoder for detecting the direction of movement of said door as well as increments of travel by said door; said control circuitry energizing said motor for moving said door in said detected direction from one of said closed and open positions toward the other of said positions; said control circuitry de-energizing said motor when the



sum of said detected increments of travel equals the distance between said closed and open positions.

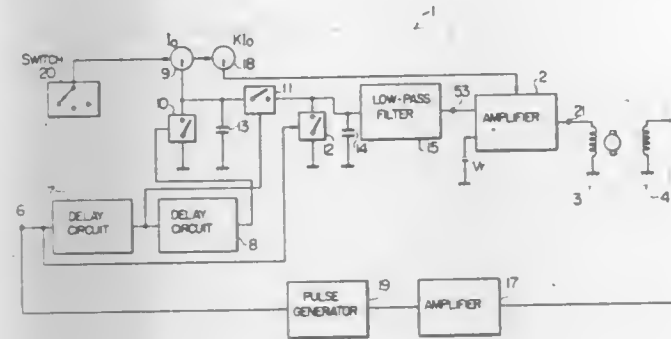
#### 4,338,554 AUTOMATIC GAIN CONTROL APPARATUS FOR A MOTOR SERVO SYSTEM

Isao Fukushima; Hideo Nishijima, both of Katsuta; Kenji Satoh, Yokohama, and Tanehiko Teshima, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 23, 1980, Ser. No. 143,120  
Claims priority, application Japan, Apr. 27, 1979, 54-51508  
Int. Cl.<sup>3</sup> H02D 5/16

U.S. Cl. 318—328

8 Claims



1. An automatic gain control apparatus comprising:
  - a frequency-voltage converter including a constant current source, a capacitor charged with the output current from said constant current source, means for discharging said capacitor in response to an input pulse signal having a period proportional to the rotational period of a motor, thereby to form a saw-tooth wave voltage at said capacitor, and means for sampling and holding the saw-tooth wave voltage so as to produce an output in the form of a DC voltage;
  - error voltage amplifier means for comparing said DC voltage from said frequency-voltage converter with a reference voltage and for producing an error voltage corresponding to the result of said comparison to said motor thereby to set the rotational speed of said motor;
  - means for varying the output current from said constant current source to set a plurality of desired motor speeds;
  - means for generating a signal proportional to the output current of said constant current source;
  - means for controlling the gain of said error voltage amplifier means in response to said proportional signal from said generating means, thereby to compensate for changes in the gain of said frequency-voltage converter produced when the motor speed is changed by said setting means.

#### 4,338,555 PULSE PAIR SERVO APPARATUS

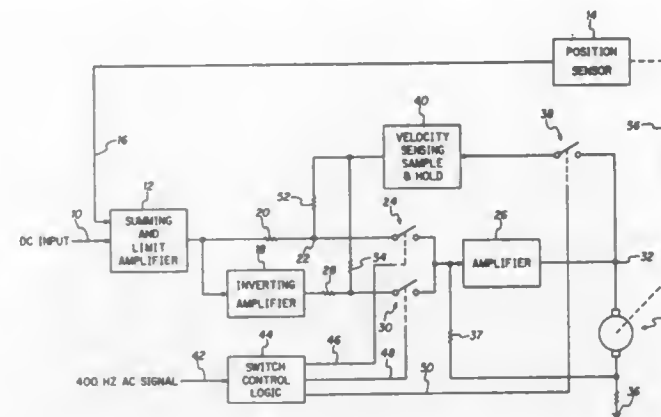
Melvin H. Rhodes, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.  
Filed Aug. 25, 1980, Ser. No. 181,298  
Int. Cl.<sup>3</sup> G05B 13/00

U.S. Cl. 318—561

5 Claims

1. Motor control apparatus comprising, in combination:
  - motor means;
  - signal supply means, connected to said motor means, for supplying position control signals to said motor means to reposition said motor means using steps of movement wherein each step comprises a predetermined radian unit;
  - detrimental repositioning force compensation means, connected to said motor means, for supplying bias signals to each step control signal based on the stopping position incurred by the previous step control signal thereto to overcome the detrimental force positioning effects tending to vary the magnitude of said radian unit steps; and

position feedback means, connected between said motor means and said signal supply means, for counteracting



input signals as said motor means approaches a desired command position.

#### 4,338,556 ELECTRONICALLY CONTROLLED THREAD-CUTTING MACHINE

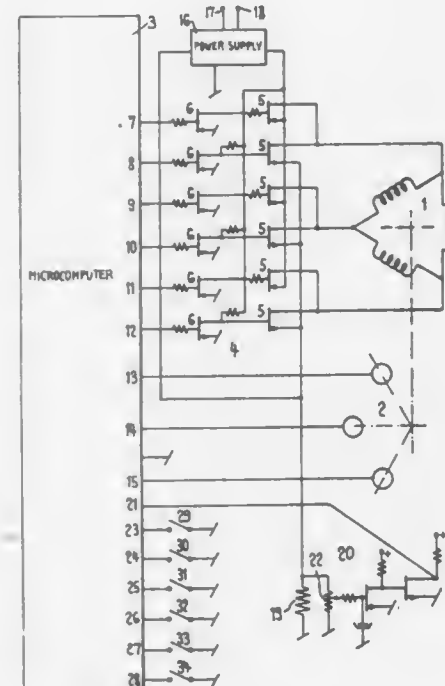
Max Hetzel, Engestrass 11, 3012 Bern, Switzerland  
Filed Nov. 20, 1979, Ser. No. 95,994

Claims priority, application Switzerland, Dec. 4, 1978, 12337/78

Int. Cl.<sup>3</sup> G05B 19/18

U.S. Cl. 318—569

9 Claims



1. An electronically controlled machine for cutting a thread in a workpiece, comprising:
  - a spindle;
  - a thread-cutting tool coupled to said spindle;
  - a multi-phase stepping motor coupled to said spindle for rotationally driving said spindle and tool, said tool engaging the workpiece to effect cutting of the thread thereby causing translational movement of said spindle and tool relative the workpiece;
  - said driving motor having a shaft, a stator with a multi-phase stator winding, a rotor with at least one pair of magnetic poles, and sensor means for producing digital information signals indicative of the angular position of said rotor;
  - a DC source;
  - control means connected to said DC source and said multi-phase driving motor for producing cyclic driving pulses and delivering said cyclic driving pulses to said stator winding; and
  - means connected to said sensor means and said control

means for selecting the sequence of said cyclic driving pulses in response to said digital information signals, said selecting means including counter means for counting a sum of said digital information signals indicative of the number of revolutions of said spindle, memory means for storing a value indicative of a preselected number of revolutions of said spindle, and comparing means for comparing said sum contained in said counter means with said value stored in said memory means, said selecting means effecting reversal of the rotating sense of said motor upon coincidence of said sum and said value, thereby determining the dimension of the thread being cut.

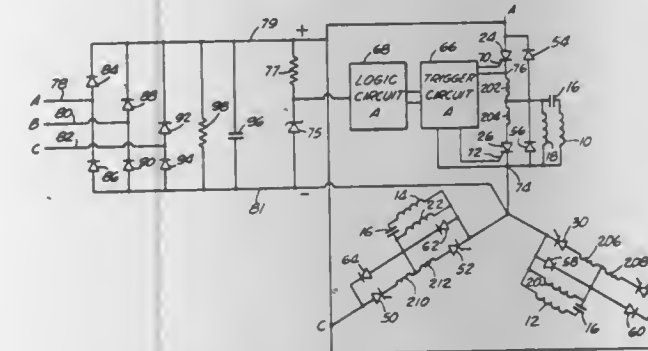
#### 4,338,557 VARIABLE SPEED ELECTRIC MACHINE HAVING CONTROLLED MAGNETIC FLUX DENSITY

Cravens L. Wanlass, 9871 Overhill Dr., Santa Ana, Calif. 92705  
Filed Aug. 14, 1979, Ser. No. 66,411

Int. Cl.<sup>3</sup> H02P 1/44

U.S. Cl. 318—729

38 Claims



1. A polyphase electric motor comprising:
  - a stator including a core of magnetic material;
  - a rotor;
  - a main polyphase stator winding having a winding for each phase wound on said core and encompassing said magnetic material;
  - a plurality of input terminals adapted to be connected to a voltage source;
  - a plurality of capacitors;
  - means connecting the main windings of each phase in a series circuit with one of said capacitors and said series circuits being connected with said input terminals;
  - a polyphase control winding having a winding for each phase wound on said core to encompass said magnetic material and connected respectively to said plurality of input terminals together with said main windings of each respective phase and the series connected capacitances in said series circuit, windings of the main winding being wound on the core radially adjacent to windings of the control winding;
  - switch means for each winding of said main polyphase stator winding; and
  - a trigger source for the switch means, the switch means being operative with the trigger source and the capacitor and each winding of said main polyphase winding to permit, on substantially low load, current flow in opposite directions across the radially adjacent windings of the main winding and the control winding, and such current flow becoming increasingly in the same direction as the load increases towards full load, the trigger source being operable at variable frequencies thereby to vary the motor speed.

#### 4,338,558 INDUCTION MOTOR CONTROL SYSTEM AND METHOD

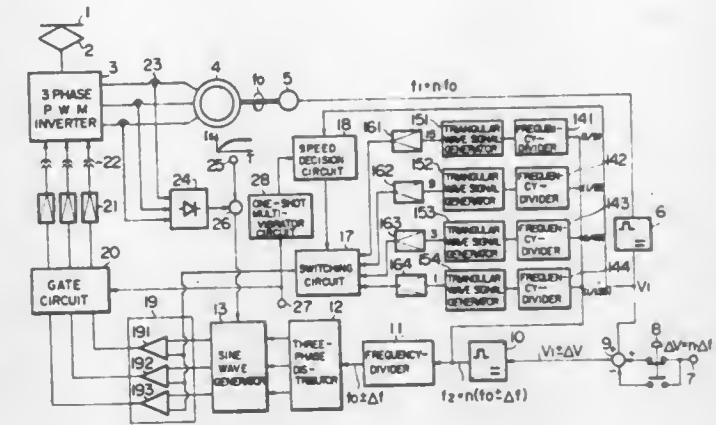
Shigetoshi Okamatsu; Takashi Tsuboi; Masahiko Ibamoto, and Hiroshi Narita, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 23, 1980, Ser. No. 199,977

Claims priority, application Japan, Oct. 24, 1979, 54/136459  
Int. Cl.<sup>3</sup> H02P 5/40

U.S. Cl. 318—802

16 Claims



1. In an induction motor control system comprising an induction motor, an inverter for supplying power to said induction motor, and a control device of pulse width modulation type for controlling said inverter, said control device including frequency command generator means for said inverter, means for generating a sine wave of a frequency corresponding to said frequency command, means for generating a triangular wave of a frequency N times the frequency of said sine wave (N: 1 or larger integer), means for deciding one of a plurality of speed ranges in accordance with the speed of said motor, means for selecting by a switching operation a frequency of said triangular wave so as to reduce the value N depending on the increase in the speed range decided by said speed decision means, means for comparing said triangular wave with said sine wave, and means for controlling said inverter in accordance with the output pulse train of said comparator means; the improvement further comprising means for inhibiting said value N from becoming 1 at least for a predetermined period of time during transition of said inverter from an idle state to an active state.

#### 4,338,559 LOAD STATE CONTROL FOR AN ASYNCHRONOUS MACHINE FED BY A CONVERTER

Felix Blaschke, and Leonhard Reng, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,144

Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919852

Int. Cl.<sup>3</sup> H02P 5/40

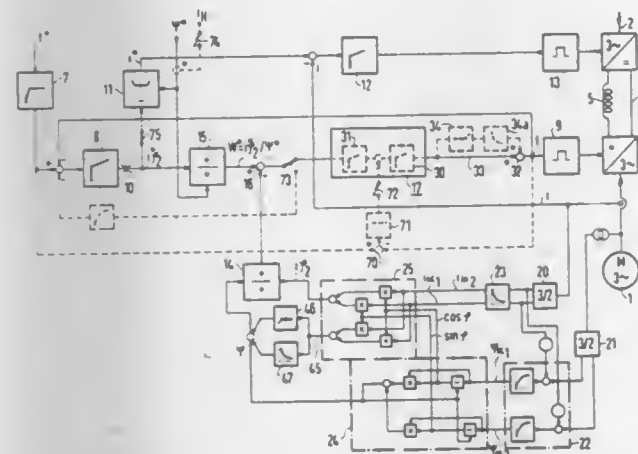
U.S. Cl. 318—805

11 Claims

1. An apparatus for controlling an asynchronous machine comprising:
  - (a) a static frequency converter having a line-controlled rectifier with line-commutated rectifier valves connected to a three phase network,
  - (b) a self-commutating converter supplying power to the machine,
  - (c) an intermediate DC link coupling the output of the rectifier to the self-commutating converter,
  - (d) a current control system including:
    - (i) a current regulator for regulating the stator current of the asynchronous machine to a desired value by controlling the line-commutated rectifier valves, the current regulator having an input,
    - (ii) input means for a reference flux variable, and



- (iii) a function generator having an input coupled to the input means for a reference flux variable and having an output coupled to the input of the current regulator, the function generator responsive to the reference flux variable for deriving the desired stator current value;
- (e) a parallel stator frequency control system including:
- an actual value computer adapted to compute, from the actual values of stator current and stator voltage, a variable proportional to the amplitude of the flux vector and a variable proportional to the amplitude of the component of the stator current vector which is perpendicular to the flux vector as output signals;
  - a load state control having an input and an output,
  - means for providing actual values of the stator current and the stator voltage of the motor,
  - a control unit for the self-commutated converter



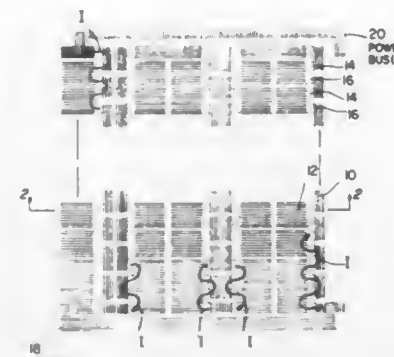
- receiving a frequency control variable from the output of the load state control,
- (v) means coupled to the input of the load state control for forming a load state control signal comprising the difference between a load state variable calculated from the actual values of stator current and stator voltage and a load state reference value derived from the input variable to the function generator,
- (vi) a first divider having a dividend input to which the variable proportional to flux amplitude is fed, a divisor input to which the variable proportional to the stator current vector component perpendicular to the flux vector is fed, and an output signal comprising the load state variable; and
- (vii) means, responsive to the reference flux variable fed to the function generator, for deriving the load state reference value.

**4,338,560**  
**ALBEDD RADIATION POWER CONVERTER**  
 Leo W. Lemley, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 12, 1979, Ser. No. 84,253  
 Int. Cl.<sup>3</sup> H02L 1/00

- U.S. Cl. 322-2 A 20 Claims
- A thermoelectric power converter for converting infrared radiation to electricity comprising:
    - a plurality of heat collectors for absorbing radiation;
    - a plurality of heat radiators arranged in lateral displacement with said collectors;
    - a plurality of thermoelectric elements of dissimilar metals, and alternating said dissimilar metals for interconnecting said collectors with said radiators, and said radiators with said collectors, and forming a series connection therewith for conducting electricity,
    - said radiation being absorbed by said collectors and being changed to heat, said heat flowing to said thermoelectric elements, said elements converting some of said heat to

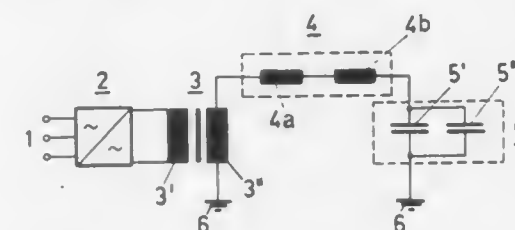
electricity, the remainder of said heat being radiated by said radiators, and said electricity flowing through said



series connections of collectors, thermoelectric elements, and radiators.

**4,338,561**  
**HIGH VOLTAGE INSULATION TESTING SYSTEM**  
 Walter S. Zaengl, Dübendorf, and Felix Bernasconi, Zürich, both of Switzerland, assignors to Forschungskommission des Sev und VSE für (FKH), Zürich, Switzerland  
 Filed Dec. 5, 1979, Ser. No. 100,703  
 Claims priority, application Switzerland, Dec. 8, 1978, 12545/78

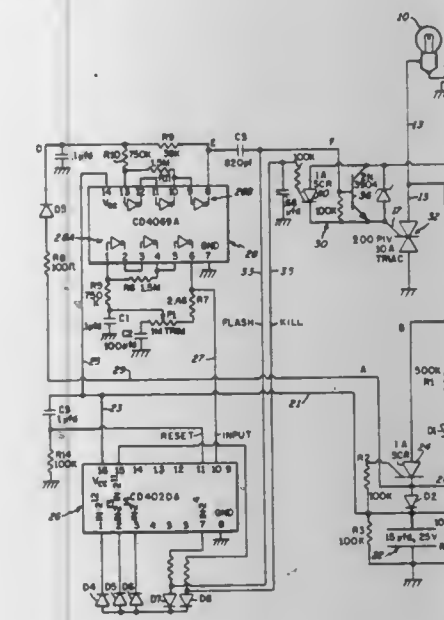
Int. Cl.<sup>3</sup> G01R 31/12 19 Claims  
 U.S. Cl. 323-208



- A high voltage testing system for testing the dielectric strength of electric insulation characterized by a capacitive reactance load by generating a rated KVA power in the form of a rated voltage and a rated current across the load, comprising:
  - a power source for supplying a KVA power less than said rated KVA power;
  - a transformer having a low voltage primary winding and a high voltage secondary winding, said secondary winding rated for a voltage less than said rated voltage and a current equal to the rated current of said reactance load;
  - at least one high voltage inductor having a substantially constant inductance value connected in series between said reactance load and said secondary winding, said inductor rated to accept the rated current and rated voltage of said reactance load; and
  - said inductor and said reactance load forming a tuned resonant circuit, and said power source having a continuously variable frequency tunable to the resonant frequency of said tuned resonant circuit;
 wherein the resonant circuit excited by said power source produces high reactive power at the rated KVA necessary to test said insulation, with said power source providing only the active power consumed by said resonant circuit; wherein said inductor comprises a serial connection of at least two high-voltage chokes with substantially constant inductance values, at least one of said chokes designed in the form of a bar-core choke.

**4,338,562**  
**LOAD CONTROL CIRCUIT WITH TIMED INTERRUPTION**  
 Robert D. Terwilliger, 190 Brookline St., Cambridge, Mass. 02139

Filed Jul. 10, 1980, Ser. No. 168,426  
 Int. Cl.<sup>3</sup> H05B 31/32  
 U.S. Cl. 323-323 12 Claims



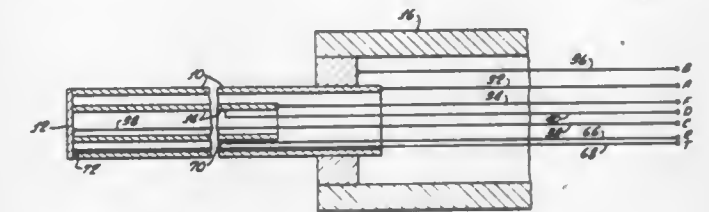
- A lower power consumption control circuit for controlling a load to provide for automatic interruption of power to the load a preselected period of time after load power is initiated, comprising:
  - a semiconductor switch adapted for selectively coupling power to the load,
  - a manually operated switch for initiation of load power, means responsive to said manual switch moved to its operating position for, in turn, operating said semiconductor switch to its power coupling state,
  - memory means responsive to said manual switch moved to its operating position for establishing an operating voltage,
  - said memory means comprising a capacitor,
  - a timer operated by said operating voltage and defining an "on" time period,
  - means responsive to said timer and termination of said time period for operating said semiconductor switch to uncouple power to the load,
  - a gated semiconductor electronic switch coupled in series with said memory capacitor,
  - one side of said load being connected in series with said semiconductor switch and also in series with the capacitor,
  - said gated semiconductor electronic switch including means responsive to the voltage across said capacitor for controlling the delivery of power to said capacitor when needed but only for a minor portion of the voltage swing delivered to the load to thereby cyclically recharge the capacitor, the remainder of the power of the voltage swing being delivered directly to the load.

**4,338,563**  
**CORROSION MEASUREMENT WITH SECONDARY TEMPERATURE COMPENSATION**  
 Rex V. Rhoades, Anaheim, and James L. Geer, Diamond Bar, both of Calif., assignors to Rohrbach Corporation, Santa Fe Springs, Calif.

Filed Aug. 11, 1980, Ser. No. 177,208  
 Int. Cl.<sup>3</sup> G01R 27/02  
 U.S. Cl. 324-65 CR 18 Claims

- A corrosion probe comprising
  - a test element adapted to be exposed to an environment of which corrosive characteristics are to be measured,

a reference element mounted adjacent said test element and protected from corrosion by said environment, resistance responsive means for generating a corrosion signal having a first compensation for temperature of said elements,



means for measuring the difference in temperature between said test and reference elements, and means responsive to said temperature difference measuring means for compensating said corrosion signal for temperature differences of said test and reference elements.

**4,338,564**  
**HEMATOLOGY CONTROL COMPOSITION AND METHODS FOR ITS USE**  
 David D. Mundschenk, Minneapolis, Minn., assignor to R & D Systems, Inc., Minneapolis, Minn.  
 Division of Ser. No. 47,063, Jun. 11, 1979. This application Nov. 5, 1980, Ser. No. 204,238  
 Int. Cl.<sup>3</sup> G01N 27/00

- U.S. Cl. 324-71 CP 10 Claims
- In the method for determining the number of platelets within a size range in a selected volume of blood involving the preparation of a blood platelet sample from the blood, presenting the sample in counting association with an electronic particle counter including discriminator means having a plurality of possible threshold settings with indicia values of known mathematical relationship to each other for excluding from the count particles of smaller volume than that established by a low threshold setting, and counting the platelets in a defined quantity of said sample by means of said electronic particle counter, the improvement which comprises:
    - determining the electronic particle volumes established by the said threshold settings by:
      - presenting in counting association with said electronic particle counter a control blood platelet preparation containing a population of platelets of known count range, size and size distribution,
      - determining the low threshold setting of said discriminator means which recognizes all platelets in said sample larger than a selected size but excludes particles smaller than that size,
      - calculating the threshold factor of said discriminator means by applying said known mathematical relationship of the indicia values of said threshold settings to said known count of platelets so recognized by said discriminator; and
      - determining the particle size corresponding to said possible threshold settings by multiplying the indicia value of each by the threshold factor so determined.

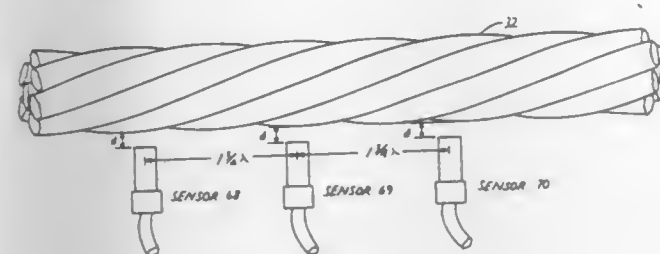
**4,338,565**  
**METHOD AND APPARATUS FOR MEASURING THE MOVEMENT OF A SPIRAL WOUND WIRE ROPE**  
 Ronald A. Hall, Sacramento, Calif., assignor to Exploration Logging, Inc., Sacramento, Calif.  
 Filed Jul. 11, 1980, Ser. No. 168,167  
 Int. Cl.<sup>3</sup> G01B 7/04

- U.S. Cl. 324-206 11 Claims
- Apparatus for measuring the length of movement of spiral wound wire rope in either longitudinal direction comprising:
    - three proximity sensors adapted to be located adjacent the wire rope along the direction of movement of the wire



rope, with adjacent pairs of the sensors being spaced to produce signals in response to movement of the spiral windings of the wire rope that are of different phase with respect to one another;

(b) means for deriving an electric signal from each proximity sensor having a magnitude that is representative of the distance between the sensor and the adjacent portion of the wire rope;



(c) means responsive to the electric signals from the proximity sensors for providing alternating current signals free from any low frequency or direct current components; and

(d) means responsive to said alternating current signals for providing digital signals that are representative of the length and direction of movement of the wire rope.

4,338,566

#### MAGNETIC PARTICLE METHOD USING WATER SOLUBLE ADHESIVE FOR DETECTING FLAWS IN MAGNETIZABLE WORKPIECES

Bruce C. Graham, Arlington Heights, Ill., assignor to Magnaflux Corporation, Chicago, Ill.

Filed Jan. 18, 1980, Ser. No. 113,328

Int. Cl.<sup>3</sup> G01R 33/12; G01N 27/84

U.S. Cl. 324—216

6 Claims

1. The method of detecting flaws in a magnetizable workpiece which comprises:  
heating said workpiece to a temperature of at least 140° F. (60° C.) in a hot water bath,  
removing the heated workpiece from said hot water bath, magnetizing the thus treated workpiece,  
applying an indicating composition including ferromagnetic particles, a fluorescent pigment, and a water soluble adhesive to the workpiece,  
drying the workpiece to drive off residual water and thereby fix the indicating composition thereon at the location of flaws by means of said adhesive, and  
inspecting the workpiece for flaws indicated by the presence of clusters of said indicating composition.

4,338,567

#### APPARATUS AND METHOD FOR DETERMINATION OF BOUND WATER IN SUBSURFACE FORMATIONS

George R. Coates, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 788,393, Apr. 18, 1977, Pat. No. 4,156,177. This application Feb. 1, 1979, Ser. No. 8,448

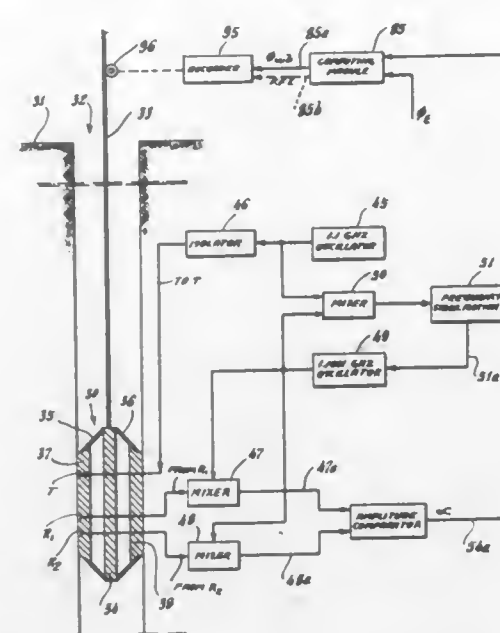
Int. Cl.<sup>3</sup> G01V 3/30

U.S. Cl. 324—338

8 Claims

1. Apparatus for determining the bound-water-filled porosity of formations surrounding a borehole, comprising:  
a logging device moveable through the borehole;  
means disposed in said logging device for transmitting microwave electromagnetic energy into the formations;  
means disposed in said logging device, and spaced from said transmitting means, for measuring, at each of a series of depth levels, the attenuation of microwave energy passing through the formations;  
means for generating, at each of said series of depth levels, a signal which is substantially proportional to the square of the measured attenuation; and

means for generating a depth-varying recording of said signals, said recording being indicative of the bound-



water-filled porosity of the formations at each of said series of depth levels.

4,338,568

#### METHOD AND DEVICE FOR DETECTION OF A SUBSTANCE

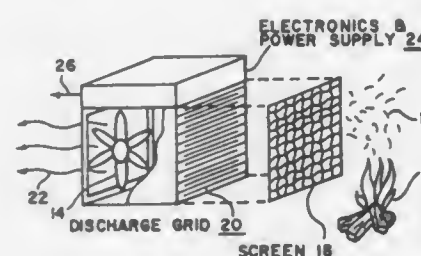
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Lien C. Yang, La Canada, Calif.

Filed Mar. 28, 1980, Ser. No. 135,038

Int. Cl.<sup>3</sup> G01R 5/28

U.S. Cl. 324—466

16 Claims



1. A device for detecting the presence of particulate substance having predetermined characteristics, said device comprising:

first means responsive to said particulate substance for initiating an electric spark discharge as a result of said substance having a predetermined location with respect to said first means, said electric spark discharge altering said substance predetermined characteristics so that said altered substance will no longer cause an electric spark discharge to be generated; and  
second means for determining the number of electric spark discharges generated, the number being related to the number of times a substance having said predetermined characteristics has been present in said predetermined location.

4,338,569

#### DELAY LOCK LOOP

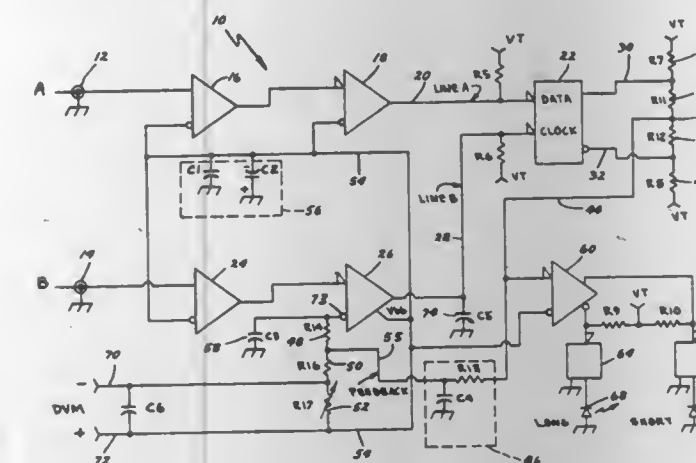
Dennis M. Petrich, Wayzata, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Mar. 11, 1980, Ser. No. 129,286

Int. Cl.<sup>3</sup> H03K 5/153

U.S. Cl. 328—155

21 Claims



1. A delay lock loop comprising:  
first input means for receiving a first input pulse train, means connected to said first input means for receiving a first input pulse train for providing a fixed time delay in transmission of said pulse train,  
a pulse edge detector means having a first and a second input channel for receiving the output of said means for providing a fixed time delay in said first input pulse train on said first channel, said pulse edge detector means producing a voltage output related to the time interval between an edge transition of a pulse on said first input channel and another input on said second input channel,  
second input means for receiving a second input pulse train, a variable delay means connected with said second input means for receiving a second input pulse train for providing a variable time delay output pulse train with respect to said second input pulse train,  
feedback means for producing a feedback voltage from the output voltage of said pulse edge detector means to provide an input to said variable delay means to control the time delay output thereof, and  
means connecting a time delayed output of said variable delay means to said second input channel of said pulse edge detector means.

4,338,570

#### RAMAN SCATTERING IN A WHISPERING MODE OPTICAL WAVEGUIDE

Norman A. Kurnit, Santa Fe, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 8, 1981, Ser. No. 271,061

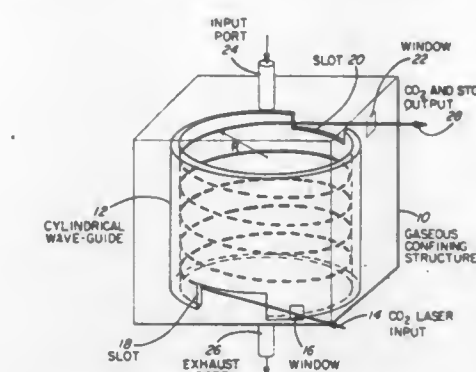
Int. Cl.<sup>3</sup> H03F 7/00

U.S. Cl. 330—4.6

7 Claims

1. A device for Raman scattering a CO<sub>2</sub> laser beam propagated by a waveguide comprising:  
waveguide means having a substantially cylindrical surface with a radius R for propagating said CO<sub>2</sub> laser beam in a helical direction along said cylindrical surface, said cylindrical surface having an additional curvature formed therein with a radius  $\rho$  which confines said CO<sub>2</sub> laser beam to a small mode volume and a high intensity as said CO<sub>2</sub> laser beam propagates along said waveguide means;  
means for confining a hydrogen isotope Raman scattering medium in the propagation path of said CO<sub>2</sub> laser beam as said CO<sub>2</sub> laser beam propagates along said waveguide means to cause Raman scattering of said CO<sub>2</sub> laser beam;

whereby Raman amplification is achieved in said device by providing long interaction path lengths between said CO<sub>2</sub>



laser beam and said hydrogen isotope Raman scattering medium at high intensities.

4,338,571

#### LOW SENSITIVITY SWITCHED-CAPACITOR LADDER FILTER USING MONOLITHIC MOS CHIP

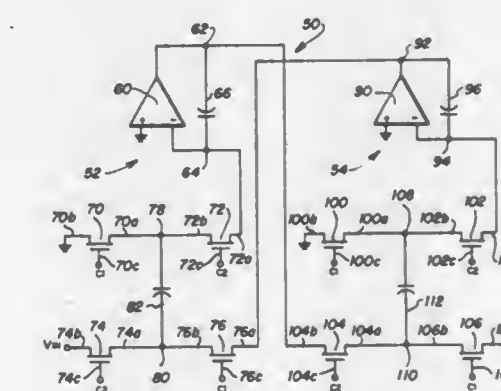
Ian A. Young, Farmers Branch, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Dec. 18, 1979, Ser. No. 105,004

Int. Cl.<sup>3</sup> H03F 1/34

U.S. Cl. 330—84

15 Claims



1. A switched-capacitor filter for passing an input audio frequency over a predetermined range of frequencies fabricated on a monolithic semiconductor substrate comprising:  
a first amplifier having input and output terminals;  
a first integrator capacitor interconnected to said first amplifier;  
a second amplifier having input and output terminals;  
a second integrator capacitor interconnected to said second amplifier;  
a first input switched-capacitor interconnected between said input terminal of said first amplifier and said output terminal of said second amplifier, such that said first input switched-capacitor samples and holds the output of said second amplifier during a first clock phase thereby isolating said output terminal of said second amplifier from said first integrating capacitor and during a second clock phase applies the sampled and held output of said second amplifier to said first integrator capacitor; and  
a second input switched-capacitor interconnected between said output terminal of said first amplifier and said input terminal of said second amplifier, such that during said second clock phase said second input switched-capacitor applies the output of said first amplifier to said second integrator capacitor.



4,338,572

## HF AMPLIFIER CIRCUIT

Josef H. Schürmann, Oberhummel, Fed. Rep. of Germany, assignor to Texas Instruments Deutschland GmbH, Freising, Fed. Rep. of Germany

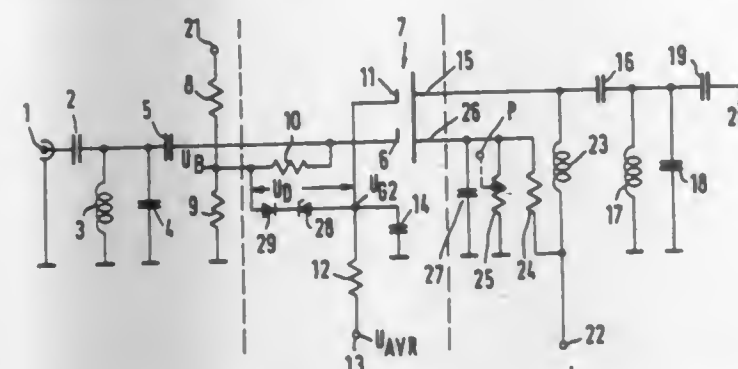
Filed Mar. 18, 1980, Ser. No. 131,323

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1979, 2911514

Int. Cl.<sup>3</sup> H03F 3/16

U.S. Cl. 330—277

12 Claims



1. HF amplifier circuit comprising an MES or MIS field-effect transistor having first and second gate electrodes; means for applying at the first gate electrode an HF signal to be amplified; means for applying at the second gate electrode a gain control voltage within a selected control voltage range; and diode means having a predetermined conduction threshold voltage connected between said second gate electrode and a node of said amplifier circuit, said node having a fixed potential lying in said control voltage range such that said diode combination becomes conductive when a value of the gain control voltage is reached at which pinch-off of said field-effect transistor commences.

4,338,573

## OUTPUT AMPLIFIER WITH NON-LINEAR NEGATIVE FEEDBACK

Martinus J. van den Bungeelaar, Nijmegen, and Albert Stoker, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

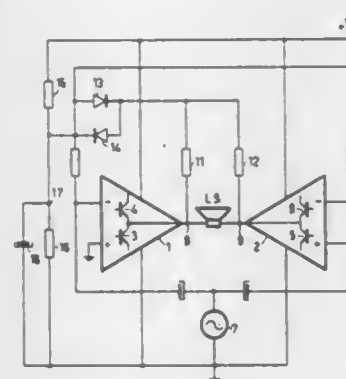
Filed Mar. 19, 1980, Ser. No. 132,471

Claims priority, application Netherlands, Mar. 20, 1979, 7902160

Int. Cl.<sup>3</sup> H03F 3/30

U.S. Cl. 330—298

7 Claims



1. A circuit arrangement comprising: a first amplifier, a second amplifier, said amplifiers having a common input and being operated in push-pull, a load impedance being switchable between the outputs of said amplifiers, a first direct-current passing circuit being included between the output of the first amplifier and a first d.c. bias point of the second amplifier, and a second direct-current passing circuit being included between the output of the second amplifier and a second d.c. bias point of the first amplifier, whereby the resulting d.c. coupling from the output of the first amplifier to the output of the second amplifier and from the output of the second amplifier to the output of the first amplifier is zero.

the output of the first amplifier is non-inverting, and each of the direct-current passing circuits includes a non-linear current-passing element.

4,338,574

## CARRIER RECOVERING CIRCUIT FOR PHASE MODULATED SIGNAL

Toshio Fujita; Youichi Matsumoto, and Yoshimi Tagashira, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

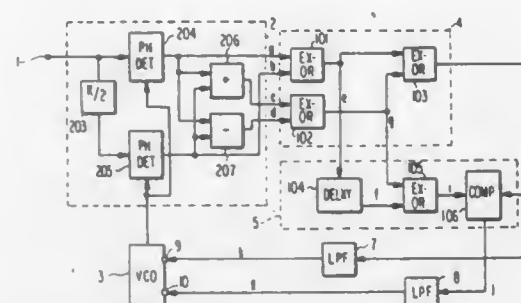
Filed Mar. 26, 1980, Ser. No. 134,001

Claims priority, application Japan, Mar. 30, 1979, 54/39132

Int. Cl.<sup>3</sup> H03L 7/08

U.S. Cl. 331—1 A

4 Claims



1. A phase locked loop circuit comprising: a voltage-controlled oscillator for generating a reference phase signal in response to a control signal; phase detecting means for receiving an N-phase ( $N=2^n$ ,  $n$  is a positive integer) phase-modulated carrier wave and said reference phase signal and for detecting said carrier wave on the basis of said reference phase signal, said phase detecting means providing mutually orthogonal outputs; means connected to the output of said phase detecting means for detecting phase and frequency errors between said modulated carrier wave and said reference phase signal, said phase and frequency error detecting means comprising n-stage multiplication means for multiplying said mutually orthogonal outputs of said phase detecting means, the nth stage of said n-stage multiplication means having first and second inputs, delay means having an input coupled to the first input of said nth stage for delaying said first input of said nth stage of said n-stage multiplication means by a predetermined time, one-stage multiplication means for multiplying the second input of said nth stage by the output of said delay means, and means for voltage-comparing the output of said n-stage multiplication means with that of said one-stage multiplication means to cancel said phase error contained in the outputs of said n-stage multiplication means and one-stage multiplication means; and means for supplying the outputs of said phase and frequency error detecting means to said voltage-controlled oscillator as said control signal.

4,338,575

## PROCESS FOR COMPENSATING TEMPERATURE VARIATIONS IN SURFACE WAVE DEVICES AND PRESSURE TRANSDUCER UTILIZING THIS PROCESS

Pierre Hartemann, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 12, 1980, Ser. No. 149,244

Claims priority, application France, May 16, 1979, 79 12458

Int. Cl.<sup>3</sup> G01N 27/00; H03B 3/04; H03H 9/42

U.S. Cl. 331—65

11 Claims

1. A process for the compensation of temperature variations in a device incorporating two elastic surface wave oscillators and mixer means supplying an output signal, whose frequency is equal to the difference of the oscillation frequency of the two oscillators, the latter having temperature variations of the same sign and unequal values, comprising inserting into the loop of

4,338,577

## SEMICONDUCTOR LASER APPARATUS

Hideaki Sato; Takashi Kitamura; Koichi Masegi, all of Yokohama, and Kazuo Hoshito, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

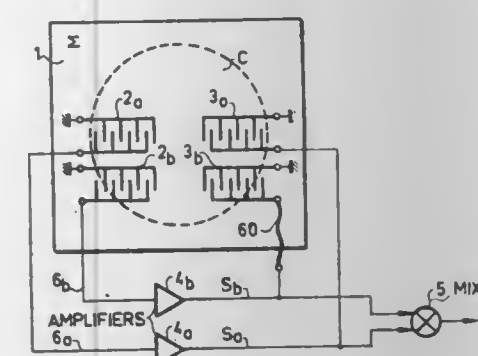
Continuation of Ser. No. 822,340, Aug. 5, 1977, abandoned. This application Oct. 24, 1979, Ser. No. 87,705

Claims priority, application Japan, Aug. 20, 1976, 51-99495; Jul. 5, 1977, 52-80103

Int. Cl.<sup>3</sup> H01S 3/19

U.S. Cl. 372—36

19 Claims



length is selected in such a way that the variation of the delay with the temperature compensates an initial difference between the thermal variations of the two oscillators.

4,338,576

## ULTRASONIC ATOMIZER UNIT UTILIZING SHIELDED AND GROUNDED ELEMENTS

Minoru Takahashi, Funabashi, and Sadao Mitsui, Chiba, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

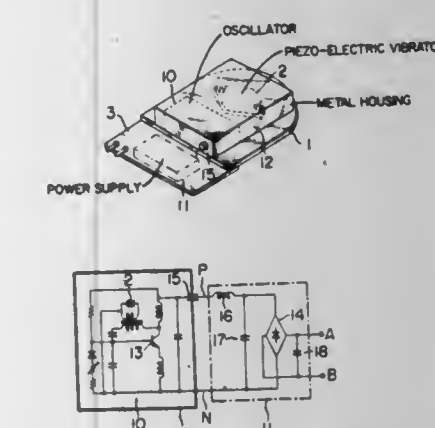
Filed Jul. 3, 1979, Ser. No. 54,588

Claims priority, application Japan, Jul. 26, 1978, 53-101891[U]; Sep. 8, 1978, 53-122707[U]

Int. Cl.<sup>3</sup> H03B 5/36

U.S. Cl. 331—67

3 Claims



1. In an ultrasonic atomizer unit including a chamber base, a piezo-electric vibrator attached to the chamber base, and a driving circuit for energizing the piezo-electric vibrator, the improvement wherein said driving circuit is separated into an oscillator part and a power supply part having a rectifier, said oscillator part is shielded by a metal housing, one of the power supply lines to said oscillator part extends through an aperture in said metal housing and is coupled to said rectifier, and another power supply line to said oscillator part is connected to said metal housing and also is coupled to said rectifier, there is provided a variable circuit element for controlling the output signal from said oscillator part, said variable circuit element is positioned outside said metal housing, a filter circuit is inserted between said oscillator part and said variable circuit element, said oscillator part comprises a self-driving oscillator circuit, said variable circuit element is a variable resistor, said variable resistor and said filter circuit are arranged in an electrode biasing circuit of said oscillator circuit, said oscillator circuit includes a transistor having a grounded collector, and said variable resistor is coupled to the base of said transistor by said filter circuit.

4,338,578

## MULTICOLOR PULSED COHERENT-LIGHT SOURCE

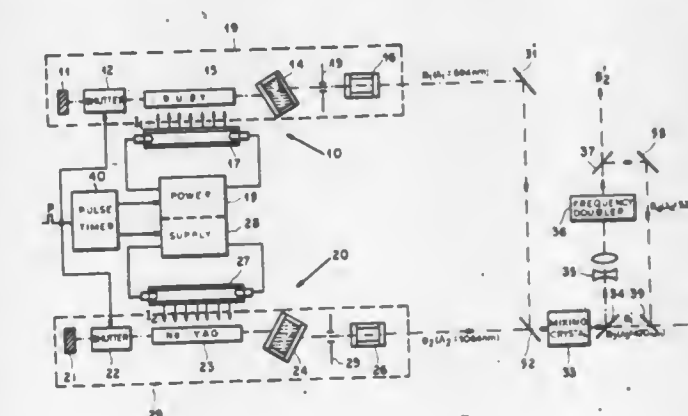
Yefim Sukhman, 31-48 41st St., Astoria, N.Y. 11103

Filed Mar. 5, 1980, Ser. No. 127,309

Int. Cl.<sup>3</sup> H01S 3/08

U.S. Cl. 372—23

7 Claims



1. A source of pulsed multicolor coherent light, comprising:



a first laser emitting a first coherent radiation in the red region of the visible spectrum;  
 a second laser emitting a second coherent radiation in the infrared part of the spectrum with a wavelength which is twice that of a color in the green region of the spectrum; light-guiding means optically aligned with said lasers for forming said first and second radiations into collinear beams passing along a common path, said light-guiding means including nonlinear light-transmitting means in said common path for summing the frequencies of said first and second radiations to produce a third coherent radiation in the blue region of the spectrum, said light-guiding means further including frequency-doubling means in a further path for deriving from said second radiation a fourth coherent radiation in the green region of the spectrum; and  
 a supply of pulsed energy for pumping said lasers in a correlated manner.

4,338,579

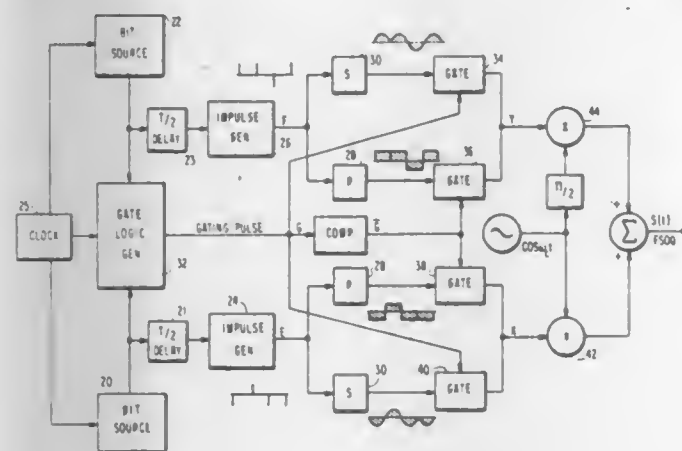
### FREQUENCY SHIFT OFFSET QUADRATURE MODULATION AND DEMODULATION

Smith A. Rhodes, Falls Church, Va., assignor to Communications Satellite Corp., Washington, D.C.

Filed Jul. 30, 1980, Ser. No. 173,559

Int. Cl.<sup>3</sup> H04L 27/12, 27/14

U.S. Cl. 332-21



1. A method of modulating a signal for transmission comprising:  
 generating first and second binary bit sequences related to first and second data sequences respectively, said first and second binary bit sequences being offset in time with respect to each other;  
 selectively generating one of (i) a sinusoidal signal, and (ii) a rectangular signal, for selected portions of said first and second binary bit sequences, to produce respective third and fourth modulation sequences, the polarities of said sinusoidal and rectangular signals selected as a function of the polarities of said first and second binary bit sequences, said one of said sinusoidal and rectangular signals being selected as a function of bit transitions of said first and second binary sequences; and  
 modulating a carrier signal with said third and fourth modulation sequences to provide a transmission signal.  
 6. A method of demodulating a received signal modulated with a plurality of pulse shapes representing a bit pattern comprising:  
 combining said received signal with a synthesized carrier signal to provide a baseband signal;  
 filtering said baseband signal to provide a filtered signal;  
 sampling said filtered signal in accordance with a signal synchronized with said bit pattern to detect the values of said bit pattern; and  
 optimizing said filtering of said baseband signal for the pulse

shape having the least energy of said plurality of pulse shapes.

13. A method of synchronizing a receiver with an incoming signal having a carrier reference signal modulated in accordance with a bit pattern to thereby provide said incoming signal with components having frequencies above, below and at the frequency of said carrier reference signal, said method comprising:  
 removing the modulation on said reference signal in accordance with a first function to provide a first reference signal;  
 mixing said first reference signal with signals related to said components having frequencies above and below the frequency of said carrier reference signal to provide first and second mixed signals, respectively; and  
 combining said first and second mixed signals to provide a combined signal synchronized with said bit pattern.

4,338,580

### SELF BALANCING AMPLITUDE MODULATOR

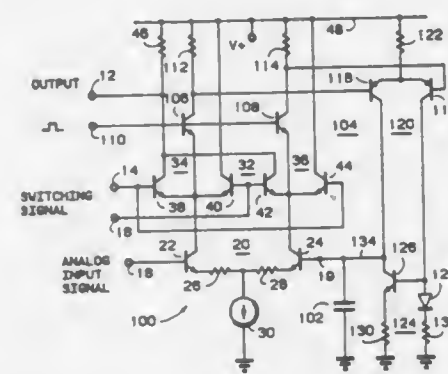
Michael J. Gay, Geneva, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 9, 1980, Ser. No. 148,349

Int. Cl.<sup>3</sup> H03C 1/06, 1/36

U.S. Cl. 332-31 T

16 Claims



1. A self balancing modulator for providing a zero output signal in response to an applied input signal being at a zero reference level, comprising:

a first differential amplifier having first and second inputs and first and second outputs, said first input being adapted to receive the applied input signal, said second input being adapted to receive a variable bias potential;

first switching circuit means coupled with said first and second outputs of said first differential amplifier and receiving a first switching signal for commutating the output signals appearing at said first and second outputs of said first differential amplifier to an output of the modulator;

feedback means responsive to input signals applied thereto for varying said bias potential supplied to said first differential amplifier to balance the output signals from said first differential amplifier; and

gating switch means coupled between said first and second outputs of said first differential amplifier and respective inputs of said feedback means, said gating switch means being responsive to a control signal for supplying said input signals to said feedback means, said control signal being supplied concurrently with the input signal to said first differential amplifier being at a zero reference level such that said output signals therefrom are balanced to provide a zero output signal.

4,338,581

### ROOM ACOUSTICS SIMULATOR

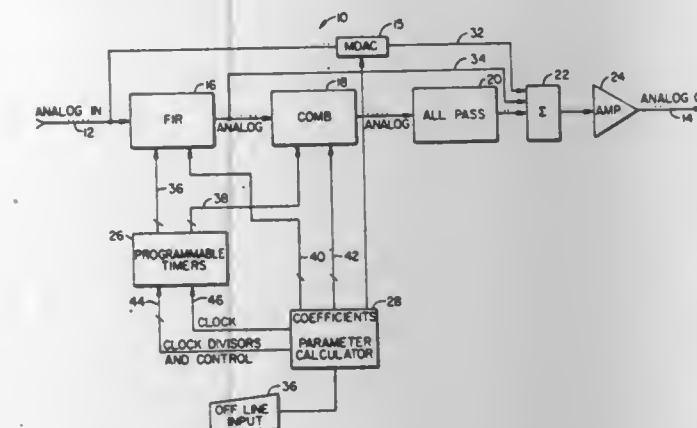
Nelson H. Morgan, Novato, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed May 5, 1980, Ser. No. 146,966

Int. Cl.<sup>3</sup> H03H 15/02; G10H 1/00

U.S. Cl. 333-165

12 Claims



8. A method for generating an electronic simulation of acoustic reverberation comprising:

applying a direct analog signal to a sampled time finite impulse response signal processing means having a digitally programmable delay line means and gain weighting means to produce an analog output signal representative of a preselected number of early echoes;

applying said early echoes output signal to an analog comb filter having digitally programmable delay line means and gain weighting means, the output of which is applied to an all pass section to produce a delayed analog output signal representative of a high echo density echo transient; and  
 combining said direct signal, said discrete echo signal and said echo transient signal into a composite analog output signal representative of reverberation.

4,338,582

### ELECTRONICALLY TUNABLE RESONATOR CIRCUIT

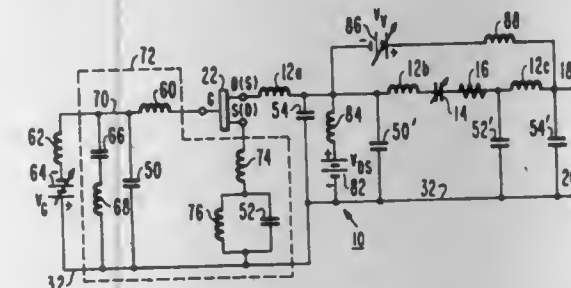
Adolph Presser, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 947,055, Sep. 29, 1978, abandoned. This application Aug. 27, 1979, Ser. No. 70,022

Int. Cl.<sup>3</sup> H03H 11/08, 11/10; H01P 1/38; H03F 3/193

U.S. Cl. 333-175

14 Claims



1. An electronically frequency tunable resonant circuit, comprising in combination:

a capacitance means, the value of which is electronically adjustable;

an inductance means coupled in combination with said capacitance means arranged to resonate at a selected one of a range of frequencies dependent on the value of said capacitance;

said combination also including resistance means;

a field effect transistor (FET) characterized by a negative resistance, arranged with said combination to offset the resistance of said resistance means, said FET including a source terminal, a drain terminal, and a gate terminal; and  
 means for providing a feedback path for said FET to pro-

duce negative resistance between said source and drain terminals.

4,338,583

### MANUAL/MAGNETIC MOTOR CONTACTOR

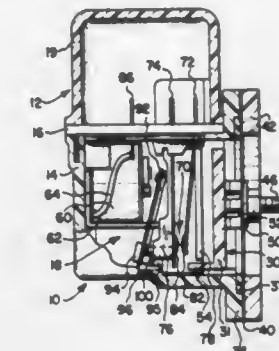
Raymond J. Mathieu, Ludlow Falls, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Nov. 13, 1980, Ser. No. 206,500

Int. Cl.<sup>3</sup> H01H 45/00

U.S. Cl. 335-186

16 Claims



1. A contactor type electrical switch comprising  
 at least one pair of normally open primary contacts,  
 a pair of normally open control contacts,  
 an electromagnet actuator having a coil and a movable armature influenced by an electromagnetic field created by current flowing through said coil,  
 means on said armature engageable with one of each of said pairs of contacts to close said one contact against the other contact of the pair,  
 circuit means connecting said control contacts to said coil and adapted to control supply of power to said coil, and  
 a reciprocable manually operable actuator engageable with one control contact of said pair thereof to close and open said control contacts independently of said electromagnetic actuator and thereby to control said circuit means.

4,338,584

### TELEVISION DEFLECTION YOKE MOUNT

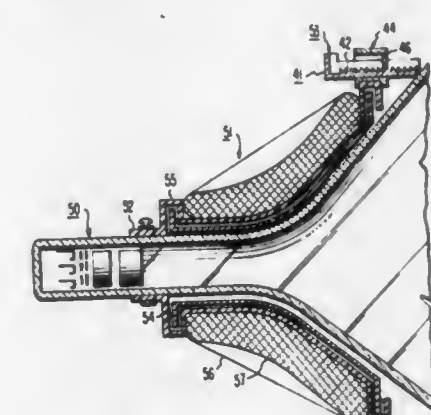
John V. Howard, East Petersburg, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 24, 1980, Ser. No. 209,534

Int. Cl.<sup>3</sup> H01F 7/00

U.S. Cl. 335-210

5 Claims



1. A deflection yoke mounting apparatus providing orientation and fixing of the position of a deflection yoke adapted for transverse adjustment on a kinescope, said mounting apparatus comprising:

an insulator disposed about the neck of said kinescope and adapted to be fixedly mounted to said neck at the rear of said insulator, said insulator dimensioned to receive horizontal and vertical deflection coils and an operatively



associated magnetically permeable core to form a deflection yoke;  
a plurality of yoke position orientation and fixing means disposed at the front of said insulator, comprising:  
guide means incorporating flexible first engagement means; and  
a member, slidably mounted in said guide means, and incorporating second engagement means, said second engagement means cooperating with said first engagement means to allow sliding movement of said member in a direction toward said kinescope and to substantially prevent sliding movement of said member in a direction away from said kinescope, said member being placed in abutment with said kinescope to orient and fix the position of said yoke with respect to said kinescope.

4,338,585

**SOLENOID HAVING A HINGED ARMATURE**

Hans-Werner Volke, Salzkotten, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

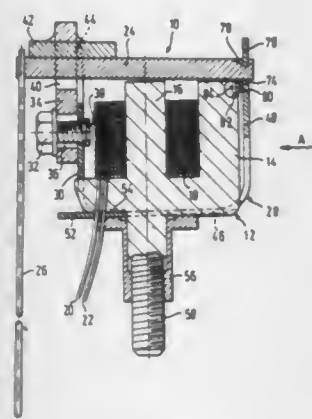
Filed Oct. 23, 1980, Ser. No. 199,755

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943440

Int. Cl.<sup>3</sup> H01F 7/14

U.S. Cl. 335—274

5 Claims



1. A hinged armature magnet for moving a device such as a printing needle between first and second positions comprising:  
a magnetic yoke (12) having a first arm (16) carrying a coil (18) for providing a motive force, said yoke (12) having a second arm (14) adjacent to but spaced from the first arm (16) and magnetically integral therewith;  
a bearing pin (80) non-rotatably mounted on the second arm (14) near an extremity thereof;  
a bracket spring (28) secured to the yoke (12) and having a U-shank (48) with a mounting part which extends adjacent to but is spaced from the pin (80);  
an armature (24) having a first relatively fixed end secured to the mounting part of the U-shank (48) near the pin (80) and bearing against the pin (80) and extending over but normally being spaced from the arms (14, 16) of the yoke (12), the armature (24) having a second relatively free end remote from the first end and adapted to carry said device; whereby energization of the coil (18) causes the armature (24) to be drawn toward and into contact with the arm (16) and to roll over the pin (80) against the spring force of the U-shank (48);  
and stop means (42) for delimiting the return movement of the armature (24) away from the arm (16) when the coil (18) is de-energized.

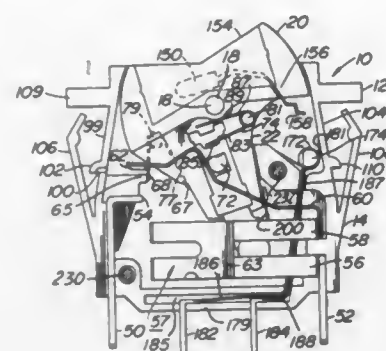
**4,338,586**  
**CIRCUIT PROTECTOR HAVING A SLIDABLE LATCH**  
William F. Scanlon, New Hope, Pa., assignor to Heinemann Electric Company, Trenton, N.J.

Filed Sep. 3, 1980, Ser. No. 183,959

Int. Cl.<sup>3</sup> H01H 71/16

U.S. Cl. 337—74

4 Claims



1. A circuit protector comprising  
a case,  
a rocker movable between "on" and "off" positions,  
a first spring means within said case for biasing said ROCKER to the "off" position,  
a stationary contact,  
a movable contact carried by a movable contact blade, said rocker including an extension,  
said extension carrying a pivotal latch lever and a slidable latch,  
said latch lever having a detent restraining movement of said slidable latch,  
a second spring means biasing said latch lever toward said slidable latch,  
said slidable latch including a cam stop engaging said movable contact blade to keep said contacts engaged,  
a bimetal engageable on predetermined heating with said latch lever to pivot said latch lever away from said slidable latch,  
whereupon said detent is moved out of engagement with said slidable latch permitting said slidable latch to move upwardly under pressure of said movable contact blade and permitting said handle to be pivoted by said spring to the contacts "off" position.

4,338,587

**TOLL COLLECTION SYSTEM**

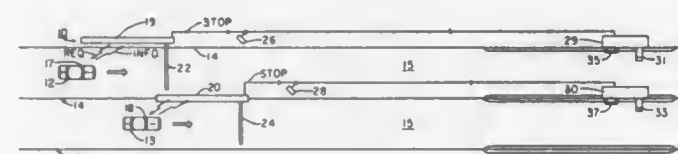
Arthur B. Chiappetti, 10600 S. Oakley, Chicago, Ill. 60643

Continuation-in-part of Ser. No. 14,448, Feb. 23, 1979, abandoned. This application Aug. 11, 1980, Ser. No. 177,036

Int. Cl.<sup>3</sup> G08G 1/01

U.S. Cl. 340—32

16 Claims



1. In a vehicle toll collection system for vehicles, the system including at least one elongated vehicle lane indicia means for directing the vehicles therealong over a roadway, a stationary control unit comprising:  
said stationary control unit being disposed at said indicia means having receiving means adapted to receive a series of vehicle identification information signals from each one of a series of the vehicles traveling therepast along the roadway, said signals being coded to identify uniquely the vehicle sending it;  
a signal transmitter for generating and sending request signals to the vehicles passing by the stationary control unit

to cause the vehicles to return their vehicle identification signals to said stationary control unit;  
memory means responsive to said receiving means receiving identification information signals from passing vehicles for storing the identification information signals; and  
logic means responsive to said receiving means receiving all of the identification information signals from each one of the passing vehicles for generating vehicle warning signals corresponding to each one of the passing vehicles and indicative of whether or not identification information signals were properly received.

4,338,588

**ARRANGEMENT FOR DETERMINING THE OPTIMUM SCAN ANGLE FOR PRINTED DOCUMENTS**

Pierre Chevillat, Adliswil, and Hans R. Schindler, Langnau, both of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

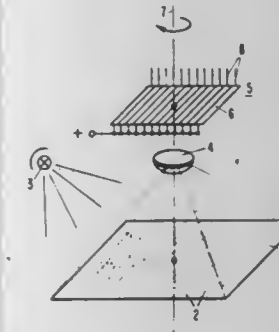
Filed Jun. 2, 1980, Ser. No. 155,863

Claims priority, application Switzerland, Jun. 26, 1979, 5939/79

Int. Cl.<sup>3</sup> G06K 9/32

U.S. Cl. 340—146.3 H

6 Claims



1. Apparatus for determining the angle that a document bearing parallel lines of printing is out of predetermined orientation with an angular reference, wherein the improvement comprises:

sensor means including a plurality of elongated parallel transducers for generating signals corresponding to the light incident thereon,  
means for projecting an image of a substantial portion of a plurality of lines of the document onto said sensing means, turning means for rotating one of said document image and said sensor with respect to said reference,  
means for measuring the difference in the signals generated by non-adjacent ones of said transducers to produce a plurality of difference signals,  
means summing a function of said difference signals to produce a test value, and  
read-out means responsive to the occurrence of said test value reaching a maximum during said rotation for storing an indication of the position of said turning means at such occurrence with respect to said reference.

4,338,589

**AUTOCALIBRATION OF COMPRESSED A/D CONVERTER**

Steven J. Engel, West Whiteland; Richard E. Marsh, Kemblesville, both of Pa., and Robert P. Rhodes, Newark, Del., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 13, 1979, Ser. No. 11,822

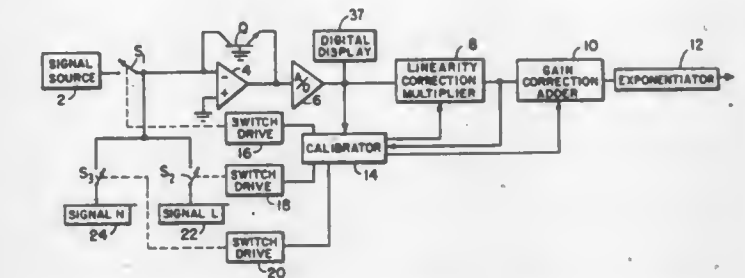
Int. Cl.<sup>3</sup> H03K 13/02

U.S. Cl. 340—347 CC

7 Claims

1. An analog-to-digital converter system comprising  
logging means for producing at its output the logarithm to an unknown base  $h$  of an analog signal applied to its input, an analog-to-digital converter having an input and an output,

means coupling the output of said log deriving means to the input of said analog-to-digital converter,  
a multiplier having an input and an output,  
means coupling the output of said analog-to-digital converter to the input of said multiplier,  
an exponentiator operating at a desired base and having an input and an output, said input being coupled to the output of said multiplier,  
means for applying a reference signal  $H$  of known value to the input of said logging means,



means for applying a reference signal  $L$  of known value to the input of said logging means,  
means coupled to the input of said multiplier for deriving a linearity correction factor equal to the logarithm to the base  $h$  of  $H/L$ , times logarithm to the base  $H/L$  of the desired base, and  
means causing said multiplier to multiply signals applied to it by the reciprocal of the correction factor.

4,338,590

**MULTI STAGE RESISTIVE LADDER NETWORK HAVING EXTRA STAGES FOR TRIMMING**

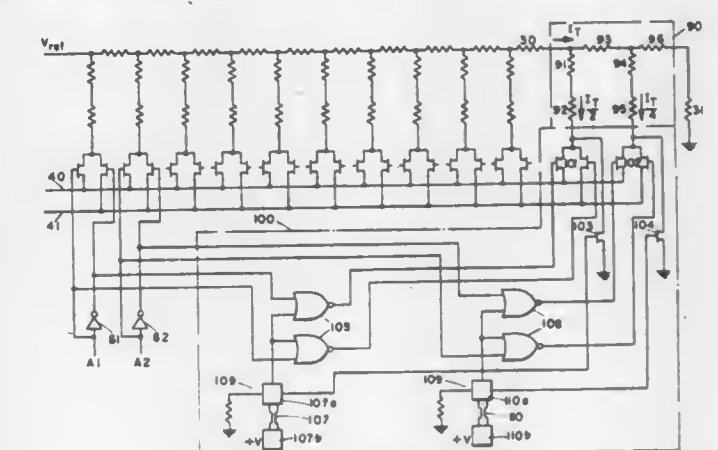
Joseph J. Connolly, Jr., San Jose, and James B. Cecil, Santa Clara, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 7, 1980, Ser. No. 110,135

Int. Cl.<sup>3</sup> H03K 13/02

U.S. Cl. 340—347 CC

2 Claims



1. Apparatus for performing digital to analog voltage conversions, said apparatus being comprised of  
a resistive ladder network containing a plurality of stages;  
each of said stages having an input node, a first output node, and a second output node; the nominal resistance from said input node to said first output node being of the same value for each stage, and the nominal resistance from said input node to said second output node being of twice said value for each stage; the actual resistance between said input and output nodes varying slightly from said nominal resistance due to various processing limitations; all of said stages being interconnected in series such that said first output node of one stage connects to said input node of the next succeeding stage;  
a first conductive bus and a second conductive bus;  
means for receiving externally generated logic signals and for selectively coupling said second output nodes to said



output buses in response thereto to cause current to flow from said selectively coupled second output nodes to said output buses;

means for partitioning any current that exits from said first output node of the least significant bit stage of said series; and

means for selectively coupling said partitioned current onto said output buses in response to said logic signals to thereby compensate for any said variations in resistance that causes the current that flows from the second output node of the most significant bit stage to be disproportionately small;

wherein the selective coupling means includes

first transistors for selectively coupling said partitioning means to said conductive buses;

logic means responsive to said logic signals for turning said first transistors on and off in response to said logic signals to cause the partitioned current to flow to said first output bus when current flows from the second output node of said most significant bit stage to said first conductive bus; a second transistor connected to said partitioning means for selectively diverting the partitioned current to circuit ground; and

programmable means coupled to the logic means and the second transistor for selectively either (a) inhibiting said logic means from turning on and off said first transistors and simultaneously enabling said second transistor to divert the partitioned current or (b) enabling said logic means for turning on and off said first transistors and simultaneously inhibiting said second transistor from diverting the partitioned current;

wherein said first and second conductive buses are connected to the inputs of a differential amplifier having a large gain which forces said inputs to a virtual ground and causes the conductive buses to be at nearly the same potential at all times as the potential at the connection of said second transistor to said partitioning means when the partitioned current is diverted so that the impedance through which the partitioned current passes remains unchanged regardless of the selected state of the programmable means.

4,338,591

## HIGH RESOLUTION DIGITAL-TO-ANALOG CONVERTER

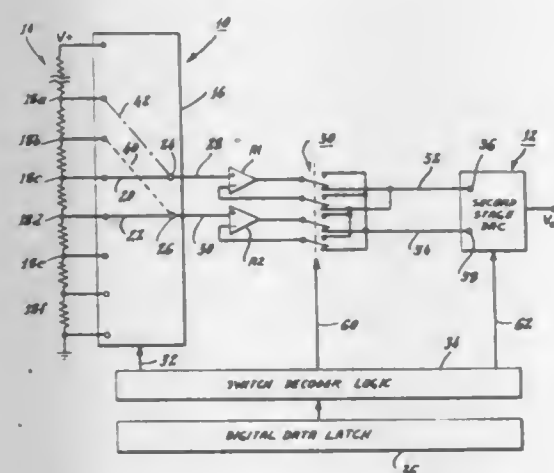
Michael G. Tuthill, Limerick, Ireland, assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Jun. 9, 1981, Ser. No. 272,053

Int. Cl.<sup>3</sup> H03K 13/02

U.S. Cl. 340—347 DA

6 Claims



1. In a two-stage digital-to-analog converter wherein the first stage decodes a set of higher-order bits and the second stage decodes the remaining, lower-order bits, said first stage comprising a series-connected string of resistors energized by a reference voltage and including first switch means responsive to said higher-order bits for stepping up or down the string of

resistors to make first and second connections respectively to any pair of adjacent nodal points of said resistor string to produce between first and second reference leads any of the voltages appearing across the resistors of said string;

first and second buffer amplifiers having input circuits connected to said reference leads respectively responsive to the selected nodal point voltages to develop a voltage for the input of said second-stage converter;

said first switch means being operable at each step up (or down) the resistor string to interchange the roles of said buffer amplifiers at each step up (or down) the resistor string by switching the connection to only one of said nodal points, connecting the corresponding buffer amplifier to the nodal point next beyond the nodal point to which the other buffer amplifier is connected while leaving said other buffer amplifier with its connection to the resistor string unchanged, whereby said buffer amplifiers are alternately connected to the successive nodal points of said resistor string as said first switch means steps the connections up (or down) the string;

reversing switch means connecting the outputs of said buffer amplifiers to respective input terminals of the second stage of said converter;

said reversing switch means being operable in response to the digital input signal to reverse the connections between said amplifier outputs and said second stage input terminals for each step up (or down) the resistor string effected by said first switch means, thereby maintaining a uniform polarity relationship between said second stage input terminals for all settings of said first switch means;

the interchanged roles of said buffer amplifiers produced by said alternating connection of said buffer amplifiers to said successive nodal points serving to minimize differential non-linearity errors which otherwise could occur due to offset mismatch between the buffer amplifiers.

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## HIGH ACCURACY DIGITAL-TO-ANALOG CONVERTER AND TRANSIENT ELIMINATION SYSTEM THEREOF

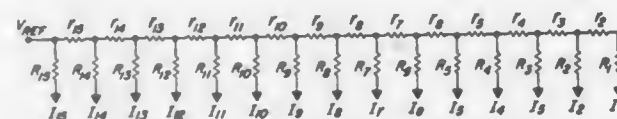
Samuel Wilensky, Concord, Mass., assignor to Hybrid Systems Corporation, Bedford, Mass.

Filed Feb. 11, 1980, Ser. No. 120,386

Int. Cl.<sup>3</sup> H03K 13/02

U.S. Cl. 340—347 CC

5 Claims



1. A method of compensating a digital-to-analog converter of the type which includes a resistor network which provides equally weighted currents at the output nodes thereof by virtue of providing a string of serially connected trimming resistors, one end of the string being coupled to a voltage source, and main resistors, each, with the exception of the LSB main resistor, being connected at one end thereof to a junction between adjacent trimming resistors and each being selectively coupled at the other end thereof either to a load or ground, comprising the steps of trimming the main resistors starting with the main resistor corresponding to the least significant bit and working towards the main resistor corresponding to the most significant bit side of an over-trimmed main resistor such that the current generated by each main resistor corresponding to less significant bits generates a current equal to the current generated by the overtrimmed resistor.

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## RODENT CONTROL APPARATUS AND METHOD

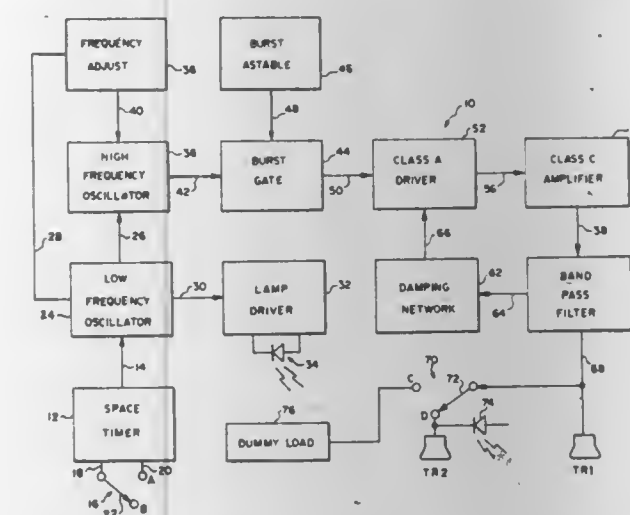
Thomas Mills, Chicago, Ill., assignor to Sound Control, Inc., Algonquin, Ill.

Filed Aug. 18, 1980, Ser. No. 179,268

Int. Cl.<sup>3</sup> G08B 3/10

U.S. Cl. 340—384 E

10 Claims



1. An apparatus for producing sound waves to repel rodents, comprising:

low frequency oscillator means for producing a frequency modulating ramp signal and an alternating mark space pedestal signal;

high frequency oscillator means for producing an electrical signal oscillating within an ultrasonic frequency band which is frequency modulated through a band of frequencies between 18 and 30 kilohertz in response to the ramp signal and which is alternately turned on and turned off in response to the pedestal signal;

burst means for amplitude modulating the electrical signal by increasing the amplitude of the produced electrical signal asynchronously with the frequency modulation of the produced electrical signal;

amplifier means for amplifying the power of the amplitude modulated electrical signal including negative feedback damping means for reducing the power required for amplifying the power of the amplitude modulated signal; and

transducer means for converting the amplified signal into sound waves.

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## TROLLEY CHECK-OUT MONITORING SYSTEM

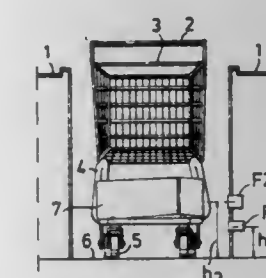
Lars-Erik Holm, Pollenvägen 12, 722 31 Västerås, Sweden

Filed Nov. 14, 1980, Ser. No. 207,089

Int. Cl.<sup>3</sup> G08B 13/18

U.S. Cl. 340—568

3 Claims



1. A monitoring system for shopping trolleys of the kind used in self-service stores, having a basket for the goods and at least one support surface below said basket which is not normally visible to the sitting checkout operator, wherein the system comprises at least two transmitters/receivers to detect/indicate an article on said lower surface and a further transmitter/receiver arranged at a lower level than, and between said first-mentioned transmitters/receivers to block operation

of the first-mentioned transmitters/receivers in response to the legs of a passing customer, parts of the trolley gear and the like, and a device controlled by first-mentioned transmitter/receiver in order to provide a signal giving evidence of an article on said lower surface, said transmitters arranged to emit a frequency-modulated infrared light in the form of a beam, which is reflected by said article and details back towards the respective receivers.

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## MICROWAVE LEAKAGE DETECTOR

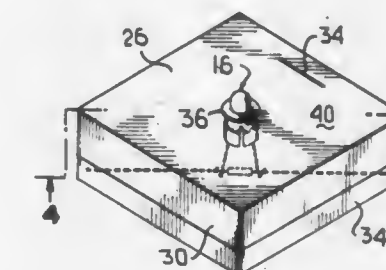
Daniel D. Newman, Los Angeles, Calif., assignor to Microwave Radiation Detector Corporation, Landover, Md.

Filed Sep. 9, 1980, Ser. No. 185,880

Int. Cl.<sup>3</sup> G08B 21/00

U.S. Cl. 340—600

10 Claims



1. A microwave radiation detector comprising:

a detector casing;

sensing means provided in said casing for sensing radiation;

display means connected to said sensing means for indicating the presence of radiation; and

means orienting said detector for insuring that the maximum amount of radiation emanating from a particular source is sensed by said sensing means, said sensing means and said display means containing only two electrical connections.

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## CIRCUIT FOR INDICATING THE CONDITION OF THE BATTERY IN A PHOTOGRAPHIC CAMERA

Theodor Huber, Munich; Kurt Borowski, Aschheim, and Gerhard Egger, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 898,314, May 19, 1978, Pat. No.

4,211,478. This application Jan. 14, 1980, Ser. No. 112,562

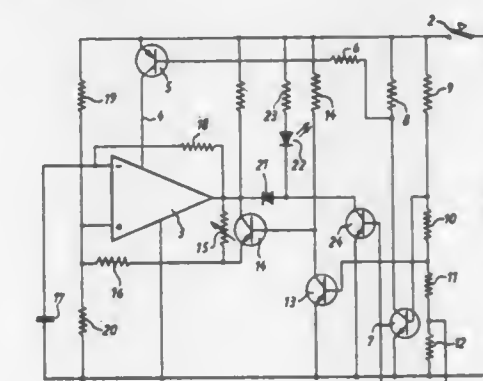
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1977, 2717191

The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> G08B 21/00

U.S. Cl. 340—636

4 Claims



1. A battery monitoring circuit for monitoring voltage of a battery and indicating such voltage to a user, comprising: an indicator; a transistor connected to the battery and connected in series with the indicator, to permit the indicator to generate



a first continuous indication; an astable multivibrator connected to the battery and connected in series with the indicator to permit the indicator to generate a discontinuous indication and a second continuous indication which is different from said first continuous indication; and a selector connected to the battery, the transistor and the astable multivibrator and cooperating therewith in a manner that the indicator generates the first continuous indication when the battery voltage is in a safe range, the indicator generates the different second continuous indication when the battery voltage is in a marginal range, and the indicator generates the discontinuous indication when the battery voltage is in an unacceptable range, said astable multivibrator being connected in parallel to the main-electrode path of said transistor so that the lower value of the second continuous indication is equal to the lowest permissible battery voltage value.

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## REMOTE MONITOR INTERFACE

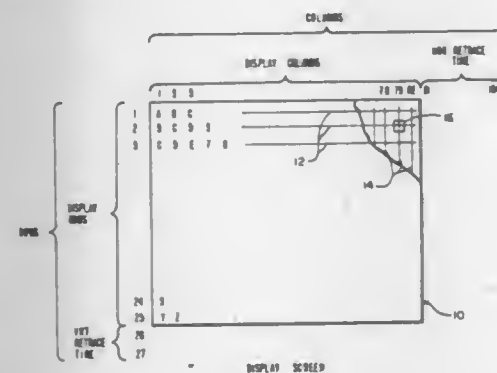
Gordon L. Steiner, Milford; David B. O'Keefe, Westford, and Robert C. Miller, Braintree, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 6, 1980, Ser. No. 127,671

Int. Cl.<sup>3</sup> G09G 1/00

U.S. Cl. 340—706

27 Claims



1. A method of communicating N different types of time-related information represented by a plurality of N binary information signals between a first device and a second device along a plurality of N parallel information channels comprising the steps of:

- synchronizing all of said plurality of N binary information signals within said first device by use of a common clocking signal to produce a plurality of N synchronized binary information signals;
- transmitting said plurality of N synchronized binary information signals by using a plurality of N drivers in said first device, each of said plurality of N drivers for driving one signal of said plurality of N synchronized binary information signals along one of said plurality of N parallel information channels;
- receiving said plurality of N synchronized binary information signals by using a plurality of N receivers in said second device, each of said N receivers for receiving one signal of said plurality of N synchronized binary information signals from one of said plurality of N parallel information channels to produce a plurality of N received information signals;
- amplifying each of said plurality of N received information signals by using one or more parallel amplifiers for each signal of said plurality of N received information signals to produce a plurality of N amplified information signals; and
- combining at least a first one of said plurality of N amplified information signals with at least a second one of said plurality of N amplified information signals to produce at least one modulated information signal comprising a plurality of M output information signals, wherein M is less than N and each of said plurality of M output information signals is either a one of said plurality of N amplified

information signals or one of said at least one modulated information signals.

4,338,598

## THIN-FILM EL IMAGE DISPLAY PANEL WITH POWER SAVING FEATURES

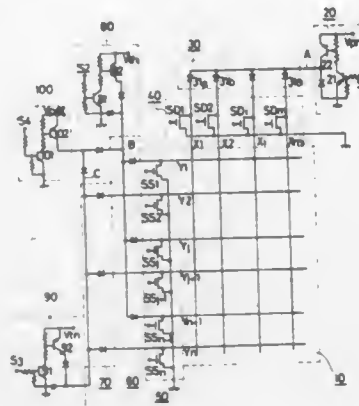
Toshihiro Ohba; Shuhei Yasuda, and Yoshiharu Kanatani, all of Tenri, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 7, 1980, Ser. No. 110,214

Int. Cl.<sup>3</sup> G09G 3/30

U.S. Cl. 340—713

3 Claims



1. A display device comprising:

- a thin-film EL display panel having a plurality of scanning side electrodes and a plurality of data side electrodes;
- a scanning side selection circuit connected to said scanning side electrodes of said thin-film EL display panel;
- a data side selection circuit connected to said data side electrodes of said thin-film EL display panel;
- a first pre-charge circuit connected to said data side selection circuit for supplying a supply voltage lower than a modulation voltage from the data side electrodes to the thin-film EL display panel, said voltage representing a first pre-charge voltage;
- a second pre-charge circuit connected to said scanning side electrodes for supplying a difference voltage approximately equal to the difference between said supply voltage and said modulation voltage from the scanning side electrodes to the thin-film EL display panel, said difference voltage representing a second pre-charge voltage; and
- a write circuit for supplying a write voltage to said scanning side electrode inclusive of the picture element to be written, said write voltage being supplied through the scanning side selection circuit connected to the scanning side electrodes and through the data side selection circuit connected to said data side electrodes.

4,338,599

## APPARATUS FOR ALPHA-NUMERIC/GRAPHIC DISPLAY

Steven Leininger, Arlington, Tex., assignor to Tandy Corporation, Fort Worth, Tex.

Division of Ser. No. 926,957, Jul. 21, 1978, abandoned. This application Apr. 18, 1980, Ser. No. 141,293

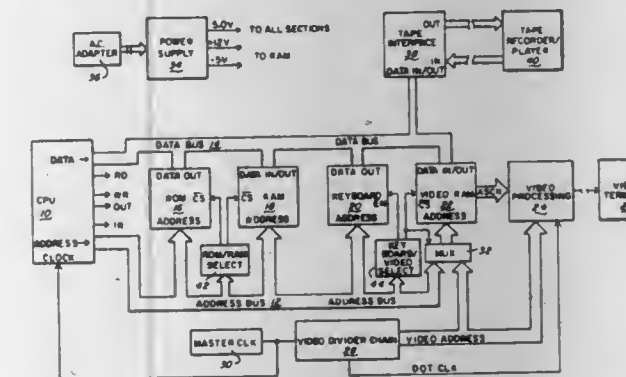
Int. Cl.<sup>3</sup> G06F 3/14

U.S. Cl. 340—721

11 Claims

1. A system for generating and displaying characters on a video display means, comprising; video memory means for storing codes a portion of each which is representative of the character that is to be displayed represented as a character code and a portion of which is representative of character type as to being one of alpha-numeric and graphic type identified as a type code, a first data latch, means coupling the character code from the video memory means to the first data latch,

timing means including means for generating timing control signals including a latch signal, a blanking signal, line address signals and a shift signal, means coupling the latch signal to the first data latch for controlling the latching of the character codes from the video memory means to the first data latch, a second data latch connected to the timing means and video memory means for storing control signals including the blanking signal, line address signal and type code, a character generator having input character code lines, input address lines and output dot lines, means coupling the character code from the first data latch to the input character code lines of the character generator, means coupling the line address signal to the input address lines of the character generator, a first shift register having input data lines, an output line, a shift line and a control line, means coupling the output dot lines of the character generator to the input data lines of the first shift register, means for providing a composite video signal, means coupling the first shift register output line to the means for providing a composite video signal, a graphic generator having input character code lines, input address lines and output dot lines, means coupling the character code from the first data latch to the input character code lines of the graphic generator, means coupling the line address signals to the input address lines of the graphic generator, a second shift register having input data lines, an output line, a shift line and a control line,



means coupling the output dot lines from the graphic generator to the input data lines of the second shift register, means coupling the second shift register output line to the means for providing a composite video signal, first gate means having a plurality of input lines and an output line which couples to the control line of the first shift register for controlling the inputting of data into the first shift register, second gate means having a plurality of input lines and an output line which couples to the control line of the second shift register for controlling the inputting of data into the second shift register, means for coupling said shift signal to the shift line of said first and second shift registers, means applying a clock signal in common to an input line of both first and second gate means, means coupling the blanking signal from said second data latch in common to another input line of both first and second gate means, said second data latch including bistable means responsive to said type code for establishing mutually opposite first and second select signals, means coupling the first select signal to another input of only the first gate means to enable clocking of the first shift register when the type code indicates alpha-numeric display, and means coupling the second select signal to another input of only the second gate means to enable clocking of the

second shift register when the type code indicates graphic display.

4,338,600

## LIQUID CRYSTAL DISPLAY SYSTEM HAVING TEMPERATURE COMPENSATION

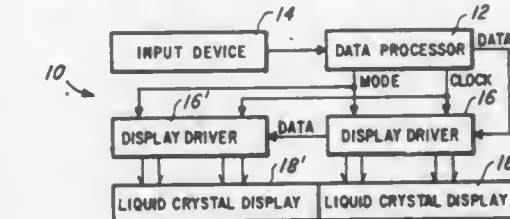
Jerald G. Leach, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 14, 1980, Ser. No. 168,920

Int. Cl.<sup>3</sup> G09G 3/18

U.S. Cl. 340—812

20 Claims



1. A liquid crystal display system comprising: a liquid crystal display segment; display drive means for alternately coupling the segment to first and second voltages; and temperature compensation means for determining the ratio of the capacitance of the segment when coupled to the first voltage to the capacitance of the segment when coupled to the second voltage, and for changing the second voltage to converge said ratio toward a predetermined ratio value.

4,338,601

## APPARATUS FOR THE STORAGE AND TRANSFER OF INFORMATION

Stanley Nance-Kivell, 40 Stafford Rd., Cowies Hill, Durban, Natal, South Africa

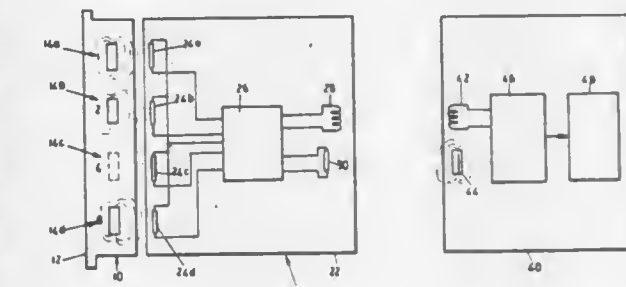
Filed Jun. 18, 1980, Ser. No. 160,341

Claims priority, application South Africa, Jun. 28, 1979, 79/3236

Int. Cl.<sup>3</sup> G08C 19/28

U.S. Cl. 340—870.02

10 Claims



1. Apparatus for monitoring the visits of a person to a plurality of outlying stations, the apparatus including respective encoders for installation at said outlying stations, portable memory means to be carried by said person, and at least one discrete decoder for installation at a central station, said encoders each being provided with at least one permanent magnet arranged in one of a plurality of predetermined fixed patterns to provide each encoder with a predetermined fixed magnetic code unique to that encoder, said portable memory means being interfaceable with each encoder and including magnetically sensitive means for reading the code of each encoder when interfaced therewith and being adapted to store the codes read from successive encoders, said portable memory means being interfaceable with said decoder for transferring thereto the codes stored in the memory means so that it can be ascertained from the transferred codes which, if any, of said outlying stations were visited by said person.



4,338,602

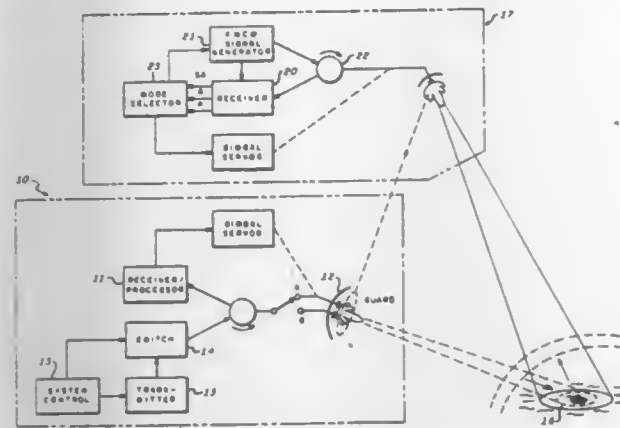
## SEMI-ACTIVE GUIDANCE SYSTEM

Robert S. Roeder, W. Baldwin Day, both of Dunedin; Harold W. Hunt, and Robert E. Wilt, both of Clearwater, all of Fla., assignors to Sperry Corporation, New York, N.Y.  
Continuation of Ser. No. 947,975, Oct. 2, 1978, abandoned. This application Jul. 23, 1980, Ser. No. 171,560

Int. Cl.<sup>3</sup> G01S 13/08

U.S. Cl. 343—10

7 Claims



1. An air-to-ground terminal guidance system comprising: tracker-illuminator means for acquiring and tracking a selected ground target and illuminating said selected ground target with signals at a first predetermined frequency; seeker means external to said tracker-illuminator means for homing on said selected target having therewithin: means for determining range between said seeker means and said selected target; means for tracking said selected target through three modes of operation, each mode switchably activated at predetermined ranges from said selected target, said three modes including: semi-active mode for tracking reflections from said selected target of said first predetermined frequency signal illumination, thereby causing said seeker means to track said selected target for a predetermined initial range; active mode for tracking reflections from said selected target of a frequency modulated signal emanating from said seeker means which illuminates said selected target, thereby causing said seeker means to track said selected target for a predetermined intermediate range; and passive mode for tracking thermal emissions from said selected target, thereby causing said seeker means to terminally track said selected target; means for transmitting from said tracker-illuminator means guarding signals at a second predetermined frequency; and means on said seeker means for receiving and processing said guarding signals and said illumination signals to prevent said seeker from tracking said tracker-illuminator means while maintaining said tracking of said reflections from said target of said signal at said first frequency.

4,338,603

## SELF ADAPTIVE CORRELATION RADAR

William R. Magorian, Rialto, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 25, 1967, Ser. No. 643,297

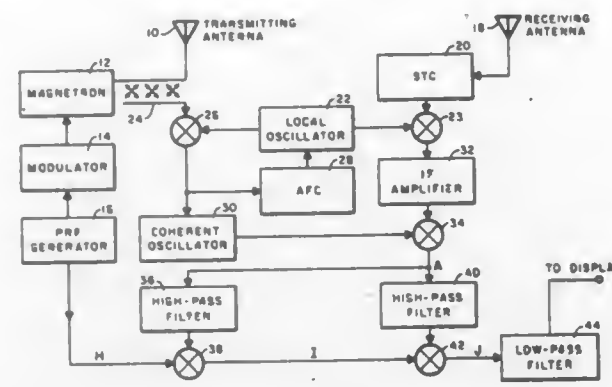
Int. Cl.<sup>3</sup> G01S 7/28

U.S. Cl. 343—17.1 R

2 Claims

1. A coherent correlation radar system comprising: (a) transmitting means for transmitting a pulse modulated radio frequency signal at a predetermined pulse repetition frequency, (b) receiving means for receiving signal echoes produced by

the reflection of the transmitted signal from targets of interest, (c) correlation circuit means coupled to said transmitting



means and to said receiving means for correlating the second order doppler sidebands of the received signal to produce an output target signal that is independent of the target velocity and the transmitted carrier frequency.

4,338,604

## PULSED COHERENT DOPPLER RADAR WITH FREQUENCY AGILITY

Christian H. Petitjean, Colombes, France, assignor to Le Matériel Téléphonique Thomson-CSF, Paris, France

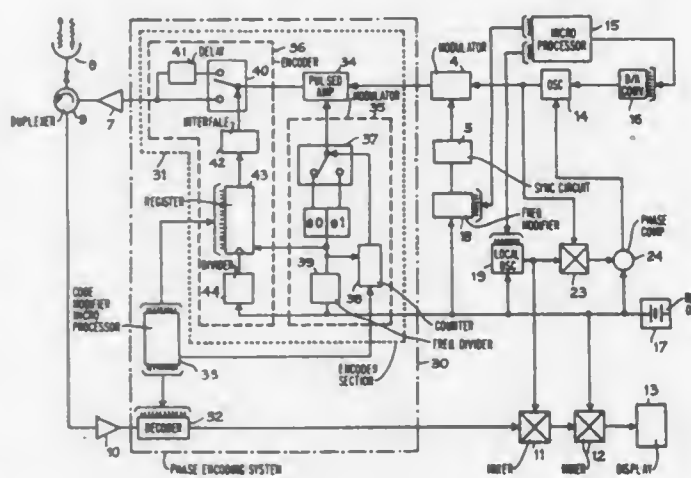
Filed Jul. 29, 1980, Ser. No. 173,422

Claims priority, application France, Jul. 31, 1979, 79 19633

Int. Cl.<sup>3</sup> G01S 13/24

U.S. Cl. 343—17.2 R

4 Claims



1. A pulsed coherent Doppler radar with frequency agility consisting of an antenna for both transmission and reception and a coherent transmit-receive system comprising for transmission a modulator (4) producing pulses of width  $\mu$  at the repetition frequency ( $F_r$ ), whose synchronization input is connected to a synchronization circuit (5) and whose output is connected to the input of a power amplifier (7) whose output is connected to the antenna (8) via a duplexer (9), a voltage-controlled transmission oscillator (14) whose output is connected to the input of the modulator (4) and which is phase-locked to a local oscillator (19) with a frequency difference equal to the intermediate frequency produced by a reference oscillator (17), by means of a phase-lock loop which comprises a phase comparator (24) whose first input is connected to the output of the reference oscillator (17), whose second input is connected to the output of a first mixer (23) whose first input is connected to the output of the local oscillator (19) and whose second input is connected to the output of the transmission oscillator (14), and whose output is connected to the control voltage input of the transmission oscillator (14), and which comprises for reception a power amplifier (10) whose input is connected to the antenna (8) via the duplexer (9) and whose output is connected to one of the inputs of a second

4,338,606

## ANTENNA SYSTEM WITH VARIABLE DIRECTIVITY

Masahiro Tada, Yokohama; Yoshio Ishigaki, Tokyo; Koji Ouchi, and Koya Nakamichi, both of Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

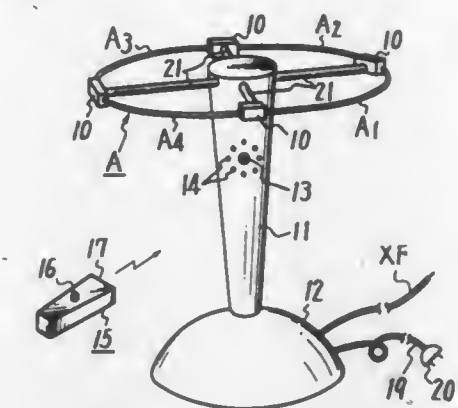
Filed Dec. 18, 1979, Ser. No. 104,909

Claims priority, application Japan, Dec. 21, 1978, 53-158218; Dec. 21, 1978, 53-158219

Int. Cl.<sup>3</sup> H01Q 3/24

U.S. Cl. 343—744

7 Claims



mixer (11) whose output is connected to one of the inputs of a third mixer (12) whose other input is connected to the output of the reference oscillator (17) and whose output is connected to a data analysis device (13), wherein the nominal frequency ( $F_0$ ) of the transmission oscillator (14) is determined by first frequency modification means (15 and 16), wherein the local oscillator (19) consists of a frequency synthesizer whose local output frequency ( $F_1$ ) is determined by second modification means (15 and 21) and whose output is connected to the second input of the second mixer (11), and wherein the reference oscillator (17) piloted by the frequency synthesizer (19) also has its output connected to the input of third means (18 and 15) modifying the repetition frequency ( $F_r$ ), whose output is connected to the synchronization circuit (5) of the pulse modulator.

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## ANTENNA ARRAY WITH ADAPTIVE SIDELobe CANCELLATION

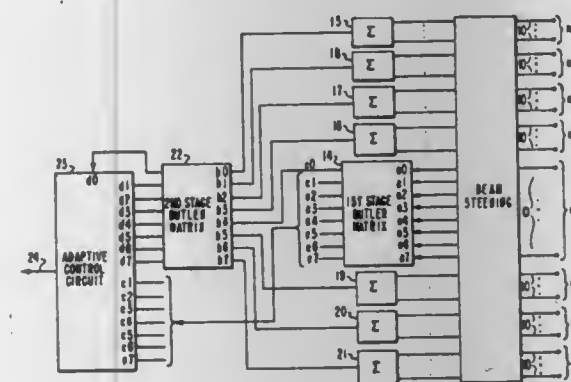
James H. Mims, Millersville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 28, 1980, Ser. No. 125,809

Int. Cl.<sup>3</sup> H04B 7/00

U.S. Cl. 343—100 LE

6 Claims



1. A method of discriminating against interference of a beam space adaptive antenna system having an array of individual antenna elements arranged to form a plurality of sub-arrays, comprising: processing the signals of a selected number of said elements of at least one sub-array to provide a plurality of first stage signals, one of said first stage signals representing a zero phase shifted sum of the element signals, each of said remaining first stage signals representing the phase shifted sum of the selected individual element signals, combining the signals of the antenna elements of each of the remaining sub-arrays to provide for each of the sub-arrays a single sub-array, processing each of the sub-array signals and the zero phase shift summed first stage signal to provide a plurality of second stage signals, one of said second stage signals being the zero phase shifted sum of the first stage signals, each of said remaining second stage signals representing the phase shifted sum of the sub-array signal, weighting adaptively each of said remaining first and second stage signals, and combining the weighted signals with each other and said zero phase shift summed second stage signal to provide the output signal of the array.

4,338,607

## CONICAL SCAN ANTENNA FOR TRACKING RADAR

Serge Drabowitch, Paris, France, assignor to Thomson-CSF, Paris, France

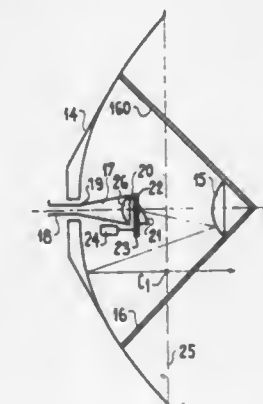
Filed Dec. 18, 1979, Ser. No. 104,837

Claims priority, application France, Dec. 22, 1978, 78 36245

Int. Cl.<sup>3</sup> H01Q 3/18, 15/23

U.S. Cl. 343—754

9 Claims



1. A conically scanning radar antenna comprising: a source of electromagnetic waves; wave-reflecting means centered on an axis for converting waves emitted by said source into a beam of phase-modulated radiation substantially parallel to the axis, said source having a phase center located on said axis and a



direction of maximum radiation inclined at an acute angle to said axis, said phase center substantially coinciding with a focal point of said wave-reflecting means;  
drive means coupled with said source for rotating said direction of maximum radiation about said axis as a generatrix of a cone having a vertex substantially coincident with said phase center; and  
circuit means connected to said source for extracting azimuthal and elevational data relative to a beam-illuminated target from reflected waves intercepted by said well-reflecting means and directed back to said source, said circuit means including a generator of reference scanning signals coupled with said drive means.

4,338,608

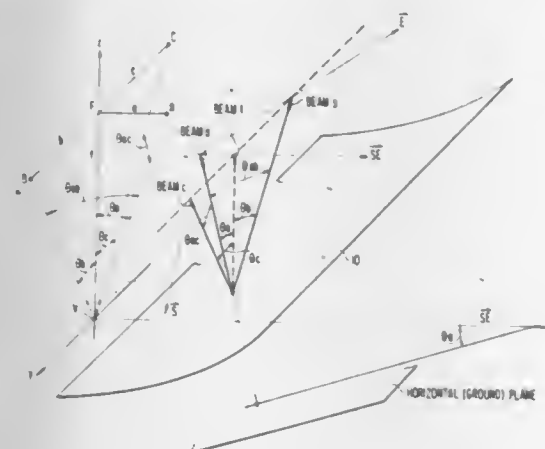
**TRIPLE-BEAM OFFSET PARABOLOIDAL ANTENNA**  
Richard G. Strauch, and David C. Hogg, both of Boulder, Colo., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Sep. 30, 1980, Ser. No. 192,261

Int. Cl.<sup>3</sup> H01Q 19/17, 3/24

U.S. Cl. 343—779

12 Claims



1. A beam steered antenna system for use in a wind profile measuring system comprising:
  - a reflecting surface describing a portion of a paraboloidal section having a vertex V and a focal point F defining an axis V-F;
  - at least first and second antenna feeds offset from said axis V-F for respectively producing at least first and second beam patterns;
  - said reflecting surface and said at least first and second antenna feeds being oriented such that said first beam pattern has an axis lying along a first predetermined reference direction, wherein the angle  $\theta_1$  between the axes of said first beam pattern and said second beam pattern is larger than each of (i) the angle  $\theta_2$  between said axis V-F and a line from said vertex V to said first antenna feed, and (ii) the angle  $\theta_3$  between said axis V-F and a line from said vertex V to said second antenna feed, and wherein said reference direction is substantially perpendicular to a reference horizontal ground plane.

4,338,609

**SHORT HORN RADIATOR ASSEMBLY**  
Norman R. Landry, Mount Laurel, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,168

Int. Cl.<sup>3</sup> H01Q 13/00

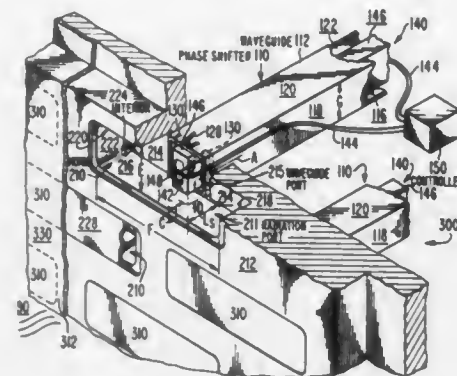
U.S. Cl. 343—786

13 Claims

1. A short horn radiator assembly for operation over a predetermined band of operating frequencies, said assembly comprising:
  - a short horn radiator for radiating electromagnetic radiation into an external propagation medium, said horn radiator having a radiation port, a waveguide port, a pair of oppositely disposed broad walls and a pair of oppositely dis-

posed narrow walls oriented perpendicular to said broad walls, said walls extending longitudinally between said radiation port and said waveguide port, said horn having a length from said waveguide port to said radiation port of less than  $\frac{1}{2}$  wavelength at any one of said operating frequencies;

a dielectrically loaded waveguide connected to said waveguide port of said horn, said dielectrically loaded waveguide comprising a rectangular waveguide and a body of dielectric material within said waveguide, said waveguide having a pair of oppositely disposed, parallel broad walls and a pair of oppositely disposed, parallel narrow walls oriented perpendicular to said broad walls, said body of dielectric material extending between said broad walls of



said loaded waveguide, said waveguide oriented with its broad walls adjacent the broad walls of said horn, said broad walls of said horn being broader than said broad walls of said waveguide, said waveguide electrically coupled to said horn at said waveguide port and having each of its broad walls electrically shorted to the adjacent broad wall of said horn; and

a portion of said body of dielectric material protruding beyond the end of said waveguide, through said waveguide port, into said horn and terminating within said horn, said protruding dielectric having a larger effective dielectric constant than the effective dielectric constant within the rest of the portion of said horn into which said dielectric protrudes.

4,338,610

**MODULAR-HEAD ENDORSER**

Kenneth R. Sellen, Dearborn Heights; Jimmie Neill, Walled Lake; Eugene F. Banka, Livonia, and William Barz, Bloomfield, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 18, 1980, Ser. No. 178,875

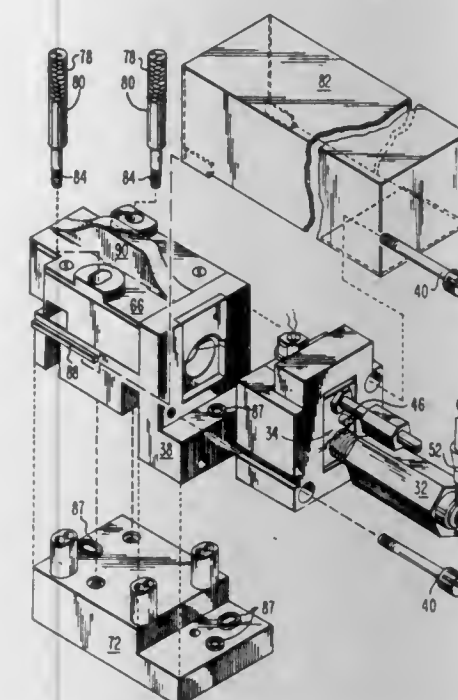
Int. Cl.<sup>3</sup> G01D 15/18

U.S. Cl. 346—75

5 Claims

1. A modular-head endorser for an ink jet printer system comprising:
  - a droplet generator module, for expelling drops of printing fluid;
  - means for charging the expelled drops of printing fluid for deflection by an electrical field; and
  - a plurality of mateable modules, the modules including:
    - a base module mateable with a primary module;
    - a primary module engageable with the droplet generator module;
    - a first deflection module above which the charged drops of printing fluid are expelled, the first deflection module being mateable with the primary module;
    - a second deflection module below which the charged drops of printing fluid are expelled, the second deflection module being mateable with the first deflection module;
  - means for transmitting electrical energy to the second deflection and first deflection modules for generating an

electrical field to deflect expelled, charged drops of printing fluid;  
a secondary module mateable with the second deflection module; and  
means for releasably securing the primary, first deflection, second deflection and secondary modules to the base module;



wherein the means for releasably securing the primary, first deflection, second deflection, and secondary modules to the base module comprises:

- a shroud to secure the second and first deflection modules to the primary module;
- a threaded rod, finger tightenable, to secure the primary and first deflection modules to the base module; and
- a plurality of gaskets between the modules.

4,338,611

**LIQUID JET RECORDING HEAD**

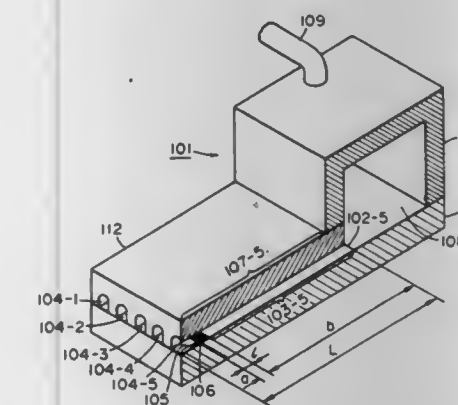
Tsuyoshi Elda, Chiba; Yohji Matsufuji; Yasuhiro Yano, both of Tokyo; Tokuya Ohta, Yokohama, and Masahiro Haruta, Funabashi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1980, Ser. No. 186,581

Int. Cl.<sup>3</sup> G01D 15/16

U.S. Cl. 346—75

8 Claims



1. A liquid jet recording head comprising a liquid discharging section constructed with an orifice side end part having an orifice at its tip end for discharging liquid, an energy acting zone which is communicatively connected with said orifice and where energy for forming flying droplets acts on the liquid, a liquid inlet port side end part connected with the energy acting zone and having a liquid inlet port for introducing the liquid into said energy acting zone, and energy generat-

ing means for generating said energy, characterized in that the following dimensional relationship is established:

$$\frac{1}{100} \leq \frac{a}{b} \leq 1$$

where the length of a liquid flow path from said orifice to said liquid inlet port is L; the length of said energy acting zone along the moving direction of the liquid is l; the length of a liquid flow path from said orifice to said energy acting zone is a; and the length of a liquid flow path from said liquid inlet port to said energy acting zone is b; and that said length L is not less than 0.1 mm and not more than 5 mm, and said length l is not less than 10  $\mu$ m and not more than 800  $\mu$ m.

4,338,612

**MULTIPLE DEFLECTION PLATE DEVICE FOR LIQUID JET PRINTER OR THE LIKE**

Haruhiko Nagayama, Machida, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

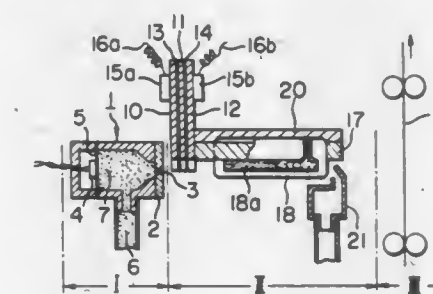
Filed Sep. 29, 1980, Ser. No. 191,524

Claims priority, application Japan, Oct. 11, 1979, 54-129917; Nov. 10, 1979, 54-145855; Apr. 28, 1980, 55-55495

Int. Cl.<sup>3</sup> G01D 15/18

U.S. Cl. 346—75

7 Claims



2. A multiple deflection plate device for a liquid jet printer, comprising:

- a plurality of deflection plate units, each of said units comprising an insulating substrate having a conductive thin-film pattern on each major surface of said substrate, said pattern comprising a deflection plate portion and an elongated connecting lead portion extending from said deflection plate portion; and
- a deflection plate unit holder comprising an insulating material and having a plurality of parallel slits for receiving said deflection plate units in such a manner that only the part of each substrate which contains said connecting lead portion is engaged with a corresponding slit.

4,338,613

**INK DROP DEFLECTOR**

Antonio S. Cruz-Urbe, Cobalt, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 19, 1980, Ser. No. 218,392

Int. Cl.<sup>3</sup> G01D 15/18

U.S. Cl. 346—75

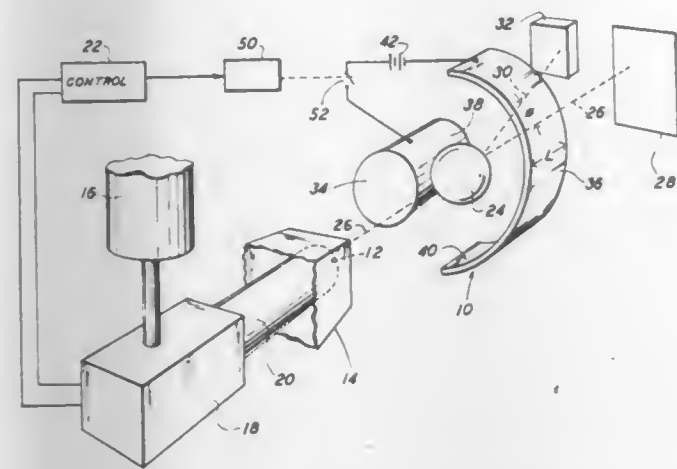
11 Claims

1. An apparatus for deflecting electrically neutral ink drops ejected from an orifice in an ink head to travel in free flight towards a record medium along a predetermined trajectory orifice comprising:

- means for producing a non-uniform electric field with a potential gradient oriented along a desired deflection direction with respect to said trajectory, said means including:
  - a first electrode having a cylindrically shaped first electric field producing surface;
  - a second electrode having a cylindrically shaped second electric field producing surface facing the first electrode



and being located generally equidistant from the first electric field producing surface;  
said first electric field producing surface having a surface area which is smaller than the surface area of said second



electric field producing surface to produce said potential gradient, whereby said electrically neutral drops are deflected towards said first electrode when said electrodes are electrically energized.

4,338,614

**ELECTROSTATIC PRINT HEAD**

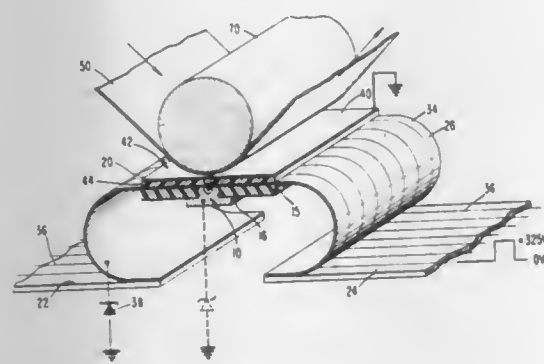
Gerald L. Pressman, Cupertino, Calif.; Robert A. Moore, Amherst, N.H.; Jeffrey B. Brooks, Keene, N.H., and Robert W. Sengstaken, Jr., Harrisville, N.H., assignors to Markem Corporation, Keene, N.H.

Filed Oct. 22, 1979, Ser. No. 87,152

Int. Cl.<sup>3</sup> G01D 15/10

U.S. Cl. 346—155

16 Claims



1. An electrostatic print head comprising:
  - (a) an elongated source of ions, the source of ions having a longitudinal axis,
  - (b) a back plane which is adapted to movably support a moving dielectric print medium on which an image is to be formed by ions produced by the source of ions,
  - (c) an aperture mask having two substantially parallel rows of apertures through which ions may be selectively passed by the application of a pulse to an aperture electrode associated with each aperture within the two rows of apertures, each row of apertures having a center line which is substantially parallel to the longitudinal axis of the ion source and substantially perpendicular to the direction of motion of the dielectric print medium, the aperture mask being disposed between the source of ions and the back plane,
  - (d) means for establishing an electric field between the aperture mask and the back plane for propelling ions passing through the aperture mask from the elongated source of ions toward the dielectric print medium,
  - (e) a focus plane disposed between the back plane and the aperture mask having a slot with a center line disposed substantially parallel to the center lines of the aperture rows, and substantially perpendicular to the direction of

motion of the dielectric print medium, for modifying the electric field between the aperture mask and the back plane upon the application of a bias potential to the focus plane, and  
(f) means for applying a bias potential to the focus plane.

4,338,615  
**ELECTROSTATIC PRINTER HAVING LED ARRAY WRITE HEAD**

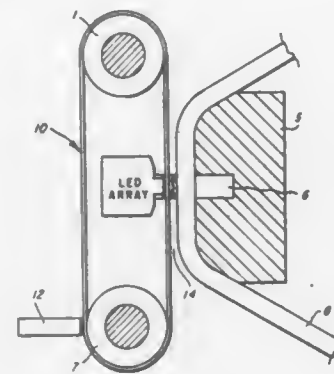
William E. Nelson, and Gene D. Lee, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 2, 1980, Ser. No. 155,875

Int. Cl.<sup>3</sup> G03G 13/22

U.S. Cl. 346—160

10 Claims



7. A method for printing on plain paper, comprising the following steps:

- (a) delivering a constant supply of unpatterned particulate medium on an electrically charged substrate incorporating a photoconductive substance;
- (b) selecting and releasing a pattern of particles of said medium from said supply;
- (c) transferring said released pattern of particles across an air gap to a substrate.

4,338,616

**SELF-ALIGNED SCHOTTKY METAL SEMI-CONDUCTOR FIELD EFFECT TRANSISTOR WITH BURIED SOURCE AND DRAIN**

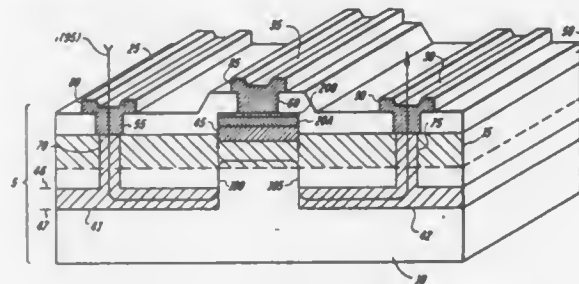
Izya Bol, Hawthorne, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 19, 1980, Ser. No. 122,627

Int. Cl.<sup>3</sup> H01L 21/265

U.S. Cl. 357—15

3 Claims



1. A high speed Schottky barrier field effect transistor with low series resistance, comprising:
  - a substrate of one conductivity type;
  - a channel layer of the other conductivity type extended downward from a major surface of said substrate;
  - a source region of said other conductivity type buried within said substrate below said channel layer;
  - a drain region of said other conductivity type buried within said substrate below said channel layer;
  - Schottky barrier gate means forming a rectifying junction with a portion of said channel, said gate means providing,

when properly biased, control of the current flow between said source region and said drain region;  
said barrier gate means being disposed between said source and drain regions in the horizontal direction, with one edge of said barrier gate means being aligned substantially vertically with an edge of said source region and with another edge of said barrier gate means being aligned substantially vertically with an edge of said drain region; and  
means for providing electrical contact to said source region, said drain region and said gate means, whereby a current flow path from said source region through a portion of said channel and to said drain region can be controllably achieved.

4,338,617

**FOUR TERMINAL GTO THYRISTOR WITH TRANSISTOR CONTROLLED TURN-OFF**

Masahiko Akamatsu, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 911,717, Jun. 21, 1978, abandoned,

which is a continuation of Ser. No. 743,670, Nov. 22, 1976,

abandoned. This application Oct. 29, 1979, Ser. No. 89,156

Claims priority, application Japan, Feb. 12, 1976, 51-14200

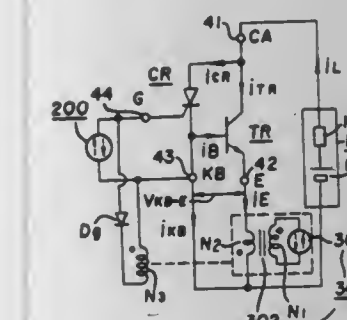
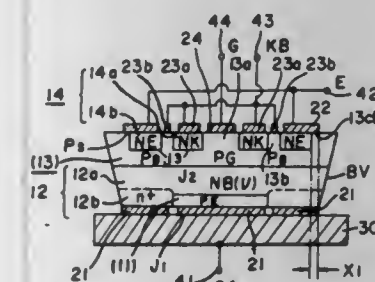
The portion of the term of this patent subsequent to Aug. 15,

1995, has been disclaimed.

Int. Cl.<sup>3</sup> H01L 29/74

U.S. Cl. 357—38

5 Claims



1. A semiconductor device adapted to be connected in a main current carrying path and switched between a high and a low impedance state comprising:

- (A) four electrodes including
  - (a) a pair of main electrodes (41), (43) adapted to be connected in the main current carrying path,
  - (b) a gating electrode (44) for switching the semiconductor device to the low impedance state from the high impedance state, and
  - (c) a turn-off controlling electrode (42) for switching the semiconductor device to the high impedance state from the low impedance state;
- (B) first semiconductor means including
  - a first semiconductor region consisting of four layers with alternate layers of opposite conductivity type thereby forming a thyristor with two outer layers and two inner layers,
  - the outer layers of the thyristor directly connected between the pair of main electrodes (41), (43), and one of

the two inner layers of the thyristor electrically connected to the gating electrode (44),  
the thyristor through which most of the current of the main current carrying path passes is in its low impedance state;

- (C) second semiconductor means including
  - a second semiconductor region having three alternate layers of opposite conductivity type thereby forming a transistor with two outer layers of one conductivity type separated by a base layer of opposite conductivity type,
  - the two outer layers of the transistor electrically connected between the turn-off controlling electrode (42) and one (41) main electrode, and the base layer of the transistor electrically connected to the other (43) main electrode; and
- (D) turn-off controlling means (300 or 400) connected between the turn-off controlling electrode (42) and the other (43) main electrode for applying a pulse to the turn-off controlling electrode to turn on the transistor and to turn off the thyristor and for subsequently removing the pulse to turn off the transistor; wherein
- (E) the transistor is made conductive only by said pulse.

4,338,618

**COMPOSITE STATIC INDUCTION TRANSISTOR AND INTEGRATED CIRCUIT UTILIZING SAME**

Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaiden Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Continuation-in-part of Ser. No. 902,965, May 4, 1978, Pat. No.

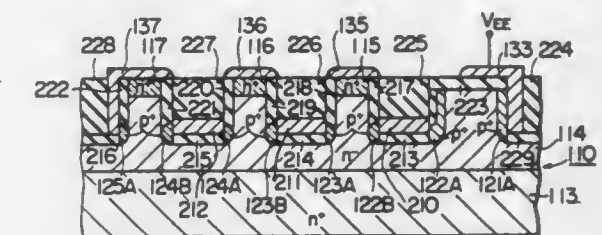
4,198,648. This application Nov. 1, 1979, Ser. No. 90,496

Claims priority, application Japan, May 15, 1977, 52-55778

Int. Cl.<sup>3</sup> H01L 27/02

U.S. Cl. 357—43

18 Claims



1. A composite static induction semiconductor device comprising:

- a first and a second static induction transistor, both of which being formed in a single common semiconductor body, said first transistor including:
  - a first semiconductor layer; a heavily-doped source semiconductor region having a first conductivity type and provided in said first semiconductor layer; a heavily-doped drain semiconductor region having said first conductivity type and provided in said first semiconductor layer; a current channel having said first conductivity type and provided in said first semiconductor layer between said drain and said source; and a heavily-doped gate semiconductor region having a second conductivity type opposite to said first conductivity type and provided adjacent to said current channel to define a boundary of said current channel,
- said second transistor including: a second semiconductor layer; a heavily-doped source semiconductor region having said first conductivity type and provided in said second semiconductor layer; a heavily-doped drain semiconductor region having said first conductivity type and provided in said second semiconductor layer between said second transistor drain and source; and a heavily-doped gate semiconductor region having said second conductivity type and located adjacent to said second current channel to define a boundary of said second current channel,



said gate of said second transistor being electrically connected to both said drain of said second transistor and said gate of said first transistor, said second transistor having a variable internal resistance versus drain-source voltage characteristic, said sources of said both transistors being electrically connected to each other and being formed in a portion of said single common semiconductor body.

4,338,619

## FLIP-FLOP CIRCUIT

Masayuki Miyake, Takeo Sekino, Masashi Takeda, and Yasuharu Baba, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

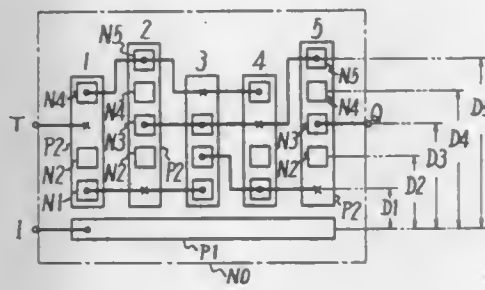
Filed Jun. 3, 1980, Ser. No. 156,207

Claims priority, application Japan, Jun. 8, 1979, 54-72520

Int. Cl.<sup>3</sup> H01L 27/04; H03K 19/091

U.S. Cl. 357-46

6 Claims



1. A T flip-flop circuit comprising, a substrate of semiconductor material of a first conductivity type, a first generally rectangularly-shaped region of a second conductivity type formed in said substrate, second through sixth generally rectangularly-shaped regions of a second conductivity type formed parallel to each other in said substrate and the longitudinal axes of said second through sixth rectangularly-shaped regions extending normal to the longitudinal axis of said first rectangularly-shaped region, a plurality of collector regions of first conductivity type formed in said second through sixth rectangularly-shaped regions, first ones of said plurality of collector regions formed in said second, fourth and fifth rectangularly-shaped regions and spaced a distance  $D_1$  from said first rectangularly-shaped region, a second one of said plurality of collector regions formed in said fourth rectangularly-shaped region and spaced a distance  $D_2$  from said first rectangularly-shaped region, third ones of said plurality of collector regions formed in said third, fourth and sixth rectangularly-shaped regions and spaced a distance  $D_3$  from said first rectangularly-shaped region, fourth ones of said plurality of collector regions formed in said second and fifth rectangularly-shaped regions and spaced a distance  $D_4$  from said first rectangularly-shaped region, fifth ones of said plurality of collector regions formed in said third and sixth rectangularly-shaped regions and spaced a distance  $D_5$  from said first rectangularly-shaped region and  $D_1 < D_2 < D_3 < D_4 < D_5$ , a plurality of base regions located in said second through sixth rectangularly-shaped regions with the base regions in the second and fifth rectangularly-shaped regions located at a distance of  $D_3$ , the base regions in the third and sixth rectangularly-shaped regions located at a distance  $D_1$ , the base region in the fourth rectangularly-shaped region located at distance  $D_4$ , the base region in said fifth rectangularly-shaped region located at a distance  $D_3$ , and said base region in said third rectangularly-shaped region electrically connected to said first ones of said plurality of collector regions in said second and fifth rectangularly-shaped regions, said base region in said fourth rectangularly-shaped region electrically connected to the fourth ones of said plurality of collector regions in said second and fifth rectangularly-shaped regions and to said fifth one of said collector region in said third rectangularly-shaped region, said base region in said fifth rectangularly-shaped region electrically connected to said third ones of said plurality of collector regions in said third and fourth rectangularly-shaped region, and to the fifth one of said collector region in said sixth rectangularly-shaped region, said

base region in said sixth rectangularly-shaped region electrically connected to said first collector region in said fifth rectangularly-shaped region and to said second collector region in said fourth rectangularly-shaped region.

4,338,620

## SEMICONDUCTOR DEVICES HAVING IMPROVED ALIGNMENT MARKS

Yunosuke Kawabe, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 71,085, Aug. 31, 1979, Pat. No. 4,233,091.

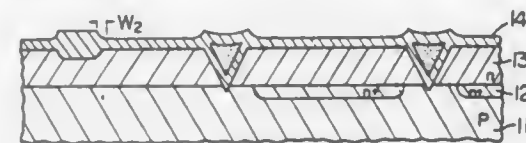
This application Apr. 4, 1980, Ser. No. 137,804

Claims priority, application Japan, Aug. 31, 1978, 53-106677

Int. Cl.<sup>3</sup> H01L 21/76, 21/95

U.S. Cl. 357-50

7 Claims



1. A semiconductor device having plural areas for active elements and at least one alignment mark apart from said areas for impurity introducing and conductor pattern forming steps for producing said semiconductor device, said device comprising

a semiconductor substrate,

an epitaxial layer which is formed on said semiconductor substrate to have a V-groove extending from the surface of said epitaxial layer to said semiconductor substrate for V-groove isolation of said active elements in said plural areas, the side walls of said V-groove being coated with a thin oxide layer, and said V-groove being filled with polycrystalline silicon having an oxidized portion at the top of said V-groove

an oxide layer formed on said epitaxial layer to comprise said alignment mark, said alignment mark comprising a locally thick portion of said oxide layer which is located at a predetermined distance from said V-groove on the other side of said V-groove from one of said areas for said active elements, said locally thick portion having an upper surface that is higher than the upper surface of at least a portion of the oxide layer adjacent to said locally thick portion,

said alignment mark having a slanted side between said locally thick portion and said adjacent portion of said oxide layer, the width of said slanted side being no larger than 1 micron.

4,338,621

## HERMETIC INTEGRATED CIRCUIT PACKAGE FOR HIGH DENSITY HIGH POWER APPLICATIONS

Robert E. Braun, Norristown, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 4, 1980, Ser. No. 118,496

Int. Cl.<sup>3</sup> H01L 23/02, 23/12, 39/02

U.S. Cl. 357-74

8 Claims

1. An hermetic package for an integrated circuit die which has a plurality of wires emanating from its periphery comprising:

a base member having an outer surface and a mounting surface, said base member having an internal recess for mounting said die in proximity to said outer surface, said base member further including a ledge encompassing said die, a plurality of electrically conductive tabs disposed on the surface of said ledge, said plurality of wires of said die being connected to respective ones of said tabs, a plurality of metallized lines each having an extremity connected respectively to one of said tabs and its remaining portion embedded in the material of said base member, said metal-

lized lines lying in a plane substantially coplanar with the surface of said ledge, said mating surface of said base member lying in a plane parallel to but displaced from that of the surface of said ledge, the area of said last mentioned mating surface being substantially equal to that of said outer surface of said base member less the combined areas of the surface of said internal recess for mounting said die and the surface of said ledge, a plurality of metallized vias connecting the opposite extremities of said metallized lines to respective electrically conductive pads on said last mentioned mating surface,

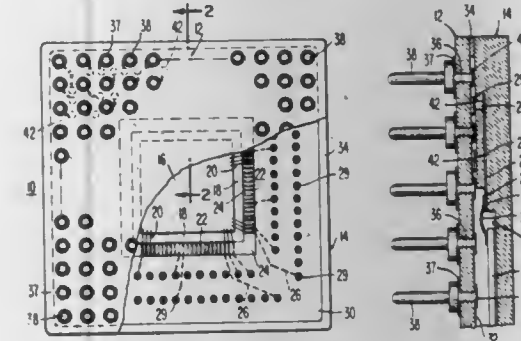
a cover member having an outer surface and a mating surface, said cover member having a plurality of pads on said mating surface, said pads being homologically disposed

region of said fan-out transistor and wherein the collector region and its contact of said fan-out transistor are mutually self-aligned with the base region and the contact thereto of said fan-out transistor,

recessed electrical isolation regions in said semiconductor layer abutting said collector region of said fan-out transistor,

a polycrystalline semiconductor layer making electrical contact to the collector regions of said at least one fan-out transistor and located over said single crystal semiconductor layer,

a metal layer located over said polycrystalline semiconductor layer and insulated therefrom for making electrical contact to said base region of said at least one fan-out transistor.



with respect to said pads on said mating surface of said base member, a plurality of metallized lines on said mating surface of said cover member each having an extremity connected respectively to a pad on said last mentioned surface, a plurality of metallized vias connecting the opposite extremities of said metallized lines to bosses on said outer surface of said cover member, a plurality of input/output terminals affixed respectively to said bosses, said plurality of input/output terminals populating substantially the entire outer surface of said cover member, and means for connecting homologically disposed pads on the mating surfaces of said base and cover members to each other and for sealing said last mentioned surfaces to each other.

4,338,622

## SELF-ALIGNED SEMICONDUCTOR CIRCUITS AND PROCESS THEREFOR

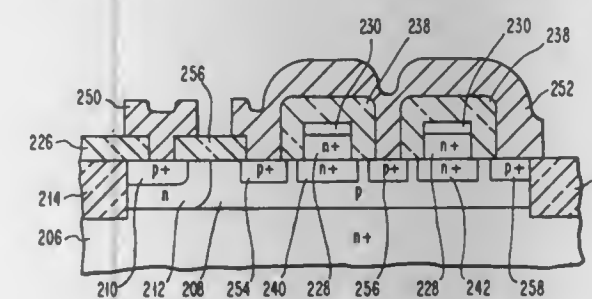
George C. Feth, Tak H. Ning, Denny D. Tang, all of Yorktown Heights; Siegfried K. Wiedmann, Peekskill, and Hwa N. Yu, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,473

Int. Cl.<sup>3</sup> H01L 27/02, 29/04

U.S. Cl. 357-92

24 Claims



1. A MTL circuit comprising, in combination:

an injector transistor located in a single crystal semiconductor layer, having collector, base and emitter regions,

at least one logic fan-out transistor located in said semiconductor layer, having collector, base and emitter regions with electrical contacts thereto, wherein the collector region of said injector transistor is electrically connected to the base

1. A video circuit for generating video signals for displaying pictures on a picture screen, the video circuit comprising a picture signal source for providing picture signals containing visual picture information, means for controlling said picture signal source coupled thereto, at least one luminance circuit coupled to said picture signal source for generating a luminance signal, and a protection circuit coupled to said luminance circuit for protecting the picture screen from burning-in due to a prolonged nonchanging picture, wherein the protection circuit comprises an electric protection switch, having a control input, for suppressing in a switched-off state the luminance signal generated in the video circuit, a detection circuit, having an output, for detecting changes in an electric control signal from said controlling means to the picture signal source, which changes in the control signal would be indicative of active use of said video circuit, and a timer circuit having a start input and an output, the output of the detection circuit being coupled to the start input of the timer circuit, the output of the timer circuit being coupled to the control input of the protection switch, whereby absent an output from said detection circuit, which output would be indicative of active use of said video circuit and which would reset said timer circuit, after a predetermined period of time, said timer circuit causes said protection switch to suppress the luminance signal.

4,338,623

## VIDEO CIRCUIT WITH SCREEN-BURN-IN PROTECTION

Jean-Pierre Asmus, Marly-le-Roi; Joseph Soto, Montrouge, both of France, and Sebastianus J. Op Het Veld, Henri W. Schneider, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

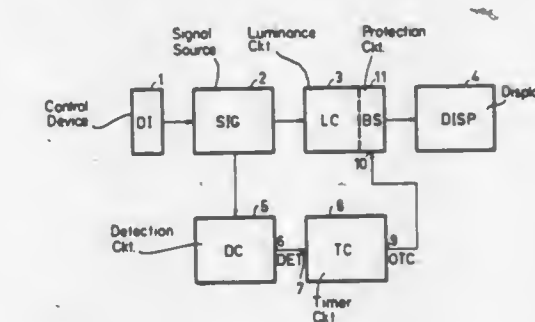
Continuation of Ser. No. 957,395, Nov. 3, 1978, abandoned. This application Apr. 30, 1980, Ser. No. 145,079

Claims priority, application France, Oct. 11, 1977, 77 380547; Oct. 4, 1978, 78 28418

Int. Cl.<sup>3</sup> H04N 5/22; H01J 29/52; A63B 71/00; G09F 9/32

U.S. Cl. 358-22

13 Claims





4,338,624

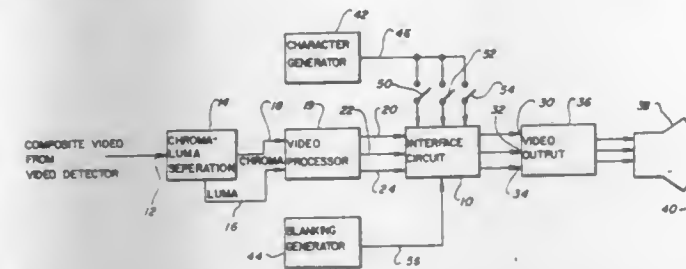
## ON SCREEN COLOR DISPLAY

Alain H. d'Hautecourt, Prospect Heights, and George J. Tzakis, Glenview, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Jan. 5, 1981, Ser. No. 222,476  
Int. Cl.<sup>3</sup> H04N 9/535

U.S. Cl. 358—22

12 Claims



1. In a color television receiver having means developing red, green and blue video signals at respective circuit terminals in response to a received television signal and output means adapted for processing said video signals for producing a corresponding video image on a color CRT, the improvement comprising:

- means operable for developing an information signal;
- means operable for developing a blanking signal;
- means responsive to said blanking signal for shunting each of said circuit terminals for maintaining the potential thereof at or below the blanking level of said CRT;
- means forming a circuit node between each of said circuit terminals and said output means, each of said circuit nodes being adapted for developing a potential above the blanking level of said CRT; and
- means operable for coupling said information signal to selected ones of said circuit nodes for developing a potential at said selected circuit nodes above the blanking level of said CRT, whereby an image is produced on the screen of said CRT corresponding to said information signal and in a color determined by said selected nodes.

4,338,625

## SOLID STATE TELEVISION CAMERA

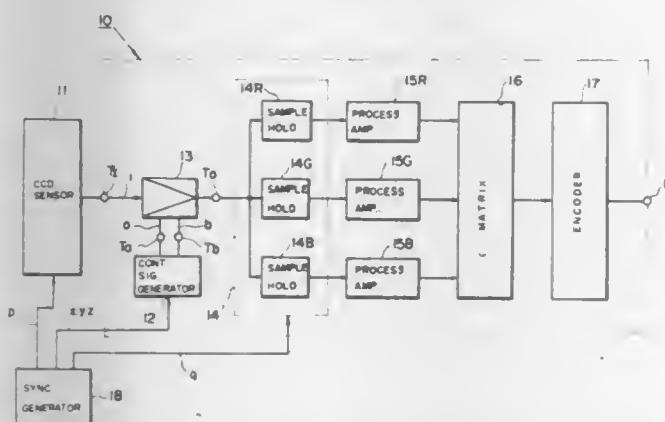
Seisuke Yamanaka, Mitaka, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 26, 1980, Ser. No. 210,551

Claims priority, application Japan, Dec. 24, 1979, 54-167800  
Int. Cl.<sup>3</sup> H04N 9/535

U.S. Cl. 358—29

11 Claims



1. A solid state color television camera having a solid state image sensing device from which dots sequential color signals are picked up, which camera comprises:

- (a) a gain control signal generator for producing a gain control signal level-set at a predetermined signal level, said signal level being sequentially changed to change the output level of said solid state image sensing device;
- (b) a dots sequential gain control amplifier gain-controlled

by said gain control signal receiving the output of said image sensing device,

- (c) a color signal separator receiving the output of said dot sequential gain control amplifier and having sampling-hold circuits for converting said gain controlled dots sequential color signals into simultaneous color signals; and
- (d) a synchronous signal generator for supplying drive pulses p to said image sensing device, sequential pulses x, y, z to said gain control signal generator and supplying sampling pulses q to said color signal separator and said drive pulses p sequential pulses x, y and z and sampling pulses q synchronized with each other.

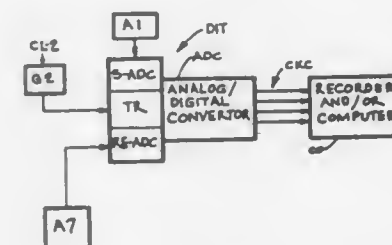
4,338,626

## SCANNING APPARATUS AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08841  
Division of Ser. No. 778,331, Mar. 16, 1977, Pat. No. 4,148,061, which is a continuation of Ser. No. 254,710, May 18, 1972, Pat. No. 4,118,730, which is a continuation-in-part of Ser. No. 267,377, Mar. 11, 1963, which is a continuation-in-part of Ser. No. 626,211, Dec. 4, 1956, Pat. No. 3,081,379, which is a continuation-in-part of Ser. No. 477,467, Dec. 24, 1954, abandoned. This application Feb. 16, 1979, Ser. No. 13,608  
Int. Cl.<sup>3</sup> H04N 7/18

U.S. Cl. 358—93

48 Claims



1. An apparatus for analyzing time variable electrical signals comprising:

- (a) first means for generating a time variable electrical analog signal,
- (b) second means for receiving and analyzing said analog signal,
- (c) said second means including means for separating those portions of the analog signal having characteristics varying beyond a predetermined minimum value and for selectively gating said separate signal portions to said receiving and analyzing means,
- (d) said analyzing means including means responsive to variations in said separated signal portions for digitizing same, and
- (e) said digitizing means including means for generating a plurality of digital code signals which are indicative of the value of the variations in said electrical analog signal.

4,338,627

## LED/CCD MULTIPLEXER AND INFRARED IMAGE CONVERTER

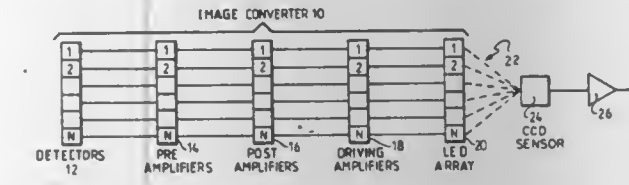
John J. Stapleton, East Brunswick, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.  
Filed Apr. 28, 1980, Ser. No. 144,519  
Int. Cl.<sup>3</sup> H04N 7/18

U.S. Cl. 358—113

19 Claims

- 1. A device for irradiation detection and image conversion which comprises:
- at least one irradiation detector means capable of providing an output in the presence of said irradiation with said output proportional to the level of said irradiation;
- at least one light emitting means coupled to a respective detector means and adapted to emit a signal responsive to the output of said detector means;

at least one optical fiber for each respective emitting means coupled to said emitting means at one end; sensor coupled to said fiber at its other end; and



said sensor being capable of receiving and storing as data the signal received from each emitting means and provide an output therefrom at predetermined intervals which may be used for image reconstruction.

4,338,628

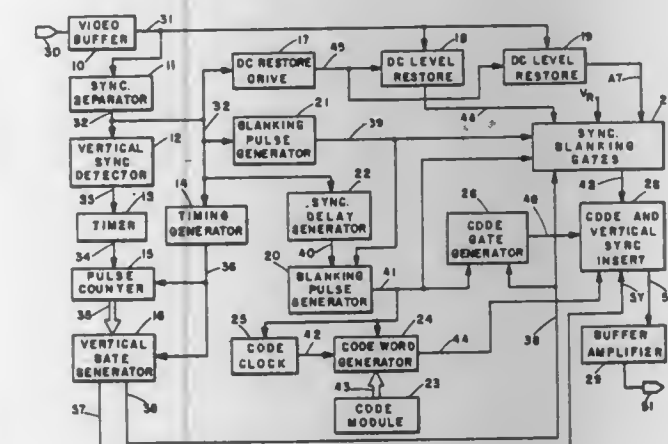
## SCRAMBLED VIDEO COMMUNICATION SYSTEM

Robert W. Payne, San Diego, and Wesley F. Smith, San Jose, both of Calif., assignors to Dynacom International, Inc., Marietta, Ga.

Filed Dec. 19, 1979, Ser. No. 105,127  
Int. Cl.<sup>3</sup> H04N 7/16

U.S. Cl. 358—120

32 Claims



- 10. An encoder for a television communication system wherein a composite video signal is scrambled to prevent a stabilized picture from being displayed by a typical broadcast television set receiving the scrambled video signal, comprising means for offsetting the DC level of the reference color burst information in a composite video signal to a point nearly midway between the reference black and white levels of the video information; and for removing horizontal synchronizing pulses from the composite video signal to provide a scrambled video signal;
- a code word generator for generating a code word; and
- an insert circuit for inserting the code word in the scrambled video signal in regularly spaced positions that normally would be occupied by every nth one of the horizontal synchronizing pulses to thereby encode the scrambled video signal; wherein n is an integer greater than 1.

4,338,629

## PROCESS AND APPARATUS FOR CODING BINARY SIGNALS FOR NUMBERING IMAGES OR PICTURES STORED ON A RECORDING MEDIUM FOR STOP MODE REPRODUCTION

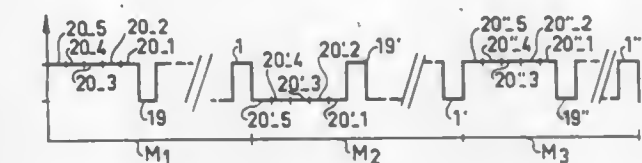
Pierre Oprandis, and Rene Romeas, both of Paris, France, assignors to Thomson-CSF, Paris, France  
Filed May 8, 1980, Ser. No. 147,958  
Claims priority, application France, May 10, 1979, 79 11853  
Int. Cl.<sup>3</sup> H04N 5/76

U.S. Cl. 358—128.5

10 Claims

- 1. A process for coding binary image numbering signals to be stored on a recording medium, said binary signals being in the form of a serial bit train, wherein the binary signals are

protected against variations encountered during the transcription process by repeating a number of times the lowest weight



bit of said serial bit train and retransmitting the redundant serial bit train obtained in this way on a number of occasions, the bits of one part of said redundant trains also being inverted.

4,338,630

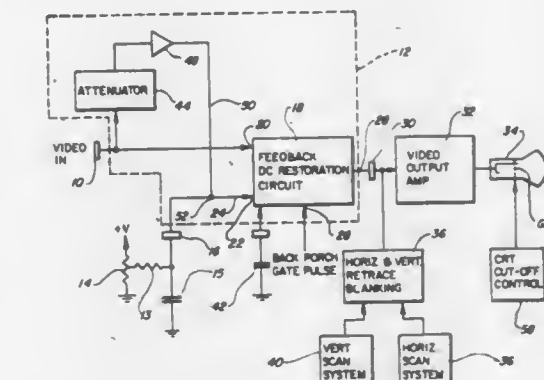
## ONE-CHIP CHROMA/LUMA IC: D.C. COUPLING REDUCTION CIRCUIT

Christopher M. Engel, Arlington Heights, and George J. Tzakis, Glenview, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Dec. 15, 1980, Ser. No. 216,451  
Int. Cl.<sup>3</sup> H04N 5/18

U.S. Cl. 358—172

8 Claims



1. In a television receiver of the type having means for developing a video signal and including a DC restoration circuit having a reference input, said DC restoration circuit being operable for clamping a portion of the horizontal blanking interval of said video signal to the direct current voltage level presented to said reference input, the improvement comprising:

- means for developing a dynamic adjustment signal representing a selected percentage of said video signal;
- viewer operable means for developing a selected direct current black level reference signal; and
- means combining the direct current level of said dynamic adjustment signal with said direct current black level reference signal and coupling the resulting combined direct current signal to the reference input of said DC restoration circuit, whereby the DC coupling of said DC restoration circuit is reduced in accordance with said selected percentage.

4,338,631

## VIDEO SIGNAL, SPEED-CHANGE REPRODUCING SYSTEM

Yoshihiko Ota, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan  
Continuation-in-part of Ser. No. 891,409, Mar. 29, 1978, abandoned. This application Jul. 18, 1979, Ser. No. 58,537  
Claims priority, application Japan, Mar. 30, 1977, 53-15601  
Int. Cl.<sup>3</sup> G11B 15/46

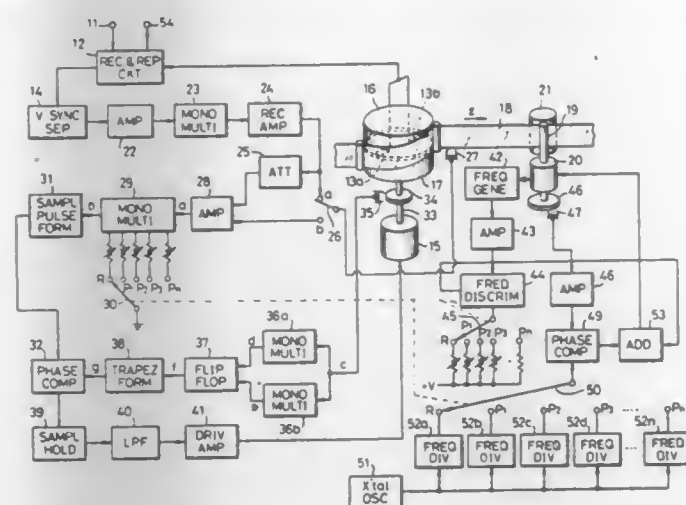
U.S. Cl. 358—127

6 Claims

- 1. A video signal, speed-change reproducing system for reproducing video signals which are recorded on a tape, said signals being recorded by a pair of rotary recording heads



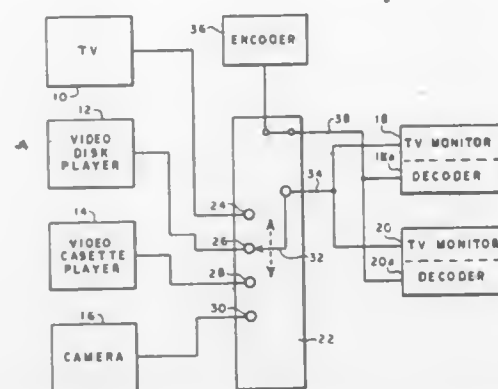
plurality of user-variable control signals, a counter for generating sequentially occurring output pulses, switch means responsive to said output pulses for sequentially selecting the control signals, and means responsive to each selected signal for generating a control pulse whose period is a function of the value of the selected control signal;


$$V = V_0 \left( \frac{n \pm 2}{n} \right),$$

a second control means for controlling both the relative phases of the rotational member having said reproducing head thereon, and the tape travel so that said rotational phase of the rotating member is maintained in a predetermined phase relationship with respect to the picked up control signal, said predetermined phase being such that each time instant when the level of the reproduced signal becomes a minimum value falls within or in the vicinity of a vertical blanking period.

## 21 Claims

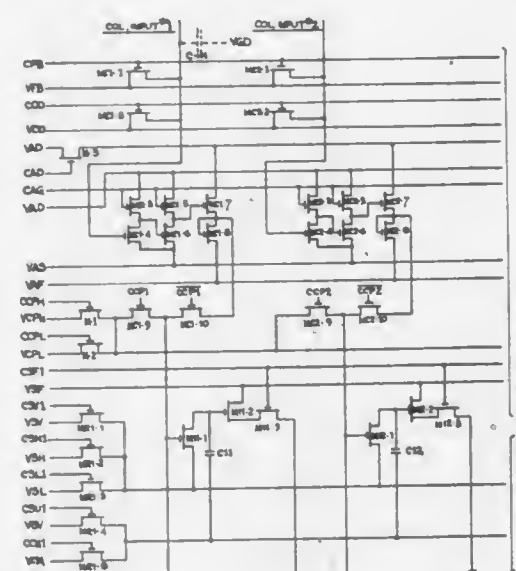
1. A system for remotely adjusting the control functions of at least one television monitor, comprising:  
an encoder for generating a repetitive multi-channel signal whose period is substantially constant, each channel including a control pulse having a variable pulse period, said encoder including:  
user-operable controls which are adapted to generate a



a decoder associated with the monitor and receiving the multi-channel signal for converting each of said control pulses to an output signal whose value is a function of said pulse period so as to develop a multi-channel output signal for application to and adjustment of the monitor's control functions.

Int. Cl.<sup>3</sup> H04N 5/30

### 3 Claims

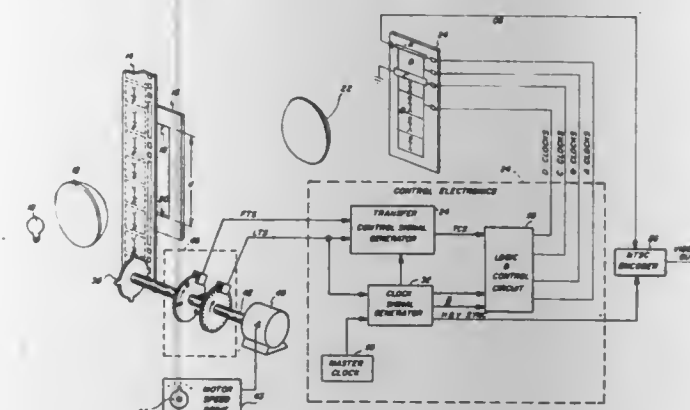


- (a) sampling and dumping means for sampling the output of the element and dumping the accumulated charge from the element after each sampling of the output, which means uses the charge injection device technique,
- (b) integrating means, responsive to the sampled output of the element, for integrating the sampled outputs,
- (c) readout means for periodically reading out the output of the integrating means and resetting the output of the integrating means to "zero".

## 351

Int. Cl.<sup>3</sup> H04N 3/36

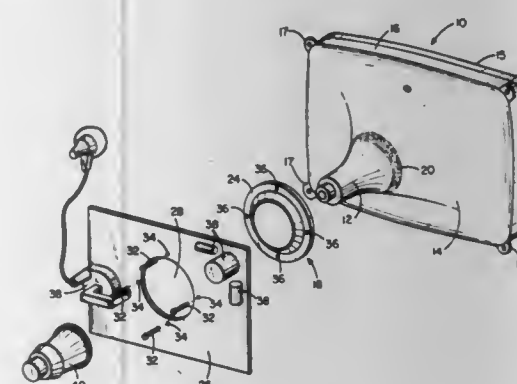
#### 4 Claims



(f) means for reading said portion of said imagewise charge pattern out of said temporary storage means at a standard video rate for producing a standard video signal.

Int. Cl.<sup>3</sup> H04N 5/64

## 23 Claims

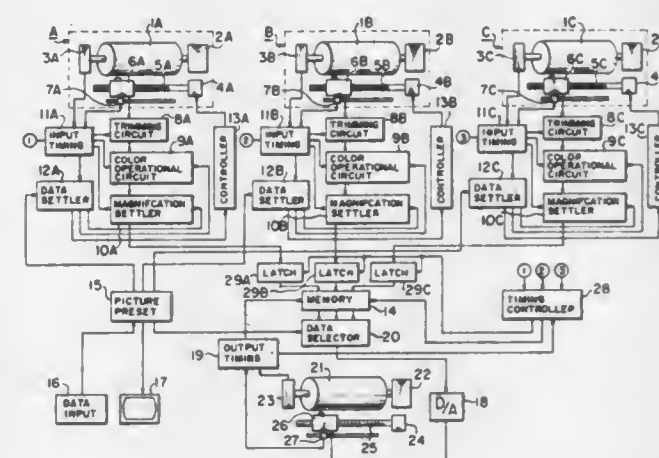


1. Mounting apparatus for mounting a circuit board to a cathode ray tube having a front face and a back surface with a

attaching means proximate a transition between the neck portion and the bell portion for fixedly attaching the mounting collar to the back surface of the cathode ray tube; and  
connecting means for connecting the circuit board to the mounting collar.

Claims priority, application Japan, Aug. 16, 1979, 54-103514  
Int. Cl.<sup>3</sup> H04N 1/00

### 5 Claims



(c) recording reproduction pictures on a photosensitive material in the desired layout positions by the picture signals aligned by means of a picture recording means.

Claims priority, application Japan, Oct. 25, 1979, 54-137002  
Int. Cl.<sup>3</sup> H04N 1/40

#### 4 Claims

1. A variable scanning device comprising:

1. A variable scanning device comprising:  
a scanning unit which divides one image line of an image surface to be transmitted into  $m$  ( $2 \leq m$ ) divided lines at maximum, scanning the divided lines and supplies a scan-

maximum, scanning the divided lines and supplies a scanning pulse signal controlling the scanning, a scanning start signal indicating the start of scanning obtained in synchronism with said scanning pulse signal, and a scanning out-

output signal obtained in synchronism with said scanning pulse signal, said scanning unit transmitting said image surface by one image line to be transmitted by inputting a

a memory unit connected to said scanning unit, which obtains an image signal from said scanning output signal supplied from said scanning unit for storing it in response

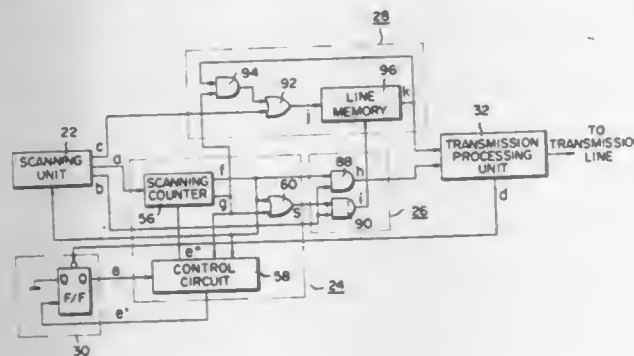


to a write and read pulse signal and which transmits said image signal of one image line to be transmitted already stored therein;

a transmission processing unit connected to said memory unit, which reads and encodes said image signal supplied from said memory unit for supplying it to a transmission line and which supplies an image signal output request signal;

a latch unit connected to said transmission processing unit, to which is input said image signal output request signal supplied from said transmission processing unit for supplying an enabling signal;

a control unit connected to said latch unit and said scanning unit, which is rendered operative by said enabling signal supplied from said latch unit for counting scanning start signals supplied from said scanning unit, said control unit supplying a gate signal for obtaining and supplying at said memory unit said image signal from said scanning output



signal of up to the  $n$ th ( $1 \leq n \leq m$ ) divided line when another enabling signal is supplied from said latch unit while counting said scanning start signal corresponding to said  $n$ th divided line from said scanning unit, said control unit supplying a gate signal for obtaining and supplying at said memory unit said image signal from said scanning output signal up to the  $(n+1)$ th divided line when another enabling signal is supplied from said latch unit while counting said scanning start signal corresponding to said  $(n+1)$ th divided line from said scanning unit, said control unit also supplying subscanning signal; and

a timing signal generating unit connected to said control unit, said scanning unit, said memory unit, and said transmission processing unit, which obtains a read pulse signal and a write and read signal from said scanning pulse signal supplied from said scanning unit and said gate signal supplied from said control unit for supplying said read pulse signal to said transmission processing unit and said write and read pulse signal to said memory unit.

4,338,638

## TAPE RECORDER

Shunichi Orita, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

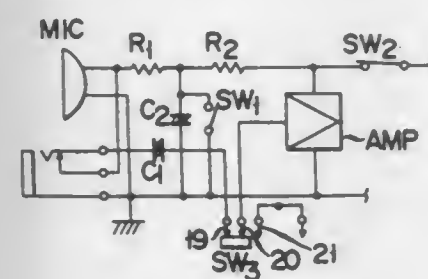
Filed Dec. 7, 1979, Ser. No. 101,255

Claims priority, application Japan, Dec. 27, 1978, 53-180331[U]

Int. Cl.<sup>3</sup> G11B 15/04

U.S. Cl. 360—60

2 Claims



1. A tape recorder comprising:

a built-in microphone;

a power supply circuit for said microphone, a power supply switch in said power supply circuit;

a microphone disabling switch provided in said circuit for disabling said microphone;

an operation button;

connecting means including microphone disabling switch actuating means operably connected to said operation button to actuate said microphone disabling switch at an initial state of movement of the operation button when said operation button is moved to change the operation mode of the tape recorder from a recording mode to a stop mode thereby rendering the disabling switch operative to disable the microphone during initial operation button movement;

said connecting means further including power supply switch actuating means operably connected to said operation button to actuate said power switch when the operation button is moved to change the operation mode from the stop mode to the recording mode, thereby, actuating the power supply switch to effect power supply to the microphone, said connecting means further including delay means preventing deactuation of said power supply switch until after said microphone disabling switch has been actuated by said microphone switch actuating means, said delay means preventing deactuation of said power supply switch until the operation button has reached a terminal state of movement thereof, said delay means further including means for delaying deactuation of said microphone disabling switch until the operation button has reached a terminal state of movement thereof during a change in operation mode of the tape recorder from a stop mode to a recording mode, both said power supply switch and said microphone disabling switch being in operation at the same time between said initial and terminal states of movement of said operation button so that said microphone is always disabled during movement of the operation button between said initial and terminal states of movement thereof; and

means in said connecting means for maintaining said microphone disabling switch actuated whenever said power supply switch is deactuated, thereby maintaining said microphone disabled whenever power to the microphone is shut off by the operation button.

4,338,639

## CUE SIGNAL RECORDING APPARATUS

Kenji Fujibayashi, Nogata, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1980, Ser. No. 138,195

Claims priority, application Japan, Apr. 20, 1979, 54-48698

Int. Cl.<sup>3</sup> G11B 5/47, 5/02

U.S. Cl. 360—66

27 Claims

1. A cue signal recording apparatus comprising:

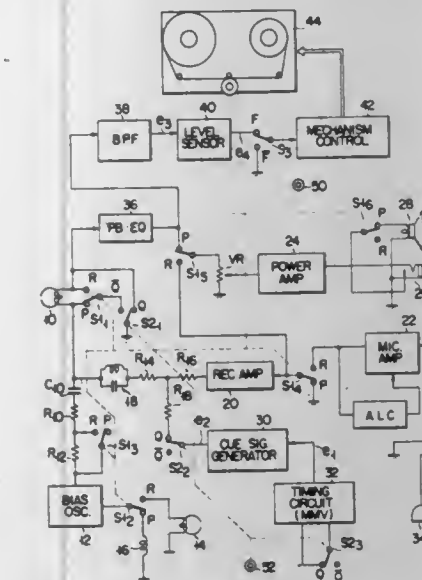
a magnetic head for making recordings on a magnetic recording medium;

a bias means for feeding a bias current to said magnetic head;

a cue signal generating means for providing a cue signal to said magnetic head; and

means responsive to operation of said cue signal generating means for weakening a recording bias magnetic field

caused by said bias current when said cue signal is recorded by said magnetic head on the magnetic recording



medium with something already recorded on the magnetic recording medium.

4,338,640

## SPEED CONTROL SYSTEM FOR A MULTIPLE SPEED TAPE RECORDING AND REPRODUCING APPARATUS

Toshio Imai, Yabu, Tatsuo Wada, Masaru Hashirano, and Kouichi Yamada, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

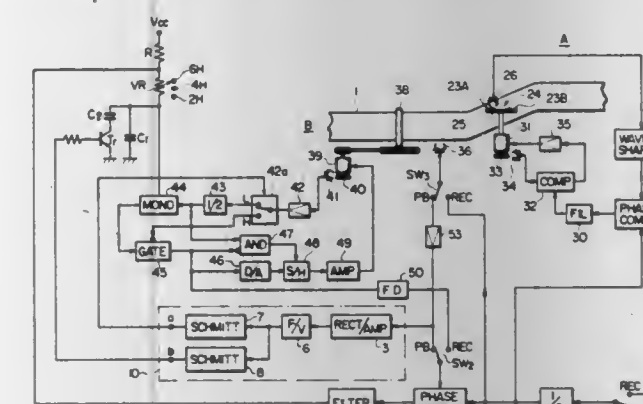
Filed Feb. 15, 1980, Ser. No. 122,102

Claims priority, application Japan, Feb. 19, 1979, 54/18177

Int. Cl.<sup>3</sup> G11B 15/46, 19/28

U.S. Cl. 360—73

6 Claims



1. In a tape recording and reproducing apparatus including means for driving the tape at one of at least three predetermined speeds during recording and playback modes and means for recording a reference speed indicative signal in said tape during the recording mode, and means for generating a capstan speed indicative signal, a speed control system comprising:

a transducer for reproducing said reference speed indicative signal from said tape during the playback mode, whereby the frequency of the reproduced speed indicative signal assumes one of a plurality of discrete values depending on deviation of the speed of said tape from the speed with which said reference speed signal is recorded in said tape; means connected to said transducer for converting the frequency of said reproduced speed indicative signal to a voltage signal;

means connected to said converting means for comparing said voltage signal with a plurality of reference values representing different frequencies to generate a first speed control signal indicative of the deviation of the tape speed from said reference values; and

means responsive to said first speed control signal and to said capstan speed indicative signal for generating a second

speed control signal indicative of the difference therebetween for controlling the capstan

wherein said predetermined speeds have ratios of 1:2:3, and wherein said comparing means comprises means for establishing first, second and third reference voltages to define a set of first, second, third and fourth voltage ranges, said third voltage range including a predetermined voltage which is derived when the playback tape speed equals the recording tape speed, and means for generating low-speed, medium-speed and high-speed control signals for application to said second speed control signal generating means when said voltage signal corresponds to said first, second and fourth voltage ranges, respectively.

4,338,641

## MAGNETIC TAPE DEVICE

Hiroshi Sato, Fujisawa, Japan, assignor to Daiichi Electric Co., Ltd., Fujisawa, Japan

Filed Mar. 18, 1980, Ser. No. 131,681

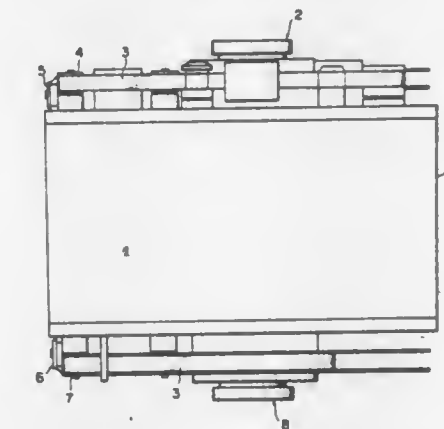
Claims priority, application Japan, Apr. 13, 1979, 54-045840;

May 29, 1979, 54-065587

Int. Cl.<sup>3</sup> G11B 15/60, 15/32, 5/78

U.S. Cl. 360—90

2 Claims



1. An underwater magnetic device, comprising:

- a first and a second shaft;
- a supply reel connected to said first shaft;
- a first pulley substantially coplanar with said supply reel;
- a second pulley rotatable about an axis whose said axis is at a substantially 90° angle relative to the axis of said first shaft;
- a third pulley rotatable about an axis whose said axis is substantially parallel with the axis of the second pulley;
- a fourth pulley rotatable about an axis whose said axis is at a substantially 90° angle relative to the axis of said second and third pulleys;
- a take-up reel connected to said second shaft, said take-up reel being substantially coplanar with said fourth pulley; and
- a tape which is connected to said supply reel and said take-up reel, whereby the first pulley is connected to said tape between said supply reel and the second pulley, the second pulley is connected to the tape between the first pulley and the third pulley, the third pulley is connected to the tape between the second pulley and the fourth pulley, and the fourth pulley is connected to the tape between the third pulley and the take-up reel.

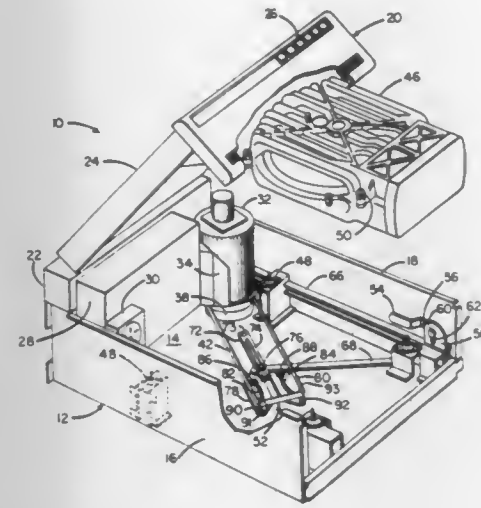


# 4,338,642 DRIVE BELT RELEASE MECHANISM FOR MAGNETIC DISK DRIVES

Allen Clark, and Michael V. Konshak, both of Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 2, 1980, Ser. No. 136,541  
Int. Cl.<sup>3</sup> G11B 17/00, 5/012, 25/04  
U.S. Cl. 360—97

8 Claims



1. In a disk drive in which a rotatable disk is housed in a disk housing assembly having a drive spindle pulley projecting therefrom, the disk drive including a drive motor and a drive belt, the drive belt engaging the drive motor and the spindle pulley to facilitate the rotation of the disk by the motor, a release mechanism comprising:

actuator means movable by an operator between a belt-released position and a belt-seated position, and means responsive to the movement of the actuator means for disengaging the belt from the spindle pulley when the actuator means is in the belt-released position and for engaging the belt on the spindle pulley when the actuator means is in the belt-seated position, said means comprising first and second belt-engaging members engaging said actuator means and a camming means so that, when said actuator means is moved between the belt-released position and the belt-seated position, said first and second members are moved along paths defined by said camming means on opposing sides of the spindle pulley to wholly disengage and engage the belt from the spindle pulley.

# 4,338,643 MAGNETIC RECORDING DISC AND METHOD OF MAKING SAME

Eiichi Tadokoro, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 6,169, Jan. 24, 1979, abandoned, which is a continuation-in-part of Ser. No. 838,499, Oct. 3, 1977, abandoned. This application Apr. 8, 1980, Ser. No. 138,368

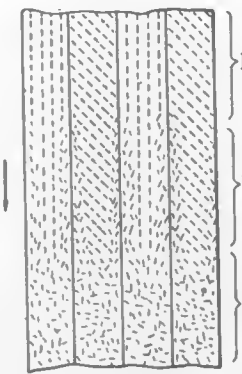
Claims priority, application Japan, Nov. 16, 1976, 51-137502  
Int. Cl.<sup>3</sup> G11B 5/82

U.S. Cl. 360—135

10 Claims

1. A method of producing a magnetic recording disc comprising applying a magnetic layer containing magnetic particles on a support film base, orienting the magnetic particles in a number of first strip-like zones in a first direction and in a number of second strip-like zones in a second direction inclined with respect to the first direction at an angle of 60° to 120°, said first and second strip-like zones being alternately and contiguously arranged in parallel to each other, the width of each said first and second strip-like zones being not more than 5 mm and the ratio of the width of the first strip-like zone to that of the second strip-like zone being within the range of 1:3 to 3:1, solidifying the magnetic layer after the magnetic particles in said first strip-like zones, causing interaction along the bound-

aries between adjacent strip-like zones resulting in a random particle orientation and then stamping out a magnetic record-



ing disc from the support film base, whereby positioning of a disc center hole is greatly facilitated and the output is enhanced.

# 4,338,644 MAGNETIC TAPE CASSETTES PROVIDED WITH MEMORY CIRCUITS FOR STORING INFORMATION

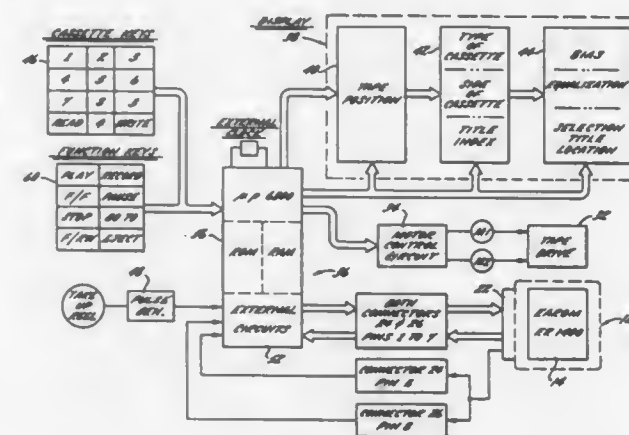
Theophil C. J. L. Staar, Brussels, Belgium, assignor to Staar S. A., Belgium

Filed Oct. 22, 1979, Ser. No. 87,691  
Claims priority, application Belgium, Oct. 27, 1978, 871596;  
Oct. 31, 1978, 871690

Int. Cl.<sup>3</sup> G11B 27/24

U.S. Cl. 360—132

32 Claims



1. In combination with a cassette containing a magnetic recording tape, said cassette having a housing and one or more reels for said tape within said housing, electronic memory means carried by said housing having terminals adapted to engage and establish electrical connection to terminals of a peripheral device, said memory means including semi-conductor memory circuits for representing by the state of said circuits, information as to the cassette or tape contained therein and readable from said peripheral device via said terminals.

# 4,338,645 TAPE RUNNING TIME INDICATION SYSTEM

Katsuo Mohri, Yokosuka, and Yoshinori Okada, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 2, 1979, Ser. No. 90,610

Claims priority, application Japan, Nov. 6, 1978, 53-135849;  
Nov. 6, 1978, 53-135853; Nov. 6, 1978, 53-135854

Int. Cl.<sup>3</sup> G06F 15/20

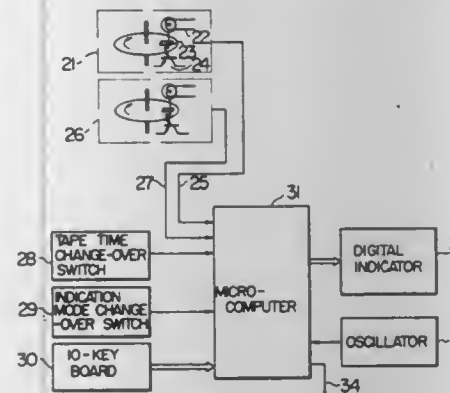
U.S. Cl. 360—137

8 Claims

1. A tape running time indication system for a magnetic recording-reproduction apparatus using a magnetic tape and including a supply reel and a take-up reel, comprising:

means for detecting an angular velocity  $\omega_1$  of said supply reel;

means for detecting an angular velocity  $\omega_2$  of said take-up reel;  
a microcomputer supplied with the velocities  $\omega_1$  and  $\omega_2$  detected by said detecting means, the tape running speed  $v$ , the total tape length indicated as time  $T_0$  corresponding



to the total tape length and the hub radius  $R$  of each reel, said microcomputer calculating at least one of a remaining tape length  $T_1$  indicated as time and a taken-up tape length  $T_2$  indicated as time; and  
means for indicating a length of time obtained from the result of said calculation.

# 4,338,646 CURRENT LIMITING CIRCUIT

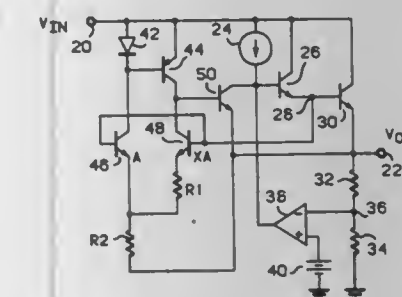
William F. Davis, Tempe, and Robert N. Dotson, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 27, 1981, Ser. No. 257,837

Int. Cl.<sup>3</sup> H02H 3/08

U.S. Cl. 361—18

7 Claims



1. A circuit for monitoring the base-emitter voltage of a transistor for limiting the current therethrough, comprising:  
a first transistor having base, emitter and collector terminals;  
a first source of current coupled to said first transistor for supplying base drive to said first transistor;  
a second transistor having a collector for conducting a first current, a base coupled to the base of said first transistor, and an emitter having a first area;  
a third transistor having a collector for conducting a second current, a base coupled to the base of said first transistor, and an emitter having a second area, said first area being substantially larger than said second area;  
impedance means coupled between the emitters of said second and third transistors and the emitter of said first transistor, said impedance means and said first and second areas causing said first and second currents to be substantially equal at a predetermined value of the base-emitter voltage of said first transistor; and  
means for reducing the base drive to said first transistor when said first current is substantially equal to said second current.

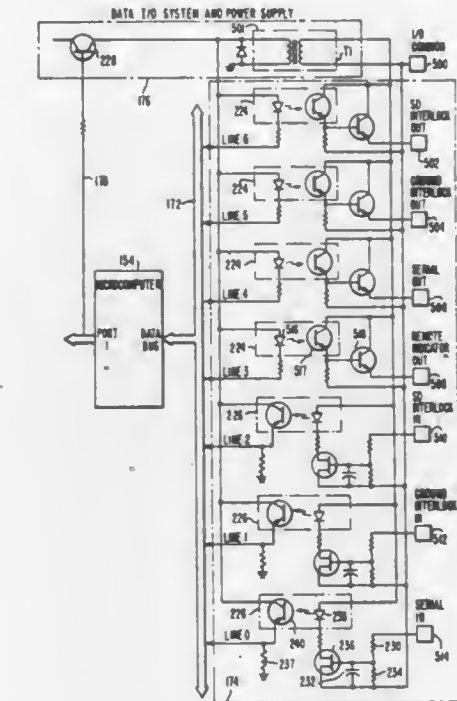
# 4,338,647 CIRCUIT INTERRUPTER WITH DIGITAL TRIP UNIT AND OPTICALLY-COUPLED DATA INPUT/OUTPUT SYSTEM

John T. Wilson; John A. Wafer, both of Beaver; Joseph C. Engel, and Robert T. Elms, both of Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 15, 1980, Ser. No. 140,627  
Int. Cl.<sup>3</sup> H02H 3/093

U.S. Cl. 361—96

10 Claims



10. Circuit interrupter apparatus, comprising:  
interrupter means for conducting current flow through an associated circuit and for operating to interrupt current flow therethrough on command;  
sensing means for sensing current flow through said interrupter means;  
trip unit means connected between said sensing means and said interrupter means for comparing current flow through said interrupter means to a predetermined time-current trip characteristic and for operating said interrupter means when current flow therethrough exceeds said time-current trip characteristic;  
interface means for optically coupling said trip unit means to associated apparatus; and  
pulse power supply means connected to said interface means for supplying pulses of operating power thereto sufficient to achieve the desired operation thereof.

# 4,338,648 GAPLESS DISCHARGE COUNTER FOR LIGHTNING ARRESTERS

Thallam Subbarao, Castleton, N.Y., assignor to General Electric Company, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,767  
Int. Cl.<sup>3</sup> H02H 3/22

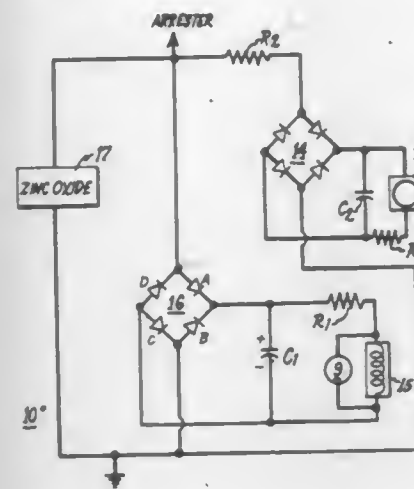
U.S. Cl. 361—127

1 Claim

1. A discharge counter and leakage current meter circuit for a voltage surge arrester, said circuit comprising, in combination:  
a zinc oxide varistor directly connecting the voltage surge arrester to ground;  
a first rectifying bridge having first and second input terminals and first and second output terminals;  
a first resistor connecting said first input terminal to the junction between the arrester and said varistor, said second input terminal connected directly to ground;  
a first capacitor shunting said first and second output terminals;  
the series combination of a second resistor and an ammeter

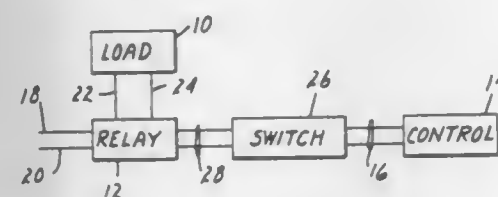


connected across said first capacitor, said ammeter reading leakage current through the arrester;  
a second rectifying bridge having a third input terminal directly connected to the junction between the arrester and said varistor, a fourth input terminal directly connected to ground, and third and fourth output terminals;



a second capacitor shunting said third and fourth output terminals; and  
the series combination of a third resistor and a cyclometer coil connected across said second capacitor, said cyclometer coil activating a counter to register the number of discharges through the arrester.

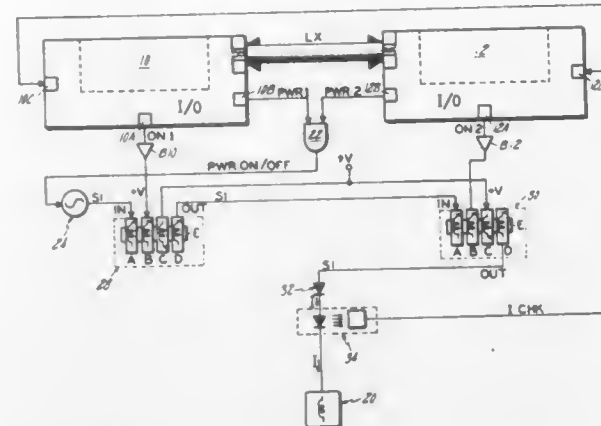
**4,338,649**  
**SYSTEM FOR REMOTELY CONTROLLING A LOAD**  
Douglas R. Mosler, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.  
Filed Oct. 29, 1980, Ser. No. 201,742.  
Int. Cl.<sup>3</sup> H01H 47/22  
U.S. Cl. 361-139 42 Claims



1. A system for controlling a transformer relay in response to a stimulus, said transformer relay having a primary winding coupled to an energy source, having a load switch adapted to control the application of said energy source to a load, and having a secondary winding which controls said load switch depending upon the unidirectional flow of current above a predetermined threshold in said secondary winding, comprising:

- a switching means coupled to said secondary winding with two wires for allowing, in response to a control signal, a unidirectional current flow in said secondary winding of an amount exceeding said threshold in said secondary winding; and
- a control means operatively coupled to said switching means for momentarily producing said control signal in response to said stimulus;
- said switching means and said control means being powered from said secondary winding, drawing a quiescent current of an amount less than said threshold from said secondary winding;
- whereby said transformer relay is controlled utilizing only two wires between said secondary winding and said switching means and whereby said control signal may be a signal other than a unidirectional current flow.

**4,338,650**  
**FAIL-SAFE RELAY DRIVING**  
Gilbert W. Wierschke, Englewood, Colo., assignor to Otis Elevator Company, Farmington, Conn.  
Filed Nov. 10, 1980, Ser. No. 205,830  
Int. Cl.<sup>3</sup> H01H 47/22  
U.S. Cl. 361-139 4 Claims

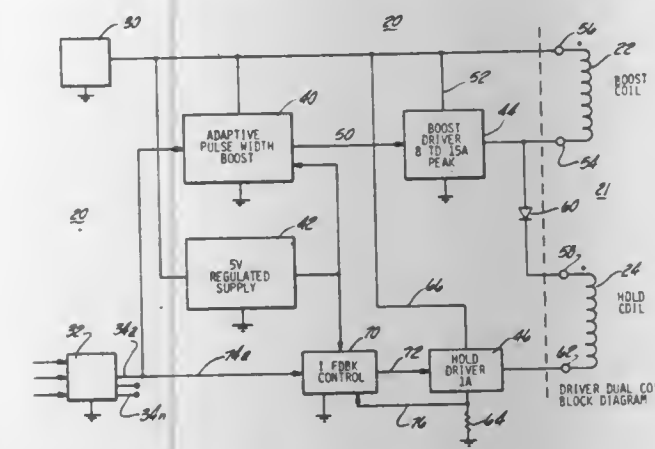


1. An apparatus comprising:  
at least two controllers,  
a control device to which power is provided,  
a power source for generating said power,  
first means for coupling said power source to said device,  
said means operating under the control of said controllers, characterized in that:  
said power source provides alternating output voltages in response to concurrent control signals from the controllers,  
said power coupling means comprises: a first coupling device which receives the output from said power source and a second coupling device which receives the output from said first coupling device and provides an output to power the control device,  
said first coupling device characterized in that its input and output are inductively coupled when a first and second signal are simultaneously applied thereto, one of said signals being provided by one of the controllers and the other by a constant signal source, the input and output of said first device being substantially, inductively decoupled if either of these signals is not applied thereto,  
said second coupling device characterized in that its input and output are inductively coupled by simultaneous application of said constant signal and a third signal provided by a second of the controllers, the input and output of said second device being substantially, inductively decoupled if either of said signals is not simultaneously applied thereto.

**4,338,651**  
**DUAL COIL DRIVER**  
Robert S. Henrich, Farmington Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.  
Filed Oct. 1, 1980, Ser. No. 193,333  
Int. Cl.<sup>3</sup> H01H 47/04  
U.S. Cl. 361-154 22 Claims

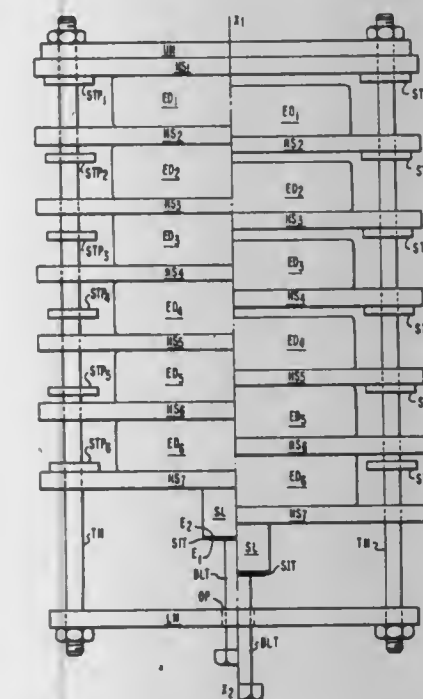
1. A driver circuit for a fuel injector, the driver circuit adapted to be connected to a voltage source and to receive input metering signals from an electronic control unit, for controlling the operation of a solenoid of the type having a plurality of coils situated so as to produce, when activated, aiding magnetic fields, the driver circuit comprising:  
voltage regulator means connected to said voltage source for generating a regulated voltage;  
adaptive means, responsive to the metering signals for generating a pulse width boost signal that is variable in correspondence with fluctuations of the voltage level of said voltage source;  
first driver means, responsive to said boost signal, and con-

nected to the first of said coils for causing current to flow therethrough;  
second driver means, responsive to said boost signal, and connected to the second of said coils for activating said



second coil and for causing the current flowing through said first coil to flow through said second coil; and  
first means connected to said first or said second driver means for reducing current droop upon activation of said second coil.

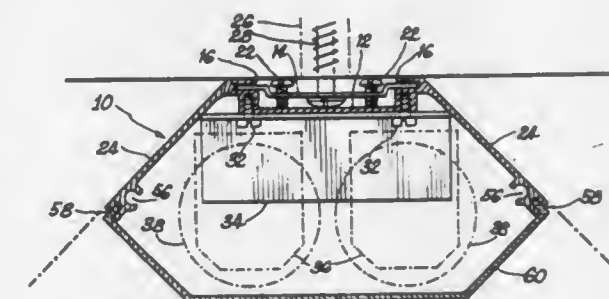
**4,338,652**  
**STACK MODULE AND STACK LOADER THEREFOR**  
Walter N. Romanczuk, Buffalo; Paul J. Reiter, West Seneca, and William R. Watkins, Colden, all of N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.  
Continuation of Ser. No. 124,689, Feb. 26, 1980, abandoned.  
This application Jul. 16, 1981, Ser. No. 283,707  
Int. Cl.<sup>3</sup> H05K 7/20  
U.S. Cl. 361-388 2 Claims



1. In a frame assembly holding together under pressure along a longitudinal axis a stack of electrical components including a plurality of semiconductor devices and of heat sinks arranged in pairs so that two heat sinks per semiconductor device are adjacent opposite sides thereof, the combination of:  
an upper end member disposed transversely of said longitudinal axis above said stack;  
a base plate normally in engagement with the lower end of said stack;  
a lower end member disposed transversely of said longitudinal axis below said stack and said base plate;  
said lower end member having a threaded central opening aligned with said longitudinal axis;  
bolt means operatively mounted through said threaded cen-

tral opening of said lower end member and engaging said base plate for applying pressure to said stack therethrough and against said upper end member;  
tension members mounted laterally of said stack and connecting said upper and lower end members;  
said bolt means being adjustable between an upper extreme position for which said stack is under pressure and a withdrawn extreme position away from said upper extreme position, said stack being lowered under gravity when said bolt means is moved from said upper to said withdrawn extreme position;  
at least one of said tension members having a plurality of vertically spaced stoppers matching in number the number of heat sinks laying immediately above each semiconductor device in said stack, said stoppers being increasingly spaced from one another downward along the associated tension member and being adapted to retain a corresponding one of said number of heat sinks when said stack is lowered by said bolt means from said upper extreme position, thereby to open said stack and allow a selected semiconductor device to be removed and replaced immediately below a retained heat sink.

**4,338,653**  
**VERSATILE FLUORESCENT LIGHTING FIXTURE**  
Louis Marrero, 1209 Via Ramon, Escondido, Calif. 92025  
Filed Sep. 24, 1980, Ser. No. 190,466  
Int. Cl.<sup>3</sup> F21S 3/00  
U.S. Cl. 362-223 7 Claims



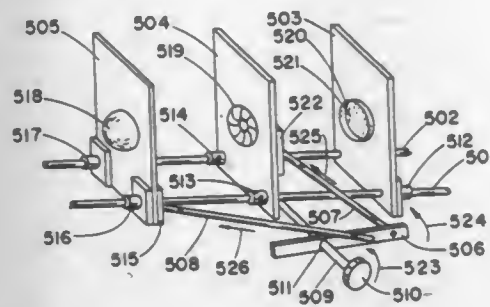
1. A fluorescent light fixture comprising:  
(a) an elongated housing;  
(b) means on the back of said housing for mounting same; and  
(c) universal mounting means defined in the front of said housing and extending the substantial length thereof for alternatively or collectively mounting fluorescent sockets, a frontal reflector assembly, and transformer/ballast, said universal mounting means comprising a pair of parallel forward facing slots defined in said housing and extending the substantial length of same, and said sockets, reflector assembly, and transformer each defines at least one mounting panel mountable by means of screws engageable in said slots to capture said panels by the opposite edges thereof.

**4,338,654**  
**VARIABLE SPOT STAGE LIGHT**  
Richard Logothetis, 631 Johnson Ave., Bohemia, N.Y. 11716  
Filed Sep. 20, 1980, Ser. No. 183,058  
Int. Cl.<sup>3</sup> F21V 29/00  
U.S. Cl. 362-268 2 Claims

1. A stage light comprising:  
(a) a frame, having a forward direction towards which the light is to be beamed, and a rearward direction opposite the forward direction;  
(b) an incandescent lamp movably mounted within the frame and located towards the rear of the frame;  
(c) a reflector placed adjacent and to the rear of the lamp and on the same movable mounting as the lamp having



general hemispherical coverage of the lamp generally parabolic contours to capture and beam the light from the rear of the lamp in the forward direction,  
(d) a variable aperture iris fixedly mounted to the frame and positioned forward of the lamp to control the amount of light from the lamp and reflector passed in the forward direction by means of varying the aperture size,



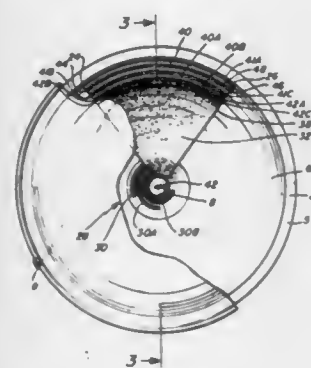
(e) an objective lens system located forward of the iris to accept and focus the light passed through the iris, and  
(f) means for linking the lamp and reflector on the movable mounting to the iris to automatically adjust the iris aperture with the movement of the lamp and reflector for maximum forward light transmission with each setting of the lamp and reflector position.

**4,338,655**  
**LUMINAIRE APPARATUS INCLUDING EXPANSIBLE REFLECTOR MEANS AND METHOD OF REFLECTING RADIANT ENERGY TO PROVIDE A SPOT TO FLOOD CONFIGURATION**

John E. Gulliksen, Shrewsbury, and William H. Hamilton, Lincoln, both of Mass., assignors to Koehler Manufacturing Company, Marlborough, Mass.

Filed Oct. 20, 1980, Ser. No. 198,660  
Int. Cl.<sup>3</sup> F21V 7/16, 7/02

U.S. Cl. 362—281



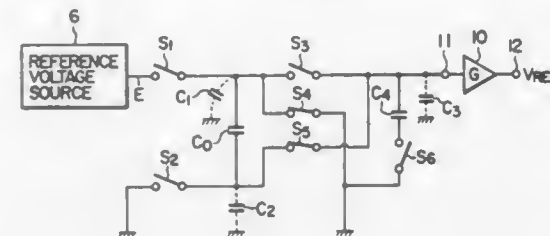
1. In a method of reflecting radiant energy in which a light source is received in a housing body and radiant energy from the light source is reflected from a stationary reflector surface through a light transmitting member on the housing to provide a desired configuration of the said reflected radiant energy the steps which include interposing expandable reflector means between the stationary reflector surface and the light transmitting member, and rotating the light transmitting member to progressively extend the expandable reflector means around the light source thereby changing the angles of reflection of a portion of the reflected radiant energy thus producing a different configuration of emitted radiation.

**4,338,656**  
**VOLTAGE POLARITY SWITCHING CIRCUIT**  
Kazuo Yamakido, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 2, 1980, Ser. No. 165,334  
Claims priority, application Japan, Jul. 20, 1979, 54/91567  
Int. Cl.<sup>3</sup> H02M 3/06

U.S. Cl. 363—63

2 Claims



1. A voltage polarity switching circuit comprising a first capacitor, an input terminal for receiving an input voltage to charge said first capacitor, an output terminal for delivering an output voltage, a first switch interposed between one end of said first capacitor and said input terminal, a second switch interposed between the other end of said first capacitor and ground and a switching circuit for selectively inverting the voltage charge on said first capacitor and providing it to said output terminal, characterized in that said switching circuit comprises a third switch interposed between said one end of said first capacitor and said output terminal, a fourth switch interposed between said one end of said first capacitor and ground, a fifth switch interposed between the said other end of said first capacitor and said output terminal, a second capacitor having its one end connected to said output terminal and a sixth switch interposed between the other end of said second capacitor and ground, and means for controlling said switches including means for charging said first capacitor by turning on said first, second, fifth and sixth switches with the other switches turned off, means for turning on said second, third and sixth switches with the other switches turned off thereby to produce an output voltage of a first polarity at said output terminal, and means for turning on said fourth and fifth switches with the other switches turned off thereby to produce an output voltage of a second polarity at said output terminal.

**4,338,657**  
**HIGH-VOLTAGE TRANSFORMER-RECTIFIER DEVICE**  
Vladimir N. Lisin, Dushinskaya ulitsa, 14, kv. 106; Mikhail V. Pavlov, ulitsa Flotskaya, 13, korpus 5, kv. 77; Yuri V. Laschenov, ulitsa Perovskaya, 15, kv. 41; Stanislav I. Gusev, ulitsa akademika Skryabina, 28, korpus 2, kv. 87; Lev V. Kozlov, Bolshoi Simonovskiy proezd, 28, kv. 40; Sergei V. Pokrovsky, Tarutinskaya ulitsa, 5, korpus 3, kv. 73, and Igor I. Mozhaev, Krasnokazarmennaya ulitsa, 12, korpus 2, kv. 28, all of, Moscow, U.S.S.R.

PCT No. PCT/SU79/00046, § 371 Date May 8, 1980, § 102(e) Date May 7, 1980, PCT Pub. No. WO80/00636, PCT Pub. Date Apr. 3, 1980

PCT Filed Jul. 2, 1979, Ser. No. 195,426  
Claims priority, application U.S.S.R., May 21, 1974, 2026801; Sep. 8, 1978, 2662933

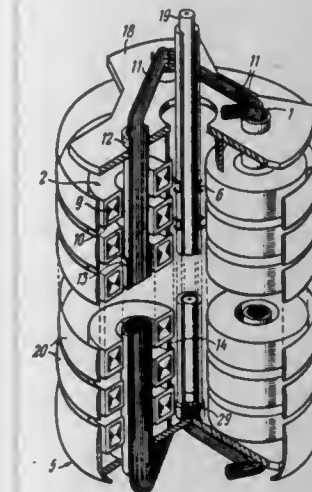
Int. Cl.<sup>3</sup> H01F 27/24, 27/36, 33/00

U.S. Cl. 363—68

7 Claims

1. A high-voltage transformer-rectifier device comprising: a step-up three-phase transformer with a spatial magnetic circuit having a symmetry axis and carrying a primary winding and a sectionalized secondary winding having a secondary-winding neutral and a plurality of sections; bridge rectifier units coupled to said sectionalized secondary winding and having one pole grounded and arranged parallel to the symmetry axis of the magnetic circuit; a potential screen for the secondary-winding neutral; a high-voltage terminal arranged along the symmetry axis of the magnetic circuit; and

a rectifier-unit potential screen electrically connected to the high-voltage terminal;  
wherein the spatial magnetic circuit comprises an insulating frame, and three vertical stacks of closed cores insulated from one another and secured in said insulating frame, said cores having a common window with an axis and carrying sections of the secondary winding, the primary winding



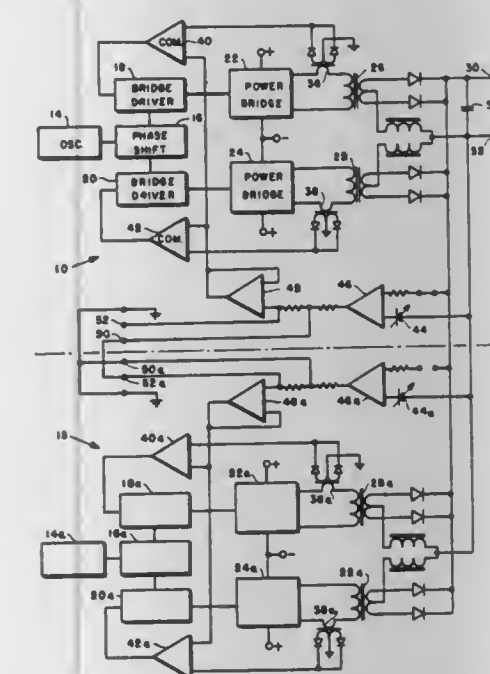
comprising three flat rectangular coils having vertical parts arranged to lie pair-wise along the axis of the common window in each stack of the cores, and wherein the bridge rectifier units each comprise individual bridge rectifiers connected to the sections of the secondary winding, and each of the potential screens comprises ring sections arranged one on top of another along the stacks of the cores.

**4,338,658**  
**MASTER-SLAVE HIGH CURRENT D.C. POWER SUPPLY**  
Samson K. Toy, Sunnyvale, Calif., assignor to Boschert, Incorporated, Sunnyvale, Calif.

Filed May 14, 1981, Ser. No. 263,430  
Int. Cl.<sup>3</sup> H02J 1/10; H02M 3/335

U.S. Cl. 363—72

9 Claims



1. A high current regulated D.C. power supply comprising a master power supply and at least one slave power supply, the output voltages of said slave supplies being controlled by said master supply, and said slave supplies equally sharing the current load with said master supply, each of said master and slave supplies being identical and including:  
first and second power bridges, each having input conduc-

tors coupled across a source of high voltage D.C. power and each having switching means in each diagonal leg;  
first and second step-down transformers respectively coupled to the output conductors of said first and second power bridges;

first and second rectifying circuits respectively coupled to the secondary windings of said first and second step-down transformers, the output conductors of said first and second rectifying circuits being coupled together and to the output terminals of the D.C. power supply;

switching circuitry coupled to said switching means in each leg of said first and second power bridges, said switching circuitry alternately enabling said switching means in opposite diagonal legs of said first power bridge and 90 electrical degrees thereafter alternately enabling said switching means in opposite diagonal legs of said second power bridge; and error signal circuitry having a first input for sensing the output voltage level of said power supply and a second input for sensing an adjustable D.C. voltage reference, said error signal circuitry generating an output error signal representing the difference in levels between said output voltage and said reference voltage;  
first and second current sensors associated with the secondary circuit of said first and second step-down transformers, said current sensors producing a D.C. output signal; and

first and second signal comparators coupled to the output conductors of said error signal circuitry and said first and second current sensors, respectively, each of said comparators generating an instantaneous turnoff signal to its respective power bridge when current measured by its respective current sensor reaches a predetermined level;  
the improvement comprising the method for intercoupling at least two of said supplies into a master and slave supply system, said intercoupling method including the steps of: disconnecting the first input to said error signal circuitry in each selected slave power supply;  
connect to ground said output error signals generated by said error signal circuitry in each of said slave power supplies;  
interconnect the signal ground circuits of the master power supply and each of said slave power supplies;  
connect the output from said error signal circuitry of said master supply to said first and second signal comparators of each of said slave supplies; and  
interconnect the D.C. output terminals of all said slave supplies and said master power supply.

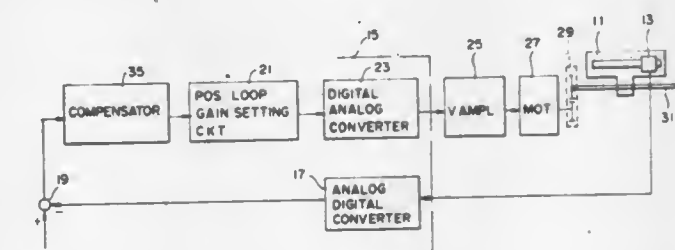
**4,338,659**  
**POSITION CONTROL SYSTEM FOR A CLOSED LOOP TYPE NUMERICAL-CONTROLLED MACHINE TOOL**  
Mitsuo Kurakake, Kokubunji, Japan, assignor to Fujitsu Fanuc Ltd., Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,864  
Claims priority, application Japan, Dec. 15, 1978, 53-156692; Jan. 31, 1979, 54-10227; Feb. 14, 1979, 54-15905; Feb. 14, 1979, 54-15906

Int. Cl.<sup>3</sup> G05B 13/04, 17/02

U.S. Cl. 364—170

13 Claims



1. A position control system for a closed loop numerical-controlled machine tool in which the position of a mechanical



moving part is controlled according to a position command, said system comprising

a position detector mounted for detecting the position of the mechanical moving part,  
means for determining a positioning error signal by making a comparison between the position command and the detected position from said position detector, and  
correcting means for reducing the positioning error signal resulting from the inclusion of the mechanical moving part in the closed loop, said correcting means comprising a compensator included in the closed loop, said compensator comprising  
a processor,  
means for increasing the break angular frequency of said closed loop including the mechanical moving part, and  
for increasing the gain of the feedback of the closed loop in correspondence to the value of said positioning error signal in a stable region of the closed loop, said gain being usable for higher frequencies as a result of said increased break angular frequency of said closed loop including said compensator than for frequencies without said compensator.

4,338,660

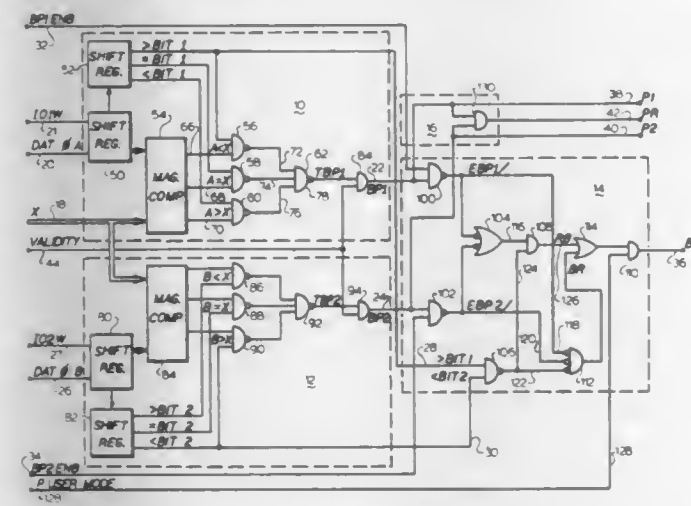
**RELATIONAL BREAK SIGNAL GENERATING DEVICE**  
James M. Kelley, San Jose, and Fred F. Coury, Sunnyvale, both of Calif., assignors to Relational Memory Systems, Inc., Sunnyvale, Calif.

Filed Apr. 13, 1979, Ser. No. 29,825

Int. Cl.<sup>3</sup> G06F 7/00, 7/02, 9/00

U.S. Cl. 364-200

8 Claims



1. A relational break signal generating device for use in debugging and monitoring the execution of computer programs and producing break signals when a particular relationship exists between an input program address signal and a pair of selected reference address signals which define an address region, comprising:

first relational comparing means for comparing each address X of an input program signal to the address A of a first selected reference signal and for developing a first break point signal when certain first qualifying conditions specifying a particular relationship between the input address X and the address A of said first reference signal are met;  
second relational comparing means for comparing each address X of said input program signal to the address B of a second selected reference signal and for developing a second break point signal when certain second qualifying conditions specifying a particular relationship between the input address X and the address A of said second reference signal are met; and  
combinational logic means for monitoring said first and second break point signals and for generating a break signal when one of said break point signals exists and certain third qualifying conditions are met, said third qualifying conditions including either the condition that the magnitude of the address X of said input program

signal is greater than the magnitude of the address A of said first reference signal but less than the magnitude of the address of said second reference signal or the condition that the magnitude of the address X of said input program signal is either less than or equal to the magnitude of the address A of said first reference signal or that the magnitude of the address X of said input program signal is either greater than or equal to the magnitude of the address B of said second reference signal.

4,338,661

**CONDITIONAL BRANCH UNIT FOR MICROPROGRAMMED DATA PROCESSOR**

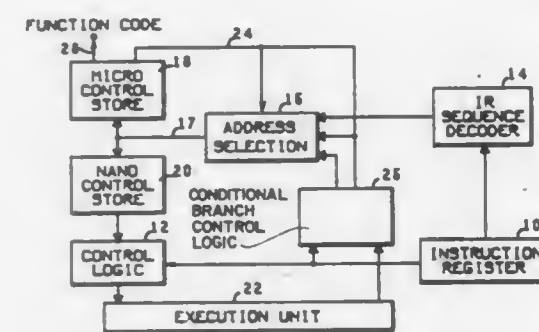
Harry L. Tredennick, and Thomas G. Gunter, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 21, 1979, Ser. No. 41,201

Int. Cl.<sup>3</sup> G06F 9/06, 9/22, 9/30

U.S. Cl. 364-200

5 Claims



1. A data processor adapted for microprogrammed operation for executing a plurality of macroinstructions, the data processor comprising:

- first means for storing a macroinstruction having a field containing conditional branch information;
- a control store having an input port for receiving a control store address and an output port providing a control word which includes a conditional branch selection field; and
- means for storing conditional signals indicative of the operational state of the data processor,
- conditional branch control means coupled to the first means, coupled to the output port of the control store, and coupled to the means for storing conditional signals, the conditional branch control means comprising means for decoding the conditional branch selection field to provide a selection signal for selecting branch information from either the macroinstruction branch field or the control word conditional branch selection field, and means responsive to the selected branch field information and the conditional signals for providing branch execution address information to the control store.

4,338,662

**MICROINSTRUCTION PROCESSING UNIT RESPONSIVE TO INTERRUPTION PRIORITY ORDER**  
Yasushi Yokoyama, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 22, 1979, Ser. No. 68,709

Claims priority, application Japan, Aug. 22, 1978, 53-102628

Int. Cl.<sup>3</sup> G06F 9/22

U.S. Cl. 364-200

5 Claims

1. A microinstruction processing unit of the type in which microinstructions are fed and executed in a predetermined sequence to process data in a data processing system, said microinstructions having various priority ranks such that, upon the feeding of an interrupting microinstruction of a higher priority rank, the execution of a previously fed microinstruction of lower priority rank will be interrupted, said microinstructions including load accumulator instructions, unload accumulator instructions, arithmetic instructions and return-

after-interruption instructions, said microinstruction processing unit comprising:

a microprogram control storage for storing microinstructions to be fed in said predetermined sequence,  
a storage register, a register file and an arithmetic circuit, control means connected to said storage register for causing the receiving and storing of data from an external data bus in response to the feeding of each load accumulator instruction, for causing the feeding of data to an external data bus in response to the feeding of each unload accumulator instruction, for causing the feeding of data and the receiving of data from said arithmetic circuit in response to the feeding of each arithmetic instruction and for receiving data from said register file in response to the feeding of each return-after-interruption instruction, said register file having a plurality of data storage positions, each said position representing a different priority rank, said register file being connected and arranged to receive and store data from said external data bus in response to the feeding of each load accumulator instruction which is lower than the highest priority rank and to store such data

4,338,663

**CALLING INSTRUCTIONS FOR A DATA PROCESSING SYSTEM**

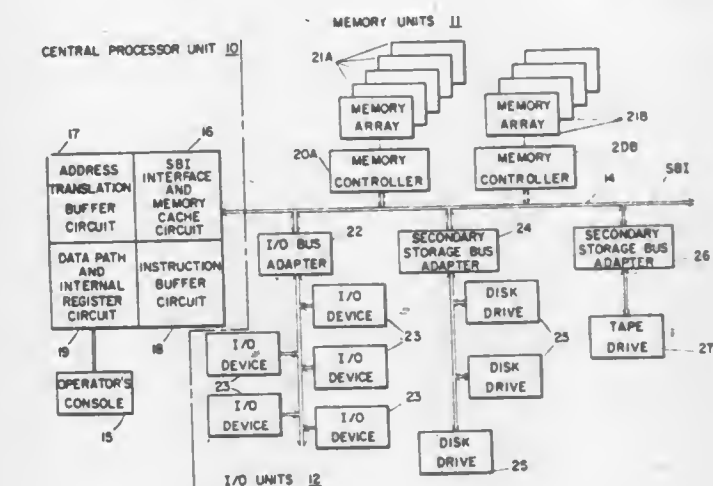
William D. Strecker, Harvard; Thomas N. Hastings, Lexington, both of Mass.; Richard F. Lary, Colorado Springs, Colo.; David P. Rodgers, Acton, and Steven H. Rothman, Bolton, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 954,602, Oct. 25, 1978, Pat. No. 4,241,399, which is a continuation-in-part of Ser. No. 845,416, Oct. 25, 1977, abandoned. This application Sep. 18, 1980, Ser. No. 188,291

Int. Cl.<sup>3</sup> G06F 9/40

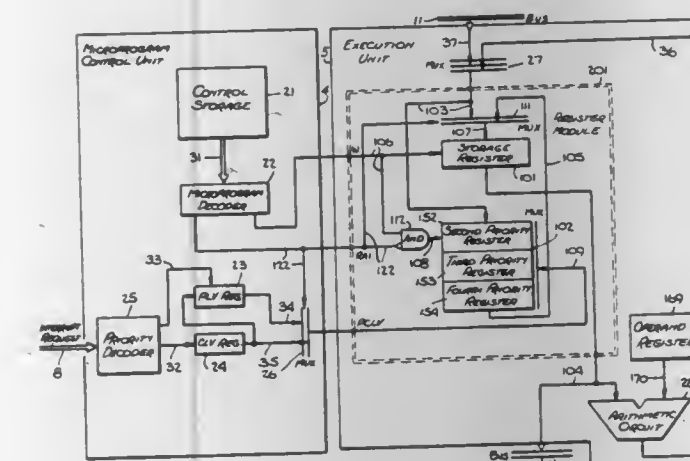
U.S. Cl. 364-200

10 Claims



1. A central processor for a data processing system which system further includes a memory for storing instructions that are grouped in routines, at least one routine constituting a subroutine for processing information in an argument list, a predetermined memory location of the subroutine storing operating information that defines the operating environment of the central processor while it is processing the subroutine, and at least one other routine in the memory being a calling routine that utilizes the subroutine and that contains a subroutine calling instruction that includes an operation code, a first operand specifier for identifying a representation of the argument list to be passed from the calling routine to the subroutine and a second operand specifier for identifying the predetermined location in the memory, said central processor comprising:

- a program counter register for addressing instructions in the memory,
- a stack pointer register for addressing locations in a memory stack including a block of consecutive memory locations,
- operating environment means for storing operating information that defines the operating environment for said central processor unit of the routine being processed by said central processor,
- instruction decoding means for decoding the instruction operation codes,
- operand retrieval means connected to said instruction decoding means for decoding the operand specifiers of the subroutine when said instruction decoding means decodes an operation code as a subroutine calling instruction, and
- control means connected to said operating environment means, said instruction decoding means and said operand retrieval means for controlling the response of said central processor to the subroutine calling instruction, said control means including:
  - means connected to said instruction decoding means and said operating environment means for storing the operating information for the calling routine in the memory stack at locations specified by said stack pointer register prior to the execution of the subroutine thereby auto-



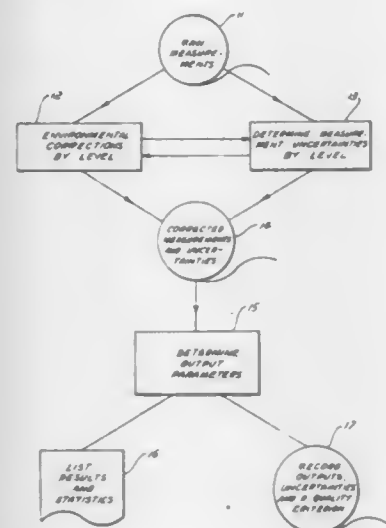
in a storage position corresponding to the priority rank of such load accumulator instruction, said register file further being connected and arranged to feed data from one of said storage positions to said storage register in response to the feeding of a return-after-interruption instruction,

- a priority decoder for producing signals representative of the priority rank of each microinstruction and each interrupting microinstruction as it is fed,
- a current level register for storing signals from said priority decoder,
- a previous level register, of the stacking type, connected and arranged to receive, upon the feeding of a microinstruction of higher priority rank which interrupts a microinstruction of lower priority rank, the signals previously stored in said current level register, and
- a multiplexer associated with said register file and connected and arranged to select, according to the signals in said previous level register, and upon the occurrence of a return-after-interruption instruction, the data storage position in said register file from which data is fed to said storage register.



- matically to save processor state information for the calling routine, and
- ii. means for transferring the operating information from the subroutine to said operating environment means thereby to establish the operating environment for said central processor during the processing of the subroutine.

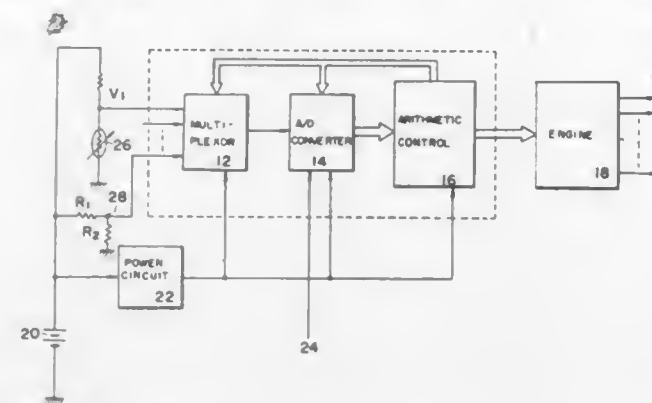
**4,338,664**  
**METHOD OF EVALUATING FORMATIONS TRAVERSED BY A BOREHOLE**  
 Claude Mayer, Paris, France, assignor to Schlumberger Technology Corporation, New York, N.Y.  
 Filed May 19, 1980, Ser. No. 151,504  
 Int. Cl.<sup>3</sup> G01V 3/18, 3/38, 5/04; G06F 15/20  
 U.S. Cl. 364-422 **26 Claims**



26. A method of obtaining an improved display of a trace over a depth interval of values of output parameters characteristic of the geologic formations traversed by a borehole, said method including the steps of:

- generating signals indicative of actual values for a plurality of borehole and/or formation parameters;
- deriving a plurality of response equations which functionally relate at least some of said formation parameters to said output parameters;
- utilizing said response equations and assumed values of said output parameters to obtain signals indicative of calculated or theoretical values for each of said at least some of said formation parameters;
- generating signals indicative of uncertainties for said responsive equations and for each of said at least some of said formation parameters;
- generating signals indicative of the differences between said calculated or theoretical value signals and said actual value signals;
- generating signals indicative of weighting factors dependent on said response equation uncertainty signals and said formation parameter uncertainty signals, said weighting factor signals being functionally related to the inverse of the sum of the squares of said uncertainty signals;
- combining said difference signals and said weighting factor signals to generate an incoherence function signal functionally related to the sum of the squares of said difference signals and directly related to said weighting factor signals;
- varying said assumed values of said output parameters until said incoherence signal has obtained a minimum value and generating output parameter signals indicative of the assumed values corresponding to said minimum incoherence signal;
- recording on a medium a trace representation over said depth interval of an output parameter signal and a trace representation over said depth interval of said minimum incoherence function signal.

**4,338,665**  
**DATA GATHERING SYSTEM FOR AUTOMOTIVE VEHICLES**  
 Shigeo Aono, Tokyo, and Sadao Takase, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan  
 Filed May 30, 1980, Ser. No. 154,768  
 Claims priority, application Japan, May 31, 1979, 54-67709  
 Int. Cl.<sup>3</sup> G06F 15/20  
 U.S. Cl. 364-424 **3 Claims**

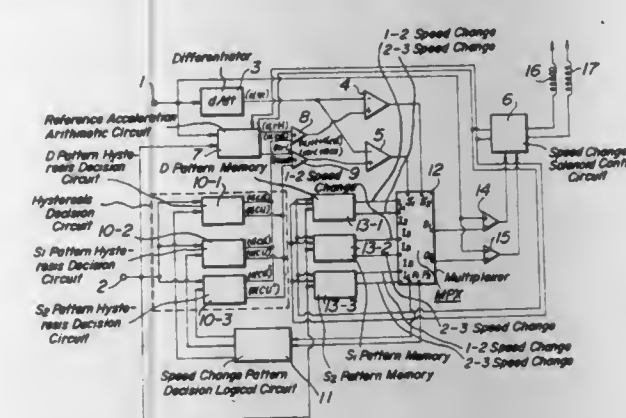


- A system comprising:
  - at least one sensor for providing an analog sensor voltage signal related to an engine operating condition;
  - a first reference voltage source for providing a first predetermined voltage indicative of a first reference value;
  - a second reference voltage source for providing a second predetermined voltage lower than said first predetermined voltage;
  - an A/D converter for converting an input analog voltage to a digital value, said A/D converter having an input for receiving said input analog voltage and including a capacitor having first and second terminals, said first terminal being connected to said A/D converter input, and control means for placing said capacitor in a charging mode to permit said capacitor to charge in response to said input analog voltage for a predetermined time period, applying a third predetermined voltage to said capacitor second terminal at the termination of said capacitor charging mode, placing said capacitor in a discharging mode to discharge the same at a constant rate until the voltage at said capacitor first terminal falls to a predetermined value after the termination of said capacitor charging mode, and resetting said capacitor to its initial state;
  - a multiplexor having data channels for connecting said first and second reference voltage sources and said sensor to said A/D converter input, respectively; and
  - a digital computer for sequentially selecting said multiplexor data channels in a desired order for sequentially coupling said first and second reference voltage sources and said sensor to said A/D converter input, said digital computer storing a digital value corresponding to said first reference value and receiving from said A/D converter and storing digital values for said sensor voltage and said first and second predetermined voltages, and calculating a corrected digital value corresponding to the sensor voltage from said stored digital values.

**4,338,666**  
**SPEED CHANGE CONTROL DEVICE FOR AUTOMATIC TRANSMISSION**  
 Tadashi Suzuki, and Norimasa Kishi, both of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Japan  
 Filed Jul. 3, 1980, Ser. No. 165,705  
 Claims priority, application Japan, Jul. 9, 1979, 54-86614  
 Int. Cl.<sup>3</sup> B60K 41/04  
 U.S. Cl. 364-424.1 **8 Claims**

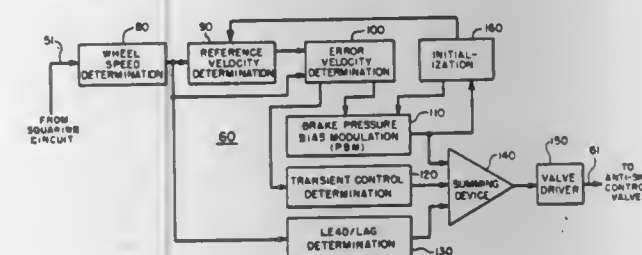
- In a shift control device for an automatic transmission having a vehicle speed sensor (1) for sensing vehicle speed to

generate vehicle speed signals, an engine load sensor (2) for sensing engine load to generate signals representing the engine load, a shift control circuit (6) connected to said sensors (1, 2) for generating shift position and instruction signals based on any one of at least two predetermined shift patterns (D, S<sub>1</sub>, S<sub>2</sub>) of a transmission range suitable for different driving conditions of a vehicle in accordance with output signals supplied from both sensors, the shift instruction signals being supplied to shift solenoids (16, 17), the improvement comprising:



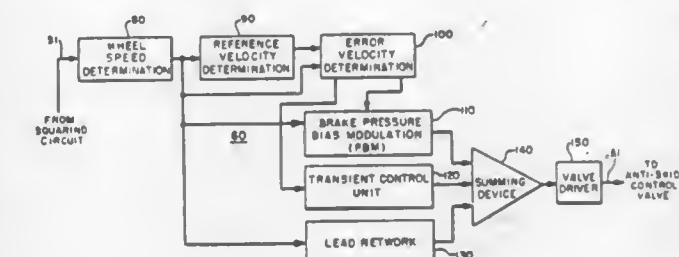
- a shift pattern decision circuit connected between the sensors (1, 2) and the shift control circuit (6) for generating signals capable of selecting and deciding any one of the shift patterns of the transmission range, said shift pattern decision circuit including a hysteresis setting means for setting hysteresis to the changeover characteristic between the shift patterns (D, S<sub>1</sub>, S<sub>2</sub>), the hysteresis characteristic set by said hysteresis setting means varying in accordance with whether the shift pattern is changed over from low speed to high speed side or from high speed side to low speed side, respectively.

**4,338,667**  
**INITIALIZATION APPARATUS FOR A BRAKE CONTROL SYSTEM**  
 Robert D. Cook, Valencia, and Thomas Skarvada, Woodland Hills, both of Calif., assignors to Crane Co., Chicago, Ill.  
 Filed Mar. 20, 1980, Ser. No. 132,112  
 Int. Cl.<sup>3</sup> B60T 8/02; G06F 15/20  
 U.S. Cl. 364-426 **38 Claims**



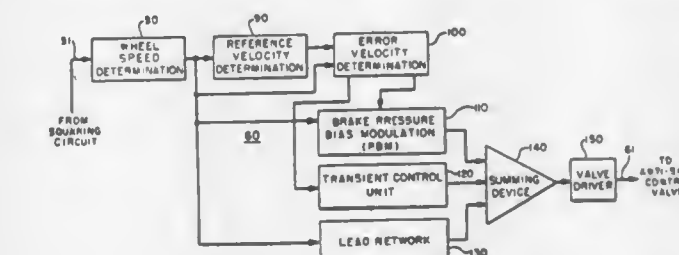
- In a vehicle antiskid brake control system for controlling the braking action on a braked wheel during a braking period to slow the vehicle from a higher speed to a lower speed; said system including modulator means for generating a modulated brake control signal; and valve means, responsive to the brake control signal, for controlling the braking of said braked wheel; the improvement comprising:
  - means for initializing said modulator means by modifying said brake control signal to reduce braking action on said braked wheel, said initializing means operative only during an initial reduction in braking action by said valve means after a selected time period of substantially no reduction in braking action by said valve means, said selected time period being shorter in duration than the braking period such that the initializing means may operate repeatedly during the braking period to initialize said modulator means.

**4,338,668**  
**MODULATOR FOR ANTI-SKID BRAKING SYSTEM**  
 Robert D. Cook, Valencia, Calif., assignor to Crane Co., Chicago, Ill.  
 Filed May 7, 1980, Ser. No. 147,385  
 Int. Cl.<sup>3</sup> B60T 8/00; G06F 15/20  
 U.S. Cl. 364-426 **21 Claims**



- In an anti-skid braking system for modifying the action of a brake application means for a braked wheel of a vehicle, said system including means for utilizing information obtained from the rotation of said wheel to generate an input signal indicative of a braking condition; modulator means, responsive to the input signal, for generating a modulated brake control signal; and means, responsive to the modulated brake control signal, for modifying the action of the brake application means; the improvement comprising:
  - means, included in the modulator means, for generating a rate signal, said rate signal including a non-linear function of the input signal such that the change in the rate signal for a selected change in the input signal varies as a freely selectable function of the magnitude of the input signal; and
  - means, included in the modulator means, for generating the modulated brake control signal as a time integral function of the rate signal, said non-linear function chosen to promote effective control of the action of the brake application means.

**4,338,669**  
**MODULATOR FOR ANTI-SKID BRAKING SYSTEM**  
 Thomas Skarvada, Woodland Hills, Calif., assignor to Crane Co., Chicago, Ill.  
 Filed May 7, 1980, Ser. No. 147,386  
 Int. Cl.<sup>3</sup> B60T 8/00; G06F 15/20  
 U.S. Cl. 364-426 **18 Claims**

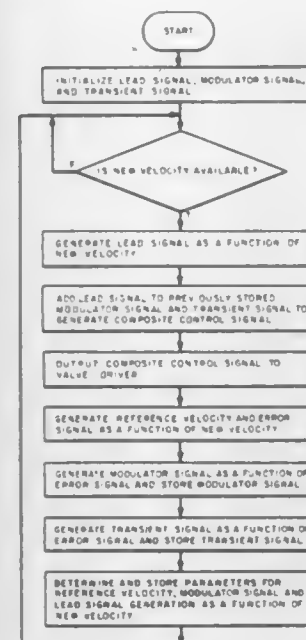


- In an anti-skid braking system for modifying the action of a brake application means for a braked wheel of a vehicle, said system including means for utilizing information obtained from the rotation of said wheel to generate an input signal indicative of a braking condition; modulator means, responsive to the input signal, for generating a modulated brake control signal; means, included in the modulator means, for generating a rate signal as a function of both the input signal and a threshold signal; means, included in the modulator means, for generating the modulated brake control signal as a time integral function of the rate signal; and means, responsive to the modulated brake control signal, for modifying the action of the brake application means; the improvement comprising:
  - means, included in the modulator means, for generating the threshold signal as a function of a velocity signal generally indicative of the velocity of the braked wheel.



**4,338,670**  
**METHOD AND APPARATUS FOR GENERATING A CONTROL SIGNAL AS A FUNCTION OF A PLURALITY OF INTERMEDIATE CONTROL SIGNALS**  
 Thomas Skarvada, Woodland Hills, Calif., assignor to Crane Co., Chicago, Ill.

Filed May 7, 1980, Ser. No. 147,594  
 Int. Cl.<sup>3</sup> B60T 8/00; G05B 19/02; G06F 15/20  
 U.S. Cl. 364-426 12 Claims



1. A control apparatus responsive to input means for generating a periodically adjusted input signal, said input signal having a first input value at a first time and a second input value at a second time, subsequent to the first time, said apparatus comprising:

- first means, responsive to the input means, for generating a first intermediate control signal prior to the second time as a function of the first input value of the input signal;
- means for storing the first intermediate control signal prior to the second time;
- second means, responsive to the input means, for generating a second intermediate control signal after the second time as a function of the second input value of the input signal, said second intermediate control signal varying more rapidly with time than the first intermediate control signal; and
- means for generating an output control signal after generation of the second intermediate control signal as a function of both the stored first intermediate control signal and the second intermediate control signal;
- said first means, storing means, second means, and output control signal generating means cooperating to maintain the elapsed time between the second time and the generation of the output control signal at a sufficiently short interval such that the output control signal is generated before the second intermediate control signal becomes stale.

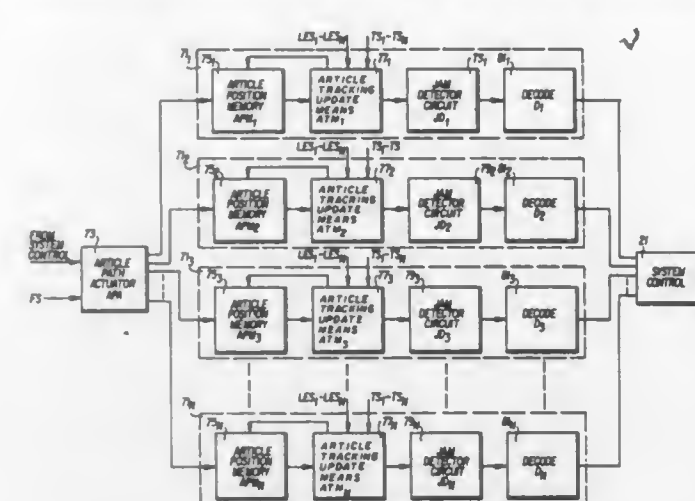
**4,338,671**  
**METHOD AND APPARATUS FOR MONITORING THE PASSAGE OF ARTICLES THROUGH A MODULAR PROCESSING SYSTEM**  
 Henry M. Korytkowski, and Frederick H. Dear, both of Rochester, N.Y., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 844,475, Oct. 21, 1977. This application Dec. 3, 1979, Ser. No. 99,961  
 Int. Cl.<sup>3</sup> G08B 21/00; B65H 7/02  
 U.S. Cl. 364-478 8 Claims

1. An apparatus establishing logical article paths for monitoring the processing of articles within a modular article processing system, comprising:

- a plurality of logical article paths for tracking the position of articles within said article processing system, each of said

logical article paths comprising memory means for updatablely storing data indicating the position of said associated article within said processing system, means coupled to said memory means for periodically updating the position of said associated article within said memory means responsive to a change in the position of said associated article within said article processing system, processing system failure detection means coupled to said updating means for detecting the failure of said article processing

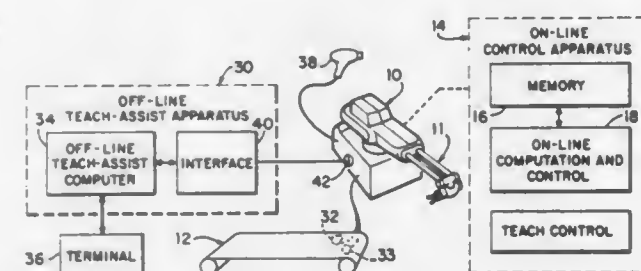


system upon the failure of an article to change position within a predetermined time period; and decode means coupled to said detection means for determining the malfunctioning module within a modular article processing system; and

means for associatively activating article path in response to each article entered into the processing system, whereby each article will be associated with an individual logical article path while it is being processed in said processing system.

**4,338,672**  
**OFF-LINE TEACH ASSIST APPARATUS AND ON-LINE CONTROL APPARATUS**  
 William Perzley, Weston, and Yung-Ming Yen-Chen, Brookfield Center, both of Conn., assignors to Unimation, Inc., Danbury, Conn.

Continuation-in-part of Ser. No. 898,112, Apr. 20, 1978, abandoned. This application May 29, 1980, Ser. No. 154,439  
 Int. Cl.<sup>3</sup> G05B 19/42  
 U.S. Cl. 364-513 81 Claims

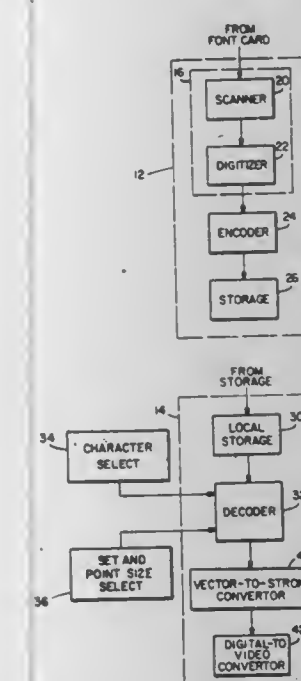


1. In a programmable manipulator provided with a manipulator arm which is movable in a plurality of axes, having means for developing position signals corresponding to the actual position of said arm in said plurality of axes and arranged adjacent a predetermined work path to perform a series of operations with respect to a workpiece moving along said work path, the combination of:

- means for positioning said arm at different locations relative to a stationary workpiece during an initial teaching operation;
- means for precomputing signals representing movement of said arm between said different locations relative to the workpiece accounting for projected workpiece movement and corresponding to movement at the maximum dynamic capabilities of said manipulator arm; and

means for storing said precomputed signals for use as command signals in controlling movement of said arm in a playback cycle with a moving workpiece.

**4,338,673**  
**PHOTOTYPESETTING SYSTEM AND METHOD**  
 Kenneth W. Brown, Framingham, Mass., assignor to Compu-graphic Corporation, Wilmington, Mass.  
 Continuation of Ser. No. 966,638, Dec. 5, 1978, abandoned. This application Aug. 27, 1980, Ser. No. 181,808  
 Int. Cl.<sup>3</sup> G06F 3/153, 15/20  
 U.S. Cl. 364-523 30 Claims



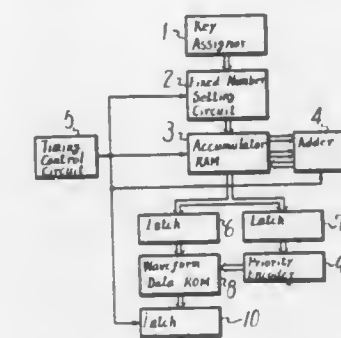
8. System for generating phototypesetting control signals for a cathode ray tube (CRT) having a constant stroke rate raster pattern, comprising:

- means for scanning selected images and generating character data representative thereof;
- means for encoding said character data in accordance with a first predetermined sequence of steps to generate an ordered succession of encoded untagged character data words;
- means for decoding said encoded untagged character data words in accordance with a second predetermined sequence of steps;
- means for transforming said decoded character data to said control signals, said control signal being adapted to reproduce said selected images on said CRT;
- wherein said first and second predetermined sequence of steps are related so that the ordering of said ordered succession of data words provides data word type and contour segment identification required by said second sequence of steps to generate stroke signals for said output CRT;
- wherein said first predetermined steps are adapted so that said second predetermined steps may be selectively modified to provide selective scaling of reproduction of said selected images on said CRT.

**4,338,674**  
**DIGITAL WAVEFORM GENERATING APPARATUS**  
 Osamu Hamada, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan  
 Filed Apr. 1, 1980, Ser. No. 136,296  
 Claims priority, application Japan, Apr. 5, 1979, 54-41324  
 Int. Cl.<sup>3</sup> G10H 1/00, 1/06  
 U.S. Cl. 364-718 5 Claims

1. Digital waveform generating apparatus for generating a signal of a desired waveform at a selected frequency within a frequency range comprising

generating means for generating a first data word whose digital value corresponds to said selected frequency; accumulating means for storing a second data word corresponding to a data memory address; adding means for adding the first data word to the second data word and storing the result in said accumulating means as an accumulated second data word; waveform storage means for storing a plurality of waveform data words corresponding to said desired waveform, each of said waveform data words being stored at a predetermined respective data memory address therein; clock means providing a timing signal of fixed frequency; and control means responsive to said timing signal for controlling said accumulating means and for addressing the waveform data words stored in said waveform storage means in accordance with the accumulated second data word stored in said accumulating means upon occurrence



of said timing signal so that the addressed waveform data words are read out from said waveform storage means as said output signal;

wherein, to avoid a folded error in the output signal, said waveform storage means is partitioned into a plurality of data banks each corresponding to a predetermined portion of said frequency range and each storing a corresponding plurality of waveform data words therein, with each such plurality of waveforms data words representing waveforms having progressively fewer harmonics as the frequency of the corresponding portion of the frequency range increases, and said control means includes means for selecting one of said data banks in accordance with the particular portion of the frequency range containing said selected frequency to provide as said output signal its waveform data words in response to said accumulated second data words.

**4,338,675**  
**NUMERIC DATA PROCESSOR**  
 John F. Palmer, Hillsboro, Oreg.; Bruce W. Ravenel, Sunnyvale, Calif., and Rafi Nave, Kiriat Motzkia, Israel, assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 13, 1980, Ser. No. 120,995  
 Int. Cl.<sup>3</sup> G06F 7/48, 9/00, 11/00  
 U.S. Cl. 364-748 10 Claims

1. An improvement in a numeric data processor for performing calculations on a plurality of data formats representable by a fraction and exponent representation comprising:

- first means for converting said plurality of data formats to a file format having a fraction and exponent representation wherein said file format has a numeric fraction and exponent domain greater than any one of said plurality of data formats;
- a fraction and exponent bus coupled to said first means;
- a stack of registers configured to store numeric information in said file format, said stack coupled to said exponent and fraction bus;
- an arithmetic unit to perform arithmetic operations on said







4,338,680

## ELECTRONIC TIMEPIECE

Yasushi Nomura, Tokorozawa, Japan, assignor to Citizen Watch Co. Ltd., Tokyo, Japan  
Continuation of Ser. No. 837,334, Sep. 28, 1977, abandoned. This application May 14, 1979, Ser. No. 38,788

Claims priority, application Japan, Sep. 28, 1976, 51-116441; Sep. 28, 1976, 51-116442

Int. Cl.<sup>3</sup> G04B 19/24, 25/00; G04C 19/00  
U.S. Cl. 368—29

12 Claims



1. An electronic timepiece comprising:

- (a) a time reference signal generation source for generating a time reference signal;
- (b) time keep means for processing the time reference signal to synthesize a driving signal, said time keep means including a gear wheel train which keeps the time;
- said time keep means comprising a frequency divider circuit connected to said time reference signal generation source, a driving circuit receiving an output signal from said frequency divider circuit, said gear wheel train receiving a signal from said driving circuit and keeping the time information;
- (c) analogue display means for displaying at least hours and minutes by means of hands and dial plate connected with said gear wheel train;
- (d) electrical time keep means for receiving an output signal from said time keep means and for keeping a time information of at least hours and minutes;
- said electrical time keep means converting the time information kept by said gear wheel train into an electrical signal;
- (e) external alarm actuating means for providing an alarm time information of at least hours and minutes;
- (f) an alarm memory circuit for receiving and storing the alarm time information provided by said external alarm actuating means;
- (g) a coincidence detection circuit connected to said alarm memory circuit and to said electrical time keep means respectively, and receiving and comparing the alarm time information signal stored in said alarm memory circuit and the time information signal kept by said electrical time keep means detecting a coincidence thereof so as to transmit an alarm signal;
- (h) an alarm emitting device emitting an alarm by the alarm signal from said coincidence detection circuit;
- (i) alarm digital display means connected to said alarm memory circuit and provided at the part of a display area of said analogue display means for digitally displaying the alarm time information stored in said alarm memory circuit; and
- (j) means for converting said electrical signal to a digital display corresponding to said time information kept by the gear wheel train.

4,338,681

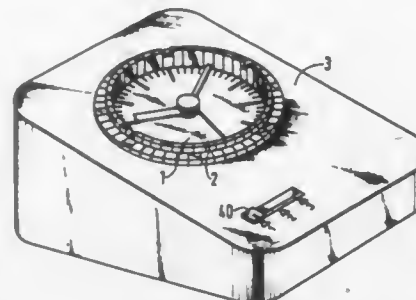
## ELECTRIC TIMING CLOCK

Egon Rapp, Schramberg, and Heinrich Oertel, St. Georgen, both of Fed. Rep. of Germany, assignors to Gebrüder Junghans GmbH, Schramberg, Fed. Rep. of Germany  
Filed Feb. 4, 1980, Ser. No. 118,091

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, 2904744

Int. Cl.<sup>3</sup> G04B 23/02; G04C 21/16  
U.S. Cl. 368—72

13 Claims



1. An electric clock having an hour hand on an hour hand shaft and an electrical switching device which includes a plurality of time setting means (2) arranged about a clock dial (1), which are selectively manually displaceable at preselected time points between on and off positions, wherein each time setting means (2), has an associated contact finger (18) extending radially below the clock dial (1), with a ring shaped conductive connection of the contact fingers (18) to each other, and wherein a contact maker (13) is provided rotating with the hour hand, characterized in that said contact fingers (18) are elastic segments on a segmented ring (15) and are pivotally maintained projecting into the path of rotation of said contact maker (13) when an associated time setting means (2) is engaged in an on position and acts on the opposite free segment end (17), and said contact maker (13) is resiliently deflected opposite to the path of its rotational movement by the contact fingers (18) pivoted into its path of movement.

4,338,682

## TRACKING SERVO SYSTEM OF VIDEO DISC PLAYER

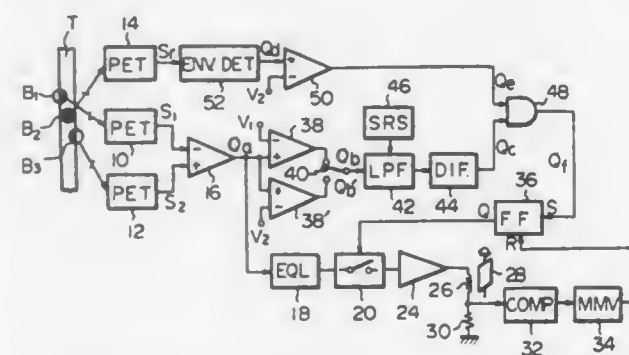
Toshihiko Hosaka, and Toru Akiyama, both c/o Universal Pioneer Tokorozawa Plant, 2610, Hanazono 4-chome, Tokorozawa-City, Saitama Prefecture, Japan

Filed Oct. 10, 1980, Ser. No. 196,143

Claims priority, application Japan, Oct. 16, 1979, 54-133697  
Int. Cl.<sup>3</sup> G11B 7/00, 21/10

U.S. Cl. 369—44

8 Claims



1. A tracking servo system for a video-disc information reading and reproducing apparatus (wherein the information carried by a video disc is to be scanned by a scanning spot displaced radially of the video disc) which apparatus includes a pick-up unit having a system for producing a scanning spot with respect to a video disc while deflecting the scanning spot radially of said video disc so as to make the scanning spot to trace a target track of the video disc, comprising:  
signal level detector means mounted on said pick-up unit, for detecting the signal level of the reproducing signal read

out by the scanning spot from said video disc and producing an output signal variable with the detected signal level,  
error signal producing means operative to produce a tracking error signal continuously variable in magnitude with an amount of deviation, if any, of the scanning spot from (a) said target track (on) of the video disc and having polarities respectively corresponding to the directions in which the scanning spot is to be displaced radially of the video disc,  
scanning spot deflecting means mounted on said pick-up unit for deflecting said scanning spot in response to variations in magnitude of said error signal,  
comparing means for comparing the output signal from said signal level detector means with reference signal having a predetermined level for producing an output signal when the former is higher in level than the latter,  
control signal producing means responsive to said tracking error signal and said output signal from said comparing means and operative to produce a control signal when said tracking error signal has a predetermined level in the presence of the output signal from the comparing means, and  
loop closure switch means provided (in the servo loop of said tracking servo system) between said error signal producing means and said scanning spot deflecting means and operative to (close the servo loop) interconnect said error signal producing means and said scanning spot deflecting means in response to (the) said control signal (delivered from said control signal signal producing means) so as to supply said error signal to said scanning spot deflecting means.

4,338,683

## VIDEODISC PLAYER WITH CONSTANT TURNTABLE VELOCITY

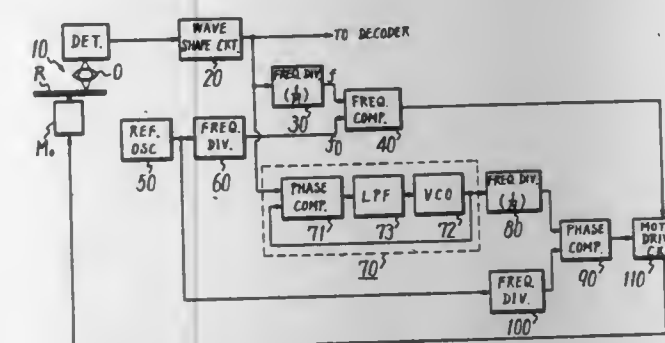
Shunsuke Furukawa, Hiroshi Ogawa, Hitoshi Okada, and Masanobu Yamamoto, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 6, 1980, Ser. No. 204,708

Claims priority, application Japan, Nov. 15, 1979, 54-148094  
Int. Cl.<sup>3</sup> G11B 17/00

U.S. Cl. 369—50

1 Claim



1. A disc record reproducing apparatus comprising, a disc on which a PCM (pulse code modulation) signal in the form of an RLLC (run length limited code) is recorded, a motor for rotating said disc, a detecting head for scanning a recording surface of said disc to detect the PCM signal, a frequency-divisor for frequency-dividing a reproduced PCM signal by said detecting head with a dividing factor of  $m$  where  $m$  is greater than 100, a reference oscillator for generating a reference frequency signal, a frequency comparator coupled to said frequency divider and said reference oscillator for comparing the frequency of the signal generated from said reference oscillator with the frequency of the signal delivered from said frequency divider to produce an output proportional to the compared signals, a motor drive circuit coupled to said frequency comparator for driving said motor by the output from said frequency comparator such that the relative velocity of said detecting head to said disc becomes a constant line velocity responsive of the relative position of said detecting head to said disc, and further comprising a voltage controlled oscillator,

a first phase comparator receiving the reproduced PCM signal and a signal generated by said voltage controlled oscillator and producing an output proportional to their phase differences and supplying said output to said voltage controlled oscillator, a second phase comparator receiving an input from said voltage controlled oscillator and an input from said reference oscillator and producing an output proportional to the phase differences between said inputs, and said motor drive circuit receiving an input from said second phase comparator.

4,338,684

## SCANNING SYSTEM FOR REPRODUCING SIDE-BY-SIDE OPTICAL SOUND TRACKS

Ray M. Dolby, San Francisco, Calif., assignor to Dolby Laboratories, Inc., San Francisco, Calif.

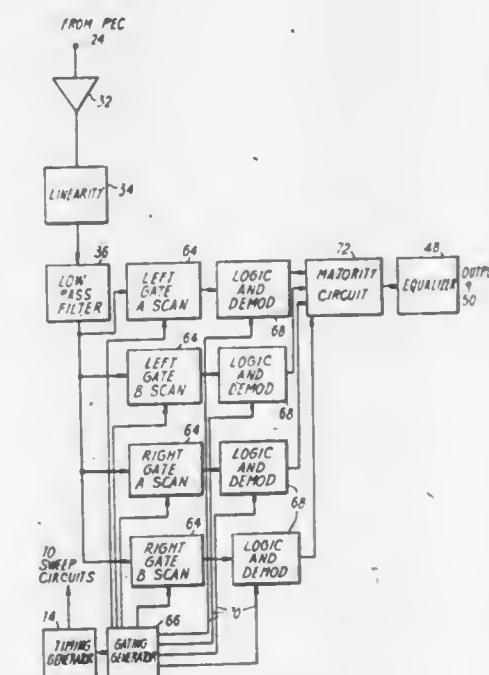
Division of Ser. No. 778,870, Mar. 18, 1977, Pat. No. 4,223,188, which is a continuation-in-part of Ser. No. 603,671, Aug. 11, 1975, abandoned. This application Apr. 7, 1980, Ser. No. 137,902

Claims priority, application United Kingdom, Aug. 27, 1974, 37292/74

Int. Cl.<sup>3</sup> G11B 7/14

U.S. Cl. 369—92

2 Claims



1. A scanning system for reproducing a plurality of side-by-side variable area optical sound tracks, comprising  
scanning means arranged to scan repeatedly across the width of all of said tracks in each scan to provide a two-level first electrical signal;  
a plurality of bistable circuits;  
gating means coupled between said scanning means and said bistable circuits;  
a source of gating signals synchronized to said scanning means and operating said gating means to pass portions of said first signal corresponding to the different sound tracks to different ones of said bistable circuits;  
each said bistable circuit providing a two-level second signal and being responsive to the first signal portion gated thereto to set its second signal from a first level to a second level in response to a transition in the first signal occurring as said scanning means scan from an opaque area to a clear area of the corresponding sound track;  
delay means operative to delay setting of each bistable circuit until said transition in the first signal is followed by maintenance of the first signal at a level corresponding to a clear area of the corresponding sound track for a predetermined length of time established by the delay means; and  
means for resetting said bistable circuits at reference instants, independently of said first signal, thereby to reset said second signals from said second level to said first level.



# DESIGNS

JULY 6, 1982

265,265

BRASSIERE

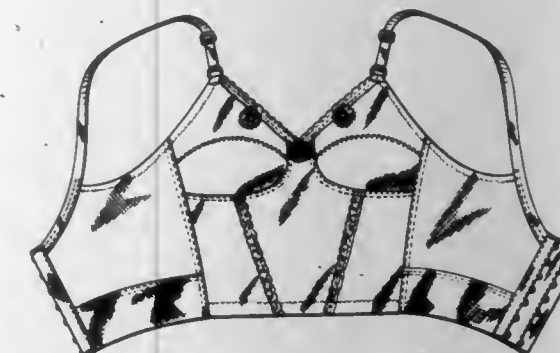
Harold Stern, Wyckoff, N.J., and William White, New York, N.Y., assignors to International Playtex, Inc., Stamford, Conn.

Filed Jul. 14, 1980, Ser. No. 167,859

Term of patent 14 years

Int. Cl. D2—01

U.S. Cl. D2—24



265,268

TOTE BAG

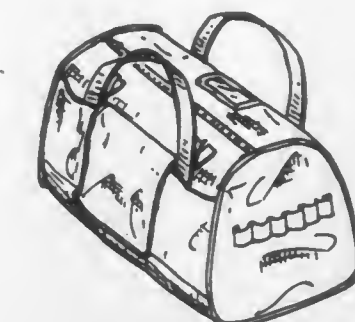
Stephan E. Plough, 15805 Oak Valley Rd., Ramona, Calif. 92065, and David L. Swartzendruber, Ramona, Calif., assignors to Stephan E. Plough, Ramona, Calif.

Filed Aug. 25, 1980, Ser. No. 181,276

Term of patent 14 years

Int. Cl. D3—01

U.S. Cl. D3—48



265,266

LOAFER

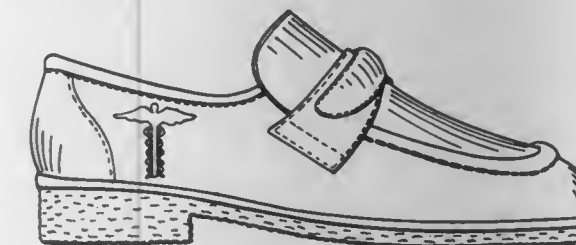
Clifford C. Snyder, 875 Donner Way, Salt Lake City, Utah 84108

Filed Sep. 10, 1979, Ser. No. 74,082

Term of patent 14 years

Int. Cl. D2—04

U.S. Cl. D2—269



265,269

ICE SCRAPER WITH ATTACHED SNOW BRUSH

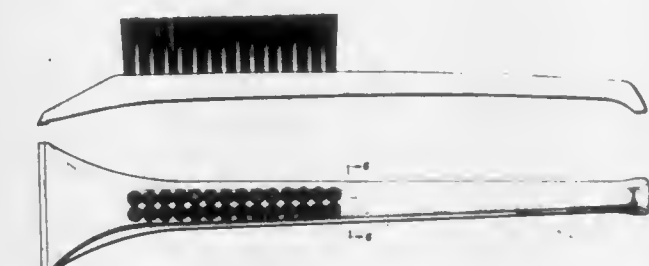
Frank B. Frantz, South Euclid, Ohio, assignor to The Atlas Textiles Co. Division of The Ohio Wiping Cloth Mfg. Co., Cleveland, Ohio

Filed Mar. 27, 1979, Ser. No. 24,196

Term of patent 14 years

Int. Cl. D4—01; D7—05

U.S. Cl. D4—6



265,267

HORTICULTURAL IMPLEMENT CONTAINER

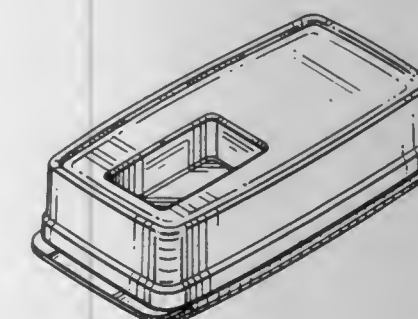
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Northbrook, Ill.

Filed Jun. 2, 1980, Ser. No. 155,740

Term of patent 14 years

Int. Cl. D3—02

U.S. Cl. D3—30.1



265,270

COMBINED TOOTHBRUSH AND TONGUE CLEANER

William R. McCarty, 176 Lenox Ave., Pittsfield, Mass. 01201

Filed Oct. 1, 1980, Ser. No. 192,861

Term of patent 14 years

Int. Cl. D4—02

U.S. Cl. D4—18





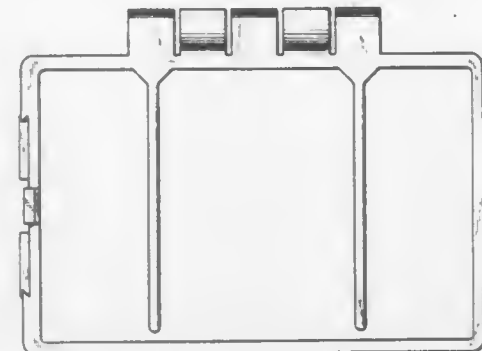
265,271  
**COMBINED COMPUTER-CONTROLLED DRAFTING  
 TABLE, CHAIR AND MICROPROCESSOR BASE UNIT  
 FOR ENGINEERING USE**  
 Eugene L. Selleck, 419 Wolcott Ave., Beacon, N.Y. 12508  
 Filed Dec. 5, 1979, Ser. No. 100,366  
 Term of patent 7 years  
 Int. Cl. D6—05

U.S. Cl. D6—4



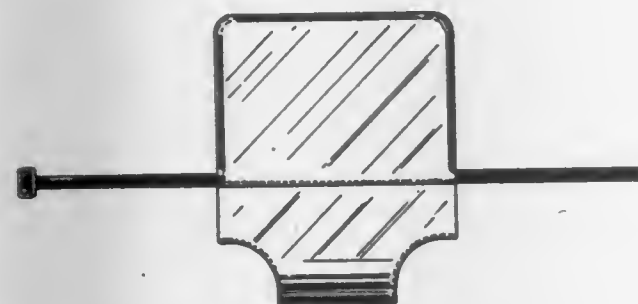
265,273  
**GUARDED DISPLAY HOLDER**  
 Daniel W. Leo, Jr., Edgewater, N.J., assignor to Ledan Repro-  
 ductions, Inc., New York, N.Y.  
 Filed Oct. 4, 1979, Ser. No. 72,028  
 Term of patent 14 years  
 Int. Cl. D06—99

U.S. Cl. D6—114



265,272  
**CHILD SEAT**  
 Linda M. Joy, 5926 - 140th St. Southwest, Edmonds, Wash.  
 98020  
 Filed Oct. 1, 1979, Ser. No. 80,259  
 Term of patent 14 years  
 Int. Cl. D6—01

U.S. Cl. D6—9



265,274  
**SHELF**  
 Winfried Scholl, Düsseldorf, Fed. Rep. of Germany, assignor to  
 HEWI, Heinrich Wilke GmbH, Arolsen, Fed. Rep. of Ger-  
 many  
 Filed Aug. 7, 1979, Ser. No. 64,562  
 Claims priority, application Fed. Rep. of Germany, Feb. 8,  
 1979, MR93  
 Term of patent 14 years  
 Int. Cl. D6—04

U.S. Cl. D6—132



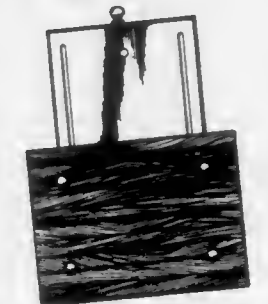
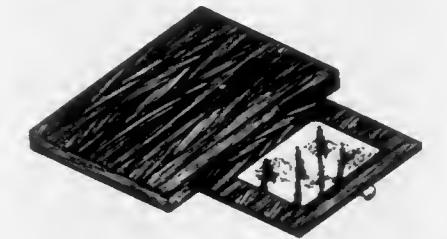
265,275  
**COMBINED DRESSER AND DUAL MIRROR UNIT**  
 Anthony L. Bravo, Brea, Calif., assignor to Zeno Table Co., Inc.,  
 Santa Ana, Calif.  
 Filed Jul. 15, 1980, Ser. No. 169,223  
 Term of patent 14 years  
 Int. Cl. D06—04

U.S. Cl. D6—154



265,277  
**COMBINED APPLIANCE SUPPORT AND  
 RETRACTABLE WORKING SURFACE**  
 Charles E. Dunn, Cartersville, Ga., assignor to Wood Valley  
 Industries, Inc., Cartersville, Ga.  
 Filed Sep. 18, 1980, Ser. No. 188,389  
 Term of patent 14 years  
 Int. Cl. D07—04, 99

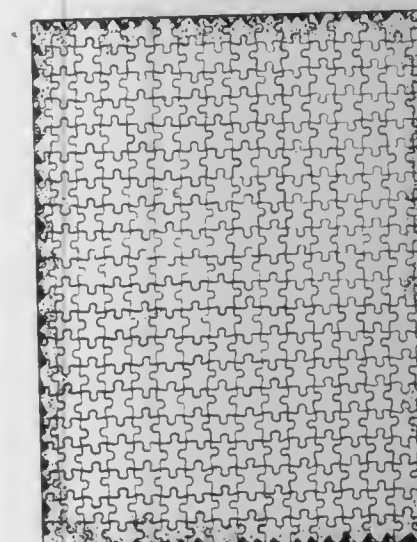
U.S. Cl. D7—46



265,276  
**FRAME FOR PICTURE PUZZLE AND LIKE ARTICLE**  
 Robert Malin, 4610 Densmore Ave., Apt. 207, Encino, Calif.  
 91436

Filed Mar. 12, 1981, Ser. No. 243,127  
 Term of patent 14 years  
 Int. Cl. D6—07

U.S. Cl. D6—242



265,278  
**DETACHABLE CAN HOLDER OR SIMILAR ARTICLE**  
 John W. Mellgren, Rte. A, Box 108, Yellville, Ark. 72678  
 Filed Nov. 13, 1979, Ser. No. 93,901  
 Term of patent 14 years  
 Int. Cl. D07—06

U.S. Cl. D7—70





265,279

## HANDLE FOR A BEVERAGE CAN

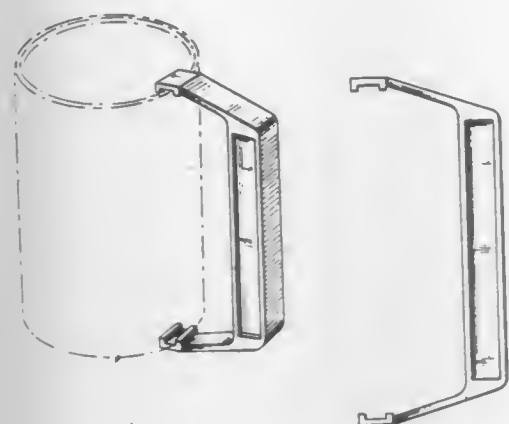
Thomas E. Wright, 6340 Americana Dr., Clarendon Hills, Ill. Margaret E. Bennett, 3376 Gramercy Ave., Ogden, Utah 84403  
60514

Filed Sep. 10, 1980, Ser. No. 185,789

Term of patent 14 years

Int. Cl. D07—99

U.S. Cl. D7—70



265,281

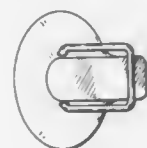
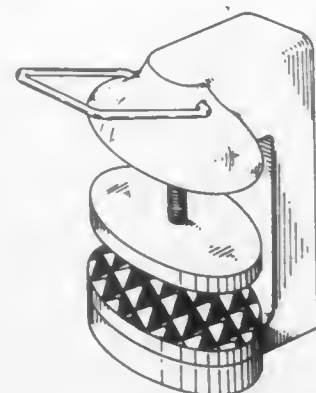
## MEAT TENDERIZER

Margaret E. Bennett, 3376 Gramercy Ave., Ogden, Utah 84403  
Filed Sep. 28, 1979, Ser. No. 79,757

Term of patent 14 years

Int. Cl. D07—04

U.S. Cl. D7—153



265,282

## PRUNER

Christopher R. B. Harrison, Porthcawl, Wales, and Alan K. Pittaway, High Wycombe, England, assignors to Wilkinson Sword Limited, High Wycombe, England

Filed Feb. 21, 1980, Ser. No. 123,266

Claims priority, application United Kingdom, Aug. 29, 1979,  
79991348

Term of patent 14 years

Int. Cl. D8—03

U.S. Cl. D8—5



265,280

## CANISTER RIM OR THE LIKE

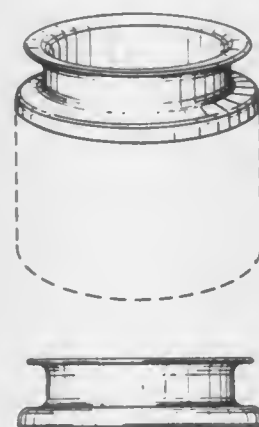
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Northbrook, Ill.

Filed Aug. 7, 1980, Ser. No. 176,159

Term of patent 14 years

Int. Cl. D07—07

U.S. Cl. D7—129



265,283

## ASSEMBLY TOOL FOR REMOTE MANIPULATION OF LOCKING CONTAINER PINS

Elis Kallaes, and Karl-Erik Starell, both of Orsa, Sweden, assignors to Orsa Kättingfabrik AB, Orsa, Sweden

Filed Mar. 12, 1979, Ser. No. 19,603

Term of patent 14 years

Int. Cl. D8—05

U.S. Cl. D8—89



265,285

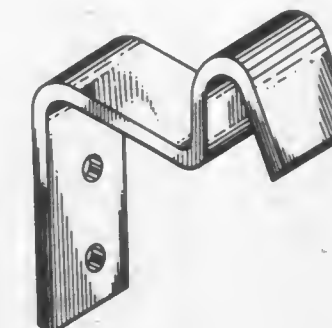
## TRASH CAN HOLD DOWN BRACKET

Michael W. Englert, Jr., 1521 Ridge Dr., Redding, Calif. 96001  
Filed Jun. 2, 1980, Ser. No. 155,390

Term of patent 14 years

Int. Cl. D8—08

U.S. Cl. D8—354



265,286

## LEG FOR RECREATIONAL VEHICLE AND MOBILE HOME HOSE SUPPORT

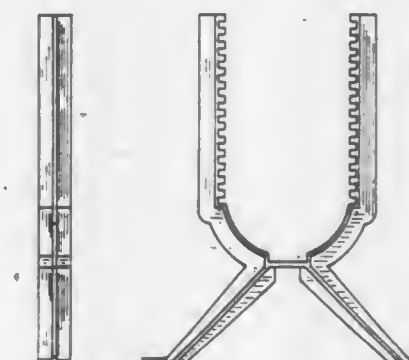
Robley H. Baldwin, P.O. Box 13286, South Lake Tahoe, Calif. 95702

Filed Jul. 30, 1979, Ser. No. 62,009

Term of patent 14 years

Int. Cl. D8—08

U.S. Cl. D8—356



265,284

## RETAINER FOR LATCHING PIN

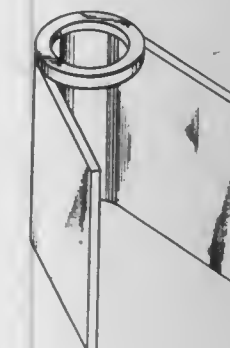
Robert F. Woods, Woodbridge, and Ronald F. Bergstrom, Lodi, both of Calif., assignors to Agri-Fab Industries, Inc., Lodi, Calif.

Filed Jun. 10, 1980, Ser. No. 158,114

Term of patent 14 years

Int. Cl. D8—07

U.S. Cl. D8—344



265,287

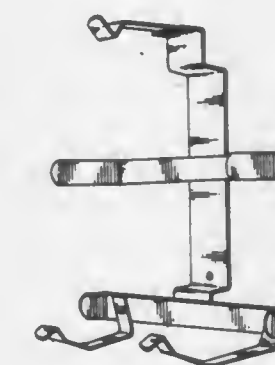
## SUPPORT BRACKET FOR BIOMARINE BREATHING APPARATUS

Theodore Zlaylek, Jr., P.O. Box 292, Yardley, Pa. 19067  
Filed Jul. 7, 1980, Ser. No. 166,430

Term of patent 14 years

Int. Cl. D8—08

U.S. Cl. D8—373





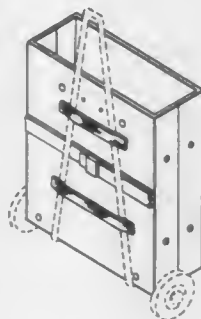
265,288  
REFRACTORY ANCHOR FOR USE IN FURNACES OR  
THE LIKE  
Douglas B. McLean, Centerville, Ohio, assignor to H. A. Jones  
Company Incorporated, Dayton, Ohio  
Filed Mar. 31, 1980, Ser. No. 135,999  
Term of patent 14 years  
Int. Cl. D8-08  
U.S. Cl. D8-393



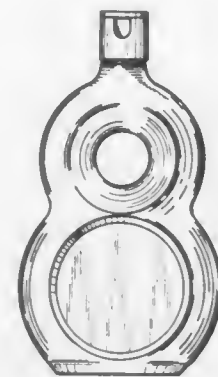
265,289  
BELLOWED DISPENSING BOTTLE  
Edward C. Kozlowski, Trumbull, Conn., assignor to Sterling  
Drug Inc., New York, N.Y.  
Filed Jun. 6, 1980, Ser. No. 157,114  
Term of patent 14 years  
Int. Cl. D9-01  
U.S. Cl. D9-301



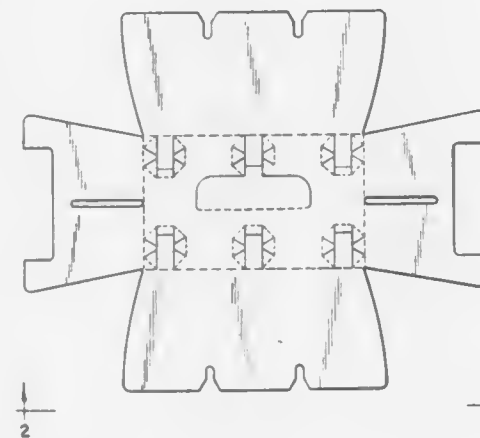
265,290  
SHOPPING BAG  
Frank Dolinsky, 572 Grand St., New York, N.Y. 10002  
Filed May 17, 1979, Ser. No. 39,973  
Term of patent 14 years  
Int. Cl. D9-05  
U.S. Cl. D9-305



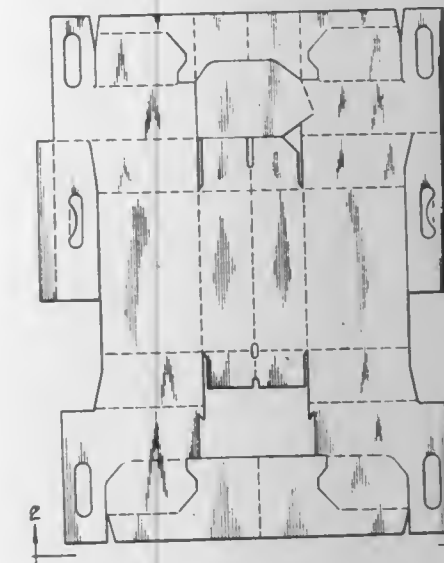
265,291  
BOTTLE  
Jerome Gould, Los Angeles County, Calif., assignor to Scotts  
Detergents, (A/Asia) Pty. Ltd., Sydney, Australia  
Filed Feb. 5, 1979, Ser. No. 9,110  
Term of patent 14 years  
Int. Cl. D9-01  
U.S. Cl. D9-382



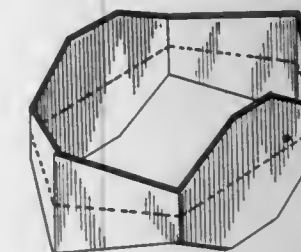
265,292  
PROTECTIVE COVER FOR A BOTTLE CARRIER OR  
THE LIKE  
Earl J. Killy, Monroe, La., assignor to Manville Service Corpo-  
ration, Denver, Colo.  
Filed Jul. 7, 1980, Ser. No. 166,428  
Term of patent 14 years  
Int. Cl. D9-03  
U.S. Cl. D9-433



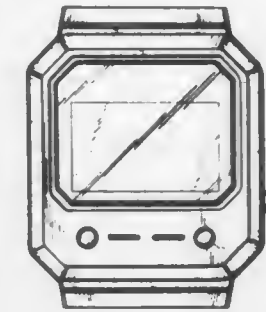
265,293  
ARTICLE CARRIER BLANK  
Earl J. Graser, Monroe, and Jerry F. Wilson, West Monroe,  
both of La., assignors to Manville Service Corporation, Den-  
ver, Colo.  
Filed Jul. 21, 1980, Ser. No. 170,484  
Term of patent 14 years  
Int. Cl. D9-03  
U.S. Cl. D9-433



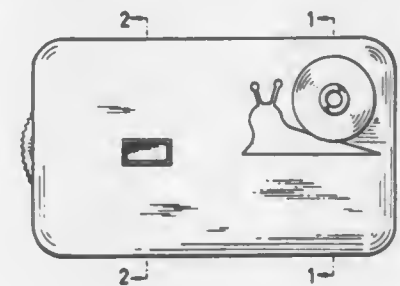
265,294  
SLEEVE FOR CONNECTING CONTAINERS  
John J. Austin, LaGrange, Ill., assignor to Champion Interna-  
tional Corporation, Stamford, Conn.  
Filed Jan. 22, 1980, Ser. No. 114,193  
Term of patent 14 years  
Int. Cl. D9-03  
U.S. Cl. D9-434



265,295  
DIGITAL WRIST WATCH, OR THE LIKE  
Masao Wada, Mitaka, Japan, assignor to Casio Computer Co.,  
Ltd., Tokyo, Japan  
Division of Ser. No. 924,216, Jul. 12, 1978. This application Jul.  
15, 1980, Ser. No. 169,224  
Claims priority, application Japan, Feb. 10, 1978, 53-4374  
Term of patent 14 years  
Int. Cl. D10-02  
U.S. Cl. D10-38



265,296  
PACEMAKER FOR ATHLETIC SPORTS  
Hiroshi Wanibuchi, Masayuki Moriya, and Yoshiro Yanagi, all  
of Sendai, Japan, assignors to Kabushiki Kaisha Sendai Sei-  
mitsu Zairyo Kenkyujo, Tokyo, Japan  
Filed May 6, 1980, Ser. No. 147,270  
Term of patent 14 years  
Int. Cl. D10-03  
U.S. Cl. D10-40

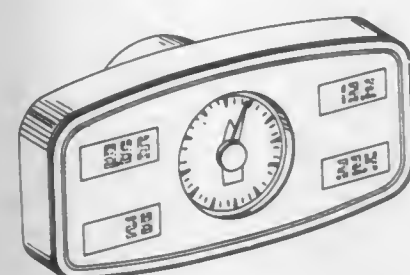


265,297  
CORD SLACK GAUGE  
Harry Eisen, 16421 Chatsworth St., Granada Hills, Calif. 91344  
Filed Jul. 10, 1980, Ser. No. 168,261  
Term of patent 14 years  
Int. Cl. D10-04  
U.S. Cl. D10-70

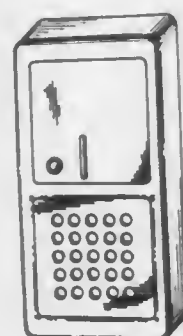




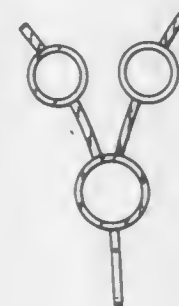
265,298  
**SAILBOAT INSTRUMENT DISPLAY PANEL**  
 Donald M. Salisbury, Long Beach, Calif., assignor to Transdynamics, Inc., El Monte, Calif.  
 Filed Oct. 20, 1978, Ser. No. 953,838  
 Term of patent 14 years  
 Int. Cl. D10-04  
 U.S. Cl. D10-98



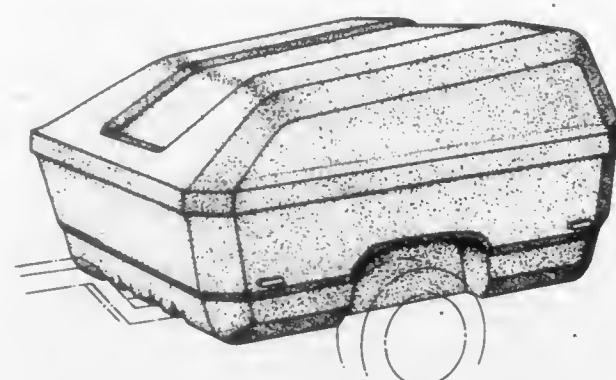
265,299  
**ALARM REPEATER**  
 Michael G. Jaretsky, Sparta, N.J., assignor to Baker Industries, Inc., Parsippany, N.J.  
 Filed Aug. 13, 1979, Ser. No. 65,785  
 Term of patent 14 years  
 Int. Cl. D10-05  
 U.S. Cl. D10-106



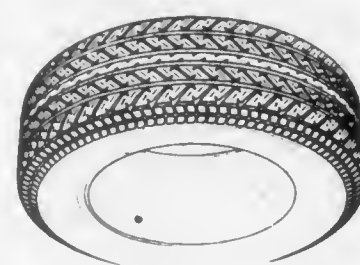
265,300  
**PENDANT SETTING FOR GEMS**  
 Robert G. Musillo, 5481 Wolf Dr., Pittsburgh, Pa. 15236  
 Filed Jun. 9, 1980, Ser. No. 157,315  
 Term of patent 14 years  
 Int. Cl. D11-01  
 U.S. Cl. D11-91



265,301  
**STORAGE CONTAINER MOUNTED ON AN AUTOMOBILE TRAILER**  
 Walter W. Zander, 2241 Deepgrove Ave., Rowland Height, Calif. 91748  
 Filed May 2, 1980, Ser. No. 145,897  
 Term of patent 14 years  
 Int. Cl. D12-10  
 U.S. Cl. D12-102



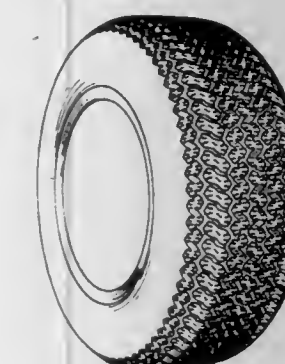
265,302  
**VEHICLE TIRE**  
 Hiroshi Kojima, Hino, and Hideki Yokoyama, Musashino, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan  
 Filed Oct. 14, 1980, Ser. No. 196,971  
 Claims priority, application Japan, Apr. 26, 1980, 55-16416  
 Term of patent 14 years  
 Int. Cl. D12-15  
 U.S. Cl. D12-145



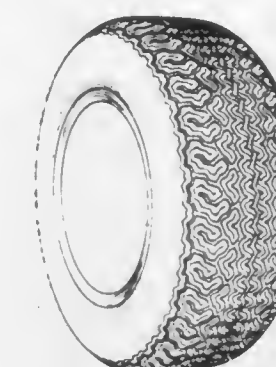
265,303  
**VEHICLE TIRE**  
 Hideki Yokoyama, Murayama, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan  
 Filed May 28, 1980, Ser. No. 154,178  
 Claims priority, application Japan, Nov. 29, 1979, 54-49739  
 Term of patent 14 years  
 Int. Cl. D12-15  
 U.S. Cl. D12-147



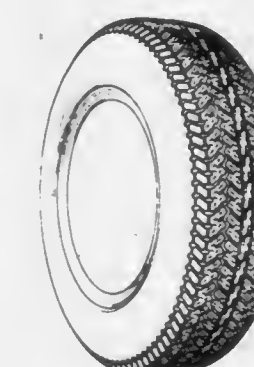
265,304  
**VEHICLE TIRE**  
 Hiroshi Kojima, Hino, and Toshihiko Yashima, Murayama, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan  
 Filed May 28, 1980, Ser. No. 154,179  
 Claims priority, application Japan, Nov. 29, 1979, 54-49735  
 Term of patent 14 years  
 Int. Cl. D12-15  
 U.S. Cl. D12-147



265,305  
**VEHICLE TIRE**  
 Hiroshi Kojima, Hino, and Tatsuhiro Shimada, Fussa, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan  
 Filed May 28, 1980, Ser. No. 154,181  
 Claims priority, application Japan, Nov. 29, 1979, 54-49734  
 Term of patent 14 years  
 Int. Cl. D12-15  
 U.S. Cl. D12-147



265,306  
**VEHICLE TIRE**  
 Hiroshi Kojima, Hino, and Hideki Yokoyama, Murayama, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan  
 Filed May 28, 1980, Ser. No. 154,182  
 Claims priority, application Japan, Nov. 29, 1979, 54-49738  
 Term of patent 14 years  
 Int. Cl. D12-15  
 U.S. Cl. D12-147





**265,307**  
**VEHICLE TIRE**  
Muneyoshi Maeda, Kodaira, and Masaru Abe, Sayama, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed May 28, 1980, Ser. No. 154,180  
Claims priority, application Japan, Dec. 25, 1979, 54-54223

Term of patent 14 years

Int. Cl. D12-15

U.S. Cl. D12-149



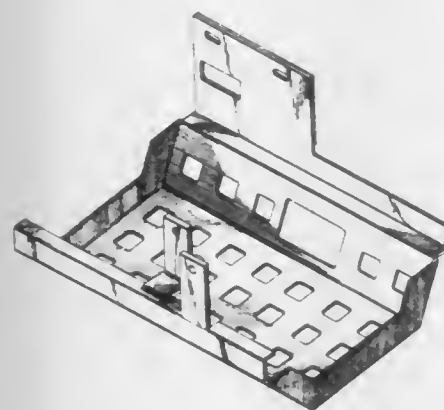
**265,308**  
**OIL PAN GUARD**  
John H. Zimmer, Jr., Maple Grove, Minn., assignor to Karrousel Racing Incorporated, Minneapolis, Minn.

Filed Jan. 14, 1980, Ser. No. 112,692

Term of patent 14 years

Int. Cl. D12-16

U.S. Cl. D12-190



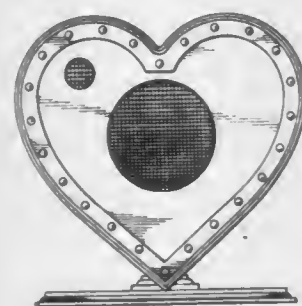
**265,309**  
**CABINET FOR A SPEAKER OR THE LIKE**  
John L. Glass, Rte. 1, Box 102, Boston, Ga. 31626

Filed Nov. 23, 1979, Ser. No. 96,828

Term of patent 14 years

Int. Cl. D14-01

U.S. Cl. D14-31



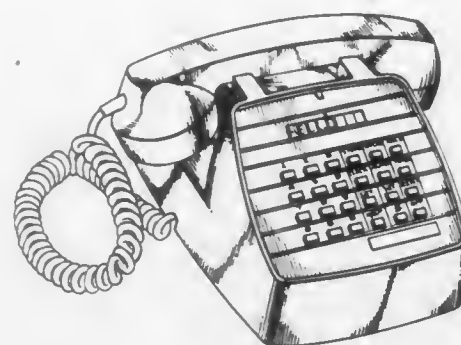
**265,310**  
**TELEPHONE**  
Michael L. Kovens, Randallstown, Md., assignor to Universal Security Instruments, Inc., Owings Mills, Md.

Filed Jul. 24, 1979, Ser. No. 60,121

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-53



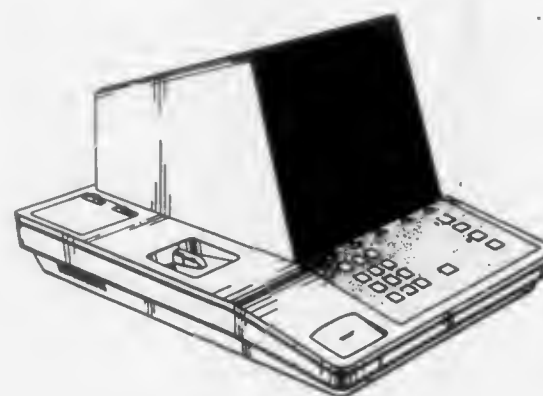
**265,311**  
**TELEPHONE DISPLAY SET BASE**  
Clifford D. Read, Almonte, and Donald T. Chadwick, Nepean, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 22, 1979, Ser. No. 88,388

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-54



**265,312**  
**RADIO RECEIVER**  
Masanori Hamada, Yao, and Yoshiyuki Saigo, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 30, 1980, Ser. No. 192,399

Claims priority, application Japan, Apr. 2, 1980, 55-13174

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-70



**265,314**  
**INFORMATION INPUT AND OUTPUT MACHINE**  
Isao Kitai, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan

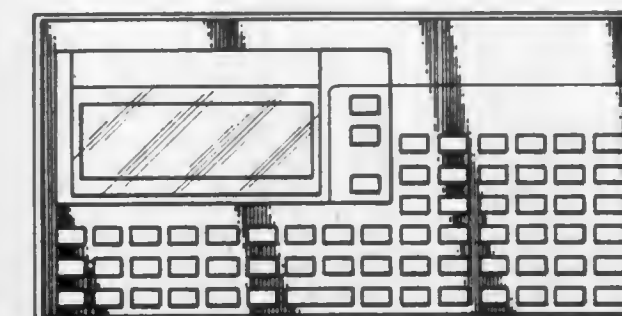
Filed Jan. 9, 1980, Ser. No. 110,785

Claims priority, application Japan, Jul. 19, 1979, 54-30383

Term of patent 14 years

Int. Cl. D14-02; D18-01

U.S. Cl. D14-100



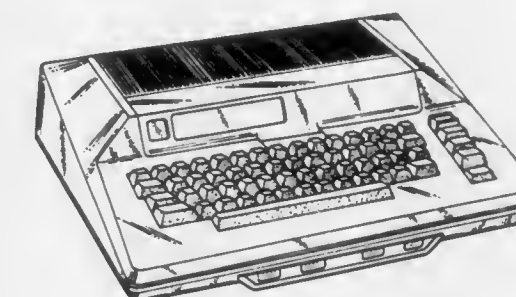
**265,315**  
**KEYBOARD CONSOLE**  
Kevin P. McKinsey, Scotts Valley, and Hugh M. Lee, Sunnyvale, both of Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Filed Apr. 16, 1979, Ser. No. 30,270

Term of patent 14 years

Int. Cl. D14-02

U.S. Cl. D14-102



**265,313**  
**RADIO RECEIVER**  
Masanori Hamada, Yao, and Yoshiyuki Saigo, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 30, 1980, Ser. No. 192,400

Claims priority, application Japan, Apr. 2, 1980, 55-13173

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-70



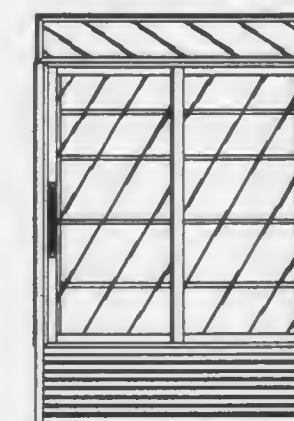
**265,316**  
**BEVERAGE COOLER**  
Arthur W. Trulaske, Frontenac, Mo., assignor to True Manufacturing Co., Inc., O'Fallon, Mo.

Filed Apr. 14, 1980, Ser. No. 140,091

Term of patent 14 years

Int. Cl. D15-07; D6-04

U.S. Cl. D15-85





265,317

**ABRADING ELEMENT SUPPORT STRUCTURE**

Glenn A. Stertzbach, Getzville, N.Y., assignor to Vonscot Industries Incorporated, Clarence, N.Y.

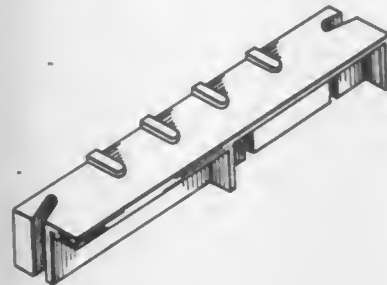
Filed Nov. 30, 1978, Ser. No. 965,153

The portion of the term of this patent subsequent to Jul. 15, 1997, has been disclaimed.

Term of patent 14 years

Int. Cl. D15—09

U.S. Cl. D15—126



265,318

**ABRADING ELEMENT SUPPORT STRUCTURE**

Glenn A. Stertzbach, Getzville, N.Y., assignor to Vonscot Industries Incorporated, Clarence, N.Y.

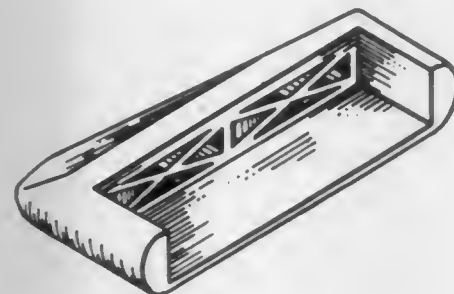
Filed Dec. 11, 1978, Ser. No. 968,392

The portion of the term of this patent subsequent to Jul. 15, 1997, has been disclaimed.

Term of patent 14 years

Int. Cl. D15—09

U.S. Cl. D15—126



265,319

**COMBINED LATHE AND SWarf COVER THEREFOR**

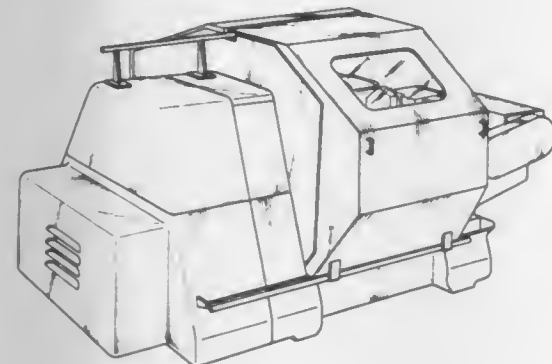
Toshiaki Watanabe, Kasugai, and Norio Tanaka, Inuyama, both of Japan, assignors to Okuma Machinery Works Ltd., Nagoya, Japan

Filed Oct. 25, 1977, Ser. No. 845,455

Term of patent 14 years

Int. Cl. D15—09

U.S. Cl. D15—130



265,320

**TABLET COUNTING TRAY**

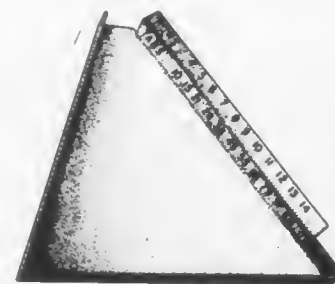
John C. Habenstein, 42 Cedar Brook Dr., Somerset, N.J. 08873

Filed Oct. 25, 1979, Ser. No. 88,007

Term of patent 14 years

Int. Cl. D15—99

U.S. Cl. D15—140



265,321

**MOTOR WINDER FOR A CAMERA**

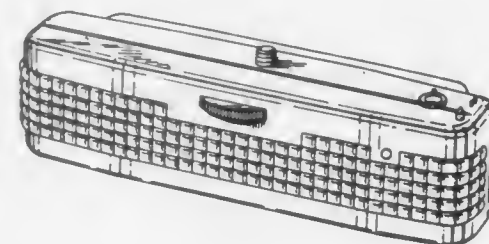
Rolf Schreiber, Dresden, German Democratic Rep., assignor to Veb Pentacon Dresden Kamera-und Kinowerke, Dresden, German Democratic Rep.

Filed Apr. 4, 1979, Ser. No. 27,139

Term of patent 14 years

Int. Cl. D16—01

U.S. Cl. D16—10



265,322

**EDUCATIONAL ELECTRONIC ANALOG COMPUTER LABORATORY**

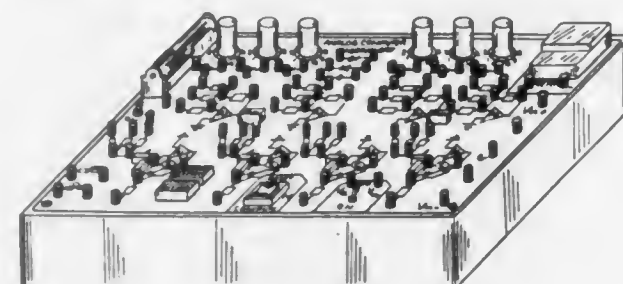
Edwin Z. Gabriel, 91 Mt. Tabor Way, Ocean Grove, N.J. 07756

Filed Mar. 21, 1979, Ser. No. 22,718

Term of patent 14 years

Int. Cl. D14—02; D19—07

U.S. Cl. D19—62



265,323

**PENCIL SHARPENER**

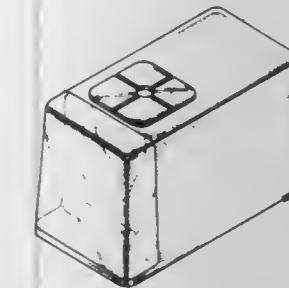
William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.

Filed Sep. 4, 1980, Ser. No. 184,439

Term of patent 14 years

Int. Cl. D19—06

U.S. Cl. D19—73



265,324

**FELT PEN HOLDER**

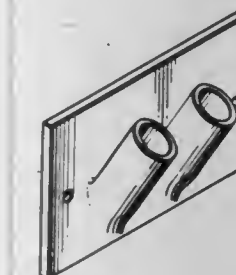
Peter M. Hedgeman, 10909 Morrison St. #6, North Hollywood, Calif. 91601

Filed Mar. 12, 1979, Ser. No. 19,445

Term of patent 3 1/2 years

Int. Cl. D19—06

U.S. Cl. D19—85



265,325

**LETTER TRAY**

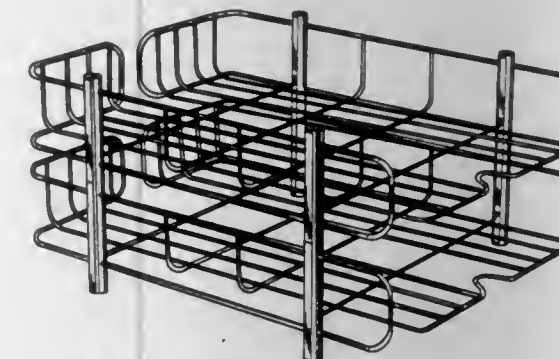
Beverly C. Rich, 1310 Maywood Ave., Ruxton, Md. 21204

Filed Mar. 31, 1980, Ser. No. 135,268

Term of patent 14 years

Int. Cl. D19—02

U.S. Cl. D19—92



265,326

**ELECTRONIC GAME HOUSING**

Minoru Sugiyama, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

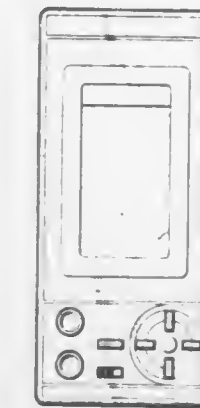
Filed Aug. 1, 1980, Ser. No. 174,621

Claims priority, application Japan, Jun. 3, 1980, 55-22061

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D21—13

265,327  
**BALLOON**

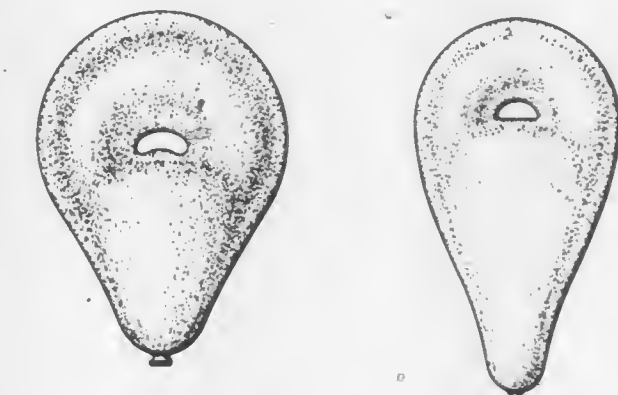
Tadao Okamoto, 4-20, 1-chome, Minami Ohtsuka, Toshima-ku, Tokyo, Japan

Filed Jun. 18, 1980, Ser. No. 160,840

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D21—84

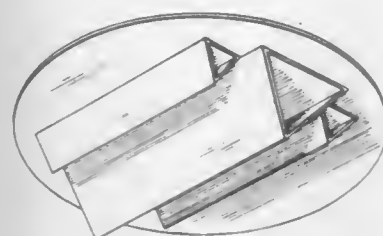




265,328  
KITE

Masuo Ishida, 5750 N. Kenmore, Chicago, Ill. 60660  
Filed Mar. 31, 1980, Ser. No. 117,146  
Term of patent 14 years  
Int. Cl. D21-01

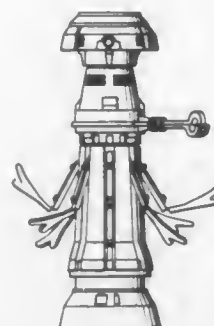
U.S. Cl. D21-88



265,330  
TOY FIGURE

George W. Lucas, Jr., San Anselmo; Ralph McQuarrie, Berkeley, and Joseph E. Johnston, Fairfax, all of Calif., assignors to Lucasfilm Ltd., San Rafael, Calif.  
Filed Apr. 18, 1980, Ser. No. 141,461  
Term of patent 14 years  
Int. Cl. D21-01

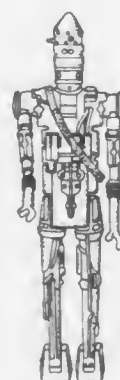
U.S. Cl. D21-150



265,331  
TOY FIGURE

George W. Lucas, Jr., San Anselmo, and Ralph McQuarrie, Berkeley, both of Calif., assignors to Lucasfilm Ltd., San Rafael, Calif.  
Filed Apr. 18, 1980, Ser. No. 141,464  
Term of patent 14 years  
Int. Cl. D21-01

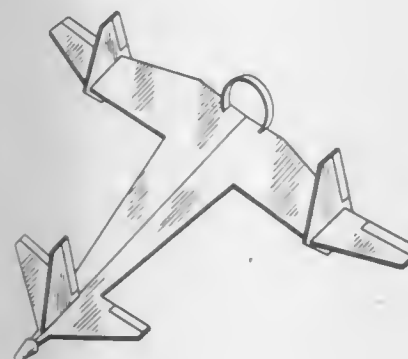
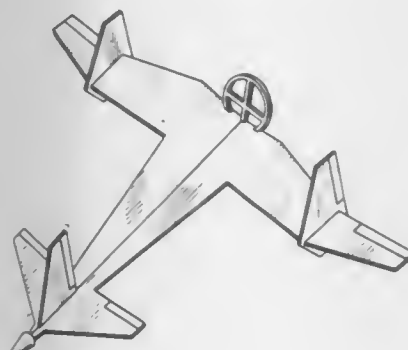
U.S. Cl. D21-150



265,329  
TOY GLIDER

George W. Craig, 1228 Randy, Irving, Tex. 75060  
Filed May 21, 1980, Ser. No. 151,935  
Term of patent 14 years  
Int. Cl. D21-01

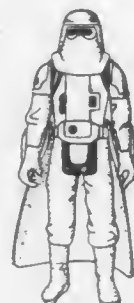
U.S. Cl. D21-88



265,332  
TOY FIGURE

George W. Lucas, Jr., San Anselmo; Ralph McQuarrie, Berkeley, and Joseph E. Johnston, Fairfax, all of Calif., assignors to Lucasfilm Ltd., San Rafael, Calif.  
Filed Apr. 18, 1980, Ser. No. 141,462  
Term of patent 14 years  
Int. Cl. D21-01

U.S. Cl. D21-178

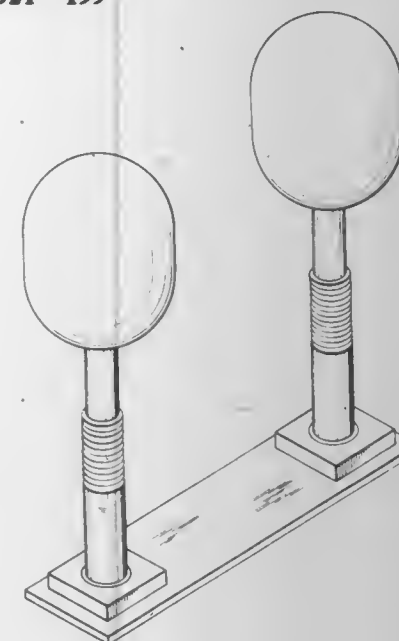


265,333

KICK PUNCHING TARGET

Dae K. Lee, 413 B N. Raleigh Ave., Atlantic City, N.J. 08401  
Filed Apr. 28, 1980, Ser. No. 144,800  
Term of patent 14 years  
Int. Cl. D21-02

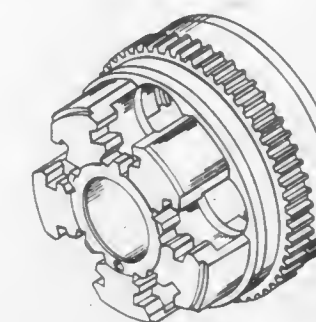
U.S. Cl. D21-199



265,335  
ROTOR

Robert G. Kirkpatrick, Shelburne, Vt., assignor to General Electric Company, Burlington, Vt.  
Filed Apr. 7, 1980, Ser. No. 137,703  
Term of patent 14 years  
Int. Cl. D22-01

U.S. Cl. D22-7



265,336

FISHING LURE

Robert E. Clauss, 5955 Fort Rd., Saginaw, Mich. 48601  
Filed Aug. 28, 1979, Ser. No. 70,699  
Term of patent 14 years  
Int. Cl. D22-05

U.S. Cl. D22-27



265,337

LIGHTED FISHING FLOAT

David P. Knight, and Don E. Sisk, both of Box 5, Kansas, Okla. 74347  
Filed Aug. 22, 1980, Ser. No. 180,510  
Term of patent 14 years  
Int. Cl. D22-05

U.S. Cl. D22-30

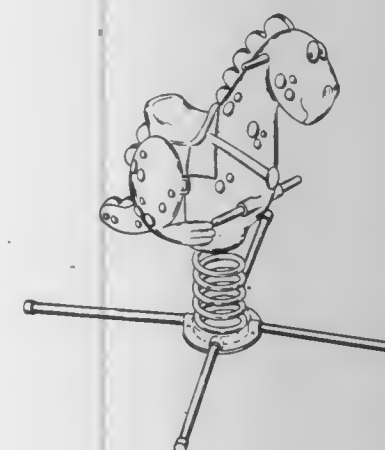


265,334

SPRING MOUNTED RIDING TOY

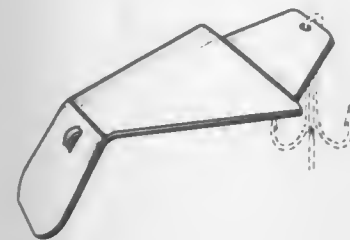
Roger J. Bollen, Willoughby Hills; William A. Erdos, Peninsula, and Roger H. Ramsey, Akron, all of Ohio, assignors to Eagle Rubber Co., Inc., Ashland, Ohio  
Filed Jun. 30, 1980, Ser. No. 164,898  
Term of patent 14 years  
Int. Cl. D21-03

U.S. Cl. D21-247





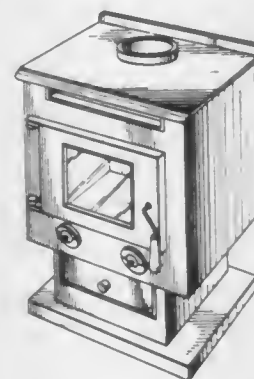
265,338  
**FISH LURE**  
 William L. Selby, 10605 Altgeld, Melrose Park, Ill. 60164  
 Filed Jul. 16, 1980, Ser. No. 169,303  
 Term of patent 14 years  
 Int. Cl. D22—05  
 U.S. Cl. D22—29



265,340  
**AIR RECIRCULATOR**  
 Albert W. Kemp, 8291 Acacia, Cypress, Calif. 90630  
 Filed Jun. 23, 1980, Ser. No. 161,900  
 Term of patent 14 years  
 Int. Cl. D23—04  
 U.S. Cl. D23—151



265,339  
**FREE STANDING FIREPLACE**  
 Gary E. Baughman, Santa Rosa, Calif., assignor to Malm Fireplaces, Inc., Santa Rosa, Calif.  
 Filed Aug. 4, 1980, Ser. No. 174,881  
 Term of patent 14 years  
 Int. Cl. D23—03  
 U.S. Cl. D23—97



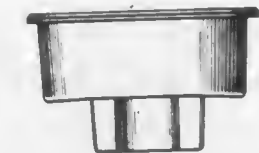
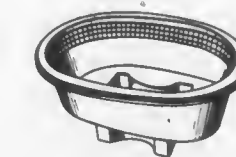
265,341  
**SEATING MANDREL ATTACHMENT FOR A DENTAL TOOL**  
 Lonny J. Moore, Denver, and Lincoln P. Tague, Lakewood, both of Colo., assignors to Teledyne Densco, Div. of Teledyne Industries, Inc., Denver, Colo.  
 Filed Apr. 17, 1980, Ser. No. 141,003  
 Term of patent 14 years  
 Int. Cl. D24—02  
 U.S. Cl. D24—10



265,342  
**CERVICAL DILATOR**  
 Richard D. Glassman, 600 Southshore Dr., Miami Beach, Fla. 33141  
 Filed Jul. 18, 1980, Ser. No. 170,300  
 Term of patent 14 years  
 Int. Cl. D24—02  
 U.S. Cl. D24—23

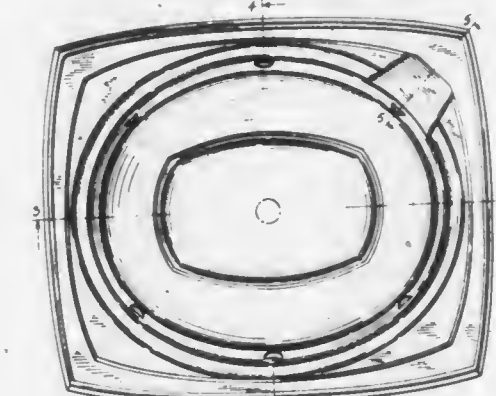
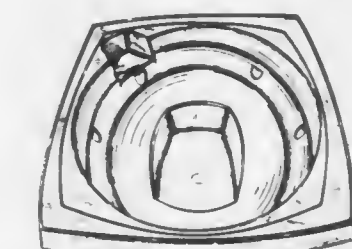
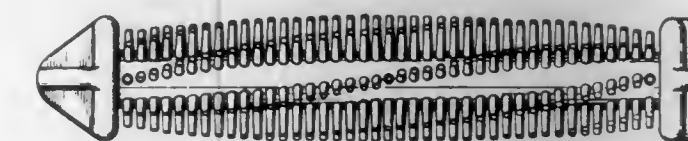


265,344  
**HYDROTHERAPY TUB**  
 Lino Z. Topete, 1845 E. San Antonio St., San Jose, Calif. 95116  
 Filed Nov. 19, 1979, Ser. No. 95,205  
 Term of patent 14 years  
 Int. Cl. D24—01; D23—02; D25—99  
 U.S. Cl. D24—38



265,345  
**HYDROTHERAPY SPA**  
 Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.  
 Filed Jul. 25, 1980, Ser. No. 172,477  
 Term of patent 14 years  
 Int. Cl. D23—02; D24—01  
 U.S. Cl. D24—38

265,343  
**BONE PREPARATION BRUSH**  
 William C. Schadrack, III, and William B. Clarke, both of Warsaw, Ind., assignors to Zimmer USA, Inc., Warsaw, Ind.  
 Filed Jan. 14, 1980, Ser. No. 111,747  
 Term of patent 14 years  
 Int. Cl. D24—02  
 U.S. Cl. D24—26





265,346

**INSTRUMENT KIT FOR TREE PROBLEM DIAGNOSIS**

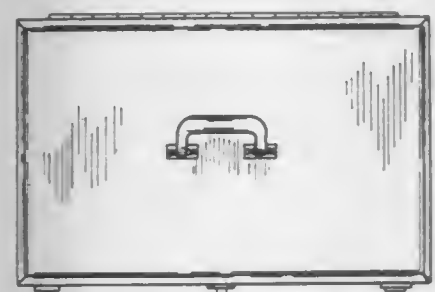
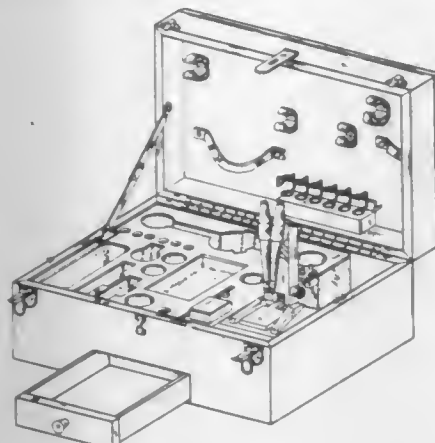
Gary H. Maier, 2419 Easton Blvd., Des Moines, Iowa 50317

Filed Jun. 30, 1980, Ser. No. 164,678

Term of patent 14 years

Int. Cl. D3—02

U.S. Cl. D24—99



265,347

**DUST-CONTROL ROOM**

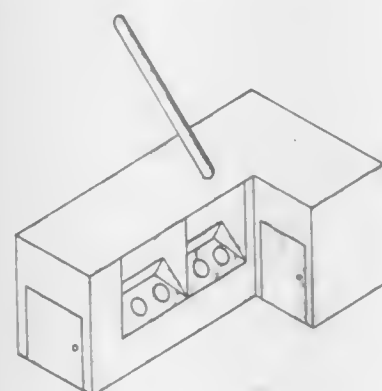
Paul W. Klein; Nicholas J. Corbo, both of Cincinnati, Ohio, and Raymond T. O'Donnell, Grand Haven, Mich., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,265

Term of patent 14 years

Int. Cl. D25—03

U.S. Cl. D25—1



265,348

**SOLAR ADOBE**

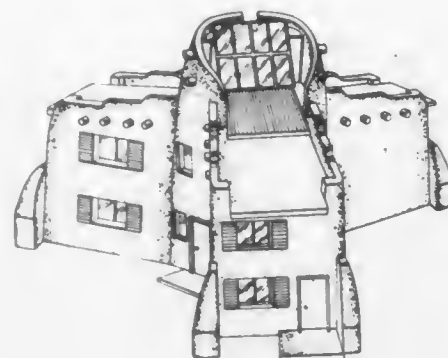
Ralph Mondragon, P.O. Box 199, Ranches of Taos, N. Mex. 87557

Filed Jul. 31, 1980, Ser. No. 174,048

Term of patent 14 years

Int. Cl. D25—03

U.S. Cl. D25—33



265,349

**BUILDING**

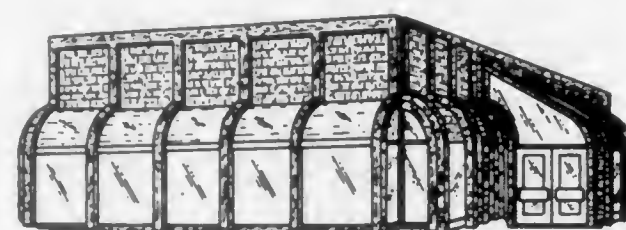
Milton N. Zic, Chicago, Ill., assignor to D'Lites Restaurants, Inc., Knoxville, Tenn.

Filed Jul. 23, 1980, Ser. No. 171,399

Term of patent 14 years

Int. Cl. D25—03

U.S. Cl. D25—34

**LIST OF PATENTEEES**

TO WHOM

**PATENTS WERE ISSUED ON THE 6TH DAY OF JULY, 1982**

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. Ahlstrom Osakeyhtio: See—  
Backstrom, Per-Ole; and Virolainen, Jorma, 4,338,147, Cl. 156-187.000.
- A. H. Ross & Associates: See—  
Eberts, Donald H., 4,338,285, Cl. 422-257.000.
- A. T. Ramot Plastics Ltd.: See—  
Kraus, Menahem A.; and Frommer, Moshe A., 4,338,190, Cl. 210-195.200.
- Abbott Laboratories: See—  
Kurath, Paul, 4,338,307, Cl. 424-180.000.  
Kurath, Paul; and Fager, Earl E. C., 4,338,308, Cl. 424-180.000.  
Kurath, Paul, 4,338,309, Cl. 424-180.000.
- Abe, Shinji: See—  
Hirata, Makizo; and Abe, Shinji, 4,337,733, Cl. 123-41.100.
- Abe, Shinya: See—  
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,338,251, Cl. 260-405.500.
- Abel, Alan S., to N P Marketing Corporation. Cargo retainer. 4,338,053, Cl. 410-94.000.
- Abrahamson, Daniel P.; and Thomas, Paul M., to Builders Equipment Company. System for loading and unloading a kiln. 4,338,056, Cl. 414-152.000.
- Acco Industries Inc.: See—  
Sevrence, Warren E., 4,337,554, Cl. 24-115.00R.
- Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., to Gulf Oil Corporation. Hot melt adhesive compositions containing a polystyrene resin. 4,338,414, Cl. 525-193.000.
- Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., to Gulf Oil Corporation. Hot melt adhesive compositions containing an aromatic hydrocarbon resin. 4,338,415, Cl. 525-193.000.
- Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., to Gulf Oil Corporation. Hot melt adhesive compositions containing terpene resins. 4,338,416, Cl. 525-193.000.
- Ackermann, Peter: See—  
Farooq, Saleem; Ackermann, Peter; Drabek, Jozef; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,338,468, Cl. 568-637.000.
- Acme-Cleveland Corporation: See—  
Rauckhorst, James E.; and Skingle, Thomas J., 4,337,677, Cl. 76-108.00A.
- Acme Visible Records, Inc.: See—  
Suling, Robert C.; Tomlinson, Charles W.; and Fields, Winfred G., 4,337,866, Cl. 209-656.000.
- Adalsteinsson, Orn: See—  
Evans, Stephen F.; Ludwa, Raymond J.; and Adalsteinsson, Orn, 4,338,366, Cl. 428-76.000.
- Adams, J. Howard, to Chevron Research Company. Additive composition for turbine oil. 4,338,207, Cl. 252-47.500.
- Adell, Robert, to U.S. Product Development Co. Method of manufacturing a door edge guard. 4,338,148, Cl. 156-222.000.
- Adrian, Werner. Anti-glare spectacles. 4,338,003, Cl. 351-45.000.
- AG-Bag Corporation: See—  
Johnson, William C.; Rasmussen, David H.; and Lee, Richard H., 4,337,805, Cl. 141-71.000.
- Agarwal, Pawan K.; and Makowski, Henry S., deceased (by Makowski, Patricia Helen, executrix), to Exxon Research & Engineering Co. Hot melt adhesive compositions. 4,338,229, Cl. 524-399.000.
- Agency of Industrial Science and Technology: See—  
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- Agfa-Gevaert AG: See—  
Huber, Theodor; Borowski, Kurt; and Egger, Gerhard, 4,338,596, Cl. 340-636.000.
- Agfa-Gevaert Aktiengesellschaft: See—  
Himmelmann, Wolfgang; Berghaller, Peter; and Sobel, Johannes, 4,338,394, Cl. 430-621.000.
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- Ahmad, Syed I.: See—  
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- Ahmed, Haroon: See—  
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- Airco, Inc.: See—  
Smith, Stephen E., 4,337,582, Cl. 34-27.000.
- Airway Industries, Inc.: See—  
Davis, Michael, 4,337,853, Cl. 190-53.000.
- Aisan Industry Co., Ltd.: See—  
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- Aisin Seiki Kabushiki Kaisha: See—  
Kazaoka, Kenichi; Hirao, Koji; and Takahasi, Hideki, 4,337,978, Cl. 297-367.000.
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- Akatsuka, Yasuo, to Nippon Electric Co., Ltd. Memory device. 4,338,678, Cl. 365-174.000.
- AKG Akustische u. Kino-Gerate Gesellschaft m.b.H.: See—  
Gorke, Rudolf, 4,338,489, Cl. 179-1.00R.
- Akimune, Yoshio; Ambe, Satoshi; Takao, Hiroshi; and Kimura, Shinji, to Nissan Motor Company, Limited. Method of producing flat solid electrolyte layer of flat film type oxygen sensor. 4,338,356, Cl. 427-123.000.
- Akira, Abe; Kimura, Shoji; and Yoshinori, Miyawaki, to Omron Tateisi Electronics, Inc. Blood pressure measuring apparatus. 4,337,778, Cl. 128-680.000.
- Akiyama, Toru: See—  
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- Aktiebolaget Draco: See—  
Kjellin, Per G.; and Persson, Carl G. A., 4,338,319, Cl. 424-253.000.
- Akzo N.V.: See—  
Zeijlstra, Foeke, 4,338,200, Cl. 210-724.000.
- Alberino, Louis M.; and Regelman, Dale F., to Upjohn Company. The novel polyamides from ketene-aminals. 4,338,428, Cl. 528-73.000.
- Albert Einstein College of Medicine of Yeshiva University: See—  
Nagel, Ronald L.; and Raventos, Carmen E., 4,338,303, Cl. 424-129.000.
- Albert, Max: See—  
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- Allen, David A.; and Witala, Jay D., to Huffy Corporation. Handlebar mounting assembly. 4,337,962, Cl. 280-279.000.
- Allersma, Ties; and Simpson, James E., to PPG Industries, Inc. Addition and measurement of gases dissolved in molten metals. 4,338,127, Cl. 75-93.00R.
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Briggs, James E., Jr.; and Hasegawa, Ryusuke, 4,338,131, Cl. 148-403.000.
- Colasanti, Arduino; and Francis, Philip L., 4,337,906, Cl. 242-107.40A.
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- Yardley, James T.; Rosan, Alan M.; and Menger-Hammond, Eva L., 4,338,173, Cl. 204-162.00R.
- Allis-Chalmers Canada Inc.: See—  
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- Allis-Chalmers Corporation: See—  
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- Brundage, Charles F., 4,337,781, Cl. 130-27.00H.
- Faulkner, Bobby P.; Lee, George T.; Schumacher, Peter L.; and Weinecke, Michael H., 4,338,079, Cl. 432-14.000.
- O'Dell, Leonard J., 4,338,105, Cl. 55-304.000.
- Alps Electric Co., Ltd.: See—  
Aoki, Masatsugu; and Iwane, Yasuhiko, 4,337,697, Cl. 101-93.480.
- Alsthom Atlantique: See—  
Euvrard, Jean-Paul; and Voisin, Gilles, 4,338,483, Cl. 174-28.000.
- Alter, H. Ward, to Terradex Corporation. Low cost disposable radiation detecting apparatus. 4,338,523, Cl. 250-472.000.
- Amac Inc.: See—  
Hogsett, Robert F.; Huggins, Dale K.; and Beckstead, Leo W., 4,338,287, Cl. 423-53.000.
- Ambe, Satoshi: See—  
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- Ambers, Paul J.; and Stevens, R. Barry, to Instrumentation Laboratory Inc. Fluid sampling. 4,338,280, Cl. 422-68.000.
- American Cyanamid Company: See—  
Floyd, Middleton B., Jr., 4,338,252, Cl. 260-408.000.
- Tseng, Shin-Shyong; and Rauhut, Michael M., 4,338,213, Cl. 252-188.3CL.
- American Home Products Corporation: See—  
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- American Sterilizer Company: See—  
Hopper, James A., 4,337,956, Cl. 277-29.000.



- Ameron, Inc.: See—  
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- Ames, William A., to Eastman Kodak Company. Emulsifiable polyolefin waxes prepared by reacting pivalolactone and a polyolefin wax containing carboxyl groups. 4,338,230, Cl. 549-263.000.
- AMF Incorporated: See—  
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- Weiss, Arnold A., 4,337,660, Cl. 73-600.000.
- AMP Incorporated: See—  
Asick, John C.; Landis, John M.; and Ritchie, Leon T., 4,337,989, Cl. 339-143.00R.
- Hughes, Donald W. K.; and Lauterbach, John H. F., 4,337,574, Cl. 29-883.000.
- Amstar Corporation: See—  
Chen, Andy C. C.; Lang, Clifford E., Jr.; Graham, Charles P.; and Rizzuto, Anthony B., 4,338,350, Cl. 426-658.000.
- Amtron: See—  
Kirk, Kenneth L., 4,337,824, Cl. 165-70.000.
- Analog Devices, Incorporated: See—  
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- Anastasia, Robert W.: See—  
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- Anderson, James E., to Mid-America Body & Equipment Co. Cable reel handling apparatus for a vehicle. 4,338,059, Cl. 414-501.000.
- Anderson, Maynard E.; Marshall, Robert T.; and Stringer, William C., to United States of America, Agriculture. Carcass cleaning unit and containment chamber. 4,337,549, Cl. 17-1.00R.
- Anderson, Perry W.: See—  
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- Ando, Keikichi: See—  
Ohta, Norio; Ishida, Fumihiko; Ikeda, Tadashi; Ando, Keikichi; and Sugita, Yutaka, 4,338,372, Cl. 428-336.000.
- Ando, Kyoichi, to Nippon Steel Corporation; and Nittetsu Plant Designing Corporation. Apparatus for changing the charge distribution in a blast furnace. 4,337,928, Cl. 266-197.000.
- Andrae, Rolf, to Robert Bosch GmbH. Apparatus for transferring tablet strip packages. 4,338,083, Cl. 493-239.000.
- Antypas, George A.; Bell, Ronald L.; and Moon, Ronald L., to Varian Associates, Inc. Stacked multijunction photovoltaic converters. 4,338,480, Cl. 136-249.000.
- Aoki, Masatsugu; and Iwane, Yasuhiko, to Alps Electric Co., Ltd. Serial printer. 4,337,697, Cl. 101-93.480.
- Aoki, Satoshi: See—  
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- Aono, Shigeo; and Takase, Sadao, to Nissan Motor Company, Limited. Data gathering system for automotive vehicles. 4,338,665, Cl. 364-424.000.
- Aoyagi, Yoshiaki: See—  
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- APC-Azote et Produits Chimiques, S.A.: See—  
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- Apollo Technologies, Inc.: See—  
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- Arai, Hisaharu, to Aisan Industry Co., Ltd. Altitude compensation device. 4,338,265, Cl. 261-39.00A.
- Arakawa, Toshiaki: See—  
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- Araki, Shigeo: See—  
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- Arano, Yasushi: See—  
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- Arao, Kozo: See—  
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- Arbit, Harold A., to Mobil Oil Corporation. Enhanced wettability of hope films. 4,338,420, Cl. 525-388.000.
- Argyris, Pericles A.; and Williams, William R., to Sterling Faucet Company. Single lever mixing faucet. 4,337,795, Cl. 137-625.170.
- Aristoff, Paul A., to Upjohn Company, The. Composition and process. 4,338,457, Cl. 560-119.000.
- Arita, Masashi: See—  
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- Armour-Dial, Inc.: See—  
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- Asahi Glass Company, Ltd.: See—  
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- Asahi Kasei Kogyo Kabushiki Kaisha: See—  
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- Asahi Kogaku Kogyo Kabushiki Kaisha: See—  
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- Asakawa, Kazuhiko: See—  
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- Ashton, Gregory J.: See—  
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- Asick, John C.; Landis, John M.; and Ritchie, Leon T., to AMP Incorporated. Electromagnetic shielded connector. 4,337,989, Cl. 339-143.00R.
- Asmus, Jean-Pierre; Soto, Joseph; and Op Het Veld, Sebastianus J., to U.S. Philips Corporation. Video circuit with screen-burn-in protection. 4,338,623, Cl. 358-22.000.
- Astec Industries, Inc.: See—  
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- Atkinson, Alan W.; and Steer, Adrian M., to T and N Materials Research Limited. Process for the concentration of fibrous material. 4,337,863, Cl. 209-12.000.
- Atlantic Richfield Company: See—  
Wheaton, Gregory A., 4,338,462, Cl. 562-533.000.
- Atwood Vacuum Machine Company: See—  
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- Audiotronics Video Display Division, Inc.: See—  
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- Aurora, The Old Second National Bank of, executor: See—  
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- Austin, Robert R.; and Ginkel, Ernst R., to International Telephone and Telegraph Corporation. Natural gas calorimeter. 4,337,654, Cl. 73-190.0CV.
- Axenko, Alexandr A.: See—  
Efimov, Vyacheslav T.; Nazarian, Miron M.; Axenko, Alexandr A.; Kolyada, Vladimir A.; Maskaev, Anatoly X.; Shamsha, Ljudmila F.; and Kostjuk, Vladimir I., 4,338,178, Cl. 204-275.000.
- B. F. Goodrich Company, The: See—  
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- Varga, Richard S., 4,337,721, Cl. 118-60.000.
- Baba, Yasuharu: See—  
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- Babbitt, William M., to Owens-Corning Fiberglass Corporation. Bushing for producing glass fibers. 4,338,110, Cl. 65-1.000.
- Babcock Hitachi Kabushiki Kaisha: See—  
Sakamoto, Koya; Yoneda, Yutaka; Fujiwara, Naoki; and Takamoto, Shigehito, 4,338,283, Cl. 422-112.000.
- Babcock Product Engineering Ltd.: See—  
Cleall, Alfred F., 4,337,898, Cl. 239-422.000.
- Babcock & Wilcox Company, The: See—  
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- Babler, Egon S., to Xerox Corporation. Print wheel positioning means. 4,338,034, Cl. 400-144.200.
- Bachner, Frank J.: See—  
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- Backlin, Robert R.; and Berti, Jerome L., to Allis-Chalmers Corporation. Wear sleeve oil seal. 4,337,954, Cl. 277-237.00R.
- Backstrom, Per-Ole; and Virolainen, Jorma, to A. Ahlstrom Osakeyhtio. Method and apparatus for winding a web upon a core having a stripe of hot-melt adhesive. 4,338,147, Cl. 156-187.000.
- Backus, John G. Synthetic woodwind instrument reed and method for its manufacture. 4,337,683, Cl. 84-383.00A.
- Backx, Leo: See—  
Heeres, Jan; Backx, Leo; Hubele, Adolf; and Nyfeler, Robert, 4,338,327, Cl. 424-269.000.
- Badin, Gerard: See—  
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- Baessler, Konrad: See—  
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- Bailey, Joseph; and Cook, John, to Eastman Kodak Company. Heterocyclic magenta dye-forming couplers. 4,338,393, Cl. 430-386.000.
- Baird, Thomas E. Device for testing the suction strength of an upright vacuum sweeper. 4,337,663, Cl. 73-700.000.
- Baldwin-Gregg, Inc.: See—  
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- Ballard, Edward C., to Du Pont de Nemours, E. I., and Company. Ethylene copolymer blends and adhesives based thereon. 4,338,227, Cl. 524-143.000.
- Banka, Eugene F.: See—  
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- Banno, Taiichi: See—  
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- Banzoli, Valeriano; Beccegato, Leonardo; Minardi, Paolo; Morganti, Emilio; and Selleroni, Marco P., to Tecnomare, S.p.A. Control system for subsea well-heads. 4,337,829, Cl. 166-366.000.
- Bardsley, Harold B.; Lear, Edward C.; and Jones, J. Robert, to Spencer Wright Industries, Inc. Detection of faults in sheet and like materials. 4,338,032, Cl. 356-431.000.
- Barie, Walter P., Jr.; Huemmer, Thomas F.; and Lakshmanan, Pal-lavoor R., to Gulf Oil Corporation. Photopolymerizable compositions. 4,338,171, Cl. 204-159.150.
- Baril, James D.: See—  
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- Barna, Alex J. Compound bow. 4,337,749, Cl. 124-24.00R.
- Barnowski, Henry G.: See—  
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- Barth, Jerry J.; and Martin, Lawrence A., to Minnesota Mining and Manufacturing Company. Endless belt with automatic steering control. 4,337,598, Cl. 51-135.0BT.

- Barton, Richard O.: See—  
Miller, John M.; and Barton, Richard O., 4,338,031, Cl. 356-356.000.
- Bartuska, Miloslav; Zverina, Karel; Szabo, Josef; Pospisil, Borivoj; and Kroupa, Petr, to Vysoka skola chemicko-technologicke. Process of and apparatus for producing a homogeneous radially confined plasma stream. 4,338,509, Cl. 219-121.0PR.
- Barwell Machine and Rubber Group Limited: See—  
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- Barz, William: See—  
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- Basiulis, Algird, to Hughes Aircraft Company. Variable transmittance window. 4,337,998, Cl. 350-312.000.
- Bastings, Leonardus C., deceased: See—  
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- Bates Ventilabsack Co. A/S: See—  
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- Batesville Casket Company, Inc.: See—  
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- Battelle Development Corp.: See—  
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- Wilkinson, William H.; and Hanna, William T., 4,338,268, Cl. 261-140.00A.
- Bauman, Ralph H., to Pneumo Corporation. Surface thermocouple assembly and method of making same. 4,338,479, Cl. 136-229.000.
- Baxter, Robert; and Leach, Ronald W. A., to Shell Oil Company. Loosening agents for fruit of plants. 4,338,121, Cl. 71-118.000.
- Baxter Travenol Laboratories, Inc.: See—  
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- Bayer Aktiengesellschaft: See—  
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- Brinkwerth, Wolfgang; Huffer, Wolfgang; Raue, Roderich; Schieder, Rudolf; and Telle, Helmut, 4,338,258, Cl. 260-456.00A.
- Grigo, Ulrich; Fahnler, Friedrich; Lindner, Christian; and Binsack, Rudolf, 4,338,409, Cl. 525-66.000.
- Hildebrand, Dietrich; and Lohnert, Wolfgang, 4,338,093, Cl. 8-549.000.
- Konig, Klaus; Reichmann, Wolfgang; and Schonfelder, Manfred, 4,338,431, Cl. 528-272.000.
- Nolte, Wilfried; Keller, Wilfried; and Esser, Heinz, 4,338,238, Cl. 524-706.000.
- Preiss, Michael; Konig, Hans-Bodo; Metzger, Karl G.; and Feyen, Peter, 4,338,434, Cl. 542-420.000.
- Sanderson, John R.; Binsack, Rudolf; Fahnler, Friedrich; and Lindner, Christian, 4,338,406, Cl. 525-66.000.
- Schallner, Otto; Oeckl, Siegfried; and Schundehutte, Karl H., 4,338,262, Cl. 260-544.00S.
- Serini, Volker; Goossens, John; Bottenbruch, Ludwig; and Freitag, Dieter, 4,338,429, Cl. 528-196.000.
- Stetter, Jorg; Ditzgen, Klaus; Thomas, Rudolf; Eue, Ludwig; and Schmidt, Robert R., 4,338,119, Cl. 71-92.000.
- von Bonin, Wulf, 4,338,412, Cl. 521-157.000.
- Baylor, David R.; and Getter, Byron J., to Wolverine World Wide, Inc. Hog splitter. 4,337,550, Cl. 17-23.000.
- BBC, Brown, Boveri & Company Ltd.: See—  
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- Bear, Philip D.; and Burkhardt, Gordon H., to McDonnell Douglas Corporation. Process for producing guided wave lens on optical fibers. 4,338,352, Cl. 427-8.000.
- Beccegato, Leonardo: See—  
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- Beck, Boyd R.; Sher, Frank T.; and Tiers, George V. D., to Minnesota Mining and Manufacturing Company. Sulfonate-organosilanol compounds and aqueous solutions thereof. 4,338,377, Cl. 428-428.000.
- Beck, Vernon D., to International Business Machines Corporation. Multiple beam cathode ray tube having reduced off-axis aberrations. 4,338,341, Cl. 313-411.000.
- Becker, Floyd W.; and Regimbal, Richard R., to Drill Systems, Inc. Method of assembling multiple wall drill pipe. 4,337,563, Cl. 29-451.000.
- Becker, Klaus; Cittrich, Jurgen; and Kaufmann, Karl E., to Mannesmann DeMag A.G. Turbulent-water way. 4,337,704, Cl. 104-70.000.
- Beckers, Karl-Dieter: See—  
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- Beckman Instruments, Inc.: See—  
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- Beckstead, Leo W.: See—  
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- Becton, Dickinson and Company: See—  
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- Beecham Group Limited: See—  
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- Behre, Horst: See—  
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- Beisel, Hermann, to Heidelberger Druckmaschinen Aktiengesellschaft. Device for axially reciprocating an inking-unit roller. 4,337,699, Cl. 101-348.000.
- Beitler, Richard S.; Sellers, Frederick J.; and Bennett, George W., to United States of America, National Aeronautics and Space Administration. Control means for a gas turbine engine. 4,338,061, Cl. 415-1.000.
- Bell, Leonard: See—  
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- Bell, Ronald L.: See—  
Antypas, George A.; Bell, Ronald L.; and Moon, Ronald L., 4,338,480, Cl. 136-249.000.
- Bell Telephone Laboratories, Incorporated: See—  
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- Belt, James S.: See—  
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- Bemm, Robert A. Combination campstove and lantern. 4,338,075, Cl. 431-344.000.
- Ben-Gurion University of the Negev Research and Development Authority: See—  
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- Benjamin, Alain C., to Le Materiel Biomedical. Light microscope with a plurality of slideways. 4,337,991, Cl. 350-87.000.
- Bendix Corporation, The: See—  
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- Radcliffe, Charles R.; and Davis, James A., 4,337,647, Cl. 73-116.000.
- Taplin, Lael B., 4,337,839, Cl. 180-179.000.
- Bennett, George T., to General Motors Corporation. Multiple armature ring and spring mounting arrangement for electromagnetic friction-type clutches and brakes. 4,337,855, Cl. 192-84.00A.
- Bennett, George W.: See—  
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- Bentvelzen, Jozef M., to Weyerhaeuser Company. Pulp in the presence of a protector. 4,338,158, Cl. 162-37.000.
- Berge, Olav: See—  
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- Berger, Harvey L.; and Brandow, Charles R., to Sono-Tek Corporation. Ultrasonic fuel atomizer. 4,337,896, Cl. 239-102.000.
- Bergman, Ronald B.: See—  
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- Berghaller, Peter: See—  
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- Bernasconi, Felix: See—  
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- Berthelot, Daniel; and Badin, Gerard, to S. A. Martin. Machine for producing single-face corrugated board. 4,338,154, Cl. 156-462.000.
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- Biermann, Peter; Stordt, Ralf; and Feucht, Rudi, to GEZE GmbH. Ski brake. 4,337,964, Cl. 280-605.000.
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Winburn, Charles F.; and Blankenship, Wallace P., 4,337,556, Cl. 27-2.000.
- Blaschke, Felix; and Reng, Leonhard, to Siemens Aktiengesellschaft. Load state control for an asynchronous machine fed by a converter. 4,338,559, Cl. 318-805.000.
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- Bloom, Terry R.; and Ellis, Marion E., to CTS Corporation. Apparatus and method for producing uniform fired resistors. 4,338,351, Cl. 427-8.000.
- Bodewig, Frans G.: See—  
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- Boeing Company, The: See—  
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- Sheppard, Clyde H., 4,338,225, Cl. 525-122.000.
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- Bolton, Clifford. Method for combustion of petroleum and solid wastes. 4,337,711, Cl. 110-346.000.
- Bolton, David H., to Imperial Chemical Industries Limited. Method and apparatus for the treatment of wastewater. 4,338,197, Cl. 210-621.000.
- Bolz, Gunter; and DeForest, Sherman E., to International Remote Imaging Systems, Inc. Flow analyzer and system for analysis of fluids with particles. 4,338,024, Cl. 356-23.000.
- Bonar, Thomas G. Self-closing double hinge. 4,337,548, Cl. 16-311.000.
- Bonney, Roland W. Multiple four-way control valve. 4,337,796, Cl. 137-625.170.
- Bono, David C.; Fishbein, Marvin; and Harte, Kenneth J., to Control Data Corporation. Unipotential lens assembly for charged particle beam tubes and method for applying correction potentials thereto. 4,338,548, Cl. 315-382.000.
- Booth, William R. Means for releasably attaching strands. 4,337,913, Cl. 244-151.00B.
- Borberg, Klaus: See—  
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- Borchert, Werner: See—  
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- Borg-Warner Chemicals, Inc.: See—  
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- Borg-Warner Corporation: See—  
Greene, C. Roger, 4,337,628, Cl. 464-131.000.
- Holdeman, John W., 4,337,675, Cl. 74-477.000.
- Bornand, Jean D., to Swiss Aluminium Ltd. Method of purification of aluminium melts. 4,338,124, Cl. 75-68.00R.
- Borowski, Kurt: See—  
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- Borzym, John J. Die jaw members for tube cutoff apparatus. 4,337,680, Cl. 83-456.000.
- Boschert, Incorporated: See—  
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- Boschetti, Giovanni. Tongue and groove boards with spacers permitting expansion, and method of making the same. 4,337,607, Cl. 52-573.000.
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- Brackney, Maurice R.: See—  
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- Brand, Larry M., to Procter & Gamble Company, The. Non-nutritive sweetener. 4,338,346, Cl. 426-548.000.
- Brandow, Charles R.: See—  
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- Brandt, Herman F., to General Motors Corporation. Diesel engine start of fuel injection detecting system. 4,337,650, Cl. 73-119.00A.
- Brasier, Robert E., to Datagraphix, Inc. Linear beam scanning apparatus especially suitable for recording data on light sensitive film. 4,337,994, Cl. 350-3.710.
- Braun, Robert E., to Burroughs Corporation. Hermetic integrated circuit package for high density high power applications. 4,338,621, Cl. 357-74.000.
- Brembeck, Howard S.: See—  
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- Brennan, Michael E.; and Speranza, George P., to Texaco Inc. Synthesis of N-(2-hydroxyethyl)piperazine. 4,338,443, Cl. 544-401.000.
- Brent, Albert: See—  
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- Bridgestone Tire Company Limited: See—  
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- Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Naito, Nagayoshi; Tanaka, Chiaki; and Hiratsuka, Motoki, 4,337,946, Cl. 273-225.000.
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- Briggs, James E., Jr.; and Hasegawa, Ryusuke, to Allied Corporation. Nickel-boron binary amorphous alloys. 4,338,131, Cl. 148-403.000.
- Briley, Bruce E., to Bell Telephone Laboratories, Incorporated. Asynchronous adder circuit. 4,338,676, Cl. 364-786.000.
- Brinkwerth, Wolfgang; Huffer, Wolfgang; Raue, Roderich; Schieder, Rudolf; and Telle, Helmut, to Bayer Aktiengesellschaft. Fluorescent dyestuffs, processes for their preparation and their use as laser dyestuffs. 4,338,258, Cl. 260-456.00A.
- Briscoe, Terry L., to ESCO Corporation. Pin locking assembly. 4,337,614, Cl. 59-86.000.
- British Petroleum Company Limited, The: See—  
Weeks, Brian, 4,338,150, Cl. 156-275.500.
- British Steel Corporation: See—  
Swaby, Harold, 4,338,060, Cl. 414-748.000.
- Britton, John F.: See—  
Hooper, John D.; and Britton, John F., 4,337,783, Cl. 131-375.000.
- Broadway, Alexander R. W.; Rawcliffe, Gordon H., deceased (by Rawcliffe, Sheila M., executrix); and by Rawcliffe, Caroline S., executrix, to National Research Development Corporation. Pole-amplitude modulation, pole-changing electric motors and generators. 4,338,534, Cl. 310-184.000.
- Brock, James D., to Astec Industries, Inc. Method of weighing and dispensing material from a surge bin. 4,337,878, Cl. 222-1.000.
- Brockway, M. Clifford; and Walters, Craig T., to Liberty Glass Company. Laser treatment method for imparting increased mechanical strength to glass objects. 4,338,114, Cl. 65-28.000.
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- Brooks, Arthur W.; Stevenson, Richard B.; and Bell, Leonard, to General Foods Corporation. Process for producing a quick-cooking rice. 4,338,344, Cl. 426-461.000.
- Brooks, Charles R.: See—  
Cook, Yale B.; and Brooks, Charles R., 4,337,775, Cl. 128-349.00B.
- Brooks, Jeffrey B.: See—  
Pressman, Gerald L.; Moore, Robert A.; Brooks, Jeffrey B.; and Sengstaken, Robert W., Jr., 4,338,614, Cl. 346-155.000.
- Brooks, Stuart M.; and Fagan, Martin R., to Brooks, Stuart M. Trapped-key security unit. 4,337,987, Cl. 312-219.000.
- Brouwer, Cornelis, to Rotaque (Proprietary) Limited. Railway hopper car bogie. 4,337,707, Cl. 105-250.000.
- Brown, George N., to Westvaco Corporation. Two stage fluid bed regeneration of spent carbon. 4,338,198, Cl. 210-673.000.
- Brown International Corporation: See—  
Rohm, Robert F.; and Berge, Olav, 4,337,865, Cl. 209-548.000.
- Brown, Kenneth W., to Compugraphic Corporation. Phototypesetting system and method. 4,338,673, Cl. 364-523.000.
- Brown, Robert S.; Schwicker, Russell C.; and Demas, Nickolas, to McGraw-Edison Company. Lamp pressure checking device. 4,337,645, Cl. 73-52.000.
- Brown, Royden. Pollen trap for beehives. 4,337,541, Cl. 6-4.00R.
- Brown, Stanford M. System for handling and baling metallic scrap material. 4,337,694, Cl. 100-45.000.
- Brundage, Charles F., to Allis-Chalmers Corporation. Roller support for cage sweep mechanism. 4,337,781, Cl. 130-27.00H.
- Brunswick Corporation: See—  
Erickson, Arnold R.; Panzera, Carlino; and Tolokan, Robert P., 4,338,380, Cl. 428-594.000.
- Bryant, Michael D.: See—  
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- Bubniak, William C.; and Mitchell, Harry R., to General Motors Corporation. Valve control mechanism. 4,337,738, Cl. 123-198.00F.
- Buche, Byron D., to H. J. Heinz Company. Method and apparatus for indexing containers to be labeled. 4,338,155, Cl. 156-539.000.
- Buchmann, Hans, to Zuhke Engineering AG. Method of preparing and processing receipts for customers of parking lots or the like. 4,337,890, Cl. 234-1.000.
- Buchner, Daniel C., to Waltec, Inc. Filtering device. 4,337,790, Cl. 137-550.000.
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Neal, Maynard J., 4,338,062, Cl. 415-213.00A.
- Bufner, Ernst, to Volkswagenwerk Aktiengesellschaft. Driving device for automobiles, in particular all-terrain vehicles. 4,337,840, Cl. 180-233.000.
- Builders Equipment Company: See—  
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- Buono, Joseph. Apparatus for the handling and conditioning of snow. 4,337,586, Cl. 37-222.000.
- Burgers, August, to Europatent S.A. Baseboard fastenable to a wall by a holder. 4,337,604, Cl. 52-287.000.
- Burkett, Richard A. Precipitation hardening copper alloys. 4,338,130, Cl. 420-486.000.
- Burkhart, Gordon H.: See—  
Bear, Philip D.; and Burkhart, Gordon H., 4,338,352, Cl. 427-8.000.
- Burroughs Corporation: See—  
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- Korytkowski, Henry M.; and Dear, Frederick H., 4,338,671, Cl. 364-478.000.
- Ragle, Herbert U., 4,337,659, Cl. 73-432.00R.
- Sellen, Kenneth R.; Neill, Jimmie; Banka, Eugene F.; and Barz, William, 4,338,610, Cl. 346-75.000.
- Burst, Francis J.: See—  
Fullenkamp, Eugene H.; Burst, Francis J.; Lohrey, Cecil R.; and Drew, William D., 4,338,485, Cl. 174-48.000.
- Burton, Bruce L., to Dow Chemical Company, The. Urethane modified polymers having hydroxyl groups. 4,338,242, Cl. 523-436.000.
- Bush, Eric L.; and Workman, Ernest J., to International Standard Electric Corporation. Coating powdered material. 4,338,354, Cl. 427-80.000.
- Buss, Benjamin A.: See—  
Buss, Randall D.; and Buss, Benjamin A., 4,338,088, Cl. 493-445.000.
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Sundstrom, Inge B.; and Cairenius, Per R. W., 4,337,655, Cl. 73-193.00R.
- Cali, William V. Brick clip-on hanger. 4,337,915, Cl. 248-489.000.
- Cama, Lovji D.: See—  
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- Cameron Iron Works, Inc.: See—  
Parris, Joe P., 4,337,920, Cl. 251-357.000.
- Canadian Patents & Development Limited: See—  
Knaus, Edward E.; Corleto, Linda A.; and Redda, Kinfe, 4,338,445, Cl. 546-270.000.
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- Matsumura, Susumu; Suzuki, Takashi; Matsumoto, Kazuya; and Momiyama, Kikuo, 4,338,012, Cl. 354-200.000.
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- Shimada, Fumio; and Date, Nobuaki, 4,338,013, Cl. 354-234.000.
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- Yoshida, Syozo; and Tosaka, Yoichi, 4,338,014, Cl. 354-234.000.
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Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, 4,338,161, Cl. 202-228.000.
- Carlier, Philippe & Melky (H.K.) Limited: See—  
Philippe, Gerard G., 4,337,595, Cl. 47-10.000.
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- Carlson, Lennart L.; and Hoiberg, Douglas L., to Steward Plastics, Inc. Two piece extruded hose. 4,337,800, Cl. 138-122.000.
- Carlson, Ronald R., to Sico Incorporated. Yieldable multi-function linkage apparatus for powered pivoting loads. 4,337,670, Cl. 74-96.000.
- Carmel, Fred. Clutch assembly. 4,338,064, Cl. 416-134.00R.
- Carr, Paul L. I., to Imperial Chemical Industries Limited. Process for the manufacture of polyester yarns. 4,338,275, Cl. 264-176.00F.
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- Cascade Corporation: See—  
Sifri, Elie C.; and Schmidt, Michael D., 4,337,692, Cl. 92-168.000.
- Caspers, Karl-Heinz: See—  
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- Castle & Cooke, Inc.: See—  
Hanacek, William A.; Kahl, James E.; and Mackenzie, Angus B., 4,337,594, Cl. 47-1.100.
- Caterpillar Tractor Co.: See—  
Dennis, Ronald E.; and Kizer, Richard W., 4,337,932, Cl. 269-23.000.
- Gravey, Charles E., 4,337,814, Cl. 152-429.000.
- Rhodes, Sammy J., deceased, 4,337,787, Cl. 137-101.000.
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- Cavanagh, John R.; Cross, Kenneth R.; Clingman, David L.; and Schechter, Berton, to General Motors Corporation. Method for coating porous metal structure. 4,338,360, Cl. 427-247.000.
- Caveney, Jack E., to Panduit Corp. Assembly post. 4,337,934, Cl. 269-77.000.
- Cecil, James B.: See—  
Connolly, Joseph J., Jr.; and Cecil, James B., 4,338,590, Cl. 340-347.00C.
- Celanese Corporation: See—  
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- Edelman, Robert, 4,338,430, Cl. 528-222.000.
- Mayerle, Leanne, 4,338,196, Cl. 210-610.000.
- Chabala, Leonard V.; and Hall, Walter J., to S & C Electric Company. Anti-parallelizing apparatus for high-voltage gear. 4,338,499, Cl. 200-50.00C.
- Chafetz, Harry: See—  
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- Chamberlin, James W.: See—  
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- Chamberlin, James W., both of: See—  
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- Champion International Corporation: See—  
Sullivan, John; and Lillibridge, Harold R., 4,338,085, Cl. 493-254.000.
- Chan, Ka-Kong; and Pawson, Beverly A., to Hoffmann-La Roche Inc. Fluorinated aromatic polyenes. 4,338,253, Cl. 260-408.000.
- Chandala, Kiran B.; and Barnowski, Henry G., to Olin Corporation. Stabilization of high resilience polyurethane foam. 4,338,407, Cl. 521-99.000.
- Chang, Chau-Ting, to Institute of Nuclear Energy Research. Method for the preparation of uranium compounds via electrolytic amalgamation of uranium ion directly from an aqueous solution. 4,338,125, Cl. 75-84.000.
- Charbonnages de France: See—  
Delessard, Serge; and Puff, Roger M., 4,338,160, Cl. 201-1.000.
- Merry, Jean-Louis, 4,338,104, Cl. 55-291.000.
- Charles Stark Draper Laboratory, Inc.: See—  
De Fazio, Thomas L., 4,337,579, Cl. 33-169.00C.
- Chatzipetros, Johann; and Helten, Manfred, to Kernforschungsanlage Jülich GmbH. Cryogenic pump and air sampler. 4,337,669, Cl. 73-863.110.
- Chauffe, John A., to Koomey, Inc. Blowout preventer control and recorder system. 4,337,653, Cl. 73-151.000.
- Chemische Fabrik Zaltbommel: See—  
van der Maas, Hendrikus J. H., 4,338,254, Cl. 260-439.00R.
- Chen, Andy C. C.; Lang, Clifford E., Jr.; Graham, Charles P.; and Rizzuto, Anthony B., to Amstar Corporation. Crystallized, readily water-dispersible sugar product. 4,338,350, Cl. 426-658.000.
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- Chevron Research Company: See—  
Adams, J. Howard, 4,338,207, Cl. 252-47.500.
- Goodrich, Judson E., 4,338,137, Cl. 106-273.00R.
- Chiappetti, Arthur B. Toll collection system. 4,338,587, Cl. 340-32.000.
- Chidester, James R.: See—  
Young, James E.; Walker, Ralph S.; and Chidester, James R., 4,337,770, Cl. 128-214.00R.
- Chihara, Masao; Araki, Shigeo; and Asakawa, Kazuhiko, to TDK Electronics Co., Ltd. Electrode type steam vaporizer having corrosion resistant nickel ferrite electrodes and a protective cover. 4,338,510, Cl. 219-288.000.
- Child, Edward T.: See—  
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- Children's Hospital Medical Center, The: See—  
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Da Silva, Jose T., 4,337,782, Cl. 130-30.00E.

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Farooq, Saleem; Ackermann, Peter; Drabek, Jozef; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,338,468, Cl. 568-637.000.

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Krekeler, Claude B., 4,337,980, Cl. 299-91.000.

Cirella, Dominic. Liquid dispensing device. 4,337,806, Cl. 141-286.000.

Citizen Watch Co. Ltd.: See—  
Nomura, Yasushi, 4,338,680, Cl. 368-29.000.

Cittrich, Jurgen: See—  
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Clapper, Robert C., to DCI Marketing. Digital spring roll display device. 4,337,588, Cl. 40-10.00R.

Clark, Allen; and Konshak, Michael V., to Digital Equipment Corporation. Drive belt release mechanism for magnetic disk drives. 4,338,642, Cl. 360-97.000.

Clausen, Allan H. Vehicle securing device for frame straightening and repairing apparatus. 4,337,636, Cl. 72-457.000.

Cleall, Alfred F., to Babcock Product Engineering Ltd. Burner heads. 4,337,898, Cl. 239-422.000.

Clements, Anthony H.; and Leigh, Arthur G., to Lever Brothers Company. Bleach composition. 4,338,210, Cl. 252-96.000.

Clendaniel, W. Richard, to Ingersoll-Rand Company. Filter press with pivoting diverter doors. 4,337,695, Cl. 100-195.000.

Clingman, David L.: See—  
Cavanagh, John R.; Cross, Kenneth R.; Clingman, David L.; and Schechter, Berton, 4,338,360, Cl. 427-247.000.

Cloarec, Laurent, to Regie Nationale des Usines Renault. Ball-and-socket joint for multiarticulate arm. 4,338,038, Cl. 403-56.000.

Coates, George R., to Schlumberger Technology Corporation. Apparatus and method for determination of bound water in subsurface formations. 4,338,567, Cl. 324-338.000.

Cohen, Allen L. Multifocal phase plate. 4,338,005, Cl. 351-161.000.

Colasanti, Arduino; and Francis, Philip L., to Allied Corporation. Lock up mechanism for seat belt retractor. 4,337,906, Cl. 242-107.40A.

Colby, Dwight D.: See—  
Leonard, Kenneth L.; Colby, Dwight D.; Dougherty, William R.; Fahley, Jerome A.; and van Dyke, Martin J., 4,337,638, Cl. 73-1.00R.

College Research Corporation: See—  
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Biancale, Pierre; Corfa, Yves-Paul; Lemercier, Pierre; Moreau, Jean-Pierre; and Vertut, Jean, 4,338,043, Cl. 405-172.000.

Nicolas, Gerard; Ponthenier, Gerard; and Turc, Gerard, 4,337,573, Cl. 29-831.000.

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Commonwealth Scientific and Industrial Research Organization: See—  
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Communications Satellite Corp.: See—  
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Compak Systems, Inc.: See—  
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Compton, James C.: See—  
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Compugraphic Corporation: See—  
Brown, Kenneth W., 4,338,673, Cl. 364-523.000.

Conger, Steven J. Solar reflector and heat storage device. 4,337,754, Cl. 126-430.000.

Connolly, Joseph J., Jr.; and Cecil, James B., to National Semiconductor Corporation. Multi stage resistive ladder network having extra stages for trimming. 4,338,590, Cl. 340-347.00C.

Continental Group, Inc.: See—  
Hoenig, James R.; and Mallorca, Salvador C., 4,337,874, Cl. 220-306.000.

Continental Gummi-Werke Aktiengesellschaft: See—  
Rach, Heinz-Dieter; and Pieper, Henner, 4,337,813, Cl. 152-209.00R.

Continental Pharma: See—  
Gillet, Claude L.; Roba, Joseph L.; Snyers, Michel; Van Dorsser, William R.; and Lambelin, Georges E., 4,338,330, Cl. 424-273.00B.

Control Data Corporation: See—  
Bono, David C.; Fishbein, Marvin; and Harte, Kenneth J., 4,338,548, Cl. 315-382.000.

Petrich, Dennis M., 4,338,569, Cl. 328-155.000.

Cook, Hilbert F., to Texas Industries, Inc. Microwave curing of cementitious material. 4,338,135, Cl. 106-97.000.

Cook, John: See—  
Bailey, Joseph; and Cook, John, 4,338,393, Cl. 430-386.000.

Cook, Robert D.; and Skarvada, Thomas, to Crane Co. Initialization apparatus for a brake control system. 4,338,667, Cl. 364-426.000.

Cook, Robert D., to Crane Co. Modulator for anti-skid braking system. 4,338,668, Cl. 364-426.000.

Cook, Yale B.; and Brooks, Charles R., to Levine, Irving. Catheter drainage and protection unit. 4,337,775, Cl. 128-349.00B.

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Peck, Gene E.; and Cooperberg, Bruce, 4,338,016, Cl. 354-303.000.

Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Modified resins. 4,338,411, Cl. 525-145.000.

Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Polymer blends. 4,338,413, Cl. 525-179.000.

Corbin, Alan, to American Home Products Corporation. Use of LRH and LRH agonists. 4,338,305, Cl. 424-177.000.

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Correale, James V.: See—  
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Corso, Anthony B., to Corporate Equipment Company. Slide wire device simulator circuit and method. 4,338,531, Cl. 307-540.000.

Cosden Technology, Inc.: See—  
Mayes, Warden W., 4,338,096, Cl. 23-230.00A.

Coston, Jean A.: See—  
Dostert, Philippe L.; Douzon, Colette A.; Bourgerie, Guy R.; Gouret, Claude G.; Mocquet, Gisele C.; and Coston, Jean A., 4,338,451, Cl. 548-232.000.

Coulter, Lawrence: See—  
Coulter, Nancy J.; and Coulter, Lawrence, 4,337,544, Cl. 114-357.000.

Coulter, Nancy J.; and Coulter, Lawrence. Sport fishing boat. 4,337,544, Cl. 114-357.000.

Coulter Systems Corporation: See—  
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Cour, Francis R., to Coyne et Bellier, Bureau d'Ingenieurs Conseils. Method and apparatus for anchoring a line, such as a pipeline, to a support, and in particular a sea-bed. 4,338,045, Cl. 405-172.000.

Coury, Fred F.: See—  
Kelley, James M.; and Coury, Fred F., 4,338,660, Cl. 364-200.000.

Covert, William J.; and Strickman, Melvyn B. Skateboard. 4,337,961, Cl. 280-87.04A.

Coviello, Frank A.: See—  
Bloch, Alan; Coviello, Frank A.; Guzik, Ira; and Puebla, Candido, 4,338,495, Cl. 179-99.00M.

Coyne et Bellier, Bureau d'Ingenieurs Conseils: See—  
Cour, Francis R., 4,338,045, Cl. 405-172.000.

CPC International Inc.: See—  
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Crane Co.: See—  
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Skarvada, Thomas, 4,338,669, Cl. 364-426.000.

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Cremonesi, Pietro, to Italfarmaco S.p.A. Immobilization of enzymes. 4,338,401, Cl. 435-178.000.

Crisp, Peter N.: See—  
Spadini, Gianfranco L.; Crisp, Peter N.; and McRitchie, Allan C., 4,338,204, Cl. 252-8.750.

Cross, Kenneth R.: See—  
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Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., to Texaco Inc. Process for the partial oxidation of slurries of solid carbonaceous fuels. 4,338,099, Cl. 48-197.00R.

Crum, Gerald W.: See—  
Kennon, James L.; Macartney, Lawrence J.; Crum, Gerald W.; Dunn, John C.; and Hastings, Donald R., 4,338,364, Cl. 427-424.000.

Cruz-Urbe, Antonio S., to Pitney Bowes Inc. Ink drop deflector. 4,338,613, Cl. 346-75.000.

CTS Corporation: See—  
Bloom, Terry R.; and Ellis, Marion E., 4,338,351, Cl. 427-8.000.

Cunliffe, Frank: See—  
Jefferson, John R.; and Cunliffe, Frank, 4,337,747, Cl. 123-501.000.

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Schenck, Robert, 4,337,988, Cl. 312-250.000.

Czekajewski, Jan A.; Hill, Harold L.; and Kober, Kenneth J. Animal activity monitor and behavior processor. 4,337,726, Cl. 119-1.000.

Dahl, Norman C. Solid externally threaded fasteners having greatly increased ductility. 4,338,054, Cl. 411-424.000.

Dai Nippon Teryo Co., Ltd.: See—  
Toyoda, Tsunehiko; Matsumoto, Tokio; and Arakawa, Toshiaki, 4,338,133, Cl. 106-22.000.

Daiel Chemical Industries, Ltd.: See—  
Hashimoto, Kaname; and Ikeda, Saizo, 4,338,375, Cl. 428-412.000.

Daiichi Electric Co., Ltd.: See—  
Sato, Hiroshi, 4,338,641, Cl. 360-90.000.

Dallessio, Robert J.: See—  
Harris, Richard G.; Dallessio, Robert J.; and Harman, Neil W., 4,338,513, Cl. 235-449.000.

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Moringiello, Donald C.; and Dallmann, Stephen H., 4,337,982, Cl. 308-26.000.

Daly, Christopher N.; Hirshorn, Michael S.; Money, David K.; and Holley, Loraine K., to Teletronics Pty. Ltd. Impedance measuring pacer. 4,337,776, Cl. 128-419.0PT.

Dammann, Laurence G., to Celanese Corporation. Polyacrylate thickening agents. 4,338,239, Cl. 524-549.000.

Dandrea, Peter L., to Garden Green Vegetable Processors, Inc. Pepper coring and slicing apparatus. 4,337,693, Cl. 99-491.000.

Darnell, William R.: See—  
Jackson, Winston J., Jr.; and Darnell, William R., 4,338,422, Cl. 525-461.000.

Das, Balbhadr; and Moore, L. Dow, to PPG Industries, Inc. Aqueous sizing composition and sized glass fibers and method. 4,338,233, Cl. 523-410.000.

Das, Balbhadr: See—  
Moore, L. Dow; and Das, Balbhadr, 4,338,234, Cl. 523-206.000.

Da Silva, Jose T., to Cia Penha de Maquinas Agricolas-Copemag. Corn and cereal thrasher. 4,337,782, Cl. 130-30.00E.

Datagraphix, Inc.: See—  
Brasier, Robert E., 4,337,994, Cl. 350-3.710.

Date, Nobuaki: See—  
Shimada, Fumio; and Date, Nobuaki, 4,338,013, Cl. 354-234.000.

Daubenbuechel, Werner; and Thomas, Alfred, to Kautex-Maschinenbau GmbH. Apparatus for the manufacture of hollow bodies from a thermoplastic by the blow-moulding process. 4,338,071, Cl. 425-140.000.

Daussan, Andre: See—  
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Daussan et Compagnie: See—  
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Daussan, Gerard: See—  
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Davenport, Joseph P., to Allis-Chalmers Canada Inc. Synchronized hopper gate. 4,338,058, Cl. 414-144.000.

David, Lloyd M., to E. F. David, Inc. System for pier underpinning of settling foundation. 4,338,047, Cl. 405-230.000.

Davidson, James D. Bushing, formed compressible insulation for insulating air space created by holes. 4,337,603, Cl. 52-220.000.

Davis, J. C. Pipe interior surface coating device. 4,337,723, Cl. 118-306.000.

Davis, James A.: See—  
Radcliffe, Charles R.; and Davis, James A., 4,337,647, Cl. 73-116.000.

Davis, Michael, to Airway Industries, Inc. Cover for luggage case and method of making. 4,337,853, Cl. 190-53.000.

Davis, Noel: See—  
Haub, John T.; Krassas, James G.; Rustad, Stanley C.; and Davis, Noel, 4,337,986, Cl. 308-177.000.

Davis, William F.; and Dotson, Robert N., to Motorola, Inc. Current limiting circuit. 4,338,646, Cl. 361-18.000.

Dawn, Frederic S.; and Correale, James V., to United States of America, National Aeronautics and Space Administration. Absorbent product to absorb fluids. 4,338,371, Cl. 428-283.000.

Day, Pierce B., to Eastman Kodak Company. Imaging apparatus. 4,338,021, Cl. 355-49.000.

Day, W. Baldwin: See—  
Roeder, Robert S.; Day, W. Baldwin; Hunt, Harold W.; and Wilt, Robert E., 4,338,602, Cl. 343-10.000.

DCI Marketing: See—  
Clapper, Robert C., 4,337,588, Cl. 40-10.00R.

Dean, Earl E.; Quade, Marshall L.; and Temple, William F., to Massey-Ferguson Inc. Row crop unit. 4,337,612, Cl. 56-98.000.

Dear, Frederick H.: See—  
Korytkowski, Henry M.; and Dear, Frederick H., 4,338,671, Cl. 364-478.000.

Debayeux, Christian; Lacroix, Hubert; and Sternicha, Felix, to Societe Chimique des Charbonnages. Apparatus for granulating and/or coating particles in a spouted bed. 4,337,722, Cl. 118-303.000.

Declitractor, Inc.: See—  
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Deere & Company: See—  
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De Fazio, Thomas L., to Charles Stark Draper Laboratory, Inc. The. Deformable remote center compliance device. 4,337,579, Cl. 33-169.00C.

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Bolz, Gunner; and DeForest, Sherman E., 4,338,024, Cl. 356-23.000.

Degremont: See—  
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de Haan, Friedrich J., administrator: See—  
Lersmacher, Bernhard; van Kollenburg, Ludovicus W. J.; Bastings, Leonardus C., deceased; and de Haan, Friedrich J., administrator, 4,338,358, Cl. 427-227.000.

Dehaan, Peter H., to Eaton Corporation. Winch control. 4,337,926, Cl. 254-365.000.

Delalande S.A.: See—  
Dostert, Philippe L.; Douzon, Colette A.; Bourgerie, Guy R.; Gouret, Claude G.; Mocquet, Gisele C.; and Coston, Jean A., 4,338,451, Cl. 548-232.000.

Del Bianco, Matthew A.; and Tancredi, Henry J., to Du Pont de Nemours, E. I., and Company. Gripping arrangement for an apparatus for automatically laminating circuit boards. 4,338,152, Cl. 156-351.000.

Delessard, Serge; and Puff, Roger M., to Charbonnages de France. Process for drying and/or preheating coal. 4,338,160, Cl. 201-1.000.

DeLeu, Robert P., to Reliance Electric Company. Tapered bushing and hub assembly for sheaves, gears, sprockets, couplings and similar machine elements. 4,338,036, Cl. 403-16.000.

DelPercio, Michael J., to Intertherm Inc. Electric furnace for mobile and modular homes. 4,337,823, Cl. 165-48.00R.

DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., to Wisconsin Alumni Research Foundation. 1-Hydroxylation process. 4,338,250, Cl. 260-397.200.

DeLuca, Hector F.; Schnoes, Heinrich K.; and Jorgensen, Neal A., to Wisconsin Alumni Research Foundation. Method for preventing parturient paresis in dairy cattle. 4,338,312, Cl. 424-236.000.

Demas, Nickolas: See—  
Brown, Robert S.; Schwickert, Russell C.; and Demas, Nickolas, 4,337,645, Cl. 73-52.000.

Deminski, Richard M., to Yorde Machine Products Company, The. Multiple jackscrew rod to crosshead mounting. 4,338,037, Cl. 403-24.000.

Demonty, Guillermo A. Toenail. 4,338,039, Cl. 403-230.000.

Denki Kagaku Kogyo Kabushiki Kaisha: See—  
Nabeta, Takeshi; Masui, Takeshi; and Hasegawa, Tsuguo, 4,338,378, Cl. 428-462.000.

Dennis, Ronald E.; and Kizer, Richard W., to Caterpillar Tractor Co. Safety device for a workpiece holder. 4,337,932, Cl. 269-23.000.

de Pingon, Pierre J. Articulated catamaran. 4,337,715, Cl. 114-121.000.

Desor, Gerhard, to Hauser Verwaltungs-Gesellschaft mit beschränkter Haftung. Thermo-pneumatic pump. 4,338,065, Cl. 417-207.000.

Despang, Hans-Gunter: See—  
Kessler, Peter; Kaiser, Joachim; Keil, Wolfgang; Despang, Hans-Gunter; Haufe, Jurgen; and Kieser, Matthias, 4,337,903, Cl. 242-56.00A.

Deutsch, Leslie J.: See—  
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Kopineck, Hermann J.; Bottcher, Wolfgang; Mreyen, Klaus D.; Borchert, Werner; and Deutsch, Volker, 4,337,662, Cl. 73-632.000.

Developak Corporation: See—  
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Dhainaut, Alain: See—  
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d'Hautecourt, Alain H.; and Tzakis, George J., to Zenith Radio Corporation. On screen color display. 4,338,624, Cl. 358-22.000.

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Dickinson, William B.: See—  
Leshner, George Y.; and Dickinson, William B., 4,338,446, Cl. 546-314.000.

Dickson, Ronald; and Hampson, Michael R., to Marston Excelsior Limited. Electrode. 4,338,179, Cl. 204-284.000.

Diehl GmbH & Company: See—  
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Diermayer, Werner; and Kutzner, Luitpold. Draft control arrangement for vent of combustion apparatus. 4,337,892, Cl. 236-93.00R.

Digital Equipment Corporation: See—  
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Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,338,663, Cl. 364-200.000.

Dilling, Peter, to Westvaco Corporation. Process for lowering the viscosity of sulfonated lignins. 4,338,091, Cl. 8-524.000.

Dillon, Peter L. P.; Edwards, Evan A.; and Spaulding, Richard A., to Eastman Kodak Company. Frame-rate converting film scanner with two-dimensional solid state image sensing array. 4,338,634, Cl. 358-214.000.

DiMatteo, Paul; Segnini, Robert; and Rademacher, Paul, to Solid Photography, Inc. Gauging system for machining surfaces. 4,337,566, Cl. 29-558.000.

Ditgens, Klaus: See—  
Stetter, Jorg; Ditgens, Klaus; Thomas, Rudolf; Eue, Ludwig; and Schmidt, Robert R., 4,338,119, Cl. 71-92.000.

Divisek, Jiri; Mergel, Jurgen; and Bodewig, Frans G., to Kernforschungsanlage Julich Gesellschaft mit beschränkter Haftung. Method for increasing electrolytic efficiency of a fusion electrolysis with anodic oxygen generation. 4,338,167, Cl. 204-60.000.

Dr. Ing. h.c.f. Porsche Aktiengesellschaft: See—  
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Docutel Corporation: See—  
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Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., 4,338,441, Cl. 544-211.000.

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Dolby, Ray M., to Dolby Laboratories, Inc. Scanning system for reproducing side-by-side optical sound tracks. 4,338,684, Cl. 369-92.000.

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Doori, Hisashi, to Yoshida Kogyo K.K. Apparatus for supplying slide fastener sliders. 4,337,877, Cl. 221-171.000.

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Dorner, Wolfgang C., 4,337,856, Cl. 198-599.000.

Dorner, Wolfgang C., to Dorner Mfg. Corp. Transfer mechanism for a magnetic conveyor. 4,337,856, Cl. 198-599.000.

Doryokuro Kakuneryo Kahatsu Jigyodan: See—  
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Dostert, Philippe L.; Douzon, Colette A.; Bourgerie, Guy R.; Gouret, Claude G.; Mocquet, Gisele C.; and Coston, Jean A., to Delalande S.A. 5-Hydroxymethyl oxazolidinones. 4,338,451, Cl. 548-232.000.

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Davis, William F.; and Dotson, Robert N., 4,338,646, Cl. 361-18.000.

Dotts, Robert L.: See—  
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Dougherty, David J.; Gunesin, Binnur; and Spiewak, John W., to Firestone Tire & Rubber Company, The. Process for preparing diene-containing rubbers having improved green strength. 4,338,425, Cl. 526-216.000.

Dougherty, Frank I. Sailboat mast displacement system. 4,337,714, Cl. 114-90.000.

Dougherty, William R.: See—  
Leonard, Kenneth L.; Colby, Dwight D.; Dougherty, William R.; Fahley, Jerome A.; and van Dyke, Martin J., 4,337,638, Cl. 73-1.00R.

Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., to William H. Rorer, Inc. Triazinones. 4,338,441, Cl. 544-211.000.

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Johnson, Mark R., 4,338,162, Cl. 203-8.000.

Lane, George A.; and Rossow, Harold E., 4,338,208, Cl. 252-70.000.

Downing, Noel L., to General Motors Corporation. Fuel air ratio controlled fuel splitter. 4,337,616, Cl. 60-39.28R.

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Farooq, Saleem; Ackermann, Peter; Drabek, Jozef; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,338,468, Cl. 568-637.000.

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Drill Systems, Inc.: See—  
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Drost, Jim L.; and Gordin, Myron K. Knife with retractable blade. 4,337,576, Cl. 30-162.000.

D'Silva, Themistocles D. J., to Union Carbide Corporation. Carbamate-sulfonyl-carbamoyl fluoride compounds. 4,338,450, Cl. 548-185.000.

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Ducasse, Joseph C. V., to Fabcon. Continuous separation system. 4,338,201, Cl. 210-771.000.

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Nacci, George R.; and Pye, Donald G., deceased, 4,338,391, Cl. 430-122.000.

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Payne, Robert W.; and Smith, Wesley F., 4,338,628, Cl. 358-120.000.

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E. F. David, Inc.: See—  
David, Lloyd M., 4,338,047, Cl. 405-230.000.

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Haugwitz, Rudiger D., 4,338,435, Cl. 544-13.000.

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Franz, Rudolph J., 4,337,818, Cl. 165-2.000.

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Eck, Leonard F., to Kansas Jack, Inc. Line of sight wheel alignment apparatus for vehicles. 4,338,027, Cl. 356-155.000.

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Edahiro, Takao; Kyoto, Michihisa; Tanaka, Gotaro; and Kuwahara, Toru, to Nippon Telegraph & Telephone Public Corporation; and Sumitomo Electric Industries, Ltd. Process for producing a glass preform for optical fiber. 4,338,111, Cl. 65-18.200.

Edelman, Robert, to Celanese Corporation. Preparation of polyimide compositions with cyclic peroxyketal catalyst. 4,338,430, Cl. 528-222.000.

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Ehret, Gordon F.; Rowley, William N.; and Mullen, Richard E., to Marley-Wylain Company, The. Liquid level detection circuit for control of liquid level responsive device. 4,338,546, Cl. 315-119.000.

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Eisai Co., Ltd.: See—  
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,338,251, Cl. 260-405.500.

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Katner, Allen S.; and Bogard, Stephen J., 4,338,452, Cl. 548-251.000.

Krumkalns, Eriks V., 4,338,118, Cl. 71-76.000.

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Paget, Charles J.; Chamberlin, James W.; and Wikel, James H., 4,338,315, Cl. 424-246.000.

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Bloom, Terry R.; and Ellis, Marion E., 4,338,351, Cl. 427-8.000.

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Wilson, John T.; Wafer, John A.; Engel, Joseph C.; and Elms, Robert T., 4,338,647, Cl. 361-96.000.

Eltra Corporation: See—  
Kern, Calvin V.; and Villano, James J., 4,337,596, Cl. 49-210.000.

Major, Jeffrey T., 4,338,538, Cl. 310-242.000.

Mattson, Richard W., 4,337,743, Cl. 123-396.000.

Rittenhouse, John F., 4,338,163, Cl. 204-2.100.

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Garcia Palaez, Jose, 4,338,176, Cl. 204-228.000.

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Myers, Lyle L., 4,338,298, Cl. 424-92.000.

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Flanders, Staunton O.; and Ness, William A., 4,337,893, Cl. 237-7.000.

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Engel, Elton D. Identification card, sensor, and system. 4,338,025, Cl. 356-71.000.

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Engler, Edward M.; Kuptsis, John D.; Schad, Robert G.; and Tomkiewicz, Yaffa, to International Business Machines Corporation. Class of E-beam resists based on conducting organic charge transfer salts. 4,338,392, Cl. 430-270.000.

Engman, Thomas O. J., to Husqvarna Aktiebolag. Internal combustion engine. 4,337,748, Cl. 123-602.000.

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Erickson, Arnold R.; Panzer, Carlo; and Tolokan, Robert P., to Brunswick Corporation. Method of attaching ceramics to metals for high temperature operation and laminated composite. 4,338,380, Cl. 428-594.000.

Erwied, Werner: See—  
Worschech, Kurt; Wedl, Peter; Loffelholz, Frido; Wegemund, Bernd; and Erwied, Werner, 4,338,226, Cl. 524-302.000.

Escaron, Pierre C.; and Hoppe, Joachim A., to Schlumberger Technology Corp. Extension member for well-logging operations. 4,337,969, Cl. 285-24.000.

ESCO Corporation: See—  
Briscote, Terry L., 4,337,614, Cl. 59-86.000.

Esser, Heinz: See—  
Nolte, Wilfried; Keller, Wilfried; and Esser, Heinz, 4,338,238, Cl. 524-706.000.

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Kopineck, Hermann J.; Bottcher, Wolfgang; Mreyen, Klaus D.; Borchert, Werner; and Deutsch, Volker, 4,337,662, Cl. 73-632.000.

Etchell, Gordon; and Frank, Cyril W., to Pathfinder Graphic Associates, Inc. Blanket cylinder construction for printing press. 4,337,700, Cl. 101-415.100.

Ethyl Corporation: See—  
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Sugasawa, Fukashi; Izuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, 4,337,740, Cl. 123-198.00F.

Eue, Ludwig: See—  
Stetter, Jorg; Digtens, Klaus; Thomas, Rudolf; Eue, Ludwig; and Schmidt, Robert R., 4,338,119, Cl. 71-92.000.

Europatent S.A.: See—  
Burgers, August, 4,337,604, Cl. 52-287.000.

Euvrard, Jean-Paul; and Voisin, Gilles, to Alsthom Atlantique. Electrical power transmitting installation including a safety device for providing protection against the effects of electric arcs. 4,338,483, Cl. 174-28.000.

Evans, Marvin, to College Research Corporation. Rotary furnace for melting metal. 4,337,929, Cl. 266-248.000.

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Wersosky, John M.; and Wakefield, Frederick I., 4,338,100, Cl. 55-18.000.

Exchem Holdings Limited: See—  
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Hall, Ronald A., 4,338,565, Cl. 324-206.000.

Extramet: See—  
Bienvenu, Gerard, 4,338,169, Cl. 204-155.000.

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Gunderson, Richard H., 4,337,970, Cl. 285-136.000.

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Agarwal, Pawan K.; and Makowski, Henry S., deceased, 4,338,229, Cl. 524-399.000.

Flory, John F., 4,337,852, Cl. 188-375.000.

Guerre, Robert P., 4,338,188, Cl. 209-2.000.

Maa, Peter S.; Veluswamy, Lavanga R.; and Vadovic, Charles J., 4,338,184, Cl. 208-10.000.

Vernon, Lonnie W.; and Maa, Peter S., 4,338,182, Cl. 208-8.0LE.

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Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Yagi, Masahiro; and Ojima, Nobutoshi, 4,338,433, Cl. 536-46.000.

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Seeley, Frederic F., 4,338,264, Cl. 261-29.000.

Fabcon: See—  
Ducasse, Joseph C. V., 4,338,201, Cl. 210-771.000.

Fagan, Martin R.: See—  
Brooks, Stuart M.; and Fagan, Martin R., 4,337,987, Cl. 312-219.000.

Fager, Earl E. C.: See—  
Kurath, Paul; and Fager, Earl E. C., 4,338,308, Cl. 424-180.000.

Fahley, Jerome A.: See—  
Leonard, Kenneth L.; Colby, Dwight D.; Dougherty, William R.; Fahley, Jerome A.; and van Dyke, Martin J., 4,337,638, Cl. 73-1.00R.

Fahner, Friedrich: See—  
Grigo, Ulrich; Fahner, Friedrich; Lindner, Christian; and Binsack, Rudolf, 4,338,409, Cl. 525-66.000.

Sanderson, John R.; Binsack, Rudolf; Fahner, Friedrich; and Lindner, Christian, 4,338,406, Cl. 525-66.000.

Falater, Scott L., to Zenith Radio Corporation. Remote control system for television monitors. 4,338,632, Cl. 358-194.100.

Faldi, Giovanni, to Epi Pneuma Systems S.p.A. Apparatus for the subaqueous trenching of pipes. 4,338,042, Cl. 405-161.000.

Fan, John C. C.; and Bachner, Frank J., to Massachusetts Institute of Technology. Transparent heat-mirror. 4,337,990, Cl. 350-1.700.

Farago, Laszlo D., to Minnesota Mining and Manufacturing Company. Multiple magnification optical assembly. 4,338,022, Cl. 355-60.000.

Farge, Jean C.; and Fortin, Robert, to Noranda Mines Limited. Low alloy white cast iron. 4,338,128, Cl. 75-123.0CB.

Farkas, Daniel S., to Owens-Illinois, Inc. Starting safety control for a glassware forming machine. 4,338,115, Cl. 65-29.000.

Farmatis S.p.A.: See—  
Scalessiani, Juan B. A., 4,338,331, Cl. 424-274.000.

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Pellegata, Renato; and Gandolfi, Carmelo, 4,338,249, Cl. 549-214.000.

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Farooq, Saleem; Ackermann, Peter; Drabek, Jozef; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, to Ciba-Geigy Corporation.  $\alpha$ -Prop-1-ynyl-3-phenoxybenzyl alcohols. 4,338,468, Cl. 568-637.000.

Faulkner, Bobby P.; Lee, George T.; Schumacher, Peter L.; and Weinecke, Michael H., to Allis-Chalmers Corporation. Method and apparatus for subjecting mineral particles to gas flow. 4,338,079, Cl. 432-14.000.

Feathers, Leonard J.; to Chubb Panorama Limited. Valves. 4,337,766, Cl. 128-204.260.

Fechko, George J.: See—  
Lugosi, Robert; Fechko, George J.; Male, Alan T.; Haller, Henry E., III; and Mole, Cecil J., 4,337,567, Cl. 29-596.000.

Feldstein, Nathan. Process using activated electroless plating catalysts. 4,338,355, Cl. 427-98.000.

Felten & Guillaume Carlswerk Aktiengesellschaft: See—  
Voelker, Wolfgang; Schmitt, Alfons; and Radeck, Fritz, 4,337,725, Cl. 118-665.000.



- Ferris, Michael J., to Marvin Glass & Associates. Playing piece propelling game device. 4,337,949, Cl. 273-324.000.
- Feth, George C.; Ning, Tak H.; Tang, Denny D.; Wiedmann, Siegfried K.; and Yu, Hwa N., to International Business Machines Corporation. Self-aligned semiconductor circuits and process therefor. 4,338,622, Cl. 357-92.000.
- Feucht, Rudi: See—  
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- Feyen, Peter: See—  
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- Fiedler, Howard C., to General Electric Company. Method of producing silicon-iron sheet material with annealing atmospheres of nitrogen and hydrogen. 4,338,144, Cl. 148-113.000.
- Fields, Winfred G.: See—  
Suling, Robert C.; Tomlinson, Charles W.; and Fields, Winfred G., 4,337,866, Cl. 209-656.000.
- Firestone Tire & Rubber Company, The: See—  
Dougherty, David J.; Gunesin, Binnur; and Spiewak, John W., 4,338,425, Cl. 526-216.000.
- Firmenich SA: See—  
Schulte-Elte, Karl-Heinrich, 4,338,458, Cl. 560-122.000.
- Fischer, Herbert; Scheuermann, Fanny; Hase, Christian; and Krause, Horst-Jurgen, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Mild-to-the-skin anionic tensides of basic protein aminolysates preparations containing them, and their use. 4,338,214, Cl. 252-545.000.
- Fischer, Manfred, to Geroh GmbH Mechanische Systeme. Apparatus for guiding and clamping flexible ropes and the like. 4,337,553, Cl. 24-68.00R.
- Fishbein, Marvin: See—  
Bono, David C.; Fishbein, Marvin; and Harte, Kenneth J., 4,338,548, Cl. 315-382.000.
- Flanders, Staunton O.; and Ness, William A., to Energy Savings Parheliion. Multi-phase modular comfort controlled heating system. 4,337,893, Cl. 237-7.000.
- Flatau, Abraham. Non-spinning projectile. 4,337,911, Cl. 244-3.100.
- Flex-O-Lators, Inc.: See—  
Mundell, Donald D.; and Gowing, John P., 4,337,931, Cl. 267-102.000.
- Florent, Gerard: See—  
Lobmann, Michele; and Florent, Gerard, 4,338,296, Cl. 424-89.000.
- Flory, John F., to Exxon Research & Engineering Co. Load control link. 4,337,852, Cl. 188-375.000.
- Flower, John W., to Research Products Corporation. Device for conditioning air with improved gas-liquid contact pad. 4,338,266, Cl. 261-94.000.
- Floyd, Middleton B., Jr., to American Cyanamid Company. 1-Descarboxy-1-ketosteroid (ketocid)-prostaglandins. 4,338,252, Cl. 260-408.000.
- Flueckiger, Rudolph H., to Rockford Carbide Corporation. Method of restoring an indexable cutting insert for reuse. 4,337,562, Cl. 29-402.110.
- Flynn, Jean L. Door lock. 4,337,973, Cl. 292-290.000.
- FMC Corporation: See—  
Jadlocki, Joseph F., Jr.; and Thompson, John S., 4,338,345, Cl. 426-532.000.
- Foenard, Pierre, to Societe a Responsabilite Limitee: Societe de Developpement Pour l'Agriculture Sodelvage. Floor covering for stabling. 4,338,369, Cl. 428-235.000.
- Food Technology Products: See—  
Glabe, Elmer F.; Anderson, Perry W.; and Lafsidis, Stergios, 4,338,336, Cl. 426-1.000.
- Ford Motor Company: See—  
Holubka, Joseph W., 4,338,423, Cl. 525-511.000.
- Forschungskommission des Sev und VSE fur (FKH): See—  
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- Fortin, Robert: See—  
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- Fosco International Limited: See—  
Garcez, Joao D.; and Bryant, Michael D., 4,338,129, Cl. 75-130.00R.
- Foster, Dean H.; and Silverman, Harold, to Pitney Bowes Inc. Envelope stuffing apparatus. 4,337,609, Cl. 53-569.000.
- Fournier, Michel: See—  
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- Fox, Roland T. V.: See—  
Henrick, Clive A.; Labovitz, Jeffrey N.; Fox, Roland T. V.; Rathmell, William G.; and Shephard, Margaret C., 4,338,318, Cl. 424-251.000.
- Fox, William R., to Allied Corporation. Seat belt retractor with electrical switch. 4,337,907, Cl. 242-107.700.
- FPT Industries: See—  
Edwards, Thomas P., 4,337,921, Cl. 254-93.0HP.
- Frleigh, M. Foster. Oscillating rheometer die set. 4,337,646, Cl. 73-59.000.
- Framatome: See—  
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- Francis, Philip L.: See—  
Colasanti, Arduino; and Francis, Philip L., 4,337,906, Cl. 242-107.40A.
- Frank, Cyril W.: See—  
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- Frankl, Gerald P. Method for recovering and recycling animal waste materials. 4,338,337, Cl. 426-55.000.
- Franklin, James G.; and Rutter, Bernhard, to Societe d'Assistance Technique pour Produits Nestle S.A. Reincorporation of cocoa aroma. 4,338,349, Cl. 426-631.000.
- Franklin, Peter J. Wire gripping device. 4,337,555, Cl. 24-249.00R.
- Franz, Rudolph J., to Eaton Corporation. Vehicle temperature control system. 4,337,818, Cl. 165-2.000.
- Freitag, Dieter: See—  
Serini, Volker; Goossens, John; Bottenbruch, Ludwig; and Freitag, Dieter, 4,338,429, Cl. 528-196.000.
- Frey, Bernhard, to Hydrowatt Systems Limited. Seal for a cylinder-piston arrangement. 4,337,955, Cl. 277-12.000.
- Frigoscandia AB: See—  
Pettersson, Tomas, 4,338,055, Cl. 414-114.000.
- Fritts, David H., to United States of America, Air Force. Battery safety terminal. 4,338,382, Cl. 429-53.000.
- Frommer, Moshe A.: See—  
Kraus, Menahem A.; and Frommer, Moshe A., 4,338,190, Cl. 210-195.200.
- Fromson, Howard A.; and Gracia, Robert F., to Fromson, Howard A. Apparatus and process for making lithographic printing plate with reinforced image. 4,338,007, Cl. 355-100.000.
- Fuga, Georgy P.: See—  
Krylov, Gleb L.; Stanovoi, Ivan V.; and Fuga, Georgy P., 4,337,679, Cl. 83-385.000.
- Fugenschuh, Bernhard: See—  
Pichler, Herwig; Helletsberger, Harald; Geissler, Ernst; Ofer, Heinrich; and Fugenschuh, Bernhard, 4,338,357, Cl. 427-195.000.
- Fuji Photo Film Co., Ltd.: See—  
Tadokoro, Eiichi, 4,338,643, Cl. 360-135.000.
- Fujibayashi, Kenji, to Olympus Optical Co., Ltd. Cue signal generating circuit. 4,338,529, Cl. 307-518.000.
- Fujibayashi, Kenji, to Olympus Optical Co., Ltd. Cue signal recording apparatus. 4,338,639, Cl. 360-66.000.
- Fujii, Toshihiro; and Yokota, Sekiji, to Hayakawa Rubber Co., Ltd. Water proofing compositions for cement mortar or concrete. 4,338,224, Cl. 523-177.000.
- Fujimori, Ryo: See—  
Kato, Yutaka; and Fujimori, Ryo, 4,338,033, Cl. 356-444.000.
- Fujinami, Kimiya; Minato, Ichiro; and Shibata, Koichi, to Takeda Chemical Industries, Ltd. Triisocyanates. 4,338,256, Cl. 260-453.00A.
- Fujioka, Kotaro: See—  
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- Fujisawa Pharmaceutical Co., Ltd.: See—  
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- Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,338,313, Cl. 424-246.000.
- Fujita, Toshio; Matsumoto, Youichi; and Tagashira, Yoshimi, to Nippon Electric Co., Ltd. Carrier recovering circuit for phase modulated signal. 4,338,574, Cl. 331-1.00A.
- Fujitsu Fanuc Limited: See—  
Katsube, Hideo; Gamo, Gotaro; Kinoshita, Mitsuo; Nomura, Yoshiyuki; and Okuda, Kanemasa, 4,338,505, Cl. 219-69.00M.
- Kohzai, Yoshinori; Oyama, Shigeaki; and Katsuzawa, Yukio, 4,338,535, Cl. 310-186.000.
- Kurakake, Mitsuo, 4,338,659, Cl. 364-170.000.
- Fujitsu Limited: See—  
Kawabe, Yunosuke, 4,338,620, Cl. 357-50.000.
- Fujiwara, Naoki: See—  
Sakamoto, Koya; Yoneda, Yutaka; Fujiwara, Naoki; and Takamoto, Shigehito, 4,338,283, Cl. 422-112.000.
- Fukami, Akira: See—  
Mizuno, Junji; Fukami, Akira; Noguchi, Hiroki; and Ishii, Takeshi, 4,338,106, Cl. 55-316.000.
- Fukuroi, Akio; and Sugimoto, Isao, to Yoshida Kogyo K.K.; and Nippon Dyeing Mfg. Co. Apparatus for treatment of materials. 4,337,631, Cl. 68-189.000.
- Fukushima, Isao; Nishijima, Hideo; Satoh, Kenji; and Teshima, Tunekiko, to Hitachi, Ltd. Automatic gain control apparatus for a motor servo system. 4,338,554, Cl. 318-328.000.
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- Furuta, Yoko: See—  
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- Gall, Martin, to Upjohn Company. The. Aminoalkyl-1,2,4-triazoles. 4,338,453, Cl. 548-263.000.
- Galle, Kevin: See—  
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- Gallen, Thomas. High speed rotary atomizers. 4,337,895, Cl. 239-7.000.
- Gallup, Paul M.: See—  
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- Gamo, Gotaro: See—  
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- Gandolfi, Carmelo: See—  
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- Garagiola, Adelmo: See—  
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- Garcez, Joao D.; and Bryant, Michael D., to Fosco International Limited. Production of vermicular graphite cast iron. 4,338,129, Cl. 75-130.00R.
- Garcia Pelaez, Jose, to Empresa Nacional del Aluminio, S.A. (EN-DASA). System for generating and autocontrolling the voltage or current wave form applicable to processes for the electrolytic coloring of anodized aluminium. 4,338,176, Cl. 204-228.000.
- Garden Green Vegetable Processors, Inc.: See—  
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- Gardocki, Joseph F., to McNeilab, Inc. Analgesic potentiation. 4,338,324, Cl. 424-266.000.
- Garrett Corporation, The: See—  
LaCroix, Stephen R., 4,337,615, Cl. 60-39.14R.
- Gartsde, Robert J.; and Woebcke, Herman N., to Stone & Webster Engineering Corporation. Solids feeding device and system. 4,338,187, Cl. 208-127.000.
- Garver, Richard F.; and Stevanovich, Srbo M., to B. F. Goodrich Company, The. Profile cutting machine. 4,338,051, Cl. 409-184.000.
- Garvoli, Wolfgang N., to State of Victoria, The. Apparatus for determining properties of matter. 4,338,026, Cl. 356-73.000.
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- Gatsis, John G., to UOP Inc. Method of solvent extraction of coal by a heavy oil. 4,338,183, Cl. 208-10.000.
- Gattu, Narahari, to Harnischfeger Corporation. Telescopic crane boom having rotatable extend/retract screws. 4,337,868, Cl. 212-267.000.
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- Gaudette, Roger R.; Ohlson, John L.; and Scanlon, Patricia M., to W. R. Grace & Co. Process for preparing chelating agents. 4,338,460, Cl. 562-448.000.
- Gauthier, William K. Surgical retractor. 4,337,762, Cl. 128-20.000.
- Gay, Michael J., to Motorola, Inc. Self balancing amplitude modulator. 4,338,580, Cl. 332-31.00T.
- Gebo, George B. Power pulling arrangement. 4,337,924, Cl. 254-134.30R.
- Gebruder Junghans GmbH: See—  
Rapp, Egon; and Dertel, Heinrich, 4,338,681, Cl. 368-72.000.
- Geer, James L.: See—  
Rhoades, Rex V.; and Geer, James L., 4,338,563, Cl. 324-65.0CR.
- Geissler, Ernst: See—  
Pichler, Herwig; Helletsberger, Harald; Geissler, Ernst; Ofer, Heinrich; and Fugenschuh, Bernhard, 4,338,357, Cl. 427-195.000.
- Gelbard, Martin K., to University Of California, The Regents Of. Use of purified clostridial collagenase in the treatment of Peyronie's disease. 4,338,300, Cl. 424-94.000.
- Gell, Harold A.; and Olszewski, Daniel P. Fishing lure system. 4,337,591, Cl. 43-42.090.
- Geller, Gary R.; Suppelsa, Anthony B.; and Martin, William J., to Motorola, Inc. Method of trimming thick film capacitor. 4,338,506, Cl. 219-121.0LL.
- Gemini Systems, Inc.: See—  
Skow, Lynn R., 4,337,730, Cl. 122-20.00A.
- General Dynamics, Convair Division: See—  
Slysh, Paul, 4,337,560, Cl. 29-155.00R.
- General Electric Company: See—  
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- Logue, Harold W., 4,337,633, Cl. 72-94.000.
- Pierce, Linden W., 4,337,569, Cl. 29-605.000.
- Pierce, Linden W., 4,337,820, Cl. 165-11.00R.
- Shaw, R. Howard; and Morehouse, Charles C., 4,338,521, Cl. 250-366.000.
- Subbarao, Thallam, 4,338,648, Cl. 361-127.000.
- General Engineering Radcliffe 1979 Limited: See—  
Hill, Alan H., 4,338,274, Cl. 264-171.000.
- General Foods Corporation: See—  
Brooks, Arthur W.; Stevenson, Richard B.; and Bell, Leonard, 4,338,344, Cl. 426-461.000.
- Morimoto, Keisuke; Edgar, Brenton G.; and Hirasuna, Thomas J., 4,338,340, Cl. 426-104.000.
- General Mills, Inc.: See—  
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- General Motors Corporation: See—  
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- Brandt, Herman F., 4,337,650, Cl. 73-119.00A.
- Bubniak, William C.; and Mitchell, Harry R., 4,337,738, Cl. 123-198.00F.
- Carlson, Clifford R.; Kotzan, Joseph M.; and Voelkle, Leo H., 4,337,742, Cl. 123-339.000.
- Cavanagh, John R.; Cross, Kenneth R.; Clingman, David L.; and Schechter, Berton, 4,338,360, Cl. 427-247.000.
- Downing, Noel L., 4,337,616, Cl. 60-39.28R.
- Johnson, Lawrence P., 4,337,873, Cl. 220-204.000.
- Lane, Ernest, Jr.; and Seekins, Raymond E., 4,337,621, Cl. 60-527.000.
- Pomerantz, Allen J., 4,337,745, Cl. 123-440.000.
- Stewart, John A.; and Nichols, Wayne C., 4,337,718, Cl. 116-34.00R.
- General Tire & Rubber Company, The: See—  
Elmer, Otto C., 4,338,263, Cl. 260-762.000.
- Gerard, Thomas J.; and Gillmore, John E., Sr., to Weyerhaeuser Company. Reinforced half slotted container. 4,337,887, Cl. 229-16.00R.
- Gerling, Paul, to Glyco-Maschinenbau GmbH. Pivoted shoe bearing. 4,337,985, Cl. 308-36.100.
- Geroh GmbH Mechanische Systeme: See—  
Fischer, Manfred, 4,337,553, Cl. 24-68.00R.
- Gerry, Martin E. Fuel and water conditioner and method therefor. 4,337,732, Cl. 123-25.00B.
- Gesellschaft fur Schwerionenforschung GmbH: See—  
Spohr, Reimar, 4,338,164, Cl. 204-4.000.
- Getter, Byron J.: See—  
Baylor, David R.; and Getter, Byron J., 4,337,550, Cl. 17-23.000.
- GEZE GmbH: See—  
Biermann, Peter; Storandt, Ralf; and Feucht, Rudi, 4,337,964, Cl. 280-605.000.
- Gidge, Kenneth N. Circular boomerang. 4,337,950, Cl. 273-426.000.
- Giebel, Gerhard: See—  
Lichtner, Emil; Ungerer, Gerd; and Giebel, Gerhard, 4,337,735, Cl. 123-193.00H.
- Gilbert, Walter; and Talmadge, Karen, to President and Fellows of Harvard College. Mature protein synthesis. 4,338,397, Cl. 435-68.000.
- Gill, Jasbir S.; and Nancollas, George H., to Research Foundation of State University of New York, The. Method for inhibiting the formation of scale. 4,338,363, Cl. 427-387.000.
- Gill, Thomas E., to Killark Electric Manufacturing Co. Panel board safety latch assembly. 4,337,972, Cl. 292-67.000.
- Gillespie, John W., to Jodon Engineering Associates, Inc. Dual probe coupler. 4,337,648, Cl. 73-117.300.
- Gillet, Claude L.; Roba, Joseph L.; Snyers, Michel; Van Dorsser, William R.; and Lambelin, Georges E., to Continental Pharma. Benzimidazole derivatives, their use, and compositions containing these derivatives. 4,338,330, Cl. 424-273.00B.
- Gillette Company, The: See—  
Highley, Derek R.; and Sane, Jayant N., 4,338,295, Cl. 424-71.000.
- Trotta, Robert A., 4,337,575, Cl. 30-47.000.
- Gillmore, John E., Sr.: See—  
Gerard, Thomas J.; and Gillmore, John E., Sr., 4,337,887, Cl. 229-16.00R.
- Ginkel, Ernst R.: See—  
Austin, Robert R.; and Ginkel, Ernst R., 4,337,654, Cl. 73-190.0CV.
- Gist-Brocades N.V.: See—  
Tan, Hong S.; and Smink, Dirk A., 4,338,342, Cl. 426-308.000.
- Glabe, Elmer F.; Anderson, Perry W.; and Lafsidis, Stergios, to Food Technology Products. Animal feeds for herbivorous animals. 4,338,336, Cl. 426-1.000.
- Glasl, Johann: See—  
Wegener, Ingo; Glasl, Johann; and Werdehausen, Achim, 4,338,212, Cl. 252-174.220.
- Glass, Earl, to AMF Incorporated. Stiff dough make-up machine and method of using same. 4,338,341, Cl. 426-231.000.
- Glyco-Maschinenbau GmbH: See—  
Gerling, Paul, 4,337,985, Cl. 308-36.100.
- Goerss, William G., to N. L. B. Corp. Method for cleaning floor surfaces with high pressure water jets. 4,337,784, Cl. 134-34.000.
- Goodrich, Judson E., to Chevron Research Company. Asphalt composition for air-blowing. 4,338,137, Cl. 106-273.00R.
- Goodyear Aerospace Corporation: See—  
Suter, Charles A., 4,338,370, Cl. 428-250.000.
- Goossens, John: See—  
Serini, Volker; Goossens, John; Bottenbruch, Ludwig; and Freitag, Dieter, 4,338,429, Cl. 528-196.000.
- Gordin, Myron K.: See—  
Drost, Jim L.; and Gordin, Myron K., 4,337,576, Cl. 30-162.000.
- Gordon, Roy G., to Gordon, Roy G. Photovoltaic cell. 4,338,482, Cl. 136-256.000.
- Gorike, Rudolf, to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H. Headphone construction. 4,338,489, Cl. 179-1.00R.
- Goto, Jiro: See—  
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,338,313, Cl. 424-246.000.
- Goulet, Pierre; and Scotte, Pierre, to APC-Azote et Produits Chimiques, S.A. Method of making fast-breaking bituminous emulsions. 4,338,136, Cl. 106-273.00N.
- Gouret, Claude G.: See—  
Dostert, Philippe L.; Douzon, Colette A.; Bourgerie, Guy R.; Gouret, Claude G.; Mocquet, Gisele C.; and Coston, Jean A., 4,338,451, Cl. 548-232.000.
- Gowing, John P.: See—  
Mundell, Donald D.; and Gowing, John P., 4,337,931, Cl. 267-102.000.
- Gracia, Robert F.: See—  
Fromson, Howard A.; and Gracia, Robert F., 4,338,007, Cl. 355-100.000.
- Grado/Dendoki, Inc.: See—  
Lawrence, Frederick J., 4,337,936, Cl. 271-293.000.
- Graf zu Munster, Ludbert, to Handelskontor Ludbert Graf zu Munster GmbH & Co. Process for binding waste liquor or sludge. 4,338,134, Cl. 106-85.000.



Grafenschneil, Horst, to Siemens Aktiengesellschaft. Electric machine excited by permanent magnets. 4,338,533, Cl. 310-154.000.

Graham, Bruce C., to Magnaflux Corporation. Magnetic particle method using water soluble adhesive for detecting flaws in magnetizable workpieces. 4,338,566, Cl. 324-216.000.

Graham, Charles P.: See—  
Chen, Andy C. C.; Lang, Clifford E., Jr.; Graham, Charles P.; and Rizzuto, Anthony B., 4,338,350, Cl. 426-658.000.

Grandcolas, Jean; Harmelin, Guy; Lazzarini, Roger; and Reverchon, Bernard, to Lafarge Conseils et Etudes. Seal assembly for a rotary kiln. 4,338,080, Cl. 432-115.000.

Granjon, Robert; and Fournier, Michel, to Rhone-Poulenc Industries. Solid bisphenol F particulates. 4,338,470, Cl. 568-723.000.

Granlund, Lars A., to Nitro Nobel AB. Method of manufacturing emulsion explosive insensitive to a 8 detonator. 4,338,146, Cl. 149-109.600.

Grater, Wolfgang: See—  
Pilz, Karl-Heinz; Grater, Wolfgang; and Mayer, Hans-Dietrich, 4,338,552, Cl. 318-266.000.

Grawey, Charles E., to Caterpillar Tractor Co. Air valve conduit in the track wall of a tire. 4,337,814, Cl. 152-429.000.

Gray, Samuel A., to Pacific Controls Incorporated. Arc prevention and detection electrical discharge machine servo control system. 4,338,504, Cl. 219-69.00M.

Greene, C. Roger, to Borg-Warner Corporation. Universal joint with unitary face seal and retainer assembly. 4,337,628, Cl. 464-131.000.

Greenfield, Stuart T. Alternating piston machine with rotating end walls and chain drive. 4,338,067, Cl. 418-37.000.

Gregoire, Clyde G., to Baldwin-Gregg, Inc. Combined web jaw and bight stripper. 4,338,087, Cl. 493-425.000.

Gregory, Clarence T. Reversible grappling anchor. 4,337,717, Cl. 114-294.000.

Gregory, James E. Bracket structure, especially for carrying corral sections on a vehicle or the like. 4,337,918, Cl. 248-201.000.

Greidanus, Pieter J.: See—  
Heslinga, Adolf; and Greidanus, Pieter J., 4,338,417, Cl. 525-197.000.

Grevstad, Paul E.; Johnson, Carl K.; and Mientek, Anthony P., to United States of America, Energy. Method for producing a fuel cell manifold seal. 4,337,571, Cl. 29-623.200.

Grigo, Ulrich; Fahnler, Friedrich; Lindner, Christian; and Binsack, Rudolf, to Bayer Aktiengesellschaft. Elastomeric thermoplastic moulding compositions. 4,338,409, Cl. 525-66.000.

Grove Valve and Regulator Company: See—  
Ripert, Roger L., 4,337,919, Cl. 251-304.000.

Grumman Aerospace Corporation: See—  
Miller, John M.; and Barton, Richard O., 4,338,031, Cl. 356-356.000.

Gsell, Laurenz: See—  
Farooq, Saleem; Ackermann, Peter; Drabek, Jozef; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,338,468, Cl. 568-637.000.

GTE Products Corporation: See—  
Vanderpool, Clarence D.; and McClintic, Robert P., 4,338,126, Cl. 75-84.000.

Guerre, Robert P., to Exxon Research & Engineering Co. Coal cleaning process. 4,338,188, Cl. 209-2.000.

Guinle, David P., to Owens-Illinois, Inc. Closure assembly. 4,337,869, Cl. 215-201.000.

Gulf Oil Corporation: See—  
Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., 4,338,414, Cl. 525-193.000.

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Patel, Natu R., 4,338,257, Cl. 260-454.000.

Gulliksen, John E.; and Hamilton, William H., to Koehler Manufacturing Company. Luminaire apparatus including expansible reflector means and method of reflecting radiant energy to provide a spot to flood configuration. 4,338,655, Cl. 362-281.000.

Gunderson, Richard H., to Exxon Production Research Company. Universal joint for multiple conduit system. 4,337,970, Cl. 285-136.000.

Gunesin, Binnur: See—  
Dougherty, David J.; Gunesin, Binnur; and Spiewak, John W., 4,338,425, Cl. 526-216.000.

Gunter, Thomas G.: See—  
Tredennick, Harry L.; and Gunter, Thomas G., 4,338,661, Cl. 364-200.000.

Gusev, Stanislav I.: See—  
Lisin, Vladimir N.; Pavlov, Mikhail V.; Laschenov, Jury V.; Gusev, Stanislav I.; Kozlov, Lev V.; Pokrovsky, Sergei V.; and Mozhaev, Igor I., 4,338,657, Cl. 363-68.000.

Guzik, Ira: See—  
Bloch, Alan; Coviello, Frank A.; Guzik, Ira; and Puebla, Candido, 4,338,495, Cl. 179-99.00M.

H. J. Heinz Company: See—  
Buchehe, Byron D., 4,338,155, Cl. 156-539.000.

Haataja, Bruce A.; Kilpela, Tauno B.; Lund, Anders E.; and Hamilton, James F., to Michigan Technological University. Pallets molded from matted wood flakes. 4,337,710, Cl. 108-53.300.

Habig, Kurt; Baessler, Konrad; Schulz, Lothar; and Schutte, Heinz, to Hoechst Aktiengesellschaft. Method for removing nitrosation

agent(s) from a nitrated aromatic compound. 4,338,473, Cl. 568-933.000.

Hackforth GmbH & Co.: See—  
Walter, Jurgen, 4,337,629, Cl. 464-24.000.

Haddad, James H.: See—  
Pennington, Nicholas D.; and Haddad, James H., 4,338,475, Cl. 585-408.000.

Haferl, Peter E., to RCA Corporation. Vertical deflection circuit. 4,338,549, Cl. 315-393.000.

Hager, Bror O. Apparatus for treatment of wood. 4,337,720, Cl. 118-50.000.

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Off, Joseph W. A.; and Early, Judson H., 4,337,881, Cl. 223-1.000.

Haider, Francis J.; and Kent, Allen R., to Audiotronics Video Display Division, Inc. Cathode ray tube monitor. 4,338,635, Cl. 358-254.000.

Hale Fire Pump Company: See—  
Eberhardt, H. Alfred, 4,337,830, Cl. 169-24.000.

Hall, Ronald A., to Exploration Logging, Inc. Method and apparatus for measuring the movement of a spiral wound wire rope. 4,338,565, Cl. 324-206.000.

Hall, Walter J.: See—  
Chabala, Leonard V.; and Hall, Walter J., 4,338,499, Cl. 200-50.00C.

Haller, Henry E., III: See—  
Lugosi, Robert; Fechko, George J.; Male, Alan T.; Haller, Henry E., III; and Mole, Cecil J., 4,337,567, Cl. 29-596.000.

Halliburton Company: See—  
Kendrick, William D., 4,337,971, Cl. 285-315.000.

Hallidy, William M. Reversible direct current machine with movable stator. 4,338,536, Cl. 310-191.000.

Halpern, Yuval, to Borg-Warner Chemicals, Inc. Intumescent flame retardant thermoplastic polyester compositions. 4,338,245, Cl. 524-100.000.

Halpern, Yuval, to Borg-Warner Chemicals, Inc. Intumescent flame retardant thermoplastic polymethacrylate compositions. 4,338,246, Cl. 524-100.000.

Hamada, Osamu, to Sony Corporation. Digital waveform generating apparatus. 4,338,674, Cl. 364-718.000.

Hamer, David E.: See—  
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Hamilton, James F.: See—  
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Hamilton, William H.: See—  
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Hammond, Kenneth G.; and Chafetz, Harry, to Texaco Inc. Quaternary ammonium succinimide salt composition and lubricating oil containing same. 4,338,206, Cl. 252-34.000.

Hamon, Christian H., to Societe Anonyme de Telecommunications. Cryostatic device. 4,337,624, Cl. 62-45.000.

Hampson, Michael R.: See—  
Dickson, Ronald; and Hampson, Michael R., 4,338,179, Cl. 204-284.000.

Hampton, Auburn R. Golf club cart carrier. 4,337,882, Cl. 224-42.03R.

Hanacek, William A.; Kahl, James E.; and Mackenzie, Angus B., to Castile & Cooke, Inc. Mushroom casing composition and process. 4,337,594, Cl. 47-1.100.

Hanamura, Michihiro, to Kuraray Co., Ltd. Photoelectrodes for photoelectrochemical cells. 4,338,180, Cl. 204-290.00R.

Hancou, Theodore, to Societe d'Exploitation de Brevets J.B. Screen wiper. 4,337,547, Cl. 15-250.420.

Handel, Richard R., to RCA Corporation. CRT With arc suppression means therein. 4,338,543, Cl. 313-457.000.

Handelskontor Ludbert Graf zu Munster GmbH & Co.: See—  
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Haneda, Hideo: See—  
Yamanaka, Minoru; Haneda, Hideo; Kato, Masatoshi; and Suzuki, Mitsuyuki, 4,337,794, Cl. 137-596.170.

Hanna, William T.: See—  
Wilkinson, William H.; and Hanna, William T., 4,338,268, Cl. 261-140.00A.

Hansen, Elmer K. Helical storage bin. 4,337,600, Cl. 52-82.000.

Hansen, John D.: See—  
Morrill, Justin S., Jr.; and Hansen, John D., 4,338,677, Cl. 364-900.000.

Hansen, Lynn D.: See—  
Spevak, Richard P.; and Hansen, Lynn D., 4,337,779, Cl. 128-691.000.

Hanson, Steven P.: See—  
Breslow, Jeffrey D.; Rosenwinkel, Donald A.; Hanson, Steven P.; and Harper, Rex M., 4,337,948, Cl. 273-237.000.

Harja, Arne M., to Sundstrand Corporation. Magnetic tape cassette. 4,337,909, Cl. 242-199.000.

Harman, Neil W.: See—  
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Vaerk, Lembit; and Gattu, Narahari, 4,337,601, Cl. 52-118.000.

Harper, Jon J.; and Zeitlin, Martin A., to Standard Oil Company (Indiana). Removal of bromobutanone from acetic acid. 4,338,464, Cl. 562-608.000.

Harper, Rex M.: See—  
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Harrington, Edward R.: See—  
Marzocchi, Alfred; Bolen, Charles E.; Harrington, Edward R.; and Roberts, Michael G., 4,338,231, Cl. 523-214.000.

Harris, Jack. Marine growth wiper. 4,337,716, Cl. 114-222.000.

Harris, Kenneth R. Apparatus and method for drying a substance. 4,337,583, Cl. 34-33.000.

Harris, Richard G.; Dalessio, Robert J.; and Harman, Neil W., to Honeywell Information Systems Inc. Bistable magnetic wire badge reader. 4,338,513, Cl. 235-449.000.

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Harte, Kenneth J.: See—  
Bono, David C.; Fishbein, Marvin; and Harte, Kenneth J., 4,338,548, Cl. 315-382.000.

Hartmann, Pierre, to Thomson-CSF. Process for compensating temperature variations in surface wave devices and pressure transducer utilizing this process. 4,338,575, Cl. 331-65.000.

Hartlaub, Jerome T.; McDonald, Ray S.; and Hudziak, Lawrence C., to Medtronic, Inc. Rate limited pacer. 4,337,777, Cl. 128-419.0PG.

Hartwimmer, Robert: See—  
Sulzbach, Reinhard A.; and Hartwimmer, Robert, 4,338,237, Cl. 524-777.000.

Haruta, Masahiro: See—  
Eida, Tsuyoshi; Matsufuji, Yohji; Yano, Yasuhiro; Ohta, Tokuya; and Haruta, Masahiro, 4,338,611, Cl. 346-75.000.

Hase, Christian: See—  
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Hasegawa, Ryusuke: See—  
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Hasegawa, Shinichi: See—  
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Hastings, Thomas N.: See—  
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Hatada, Kenji; and Kobayashi, Hiroaki, to Toray Industries, Inc. Polyvinyl chloride sheet and method of making the same. 4,337,768, Cl. 128-214.00D.

Hattori, Tadashi: See—  
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Hattori, Yoshiyuki; Matsui, Kazuma; and Kinbara, Hiroji, to Nippondenso Co., Ltd. Torque transmission belt means. 4,338,081, Cl. 474-201.000.

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Haub, John T.; Krassas, James G.; Rustad, Stanley C.; and Davis, Noel, to General Mills, Inc. Method and apparatus for increasing the spacing between plants in accordance with their growth rate. 4,337,986, Cl. 308-177.000.

Haubner, Georg: See—  
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Haugwitz, Rudiger D., to E. R. Squibb & Sons, Inc. Benzothiadiazines having diuretic activity. 4,338,435, Cl. 544-13.000.

Hauser Verwaltungs-Gesellschaft mit beschränkter Haftung: See—  
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Hawkins, James H. Whaler retainer. 4,338,040, Cl. 403-385.000.

Hawkins, John J., to Beckman Instruments, Inc. Diaryl phosphate morpholinium salts. 4,338,440, Cl. 544-110.000.

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Hazan, Isidor, to Du Pont de Nemours, E. I., and Company. Polyhydroxyamine dispersant useful in electrodeposition. 4,338,236, Cl. 524-320.000.

Heasley, Ralph A., to Riker Laboratories, Inc. Hydrophilic choline salicylate formulation. 4,338,311, Cl. 424-233.000.

Heater, Charles P. Machine for making longitudinal and transverse folds in fabric. 4,338,086, Cl. 493-419.000.

Hebrank, William H. Heat recovery and air preheating apparatus for textile dryer ovens. 4,337,585, Cl. 34-86.000.

Hecht, James L.; and Yates, Paul C., to Du Pont de Nemours, E. I., and Company. Polyethylene terephthalate blends. 4,338,243, Cl. 524-287.000.

Heckman, Richard A.: See—  
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Heeres, Jan; Backx, Leo; Hubele, Adolf; and Nyfeler, Robert, to Janssen Pharmaceutica, N.V. Substituted 1-(2-aryl-1,3-dioxolan-2-ylmethyl)-1H-1,2,4-triazoles. 4,338,327, Cl. 424-269.000.

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Heim Universal Corporation: See—  
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Heine, Bertha E.: See—  
Heine, Charles A., 4,337,957, Cl. 280-7.140.

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Hellemans, Julianus J.: See—  
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Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): See—  
Fischer, Herbert; Scheuermann, Fanny; Hase, Christian; and Krause, Horst-Jurgen, 4,338,214, Cl. 252-545.000.

Wegener, Ingo; Glasl, Johann; and Werdehausen, Achim, 4,338,212, Cl. 252-174.220.

Henrich, Robert S., to Bendix Corporation, The. Dual coil driver. 4,338,651, Cl. 361-154.000.

Henrick, Clive A.; Labovitz, Jeffrey N.; Fox, Roland T. V.; Rathmell, William G.; and Shephard, Margaret C., to Zeecon Corporation; and ICI Ltd. Novel compositions and methods. 4,338,318, Cl. 424-251.000.

Herbst, Heiner; and Pfeiderer, Hans-Jorg, to Siemens Aktiengesellschaft. Analog-digital converter for the evaluation of the output signal of an optoelectronic sensor element. 4,338,515, Cl. 250-214.00R.

Hermann Rappold & Co. GmbH: See—  
Lonardo, Pietro, 4,337,789, Cl. 137-340.000.

Herron, David K.; and Lunn, William H. W., to Eli Lilly and Company. 7-[2-((Substituted benzoyl)amino)acetamido]cephalosporins. 4,338,436, Cl. 544-16.000.

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Heslinga, Adolf; and Greidanus, Pieter J., to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek. Method of preparing a polymer mixture, formed products obtained therefrom and polymer alloy. 4,338,417, Cl. 525-197.000.

Hetzl, Max. Electronically controlled thread-cutting machine. 4,338,556, Cl. 318-569.000.

Heusler, Samuel, to Sulzer Brothers Limited. Safety system for a double acting servomotor. 4,337,689, Cl. 91-438.000.

Hewitt, Harvey J., to Xerox Corporation. Overcoated photoreceptor containing inorganic electron trapping and hole trapping layers. 4,338,387, Cl. 430-58.000.

Hewlett-Packard Company: See—  
Engel, Steven J.; Marsh, Richard E.; and Rhodes, Robert P., 4,338,589, Cl. 340-347.00C.

Morrill, Justin S., Jr.; and Hansen, John D., 4,338,677, Cl. 364-900.000.

Hibner, David H., to United Technologies Corporation. Viscous damper. 4,337,983, Cl. 308-26.000.

Hice, Robert C., Sr. Tree support for hunters. 4,337,844, Cl. 182-187.000.

Hickman, Howard M.: See—  
Earl, Gary W.; and Hickman, Howard M., 4,338,216, Cl. 252-311.000.



- Hickner, Richard A.: See—  
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- Highlander, Sarah K.: See—  
Manis, Jack J.; and Highlander, Sarah K., 4,338,400, Cl. 435-172.000.
- Highley, Derek R.; and Sane, Jayant N., to Gillette Company, The. Hair setting and bodying composition and method. 4,338,295, Cl. 424-71.000.
- Higuchi, Chojiro: See—  
Mita, Ryuichi; Yamaguchi, Akihiro; Kato, Toshio; Higuchi, Chojiro; and Murakami, Hisamichi, 4,338,259, Cl. 260-465.50R.
- Higuchi, Toshiharu: See—  
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- Hilbert, Francis H.: See—  
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- Hildebrand, Dietrich; and Lohmert, Wolfgang, to Bayer Aktiengesellschaft. Process for dyeing with reactive dyestuffs. 4,338,093, Cl. 8-549.000.
- Hill, Alan H., to General Engineering Radcliffe 1979 Limited. Method and apparatus for the incorporation of additives into plastics materials. 4,338,274, Cl. 264-171.000.
- Hill, Harold L.: See—  
Czekajewski, Jan A.; Hill, Harold L.; and Kober, Kenneth J., 4,337,726, Cl. 119-1.000.
- Hill-Rom Company, Inc.: See—  
Fullenkamp, Eugene H.; Burst, Francis J.; Lohrey, Cecil R.; and Drew, William D., 4,338,485, Cl. 174-48.000.
- Himmelmann, Wolfgang; Bergthaller, Peter; and Sobel, Johannes, to Agfa-Gevaert Aktiengesellschaft. Process for hardening photographic gelatin. 4,338,394, Cl. 430-621.000.
- Himpsl, Francis L.: See—  
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- Hino, Ken-ichi: See—  
Kyo, Sunao; Omura, Katsumi; and Hino, Ken-ichi, 4,338,478, Cl. 585-606.000.
- Hinsken, Hans; Mayerhoefer, Horst; Mueller, Wolfgang; and Schneider, Hermann, to Sandoz Ltd. Benzofuran(2)one or indolin(2)one compounds useful as stabilizers for organic materials. 4,338,244, Cl. 524-109.000.
- Hirakawa, Tadashi; Sasashige, Hiroaki; Takenaka, Hiroyuki; and Katayama, Keiichi, to Mitsubishi Jukogyo Kabushiki Kaisha. Single facer. 4,337,884, Cl. 226-52.000.
- Hirao, Koji: See—  
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- Hirasuna, Thomas J.: See—  
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- Hirata, Makizo; and Abe, Shinji, to Kawasaki Jukogyo Kabushiki Kaisha. Cooling liquid temperature control system for internal combustion engine. 4,337,733, Cl. 123-41.100.
- Hiratsuka, Motoki: See—  
Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Naito, Nagayoshi; Tanaka, Chiaki; and Hiratsuka, Motoki, 4,337,946, Cl. 273-225.000.
- Hirshorn, Michael S.: See—  
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- Hitachi Cable, Ltd.: See—  
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- Hitachi Chemical Company Ltd.: See—  
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- Sato, Hidetaka; Uchimura, Shunichiro; Suzuki, Hiroshi; and Makino, Daisuke, 4,338,426, Cl. 528-26.000.
- Hitachi, Ltd.: See—  
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- Mohri, Katsuo; and Okada, Yoshinori, 4,338,645, Cl. 360-137.000.
- Ohta, Norio; Ishida, Fumihiko; Ikeda, Tadashi; Ando, Keikichi; and Sugita, Yutaka, 4,338,372, Cl. 428-336.000.
- Okamatsu, Shigetoshi; Tsuboi, Takashi; Ibamoto, Masahiko; and Narita, Hiroshi, 4,338,558, Cl. 318-802.000.
- Sato, Hideo; Kawakami, Kanji; and Nishihara, Motohisa, 4,337,665, Cl. 73-766.000.
- Shibayama, Hiroshi; Tanifuji, Shinya; Morooka, Yasuo; Nakai, Kojo; and Togashi, Nobuyuki, 4,338,077, Cl. 432-11.000.
- Tanaka, Toshiki P.; Maeda, Minoru; Aoki, Satoshi; and Yamada, Shoji, 4,337,995, Cl. 350-96.200.
- Terashima, Isamu; Uchida, Shigeru; and Senba, Eiiji, 4,338,019, Cl. 355-14.00D.
- Yamakido, Kazuo, 4,338,656, Cl. 363-63.000.
- Hobart Corporation: See—  
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- Hoechst Aktiengesellschaft: See—  
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- Sulzbach, Reinhard A.; and Hartwimmer, Robert, 4,338,237, Cl. 524-777.000.
- Hoening, James R.; and Mallorca, Salvador C., to Continental Group, Inc., The. Snap lock cover end unit. 4,337,874, Cl. 220-306.000.
- Hoffken, Erich; and Beckers, Karl-Dieter, to Martin & Pagenstecher GmbH. Process and device for producing the refractory lining of metallurgical vessels. 4,337,897, Cl. 239-214.250.
- Hoffman, David S.: See—  
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- Hoffman, Dwight K.: See—  
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- Hoffmann-La Roche Inc.: See—  
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- Imhof, Rene; and Kyburz, Emilio, 4,338,444, Cl. 546-138.000.
- Hogg, David C.: See—  
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- Hogsett, Robert F.; Huggins, Dale K.; and Beckstead, Leo W., to Amax Inc. Process for conditioning tungsten concentrates. 4,338,287, Cl. 423-53.000.
- Hohman, Charles M.; and Propster, Mark A., to Owens-Corning Fiberglass Corporation. Method for controlling particulate emissions. 4,338,113, Cl. 65-27.000.
- Hoiberg, Douglas I.: See—  
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- Holdeman, John W., to Borg-Warner Corporation. Transmission shift control apparatus. 4,337,675, Cl. 74-477.000.
- Holick, Michael F., to Massachusetts General Hospital. Sunscreening agent. 4,338,293, Cl. 424-59.000.
- Holley, Loraine K.: See—  
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- Holm, Lars-Erik. Trolley check-out monitoring system. 4,338,594, Cl. 340-568.000.
- Holmes, William A., to Polaroid Corporation. 35 mm Cassette with film rewind limit, exposure indicator, and film release. 4,338,015, Cl. 354-275.000.
- Holt, Jack W.: See—  
United States of America, National Aeronautics and Space Administration; Dotts, Robert L.; and Holt, Jack W., 4,338,368, Cl. 428-212.000.
- Holubka, Joseph W., to Ford Motor Company. Alkaline resistant organic coatings for corrosion susceptible substrates I. 4,338,423, Cl. 525-511.000.
- Honeywell Inc.: See—  
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- Motchenbacher, Curt D.; and Nicholas, Merle E., 4,337,658, Cl. 73-335.000.
- Honeywell Information Systems Inc.: See—  
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- Steiner, Gordon L.; O'Keefe, David B.; and Miller, Robert C., 4,338,597, Cl. 340-706.000.
- Hooker Chemicals & Plastics Corp.: See—  
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- Hooper, John D.; and Britton, John F., to Imperial Group Limited. Forming sheet from reconstituted tobacco. 4,337,783, Cl. 131-375.000.
- Hoover, C. Roger. Thread protector. 4,337,799, Cl. 138-96.00T.
- Hoover, Robert A., to Prince Manufacturing Corporation. Poppet trip device for hydraulic cylinders. 4,337,687, Cl. 91-401.000.
- Hoppe, Joachim A.: See—  
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- Hopper, James A., to American Sterilizer Company. Double lip seal with pressure compensation. 4,337,956, Cl. 277-29.000.
- Horikoshi, Shigeo: See—  
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- Hornig, Cheng T.: See—  
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- Horste, Stephen C.; and Bergman, Ronald B., to Visual Systems Corporation. Adjustable blip sensor interface for microfilm reader and microfilm reader printers. 4,338,519, Cl. 250-239.000.
- Horton, Donald D.: See—  
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- Hosaka, Toshihiko; and Akiyama, Toru. Tracking servo system of video disc player. 4,338,682, Cl. 369-44.000.
- Hoshito, Kazuo: See—  
Sato, Hideaki; Kitamura, Takashi; Masegi, Koichi; and Hoshito, Kazuo, 4,338,577, Cl. 372-36.000.
- Hosler, Peter: See—  
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- Hosono, Nagao; Kanbe, Junichiro; Arao, Kojo; and Miyake, Nobuyuki, to Canon Kabushiki Kaisha. Developing device. 4,337,724, Cl. 118-652.000.
- Hotchkiss, Noel J., to Declitractor, Inc. Declination transposer. 4,337,577, Cl. 33-1.00N.
- Houghton, Russell J., to International Business Machines Corp. Integrated delay circuits. 4,338,532, Cl. 307-590.000.

- Howard, John V., to RCA Corporation. Television deflection yoke mount. 4,338,584, Cl. 335-210.000.
- Hoydic, Stephen V., Jr.: See—  
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- Hoyle, David C.; and Kandarian, Sue. Ankle exercise device. 4,337,939, Cl. 272-96.000.
- Hubele, Adolf: See—  
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- Huber, Theodor; Borowski, Kurt; and Egger, Gerhard, to Agfa-Gevaert AG. Circuit for indicating the condition of the battery in a photographic camera. 4,338,596, Cl. 340-636.000.
- Hudziak, Lawrence C.: See—  
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- Huemmer, Thomas F.: See—  
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- Hueschens, Rolf: See—  
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- Huff, Norman T.; Shetterly, Donivan M.; and Kalisher, Lawrence I., to Owens-Illinois, Inc. Apparatus and method for reducing mechanical dead times in the operation of a glassware forming machine. 4,338,116, Cl. 65-29.000.
- Huffer, Wolfgang: See—  
Brinkwerth, Wolfgang; Huffer, Wolfgang; Raue, Roderich; Schieder, Rudolf; and Telle, Helmut, 4,338,258, Cl. 260-456.00A.
- Huffy Corporation: See—  
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- Huggins, Dale K.: See—  
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- Huggins, Larry F.: See—  
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- Hughes Aircraft Company: See—  
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- Hughes, Donald W. K.; and Lauterbach, John H. F., to AMP Incorporated. Method of manufacturing electrical connector receptacles. 4,337,574, Cl. 29-883.000.
- Hughes, Eric; and McKnight, Donald, to Rolls-Royce Limited. Gas turbine engine fuel burners. 4,337,618, Cl. 60-39.550.
- Hunt, Harold W.: See—  
Roeder, Robert S.; Day, W. Baldwin; Hunt, Harold W.; and Wilt, Robert E., 4,338,602, Cl. 343-10.000.
- Hunter, Walter D., to Texaco Development Corp. Process for secondary recovery. 4,338,203, Cl. 252-8.55D.
- Hurco Manufacturing Company, Inc.: See—  
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- Husqvarna Aktiebolag: See—  
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- Hutcheson, William F., to Rossville Yarn Processing Company. Simulated Berber yarn and process of producing same. 4,338,090, Cl. 8-478.000.
- Hutter, Charles G., III, to Physical Systems, Inc. Method of securing an adhesive attachment assembly to a substrate. 4,338,151, Cl. 156-344.000.
- Hybrid Systems Corporation: See—  
Wilensky, Samuel, 4,338,592, Cl. 340-347.0CC.
- Hydrocarbon Research, Inc.: See—  
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- Hydrowatt Systems Limited: See—  
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- Hylsa, S.A.: See—  
San Jose-Alcalde, Juan L., 4,338,123, Cl. 75-34.000.
- Hyltin, Tom M.; and Jamieson, J. Scott. Digital thermostat. 4,337,822, Cl. 165-26.000.
- Ibamoto, Masahiko: See—  
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- Ibrahim, Faye F., to Tyler Refrigeration Corporation. Well type refrigerated case with defrost air intake and colliding band air defrost. 4,337,626, Cl. 62-82.000.
- Ichinose, Noboru: See—  
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- ICI Americas Inc.: See—  
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- Yellin, Tobias O.; and Mant, Derrick M., 4,338,448, Cl. 548-133.000.
- ICI Australia Limited: See—  
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- ICI Ltd.: See—  
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- Ideas That Sell, Inc.: See—  
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- Ignoffo, Vincent E., to Vinco Sales Corp., Inc. Exhaust gas purifier. 4,338,284, Cl. 422-171.000.
- Iio, Toshimitsu, to Yamaha Hatsudoki Kabushiki Kaisha. Two-cycle engine. 4,337,734, Cl. 123-65.0PE.
- Iizuka, Haruhiko: See—  
Sugawara, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, 4,337,740, Cl. 123-198.00F.
- Ikeda, Hideo; Teraoka, Masao; and Ishimaru, Junzo, to Nissan Motor Co., Ltd.; and Keeper Co., Ltd. Sealing device with seal lips forming V-shape. 4,337,953, Cl. 277-152.000.
- Ikeda, Saizo: See—  
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- Ikeda, Tadashi: See—  
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- Ikeguchi, Nobuyuki; and Osaki, Yasunori, to Mitsubishi Gas Chemical Company, Inc. Coating method. 4,338,373, Cl. 428-383.000.
- Ikimi, Kiyoshi: See—  
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- Imbessi, James: See—  
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- Imchemie Kunststoff GmbH: See—  
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- Imhof, Rene; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Phenyl-hexahydro-2H-quinolizines. 4,338,444, Cl. 546-138.000.
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- Carr, Paul L. I., 4,338,275, Cl. 264-176.00F.
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- Marshall, Peter R., 4,338,316, Cl. 424-250.000.
- Turner, Mervyn E. D.; and Quayle, Joshua C., 4,338,097, Cl. 23-230.00C.
- Yellin, Tobias O.; and Mant, Derrick M., 4,338,447, Cl. 548-133.000.
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- Imperial Group Limited: See—  
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- Indesit Industria Elettrodomestici Italiana, S.p.A.: See—  
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- Infanger, Rex C.: See—  
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- Ingersoll-Rand Company: See—  
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- Krasnoff, Eugene L.; and Luthi, Oscar, 4,338,192, Cl. 210-221.200.
- Shaffer, Robert W., 4,337,984, Cl. 308-103.000.
- Innertsberger, Ernst: See—  
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- Inokuchi, Nobuyuki: See—  
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- Inomata, Jihei: See—  
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- Inoue-Japax Research Incorporated: See—  
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- Inskeep, John M.: See—  
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- Insta-Print, Incorporated: See—  
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- Instrumentation Laboratory Inc.: See—  
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- Intel Corporation: See—  
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- International Business Machines Corporation: See—  
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- Cavaliere, Joseph R.; Hornig, Cheng T.; Konian, Richard R.; Rupprecht, Hans S.; and Schwenker, Robert O., 4,338,138, Cl. 148-1.500.
- Chevillat, Pierre; and Schindler, Hans R., 4,338,588, Cl. 340-146.30H.
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- Houghton, Russell J., 4,338,532, Cl. 307-590.000.
- International Harvester Co.: See—  
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- International Remote Imaging Systems, Inc.: See—  
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- International Standard Electric Corporation: See—  
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- International Telephone and Telegraph Corporation: See—  
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- Stapleton, John J., 4,338,627, Cl. 358-113.000.
- Interplay Design Limited: See—  
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Nissen, Roland N., 4,337,837, Cl. 172-822.000.  
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Jackisch, Philip F., to Ethyl Corporation. Stabilization of dibromostyrene. 4,338,474, Cl. 570-105.000.  
Jackson, Andrew C., to Children's Hospital Medical Center, The. Gas volume flow rate measurement apparatus. 4,337,639, Cl. 73-3.000.  
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Jefferson, John R.; and Cunliffe, Frank, to Lucas Industries Limited. Fuel injection pumping apparatus. 4,337,747, Cl. 123-501.000.

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Johnson, Lester L., Sr. Oil reconditioning device. 4,338,189, Cl. 210-180.000.  
Johnson, Mark R., to Dow Chemical Company, The. Inhibitor for the polymerization of a 2-isocyanatoalkyl ester of an  $\alpha$ -ethylenically unsaturated carboxylic acid. 4,338,162, Cl. 203-8.000.  
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Johnson, Wilfred V. Energy storage. 4,337,622, Cl. 60-641.130.  
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Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,338,251, Cl. 260-405.500.  
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Killark Electric Manufacturing Co.: See—  
Gill, Thomas E., 4,337,972, Cl. 292-67.000.  
Kilpela, Tauno B.: See—  
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Kimberly-Clark Corporation: See—  
Roeder, Robert J., 4,337,772, Cl. 128-290.00R.  
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- Kindler, Gerhard, to Invento AG. Start control device, especially for an elevator. 4,337,848, Cl. 187-29.00R.
- King, Richard P. Enclosure. 4,337,602, Cl. 52-202.000.
- King, William H.; and Kear, Bernard H., to United Technologies Corporation. Welding with a wire having rapidly quenched structure. 4,337,886, Cl. 228-263.00B.
- Kinoshita, Mitsuo: See—  
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- Kipp, Frederick M.; and Wetterhorn, Richard H., to Dresser Industries, Inc. Pressure gauge construction. 4,337,664, Cl. 73-741.000.
- Kirk, Kenneth L., to Amtrol. Double wall heat exchanger. 4,337,824, Cl. 165-70.000.
- Kishi, Norimasa: See—  
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- Kitamura, Takashi: See—  
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- Kitao, Kazuhiko; and Nishimura, Ken-ichi, to Kyoto Yakuin Kogyo Kabushiki Kaisha. Adjuvant for promoting absorption of pharmacologically active substances through the rectum. 4,338,306, Cl. 424-178.000.
- Kitazawa Valve Co., Ltd.: See—  
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- Kitka, Zoltan, to Interplay Design Limited. Building structure. 4,337,941, Cl. 272-113.000.
- Kitoh, Ryoze: See—  
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- Kiyasu, John Y. Heart attack screening method and process. 4,338,396, Cl. 435-17.000.
- Kizer, Richard W.: See—  
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- Kjellin, Per G.; and Persson, Carl G. A., to Aktiebolaget Draco. Method for the treatment of chronic obstructive airway or cardiac diseases. 4,338,319, Cl. 424-253.000.
- Klockner-Humboldt-Deutz AG: See—  
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- Klockner-Humboldt-Deutz AG Zweigniederlassung Fahr: See—  
Wessel, Ulrich; and Krauss, Albert, 4,337,613, Cl. 56-370.000.
- Klockner-Humboldt-Deutz Aktiengesellschaft: See—  
Lichtner, Emil; Ungerling, Gerd; and Giebel, Gerhard, 4,337,735, Cl. 123-193.00H.
- Knaus, Edward E.; Corleto, Linda A.; and Redda, Kinfe, to Canadian Patents & Development Limited. N-(Carbonylamino)-tetrahydropyridyl derivatives. 4,338,445, Cl. 546-270.000.
- Knoell, Hellmuth: See—  
Jost, Heinz; Knoell, Hellmuth; Markert, Gerhard; and Pennewiss, Horst, 4,338,418, Cl. 525-281.000.
- Kobayashi, Hiroaki: See—  
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- Kobayashi, Seiichi: See—  
Yasujima, Nobuo; Itokawa, Natsuo; and Kobayashi, Seiichi, 4,338,145, Cl. 148-133.000.
- Kobe Steel, Limited: See—  
Okuda, Naoki; and Tanaka, Kazuo, 4,338,142, Cl. 148-26.000.
- Kober, Kenneth J.: See—  
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- Koehler Manufacturing Company: See—  
Gulliksen, John E.; and Hamilton, William H., 4,338,655, Cl. 362-281.000.
- Koga, Kenji: See—  
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- Koga, Shigenobu: See—  
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- Kohlpaintner, Georg; and Rottenfusser, Wolfgang, to Webasto-Werk W. Baier GmbH & Co. Vehicle roof. 4,337,974, Cl. 296-214.000.
- Kohzai, Yoshinori; Oyama, Shigeaki; and Katsuzawa, Yukio, to Fujitsu Fanuc Limited. Direct current motor having E-shaped interpoles. 4,338,535, Cl. 310-186.000.
- Koide, Tsuyoshi; and Suzuki, Yasuo, to Toyoda Koki Kabushiki Kaisha. Method of shoulder grinding. 4,337,599, Cl. 51-289.00R.
- Koike, Shigemitsu: See—  
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- Koinuma, Tokuju; Saito, Hisao; and Miura, Heihachi, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetron unit with a magnetic field adjusting means. 4,338,545, Cl. 315-39.710.
- Koizumi, Yutaka, to Ricoh Company, Ltd. Multiple reproduction process and apparatus involves toned electrophotographic image transfer. 4,338,386, Cl. 430-49.000.
- Kojima, Hiroshi: See—  
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- Kollmorgen Technologies Corporation: See—  
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- Kolmar Laboratories Inc.: See—  
Murphy, John H.; Brodzinski, John J.; and Horton, Donald D., 4,337,859, Cl. 206-37.000.
- Kolyada, Vladimir A.: See—  
Efimov, Vyacheslav T.; Nazarian, Miron M.; Axenko, Alexander A.; Kolyada, Vladimir A.; Maskaev, Anatoly X.; Shamsha, Ljudmila F.; and Kostjuk, Vladimir I., 4,338,178, Cl. 204-275.000.
- Komaki, Shigeki: See—  
Hashimoto, Shintaro; Komaki, Shigeki; and Tanimoto, Akira, 4,338,502, Cl. 200-159.00B.
- Komatsu, Fumito; and Kamijima, Tadashi, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Printing apparatus. 4,337,696, Cl. 101-93.040.
- Komatsu, Masato: See—  
Inoue, Hiroshi; Isoi, Masaaki; Yoda, Makoto; and Komatsu, Masato, 4,338,228, Cl. 524-120.000.
- Komatsu, Mikiya; Arita, Masashi; and Suzuki, Syunsuke, to Nissan Motor Co., Ltd. Method of joining a member to a diecast article wrapping thereabout in diecasting. 4,337,817, Cl. 164-120.000.
- Komiya, Akitoshi; Yagi, Toshiharu; and Kondo, Akiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Fluorescent lamp. 4,338,544, Cl. 313-489.000.
- Kompfner, Rudolf, to National Research Development Corporation. Holographic optical fiber coupler. 4,337,993, Cl. 350-96.190.
- Kondo, Akiyoshi: See—  
Komiya, Akitoshi; Yagi, Toshiharu; and Kondo, Akiyoshi, 4,338,544, Cl. 313-489.000.
- Kondo, Hiroatsu; Ozawa, Toshiaki; and Yamada, Yasuaki, to Canon Kabushiki Kaisha. Printer. 4,338,035, Cl. 400-144.200.
- Konian, Richard R.: See—  
Cavaliere, Joseph R.; Hornig, Cheng T.; Konian, Richard R.; Rupprecht, Hans S.; and Schwenker, Robert O., 4,338,138, Cl. 148-1.500.
- Konig, Hans-Bodo: See—  
Preiss, Michael; Konig, Hans-Bodo; Metzger, Karl G.; and Feyen, Peter, 4,338,434, Cl. 542-420.000.
- Konig, Klaus; Reichmann, Wolfgang; and Schonfelder, Manfred, to Bayer Aktiengesellschaft. Process for the preparation of neopentyl glycol polyesters and co-polyesters. 4,338,431, Cl. 528-272.000.
- Konishiroku Photo Industry Co., Ltd.: See—  
Yukawa, Koji; Miyazaki, Masayuki; and Murahashi, Takashi, 4,338,020, Cl. 355-41.000.
- Konshak, Michael V.: See—  
Clark, Allen; and Konshak, Michael V., 4,338,642, Cl. 360-97.000.
- Koomey, Inc.: See—  
Chauffe, John A., 4,337,653, Cl. 73-151.000.
- Kopacz, Bernard F.: See—  
Riuli, Arduino E.; Anastasia, Robert W.; and Kopacz, Bernard F., 4,338,267, Cl. 261-121.00R.
- Kopineck, Hermann J.; Bottcher, Wolfgang; Mreyen, Klaus D.; Borchert, Werner; and Deutsch, Volker, to Estel Hoesch Werke AG. Electrodynamic sound converter. 4,337,662, Cl. 73-632.000.
- Korb, Donald R.; and Gallop, Paul M., to Syntex (U.S.A.) Inc. Process for treatment of hydrogel lens with thiols. 4,338,419, Cl. 525-350.000.
- Korytkowski, Henry M.; and Dear, Frederick H., to Burroughs Corporation. Method and apparatus for monitoring the passage of articles through a modular processing system. 4,338,671, Cl. 364-478.000.
- Kostjuk, Vladimir I.: See—  
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- Krassas, James G.: See—  
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- Kraus, Menahem A.; and Frommer, Moshe A., to A. T. Ramot Plastics Ltd. Peritoneal artificial kidney. 4,338,190, Cl. 210-195.200.
- Krause, Horst-Jürgen: See—  
Fischer, Herbert; Scheuermann, Fanny; Hase, Christian; and Krause, Horst-Jürgen, 4,338,214, Cl. 252-545.000.
- Krauss, Albert: See—  
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- Kreibaum, Otto. Method of producing cut timber from round timber. 4,337,810, Cl. 144-357.000.
- Krekeler, Claude B., to Cincinnati Mine Machinery Company. The. Wedge arrangements and related means for mounting means, base members, and bits, and combinations thereof, for mining, road working, or earth moving machinery. 4,337,980, Cl. 299-91.000.
- Kretz, Carl, to Kretztechnik Gesellschaft m.b.H. Equipment for ultrasonic examination. 4,337,661, Cl. 73-628.000.
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- Kritzer, Richard W., to Peerless of America, Inc. Heat exchangers and method of making same. 4,337,826, Cl. 165-151.000.
- Kritzler, Steven, to Otis Elevator Company. High fluorocarbon content coating composition, method of application, and coated article. 4,338,376, Cl. 428-417.000.
- Kronogard, Sven-Olof. Vehicle drive system. 4,337,623, Cl. 60-716.000.

- Kroupa, Petr: See—  
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- Krumkalns, Eriks V., to Eli Lilly and Company. Plant growth regulation. 4,338,118, Cl. 71-76.000.
- Krutz, Gary W.: See—  
Mailander, Michael P.; Krutz, Gary W.; and Huggins, Larry F., 4,337,611, Cl. 56-10.200.
- Krylov, Gleb L.; Stanovoi, Ivan V.; and Fuga, Georgy P. Plate shears. 4,337,679, Cl. 83-385.000.
- Kuck, Mark A.; and Miller, Gary K., to Stauffer Chemical Company. Electrochemical synthesis of organophosphorus compounds. 4,338,166, Cl. 204-59.00R.
- Kudalkar, Kishor N., to Weyerhaeuser Company. Non-glued manufacturers joint. 4,337,888, Cl. 229-48.00R.
- Kuehnle, Manfred R.; and Compton, James C., to Coulter Systems Corporation. Light scanning assembly for electrophotographic printing plate making apparatus. 4,338,018, Cl. 355-8.000.
- Kumasaka, Sadao; Tada, Satomi; Horikoshi, Shigeo; Tsuchiya, Tokio; and Numabe, Masashi, to Toyo Rubber Chemical Industrial Corp. Method for manufacturing a low density synthetic resin body. 4,338,271, Cl. 264-54.000.
- Kuno, Akira: See—  
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- Kunz, Peter, to Mettler Instrumente AG. Weighing apparatus including improved permanent magnet system. 4,337,838, Cl. 177-212.000.
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- Kuraray Co., Ltd.: See—  
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- Kyo, Sunao; Omura, Katsumi; and Hino, Ken-ichi, 4,338,478, Cl. 585-606.000.
- Kurath, Paul, to Abbott Laboratories. 2'-N-Des- $\beta$ -lysyl antibiotic AX-127B-1 and 4-N-acyl and alkyl derivatives thereof. 4,338,307, Cl. 424-180.000.
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- Kurnit, Norman A., to United States of America, Energy. Raman scattering in a whispering mode optical waveguide. 4,338,570, Cl. 330-4.600.
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- Kuwahara, Toru: See—  
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- Kuwana, Noriaki: See—  
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- Kyburz, Emilio: See—  
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- Lacroix, Hubert: See—  
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- LaCroix, Stephen R., to Garrett Corporation. The. Gas turbine fuel control system. 4,337,615, Cl. 60-39.14R.
- Lafarge Concrets et Etudes: See—  
Grandcolas, Jean; Harmelin, Guy; Lazzarini, Roger; and Reverchon, Bernard, 4,338,080, Cl. 432-115.000.
- LaFountain, Mary J.: See—  
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- Lafsidis, Stergios: See—  
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- Lakshmanan, Pallavoor R.: See—  
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- Barie, Walter P., Jr.; Huemmer, Thomas F.; and Lakshmanan, Pallavoor R., 4,338,171, Cl. 204-159.150.
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- Lampkin, Curtis M., to Photon Power, Inc. Heated conveyor system. 4,338,078, Cl. 432-11.000.
- Landis, John M.: See—  
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- Landry, Norman R., to RCA Corporation. Short horn radiator assembly. 4,338,609, Cl. 343-786.000.
- Lane, Ernest, Jr.; and Seekins, Raymond E., to General Motors Corporation. Power element assembly. 4,337,621, Cl. 60-527.000.
- Lane, George A.; and Rossow, Harold E., to Dow Chemical Company. The. Hydrated MgCl<sub>2</sub> reversible phase change compositions. 4,338,208, Cl. 252-70.000.
- Lang, Clifford E., Jr.: See—  
Chen, Andy C. C.; Lang, Clifford E., Jr.; Graham, Charles P.; and Rizzuto, Anthony B., 4,338,350, Cl. 426-658.000.
- Lapine, Anatole; and Schreiber, Reinhold, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Rear of an automobile, preferably a passenger car. 4,337,976, Cl. 296-216.000.
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- Laschenov, Jury V.: See—  
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- Lauterbach, John H. F.: See—  
Hughes, Donald W. K.; and Lauterbach, John H. F., 4,337,574, Cl. 29-883.000.
- Lautrette, Jean-Claude; and Queyroy, Christian A., to F. Aoustin et Cie. Horizontal endless belt vacuum filter. 4,338,193, Cl. 210-401.000.
- Law, Gerald S. Accident prevention apparatus for power takeoffs. 4,337,841, Cl. 180-271.000.
- Lawrence, Frederick J., to Gradco/Dendoki, Inc. Compact sorter. 4,337,936, Cl. 271-293.000.
- Lawrence, Roger W. Lateral tube transmission control. 4,337,674, Cl. 74-475.000.
- Lawson, Christopher J.; and Symes, Kenneth C., to Talres Development (N.A.) N.V. Indian and suspensions and gels thereof and their uses. 4,338,432, Cl. 536-123.000.
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- Leach, Ronald W. A.: See—  
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- Lear, Edward C.: See—  
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- Lee, James K., to Eastman Kodak Company. Bistable actuating mechanism for optical apparatus. 4,338,009, Cl. 354-152.000.
- Lee, Richard H.: See—  
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- Leigh, Arthur G.: See—  
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- Leininger, Steven, to Tandy Corporation. Apparatus for alpha-numeric/graphic display. 4,338,599, Cl. 340-721.000.
- Leiter, L. David, to West Company. The. Gimbal anvil for seal force test device. 4,337,644, Cl. 73-52.000.
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- Le Merit, Alfred J., to Ludwig Industries. Outrigger holder assembly for percussion musical instruments. 4,337,684, Cl. 84-421.000.
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Leounes, Nicholas P. Heat re-taining collar. 4,337,752, Cl. 126-215.000.

Lerman, Max, to United States Manufacturing Company. Adjustable motion brace. 4,337,764, Cl. 128-80.00F.

Lersmacher, Bernhard; van Kollenburg, Ludovicus W. J.; Bastings, Leonardus C., deceased; and de Haan, Friedrich J., administrator, to U.S. Philips Corporation. Method of producing cuvettes for the flameless atomic absorption spectroscopy. 4,338,358, Cl. 427-227.000.

Leshner, George Y.; and Dickinson, William B., to Sterling Drug Inc. Di-(lower-alkyl)hydroxy-[2-oxo-2-(pyridinyl)ethyl]-propanedioates. 4,338,446, Cl. 546-314.000.

Lever Brothers Company: See—  
Clements, Anthony H.; and Leigh, Arthur G., 4,338,210, Cl. 252-96.000.

Levine, Irving: See—  
Cook, Yale B.; and Brooks, Charles R., 4,337,775, Cl. 128-349.00B.

Levy, David. Roulette gaming apparatus. 4,337,945, Cl. 273-142.00E.

Liberty Glass Company: See—  
Brookway, M. Clifford; and Walters, Craig T., 4,338,114, Cl. 65-28.000.

Lichtner, Emil; Ungerling, Gerd; and Giebel, Gerhard, to Klockner-Humboldt-Deutz Aktiengesellschaft. Light metal cylinder head for a valve-controlled internal combustion engine. 4,337,735, Cl. 123-193.00H.

Lienert, Gerold, to Rockwell International Corporation. Leaf spring stress peening method and apparatus. 4,337,632, Cl. 72-53.000.

Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Hell, Insa; and Wolf, Klaus-Ulrich, to Kali-Chemie Pharma GmbH. [1,2]Anellated-7-phenyl-1,4-benzodiazepine and pharmaceutical compositions thereof and use for treatment of ulcers. 4,338,314, Cl. 424-246.000.

Lillibridge, Harold R.: See—  
Sullivan, John; and Lillibridge, Harold R., 4,338,085, Cl. 493-254.000.

Limborg, William W.; Pai, Damodar M.; and Pearson, James M., to Xerox Corporation. Semiconductive organic compositions. 4,338,222, Cl. 252-500.000.

Lin, Kingso C., to Owens-Corning Fiberglass Corporation. Method and apparatus for applying textile sizes. 4,338,361, Cl. 427-299.000.

Lincoln, Frank H.: See—  
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,338,325, Cl. 424-285.000.

Lindauer Dornier Gesellschaft mbH.: See—  
Strahm, Christian, 4,337,630, Cl. 68-13.00R.

Lindner, Werner, 4,337,634, Cl. 72-113.00R.

Lindemann, Patricia A. Portable bathing tub accessory for shower stall. 4,337,540, Cl. 4-546.000.

Linden, Hans W.: See—  
Blank, Heinz U.; Behre, Horst; Linden, Hans W.; and Mentzel, Werner, 4,338,261, Cl. 260-508.000.

Lindner, Christian: See—  
Grigo, Ulrich; Fahnler, Friedrich; Lindner, Christian; and Binsack, Rudolf, 4,338,409, Cl. 525-66.000.

Sanderson, John R.; Binsack, Rudolf; Fahnler, Friedrich; and Lindner, Christian, 4,338,406, Cl. 525-66.000.

Lindstrom, Rune, to Skega AB. Device for attaching a cloth. 4,337,815, Cl. 160-392.000.

Lisin, Vladimir N.; Pavlov, Mikhail V.; Laschenov, Jury V.; Gusev, Stanislav I.; Kozlov, Lev V.; Pokrovsky, Sergei V.; and Mozhaev, Igor I. High-voltage transformer-rectifier device. 4,338,657, Cl. 363-68.000.

Littrell, Gary L. Cable carrying floor duct apparatus. 4,338,484, Cl. 174-48.000.

Littwin, Burkhard, to Siemens Aktiengesellschaft. Gas display device with a profiled cathode. 4,338,539, Cl. 313-217.000.

Livne, Avinoam: See—  
Trop, Moshe; and Livne, Avinoam, 4,338,347, Cl. 426-565.000.

Lobeck, Walter G., Jr.: See—  
Temple, Davis L., Jr.; and Lobeck, Walter G., Jr., 4,338,317, Cl. 424-250.000.

Lobmann, Michele; and Florent, Gerard, to SmithKline-RIT. Influenza virus and process of producing a vaccine therefrom. 4,338,296, Cl. 424-89.000.

Lockett, James H., to Northrop Corporation. Variable geometry router. 4,338,052, Cl. 409-206.000.

Loffelholz, Frido: See—  
Worshech, Kurt; Wedl, Peter; Loffelholz, Frido; Wegemund, Bernd; and Erwid, Werner, 4,338,226, Cl. 524-302.000.

Logothetis, Richard. Variable spot stage light. 4,338,654, Cl. 362-268.000.

Logue, Harold W., to General Electric Company. Cylinder handling device. 4,337,633, Cl. 72-94.000.

Lohberg, Werner, to Reuter Technologie GmbH. Feed system for introducing water vapor into the suction path of an internal combustion engine. 4,337,731, Cl. 123-25.00B.

Lohnert, Wolfgang: See—  
Hildebrand, Dietrich; and Lohnert, Wolfgang, 4,338,093, Cl. 8-549.000.

Lohrey, Cecil R.: See—  
Fullenkamp, Eugene H.; Burst, Francis J.; Lohrey, Cecil R.; and Drew, William D., 4,338,485, Cl. 174-48.000.

Lonardo, Pietro, to Hermann Rappold & Co. GmbH. Shut-off valve for interrupting a flow of a fluid through a pipeline. 4,337,789, Cl. 137-340.000.

Loos, Hendricus G. Dispersive instrument for measurement of particle size distributions. 4,338,030, Cl. 356-336.000.

Loosli, Hugo, to Schweizerische Lokomotiv und Maschinenfabrik. Railway locomotive. 4,337,706, Cl. 105-184.000.

Lopez, Rafael E. Arm muscle exerciser device. 4,337,937, Cl. 272-67.000.

Lorenz, Kurt: See—  
Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, 4,338,161, Cl. 202-228.000.

Louboutin, Robert, to Degremont. Water treatment process and apparatus and device for the distribution of water to be treated into and for the recovery from washing liquid from a water treatment filter apparatus. 4,338,202, Cl. 210-795.000.

Lu, Chin H., to Xerox Corporation. Quarternary ammonium sulfate or sulfonate charge control agents for electrophotographic developers compatible with viton fuser. 4,338,390, Cl. 430-106.000.

Lucas Industries Limited: See—  
Jefferson, John R.; and Cunliffe, Frank, 4,337,747, Cl. 123-501.000.

Smith, Trevor S., 4,337,617, Cl. 60-39.28R.

Ludwa, Raymond J.: See—  
Evans, Stephen F.; Ludwa, Raymond J.; and Adalsteinsson, Orn, 4,338,366, Cl. 428-76.000.

Ludwig Industries: See—  
Le Mert, Alfred J., 4,337,684, Cl. 84-421.000.

Ludwig, Walter F. Truck safety recorder. 4,338,512, Cl. 235-92.00T.

Lugosi, Robert; Fechko, George J.; Male, Alan T.; Haller, Henry E., III; and Mole, Cecil J., to Westinghouse Electric Corp. Method of making a conductor bar for dynamoelectric machines. 4,337,567, Cl. 29-596.000.

Luker, Graham J. Grease gun. 4,338,066, Cl. 417-259.000.

Luminaud Company: See—  
Lennox, Thomas M., 4,338,488, Cl. 179-1.0AL.

Lund, Anders E.: See—  
Haataja, Bruce A.; Kilpela, Tauno B.; Lund, Anders E.; and Hamilton, James F., 4,337,710, Cl. 108-53.300.

Lunn, William H. W.: See—  
Herron, David K.; and Lunn, William H. W., 4,338,436, Cl. 544-16.000.

Herron, David K.; and Lunn, William H. W., 4,338,439, Cl. 544-24.000.

Luthi, Oscar: See—  
Krasnoff, Eugene L.; and Luthi, Oscar, 4,338,192, Cl. 210-221.200.

Lyons, Dale E., to Atwood Vacuum Machine Company. Overflow and vent cap for a container. 4,337,875, Cl. 220-368.000.

Lyons, James E.; and Hosler, Peter, to Suntech, Inc. 8-Methoxy-p-menthane. 4,338,469, Cl. 568-666.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: See—  
Rasch, Walter; Caspers, Karl-Heinz; Wiebcke, Klaus; and Albert, Max, 4,337,736, Cl. 123-193.00H.

Maa, Peter S.; Veluswamy, Lavanga R.; and Vadovic, Charles J., to Exxon Research & Engineering Co. Coal conversion in the presence of added alkali metal compounds. 4,338,184, Cl. 208-10.000.

Maa, Peter S.: See—  
Vernon, Lonnie W.; and Maa, Peter S., 4,338,182, Cl. 208-8.0LE.

Macartney, Lawrence J.: See—  
Kennon, James L.; Macartney, Lawrence J.; Crum, Gerald W.; Dunn, John C.; and Hastings, Donald R., 4,338,364, Cl. 427-424.000.

Mackenzie, Angus B.: See—  
Hanacek, William A.; Kahl, James E.; and Mackenzie, Angus B., 4,337,594, Cl. 47-1.100.

Macmillan, Norman H.: See—  
Shaffer, Peter T. B.; Roy, Rustum; and Macmillan, Norman H., 4,338,215, Cl. 252-628.000.

Macourt, Denis J. C. Mineral exploration. 4,338,029, Cl. 356-311.000.

Maeda, Minoru: See—  
Tanaka, Toshiaki P.; Maeda, Minoru; Aoki, Satoshi; and Yamada, Shoji, 4,337,995, Cl. 350-96.200.

Maekawa, Iwao; and Makino, Daisuke, to Hitachi Chemical Company Ltd. Process for producing polyimide-amide-carboxylic acid. 4,338,427, Cl. 528-53.000.

Maggi, Ernesto. Extinguishing chamber for an electric arc of the magnetic blow-out type. 4,338,501, Cl. 200-147.00A.

Magna Corporation: See—  
Blair, Charles M., Jr., 4,337,828, Cl. 166-274.000.

Magnaflux Corporation: See—  
Graham, Bruce C., 4,338,566, Cl. 324-216.000.

Magorian, William R., to United States of America, Navy. Self adaptive correlation radar. 4,338,603, Cl. 343-17.10R.

Maier, Theodore, to Standard Register Company, The. Sensitized record sheet. 4,337,968, Cl. 282-27.500.

Mailander, Michael P.; Krutz, Gary W.; and Huggins, Larry F., to Purdue Research Foundation. Automatic control of a combine threshing cylinder and feeder conveyor. 4,337,611, Cl. 56-10.200.

Major, Jeffrey T., to Eltra Corporation. Removable brush holder for dynamoelectric machine. 4,338,538, Cl. 310-242.000.

Makino, Daisuke: See—  
Maekawa, Iwao; and Makino, Daisuke, 4,338,427, Cl. 528-53.000.

Sato, Hidetaka; Uchimura, Shunichiro; Suzuki, Hiroshi; and Makino, Daisuke, 4,338,426, Cl. 528-26.000.

Makowski, Henry S., deceased: See—  
Agarwal, Pawan K.; and Makowski, Henry S., deceased, 4,338,229, Cl. 524-399.000.

Makowski, Patricia Helen, executrix: See—  
Agarwal, Pawan K.; and Makowski, Henry S., deceased, 4,338,229, Cl. 524-399.000.

Male, Alan T.: See—  
Lugosi, Robert; Fechko, George J.; Male, Alan T.; Haller, Henry E., III; and Mole, Cecil J., 4,337,567, Cl. 29-596.000.

Mallorca, Salvador C.: See—  
Hoenig, James R.; and Mallorca, Salvador C., 4,337,874, Cl. 220-306.000.

Malm, Robert, to Northrop Corporation. Frame integrator for CID imaging system. 4,338,633, Cl. 358-213.000.

Manabe, Isao; and Inubushi, Akiyoshi, to Otsuka Chemical Co., Ltd. Metal corrosion inhibitor. 4,338,209, Cl. 252-75.000.

Manabe, Sugio: See—  
Orimo, Ryoichi; Sakurada, Masahiko; Banno, Taiichi; Manabe, Sugio; and Galle, Kevin, 4,338,279, Cl. 422-64.000.

Mandelkorn, Joseph. Very thin silicon wafer base solar cell. 4,338,481, Cl. 136-255.000.

Manis, Jack J.; and Highlander, Sarah K., to Upjohn Company. The. Co-integrate plasmids and their construction from plasmids of Escherichia and Streptomyces. 4,338,400, Cl. 435-172.000.

Mannesmann DeMag A.G.: See—  
Becker, Klaus; Citterich, Jürgen; and Kaufmann, Karl E., 4,337,704, Cl. 104-70.000.

Mant, Derrick M.: See—  
Yellin, Tobias O.; and Mant, Derrick M., 4,338,447, Cl. 548-133.000.

Yellin, Tobias O.; and Mant, Derrick M., 4,338,448, Cl. 548-133.000.

Marcon Electronics Co., Ltd.: See—  
Yokomizo, Yui; Minami, Kiyoshi; Ichinose, Noboru; and Tanno, Yoshikazu, 4,338,223, Cl. 252-519.000.

Marino, Francesco, to Indesit Industria Elettrodomestici Italiana, S.p.A. Circuit for obtaining saw-tooth current in a coil. 4,338,550, Cl. 315-408.000.

Marion, Charles P.: See—  
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,338,099, Cl. 48-197.00R.

Markem Corporation: See—  
Pressman, Gerald L.; Moore, Robert A.; Brooks, Jeffrey B.; and Sengstaken, Robert W., Jr., 4,338,614, Cl. 346-155.000.

Markert, Gerhard: See—  
Jost, Heinz; Knoell, Hellmuth; Markert, Gerhard; and Pennewiss, Horst, 4,338,418, Cl. 525-281.000.

Markham, Melvin C. Insulation anti-static and blowing machine. 4,337,902, Cl. 241-56.000.

Markus, Henry Z.: See—  
McAleer, William J.; and Markus, Henry Z., 4,338,335, Cl. 424-361.000.

Marley-Wylain Company, The: See—  
Ehret, Gordon F.; Rowley, William N.; and Mullen, Richard E., 4,338,546, Cl. 315-119.000.

Marrero, Louis. Versatile fluorescent lighting fixture. 4,338,653, Cl. 362-223.000.

Marsh, Richard E.: See—  
Engel, Steven J.; Marsh, Richard E.; and Rhodes, Robert P., 4,338,589, Cl. 340-347.00C.

Marshall, Robert T.: See—  
Anderson, Maynard E.; Marshall, Robert T.; and Stringer, William C., 4,337,549, Cl. 17-1.00R.

Marshall, Peter R., to Imperial Chemical Industries Limited. 9-Aryloxy propane derivatives. 4,338,316, Cl. 424-250.000.

Marston Excelsior Limited: See—  
Dickson, Ronald; and Hampson, Michael R., 4,338,179, Cl. 204-284.000.

Martin, Jean; and Jolly, Jacques, to Framatome. Finger mechanism, with a cyclic movement, for controlling a nuclear reactor. 4,338,159, Cl. 376-228.000.

Martin, Lawrence A.: See—  
Barth, Jerry J.; and Martin, Lawrence A., 4,337,598, Cl. 51-135.00B.

Martin & Pagenstecher GmbH: See—  
Hoffken, Erich; and Beckers, Karl-Dieter, 4,337,897, Cl. 239-214.250.

Martin, Richard G.; and Brackney, Maurice R., to Multi-Elmac. Garage door operator with gas sensor. 4,338,526, Cl. 307-116.000.

Martin, William C.; and Hoydic, Stephen V., Jr., to Teledyne Penn-Union. Compression tool. 4,337,635, Cl. 72-410.000.

Martin, William J.: See—  
Geller, Gary R.; Suppelsa, Anthony B.; and Martin, William J., 4,338,506, Cl. 219-121.0LJ.

Marusak, Ralph M. Household system for vacuum packing foods. 4,337,804, Cl. 141-65.000.

Maruyama, Takashi; and Ueno, Katsuji, to Sumitomo Chemical Company, Limited. Resin composition. 4,338,421, Cl. 525-397.000.

Maruyama, Takashi: See—  
Ueno, Katsuji; and Maruyama, Takashi, 4,338,410, Cl. 525-132.000.

Marvin Glass & Associates: See—  
Breslow, Jeffrey D.; Rosenwinkel, Donald A.; Hanson, Steven P.; and Harper, Rex M., 4,337,948, Cl. 273-237.000.

Ferris, Michael J., 4,337,949, Cl. 273-324.000.

Marzocchi, Alfred; Bolen, Charles E.; Harrington, Edward R.; and Roberts, Michael G., to Owens-Corning Fiberglass Corporation. Modified asphalt compositions. 4,338,231, Cl. 523-214.000.

Masaki, Kenji, to Nissan Motor Co., Ltd. System for feedback control of air/fuel ratio in internal combustion engine. 4,337,746, Cl. 123-489.000.

Masegi, Koichi: See—  
Sato, Hideaki; Kitamura, Takashi; Masegi, Koichi; and Hoshito, Kazuo, 4,338,577, Cl. 372-36.000.

Maskaev, Anatoly X.: See—  
Efimov, Vyacheslav T.; Nazarian, Miron M.; Axenko, Alexander A.; Kolyada, Vladimir A.; Maskaev, Anatoly X.; Shamsha, Ljudmila F.; and Kostjuk, Vladimir I., 4,338,178, Cl. 204-275.000.

Massachusetts General Hospital: See—  
Holick, Michael F., 4,338,293, Cl. 424-59.000.

Massachusetts Institute of Technology: See—  
Fan, John C. C.; and Bachner, Frank J., 4,337,990, Cl. 350-1.700.

Suh, Nam P.; and Rinderle, James R., 4,338,068, Cl. 425-144.000.

Massey-Ferguson Inc.: See—  
Dean, Earl E.; Quade, Marshall L.; and Temple, William F., 4,337,612, Cl. 56-98.000.

Massino, Chester F., to Ideas That Sell, Inc. Lighter and softer recreational balls. 4,337,944, Cl. 273-65.00A.

Mast, Rolf, to Armour-Dial, Inc. Antiperspirant compositions and methods for their preparation. 4,338,294, Cl. 424-68.000.

Masui, Takeshi: See—  
Nabeta, Takeshi; Masui, Takeshi; and Hasegawa, Tsuguo, 4,338,378, Cl. 428-462.000.

Masuzawa, Sigeaki; Miyazaki, Hiroshi; and Shibata, Shinya, to Sharp Kabushiki Kaisha. Speech synthesis method and device. 4,338,490, Cl. 179-1.05M.

Mathias Streiff AG: See—  
Streiff, Mathias; and Schnyder, Peter, 4,337,922, Cl. 254-134.3FT.

Mathieu, Raymond J., to Hobart Corporation. Manual/magnetic motor contactor. 4,338,583, Cl. 335-186.000.

Matsuda, Akira; Hayakawa, Yoshihiro; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, to Bridgestone Tire Company Limited; and Mitaka Instrument Company Limited. Tire pressure drop detecting apparatus. 4,337,652, Cl. 73-146.500.

Matsufuji, Yohji: See—  
Eida, Tsuyoshi; Matsufuji, Yohji; Yano, Yasuhiro; Ohta, Tokuya; and Haruta, Masahiro, 4,338,611, Cl. 346-75.000.

Matsui, Kazuma: See—  
Hattori, Yoshiyuki; Matsui, Kazuma; and Kinbara, Hiroji, 4,338,081, Cl. 474-201.000.

Matsui, Sei, to Nippon Kogaku K.K. Telephoto lens system. 4,338,001, Cl. 350-455.000.

Matsumoto, Kazuya: See—  
Matsumura, Susumu; Suzuki, Takashi; Matsumoto, Kazuya; and Momiyama, Kikuo, 4,338,012, Cl. 354-200.000.

Matsumoto, Tokio: See—  
Toyoda, Tsunehiko; Matsumoto, Tokio; and Arakawa, Toshiaki, 4,338,133, Cl. 106-22.000.

Matsumoto, Youichi: See—  
Fujita, Toshio; Matsumoto, Youichi; and Tagashira, Yoshimi, 4,338,574, Cl. 331-1.00A.

Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Yagi, Masahiro; and Ojima, Nobutoshi, to Nippon Shinyaku Co. Ltd. Moranoline derivatives and process for preparation thereof. 4,338,433, Cl. 536-46.000.

Matsumura, Susumu; Suzuki, Takashi; Matsumoto, Kazuya; and Momiyama, Kikuo, to Canon Kabushiki Kaisha. Focusing screen. 4,338,012, Cl. 354-200.000.

Matsunaga, Tsutomu: See—  
Saito, Tasuku; Noma, Tsutomu; Matsunaga, Tsutomu; Naito, Nagayoshi; Tanaka, Chiaki; and Hiratsuka, Motoki, 4,337,946, Cl. 273-225.000.

Saito, Tasuku; Noma, Tsutomu; Matsunaga, Tsutomu; Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, 4,337,947, Cl. 273-235.00R.

Matsuo, Junichi, to NGK Insulators, Ltd. Condenser bushing. 4,338,487, Cl. 174-143.000.

Matsushita Electric Industrial Co., Ltd.: See—  
Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; and Ouchi, Hiromu, 4,338,403, Cl. 501-136.000.

Morisawa, Masanori, 4,337,568, Cl. 29-598.000.

Yabu, Toshiomi; Wada, Tatsuo; Hashirano, Masaru; and Yamada, Kouichi, 4,338,640, Cl. 360-73.000.

Matsuura, Masataka: See—  
Funada, Fumiaki; Matsuura, Masataka; and Wada, Tomio, 4,337,999, Cl. 350-345.000.

Matsuzawa, Yoneo: See—  
Kawakami, Yoshio; Matsuzawa, Yoneo; and Kajimoto, Norifumi, 4,338,367, Cl. 428-141.000.

Mattson, Richard W., to Eltra Corporation. Throttle pedal feedback apparatus for economical engine operation. 4,337,743, Cl. 123-396.000.

Mauri Brothers & Thomson (Aust.) Pty. Limited: See—  
Tucker, Raymond L., 4,337,871, Cl. 215-328.000.

Mayer, Claude, to Schlumberger Technology Corporation. Method of evaluating formations traversed by a borehole. 4,338,664, Cl. 364-422.000.

Mayer, Hans-Dietrich: See—  
Pliz, Karl-Heinz; Grater, Wolfgang; and Mayer, Hans-Dietrich, 4,338,552, Cl. 318-266.000.



- Mayerhoefer, Horst: See—  
Hinsken, Hans; Mayerhoefer, Horst; Mueller, Wolfgang; and Schneider, Hermann, 4,338,244, Cl. 524-109.000.
- Mayerle, Leanne, to Celanese Corporation. Biological treatment of a formaldehyde-containing waste water contacted with a biomass together with a nitrogen compound. 4,338,196, Cl. 210-610.000.
- Mayes, Warden W., to Cosden Technology, Inc. Method and apparatus for controlling the flow of molten reaction media. 4,338,096, Cl. 23-230.00A.
- McAleer, William J.; and Markus, Henry Z., to Merck & Co., Inc. Vaccine stabilizer containing L-glutamic acid and L-arginine. 4,338,335, Cl. 424-361.000.
- McAllister, Wesley J. Anatomically manipulable rotatable implement. 4,337,593, Cl. 46-64.000.
- McCaslin, Robert E. Apparatus and method for generating light designs. 4,338,547, Cl. 315-312.000.
- McClintic, Robert P.: See—  
Vanderpool, Clarence D.; and McClintic, Robert P., 4,338,126, Cl. 75-84.000.
- McDonald, Ray S.: See—  
Hartlaub, Jerome T.; McDonald, Ray S.; and Hudziak, Lawrence C., 4,337,777, Cl. 128-419.0PG.
- McDonald, William J.; and Robinson, Brian, to James Mackie & Sons Limited. Method and apparatus for texturizing thermoplastic yarn. 4,337,557, Cl. 28-250.000.
- McDonnell Douglas Corporation: See—  
Bear, Philip D.; and Burkhardt, Gordon H., 4,338,352, Cl. 427-8.000.
- McGibbon, Gary M., to Xerox Corporation. Job recovery hierarchy in a reproduction machine. 4,338,023, Cl. 355-14.0SH.
- McGinn, Terrance E., to Penn-Field Stove, Inc. Stove having non-escaping smoke. 4,337,753, Cl. 126-287.000.
- McGraw-Edison Company: See—  
Brown, Robert S.; Schwickert, Russell C.; and Demas, Nickolas, 4,337,645, Cl. 73-52.000.
- Phillips, Paul E., 4,337,546, Cl. 15-49.00R.
- McHugh, John V.: See—  
Jutte, Gottfried W.; and McHugh, John V., 4,338,383, Cl. 429-88.000.
- McKenna, Nicholas M. Q.; and Raven, Peter J. Rotary internal combustion engine. 4,337,741, Cl. 123-228.000.
- McKnight, Donald: See—  
Hughes, Eric; and McKnight, Donald, 4,337,618, Cl. 60-39.550.
- McLean, Charles M., to Doculit Corporation. Currency note dispensing system. 4,337,864, Cl. 209-534.000.
- McNab, Incorporated: See—  
Binder, Ira; and Teass, Horace A., Jr., 4,338,175, Cl. 204-195.00R.
- McNeilab, Inc.: See—  
Gardocki, Joseph F., 4,338,324, Cl. 424-266.000.
- Tamura, Paul S., 4,338,174, Cl. 204-195.00P.
- McRitchie, Allan C.: See—  
Spadini, Gianfranco L.; Crisp, Peter N.; and McRitchie, Allan C., 4,338,204, Cl. 252-8.750.
- Mead Johnson & Company: See—  
Temple, Davis L., Jr.; and Lobeck, Walter G., Jr., 4,338,317, Cl. 424-250.000.
- Medtronic, Inc.: See—  
Hartlaub, Jerome T.; McDonald, Ray S.; and Hudziak, Lawrence C., 4,337,777, Cl. 128-419.0PG.
- Spevak, Richard P.; and Hansen, Lynn D., 4,337,779, Cl. 128-691.000.
- Megerle, Friedrich, to Klockner-Humboldt-Deutz AG. Furnace installation particularly for the melting of ore concentrate. 4,337,927, Cl. 266-190.000.
- Meier, Martin: See—  
Schroder, Joris; and Meier, Martin, 4,337,847, Cl. 187-29.00R.
- Meier, Werner: See—  
Seeger, Karl; Jundt, Werner; Mezger, Manfred; Kiencke, Uwe; Wesemeyer, Jürgen; Haubner, Georg; and Meier, Werner, 4,337,744, Cl. 123-416.000.
- Meiller Research, Inc.: See—  
Isbell, Arthur F., 4,338,465, Cl. 568-69.000.
- Meinel, Aden B.; and Meinel, Walter B. Solar energy collector and converter. 4,337,758, Cl. 126-438.000.
- Meinel, Walter B.: See—  
Meinel, Aden B.; and Meinel, Walter B., 4,337,758, Cl. 126-438.000.
- Meinke, Peter. Drive and support arrangement for a disc-shaped rotor. 4,337,981, Cl. 308-10.000.
- Melchior, Bernd, to Imchemie Kunststoff GmbH. Method for increasing the strength of a porous body. 4,338,353, Cl. 427-36.000.
- Menger-Hammond, Eva L.: See—  
Yardley, James T.; Rosan, Alan M.; and Menger-Hammond, Eva L., 4,338,173, Cl. 204-162.00R.
- Mentzel, Werner: See—  
Blank, Heinz U.; Behre, Horst; Linden, Hans W.; and Mentzel, Werner, 4,338,261, Cl. 260-508.000.
- Menzel, Stanley W. O.; Mominee, David E.; and Vance, Gilbert W., to Rib Loc Hong Kong Limited. Machine and method for forming tubes from a strip. 4,337,564, Cl. 29-453.000.
- Merck & Co., Inc.: See—  
Christensen, Burton G.; Karady, Sander; Cama, Lovji D.; and Slettinger, Meyer, 4,338,437, Cl. 544-021.000.
- Christensen, Burton G.; Karady, Sander; Cama, Lovji D.; and Slettinger, Meyer, 4,338,438, Cl. 544-21.000.
- Jensen, Norman P.; Jacobus, David P.; and Jones, Howard, 4,338,334, Cl. 424-322.000.
- McAleer, William J.; and Markus, Henry Z., 4,338,335, Cl. 424-361.000.
- Zupan, Jacob A., 4,338,455, Cl. 560-29.000.
- Mergel, Jürgen: See—  
Divisek, Jiri; Mergel, Jürgen; and Bodewig, Frans G., 4,338,167, Cl. 204-60.000.
- Merry, Jean-Louis, to Charbonnages de France. Apparatus for dusting off gas by filtration and aspiration cleaning of filter, and application to combustion gases. 4,338,104, Cl. 55-291.000.
- Messerschmitt-Bolkow-Blohm Gesellschaft mit beschränkter Haftung: See—  
Munding, German; Müller, Wolfgang; and Strobl, Heinrich, 4,337,685, Cl. 89-7.000.
- Metallurgical, Inc.: See—  
Withers, James C.; and Upperman, Gary V., 4,338,177, Cl. 204-243.00R.
- Metatech Corporation: See—  
Perlin, Alfred R., 4,337,774, Cl. 128-325.000.
- Metrick, Glen F. Muscle testing apparatus. 4,337,780, Cl. 128-774.000.
- Mettler Instrumente AG: See—  
Kunz, Peter, 4,337,838, Cl. 177-212.000.
- Metzger, Karl G.: See—  
Preiss, Michael; König, Hans-Bodo; Metzger, Karl G.; and Feyen, Peter, 4,338,434, Cl. 542-420.000.
- Mezger, Manfred: See—  
Seeger, Karl; Jundt, Werner; Mezger, Manfred; Kiencke, Uwe; Wesemeyer, Jürgen; Haubner, Georg; and Meier, Werner, 4,337,744, Cl. 123-416.000.
- Michael, Jacob G.; and Pesce, Amadeo J. Polypeptide active pollen immunosuppressant fraction. 4,338,297, Cl. 424-91.000.
- Michalko, Jan, to Jednotné reolnické družstvo. Injection plow. 4,337,712, Cl. 111-7.000.
- Michigan Technological University: See—  
Haataja, Bruce A.; Kilpela, Tauno B.; Lund, Anders E.; and Hamilton, James F., 4,337,710, Cl. 108-53.300.
- Mickelsen, Roger W.; Infanger, Rex C.; and Heckman, Richard A. Modular cage system for underwater use. 4,337,727, Cl. 119-2.000.
- Microwave Radiation Detector Corporation: See—  
Newman, Daniel D., 4,338,595, Cl. 340-600.000.
- Mid-America Body & Equipment Co.: See—  
Anderson, James E., 4,338,059, Cl. 414-501.000.
- Mientek, Anthony P.: See—  
Grevstad, Paul E.; Johnson, Carl K.; and Mientek, Anthony P., 4,337,571, Cl. 29-623.200.
- Miesel, John L., to Eli Lilly and Company. Formulations of dihalobenzoyl-substituted-pyridinylurea insecticides. 4,338,321, Cl. 424-263.000.
- Millford, Alan H.; and Proulx, Oliver J., to Olin Corporation. Apparatus for curing partially cured freely risen foam. 4,338,072, Cl. 425-371.000.
- Milkowski, Wolfgang: See—  
Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Hell, Insa; and Wolf, Klaus-Ulrich, 4,338,314, Cl. 424-246.000.
- Miller, Gary K.: See—  
Kuck, Mark A.; and Miller, Gary K., 4,338,166, Cl. 204-59.00R.
- Miller, John M.; and Barton, Richard O., to Grumman Aerospace Corporation. Laser grade, elevation, curve surveying system. 4,338,031, Cl. 356-356.000.
- Miller, Peter S.; and Myers, Jack H., to Owens-Illinois, Inc. Web tension control method and apparatus. 4,337,904, Cl. 242-75.530.
- Miller, Robert C.: See—  
Steiner, Gordon L.; O'Keefe, David B.; and Miller, Robert C., 4,338,597, Cl. 340-706.000.
- Mills, Thomas, to Sound Control, Inc. Rodent control apparatus and method. 4,338,593, Cl. 340-384.00E.
- Mims, James H., to Westinghouse Electric Corp. Antenna array with adaptive sidelobe cancellation. 4,338,605, Cl. 343-100.0LE.
- Minami, Kiyoshi: See—  
Yokomizo, Yuji; Minami, Kiyoshi; Ichinose, Noboru; and Tanno, Yoshikazu, 4,338,223, Cl. 252-519.000.
- Minardi, Paolo: See—  
Banzoli, Valeriano; Beccegato, Leonardo; Minardi, Paolo; Morganti, Emilio; and Selleroni, Marco P., 4,337,829, Cl. 166-366.000.
- Minato, Ichiro: See—  
Fujinami, Kimiya; Minato, Ichiro; and Shibata, Koichi, 4,338,256, Cl. 260-453.00A.
- Minegishi, Harumasa: See—  
Yoshino, Yasuhisa; Kuno, Akira; Shimizu, Hidetoshi; and Minegishi, Harumasa, 4,337,651, Cl. 73-129.000.
- Minnesota Mining and Manufacturing Company: See—  
Barth, Jerry J.; and Martin, Lawrence A., 4,337,598, Cl. 51-135.0BT.
- Beck, Boyd R.; Sher, Frank T.; and Tiers, George V. D., 4,338,377, Cl. 428-428.000.
- Farago, Laszlo D., 4,338,022, Cl. 355-60.000.
- Mosier, Douglas R., 4,338,649, Cl. 361-139.000.
- Theiler, Werner C., Sr., 4,337,542, Cl. 7-107.000.
- Minolta Camera Kabushiki Kaisha: See—  
Kuramoto, Yoshio; Ueda, Hiroshi; and Itoh, Masatoshi, 4,337,956, Cl. 350-255.000.
- Mita, Ryueichi; Yamaguchi, Akihiro; Kato, Toshio; Higuchi, Chojiro; and Murakami, Hisamichi, to Mitsui Toatsu Chemicals, Inc. Alpha-halogeno-beta-aminopropionitriles or the mineral acid salts thereof, and processes for production thereof. 4,338,259, Cl. 260-465.50R.

- Mitaka Instrument Company Limited: See—  
Matsuda, Akira; Hayakawa, Yoshihiro; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,337,652, Cl. 73-146.500.
- Mitchell, Harry R.: See—  
Bubniak, William C.; and Mitchell, Harry R., 4,337,738, Cl. 123-198.00F.
- Mitsubishi Denki Kabushiki Kaisha: See—  
Akamatsu, Masahiko, 4,338,617, Cl. 357-38.000.
- Yonemoto, Masashi; and Watanabe, Eiiki, 4,337,846, Cl. 187-29.00R.
- Mitsubishi Gas Chemical Company, Inc.: See—  
Ikeguchi, Nobuyuki; and Osaki, Yasunori, 4,338,373, Cl. 428-383.000.
- Mitsubishi Jukogyo Kabushiki Kaisha: See—  
Hirakawa, Tadashi; Sasashige, Hiroaki; Takenaka, Hiroyuki; and Katayama, Keiichi, 4,337,884, Cl. 226-52.000.
- Kaku, Yasuo, 4,337,816, Cl. 164-58.100.
- Mitsubishi Kinzoku Kabushiki Kaisha: See—  
Nakai, Eiichiro; Kojima, Hiroshi; Tanaka, Shoichi; Kai, Toshiyuki; and Hasegawa, Shinichi, 4,338,286, Cl. 423-12.000.
- Mitsui Petrochemical Industries Ltd.: See—  
Morita, Yoshinori; Kato, Akifumi; and Yamamoto, Ryoichi, 4,338,424, Cl. 526-65.000.
- Mitsui, Sadao: See—  
Takahashi, Minoru; and Mitsui, Sadao, 4,338,576, Cl. 331-67.000.
- Mitsui Toatsu Chemicals, Inc.: See—  
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- Miura, Heihachi: See—  
Koinuma, Tokujir; Saito, Hisao; and Miura, Heihachi, 4,338,545, Cl. 315-39.710.
- Miyake, Masayuki; Sekino, Takeo; Takeda, Masashi; and Baba, Yasuharu, to Sony Corporation. Flip-flop circuit. 4,338,619, Cl. 357-46.000.
- Miyake, Nobuyuki: See—  
Hosono, Nagao; Kanbe, Junichiro; Arao, Kozo; and Miyake, Nobuyuki, 4,337,724, Cl. 118-652.000.
- Miyazaki, Hiroshi: See—  
Masuzawa, Sigeaki; Miyazaki, Hiroshi; and Shibata, Shinya, 4,338,490, Cl. 179-1.0SM.
- Miyazaki, Masayuki: See—  
Yukawa, Koji; Miyazaki, Masayuki; and Murahashi, Takashi, 4,338,020, Cl. 355-41.000.
- Miyo, Hiroaki: See—  
Otsuka, Katsuyuki; and Miyo, Hiroaki, 4,338,102, Cl. 55-185.000.
- Mizuhashi, Mamoru: See—  
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- Mizumoto, Katsuji, to Pioneer Electronic Corporation. Two-phase brushless motor driving circuit. 4,338,551, Cl. 318-254.000.
- Mizuno, Junji; Fukami, Akira; Noguchi, Hiroki; and Ishii, Takeshi, to Nippon Soken, Inc.; and Nippondenso Co., Ltd. Canister for fuel evaporative emission control system. 4,338,106, Cl. 55-316.000.
- Mizutani, Kiyokazu; and Ogasawara, Takahisa, to Toagosei Chemical Industry Co., Ltd. Curable material and process for production thereof. 4,338,240, Cl. 524-284.000.
- Mobil Oil Corporation: See—  
Arbit, Harold A., 4,338,420, Cl. 525-388.000.
- Pennington, Nicholas D.; and Haddad, James H., 4,338,475, Cl. 585-408.000.
- Rollmann, Louis D., 4,338,288, Cl. 423-210.000.
- Russo, Robert V., 4,338,365, Cl. 428-35.000.
- Yan, Tsoung-yuan, 4,337,979, Cl. 299-4.000.
- Mocquet, Gisele C.: See—  
Dostert, Philippe L.; Douzon, Colette A.; Bourgerie, Guy R.; Gouret, Claude G.; Mocquet, Gisele C.; and Coston, Jean A., 4,338,451, Cl. 548-232.000.
- Modar, Inc.: See—  
Modell, Michael, 4,338,199, Cl. 210-721.000.
- Modell, Michael, to Modar, Inc. Processing methods for the oxidation of organics in supercritical water. 4,338,199, Cl. 210-721.000.
- Moertel, George B., to Talon, Inc. Reclosable bag with slide fastener. 4,337,889, Cl. 229-62.000.
- Mohri, Katsuo; and Okada, Yoshinori, to Hitachi, Ltd. Tape running time indication system. 4,338,645, Cl. 360-137.000.
- Mole, Cecil J.: See—  
Lugosi, Robert; Fechko, George J.; Male, Alan T.; Haller, Henry E., III; and Mole, Cecil J., 4,337,567, Cl. 29-596.000.
- Mole, Thomas: See—  
Moody, Keith; and Mole, Thomas, 4,338,477, Cl. 585-520.000.
- Molins, Desmond W., to Molins Limited. Handling rod-like articles. 4,338,057, Cl. 414-417.000.
- Molins Limited: See—  
Molins, Desmond W., 4,338,057, Cl. 414-417.000.
- Mominee, David E.: See—  
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- Momiyama, Kikuo: See—  
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- Monarch Marking Systems, Inc.: See—  
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- Monette, Serge: See—  
Stanley, Robert W.; Monette, Serge; and Kerfoot, Derek G. E., 4,338,168, Cl. 204-108.000.
- Money, David K.: See—  
Daly, Christopher N.; Hirshorn, Michael S.; Money, David K.; and Holley, Loraine K., 4,337,776, Cl. 128-419.0PT.
- Monsanto Company: See—  
Coran, Aubert Y.; and Patel, Raman, 4,338,411, Cl. 525-145.000.
- Coran, Aubert Y.; and Patel, Raman, 4,338,413, Cl. 525-179.000.
- Monte, Anthony J., to United States of America, Army. Method of recharging fire extinguisher bottles. 4,337,803, Cl. 141-2.000.
- Monte, Salvatore J.: See—  
Sugerman, Gerald; and Monte, Salvatore J., 4,338,220, Cl. 252-430.000.
- Moody, Keith; and Mole, Thomas, to ICI Australia Limited; and Commonwealth Scientific and Industrial Research Organization. Removal of catalyst residues from a gas. 4,338,477, Cl. 585-520.000.
- Moog Inc.: See—  
Caruso, John T., 4,337,797, Cl. 137-625.480.
- Moon, Ronald L.: See—  
Antypas, George A.; Bell, Ronald L.; and Moon, Ronald L., 4,338,480, Cl. 136-249.000.
- Moore, James D. Tube end finishing device. 4,337,558, Cl. 29-33.00T.
- Moore, L. Dow; and Das, Balbhadra, to PPG Industries, Inc. Sizing composition and sized glass fibers and strands produced therewith. 4,338,234, Cl. 523-206.000.
- Moore, L. Dow: See—  
Das, Balbhadra; and Moore, L. Dow, 4,338,233, Cl. 523-410.000.
- Moore, Robert A.: See—  
Pressman, Gerald L.; Moore, Robert A.; Brooks, Jeffrey B.; and Sengstaken, Robert W., Jr., 4,338,614, Cl. 346-155.000.
- Moreau, Jean-Pierre: See—  
Biancale, Pierre; Corfa, Yves-Paul; Lemercier, Pierre; Moreau, Jean-Pierre; and Vertut, Jean, 4,338,043, Cl. 405-172.000.
- Morehouse, Charles C.: See—  
Shaw, R. Howard; and Morehouse, Charles C., 4,338,521, Cl. 250-366.000.
- Morgan, Nelson H., to University of California, The Regents of the. Room acoustics simulator. 4,338,581, Cl. 333-165.000.
- Morganti, Emilio: See—  
Banzoli, Valeriano; Beccegato, Leonardo; Minardi, Paolo; Morganti, Emilio; and Selleroni, Marco P., 4,337,829, Cl. 166-366.000.
- Morimoto, Keisuke; Edgar, Brenton G.; and Hirasuna, Thomas J., to General Foods Corporation. Extruded protein product. 4,338,340, Cl. 426-104.000.
- Moringiello, Donald C.; and Dallmann, Stephen H., to United Technologies Corporation. Friction damper. 4,337,982, Cl. 308-26.000.
- Morinibu, Yasuo: See—  
Ito, Hideo; Ueda, Issei; Morinibu, Yasuo; and Takeyasu, Michitomo, 4,338,241, Cl. 523-200.000.
- Morisaki, Itsuo, to Morisaki Jutakusangyo Kabushiki Kaisha. Super-surface. 4,337,808, Cl. 144-114.00A.
- Morisaki Jutakusangyo Kabushiki Kaisha: See—  
Morisaki, Itsuo, 4,337,808, Cl. 144-114.00A.
- Morisawa, Masanori, to Matsushita Electric Industrial Co., Ltd. Process for fabricating cup-shaped coreless armature. 4,337,568, Cl. 29-598.000.
- Morita, Yoshinori; Kato, Akifumi; and Yamamoto, Ryoichi, to Mitsui Petrochemical Industries Ltd. Multi-step gas-phase polymerization of olefins. 4,338,424, Cl. 526-65.000.
- Morooka, Yasuo: See—  
Shibayama, Hiroshi; Tanifuji, Shinya; Morooka, Yasuo; Nakai, Kozo; and Togashi, Nobuyuki, 4,338,077, Cl. 432-11.000.
- Morrill, Justin S., Jr.; and Hansen, John D., to Hewlett-Packard Company. Multi-clock data capture circuit. 4,338,677, Cl. 364-900.000.
- Morris, Benny G. Oil level gauge. 4,337,657, Cl. 73-313.000.
- Mosier, Douglas R., to Minnesota Mining and Manufacturing Company. System for remotely controlling a load. 4,338,649, Cl. 361-139.000.
- Mostek Corporation: See—  
O'Toole, James E., 4,338,679, Cl. 365-203.000.
- Young, Ian A., 4,338,571, Cl. 330-84.000.
- Motchenbacher, Curtus D.; and Nicholas, Merle E., to Honeywell Inc. Humidity sensor. 4,337,658, Cl. 73-335.000.
- Motooka, Setsuzo; Karigane, Yukihiro; Yamazaki, Osamu; and Ochiai, Osamu, to Duskon Franchise Co., Ltd. Selective collecting system of washing treated articles. 4,338,282, Cl. 422-105.000.
- Motorenfabrik Hatz GmbH & Co. KG: See—  
Hatz, Ernst; and Eibl, Heinz, 4,338,524, Cl. 290-2.000.
- Motorola, Inc.: See—  
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- Gay, Michael J., 4,338,580, Cl. 332-31.00T.
- Geller, Gary R.; Suppelsa, Anthony B.; and Martin, William J., 4,338,506, Cl. 219-121.0LJ.
- Parker, Norman W.; and Hilbert, Francis H., 4,338,491, Cl. 179-1.0GS.
- Tredennick, Harry L.; and Gunter, Thomas G., 4,338,661, Cl. 364-200.000.
- Mozhaev, Igor I.: See—  
Lisin, Vladimir N.; Pavlov, Mikhail V.; Laschenov, Jury V.; Gusev, Stanislav I.; Kozlov, Lev V.; Pokrovsky, Sergei V.; and Mozhaev, Igor I., 4,338,657, Cl. 363-68.000.
- Mreyen, Klaus D.: See—  
Kopineck, Hermann J.; Bottcher, Wolfgang; Mreyen, Klaus D.; Borchert, Werner; and Deutsch, Volker, 4,337,662, Cl. 73-632.000.



Mucke, Klaus, to Schott Glaswerke. Housing for electrical and electronic components. 4,338,486, Cl. 174-52.00H.

Mueller, Wolfgang: See—  
Hinsken, Hans; Mayerhoefer, Horst; Mueller, Wolfgang; and Schneider, Hermann, 4,338,244, Cl. 524-109.000.

Mullen, Richard E.: See—  
Ehret, Gordon F.; Rowley, William N.; and Mullen, Richard E., 4,338,546, Cl. 315-119.000.

Muller, Adam. Isomerization of alpha acids. 4,338,348, Cl. 426-600.000.

Muller, Wolfgang: See—  
Munding, German; Muller, Wolfgang; and Strobl, Heinrich, 4,337,685, Cl. 89-7.000.

Multi-Elmac: See—  
Martin, Richard G.; and Brackney, Maurice R., 4,338,526, Cl. 307-116.000.

Mumford, George V., to Owens-Illinois, Inc. Threaded closure removal tool. 4,337,678, Cl. 81-3.400.

Mundell, Donald D.; and Gowing, John P., to Flex-O-Lators, Inc. Spring base for upholstered seating. 4,337,931, Cl. 267-102.000.

Munding, German; Muller, Wolfgang; and Strobl, Heinrich, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschränkter Haftung. Apparatus for generating a propellant gas. 4,337,685, Cl. 89-7.000.

Mundschenk, David D., to R & D Systems, Inc. Hematology control composition and methods for its use. 4,338,564, Cl. 324-71.0CP.

Murahashi, Takashi: See—  
Yukawa, Koji; Miyazaki, Masayuki; and Murahashi, Takashi, 4,338,020, Cl. 355-41.000.

Murakami, Hisamichi: See—  
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Murakami, Ryoichi: See—  
Senzaki, Takashi; Murakami, Ryoichi; Yasuhara, Kiyotada; and Takahashi, Masashi, 4,338,141, Cl. 148-6.15Z.

Muranaka, Shigeo; Onoda, Michio; and Sugihara, Kunihiro, to Nissan Motor Co., Ltd. Knocking sensor. 4,337,640, Cl. 73-35.000.

Muranaka, Shigeo: See—  
Sugihara, Kunihiro; Yoneda, Kenji; and Muranaka, Shigeo, 4,337,641, Cl. 73-35.000.

Murata, Atsuo; Tsuchiya, Syuji; and Suzuki, Hideo, to Nissan Chemical Industries, Ltd. Isomerization of  $\beta$ - $\gamma$ -unsaturated alcohol or its ester. 4,338,170, Cl. 204-158.00R.

Murib, Jawad H.; and Inskeep, John M., to National Distillers & Chemical Corp. Hydrolysis of halohydrin or dihalide with HI catalyst. 4,338,290, Cl. 423-481.000.

Murphy, John H.; Brodzinski, John J.; and Horton, Donald D., to Kolmar Laboratories Inc. Method of producing a cosmetic product containing a powder cake. 4,337,859, Cl. 206-37.000.

Murphy, John M.; and Spensley, Robert H., to Eschem Holdings Limited. Cartridge for rock-bolting. 4,338,048, Cl. 405-261.000.

Murphy, Monroe. Trolley pole latch for electric mules. 4,338,498, Cl. 191-66.000.

Myers, Jack H.: See—  
Miller, Peter S.; and Myers, Jack H., 4,337,904, Cl. 242-75.530.

Myers, Lyle L., to Endowment and Research Foundation at Montana State University. Vaccine for passive immunization against enteric colibacillosis and method of use. 4,338,298, Cl. 424-92.000.

Myers, Richard G.; and Stuckey, James P., to Valmont Industries, Inc. Variable rate fertilizer injection system. 4,337,786, Cl. 137-3.000.

N. L. B. Corp.: See—  
Goerss, William G., 4,337,784, Cl. 134-34.000.

N. P. Marketing Corporation: See—  
Abel, Alan S., 4,338,053, Cl. 410-94.000.

Nabeta, Takeshi; Masui, Takeshi; and Hasegawa, Tsuguo, to Denki Kagaku Kogyo Kabushiki Kaisha. Film for heat sealing and process of heat sealing. 4,338,378, Cl. 428-462.000.

Nacci, George R.; and Pye, Donald G., deceased (by Pye, Sarah W., executrix), to Du Pont de Nemours, E. I., and Company. Magnetic resist printing process, composition and apparatus. 4,338,391, Cl. 430-122.000.

Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Voltage-current conversion circuit. 4,338,527, Cl. 307-494.000.

Nagayama, Haruhiko, to Ricoh Co., Ltd. Multiple deflection plate device for liquid jet printer or the like. 4,338,612, Cl. 346-75.000.

Nagel, Ronald L.; and Raventos, Carmen E., to Albert Einstein College of Medicine of Yeshiva University. Treatment of parasitic diseases. 4,338,303, Cl. 424-129.000.

Naito, Nagayoshi: See—  
Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Naito, Nagayoshi; Tanaka, Chiaki; and Hiratsuka, Motoki, 4,337,946, Cl. 273-235.00R.

Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, 4,337,947, Cl. 273-235.00R.

Najarian, John. Necktie knot support assembly. 4,337,539, Cl. 2-153.000.

Nakade, Toshiaki: See—  
Yamada, Mitsuhiro; and Nakade, Toshiaki, 4,338,636, Cl. 358-256.000.

Nakai, Eiichiro; Kojima, Hiroshi; Tanaka, Shoichi; Kai, Toshiyuki; and Hasegawa, Shinichi, to Mitsubishi Kinzoku Kabushiki Kaisha. Process for recovering uranium and/or thorium from a liquid containing uranium and/or thorium. 4,338,286, Cl. 423-12.000.

Nakai, Kozo: See—  
Shibayama, Hiroshi; Tanifuji, Shinya; Morooka, Yasuo; Nakai, Kozo; and Togashi, Nobuyuki, 4,338,077, Cl. 432-11.000.

Nakajima, Kenji: See—  
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,338,251, Cl. 260-405.500.

Nakamichi, Koya: See—  
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Nakamura, Hitoshi: See—  
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Nakanishi, Keiichi, to Nissan Motor Company, Limited. Diffuser of centrifugal compressor. 4,338,063, Cl. 415-164.000.

Nakayama, Shouji: See—  
Takanashi, Yukio; Nakayama, Shouji; and Higuchi, Toshiharu, 4,338,542, Cl. 313-446.000.

Nance-Kivell, Stanley. Apparatus for the storage and transfer of information. 4,338,601, Cl. 340-870.020.

Nancollas, George H.: See—  
Gill, Jasbir S.; and Nancollas, George H., 4,338,363, Cl. 427-387.000.

Narita, Hiroshi: See—  
Okamatsu, Shigetoshi; Tsuboi, Takashi; Ibamoto, Masahiko; and Narita, Hiroshi, 4,338,558, Cl. 318-802.000.

National Association of Theatre Owners, Inc.: See—  
Vlahos, Petro, 4,338,165, Cl. 204-7.000.

National Distillers & Chemical Corp.: See—  
Murib, Jawad H.; and Inskeep, John M., 4,338,290, Cl. 423-481.000.

National Research Development Corporation: See—  
Broadway, Alexander R. W.; Rawcliffe, Gordon H., deceased; and Rawcliffe, Caroline S., executrix, 4,338,534, Cl. 310-184.000.

Kompfner, Rudolf, 4,337,993, Cl. 350-96.190.

National Semiconductor Corporation: See—  
Connolly, Joseph J., Jr.; and Cecil, James B., 4,338,590, Cl. 340-347.0CC.

Nava, Pier L. Apparatus for molding reinforced resin products. 4,338,070, Cl. 425-112.000.

Nave, Rafi: See—  
Palmer, John F.; Ravenel, Bruce W.; and Nave, Rafi, 4,338,675, Cl. 364-748.000.

Naylor, Floyd E., to Phillips Petroleum Company. Catalyst compositions used for copolymerization of isomonocolefins with conjugated dienes. 4,338,219, Cl. 252-428.000.

Nazarian, Miron M.: See—  
Efimov, Vyacheslav T.; Nazarian, Miron M.; Axenko, Alexander A.; Kolyada, Vladimir A.; Maskaev, Anatoly X.; Shamsha, Ljudmila F.; and Kostjuk, Vladimir I., 4,338,178, Cl. 204-275.000.

Neal, Maynard J., to Buffalo Forge Company. Adjustable vortex pump. 4,338,062, Cl. 415-213.00A.

Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek: See—  
Heslinga, Adolf; and Greidanus, Pieter J., 4,338,417, Cl. 525-197.000.

Neill, Jimmie: See—  
Sellen, Kenneth R.; Neill, Jimmie; Banks, Eugene F.; and Barz, William, 4,338,610, Cl. 346-75.000.

Nelson, George L., to United States of America, Navy. Prostaglandin analogs and process of preparation thereof. 4,338,466, Cl. 568-343.000.

Nelson, William E.; and Lee, Gene D., to Texas Instruments Incorporated. Electrostatic printer having LED array write head. 4,338,615, Cl. 346-160.000.

Neser, Rudolf P., to Woelner-Werke. Fireproof material. 4,338,374, Cl. 428-411.000.

Ness, William A.: See—  
Flanders, Staunton O.; and Ness, William A., 4,337,893, Cl. 237-7.000.

Neujens, Georges J.: See—  
Stievenart, Emile F.; Plessers, Hendrik S.; Hellemans, Julianus J.; and Neujens, Georges J., 4,338,522, Cl. 250-468.000.

Newman, Daniel D., to Microwave Radiation Detector Corporation. Microwave leakage detector. 4,338,595, Cl. 340-600.000.

Newton, Alwin B. Solar heat collection and storage system. 4,337,757, Cl. 126-437.000.

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Worschech, Kurt; Wedl, Peter; Löffelholz, Frido; Wegemund, Bernd; and Ervied, Werner, 4,338,226, Cl. 524-302.000.

NGK Insulators, Ltd.: See—  
Matsuo, Junichi, 4,338,487, Cl. 174-143.000.

Nicholas, Merle E.: See—  
Motchenbacher, Curtus D.; and Nicholas, Merle E., 4,337,658, Cl. 73-335.000.

Nichols, Wayne C.: See—  
Stewart, John A.; and Nichols, Wayne C., 4,337,718, Cl. 116-34.00R.

Nicholson, James A. Wall storable table attachment top. 4,337,709, Cl. 108-33.000.

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Nicoloso, Dante: See—  
Pham Van, Doan; and Nicoloso, Dante, 4,338,500, Cl. 200-144.0AP.

Nieuwenhuizen, Wouter J.: See—  
Stenhuis, Derk; and Nieuwenhuizen, Wouter J., 4,338,493, Cl. 179-5.00R.

Nihon Medi-Physics Co., Ltd.: See—  
Yokoyama, Akira; and Arano, Yasushi, 4,338,248, Cl. 260-112.00R.

Nihon Nosan Kogyo Kabushiki Kaisha: See—  
Kamimae, Hiroshi; and Ishikawa, Tadashi, 4,338,304, Cl. 424-150.000.

Ning, Tak H.: See—  
Feth, George C.; Ning, Tak H.; Tang, Denny D.; Wiedmann, Siegfried K.; and Yu, Hwa N., 4,338,622, Cl. 357-92.000.

Nippon Dyeing Mfg. Co.: See—  
Fukuroi, Akio; and Sugimoto, Isao, 4,337,631, Cl. 68-189.000.

Nippon Electric Co., Ltd.: See—  
Akatsuka, Yasuo, 4,338,678, Cl. 365-174.000.

Fujita, Toshio; Matsumoto, Youichi; and Tagashira, Yoshimi, 4,338,574, Cl. 331-1.00A.

Yokoyama, Yasushi, 4,338,662, Cl. 364-200.000.

Nippon Kasei Chemical Co., Ltd.: See—  
Unuma, Kunio; Saito, Hiroyasu; Inomata, Jihei; and Takizawa, Saburo, 4,338,461, Cl. 562-507.000.

Nippon Kogaku K.K.: See—  
Matsui, Sei, 4,338,001, Cl. 350-455.000.

Nippon Kokan Kabushiki Kaisha: See—  
Shibayama, Hiroshi; Tanifuji, Shinya; Morooka, Yasuo; Nakai, Kozo; and Togashi, Nobuyuki, 4,338,077, Cl. 432-11.000.

Nippon Shinyaku Co., Ltd.: See—  
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Yagi, Masahiro; and Ojima, Nobutoshi, 4,338,433, Cl. 536-46.000.

Nippon Soken, Inc.: See—  
Mizuno, Junji; Fukami, Akira; Noguchi, Hiroki; and Ishii, Takeshi, 4,338,106, Cl. 55-316.000.

Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,337,643, Cl. 74-35.000.

Yoshino, Yasuhisa; Kuno, Akira; Shimizu, Hidetoshi; and Minegishi, Harumasa, 4,337,651, Cl. 73-129.000.

Nippon Steel Corporation: See—  
Ando, Kyoichi, 4,337,928, Cl. 266-197.000.

Shimoyama, Yoshiaki; Koga, Shigenobu; and Ohba, Katsuyuki, 4,338,143, Cl. 148-31.550.

Nippon Telegraph & Telephone Public Corporation: See—  
Edahiro, Takao; Kyoto, Michihisa; Tanaka, Gotaro; and Kuwahara, Toru, 4,338,111, Cl. 65-18.200.

Nippondenso Co., Ltd.: See—  
Hattori, Yoshiyuki; Matsui, Kazuma; and Kinbara, Hiroji, 4,338,081, Cl. 474-201.000.

Mizuno, Junji; Fukami, Akira; Noguchi, Hiroki; and Ishii, Takeshi, 4,338,106, Cl. 55-316.000.

Saito, Atsunori, 4,337,821, Cl. 165-12.000.

Nishida, Masamitsu: See—  
Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; and Ouchi, Hiromu, 4,338,403, Cl. 501-136.000.

Nishihara, Motohisa: See—  
Sato, Hideo; Kawakami, Kanji; and Nishihara, Motohisa, 4,337,665, Cl. 73-766.000.

Nishijima, Hideo: See—  
Fukushima, Isao; Nishijima, Hideo; Satoh, Kenji; and Teshima, Tunekiko, 4,338,554, Cl. 318-328.000.

Nishikawa, Masaji, to Olympus Optical Company Limited. Electrophotographic apparatus. 4,338,017, Cl. 355-3.0TR.

Nishimura, Ken-ichi: See—  
Kitao, Kazuhiko; and Nishimura, Ken-ichi, 4,338,306, Cl. 424-178.000.

Nishino, Hiroshi: See—  
Matsuda, Akira; Hayakawa, Yoshihiro; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,337,652, Cl. 73-146.500.

Nishio, Ken-ichi: See—  
Okamoto, Hideho; and Nishio, Ken-ichi, 4,338,132, Cl. 75-208.00R.

Nishizawa, Jun-ichi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Composite static induction transistor and integrated circuit utilizing same. 4,338,618, Cl. 357-43.000.

Nissan Chemical Industries, Ltd.: See—  
Murata, Atsuo; Tsuchiya, Syuji; and Suzuki, Hideo, 4,338,170, Cl. 204-158.00R.

Nissan Motor Company, Limited: See—  
Akimune, Yoshio; Ambe, Satoshi; Takao, Hiroshi; and Kimura, Shinji, 4,338,356, Cl. 427-123.000.

Aono, Shigeo; and Takase, Sadao, 4,338,665, Cl. 364-424.000.

Ikeda, Hideo; Terakawa, Masao; and Ishimaru, Junzo, 4,337,953, Cl. 277-152.000.

Kawamoto, Tamio, 4,337,673, Cl. 74-475.000.

Komatsu, Mikiya; Arita, Masashi; and Suzuki, Syunsuke, 4,337,817, Cl. 164-120.000.

Masaki, Kenji, 4,337,746, Cl. 123-489.000.

Muranaka, Shigeo; Onoda, Michio; and Sugihara, Kunihiro, 4,337,640, Cl. 73-35.000.

Nakanishi, Keiichi, 4,338,063, Cl. 415-164.000.

Sugawara, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, 4,337,740, Cl. 123-198.00F.

Sugihara, Kunihiro; Yoneda, Kenji; and Muranaka, Shigeo, 4,337,641, Cl. 73-35.000.

Suzuki, Tadashi; and Kishi, Norimasa, 4,338,666, Cl. 364-424.100.

Tamamushi, Masahiro; and Tsuchiya, Yoshimasa, 4,337,975, Cl. 296-215.000.

Yoshida, Kenichi, 4,337,642, Cl. 73-35.000.

Nissen, Roland N., to J. I. Case Company. Mounting mechanism for angle dozer blade. 4,337,837, Cl. 172-822.000.

Nitro Nobel AB: See—  
Granlund, Lars A., 4,338,146, Cl. 149-109.600.

Nittetsu Plant Designing Corporation: See—  
Ando, Kyoichi, 4,337,928, Cl. 266-197.000.

Nixdorf Computer AG: See—  
Volke, Hans-Werner, 4,338,585, Cl. 335-274.000.

Noelle, Calvin D. Recovery of oil from oil sands. 4,338,185, Cl. 208-11.0LE.

Noguchi, Hiroki: See—  
Mizuno, Junji; Fukami, Akira; Noguchi, Hiroki; and Ishii, Takeshi, 4,338,106, Cl. 55-316.000.

Noguchi, Kohji: See—  
Tanaka, Yasuyuki; Takeda, Junichi; and Noguchi, Kohji, 4,338,404, Cl. 521-52.000.

Nolte, Wilfried; Keller, Wilfried; and Esser, Heinz, to Bayer Aktiengesellschaft. Process for the production of polychloroprene latices rich in solid matter. 4,338,238, Cl. 524-706.000.

Noma Canada Ltd.: See—  
Drew, Douglas, 4,338,497, Cl. 191-12.400.

Noma, Tutomu: See—  
Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Naito, Nagayoshi; Tanaka, Chiaki; and Hiratsuka, Motoki, 4,337,946, Cl. 273-235.00R.

Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, 4,337,947, Cl. 273-235.00R.

Nomura, Yasushi, to Citizen Watch Co. Ltd. Electronic timepiece. 4,338,680, Cl. 368-29.000.

Nomura, Yoshitsa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fluid reservoir for brake master cylinders. 4,337,792, Cl. 137-558.000.

Nomura, Yoshiyuki: See—  
Katsube, Hideo; Gamo, Gotaro; Kinoshita, Mitsuo; Nomura, Yoshiyuki; and Okuda, Kanemasa, 4,338,505, Cl. 219-69.00M.

Noranda Mines Limited: See—  
Farge, Jean C.; and Fortin, Robert, 4,338,128, Cl. 75-123.0CB.

Stanley, Robert W.; Monette, Serge; and Kerfoot, Derek G. E., 4,338,168, Cl. 204-108.000.

Nordson Corporation: See—  
Kennon, James L.; Macartney, Lawrence J.; Crum, Gerald W.; Dunn, John C.; and Hastings, Donald R., 4,338,364, Cl. 427-424.000.

Norris, Theodore C. Adjustably orientable plant hanger. 4,337,916, Cl. 248-558.000.

Northern Telecom Systems Corporation: See—  
Sims, Dewey M., Jr., 4,337,908, Cl. 242-198.000.

Northrop Corporation: See—  
Lockett, James H., 4,338,052, Cl. 409-206.000.

Malm, Robert, 4,338,633, Cl. 358-213.000.

Norton Company: See—  
Dutcher, Richard E., 4,337,750, Cl. 125-15.000.

NRM Corporation: See—  
Singh, Anand P.; and Shichman, Daniel, 4,338,069, Cl. 425-38.000.

Numabe, Masashi: See—  
Kumasaka, Sadao; Tada, Satomi; Horikoshi, Shigeo; Tsuchiya, Tokio; and Numabe, Masashi, 4,338,271, Cl. 264-54.000.

Nyfel, Robert: See—  
Heeres, Jan; Backx, Leo; Hubele, Adolf; and Nyfeler, Robert, 4,338,327, Cl. 424-269.000.

Ochiai, Osamu: See—  
Motooka, Setsuzo; Karigane, Yukihiro; Yamazaki, Osamu; and Ochiai, Osamu, 4,338,282, Cl. 422-105.000.

O'Connor, Brendan F.: See—  
Tailleur, Andre; and O'Connor, Brendan F., 4,338,028, Cl. 356-240.000.

O'Dell, Leonard J., to Allis-Chalmers Corporation. Bearing for filter bag support arrangement. 4,338,105, Cl. 55-304.000.

Oeckl, Siegfried: See—  
Schallner, Otto; Oeckl, Siegfried; and Schundehutte, Karl H., 4,338,262, Cl. 260-544.00S.

Oertel, Heinrich: See—  
Rapp, Egon; and Oertel, Heinrich, 4,338,681, Cl. 368-72.000.

Ofer, Heinrich: See—  
Pichler, Herwig; Helletsberger, Harald; Geissler, Ernst; Ofer, Heinrich; and Fugenschuh, Bernhard, 4,338,357, Cl. 427-195.000.

Off, Joseph W. A.; and Early, Judson H., to Haggag Company. Apparatus for implanting pockets. 4,337,881, Cl. 223-1.000.

Ogasawara, Takahisa: See—  
Mizutani, Kiyokazu; and Ogasawara, Takahisa, 4,338,240, Cl. 524-284.000.

Ogawa, Hiroshi: See—  
Furukawa, Shunsuke; Ogawa, Hiroshi; Okada, Hitoshi; and Yamamoto, Masanobu, 4,338,683, Cl. 369-50.000.

Ogino, Toshio: See—  
Ito, Susumu; and Ogino, Toshio, 4,338,503, Cl. 219-10.770.

Ogura, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Device for disposing of garbage. 4,337,901, Cl. 241-46.00B.

Ohba, Katsuyuki: See—  
Shimoyama, Yoshiaki; Koga, Shigenobu; and Ohba, Katsuyuki, 4,338,143, Cl. 148-31.550.

Ohba, Toshihiro; Yasuda, Shuhei; and Kanatani, Yoshiharu, to Sharp Kabushiki Kaisha. Thin-film EL image display panel with power saving features. 4,338,598, Cl. 340-713.000.

Ohlson, John L.: See—  
Gaudette, Roger R.; Ohlson, John L.; and Scanlon, Patricia M., 4,338,460, Cl. 562-448.000.



- Ohta, Nono; Ishida, Fumihiko; Ikeda, Tadashi; Ando, Keikichi; and Sugita, Yutaka, to Hitachi, Ltd. Garnet film for magnetic bubble device. 4,338,372, Cl. 428-336.000.
- Ohta, Tokuya: See—  
Eida, Tsuyoshi; Matsufuji, Yohji; Yano, Yasuhiro; Ohta, Tokuya; and Haruta, Masahiro, 4,338,611, Cl. 346-75.000.
- Ohta, Yoshimoto, to Tokico Ltd. Hydraulic force multiplying device. 4,337,686, Cl. 91-49.000.
- Ohya, Yoichi; and Shimizu, Tadayoshi, to Sumitomo Metal Mining Company, Ltd. Divalent silver oxide cell containing cadmium and tellurium components. 4,338,385, Cl. 429-206.000.
- Ojima, Nobutoshi: See—  
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Yagi, Masahiro; and Ojima, Nobutoshi, 4,338,433, Cl. 536-46.000.
- Okada, Hitoshi: See—  
Furukawa, Shunsuke; Ogawa, Hiroshi; Okada, Hitoshi; and Yamamoto, Masanobu, 4,338,683, Cl. 369-50.000.
- Okada, Yoshinori: See—  
Mohri, Katsuo; and Okada, Yoshinori, 4,338,645, Cl. 360-137.000.
- Okamatsu, Shigetoshi; Tsuboi, Takashi; Ibamoto, Masahiko; and Narita, Hiroshi, to Hitachi, Ltd. Induction motor control system and method. 4,338,558, Cl. 318-802.000.
- Okamoto, Hideho; and Nishio, Ken-ichi, to Sumitomo Chemical Company, Limited. Process for fabricating fiber-reinforced metal composite. 4,338,132, Cl. 75-208.00R.
- Okano, Kazumi: See—  
Suzuki, Kiyoshi; and Okano, Kazumi, 4,338,389, Cl. 430-94.000.
- O'Keefe, David B.: See—  
Steiner, Gordon L.; O'Keefe, David B.; and Miller, Robert C., 4,338,597, Cl. 340-706.000.
- Okuda, Kanemasa: See—  
Katsube, Hideo; Gamo, Gotaro; Kinoshita, Mitsuo; Nomura, Yoshiyuki; and Okuda, Kanemasa, 4,338,505, Cl. 219-69.00M.
- Okuda, Naoki; and Tanaka, Kazuo, to Kobe Steel, Limited. Melting flux composition for submerged arc welding. 4,338,142, Cl. 148-26.000.
- Olin Corporation: See—  
Chandalia, Kiran B.; and Barnowski, Henry G., 4,338,407, Cl. 521-99.000.
- Milford, Alan H.; and Proulx, Oliver J., 4,338,072, Cl. 425-371.000.
- Olson, Raymond G., to Baxter Travenol Laboratories, Inc. Pressure infusion module. 4,337,769, Cl. 128-214.00F.
- Olszewski, Daniel P.: See—  
Gell, Harold A.; and Olszewski, Daniel P., 4,337,591, Cl. 43-42.090.
- Olympus Optical Co., Ltd.: See—  
Fujibayashi, Kenji, 4,338,529, Cl. 307-518.000.
- Fujibayashi, Kenji, 4,338,639, Cl. 360-66.000.
- Nishikawa, Masaji, 4,338,017, Cl. 355-3.0TR.
- Orimo, Ryoichi; Sakurada, Masahiko; Banno, Taiichi; Manabe, Sugio; and Galle, Kevin, 4,338,279, Cl. 422-64.000.
- Orita, Shunichi, 4,338,638, Cl. 360-60.000.
- Omron Tateisi Electronics, Inc.: See—  
Akira, Abe; Kimura, Shoji; and Yoshinori, Miyawaki, 4,337,778, Cl. 128-680.000.
- Omura, Katsumi: See—  
Kyo, Sunao; Omura, Katsumi; and Hino, Ken-ichi, 4,338,478, Cl. 585-606.000.
- Oneida General Corp.: See—  
Rich, Brett, 4,337,914, Cl. 246-428.000.
- Onoda, Michio: See—  
Murakami, Shigeo; Onoda, Michio; and Sugihara, Kunihiko, 4,337,640, Cl. 73-35.000.
- Onomichi Kumika K.K.: See—  
Ito, Hideo; Ueda, Issei; Morinibu, Yasuo; and Takeyasu, Michitomo, 4,338,241, Cl. 523-200.000.
- Ootsuka, Yoshinori: See—  
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,337,643, Cl. 74-35.000.
- Op Het Veld, Sebastianus J.: See—  
Asmus, Jean-Pierre; Soto, Joseph; and Op Het Veld, Sebastianus J., 4,338,623, Cl. 358-22.000.
- Oprandis, Pierre; and Romeas, Rene, to Thomson-CSF. Process and apparatus for coding binary signals for numbering images or pictures stored on a recording medium for stop mode reproduction. 4,338,629, Cl. 358-128.500.
- Orimo, Ryoichi; Sakurada, Masahiko; Banno, Taiichi; Manabe, Sugio; and Galle, Kevin, to Olympus Optical Company Limited. Automatic analyzing apparatus. 4,338,279, Cl. 422-64.000.
- Orita, Shunichi, to Olympus Optical Co., Ltd. Tape recorder. 4,338,638, Cl. 360-60.000.
- Osaki, Yasunori: See—  
Ikeguchi, Nobuyuki; and Osaki, Yasunori, 4,338,373, Cl. 428-383.000.
- Ota, Yoshihiko, to Victor Company of Japan, Ltd. Video signal, speed-change reproducing system. 4,338,631, Cl. 358-127.000.
- Otis Elevator Company: See—  
Kritzer, Steven, 4,338,376, Cl. 428-417.000.
- Wierschke, Gilbert W., 4,338,650, Cl. 361-139.000.
- O'Toole, James E., to Mostek Corporation. Row driver circuit for semiconductor memory. 4,338,679, Cl. 365-203.000.
- Otsuka Chemical Co., Ltd.: See—  
Manabe, Isao; and Inubushi, Akiyoshi, 4,338,209, Cl. 252-75.000.
- Otsuka, Katsuyuki; and Miyo, Hiroaki, to Doryokuro Kakunenryo Kahatsu Jigyodan. Device for removing radioactive particles in moist gas. 4,338,102, Cl. 55-185.000.
- Ouchi, Hiromu: See—  
Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; and Ouchi, Hiromu, 4,338,403, Cl. 501-136.000.
- Ouchi, Koji: See—  
Tada, Masahiro; Ishigaki, Yoshio; Ouchi, Koji; and Nakamichi, Koya, 4,338,606, Cl. 343-744.000.
- Overman, Paulus T. J.; and Slat, Henricus J., to Veg-Gasinstituut N.V. Electric control device for a central heating boiler. 4,337,891, Cl. 236-9.00A.
- Owens-Corning Fiberglas Corporation: See—  
Babbitt, William M., 4,338,110, Cl. 65-1.000.
- Bhattacharyya, Rabindra K.; and Belt, James S., 4,337,666, Cl. 73-818.000.
- Hohman, Charles M.; and Propster, Mark A., 4,338,113, Cl. 65-27.000.
- Lin, Kingso C., 4,338,361, Cl. 427-299.000.
- Marzocchi, Alfred; Bolen, Charles E.; Harrington, Edward R.; and Roberts, Michael G., 4,338,231, Cl. 523-214.000.
- Propster, Mark A., 4,338,112, Cl. 65-27.000.
- Owens-Illinois, Inc.: See—  
Farkas, Daniel S., 4,338,115, Cl. 65-29.000.
- Guinle, David P., 4,337,869, Cl. 215-201.000.
- Huff, Norman T.; Shetterly, Donovan M.; and Kalisher, Lawrence I., 4,338,116, Cl. 65-29.000.
- Miller, Peter S.; and Myers, Jack H., 4,337,904, Cl. 242-75.530.
- Mumford, George V., 4,337,678, Cl. 81-3.400.
- Oxley, Jerry L. Pressure release device for a transmission brake. 4,337,854, Cl. 192-13.00R.
- Oyama, Shigeaki: See—  
Kohzai, Yoshinori; Oyama, Shigeaki; and Katsuzawa, Yukio, 4,338,535, Cl. 310-186.000.
- Ozaki, Juro: See—  
Takahashi, Akio; Tsumuki, Chiaki; Nakamura, Hitoshi; and Ozaki, Juro, 4,337,572, Cl. 29-792.000.
- Ozawa, Toshiaki: See—  
Kondo, Hiroatsu; Ozawa, Toshiaki; and Yamada, Yasuaki, 4,338,035, Cl. 400-144.200.
- Ozeki, Jiro, to Slidex Corporation. Overhead projector. 4,338,006, Cl. 353-85.000.
- Ozer, Theodore; Yankovoy, Alexander; and Imbessi, James, to Boeing Company, The. Method and tool for generating holes in composite materials. 4,338,050, Cl. 408-1.00R.
- Paaren, Herbert E.: See—  
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,338,250, Cl. 260-397.200.
- Pacific Controls Incorporated: See—  
Gray, Samuel A., 4,338,504, Cl. 219-69.00M.
- Paget, Charles J.; Chamberlin, James W.; and Wikel, James H., to Eli Lilly and Company. Antiviral method employing thiazinyl benzimidazole derivatives. 4,338,315, Cl. 424-246.000.
- Paget, Charles J.; Chamberlin, James W., both of; and Wikel, James H., to Eli Lilly and Company. Antiviral method employing 1-sulfonylbenzimidazoles. 4,338,329, Cl. 424-270.000.
- Pai, Damodar M.: See—  
Limburg, William W.; Pai, Damodar M.; and Pearson, James M., 4,338,222, Cl. 252-500.000.
- Palacino, Giovanni; Garzulano, Gianfranco; and Garagiola, Adelmo. Invisible stitch hemming for tubular material. 4,337,713, Cl. 112-153.000.
- Pallos, Ferenc M., to Stauffer Chemical Company. Halo-substituted thionoacyl ketone herbicidal antidotes. 4,338,120, Cl. 71-98.000.
- Palmer, John F.; Ravenel, Bruce W.; and Nave, Rafi, to Intel Corporation. Numeric data processor. 4,338,675, Cl. 364-748.000.
- Panduit Corp.: See—  
Caveney, Jack E., 4,337,934, Cl. 269-77.000.
- Panelgraphic Corporation: See—  
Russell, Raymond J., 4,338,269, Cl. 264-22.000.
- Panzer, Carlino: See—  
Erickson, Arnold R.; Panzer, Carlino; and Tolokan, Robert P., 4,338,380, Cl. 428-594.000.
- Papazios, Christos: See—  
Shaw, Wilfrid G.; and Papazios, Christos, 4,338,463, Cl. 562-599.000.
- Park, Rodney W. Squeezing device. 4,337,879, Cl. 222-102.000.
- Parker, Norman W.; and Hilbert, Francis H., to Motorola Inc. Compatible AM stereophonic system. 4,338,491, Cl. 179-1.0GS.
- Parkyn, William A., Jr.: See—  
Popovich, John M.; Parkyn, William A., Jr.; and Pelka, David G., 4,337,759, Cl. 126-438.000.
- Parris, Joe P., to Cameron Iron Works, Inc. Valve. 4,337,920, Cl. 251-357.000.
- Partington, Everett J. Rotary planer. 4,337,811, Cl. 145-4.200.
- Pate, John R. Skateboard holder. 4,337,883, Cl. 224-250.000.
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- Roeder, Robert J., to Kimberly-Clark Corporation. Adhesive backed sanitary napkin, 4,337,772, Cl. 128-290.00R.
- Roeder, Robert S.; Day, W. Baldwin; Hunt, Harold W.; and Wilt, Robert E., to Sperry Corporation. Semi-active guidance system, 4,338,602, Cl. 343-10.000.
- Rogers, Frank A. Structural member, 4,338,381, Cl. 428-575.000.
- Rogers, Walter C., Jr.; and Hoffman, David S., to Royal Development Company, Inc. Three-way handle-operated wall-avoiding recliner chair, 4,337,977, Cl. 297-85.000.
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- Rohrbach Corporation: See—  
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- Rolland, Burton A., to Hurco Manufacturing Company, Inc. Parallel positioning device, 4,337,637, Cl. 72-461.000.
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- Rosan, Alan M.: See—  
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- Rose, John; and Pearson, James S. Bridges for providing access from a water-borne craft to the shore, 4,337,545, Cl. 14-71.100.
- Rosenberg, Harry; and Small, LaVerne D., to University of Nebraska. The Board of Regents of the. Esters of 6'-hydroxycinchonine, and a method of treating arrhythmia with them, 4,338,320, Cl. 424-259.000.
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- Rossville Yarn Processing Company: See—  
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- Rotaque (Proprietary) Limited: See—  
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- S & C Electric Company: See—  
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- SAB Industri AB: See—  
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- Saito, Aisunori, to Nippondenso Co., Ltd. Air conditioner system for automobiles, 4,337,821, Cl. 165-12.000.
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- Saito, Hisao: See—  
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- Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Naito, Nagayoshi; Tanaka, Chiaki; and Hiratsuka, Motoki, to Toray Industries, Inc.; and



- Bridgestone Tire Company Limited. Golf ball. 4,337,946, Cl. 273-225.000.
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- Sakai, Kiyoshi; Hashimoto, Mitsuru; and Kawakami, Tomiko, to Ricoh Company, Limited. Electrophotographic element with a phenylhydrazine charge transport layer. 4,338,388, Cl. 430-59.000.
- Sakamoto, Koya; Yoneda, Yutaka; Fujiwara, Naoki; and Takamoto, Shigehito, to Babcock Hitachi Kabushiki Kaisha. Fluidized bed combustor. 4,338,283, Cl. 422-112.000.
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- Sanderson, John R.; Binsack, Rudolf; Fahner, Friedrich; and Lindner, Christian, to Bayer Aktiengesellschaft. High-impact polyamide moulding compositions. 4,338,406, Cl. 525-66.000.
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- Sane, Jayant N.: See—  
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- San Jose-Alcalde, Juan L., to Hylsa, S.A. Method and apparatus for the reduction of metal ores. 4,338,123, Cl. 75-34.000.
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- Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, to Eisai Co., Ltd.; and Agency of Industrial Science and Technology. Two-functional-group-containing terpenoids, processes for the preparation of the same, and anti-ulcer agents containing the same. 4,338,251, Cl. 260-405.500.
- Sato, Hideaki; Kitamura, Takashi; Masegi, Koichi; and Hoshito, Kazuo, to Canon Kabushiki Kaisha. Semiconductor laser apparatus. 4,338,577, Cl. 372-36.000.
- Sato, Hideo; Kawakami, Kanji; and Nishihara, Motohisa, to Hitachi, Ltd. Semiconductor pressure detector apparatus with zero-point temperature compensation. 4,337,665, Cl. 73-766.000.
- Sato, Hidetaka; Uchimura, Shunichiro; Suzuki, Hiroshi; and Makino, Daisuke, to Hitachi Chemical Company, Ltd. Intermediate, copolymer resin and production thereof. 4,338,426, Cl. 528-26.000.
- Sato, Hiroshi, to Daiichi Electric Co., Ltd. Magnetic tape device. 4,338,641, Cl. 360-90.000.
- Sato, Shiro; and Sagisaka, Kiyoji, to Sumitomo Light Metal Industries, Ltd. Method using copper-copper-alloy tube for water supply. 4,337,785, Cl. 137-1.000.
- Sato, Shiro; and Sagisaka, Kiyoji, to Sumitomo Light Metal Industries, Ltd. Copper-alloy tube water supply. 4,337,793, Cl. 137-561.00R.
- Sato, Yoshinari, to Fujisawa Pharmaceutical Co., Ltd. 1,4-Dihydropyridine derivatives, pharmaceutical compositions containing same and methods of effecting vasodilation using same. 4,338,322, Cl. 424-266.000.
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- Saxton, Ronald L., to Du Pont de Nemours, E. I., and Company. Process for continuous controlled alcoholysis of polyvinyl acetate. 4,338,405, Cl. 525-62.000.
- Sazaki, Kounin, to Ryobi, Ltd. Bail latching and releasing mechanism for spinning reel of outside spool type. 4,337,905, Cl. 242-84.20G.
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- Seaberg, David H., to J. I. Case Company. Bulldozer linkage. 4,337,836, Cl. 172-826.000.
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- Severinsson, Lars M., to SAB Industri AB. Fluid pressure actuated brake unit. 4,337,690, Cl. 92-129.000.
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- Shaffer, Peter T. B.; Roy, Rustum; and Macmillan, Norman H., to Kennecott Corporation. Conversion of radioactive wastes to stable form for disposal. 4,338,215, Cl. 252-628.000.
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- Shaw, R. Howard; and Morehouse, Charles C., to General Electric Company. Modular radiation detector array and module. 4,338,521, Cl. 250-366.000.
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- Sherman, Michael I.: See—  
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- Shimano Industrial Company Limited: See—  
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- Silverman, Harold: See—  
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- Simpson, James E.: See—  
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- Slysh, Paul, to General Dynamics, Convair Division. Method for assembling large space structures. 4,337,560, Cl. 29-155.00R.
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- Smink, Dirk A.: See—  
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- Smith, David G.: See—  
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- Smith International Inc.: See—  
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- Smith, Jackson A. Fibre optical cable pulling eye. 4,337,923, Cl. 254-134.3FT.
- Smith, Stephen E., to Airco, Inc. Methods for controlling vapor concentrations in an atmosphere. 4,337,582, Cl. 34-27.000.
- Smith, Trevor S., to Lucas Industries Limited. Fuel control system for a gas turbine engine. 4,337,617, Cl. 60-39.28R.
- Smith, Wesley F.: See—  
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- SmithKline & French Laboratories Limited: See—  
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- Snopko, Paul A., to Zenith Radio Corporation. Television receiver with two-way telephone conversation capability. 4,338,492, Cl. 179-2.0TV.
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- Societe Anonyme de Telecommunications: See—  
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- Societe Anonyme d'Etudes de Recherches et de Productions d'Agents Chimiques ERPAC: See—  
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- Societe d'Exploitation de Brevets J.B.: See—  
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- Sone, Yoshiaki: See—  
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- Soong, Tsai C. Javelin. 4,337,940, Cl. 272-106.000.
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- Sovilla, Heinz. Incandescent lamp. 4,338,540, Cl. 313-220.000.
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- Spain, Stanley R., to Kidde, Inc. Curane boom pivot structure. 4,337,867, Cl. 212-181.000.
- Spangler, Ray P.; and Spector, George. Vehicle powered by air pressure engine. 4,337,842, Cl. 180-302.000.
- Spaulding, Richard A.: See—  
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- Spensley, Robert H.: See—  
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- Speranza, George P.: See—  
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- Sperry Corporation: See—  
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- Spiewak, John W.: See—  
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- Spin Physics, Inc.: See—  
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- Spinazzi, Angelo, to Rollwash Italiana S.p.A. Device for elimination of foam. 4,338,218, Cl. 252-361.000.
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- Spohr, Reimar, to Gesellschaft fur Schwerionenforschung GmbH. Method for producing planar surfaces having very fine peaks in the micron range. 4,338,164, Cl. 204-4.000.
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- Stagg, Karl. Apparatus for determining end-play in a torque converter. 4,337,649, Cl. 73-118.000.
- Stahler, Alfred F. Apparatus for guiding tape. 4,337,885, Cl. 226-97.000.
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- Stanley, Robert W.; Monette, Serge; and Kerfoot, Derek G. E., to Noranda Mines Limited. Hydrometallurgical treatment of copper-bearing hematite residue. 4,338,168, Cl. 204-108.000.
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- Stapleton, John J., to International Telephone and Telegraph Corporation. LED/CCD Multiplexer and infrared image converter. 4,338,627, Cl. 358-113.000.
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- Staten, Gilbert S.: See—  
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- Stauffer Chemical Company: See—  
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- Steer, Adrian M.: See—  
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- Steilen, Ronald M., to Deere & Company. Scraper for double disk furrow opener. 4,337,835, Cl. 172-560.000.
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- Sterling Drug Inc.: See—  
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- Thompson, Joseph, 4,337,876, Cl. 221-36.000.
- Sterling Faucet Company: See—  
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- Stevanovich, Srbo M.: See—  
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- Stevenson, Richard B.: See—  
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- Steward Plastics, Inc.: See—  
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- Stewart, Gilbert. Cue ball shooting guide. 4,337,943, Cl. 273-2.000.
- Stewart, James M. Heat pipe manifold heat exchanger. 4,337,825, Cl. 165-104.210.
- Stewart, John A.; and Nichols, Wayne C., to General Motors Corporation. Low tire pressure transducer. 4,337,718, Cl. 116-34.00R.
- Stewart, Peter A. E., to Rolls Royce Limited. Method of and apparatus for analyzing gas flows inside hollow bodies. 4,338,520, Cl. 250-356.000.
- Stewart, Robert M. Trolleys. 4,337,960, Cl. 280-47.37R.
- Stievenart, Emile F.; Plessers, Hendrik S.; Hellemans, Julianus J.; and Neijens, Georges J., to Agfa-Gevaert N.V. Device for unloading radiographic cassettes in daylight. 4,338,522, Cl. 250-468.000.
- Stiros, Paul, to Procter & Gamble Company. The. Liquid surfactant skin cleanser with lather boosters. 4,338,211, Cl. 252-142.000.
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- Stone & Webster Engineering Corporation: See—  
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- Storandt, Ralf: See—  
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- Strauch, Richard G.; and Hogg, David C., to United States of America, Commerce. Triple-beam offset paraboloidal antenna. 4,338,608, Cl. 343-779.000.
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- Strecker, Richard A., to United States of America, Army. Preparation of 1,5-methylene-3,7-dinitro-1,3,5,7-tetraazacyclooctane. 4,338,442, Cl. 544-215.000.
- Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., to Digital Equipment Corporation. Calling instructions for a data processing system. 4,338,663, Cl. 364-200.000.
- Streiff, Mathias; and Schnyder, Peter, to Mathias Streiff AG. Apparatus for laying and securing heavy electrical cables. 4,337,922, Cl. 254-134.3FT.
- Strickman, Melvyn B.: See—  
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- Strobl, Heinrich: See—  
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- Strolle, Clifford H.; and Thornley, Glenn D., to Du Pont de Nemours, E. I., and Company. High-solids thermosetting enamel coating composition. 4,338,379, Cl. 428-520.000.
- Struckmeyer, Ernest F. Sliding window construction having pivotal characteristic to facilitate cleaning both sides of the window. 4,337,597, Cl. 49-256.000.
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- Stuckey, James P.: See—  
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- Sublett, Bobby J.: See—  
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- Sugerman, Gerald; and Monte, Salvatore J., to Kenrich Petrochemicals, Inc. Pyrophosphato titanate adducts. 4,338,220, Cl. 252-430.000.
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- Sugihara, Kunihiko: See—  
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- Sugimoto, Isao: See—  
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- Sukhman, Yefim. Multicolor pulsed coherent-light source. 4,338,578, Cl. 372-23.000.
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- Sullivan, John; and Lillibridge, Harold R., to Champion International Corporation. Apparatus for manufacturing envelopes. 4,338,085, Cl. 493-254.000.
- Sulzbach, Reinhard A.; and Hartwimmer, Robert, to Hoechst Aktiengesellschaft. Process for the preparation of aqueous, colloidal dispersions of copolymers of the tetrafluoroethylene/ethylene type. 4,338,237, Cl. 524-777.000.
- Sulzer Brothers Limited: See—  
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- Sumitomo Chemical Company, Limited: See—  
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Takano, Tetsuo; Suzuki, Gohu; Ishino, Masaru; and Ikimi, Kiyoshi, 4,338,467, Cl. 568-428.000.  
Terashima, Shiro; Tanno, Norihiko; and Koga, Kenji, 4,338,255, Cl. 260-448.0AD.
- Ueno, Katsuji; and Maruyama, Takashi, 4,338,410, Cl. 525-132.000.



- Sumitomo Electric Industries, Ltd.: See—  
Edahiro, Takao; Kyoto, Michihisa; Tanaka, Gotaro; and Kuwahara, Toru, 4,338,111, Cl. 65-18.200.
- Sumitomo Light Metal Industries, Ltd.: See—  
Sato, Shiro; and Sagisaka, Kiyoji, 4,337,785, Cl. 137-1.000.  
Sato, Shiro; and Sagisaka, Kiyoji, 4,337,793, Cl. 137-561.00R.
- Sumitomo Metal Mining Company, Ltd.: See—  
Ohya, Yoichi; and Shimizu, Tadayoshi, 4,338,385, Cl. 429-206.000.
- Sun Gas Company: See—  
Zupanick, Joseph E., 4,337,668, Cl. 73-861.610.
- Sundstrand Corporation: See—  
Harja, Arne M., 4,337,909, Cl. 242-199.000.
- Sundstrom, Inge B.; and Cairenius, Per R. W. Valve provided with a measuring instrument and intended for a moving medium, 4,337,655, Cl. 73-193.00R.
- Suntech, Inc.: See—  
Lyons, James E.; and Hosler, Peter, 4,338,469, Cl. 568-666.000.  
Reif, Henry E.; and Schwedock, Jeffrey P., 4,338,186, Cl. 208-89.000.
- Suppelsa, Anthony B.: See—  
Geller, Gary R.; Suppelsa, Anthony B.; and Martin, William J., 4,338,506, Cl. 219-121.0LJ.
- Suter, Andrew K., to Wiggins Teape Group Limited, The. Flexible vertical form, fill, seal packaging material and method of using, 4,337,862, Cl. 206-632.000.
- Suter, Charles A., to Goodyear Aerospace Corporation. Chemically resistant coated fabric, 4,338,370, Cl. 428-250.000.
- Sutter, Franz: See—  
Straumann, Fritz; and Sutter, Franz, 4,338,076, Cl. 431-351.000.
- Suzukamo, Gohu: See—  
Takano, Tetsuo; Suzukamo, Gohu; Ishino, Masaru; and Ikimi, Kiyoshi, 4,338,467, Cl. 568-428.000.
- Suzuki, Hajime; Umemura, Yoshifumi; and Ueda, Shozo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Device for shedding warp yarns in a weaving loom, 4,337,801, Cl. 139-57.000.
- Suzuki, Hideo: See—  
Murata, Atsuo; Tsuchiya, Syuji; and Suzuki, Hideo, 4,338,170, Cl. 204-158.00R.
- Suzuki, Hiroshi: See—  
Sato, Hidetaka; Uchimura, Shunichiro; Suzuki, Hiroshi; and Makino, Daisuke, 4,338,426, Cl. 528-26.000.
- Suzuki, Kiyoshi; and Okano, Kazumi, to Canon Kabushiki Kaisha. CDS-Binder member for electrophotography with Fe, Co, Ni additives, 4,338,389, Cl. 430-94.000.
- Suzuki, Mitsuyuki: See—  
Yamanaka, Minoru; Haneda, Hideo; Kato, Masatoshi; and Suzuki, Mitsuyuki, 4,337,794, Cl. 137-596.170.
- Suzuki, Syunsuke: See—  
Komatsu, Mikiya; Arita, Masashi; and Suzuki, Syunsuke, 4,337,817, Cl. 164-120.000.
- Suzuki, Tadashi; and Kishi, Norimasa, to Nissan Motor Co., Ltd. Speed change control device for automatic transmission, 4,338,666, Cl. 364-424.100.
- Suzuki, Takashi: See—  
Matsumura, Susumu; Suzuki, Takashi; Matsumoto, Kazuya; and Momiyama, Kikuo, 4,338,012, Cl. 354-200.000.
- Suzuki, Tetsuo, to Kabushiki Kaisha Seisan Nipponsha Hamamatsu-Ko. Artificial insemination instrument for livestock, 4,338,402, Cl. 435-287.000.
- Suzuki, Yasuo: See—  
Koide, Tsuyoshi; and Suzuki, Yasuo, 4,337,599, Cl. 51-289.00R.  
Swaby, Harold, to British Steel Corporation. Bundling of metal stock, 4,338,060, Cl. 414-748.000.
- Swallow, Brian R., to Union Carbide Corporation. Wash system gas separation, 4,338,107, Cl. 62-17.000.
- Swanson, William C.: See—  
Bettin, Leonard A.; and Swanson, William C., 4,337,959, Cl. 280-43.230.
- Swiss Aluminium Ltd.: See—  
Bornand, Jean D., 4,338,124, Cl. 75-68.00R.
- Symes, Kenneth C.: See—  
Lawson, Christopher J.; and Symes, Kenneth C., 4,338,432, Cl. 536-123.000.
- Syntex (U.S.A.) Inc.: See—  
Korb, Donald R.; and Gallop, Paul M., 4,338,419, Cl. 525-350.000.
- Szabo, Josef: See—  
Bartuska, Miloslav; Zverina, Karel; Szabo, Josef; Pospisil, Borivoj; and Kroupa, Petr, 4,338,509, Cl. 219-121.0PR.
- T and N Materials Research Limited: See—  
Atkinson, Alan W.; and Steer, Adrian M., 4,337,863, Cl. 209-12.000.
- Tada, Masahiro; Ishigaki, Yoshio; Ouchi, Koji; and Nakamichi, Koya, to Sony Corporation. Antenna system with variable directivity, 4,338,606, Cl. 343-744.000.
- Tada, Satomi: See—  
Kumasaka, Sadao; Tada, Satomi; Horikoshi, Shigeo; Tsuchiya, Tokio; and Numabe, Masashi, 4,338,271, Cl. 264-54.000.
- Tadokoro, Eiichi, to Fuji Photo Film Co., Ltd. Magnetic recording disc and method of making same, 4,338,643, Cl. 360-135.000.
- Tagashira, Yoshimi: See—  
Fujita, Toshio; Matsumoto, Youichi; and Tagashira, Yoshimi, 4,338,574, Cl. 331-1.00A.
- Tailleux, Andre; and O'Connor, Brendan F., to Udaras Na Gaeltachta; and Societe Generale pour l'Emballage. Apparatus for inspecting translucent articles for faults, 4,338,028, Cl. 356-240.000.
- Taisei Kohki Co., Ltd.: See—  
Yasujima, Nobuo; Itokawa, Natsuo; and Kobayashi, Seiichi, 4,338,145, Cl. 148-133.000.
- Taiyo Seisakusho Manufacturing Co. Ltd.: See—  
Iwase, Shigeo, 4,337,552, Cl. 17-71.000.
- Takada, Shinzo, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic flowmeter, 4,337,667, Cl. 73-861.280.
- Takagi, Izumi: See—  
Witt, Jerry A.; and Takagi, Izumi, 4,337,958, Cl. 280-16.000.
- Takahara, Yoshimasa: See—  
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouji, 4,338,251, Cl. 260-405.500.
- Takahashi, Akio; Tsumuki, Chiaki; Nakamura, Hitoshi; and Ozaki, Juro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for manufacture of assembled cam shaft, 4,337,572, Cl. 29-792.000.
- Takahashi, Masashi: See—  
Senzaki, Takashi; Murakami, Ryoichi; Yasuhara, Kiyotada; and Takahashi, Masashi, 4,338,141, Cl. 148-6.15Z.
- Takahashi, Minoru; and Mitsui, Sadao, to TDK Electronics Co., Ltd. Ultrasonic atomizer unit utilizing shielded and grounded elements, 4,338,576, Cl. 331-67.000.
- Takahashi, Norimichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Focusing screen mounting device, 4,338,010, Cl. 354-152.000.
- Takahasi, Hideki: See—  
Kazaoka, Kenichi; Hirao, Koji; and Takahasi, Hideki, 4,337,978, Cl. 297-367.000.
- Takamoto, Shigehito: See—  
Sakamoto, Koya; Yoneda, Yutaka; Fujiwara, Naoki; and Takamoto, Shigehito, 4,338,283, Cl. 422-112.000.
- Takanashi, Yukio; Nakayama, Shouji; and Higuchi, Toshiharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Directly heated cathode assembly, 4,338,542, Cl. 313-446.000.
- Takano, Tetsuo; Suzukamo, Gohu; Ishino, Masaru; and Ikimi, Kiyoshi, to Sumitomo Chemical Company, Limited. Process for preparing acrylaldehyde, 4,338,467, Cl. 568-428.000.
- Takao, Hiroshi: See—  
Akimune, Yoshio; Ambe, Satoshi; Takao, Hiroshi; and Kimura, Shinji, 4,338,356, Cl. 427-123.000.
- Takase, Sadao: See—  
Aono, Shigeo; and Takase, Sadao, 4,338,665, Cl. 364-424.000.
- Takeda Chemical Industries, Ltd.: See—  
Fujinami, Kimiya; Minato, Ichiro; and Shibata, Koichi, 4,338,256, Cl. 260-453.00A.
- Takeda, Junichi: See—  
Tanaka, Yasuyuki; Takeda, Junichi; and Noguchi, Kohji, 4,338,404, Cl. 521-52.000.
- Takeda, Masashi: See—  
Miyake, Masayuki; Sekino, Takeo; Takeda, Masashi; and Baba, Yasuharu, 4,338,619, Cl. 357-46.000.
- Takenaka, Hiroyuki: See—  
Hirakawa, Tadashi; Sasashige, Hiroaki; Takenaka, Hiroyuki; and Katayama, Keiichi, 4,337,884, Cl. 226-52.000.
- Takeyasu, Michitomo: See—  
Ito, Hideo; Ueda, Issei; Morinibu, Yasuo; and Takeyasu, Michitomo, 4,338,241, Cl. 523-200.000.
- Takizawa, Saburo: See—  
Unuma, Kunio; Saito, Hiroyasu; Inomata, Jihei; and Takizawa, Saburo, 4,338,461, Cl. 562-507.000.
- Talmdage, Karen: See—  
Gilbert, Walter; and Talmdage, Karen, 4,338,397, Cl. 435-68.000.
- Talon, Inc.: See—  
Moertel, George B., 4,337,889, Cl. 229-62.000.
- Talres Development (N.A.) N.V.: See—  
Lawson, Christopher J.; and Symes, Kenneth C., 4,338,432, Cl. 536-123.000.
- Tamamushi, Masahiro; and Tuchiya, Yoshimasa, to Nissan Motor Company, Limited. Sunshine roof structure of vehicle, 4,337,975, Cl. 296-215.000.
- Tamura, Paul S., to McNeilab, Inc. Electrochemical sensor with temperature compensation means, 4,338,174, Cl. 204-195.00P.
- Tan, Hong S.; and Smink, Dirk A., to Gist-Brocades N.V. Sucrose ester treatment of bananas, 4,338,342, Cl. 426-308.000.
- Tanaka, Chiaki: See—  
Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Naito, Nagayoshi; Tanaka, Chiaki; and Hiratsuka, Motoki, 4,337,946, Cl. 273-225.000.
- Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, 4,337,947, Cl. 273-235.00R.
- Tanaka, Gotaro: See—  
Edahiro, Takao; Kyoto, Michihisa; Tanaka, Gotaro; and Kuwahara, Toru, 4,338,111, Cl. 65-18.200.
- Tanaka, Kanou: See—  
Sawada, Takamasa; Sone, Yoshiaki; and Tanaka, Kanou, 4,337,935, Cl. 271-9.000.
- Tanaka, Kazuo: See—  
Okuda, Naoki; and Tanaka, Kazuo, 4,338,142, Cl. 148-26.000.
- Tanaka, Shinsaku; and Watanabe, Takashi, to Tanashin Denki Co., Ltd. Manual operation device, 4,337,676, Cl. 74-483.0PB.
- Tanaka, Shoichi: See—  
Nakai, Eiichi; Kojima, Hiroshi; Tanaka, Shoichi; Kai, Toshiyuki; and Hasegawa, Shinichi, 4,338,286, Cl. 423-12.000.
- Tanaka, Toshiaki: See—  
Sugasawa, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiko; and Tanaka, Toshiaki, 4,337,740, Cl. 123-198.00F.

- Tanaka, Toshiki P.; Maeda, Minoru; Aoki, Satoshi; and Yamada, Shoji, to Hitachi, Ltd.; and Hitachi Cable, Ltd. Switch for optical transmission lines, 4,337,995, Cl. 350-96.200.
- Tanaka, Yasuyuki; Takeda, Junichi; and Noguchi, Kohji, to Asahi Kasei Kogyo Kabushiki Kaisha. Gel permeation chromatographic packing and process for producing same utilizing suspension polymerization, 4,338,404, Cl. 521-52.000.
- Tanashin Denki Co., Ltd.: See—  
Tanaka, Shinsaku; and Watanabe, Takashi, 4,337,676, Cl. 74-483.0PB.
- Tancredi, Henry J.: See—  
Del Bianco, Matthew A.; and Tancredi, Henry J., 4,338,152, Cl. 156-351.000.
- Tandy Corporation: See—  
Leininger, Steven, 4,338,599, Cl. 340-721.000.
- Tang, Denny D.: See—  
Feth, George C.; Ning, Tak H.; Tang, Denny D.; Wiedmann, Siegfried K.; and Yu, Hwa N., 4,338,622, Cl. 357-92.000.
- Tanifuji, Shinya: See—  
Shibayama, Hiroshi; Tanifuji, Shinya; Morooka, Yasuo; Nakai, Kozo; and Togashi, Nobuyuki, 4,338,077, Cl. 432-11.000.
- Tanimoto, Akira: See—  
Hashimoto, Shintaro; Komaki, Shigeki; and Tanimoto, Akira, 4,338,502, Cl. 200-159.00B.
- Tanno, Norihiko: See—  
Terashima, Shiro; Tanno, Norihiko; and Koga, Kenji, 4,338,255, Cl. 260-448.0AD.
- Tanno, Takashi; and Koike, Shigemitsu, to Toyo Kogyo Co., Ltd. Method for inspecting gear contact patterns, 4,337,580, Cl. 33-179.50R.
- Tanno, Takashi: See—  
Yamada, Akira; Tanno, Takashi; Wehle, Dieter; and Kaneko, Masao, 4,338,291, Cl. 423-648.00R.
- Tanno, Yoshikazu: See—  
Yokomizo, Yuji; Minami, Kiyoshi; Ichinose, Noboru; and Tanno, Yoshikazu, 4,338,223, Cl. 252-519.000.
- Tanny, Gerald, to Yeda Research & Development Company Ltd. Method of producing solute-rejecting dynamic membrane filters and filters including such membranes, 4,338,194, Cl. 210-490.000.
- Tao, Eddie V. P.; and Staten, Gilbert S., to Eli Lilly and Company. Herbicidal thiazolines, 4,338,449, Cl. 548-140.000.
- Taplin, Lael B., to Bendix Corporation, The. Means for improving automobile drivability, 4,337,839, Cl. 180-179.000.
- Taylor, Earl. Animal control halter, 4,337,610, Cl. 54-24.000.
- TDK Electronics Co., Ltd.: See—  
Chihara, Masao; Araki, Shigeo; and Asakawa, Kazuhiko, 4,338,510, Cl. 219-288.000.
- Kawakami, Yoshio; Matsuzawa, Yoneo; and Kajimoto, Norifumi, 4,338,367, Cl. 428-141.000.
- Takahashi, Minoru; and Mitsui, Sadao, 4,338,576, Cl. 331-67.000.
- Teass, Horace A., Jr.: See—  
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- Tech, James H.; LaFountain, Mary J.; and Van Sickle, Virginia M., to La-Van Tech Development Corp. Flow regulator assembly, 4,337,791, Cl. 137-556.000.
- Technicon Instruments Corporation: See—  
Leon, Luis P.; Yeh, Chien-Kuo; and Ahmad, Syed I., 4,338,395, Cl. 435-17.000.
- Tecnomare, S.p.A.: See—  
Banzoli, Valeriano; Beccegato, Leonardo; Minardi, Paolo; Morganti, Emilio; and Sellaoni, Marco P., 4,337,829, Cl. 166-366.000.
- Teitin Limited: See—  
Yamaji, Teizo, 4,338,098, Cl. 44-3.00A.
- Telectronics Pty. Ltd.: See—  
Daly, Christopher N.; Hirshorn, Michael S.; Money, David K.; and Holley, Loraine K., 4,337,776, Cl. 128-419.0PT.
- Teledyne Penn-Union: See—  
Martin, William C.; and Hoydic, Stephen V., Jr., 4,337,635, Cl. 72-410.000.
- Telle, Helmut: See—  
Brinkwerth, Wolfgang; Huffer, Wolfgang; Raue, Roderich; Schieder, Rudolf; and Telle, Helmut, 4,338,258, Cl. 260-456.00A.
- Temple, Davis L., Jr.; and Lobeck, Walter G., Jr., to Mead Johnson & Company. Phenoxyethyl-1,2,4-triazol-3-one antidepressants, 4,338,317, Cl. 424-250.000.
- Temple, William F.: See—  
Dean, Earl E.; Quade, Marshall L.; and Temple, William F., 4,337,612, Cl. 56-98.000.
- Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds, 4,338,313, Cl. 424-246.000.
- Teraoka, Masao: See—  
Ikeda, Hideo; Teraoka, Masao; and Ishimaru, Junzo, 4,337,953, Cl. 277-152.000.
- Terashima, Isamu; Uchida, Shigeru; and Senba, Eiji, to Hitachi, Ltd. Method for operating electrophotographic copying apparatus, 4,338,019, Cl. 355-14.00D.
- Terashima, Shiro; Tanno, Norihiko; and Koga, Kenji, to Sumitomo Chemical Company, Limited. Modified lithium aluminum hydrides, 4,338,255, Cl. 260-448.0AD.
- Terradex Corporation: See—  
Alter, H. Ward, 4,338,523, Cl. 250-472.000.
- Tervilliger, Robert D. Load control circuit with timed interruption, 4,338,562, Cl. 323-323.000.
- Tesack, Gerald; and Spector, George. Gas pump holder, 4,337,917, Cl. 251-90.000.
- Teshima, Tunekiko: See—  
Fukushima, Isao; Nishijima, Hideo; Satoh, Kenji; and Teshima, Tunekiko, 4,338,554, Cl. 318-328.000.
- Tetsuro, Fujiwara; Yuji, Tanaka; and Tsunetomo, Takei, to Tokyo Tanabe Co., Ltd. Lung tissue extract useful for treating hyaline-membrane disease and method for producing the extract, 4,338,301, Cl. 424-95.000.
- Texaco Development Corp.: See—  
Hunter, Walter D., 4,338,203, Cl. 252-8.55D.
- Texaco Inc.: See—  
Brennan, Michael E.; and Speranza, George P., 4,338,443, Cl. 544-401.000.
- Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,338,099, Cl. 48-197.00R.
- Duranleau, Roger G., 4,338,292, Cl. 423-656.000.
- Hammond, Kenneth G.; and Chafetz, Harry, 4,338,206, Cl. 252-34.000.
- Zimmerman, Robert L.; and Yeakey, Ernest L., 4,338,408, Cl. 521-115.000.
- Texas Industries, Inc.: See—  
Cook, Hilbert F., 4,338,135, Cl. 106-97.000.
- Texas Instruments Deutschland GmbH: See—  
Schurmann, Josef H., 4,338,572, Cl. 330-277.000.
- Texas Instruments Incorporated: See—  
Leach, Gerald G., 4,338,600, Cl. 340-812.000.
- Nelson, William E.; and Lee, Gene D., 4,338,615, Cl. 346-160.000.
- Thaxton, Darrel G. Fire extinguishing apparatus for oil wells, 4,337,831, Cl. 169-69.000.
- Theiler, Werner C., Sr., to Minnesota Mining & Manufacturing Company. Crimp tool with station for right angle terminal, 4,337,542, Cl. 7-107.000.
- Theis, Peter F. Telephone call inventorying and sequencing system and method, 4,338,494, Cl. 179-6.090.
- Theuerkauf, James P.: See—  
Siorek, Richard W.; and Theuerkauf, James P., 4,337,849, Cl. 188-276.000.
- Thomas, Alfred: See—  
Daubenbuechel, Werner; and Thomas, Alfred, 4,338,071, Cl. 425-140.000.
- Thomas, Michael D.; and Ryder, Francis E., to Ryder International Corporation. Lens case, 4,337,858, Cl. 206-5.100.
- Thomas, Paul M.: See—  
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- Thomas, Rudolf: See—  
Stetter, Jorg; Diggins, Klaus; Thomas, Rudolf; Eue, Ludwig; and Schmidt, Robert R., 4,338,119, Cl. 71-92.000.
- Thomson, Clarence, to Regal International, Inc. Bumper ring with relief groove, 4,338,046, Cl. 405-212.000.
- Thompson, John S.: See—  
Jadlocki, Joseph F., Jr.; and Thompson, John S., 4,338,345, Cl. 426-532.000.
- Thompson, Joseph, to Sterling Drug Inc. Apparatus for dispensing articles, 4,337,876, Cl. 221-36.000.
- Thomson-CSF: See—  
Drabowitch, Serge, 4,338,607, Cl. 343-754.000.
- Hartemann, Pierre, 4,338,575, Cl. 331-65.000.
- Oprandis, Pierre; and Romeas, Rene, 4,338,629, Cl. 358-128.500.
- Rouge, Jean, 4,338,384, Cl. 429-119.000.
- Thornley, Glenn D.: See—  
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- TIE/Communications, Inc.: See—  
Bloch, Alan; Coviello, Frank A.; Guzik, Ira; and Puebla, Candido, 4,338,495, Cl. 179-99.00M.
- Tielrooy, Robert W.: See—  
vander Griendt, Pieter S.; Tielrooy, Robert W.; and Russell, Edward J., 4,337,719, Cl. 118-46.000.
- Tiers, George V. D.: See—  
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- Tijssen, Henricus A. C.; and van der Malen, Bernardus G. M., to Douwe Egberts Koninklijke Tabaksfabriek-Koffiebranderijen-Theehandel B.V. Counter current crystallization process, 4,338,109, Cl. 62-541.000.
- Tischer, Peter: See—  
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- Titus, Paul E., to Shell Oil Company. Prevention of sliding of a weight jacket over the corrosion coating of a pipe line, 4,338,044, Cl. 405-172.000.
- Toa Nenryo Kogyo Kabushiki Kaisha: See—  
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- Toagosei Chemical Industry Co., Ltd.: See—  
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- Toft, Mark A.: See—  
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- Togashi, Nobuyuki: See—  
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- Tokico Ltd.: See—  
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- Shimokura, Akihiro, 4,337,850, Cl. 188-319.000.  
Tokyo Shibaura Denki Kabushiki Kaisha: See—  
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Koinuma, Tokuju; Saito, Hisao; and Miura, Heihachi, 4,338,545, Cl. 315-39.710.  
Komiya, Akitoshi; Yagi, Toshiharu; and Kondo, Akiyoshi, 4,338,544, Cl. 313-489.000.  
Nagano, Katsumi, 4,338,527, Cl. 307-494.000.  
Ogura, Katsumi, 4,337,901, Cl. 241-46.00B.  
Takada, Shinzo, 4,337,667, Cl. 73-861.280.  
Takanashi, Yukio; Nakayama, Shouji; and Higuchi, Toshiharu, 4,338,542, Cl. 313-446.000.  
Ueno, Seizou, 4,338,637, Cl. 358-288.000.  
Yokomizo, Yuji; Minami, Kiyoshi; Ichinose, Noboru; and Tanno, Yoshikazu, 4,338,223, Cl. 252-519.000.  
Tokyo Tanabe Co., Ltd.: See—  
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Tomlinson, Charles W.: See—  
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'Totes', Incorporated: See—  
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Toy, Samson K., to Boschert, Incorporated. Master-slave high current D.C. power supply, 4,338,658, Cl. 363-72.000.  
Toyo Kogyo Co., Ltd.: See—  
Tanno, Takashi; and Koike, Shigemitsu, 4,337,580, Cl. 33-179.50R.  
Toyo Rubber Chemical Industrial Corp.: See—  
Kumasaka, Sadao; Tada, Satomi; Horikoshi, Shigeo; Tsuchiya, Tokio; and Numabe, Masashi, 4,338,271, Cl. 264-54.000.  
Toyoda Koki Kabushiki Kaisha: See—  
Koide, Tsuyoshi; and Suzuki, Yasuo, 4,337,599, Cl. 51-289.00R.  
Toyoda, Tsunehiko; Matsumoto, Tokio; and Arakawa, Toshiaki, to Dai Nippon Torsy Co., Ltd. Jet printing ink composition, 4,338,133, Cl. 106-22.000.  
Toyota Jidosha Kogyo Kabushiki Kaisha: See—  
Nomura, Yoshihisa, 4,337,792, Cl. 137-558.000.  
Takahashi, Akio; Tsumuki, Chiaki; Nakamura, Hitoshi; and Ozaki, Juro, 4,337,572, Cl. 29-792.000.  
Yoshida, Akio; and Inokuchi, Nobuyuki, 4,337,967, Cl. 280-777.000.  
Yoshino, Yasuhisa; Kuno, Akira; Shimizu, Hidetoshi; and Minegishi, Harumasa, 4,337,651, Cl. 73-129.000.  
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Sand, Robert H.; and Trachtenburg, Martin, 4,338,156, Cl. 156-574.000.  
Tredennick, Harry L.; and Gunter, Thomas G., to Motorola, Inc. Conditional branch unit for microprogrammed data processor, 4,338,661, Cl. 364-200.000.  
Treitinger, Ludwig; Tischer, Peter; and Schneider-Gmelch, Brigitte, to Siemens Aktiengesellschaft. Thin film semiconductor gas sensor having an integrated heating element, 4,338,281, Cl. 422-98.000.  
Treyssac, Georges, to Societe Anonyme d'Etudes de Recherches et de Productions d'Agents Chimiques ERPAC. Liquid treatment apparatus, 4,338,195, Cl. 210-519.000.  
Trinkner, Eileen. Combined picnic bag and tablecloth, 4,337,812, Cl. 150-11.000.  
Trop, Moshe; and Livne, Avinoam, to Ben-Gurion University of the Negev Research and Development Authority. Powdered compositions for mousse products, 4,338,347, Cl. 426-565.000.  
Trotta, Robert A., to Gillette Company, The. Razor blade assembly, 4,337,575, Cl. 30-47.000.  
Tseng, Shin-Shyong; and Rauhut, Michael M., to American Cyanamid Company. Aqueous chemiluminescent systems, 4,338,213, Cl. 252-188.3CL.  
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Okamatsu, Shigetoshi; Tsuboi, Takashi; Ibamoto, Masahiko; and Narita, Hiroshi, 4,338,558, Cl. 318-802.000.  
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Murata, Atsuo; Tsuchiya, Syuji; and Suzuki, Hideo, 4,338,170, Cl. 204-158.00R.  
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Tsuchiya, Yoshimasa: See—  
Tamamushi, Masahiro; and Tsuchiya, Yoshimasa, 4,337,975, Cl. 296-215.000.  
Tucker, Raymond L., to Mauri Brothers & Thomson (Aust.) Pty. Limited. Crown closure, 4,337,871, Cl. 215-328.000.  
Tudek, Arthur L. Concrete building blocks with looped securing rods for mortarless wall construction, 4,337,605, Cl. 52-293.000.  
Turc, Gerard: See—  
Nicolas, Gerard; Ponthenier, Gerard; and Turc, Gerard, 4,337,573, Cl. 29-831.000.  
Turcotte, Richard L., to Radiation Monitoring Devices, Inc. Method to synthesize and produce thin films by spray pyrolysis, 4,338,362, Cl. 427-314.000.  
Turner, Mervyn E. D.; and Quayle, Joshua C., to Imperial Chemical Industries Limited. Corrosion monitoring process and apparatus for use therein, 4,338,097, Cl. 23-230.00C.  
Tuthill, Michael G., to Analog Devices, Incorporated. High resolution digital-to-analog converter, 4,338,591, Cl. 340-347.0DA.  
Tuttle, Willard N., to John Zink Company. Process and apparatus for recovering hydrocarbons from inert gas-hydrocarbon vapor mixtures, 4,338,101, Cl. 55-48.000.  
Tyler Refrigeration Corporation: See—  
Ibrahim, Fayed F., 4,337,626, Cl. 62-82.000.  
Tyrolit Schleifmittelwerke Swarovski K.G.: See—  
Fichler, Herwig; Helletsberger, Harald; Geissler, Ernst; Ofer, Heinrich; and Fugenschuh, Bernhard, 4,338,357, Cl. 427-195.000.  
Tzakis, George J.: See—  
d'Hautecourt, Alain H.; and Tzakis, George J., 4,338,624, Cl. 358-22.000.  
Engel, Christopher M.; and Tzakis, George J., 4,338,630, Cl. 358-172.000.  
Ube Industries, Inc.: See—  
Umemura, Sumio; Kitoh, Ryoze; and Uda, Taizo, 4,338,471, Cl. 568-802.000.  
Ube Industries, Ltd.: See—  
Itatani, Hiroshi; Shiotani, Akinori; and Yokota, Akiyoshi, 4,338,456, Cl. 560-96.000.  
Uchida, Shigeru: See—  
Terashima, Isamu; Uchida, Shigeru; and Senba, Eiji, 4,338,019, Cl. 355-14.00D.  
Uchimura, Shunichiro: See—  
Sato, Hidetaka; Uchimura, Shunichiro; Suzuki, Hiroshi; and Makino, Daisuke, 4,338,426, Cl. 528-26.000.  
Uda, Taizo: See—  
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Udaras Na Gaeltachta: See—  
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Ueda, Hiroshi: See—  
Kuramoto, Yoshio; Ueda, Hiroshi; and Itoh, Masatoshi, 4,337,996, Cl. 350-255.000.  
Ueda, Ichiro: See—  
Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; and Ouchi, Hiromu, 4,338,403, Cl. 501-136.000.  
Ueda, Issei: See—  
Ito, Hideo; Ueda, Issei; Morinibu, Yasuo; and Takeyasu, Michitomo, 4,338,241, Cl. 523-200.000.  
Ueda, Shozo: See—  
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Ueno, Katsuji: See—  
Maruyama, Takashi; and Ueno, Katsuji, 4,338,421, Cl. 525-397.000.  
Ueno, Seizou, to Tokyo Shibaura Denki Kabushiki Kaisha. Variable scanning device, 4,338,637, Cl. 358-288.000.  
Uffindell, Paul J., to 'Totes', Incorporated. Method of fabricating a composite foam hand held implement grip, 4,338,270, Cl. 264-46.400.  
Ulf, Andersson P. Apparatus for translating rotary movement to rectilinear movement, 4,337,671, Cl. 74-424.80C.  
Umemura, Sumio; Kitoh, Ryoze; and Uda, Taizo, to Ube Industries, Inc. Process for preparing phenol, 4,338,471, Cl. 568-802.000.  
Umemura, Yoshifumi: See—  
Suzuki, Hajime; Umemura, Yoshifumi; and Ueda, Shozo, 4,337,801, Cl. 139-57.000.  
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Lichtner, Emil; Ungerlinger, Gerd; and Giebel, Gerhard, 4,337,735, Cl. 123-193.00H.  
Unimation, Inc.: See—  
Perzley, William; and Yen-Chen, Yung-Ming, 4,338,672, Cl. 364-513.000.  
Union Carbide Corporation: See—  
Cain, Paul A.; and Wheeler, Thomas N., 4,338,326, Cl. 424-267.000.  
D'Silva, Themistocles D. J., 4,338,450, Cl. 548-185.000.  
Swallow, Brian R., 4,338,107, Cl. 62-17.000.  
Wesson, John P.; Williams, Thomas C.; and Eagar, Robert G., Jr., 4,338,454, Cl. 556-445.000.  
Wheeler, Thomas N., 4,338,122, Cl. 71-122.000.  
United States Manufacturing Company: See—  
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United States of America

- Agriculture: See—  
Anderson, Maynard E.; Marshall, Robert T.; and Stringer, William C., 4,337,549, Cl. 17-1.00R.  
Air Force: See—  
Fritts, David H., 4,338,382, Cl. 429-53.000.  
Army: See—  
Betts, Robert E., 4,337,702, Cl. 102-254.000.  
Monte, Anthony J., 4,337,803, Cl. 141-2.000.  
Shore, Sheldon G.; Toft, Mark A.; and Himpel, Francis L., 4,338,289, Cl. 423-294.000.  
Siorek, Richard W.; and Theuerkauf, James P., 4,337,849, Cl. 188-276.000.  
Strecker, Richard A., 4,338,442, Cl. 544-215.000.  
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Grevstad, Paul E.; Johnson, Carl K.; and Mientek, Anthony P., 4,337,571, Cl. 29-623.200.  
Kurnit, Norman A., 4,338,570, Cl. 330-4.600.  
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Petrashevich, Cornel H., 4,337,763, Cl. 128-20.000.  
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Dotts, Robert L.; and Holt, Jack W. Attachment system for silica tiles, 4,338,368, Cl. 428-212.000.  
Sharma, Madan M. Optical crystal temperature gauge with fiber optic connections, 4,338,516, Cl. 250-226.000.  
Yang, Lien C. Method and device for detection of a substance, 4,338,568, Cl. 324-466.000.  
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Dawn, Frederic S.; and Correale, James V., 4,338,371, Cl. 428-283.000.  
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Janson, James G., 4,337,701, Cl. 102-249.000.  
Lemley, Leo W., 4,338,560, Cl. 322-2.00A.  
Magorian, William R., 4,338,603, Cl. 343-17.10R.  
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U.S. Philips Corporation: See—  
Asmus, Jean-Pierre; Soto, Joseph; and Op Het Veld, Sebastianus J., 4,338,623, Cl. 358-22.000.  
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Six, Jean-Claude G., 4,338,511, Cl. 219-497.000.  
Six, Jean-Claude G.; and Kaire, Jean-Claude, 4,338,530, Cl. 307-520.000.  
van den Bungelaar, Martinus J.; and Stoker, Albert, 4,338,573, Cl. 330-298.000.  
U.S. Product Development Co.: See—  
Adell, Robert, 4,338,148, Cl. 156-222.000.  
United Technologies Corporation: See—  
Hibner, David H., 4,337,983, Cl. 308-26.000.  
King, William H.; and Kear, Bernard H., 4,337,886, Cl. 228-263.00B.  
Moringiello, Donald C.; and Dallmann, Stephen H., 4,337,982, Cl. 308-26.000.  
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Gelbard, Martin K., 4,338,300, Cl. 424-94.000.  
Morgan, Nelson H., 4,338,581, Cl. 333-165.000.  
University of Minnesota, The Regents of the: See—  
Vince, Robert, 4,338,310, Cl. 424-180.000.  
University of Missouri, The Curators of the: See—  
Selberg, Bruce P., 4,337,899, Cl. 239-543.000.  
University of Nebraska, The Board of Regents of the: See—  
Rosenberg, Harry; and Small, LaVerne D., 4,338,320, Cl. 424-259.000.  
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UOP Inc.: See—  
Gaisis, John G., 4,338,183, Cl. 208-10.000.  
Qualeati, Gail M., 4,338,221, Cl. 252-455.00R.  
Vickers, Anthony G.; and Zabransky, Robert F., 4,338,476, Cl. 585-440.000.  
Upjohn Company, The: See—  
Alberino, Louis M.; and Regelman, Dale F., 4,338,428, Cl. 528-73.000.  
Aristoff, Paul A., 4,338,457, Cl. 560-119.000.  
Gall, Martin, 4,338,453, Cl. 548-263.000.  
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,338,325, Cl. 424-285.000.  
Manis, Jack J.; and Highlander, Sarah K., 4,338,400, Cl. 435-172.000.  
Shenton, Francis L., 4,338,459, Cl. 560-176.000.  
Upperman, Gary V.: See—  
Withers, James C.; and Upperman, Gary V., 4,338,177, Cl. 204-243.00R.  
Upsher, Michael S. Laryngoscope, 4,337,761, Cl. 128-11.000.  
Vadovic, Charles J.: See—  
Maa, Peter S.; Veluswamy, Lavanga R.; and Vadovic, Charles J., 4,338,184, Cl. 208-10.000.  
Vaerk, Lembit; and Gattu, Narahari, to Harnischfeger Corporation. High-strength light-weight boom section for telescopic crane boom, 4,337,601, Cl. 52-118.000.  
Valmont Industries, Inc.: See—  
Myers, Richard G.; and Stuckey, James P., 4,337,786, Cl. 137-3.000.  
Van Dam Machine Corporation of America: See—  
vander Griend, Pieter S.; Tielrooy, Robert W.; and Russell, Edward J., 4,337,719, Cl. 118-46.000.  
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Tijssen, Henricus A. C.; and van der Malen, Bernardus G. M., 4,338,109, Cl. 62-541.000.  
Vanderpool, Clarence D.; and McClintic, Robert P., to GTE Products Corporation. Recovery of tungsten from heavy metal alloys, 4,338,126, Cl. 75-84.000.  
Van Dorsser, William R.: See—  
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van Dyke, Martin J.: See—  
Leonard, Kenneth L.; Colby, Dwight D.; Dougherty, William R.; Fahley, Jerome A.; and van Dyke, Martin J., 4,337,638, Cl. 73-1.00R.  
Van Gilst, Carl; Brembeck, Howard S.; and Donahoe, Bradley E., to Chore-Time Equipment, Inc. Programmed hog feeder and process, 4,337,728, Cl. 119-51.00R.  
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Van Sickle, Virginia M.: See—  
Tech, James H.; LaFontaine, Mary J.; and Van Sickle, Virginia M., 4,337,791, Cl. 137-556.000.  
Van Ulzen, William R. Collapsible trimaran boat, 4,337,543, Cl. 114-354.000.  
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Varga, Richard S., to B. F. Goodrich Company, The. Processing hot melt adhesive, 4,337,721, Cl. 118-60.000.  
Varian Associates, Inc.: See—  
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Veb Kombinat Polygraph "Werner Lamberz" Leipzig: See—  
Kessler, Peter; Kaiser, Joachim; Keil, Wolfgang; Despang, Hans-Gunter; Haufe, Jurgen; and Kieser, Matthias, 4,337,903, Cl. 242-56.00A.  
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Overman, Paulus T. J.; and Slat, Henricus J., 4,337,891, Cl. 236-9.00A.  
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Via, Francis A., to Stauffer Chemical Company. Photopolymerizable composition stabilized with epoxide compounds and process, 4,338,172, Cl. 204-159.230.  
Vickers, Anthony G.; and Zabransky, Robert F., to UOP Inc. Alkylaromatic hydrocarbon dehydrogenation process, 4,338,476, Cl. 585-440.000.  
Victor Company of Japan, Ltd.: See—  
Ota, Yoshihiko, 4,338,631, Cl. 358-127.000.  
Vidal, Frederick D.; and Jayaraman, Anantharaman, to Pennwalt Corporation. Liquid anti-microbial treatments for storage grain with ammonium bisulfite and a disproportionation product thereof, 4,338,343, Cl. 426-331.000.  
Villano, James J.: See—  
Kern, Calvin V.; and Villano, James J., 4,337,596, Cl. 49-210.000.  
Vince, Robert, to University of Minnesota, The Regents of the. Alkoxyalkanoate esters of arabinofuranosyladenine, 4,338,310, Cl. 424-180.000.  
Vincio Sales Corp., Inc.: See—  
Ignoffo, Vincent E., 4,338,284, Cl. 422-171.000.  
Virolainen, Jorma: See—  
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Visual Systems Corporation: See—  
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VLSI Technology Research Association: See—  
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Waltec, Inc.: See—  
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Brockway, M. Clifford; and Walters, Craig T., 4,338,114, Cl. 65-28.000.

Wanlass, Cravens L. Variable speed electric machine having controlled magnetic flux density, 4,338,557, Cl. 318-729.000.

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Webasto-Werk W. Baier GmbH & Co.: See—  
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Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, to Carl Still GmbH & Co. KG. Firma. Device for dry cooling glowing coke, 4,338,161, Cl. 202-228.000.

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Faulkner, Bobby P.; Lee, George T.; Schumacher, Peter L.; and Weincke, Michael H., 4,338,079, Cl. 432-14.000.

Weinhaus, Robert S. Meat grain template, 4,337,551, Cl. 17-52.000.

Weiss, Arnold A., to AMF Incorporated. Ultrasonic tire testing apparatus, 4,337,660, Cl. 73-600.000.

Welch, Rafael J. Tilttable box scraper for three-point attachment to a tractor, 4,337,833, Cl. 172-445.100.

Wendel, Richard C., to Electric Power Research Institute, Inc. Sonic waveguide arrangement using different waveguides and technique for coupling the waveguides together, 4,337,843, Cl. 181-175.000.

Werdehausen, Achim: See—  
Wegener, Ingo; Glasl, Johann; and Werdehausen, Achim, 4,338,212, Cl. 252-174.220.

Wersosky, John M.; and Wakefield, Frederick I., to Ex-Cell-O Corporation. Deaerator assembly, 4,338,100, Cl. 55-18.000.

Wesemeyer, Jürgen: See—  
Seeger, Karl; Jundt, Werner; Mezger, Manfred; Kiencke, Uwe; Wesemeyer, Jürgen; Haubner, Georg; and Meier, Werner, 4,337,744, Cl. 123-416.000.

Wessel, Ulrich; and Krauss, Albert, to Klockner-Humboldt-Deutz AG Zweigniederlassung Fahr. Wheel assembly for haying machine, 4,337,613, Cl. 56-370.000.

Wesson, John P.; Williams, Thomas C.; and Eagar, Robert G., Jr., to Union Carbide Corporation. Pentachlorophenyl 3-(triethoxysilyl) propyl ether, 4,338,454, Cl. 556-445.000.

West Company, The: See—  
Leiter, L. David, 4,337,644, Cl. 73-52.000.

Westinghouse Electric Corp.: See—  
Kilgore, Lee A., 4,338,525, Cl. 290-17.000.

Lugosi, Robert; Fechko, George J.; Male, Alan T.; Haller, Henry E., III; and Mole, Cecil J., 4,337,567, Cl. 29-596.000.

Mims, James H., 4,338,605, Cl. 343-100.0LE.

Romanczuk, Walter N.; Reiter, Paul J.; and Watkins, William R., 4,338,652, Cl. 361-388.000.

Wilson, John T.; Wafer, John A.; Engel, Joseph C.; and Elms, Robert T., 4,338,647, Cl. 361-96.000.

Westvaco Corporation: See—  
Brown, George N., 4,338,198, Cl. 210-673.000.

Dilling, Peter, 4,338,091, Cl. 8-524.000.

Wetterhorn, Richard H.: See—  
Kipp, Frederick M.; and Wetterhorn, Richard H., 4,337,664, Cl. 73-741.000.

Weyerhaeuser Company: See—  
Bentvelzen, Jozef M., 4,338,158, Cl. 162-37.000.

Gerard, Thomas J.; and Gillmore, John E., Sr., 4,337,887, Cl. 229-16.00R.

Kudalkar, Kishor N., 4,337,888, Cl. 229-48.00R.

Wheaton, Gregory A., to Atlantic Richfield Company. Silver-catalyzed oxidation of methacrolein to methacrylic acid, 4,338,462, Cl. 562-533.000.

Wheeler, Thomas N., to Union Carbide Corporation. Biocidal 2-aryl-1,3-cyclopentanedione compounds and alkali metal and ammonium salts thereof, 4,338,122, Cl. 71-122.000.

Wheeler, Thomas N.: See—  
Cain, Paul A.; and Wheeler, Thomas N., 4,338,326, Cl. 424-267.000.

White, George R., to SmithKline & French Laboratories Limited. Sulphoxides of heterocyclicthioalkylthioureas, ureas and guanidines, 4,338,328, Cl. 424-269.000.

Whitlow, Jerry. Lift system, steering system, and pivotal blade for land plane, 4,337,832, Cl. 172-265.000.

Wiebicke, Klaus: See—  
Rasch, Walter; Caspers, Karl-Heinz; Wiebicke, Klaus; and Albert, Max, 4,337,736, Cl. 123-193.00H.

Wiedmann, Siegfried K.: See—  
Feth, George C.; Ning, Tak H.; Tang, Denny D.; Wiedmann, Siegfried K.; and Yu, Hwa N., 4,338,622, Cl. 357-92.000.

Wieleisuk, Aleksander, to Barwell Machine and Rubber Group Limited. Apparatus for applying polymeric material to a workpiece, 4,338,073, Cl. 425-115.000.

Wierschke, Gilbert W., to Otis Elevator Company. Fail-safe relay driving, 4,338,650, Cl. 361-139.000.

Wiggins Teape Group Limited, The: See—  
Suter, Andrew K., 4,337,862, Cl. 206-632.000.

Wikel, James H.: See—  
Paget, Charles J.; Chamberlin, James W.; and Wikel, James H., 4,338,315, Cl. 424-246.000.

Paget, Charles J.; Chamberlin, James W., both of; and Wikel, James H., 4,338,329, Cl. 424-270.000.

Wilensky, Samuel, to Hybrid Systems Corporation. High accuracy digital-to-analog converter and transient elimination system thereof, 4,338,592, Cl. 340-347.0CC.

Wilhelm Schimmel Pianofortefabrik GmbH: See—  
Schwichtenberg, Gerhard, 4,337,682, Cl. 84-193.000.

Wilkinson, William H., to Battelle Development Corp. Waste heat driven absorption refrigeration process and system, 4,337,625, Cl. 62-79.000.

Wilkinson, William H.; and Hanna, William T., to Battelle Development Corporation. Open cycle thermal boosting system, 4,338,268, Cl. 261-140.00A.

William H. Rorer, Inc.: See—  
Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., 4,338,441, Cl. 544-211.000.

Williams, Robert M.; and Bielicki, Lucian C., to Bi-Metal Corp. Method of recovery of aluminum from waste material, 4,337,900, Cl. 241-14.000.

Williams, Thomas C.: See—  
Wesson, John P.; Williams, Thomas C.; and Eagar, Robert G., Jr., 4,338,454, Cl. 556-445.000.

Williams, William R.: See—  
Argyris, Pericles A.; and Williams, William R., 4,337,795, Cl. 137-625.170.

Wilson, John T.; Wafer, John A.; Engel, Joseph C.; and Elms, Robert T., to Westinghouse Electric Corp. Circuit interrupter with digital trip unit and optically-coupled data input/output system, 4,338,647, Cl. 361-96.000.

Wilt, Robert E.: See—  
Roeder, Robert S.; Day, W. Baldwin; Hunt, Harold W.; and Wilt, Robert E., 4,338,602, Cl. 343-10.000.

Winburn, Charles F.; and Blankenship, Wallace P., to Batesville Casket Company, Inc. Burial casket assembly, 4,337,556, Cl. 27-2.000.

Winkelmann, Günther. Herbicidal and microbiological method for the preparation thereof, 4,338,302, Cl. 424-117.000.

Wisconsin Alumni Research Foundation: See—  
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,338,250, Cl. 260-397.200.

DeLuca, Hector F.; Schnoes, Heinrich K.; and Jorgensen, Neal A., 4,338,312, Cl. 424-236.000.

Wisotsky, Max J., to Exxon Research & Engineering Co. Lubricating oil with improved diesel dispersancy, 4,338,205, Cl. 252-32.500.

Witala, Jay D.: See—  
Allen, David A.; and Witala, Jay D., 4,337,962, Cl. 280-279.000.

Withers, James C.; and Upperman, Gary V., to Metallurgical, Inc. Electrolytic cell for the production of aluminum, 4,338,177, Cl. 204-243.00R.

Witt, Jerry A.; and Takagi, Izumi, to Kawasaki Motors Corp. U.S.A. Suspension and stabilizing system for a snowmobile, 4,337,958, Cl. 280-16.000.

Woebeck, Herman N.: See—  
Gartside, Robert J.; and Woebeck, Herman N., 4,338,187, Cl. 208-127.000.

Woellner-Werke: See—  
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Wolf, Klaus-Ulrich: See—  
Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Hell, Insa; and Wolf, Klaus-Ulrich, 4,338,314, Cl. 424-246.000.

Wolkstein, Herbert J., to RCA Corporation. Optimization circuit for a serrodyne frequency translator, 4,338,528, Cl. 307-511.000.

Wolverine World Wide, Inc.: See—  
Baylor, David R.; and Getter, Byron J., 4,337,550, Cl. 17-23.000.

Won, Chong M.: See—  
Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., 4,338,441, Cl. 544-211.000.

Workman, Ernest J.: See—  
Bush, Eric L.; and Workman, Ernest J., 4,338,354, Cl. 427-80.000.

Worschech, Kurt; Wedl, Peter; Löffelholz, Frido; Wegemund, Bernd; and Ervied, Werner, to Neynaber Chemie GmbH. Process for the stabilization of polyvinyl chloride and stabilizer compositions, 4,338,226, Cl. 524-302.000.

Woznica, Kazimierz W., to Kenneth E. Beswick Limited. Electrical fuselinks, 4,337,570, Cl. 29-623.000.

Wright, Dennis L. Furnace basket, 4,337,872, Cl. 220-19.000.

Wu, Tai-Wing, to Eastman Kodak Company. Method for selective determination of conjugated and unconjugated bilirubin, 4,338,095, Cl. 23-230.00B.

Wyatt, William G., to Vapor Energy, Inc. Hot water system, 4,337,619, Cl. 60-39.550.

Xerox Corporation: See—  
Babler, Egon S., 4,338,034, Cl. 400-144.200.

Bol, Izya, 4,338,616, Cl. 357-15.000.

Hewitt, Harvey J., 4,338,387, Cl. 430-58.000.

Limborg, William W.; Pai, Damodar M.; and Pearson, James M., 4,338,222, Cl. 252-500.000.

Lu, Chin H., 4,338,390, Cl. 430-106.000.

McGibbon, Gary M., 4,338,023, Cl. 355-14.0SH.

Yabu, Toshiomi; Wada, Tatsuo; Hashirano, Masaru; and Yamada, Kouichi, to Matsushita Electric Industrial Co., Ltd. Speed control system for a multiple speed tape recording and reproducing apparatus, 4,338,640, Cl. 360-73.000.

Yagi, Toshiharu: See—  
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Yagi, Masahiro; and Ojima, Nobutoshi, 4,338,433, Cl. 536-46.000.

Yagi, Toshiharu: See—  
Komiya, Akitoshi; Yagi, Toshiharu; and Kondo, Akiyoshi, 4,338,544, Cl. 313-489.000.

Yahata, James I. Disposable anesthesia mask cover, 4,337,767, Cl. 128-206.280.

Yakel, Alfred W., to Keltronics Corporation. Testing facility for telephone conference bridge, 4,338,496, Cl. 179-175.10R.

Yamada, Akira; Tanno, Takashi; Wehle, Dieter; and Kaneko, Masao, to Rikagaku Kenkyusho. Process for producing hydrogen with viologen cation radical using metal complex of macrocyclic polydentate compound as catalyst, 4,338,291, Cl. 423-648.00R.

Yamada, Kouichi: See—  
Yabu, Toshiomi; Wada, Tatsuo; Hashirano, Masaru; and Yamada, Kouichi, 4,338,640, Cl. 360-73.000.

Yamada, Kouzi: See—  
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,338,251, Cl. 260-405.500.

Yamada, Mitsuhiro; and Nakade, Toshiaki. Method for reproducing pictures from original pictures depending on the desired layout, 4,338,636, Cl. 358-256.000.

Yamada, Shoji: See—  
Tanaka, Toshiaki P.; Maeda, Minoru; Aoki, Satoshi; and Yamada, Shoji, 4,337,995, Cl. 350-96.200.

Yamada, Yasuaki: See—  
Kondo, Hiroatsu; Ozawa, Toshiaki; and Yamada, Yasuaki, 4,338,035, Cl. 400-144.200.

Yamaguchi, Akihiro: See—  
Mita, Ryuichi; Yamaguchi, Akihiro; Kato, Toshio; Higuchi, Chojiro; and Murakami, Hisamichi, 4,338,259, Cl. 260-465.50R.

Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, to Nippon Soken, Inc. Knock detecting apparatus for internal combustion engine, 4,337,643, Cl. 74-35.000.

Yamaha Hatsudoki Kabushiki Kaisha: See—  
Iio, Toshimitsu, 4,337,734, Cl. 123-65.0PE.

Yamaji, Teizo, to Teitin Limited. Solid heat-generating composition, 4,338,098, Cl. 44-3.00A.

Yamakido, Kazuo, to Hitachi, Ltd. Voltage polarity switching circuit, 4,338,656, Cl. 363-63.000.

Yamamoto, Masanobu: See—  
Furukawa, Shunsuke; Ogawa, Hiroshi; Okada, Hitoshi; and Yamamoto, Masanobu, 4,338,683, Cl. 369-50.000.

Yamamoto, Ryoichi: See—  
Morita, Yoshinori; Kato, Akifumi; and Yamamoto, Ryoichi, 4,338,424, Cl. 526-65.000.

Yamanaka, Minoru; Haneda, Hideo; Kato, Masatoshi; and Suzuki, Mitsuyuki, to Aisin Seiki Kabushiki Kaisha. Solenoid valve assembly, 4,337,794, Cl. 137-596.170.

Yamanaka, Seisuke, to Sony Corporation. Solid state television camera, 4,338,625, Cl. 358-29.000.

Yamazaki, Osamu: See—  
Motooka, Setsuzo; Karigane, Yukihiko; Yamazaki, Osamu; and Ochiai, Osamu, 4,338,282, Cl. 422-105.000.

Yan, Tsoung-yuan, to Mobil Oil Corporation. Process for the in-situ leaching of uranium, 4,337,979, Cl. 299-4.000.

Yang, Lien C.: See—  
United States of America, National Aeronautics and Space Administration; and Yang, Lien C., 4,338,568, Cl. 324-466.000.

Yankovoy, Alexander: See—  
Ozer, Theodore; Yankovoy, Alexander; and Imbessi, James, 4,338,050, Cl. 408-1.00R.

Yano, Yasuhiro: See—  
Eida, Tsuyoshi; Matsufuji, Yohji; Yano, Yasuhiro; Ohta, Tokuya; and Haruta, Masahiro, 4,338,611, Cl. 346-75.000.

Yardley, James T.; Rosan, Alan M.; and Menger-Hammond, Eva L., to Allied Corporation. Catalytic isomerization process using photo-induced deligandation, 4,338,173, Cl. 204-162.00R.

Yasuda, Shigeo: See—  
Matsuda, Akira; Hayakawa, Yoshihiro; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,337,652, Cl. 73-146.500.

Yasuda, Shuhei: See—  
Ohba, Toshihiro; Yasuda, Shuhei; and Kanatani, Yoshiharu, 4,338,598, Cl. 340-713.000.

Yasuhara, Kiyotada: See—  
Senzaki, Takashi; Murakami, Ryoichi; Yasuhara, Kiyotada; and Takahashi, Masashi, 4,338,141, Cl. 148-6.15Z.

Yasujiima, Nobuo; Itokawa, Natsuo; and Kobayashi, Seichiro, to Taisei Kohki Co., Ltd. Chrome-tantalum alloy thin film resistor and method of producing the same, 4,338,145, Cl. 148-133.000.

Yates, Paul C.: See—  
Hecht, James L.; and Yates, Paul C., 4,338,243, Cl. 524-287.000.

Yeakey, Ernest L.: See—  
Zimmerman, Robert L.; and Yeakey, Ernest L., 4,338,408, Cl. 521-115.000.

Yeda Research & Development Company Ltd.: See—  
Tanny, Gerald, 4,338,194, Cl. 210-490.000.

Yeh, Chien-Kuo: See—  
Leon, Luis P.; Yeh, Chien-Kuo; and Ahmad, Syed I., 4,338,395, Cl. 435-17.000.

Yellin, Tobias O.; and Mant, Derrick M., to Imperial Chemical Industries Limited; and ICI Americas Inc. 5-Guanidino-1,2,4-oxadiazoles, 4,338,447, Cl. 548-133.000.

Yellin, Tobias O.; and Mant, Derrick M., to Imperial Chemical Industries Limited; and ICI Americas Inc. 3-Chloroalkyl-5-guanidino-1,2,4-oxadiazoles, 4,338,448, Cl. 548-133.000.



- Yen-Chen, Yung-Ming: See—  
Perzley, William; and Yen-Chen, Yung-Ming, 4,338,672, Cl. 364-513.000.
- Yoda, Makoto: See—  
Inoue, Hiroshi; Isoi, Masaaki; Yoda, Makoto; and Komatsu, Masato, 4,338,228, Cl. 524-120.000.
- Yokomizo, Yuji; Minami, Kiyoshi; Ichinose, Noboru; and Tanno, Yoshikazu, to Marcon Electronics Co., Ltd.; and Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing a voltage-nonlinear resistor, 4,338,223, Cl. 252-519.000.
- Yokota, Akiyoshi: See—  
Itatani, Hiroshi; Shiotani, Akinori; and Yokota, Akiyoshi, 4,338,456, Cl. 560-96.000.
- Yokota, Sekiji: See—  
Fuji, Toshihiro; and Yokota, Sekiji, 4,338,224, Cl. 523-177.000.
- Yokoyama, Akira; and Arano, Yasushi, to Nihon Medi-Physics Co., Ltd. 2-Oxopropionaldehyde bis(thiosemicarbazone) protein derivatives, and their production and use, 4,338,248, Cl. 260-112.00R.
- Yokoyama, Yasushi, to Nippon Electric Co., Ltd. Microinstruction processing unit responsive to interruption priority order, 4,338,662, Cl. 364-200.000.
- Yoneda, Kenji: See—  
Sugihara, Kunihiro; Yoneda, Kenji; and Muranaka, Shigeo, 4,337,641, Cl. 73-35.000.
- Yoneda, Yutaka: See—  
Sakamoto, Koya; Yoneda, Yutaka; Fujiwara, Naoki; and Takamoto, Shigehito, 4,338,283, Cl. 422-112.000.
- Yonemoto, Masashi; and Watanabe, Eiki, to Mitsubishi Denki Kabushiki Kaisha. Elevator relevelling control apparatus, 4,337,846, Cl. 187-29.00R.
- Yoneyama, Masaru, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Immobilization of starch degrading enzymes, 4,338,398, Cl. 435-95.000.
- Yorbe Machine Products Company, The: See—  
Deminski, Richard M., 4,338,037, Cl. 403-24.000.
- Yoshida, Akio; and Inokuchi, Nobuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Steering device, 4,337,967, Cl. 280-777.000.
- Yoshida, Kenichi, to Nissan Motor Co., Ltd. Device for judging knocking strength, 4,337,642, Cl. 73-35.000.
- Yoshida Kogyo K.K.: See—  
Doori, Hisashi, 4,337,877, Cl. 221-171.000.
- Fukuroi, Akio; and Sugimoto, Isao, 4,337,631, Cl. 68-189.000.
- Yoshida, Syozo; and Tosaka, Yoichi, to Canon Kabushiki Kaisha. Electromagnetically driven shutter, 4,338,014, Cl. 354-234.000.
- Yoshikuni, Yoshiaki: See—  
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Yagi, Masahiro; and Ojima, Nobutoshi, 4,338,433, Cl. 536-46.000.
- Yoshino, Yasuhisa; Kuno, Akira; Shimizu, Hidetoshi; and Minegishi, Harumasa, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for measuring and indicating braking vehicle speeds, 4,337,651, Cl. 73-129.000.
- Yoshinori, Miyawaki: See—  
Akira, Abe; Kimura, Shoji; and Yoshinori, Miyawaki, 4,337,778, Cl. 128-680.000.
- Young, Ian A., to Mostek Corporation. Low sensitivity switched-capacitor ladder filter using monolithic MOS chip, 4,338,571, Cl. 330-84.000.
- Young, James E.; Walker, Ralph S.; and Chidester, James R. Flow regulating device for arterial catheter systems, 4,337,770, Cl. 128-214.00R.
- Yu, Hwa N.: See—  
Feth, George C.; Ning, Tak H.; Tang, Denny D.; Wiedmann, Siegfried K.; and Yu, Hwa N., 4,338,622, Cl. 357-92.000.
- Yuji, Tanaka: See—  
Tetsuro, Fujiwara; Yuji, Tanaka; and Tsunetomo, Takei, 4,338,301, Cl. 424-95.000.
- Yukawa, Koji; Miyazaki, Masayuki; and Murahashi, Takashi, to Konishiroku Photo Industry Co., Ltd. Device for detecting the size of the material to be copied in copying machines, 4,338,020, Cl. 355-41.000.
- Zabransky, Robert F.: See—  
Vickers, Anthony G.; and Zabransky, Robert F., 4,338,476, Cl. 585-440.000.
- Zaengl, Walter S.; and Bernasconi, Felix, to Forschungskommission des Sev und VSE fur (FKH). High voltage insulation testing system, 4,338,561, Cl. 323-208.000.
- Zaidan Hojin Handotai Kenkyu Shinkokai: See—  
Nishizawa, Jun-ichi, 4,338,618, Cl. 357-43.000.
- Zalipsky, Jerome J.: See—  
Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., 4,338,441, Cl. 544-211.000.
- Zannucci, Joseph S.; and Sublett, Bobby J., to Eastman Kodak Company. Polyester compositions having improved resistance to radiation deterioration, 4,338,247, Cl. 528-307.000.
- Zeijlstra, Foeke, to Akzo N.V. Process for the removal of heavy metals from aqueous liquids, 4,338,200, Cl. 210-724.000.
- Zeitlin, Martin A.: See—  
Harper, Jon J.; and Zeitlin, Martin A., 4,338,464, Cl. 562-608.000.
- Zelder, Felix: See—  
Schlosser, Hermann; Zelder, Felix; Riedel, Rudolf; and Borberg, Klaus, 4,337,608, Cl. 53-471.000.
- Zelli, Salvatore: See—  
Zelli, Sante; and Zelli, Salvatore, 4,337,845, Cl. 187-17.000.
- Zelli, Sante; and Zelli, Salvatore. Telescopic elevator devices in particular for dollies, 4,337,845, Cl. 187-17.000.
- Zenith Radio Corporation: See—  
d'Hautecourt, Alain H.; and Tzakis, George J., 4,338,624, Cl. 358-22.000.
- Engel, Christopher M.; and Tzakis, George J., 4,338,630, Cl. 358-172.000.
- Falater, Scott L., 4,338,632, Cl. 358-194.100.
- Snopko, Paul A., 4,338,492, Cl. 179-2.0TV.
- Zettergren, Ted. Converter for valves, 4,337,798, Cl. 137-627.500.
- Zeugner, Horst: See—  
Lipmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Hell, Insa; and Wolf, Klaus-Ulrich, 4,338,314, Cl. 424-246.000.
- Zimmerman, Edgar S. Mouthguard, 4,337,765, Cl. 128-136.000.
- Zimmerman, Heinz A. R., to Ameron, Inc. Welding plastic tube lining, 4,338,153, Cl. 156-391.000.
- Zimmerman, Robert L.; and Yeakey, Ernest L., to Texaco Inc. Polyurethanes using bis(aminoethyl)ether derivatives as catalysts, 4,338,408, Cl. 521-115.000.
- Zoecon Corporation: See—  
Henrick, Clive A.; Labovitz, Jeffrey N.; Fox, Roland T. V.; Rathmell, William G.; and Shephard, Margaret C., 4,338,318, Cl. 424-251.000.
- Zuhlke Engineering AG: See—  
Buchmann, Hans, 4,337,890, Cl. 234-1.000.
- Zupan, Jacob A., to Merck & Co., Inc. Novel process and intermediates useful in the preparation of sympathomimetic amines, 4,338,455, Cl. 560-29.000.
- Zupanick, Joseph E., to Sun Gas Company. Orifice wear compensation, 4,337,668, Cl. 73-861.610.
- Zverina, Karel: See—  
Bartuska, Miloslav; Zverina, Karel; Szabo, Josef; Pospisil, Borivoj; and Kroupa, Petr, 4,338,509, Cl. 219-121.0PR.

## LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF JULY, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Bake, Earl A.; and Lunt, William G., to Rockwell International Corporation. Sealed valve and related structure. Re. 30,989, Cl. 251-335.00A.
- Crickmer, Charles D., to Otis Engineering Corporation. Well tool. Re. 30,988, Cl. 166-217.000.
- E. R. Squibb & Sons, Inc.: See—  
Haugwitz, Rudiger D.; and Maurer, Barbara V., Re. 30,990, Cl. 424-273.00B.
- Federal Screw Works: See—  
Ostrowski, Carl L., Re. 30,991, Cl. 179-1.0SM.
- Haugwitz, Rudiger D.; and Maurer, Barbara V., to E. R. Squibb & Sons, Inc. Benzimidazole derivatives, compositions thereof and method of use as anthelmintics. Re. 30,990, Cl. 424-273.00B.
- Lunt, William G.: See—  
Bake, Earl A.; and Lunt, William G., Re. 30,989, Cl. 251-335.00A.
- Maurer, Barbara V.: See—  
Haugwitz, Rudiger D.; and Maurer, Barbara V., Re. 30,990, Cl. 424-273.00B.
- Ostrowski, Carl L., to Federal Screw Works. Voice synthesizer. Re. 30,991, Cl. 179-1.0SM.
- Otis Engineering Corporation: See—  
Crickmer, Charles D., Re. 30,988, Cl. 166-217.000.
- Rockwell International Corporation: See—  
Bake, Earl A.; and Lunt, William G., Re. 30,989, Cl. 251-335.00A.

## LIST OF DESIGN PATENTEES

- Abe, Masaru: See—  
Maeda, Muneyoshi; and Abe, Masaru, 265,307, Cl. D12-149.000.
- Agri-Fab Industries, Inc.: See—  
Woods, Robert F.; and Bergstrom, Ronald F., 265,284, Cl. D8-344.000.
- Atari, Inc.: See—  
McKinsey, Kevin P.; and Lee, Hugh M., 265,315, Cl. D14-102.000.
- Atlas Textiles Co. Division of The Ohio Wiping Cloth Mfg. Co., The: See—  
Frantz, Frank B., 265,269, Cl. D4-6.000.
- Austin, John J., to Champion International Corporation. Sleeve for connecting containers, 265,294, 7-6-82, Cl. D9-434.000.
- Baker Industries, Inc.: See—  
Jaretsky, Michael G., 265,299, Cl. D10-106.000.
- Baldwin, Robley H. Leg for recreational vehicle and mobile home hose support, 265,286, 7-6-82, Cl. D8-356.000.
- Baughman, Gary E., to Malm Fireplaces, Inc. Free standing fireplace, 265,339, 7-6-82, Cl. D23-97.000.
- Bennett, Margaret E. Meat tenderizer, 265,281, 7-6-82, Cl. D7-153.000.
- Bergstrom, Ronald F.: See—  
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- Bollen, Roger J.; Erdos, William A.; and Ramsey, Roger H., to Eagle Rubber Co., Inc. Spring mounted riding toy, 265,334, 7-6-82, Cl. D21-247.000.
- Bravo, Anthony L., to Zeno Table Co., Inc. Combined dresser and dual mirror unit, 265,275, 7-6-82, Cl. D6-154.000.
- Bridgestone Tire Company Limited: See—  
Kojima, Hiroshi; and Yokoyama, Hideki, 265,302, Cl. D12-145.000.
- Kojima, Hiroshi; and Yashima, Toshihiko, 265,304, Cl. D12-147.000.
- Kojima, Hiroshi; and Shimada, Tatsuro, 265,305, Cl. D12-147.000.
- Kojima, Hiroshi; and Yokoyama, Hideki, 265,306, Cl. D12-147.000.
- Maeda, Muneyoshi; and Abe, Masaru, 265,307, Cl. D12-149.000.
- Yokoyama, Hideki, 265,303, Cl. D12-147.000.
- Casio Computer Co., Ltd.: See—  
Wada, Masao, 265,295, Cl. D10-38.000.
- Chadwick, Donald T.: See—  
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- Champion International Corporation: See—  
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- Clarke, William B.: See—  
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- Clauss, Robert E. Fishing lure, 265,336, 7-6-82, Cl. D22-27.000.
- Conti, Rino, to Dart Industries Inc. Horticultural implement container, 265,267, 7-6-82, Cl. D3-30.100.
- Conti, Rino, to Dart Industries Inc. Canister rim or the like, 265,280, 7-6-82, Cl. D7-129.000.
- Corbo, Nicholas J.: See—  
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- Craig, George W. Toy glider, 265,329, 7-6-82, Cl. D21-88.000.
- Dart Industries Inc.: See—  
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- Conti, Rino, 265,280, Cl. D7-129.000.
- D'Lites Restaurants, Inc.: See—  
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- Dolinsky, Frank. Shopping bag, 265,290, 7-6-82, Cl. D9-305.000.
- Doman, Donald W., to Kohler Co. Hydrotherapy spa, 265,345, 7-6-82, Cl. D24-38.000.
- Dunn, Charles E., to Wood Valley Industries, Inc. Combined appliance support and retractable working surface, 265,277, 7-6-82, Cl. D7-46.000.
- Eagle Rubber Co., Inc.: See—  
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- Eisen, Harry. Cord slack gauge, 265,297, 7-6-82, Cl. D10-70.000.
- Englert, Michael W., Jr. Trash can hold down bracket, 265,285, 7-6-82, Cl. D8-354.000.
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- Gabriel, Edwin Z. Educational electronic analog computer laboratory, 265,322, 7-6-82, Cl. D19-62.000.
- General Electric Company: See—  
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- Glassman, Richard D. Cervical dilator, 265,342, 7-6-82, Cl. D24-23.000.
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- Hamada, Masanori; and Saigo, Yoshiyuki, to Matsushita Electric Industrial Co., Ltd. Radio receiver, 265,313, 7-6-82, Cl. D14-70.000.
- Harrison, Christopher R. B.; and Pittaway, Alan K., to Wilkinson Sword Limited. Pruner, 265,282, 7-6-82, Cl. D8-5.000.
- Hedgeman, Peter M. Felt pen holder, 265,324, 7-6-82, Cl. D19-85.000.
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Kojima, Hiroshi; and Yashima, Toshihiko, to Bridgestone Tire Company Limited. Vehicle tire. 265,304, 7-6-82, Cl. D12-147.000.  
Kojima, Hiroshi; and Shimada, Tatsuro, to Bridgestone Tire Company Limited. Vehicle tire. 265,305, 7-6-82, Cl. D12-147.000.  
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Lucas, George W., Jr.; McQuarrie, Ralph; and Johnston, Joseph E., to Lucasfilm Ltd. Toy figure. 265,332, 7-6-82, Cl. D21-178.000.  
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Sternbach, Glenn A., to Vonscot Industries Incorporated. Abrading element support structure. 265,318, 7-6-82, Cl. D15-126.000.  
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Wilson, Jerry F.: See—  
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Wood Valley Industries, Inc.: See—  
Dunn, Charles E., 265,277, Cl. D7-46.000.  
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Ziaylek, Theodore, Jr. Support bracket for biomarine breathing apparatus. 265,287, 7-6-82, Cl. D8-373.000.  
Zic, Milton N., to D'Lites Restaurants, Inc. Building. 265,349, 7-6-82, Cl. D25-34.000.  
Zimmer, John H., Jr., to Karrousel Racing Incorporated. Oil pan guard. 265,308, 7-6-82, Cl. D12-190.000.  
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- Brooks, Donald R., executor: See—  
Davis, Luther D., deceased; and Brooks, Donald R., executor, 4,863, Cl. 43.000.  
Davis, Luther D., deceased; and by Brooks, Donald R., executor, to University of California, The Regents of the: Peach tree (N30-12E). 4,863, 7-6-82, Cl. 43.000.  
Jeffers, Glenn C. Red maple. 4,864, 7-6-82, Cl. 51.000.  
University of California, The Regents of the: See—  
Davis, Luther D., deceased; and Brooks, Donald R., executor, 4,863, Cl. 43.000.

## LIST OF DEFENSIVE PUBLICATIONS

### APPLICANTS TO WHOM

### DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 6TH DAY OF JULY, 1982

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

- Ballintine, Elmer J. Device for extraction of cataracts using miniaturized progressing cavity pump. T102,001, 7-6-82, Cl. 128-276.000.  
Bullock, Michael K. Method and apparatus for aligning pliable material. T102,003, 7-6-82, Cl. 271-227.000.  
Doane, Donald L.; and Ting, Vincent W. Electrostaticographic carrier beads and method of making. T102,004, 7-6-82, Cl. 430-108.000.  
Jubera, Johnny D. Phase invariant, adjustable power controller. T102,002, 7-6-82, Cl. 343-854.000.  
Ting, Vincent W.: See—  
Doane, Donald L.; and Ting, Vincent W., T102,004, Cl. 430-108.000.



## ISSUED JULY 6, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

	CLASS 2	615	4,337,590	92	4,338,119	168	4,337,692	489	4,337,746	357	4,337,810
153	4,337,539		CLASS 43	98	4,338,120		CLASS 99	501	4,337,747		CLASS 145
	CLASS 4	42.09	4,337,591	118	4,338,121	491	4,337,693	602	4,337,748	4.2	4,337,811
546	4,337,540	113	4,337,592	122	4,338,122		CLASS 100		CLASS 124		CLASS 148
	CLASS 6		CLASS 44	53	4,337,632	45	4,337,694	24 R	4,337,749	1.5	4,338,138
4 R	4,337,541	3 A	4,338,098	94	4,337,633	195	4,337,695		CLASS 125	6.14 R	4,338,140
	CLASS 7		CLASS 46	113	4,337,634		CLASS 101	15	4,337,750	6.15 Z	4,338,141
107	4,337,542	64	4,337,593	410	4,337,635	93.04	4,337,696		CLASS 126	26	4,338,142
	CLASS 8		CLASS 47	457	4,337,636	93.48	4,337,697	25 R	4,337,751	31.55	4,338,143
478	4,338,090	1.1	4,337,594	461	4,337,637	111	4,337,698	215	4,337,752	113	4,338,144
524	4,338,091	10	4,337,595		CLASS 73	348	4,337,699	287	4,337,753	133	4,338,145
549	4,338,092		CLASS 48	1 R	4,337,638	415.1	4,337,700	430	4,337,754	403	4,338,131
	4,338,093		4,338,099	3	4,337,639		CLASS 102	431	4,337,755		CLASS 149
	CLASS 14		CLASS 49	35	4,337,640	249	4,337,701	432	4,337,756	109.6	4,338,146
	CLASS 15		4,337,596	52	4,337,644	254	4,337,702	437	4,337,757		CLASS 150
71.1	4,337,545	210	4,337,597		4,337,645	406	4,337,703	438	4,337,759	11	4,337,812
	CLASS 16		CLASS 51	59	4,337,646		CLASS 104		CLASS 128		CLASS 152
49 R	4,337,546	135 BT	4,337,598	116	4,337,647	70	4,337,704	1 R	4,337,760	209 R	4,337,813
250.42	4,337,547	289 R	4,337,599	117.3	4,337,648		CLASS 105	11	4,337,761	429	4,337,814
	CLASS 17		CLASS 52	118	4,337,649	168	4,337,705	20	4,337,762		CLASS 156
311	4,337,548		4,337,600	119 A	4,337,650	184	4,337,706	80 F	4,337,764		4,338,147
	CLASS 17		4,337,601	129	4,337,651	250	4,337,707		4,337,765	182	4,338,148
1 R	4,337,549	82	4,337,602	145	4,337,652	397	4,337,708	136	4,337,766	227	4,338,149
23	4,337,550	210	4,337,603	151	4,337,653		CLASS 106	204.26	4,337,767	248	4,338,150
52	4,337,551	287	4,337,604	190 CV	4,337,654	22	4,338,133	206.28	4,337,768	275.5	4,338,151
71	4,337,552	293	4,337,605	193 R	4,337,655	85	4,338,134	214 F	4,337,769	344	4,338,152
	CLASS 23	520	4,337,606	290 V	4,337,656	97	4,338,135	214 R	4,337,770	351	4,338,153
	4,338,096	573	4,337,607	313	4,337,657	273 N	4,338,136	287	4,337,771	391	4,338,154
230 A	4,338,094		CLASS 53	335	4,337,658	273 R	4,338,137	290 R	4,337,772	392	4,338,155
230 B	4,338,094		4,337,608	432 R	4,337,659		CLASS 108	305	4,337,773	539	4,338,156
230 C	4,338,097	471	4,337,609	600	4,337,660		4,337,774	325	4,337,774	627	4,338,157
	CLASS 24	569	4,337,610	628	4,337,661	33	4,337,709	349 B	4,337,775		CLASS 160
	CLASS 24	24	4,337,610	632	4,337,662	53.3	4,337,710	419 PG	4,337,776	392	4,337,815
68 R	4,337,553		CLASS 54	701	4,337,663		CLASS 110	419 PT	4,337,777		CLASS 162
115 R	4,337,554		4,337,664	740	4,337,665	346	4,337,711	680	4,337,778	37	4,338,158
249 R	4,337,555	18	4,338,100	766	4,337,666		CLASS 111	691	4,337,779		CLASS 164
	CLASS 27	48	4,338,101	818	4,337,667	7	4,337,712	774	4,337,780	37	4,338,158
2	4,337,556	185	4,338,102	861.28	4,337,668		CLASS 112		CLASS 130		4,337,816
	CLASS 28	259	4,338,103	863.11	4,337,669	153	4,337,713	27 H	4,337,781	58.1	4,337,817
250	4,337,557	291	4,338,104		CLASS 74		4,337,713	30 E	4,337,782	120	4,337,817
	CLASS 29	304	4,338,105	35	4,337,643		CLASS 114		CLASS 131		CLASS 165
	4,337,557	316	4,338,106	96	4,337,670	90	4,337,714	375	4,337,783	2	4,337,818
	CLASS 29		CLASS 56	424.8 C	4,337,671	121	4,337,715		4,337,783	9	4,337,819
33 T	4,337,558	10.2	4,337,611	475	4,337,672	222	4,337,716		CLASS 134	11 R	4,337,820
145.5 B	4,337,559	98	4,337,612		4,337,673	294	4,337,717	34	4,337,784	12	4,337,821
155 R	4,337,560	370	4,337,613	477	4,337,675	354	4,337,718		CLASS 136	26	4,337,822
157 R	4,337,561		CLASS 59	483 PB	4,337,676	357	4,337,719	229	4,338,479	48 R	4,337,823
402.11	4,337,562		4,337,614		CLASS 75		CLASS 116	249	4,338,480	70	4,337,824
451	4,337,563	86	4,337,615		4,338,123		4,337,718	255	4,338,481	104.21	4,337,825
453	4,337,564		CLASS 60	34	4,338,124	34 R	4,337,719	256	4,338,482	151	4,337,826
509	4,337,565		4,337,616	68 R	4,338,125		CLASS 118		CLASS 137	172	4,337,827
558	4,337,566	39.14 R	4,337,615	84	4,338,126	46	4,337,719		4,337,785		CLASS 166
596	4,337,567	39.28 R	4,337,616		4,338,127	50	4,337,720	1	4,337,786	217	Re.30.988
598	4,337,568		4,337,617	93 R	4,338,128	60	4,337,721		4,337,787	274	4,337,828
605	4,337,569	39.55	4,337,618	123 CB	4,338,129	303	4,337,722	34	4,337,788	366	4,337,829
623	4,337,570		4,337,619	130 R	4,338,129	306	4,337,723		4,337,789		CLASS 169
623.2	4,337,571	418	4,337,620	208 R	4,338,132	652	4,337,724	350	4,337,790	24	4,337,830
792	4,337,572	527	4,337,621		CLASS 76		4,337,725	245	4,337,791	69	4,337,831
831	4,337,573	641.13	4,337,622	108 A	4,337,677	665	4,337,726	558	4,337,792		CLASS 172
883	4,337,574	716	4,337,623		CLASS 81		4,337,727	561 R	4,337,793		4,337,832
	CLASS 30		4,338,107	3.4	4,337,678		4,337,728	596.17	4,337,794	265	4,337,833
47	4,337,575	17	4,338,108		CLASS 83		4,337,729	625.17	4,337,795	445.1	4,337,834
162	4,337,576	22	4,338,109	385	4,337,679	51 R	4,337,728		4,337,796		4,337,835
	CLASS 33	45	4,337,624	456	4,337,680	52 B	4,337,729	625.48	4,337,797	560	4,337,836
1 N	4,337,577	79	4,337,625		CLASS 84		CLASS 122	627.5	4,337,798	822	4,337,837
125 R	4,337,578	82	4,337,626		4,337,681		20 A		CLASS 138		CLASS 174
169 C	4,337,579	346	4,337,627	1.24	4,337,682		4,337,730		4,337,799		4,338,483
179.5 R	4,337,580	541	4,338,109	193	4,337,682		CLASS 123		4,337,800	28	4,338,484
288	4,337,581		4,338,110	383 A	4,337,683	41.1	4,337,731		4,337,801	48	4,338,485
	CLASS 34		4,338,111	421	4,337,684	65 PE	4,337,732	57	4,337,802	52 H	4,338,486
27	4,337,582	1	4,338,112		CLASS 89	193 H	4,337,733		4,337,803	143	4,338,487
33	4,337,583	18.2	4,338,113		4,337,685		4,337,734		4,337,804		CLASS 177
65	4,337,584	27	4,338,114		CLASS 91		4,337,735		4,337,805		4,337,838
86	4,337,585	28	4,338,115	7	4,337,686		4,337,736		4,337,806		CLASS 179
	CLASS 37	29	4,338,116		4,337,687		4,337,737		4,337,807		4,338,488
	4,338,117	158	4,338,117	49	4,337,688		4,337,738		4,337,808	1 A L	4,338,489
83	4,337,587		CLASS 68	401	4,337,689		4,337,739		4,337,809	1 R	4,338,490
222	4,337,586		4,337,630	422	4,337,690		4,337,740		4,337,810	1 S M	Re.30.991
	CLASS 40	13 R	4,337,631	438	4,337,691		4,337,741		4,337,811		4,338,491
	4,337,589	189	4,337,631		CLASS 92		4,337,742		4,337,812		4,338,492
10 R	4,337,588		4,338,118	129	4,337,692		4,337,743		4,337,813		4,338,493
124.1	4,337,589	76	4,338,118	138	4,337,693		4,337,744	114 A	4,337,814	2 TV	4,338,494
								193 A	4,337,815		



## CLASSIFICATION OF PATENTS

5 R	4,338,493	519	4,338,195	489	4,337,915	93	4,337,938	408	4,338,550	455	4,338,001
6.09	4,338,494	610	4,338,196	558	4,337,916	96	4,337,939		CLASS 318	CLASS 351	
99 M	4,338,495	621	4,338,197			106	4,337,940				
175.1 R	4,338,496	673	4,338,198		CLASS 250	113	4,337,941	254	4,338,551	39	4,338,002
		721	4,338,199	201	4,338,514	144	4,337,942	266	4,338,552	45	4,338,003
	CLASS 180	724	4,338,200	214 R	4,338,515			328	4,338,553	47	4,338,004
179	4,337,839	771	4,338,201	226	4,338,516		CLASS 273	328	4,338,554	161	4,338,005
233	4,337,840	795	4,338,202	231 SE	4,338,517	2	4,337,943	561	4,338,555		
271	4,337,841			237 G	4,338,518	65 A	4,337,944	569	4,338,556		CLASS 353
302	4,337,842			239	4,338,519	142 E	4,337,945	729	4,338,557	85	4,338,006
	CLASS 181	181	4,337,867	356	4,338,520	225	4,337,946	802	4,338,558		
		267	4,337,868	366	4,338,521	235 R	4,337,947	805	4,338,559		CLASS 354
175	4,337,843		CLASS 215	468	4,338,522	237	4,337,948			21	4,338,008
	CLASS 182	201	4,337,869	472	4,338,523	324	4,337,949		CLASS 322	152	4,338,009
187	4,337,844	252	4,337,870		CLASS 251	426	4,337,950	2 A	4,338,560	196	4,338,010
	CLASS 187	328	4,337,871	90	4,337,917					200	4,338,012
17	4,337,845		CLASS 219	304	4,337,919	12	4,337,955		CLASS 323	234	4,338,013
29 R	4,337,846	10.77	4,338,503	335 A	Re.30,989	27	4,337,951	208	4,338,561	275	4,338,014
	4,337,847	69 M	4,338,504	357	4,337,920	30	4,337,952	323	4,338,562	303	4,338,015
	4,337,848		4,338,505		CLASS 252	152	4,337,953		CLASS 324		4,338,016
			4,338,506	8.55 D	4,338,203	237 R	4,337,954	65 CR	4,338,563		
276	4,337,849	121 EJ	4,338,508	8.75	4,338,204			71 CP	4,338,564		CLASS 355
319	4,337,850	121 LJ	4,338,506	32.5	4,338,205				4,338,565	3 TR	4,338,017
330	4,337,851	121 PC	4,338,507	34	4,338,206	7.14	4,337,957		4,338,566	8	4,338,018
375	4,337,852	121 PR	4,338,509	47.5	4,338,207	16	4,337,958		4,338,567	14 D	4,338,019
		497	4,338,511	70	4,338,208	43.23	4,337,959	466	4,338,568	14 SH	4,338,023
	CLASS 190			75	4,338,209	47.37 R	4,337,960			41	4,338,020
53	4,337,853		CLASS 220	96	4,338,210	87.04 A	4,337,961	155	4,338,569	60	4,338,022
	CLASS 191	19	4,337,872	142	4,338,211		4,337,962			100	4,338,007
12.4	4,338,497	204	4,337,873	174.22	4,338,212	279	4,337,963		CLASS 356	23	4,338,024
66	4,338,498	306	4,337,874	188.3 CL	4,338,213	605	4,337,964	4.6	4,338,570	71	4,338,025
	CLASS 192	368	4,337,875	311	4,338,216	628	4,337,965	84	4,338,571	73	4,338,026
			CLASS 221	358	4,338,217	645	4,337,966	277	4,338,572	105	4,338,027
13 R	4,337,854	36	4,337,876	361	4,338,218	777	4,337,967	298	4,338,573	155	4,338,028
84 A	4,337,855	171	4,337,877	428	4,338,219					240	4,338,029
	CLASS 198		CLASS 222	430	4,338,220	27.5	4,337,968	1 A	4,338,574	311	4,338,030
599	4,337,856	1	4,337,878	455 R	4,338,221			65	4,338,575	336	4,338,031
773	4,337,857	102	4,337,879	500	4,338,222	24	4,337,969	67	4,338,576	431	4,338,032
	CLASS 200	152	4,337,880	545	4,338,223	136	4,337,970		CLASS 332	444	4,338,033
			CLASS 223	628	4,338,215	315	4,337,971	21	4,338,579		
50 C	4,338,499		CLASS 224		CLASS 254		CLASS 290	31 T	4,338,580		CLASS 357
144 AP	4,338,500	1	4,337,881	93 HP	4,337,921	2	4,338,524			15	4,338,616
147 A	4,338,501	42.03 R	4,337,882	134.3 FT	4,337,922	17	4,338,525		CLASS 333	38	4,338,617
159 B	4,338,502	250	4,337,883	134.3 R	4,337,924			165	4,338,581	43	4,338,618
	CLASS 201		CLASS 226	264	4,337,925	67	4,337,972	175	4,338,582	46	4,338,619
		1	4,338,160	365	4,337,926	290	4,337,973		CLASS 335	50	4,338,620
	CLASS 202	52	4,337,884		CLASS 260			186	4,338,583	74	4,338,621
228	4,338,161	97	4,337,885	112 R	4,338,248	214	4,337,974	210	4,338,584	92	4,338,622
	CLASS 203	263 B	4,337,886	397.2	4,338,250	215	4,337,975	274	4,338,585		CLASS 358
8	4,338,162		CLASS 229	405.5	4,338,251	216	4,337,976		CLASS 337	22	4,338,623
	CLASS 204	16 R	4,337,887	408	4,338,252			74	4,338,586	29	4,338,625
2.1	4,338,163	48 R	4,337,888	439 R	4,338,253	85	4,337,977		CLASS 339	93	4,338,626
4	4,338,164	62	4,337,889	448 AD	4,338,255	367	4,337,978	143 R	4,337,989	113	4,338,627
7	4,338,165		CLASS 234	453 A	4,338,256				CLASS 340	120	4,338,628
59 R	4,338,166		CLASS 235	454	4,338,257		CLASS 299	32	4,338,587	127	4,338,631
60	4,338,167	1	4,337,890	456 A	4,338,258	4	4,337,979	146.3 H	4,338,588	127	4,338,632
108	4,338,168		CLASS 236	465.5 R	4,338,259	91	4,337,980	347 CC	4,338,589	194.1	4,338,633
155	4,338,169		CLASS 237	502 R	4,338,260		CLASS 307		4,338,592	213	4,338,634
158 R	4,338,170	92 T	4,338,512	508	4,338,261	116	4,338,526		4,338,593	214	4,338,635
159.15	4,338,171	449	4,338,513	544 S	4,338,262	494	4,338,527		4,338,594	254	4,338,636
159.23	4,338,172		CLASS 238	762	4,338,263	511	4,338,528		4,338,595	256	4,338,637
162 R	4,338,173	9 A	4,337,891		CLASS 261	518	4,338,529		4,338,596	288	4,338,637
195 P	4,338,174	93 R	4,337,892	29	4,338,264	520	4,338,530		4,338,597		CLASS 360
195 R	4,338,175		CLASS 239	39 A	4,338,265	540	4,338,531		4,338,598	60	4,338,638
228	4,338,176		CLASS 240	94	4,338,266	590	4,338,532		4,338,599	66	4,338,639
243 R	4,338,177	7	4,337,893	121 R	4,338,267		CLASS 308		4,338,600	73	4,338,640
275	4,338,178	46	4,337,894	140 A	4,338,268	10	4,337,981		4,338,601	90	4,338,641
284	4,338,179		CLASS 241		CLASS 264	26	4,337,982		870.02	97	4,338,642
290 R	4,338,180	7	4,337,895	22	4,338,269	132	4,338,644			135	4,338,645
294	4,338,181	102	4,337,896	46.4	4,338,270	135	4,338,645		CLASS 343	137	4,338,645
	CLASS 206	214.25	4,337,897	54	4,338,271	10	4,338,602				
5.1	4,337,858	422	4,337,898	86	4,338,272	17.1 R	4,338,603		CLASS 361		
37	4,337,859	543	4,337,899	167	4,338,273	17.2 R	4,338,604			18	4,338,646
376	4,337,860		CLASS 242	171	4,338,274	100 LE	4,338,605			96	4,338,647
579	4,337,861		CLASS 243	176 F	4,338,275	744	4,338,606			127	4,338,648
632	4,337,862	14	4,337,900	184	4,338,276	754	4,338,607			139	4,338,649
	CLASS 208	46 B	4,337,901	186	4,338,277	779	4,338,608			154	4,338,650
		56	4,337,902	191	4,338,278	786	4,338,609			171	4,338,651
8 LE	4,338,182		CLASS 244	214	4,338,279		CLASS 346			188	4,338,652
10	4,338,183		CLASS 245	242	4,338,280						
	CLASS 209	56 A	4,337,903		CLASS 266						
11 LE	4,338,185	75.53	4,337,904	190	4,337,927		CLASS 312			223	4,338,653
89	4,338,186	84.2 G	4,337,905	197	4,337,928	219	4,337,987			268	4,338,654
127	4,338,187	107.4 A	4,337,906	248	4,337,929	250	4,337,988			281	4,338,655
		107.7	4,337,907	283	4,337,930		CLASS 313				
2	4,338,188		CLASS 246		CLASS 267						CLASS 363
12	4,337,863	198	4,337,908	102	4,337,931	217	4,338,539			63	4,338,656
534	4,337,864	199	4,337,909		CLASS 269	220	4,338,540			68	4,338,657
548	4,337,865	204	4,337,910	23	4,337,932	411	4,338,541			72	4,338,658
656	4,337,866		CLASS 247	40	4,337,933	446	4,338,542				
	CLASS 210	3.1	4,337,911	77	4,337,934	457	4,338,543				CLASS 364
		102 R	4,337,912		CLASS 271	489	4,338,544			170	4,338,659
180	4,338,189	151 B	4,337,913				CLASS 315			200	4,338,660
195.2	4,338,190		CLASS 248	9	4,337,935	39.71	4,338,545				4,338,661
199	4,338,191	428	4,337,914	293	4,337,936	119	4,338,546				4,338,662
221.2	4,338,192				CLASS 272	312	4,338,547				4,338,663
401	4,338,193			67	4,337,937	382	4,338,548			422	4,338,664
490	4,338,194	201	4,337,918			393	4,338,549			424	4,338,665

## CLASSIFICATION OF PATENTS

424.1	4,338,666			4,338,314	212	4,338,368	CLASS 501	CLASS 536
426	4,338,667	CLASS 411		4,338,315	235	4,338,369		4,338,433
	4,338,668	424	4,338,054	4,338,316	250	4,338,370	136	4,338,432
	4,338,669		CLASS 414	4,338,317	283	4,338,371	CLASS 518	CLASS 542
	4,338,670		4,338,055	4,338,318	336	4,338,372	707	4,338,434
478	4,338,671	114	4,338,058	4,338,319	383	4,338,373		
513	4,338,672	144	4,338,056	4,338,320	411	4,338,374	CLASS 521	CLASS 544
523	4,338,673	152	4,338,057	4,338,321	412	4,338,375		
528	4,338,674	177	4,338,057	4,338,322	417	4,338,376	59	4,338,435
718	4,338,675	501	4,338,059	4,338,323	428	4,338,377	115	4,338,436
748	4,338,676	748	4,338,060	4,338,324	462	4,338,378	157	4,338,438
786	4,338,676			4,338,326	520	4,338,379		4,338,439
900	4,338,677	CLASS 415		4,338,327	575	4,338,381	CLASS 523	4,338,437
		I	4,338,061	4,338,328	594	4,338,380	177	4,338,440
CLASS 365		164	4,338,063	4,338,329			200	4,338,441
174	4,338,678	213 A	4,338,062	Re. 30,990			206	4,338,442
203	4,338,679			4,338,330	CLASS 429		214	4,338,443
				4,338,331	53	4,338,382	206	
CLASS 368		134 R	4,338,064	4,338,332	88	4,338,383	410	CLASS 546
29	4,338,680			4,338,333	119	4,338,384	414	138
72	4,338,681	CLASS 417		4,338,334	206	4,338,385	436	270
		207	4,338,065	4,338,335				314
CLASS 369		259	4,338,066		CLASS 430		CLASS 524	4,338,446
44	4,338,682				49	4,338,386	100	CLASS 548
50	4,338,683	CLASS 418		CLASS 425	58	4,338,387		4,338,447
92	4,338,684	37	4,338,067	38	59	4,338,388	109	4,338,448
				112	94	4,338,389	120	4,338,449
CLASS 372		486	4,338,130	115	106	4,338,390	143	140
23	4,338,578			140	122	4,338,391	284	185
36	4,338,577	CLASS 422		144	270	4,338,392	287	232
		64	4,338,279	371	386	4,338,393	302	251
CLASS 376		68	4,338,280	CLASS 426	621	4,338,394	320	263
228	4,338,159	98	4,338,281				399	CLASS 549
CLASS 400		105	4,338,282	1	6	CLASS 431	504	214
144.2	4,338,034	112	4,338,283	55	344	4,338,474	549	263
	4,338,035	171	4,338,284	82	351	4,338,075	706	CLASS 556
		257	4,338,285	96		4,338,076	777	445
CLASS 403				104	CLASS 432		CLASS 525	CLASS 560
16	4,338,036	12	4,338,286	231		4,338,077	62	29
24	4,338,037	53	4,338,287	308	11	4,338,078	66	4,338,455
56	4,338,038	210	4,338,288	331	14	4,338,079	122	96
230	4,338,039	294	4,338,289	461	115	4,338,080	132	119
385	4,338,040	481	4,338,290	532			145	122
		648 R	4,338,291	548	CLASS 435		179	176
CLASS 404		656	4,338,292	565	17	4,338,395	193	CLASS 562
9	4,338,041			600	68	4,338,396		448
CLASS 405		59	4,338,293	631	95	4,338,397		507
161	4,338,042	68	4,338,294	658	98	4,338,398		533
172	4,338,043	71	4,338,295	CLASS 427	99	4,338,399		599
	4,338,044	89	4,338,296	8	172	4,338,400	197	608
	4,338,045	91	4,338,297		178	4,338,401	281	CLASS 568
212	4,338,046	92	4,338,298	36	287	4,338,402	350	69
230	4,338,047		4,338,299	88	CLASS 444		388	343
261	4,338,048	94	4,338,300	123	24	4,337,629	397	428
		95	4,338,301	125	131	4,337,628	461	637
CLASS 406		117	4,338,302	127			511	666
63	4,338,049	129	4,338,303	130	CLASS 474			723
CLASS 408		150	4,338,304	247	201	4,338,081	65	802
I R	4,338,050	177	4,338,305	299	CLASS 493		216	861
		178	4,338,306	314				933
CLASS 409		180	4,338,307	387			CLASS 526	CLASS 570
			4,338,308	424	190	4,338,082	26	105
CLASS 410		233	4,338,309		239	4,338,083	53	4,338,474
		236	4,338,310	CLASS 428	244	4,338,084	73	CLASS 585
94	4,338,053	246	4,338,311		254	4,338,085	196	408
			4,338,312	35	219	4,338,086	222	440
			4,338,313	76	425	4,338,087	272	520
				141	445	4,338,088	307	606



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01 : 4,337,702	4,337,963	4,338,670	4,337,672	18 : 4,338,676	4,337,987
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4,337,729	4,337,992	4,337,754	4,337,700	4,337,556	4,338,194
4,337,858	4,337,993	4,338,287	4,337,708	4,337,587	4,338,560
4,337,882	4,337,994	4,338,608	4,337,769	4,337,611	4,338,605
04 : 4,337,541	4,337,998	4,338,642	4,337,771	4,337,616	4,337,575
4,337,548	4,338,016	4,338,650	4,337,774	4,337,637	4,337,579
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05 : 4,337,832	4,338,082	4,337,982	4,337,888	4,338,315	4,338,054
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4,337,597	4,338,201	4,338,380	4,337,949	4,338,383	4,338,295
4,337,627	4,338,207	4,338,395	4,337,954	4,338,436	4,338,362
4,337,636	4,338,300	4,338,407	4,337,959	4,338,439	4,338,397
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4,337,737	4,338,523	4,337,646	4,337,854	4,337,868	4,337,868
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4,337,764	4,338,547	4,337,887	4,338,309	4,338,059	4,337,550
4,337,775	4,338,557	4,337,913	4,338,336	4,338,067	4,337,554
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4,337,885	4,338,614	4,337,750	4,338,492	4,338,257	4,337,680
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4,337,924	4,338,653	4,337,914	4,338,566	4,338,239	4,337,738
4,337,936	4,338,658	4,337,937	4,338,587	4,337,762	4,337,739
4,337,937	4,338,660	4,337,952	4,338,593	4,337,831	4,337,742
4,337,943	4,338,667	4,337,952	4,338,624	4,337,796	4,337,745
4,337,952	4,338,668	4,337,952	4,338,630	4,337,591	4,337,784
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4,337,939	4,337,582	4,338,062	4,338,191	4,338,127	4,338,230
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4,338,162	4,337,693	4,338,108	4,338,231	4,338,233	4,338,371
4,338,208	4,337,755	4,338,138	4,338,263	4,338,234	4,338,406
4,338,232	4,337,755	4,338,144	4,338,268	4,338,305	4,338,408
4,338,400	4,337,765	4,338,172	4,338,270	4,338,324	4,338,414
4,338,423	4,337,767	4,338,175	4,338,289	4,338,335	4,338,415
4,338,453	4,337,852	4,338,181	4,338,290	4,338,363	4,338,416
4,338,457	4,337,876	4,338,206	4,338,297	4,338,379	4,338,443
4,338,459	4,337,938	4,338,215	4,338,341	4,338,405	4,338,465
4,338,474	4,337,961	4,338,222	4,338,346	4,338,441	4,338,567
4,338,519	4,338,131	4,338,252	4,338,361	4,338,447	4,338,571
4,338,526	4,338,303	4,338,303	4,338,364	4,338,448	4,338,599
4,338,610	4,338,173	4,338,340	4,338,366	4,338,466	4,338,600
4,338,651	4,338,205	4,338,365	4,338,370	4,338,469	4,338,615
4,337,598	4,338,213	4,338,387	4,338,382	4,338,471	4,338,661
4,337,620	4,338,220	4,338,390	4,338,388	4,338,479	4,338,679
4,337,638	4,338,229	4,338,396	4,338,411	4,338,483	4,338,727
4,337,658	4,338,235	4,338,430	4,338,425	4,338,486	4,338,770
4,337,660	4,338,236	4,338,446	4,338,463	4,338,589	4,338,777
4,338,253	4,338,253	4,338,454	4,338,488	4,338,621	4,338,822
4,337,670	4,338,267	4,338,495	4,338,531	4,338,647	4,338,832
4,337,730	4,338,269	4,338,578	4,338,538	4,338,674	4,338,833
4,337,777	4,338,288	4,338,622	4,338,553	4,338,685	4,338,866
4,337,779	4,338,334	4,338,634	4,338,583	4,338,714	4,338,866
4,337,986	4,338,343	4,338,648	4,338,584	4,338,725	4,338,898
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4,337,972	4,338,626	4,337,743	4,338,619	4,338,833	4,338,909
4,338,047	4,338,627	4,337,773	4,338,619	4,338,833	4,338,909
4,338,338	4,338,630	4,337,855	4,338,619	4,338,833	4,338,909
4,338,298	4,337,542	4,337,873	4,338,619	4,338,833	4,338,909
4,337,786	4,337,561	4,337,904	4,338,619	4,338,833	4,338,909
4,337,805	4,337,566	4,337,968	4,338,619	4,338,833	4,338,909
4,338,320	4,337,577	4,337,980	4,338,619	4,338,833	4,338,909
4,337,610	4,337,602	4,338,037	4,338,619	4,338,833	4,338,909
4,338,041	4,337,621	4,338,051	4,338,619	4,338,833	4,338,909

## DESIGN PATENTS

05 : 265,278	265,315	13 : 265,277	24 : 265,310	265,320	265,334
06 : 265,268	265,324	265,309	265,325	265,322	265,347
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265,276	265,331	265,294	265,270	265,333	265,287
265,284	265,332	265,328	265,280	265,348	265,300
265,285	265,339	265,338	265,336	265,271	265,329
265,286	265,340	265,349	265,308	265,290	265,266
265,291	265,344	265,343	265,316	265,317	265,281
265,297	265,341	265,346	265,265	265,318	265,335
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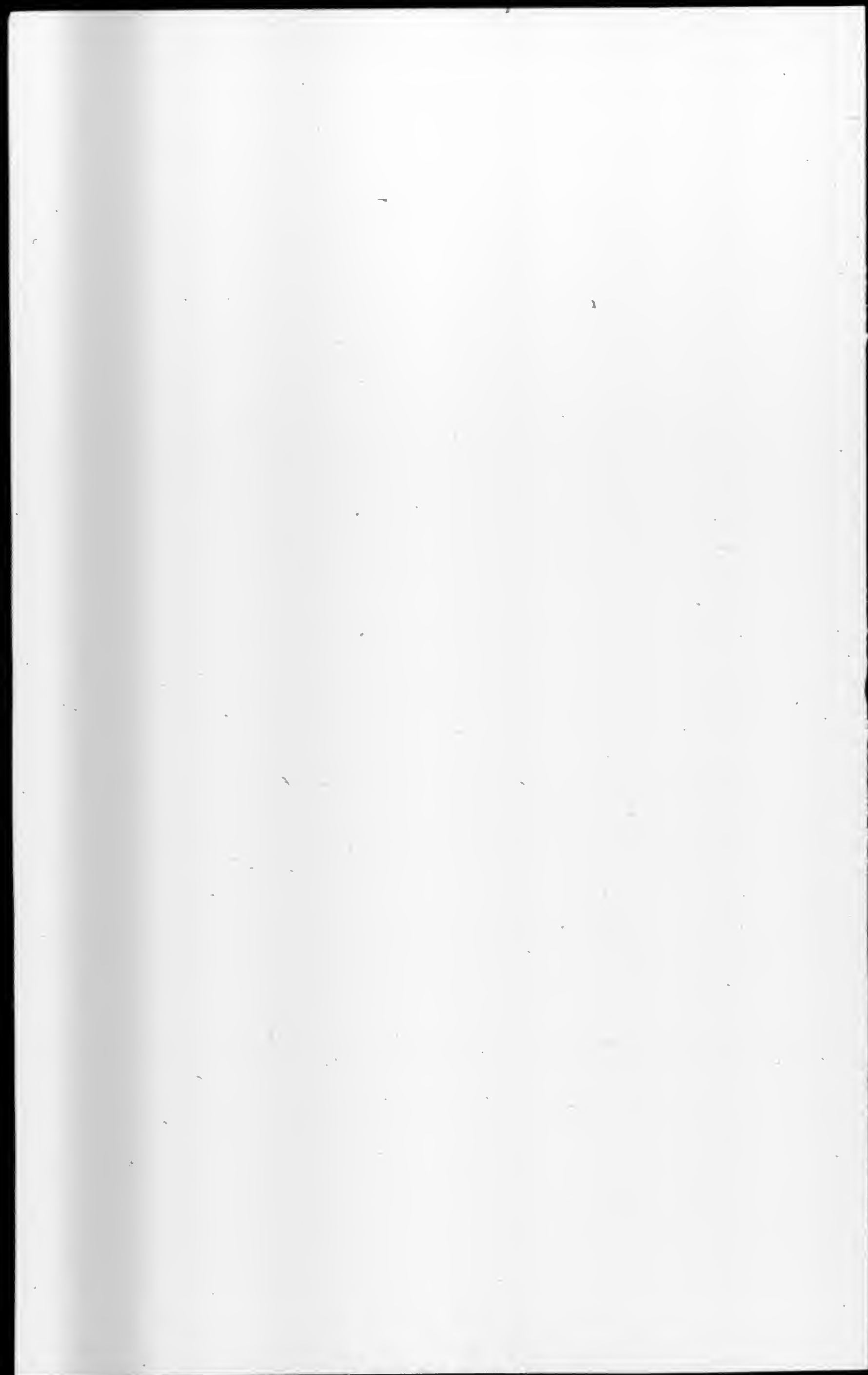
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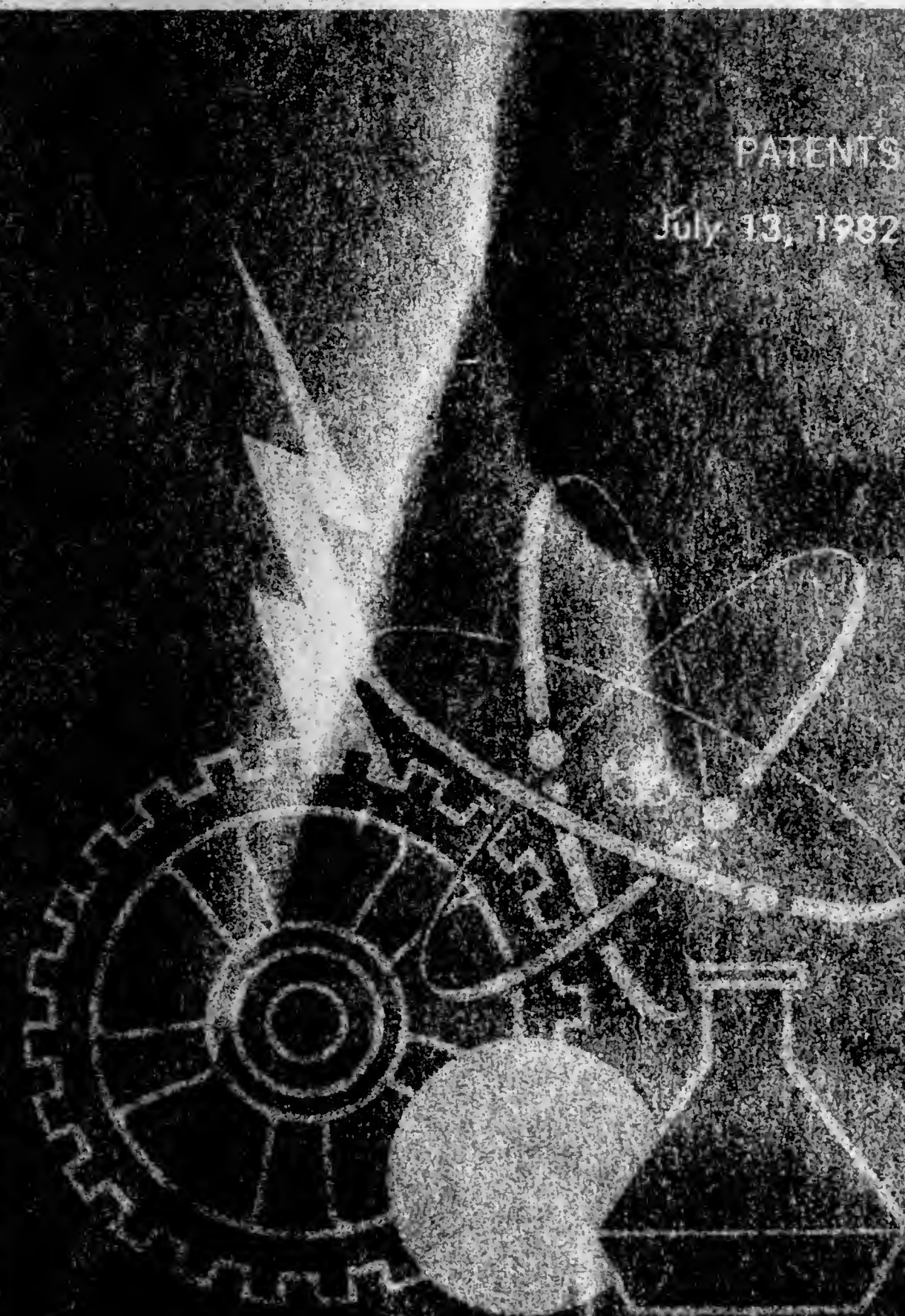
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# OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

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## PATENT AND TRADEMARK OFFICE NOTICES

### Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	\$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,  
Commissioner of Patents  
and Trademarks.  
Jan. 19, 1982.

### REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,076,695, Re. S.N. 377,508, Filed May 12, 1982, Cl. 528/48, SILICONE CONTAINING REACTION INJECTION MOLDED POLYURETHANES, Joseph W. Keil, Owner of Record: *Dow Corning Corp., Midland, Mich.*, Attorney or Agent: Jack E. Moermond, et al., Ex. Gp.: 143

4,185,376, Re. S.N. 377,319, Filed May 12, 1982, Cl. 29/568, UNMANNED MACHINING CENTER WITH TOOL CHECKING, Richard Johnstone, Owner of Record: *Kearney & Trecker Corp., West Allis, Wis.*, Attorney or Agent: Cyril M. Hajewski, et al., Ex. Gp.: 324

4,241,618, Re. S.N. 371,391, Filed Apr. 23, 1982, Cl. 74/863, VARIABLE PULLEY TRANSMISSION, Richard L. Smirl, Owner of Record: *Borg-Warner Corp., Chicago, Ill.*, Attorney or Agent: Richard L. Zieg, Ex. Gp.: 352

4,294,882, Re. S.N. 377,190, Filed May 11, 1982, Cl. 428/349, HEAT-SEALABLE ANTISTATIC POLYPROPYLENE FILMS, William J. Andrews, et al., Owner of Record: *British Cellophane Ltd., Somerset, England*, Attorney or Agent: Walter D. Ames, et al., Ex. Gp.: 164

4,310,656, Re. S.N. 353,686, Filed Mar. 1, 1982, Cl. 528/200, POLYCARBONATE TRANSESTERIFICATION, Daniel J. Brunelle, Owner of Record: *General Electric Co., Schenectady, N.Y.*, Attorney or Agent: Peter A. Bielinski, et al., Ex. Gp.: 144

### REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

1020 OG 10

4,116,358, Reexam. No. 90/000,214, Requested: June 7, 1982, Cl. 220/222, WEATHER AND VAPOR SEAL FOR STORAGE TANK, John S. Kinghorn, et al., Owner of Record: *Requester, Attorney or Agent: Albert B. Kimball, Jr., et al., Ex. Gp.: 241, Requester: Graver Tank & Mfg., Co., Inc. Houston, Tex.*

4,194,225, Reexam. No. 90/000,216, Requested: June 9, 1982, Cl. 360/98, HOUSING FOR DISK UNIT, Alfred Hasler, Owner of Record: *Requester, Attorney or Agent: Townsend & Townsend, Ex. Gp.: 235, Requester: International Memories, Inc., c/o John L. McGannon, San Francisco, Calif.*

### Discontinuation of Drawing Comparison Fee

The Patent and Trademark Office no longer requires a \$10 (ten dollar) comparison fee payment with the submission of formal sheets of drawings to replace originally filed informal drawings. Accordingly, no fee should be submitted, and all existing requirements for a drawing comparison fee are hereby rescinded.

THERESA A. BRELSFORD,  
Acting Assistant Commissioner  
for Administration.  
June 9, 1982.

### Trademark Suits

Notices under 15 U.S.C. 1116;  
Trademark Act of July 5, 1946.

Reg. No. 53,237 (VALVOLINE), Ashland Oil, Inc.; Reg. No. 56,816 (VALVOLINE AND DESIGN), same; Reg. No. 436,821 (VALVOLINE), same; Reg. No. 700,385 (V VALVOLINE), same; Reg. No. 739,915 (VALVOLINE), same; Reg. No. 841,113 (V VALVOLINE IN A CIRCLE), same; Reg. No. 867,342 (V), same, filed Mar. 29, 1982, D.C.N.J. (Newark), Doc. 82-976, *Ashland Oil, Inc. v. Taray International Corp.*

Reg. No. 56,816. (See Reg. No. 53,237.)

Reg. No. 75,365 (ALLIGATOR BRAND AND DESIGN), Lacoste Alligator S.A.; Reg. No. 655,860 (IZOD), General Mills, Inc.; Reg. No. 867,953 (ALLIGATOR DESIGN), Lacoste Alligator S.A.; Reg. No. 879,171 (LACOSTE), Lacoste Alligator S.A.; Reg. No. 976,866 (IZOD AND DESIGN), General Mills, Inc.; Reg. No. 982,012 (LACOSTE), Lacoste Alligator S.A.; Reg. No. 999,032 (IZOD), General Mills, Inc.; Reg. No. 1,084,409 (DESIGN MISCELLANEOUS), Lacoste Alligator S.A.; Reg. No. 1,101,539 (ALLIGATOR DESIGN), Lacoste Alligator S.A.; Reg. No. 1,108,987 (DESIGN MISCELLANEOUS), Lacoste Alligator S.A.; Reg. No. 1,108,988 (ALLIGATOR DESIGN), Lacoste Alligator S.A., filed Feb. 13, 1981, D.C., N.D. Miss. (Clarksdale), Doc. DC81-26-WK-P, *Lacoste Alligator S.A. and General Mills, Inc. v. Jan Johnson, et al.*

Reg. No. 266,929 (A & W ICE COLD ROOT BEER AND DESIGN), A & W Restaurants, Inc.; Reg. No. 871,882 (DESIGN MISCELLANEOUS), same; Reg. No. 871,883 (DESIGN MISCELLANEOUS), same; Reg. No. 871,884 (DESIGN MISCELLANEOUS), same; Reg. No. 871,885 (DESIGN MISCELLANEOUS), same; Reg. No. 872,290 (THE BURGER FAMILY AND DESIGN), same; Reg. No. 909,605 (A & W AND DESIGN), same, filed Apr. 12, 1982, D.C. Minn. (Marshall), Doc. CV82661, *A & W Restaurants, Inc. v. Charles D. DeVetter, et al.*

JULY 13, 1982

U.S. PATENT AND TRADEMARK OFFICE

1020 OG 11

Reg. No. 317,704 (METAMUCIL), G. D. Searle & Co., filed May 19, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 3110, *G. D. Searle & Co., et al. v. Contract Pharmacal Corp.* Same, filed May 26, 1982, D.C. District of Columbia (Wash. D.C.), Doc. 82-1443, *G. D. Searle & Co., et al. v. Giant Food, Inc.* Same, filed May 26, 1982, D.C. District of Columbia (Wash. D.C.), Doc. 82-1444, *G. D. Searle & Co., et al. v. Dart Drug Corp., et al.*

Reg. No. 411,239 (CARTIER), Cartier, Inc.; Reg. No. 411,240, same; Reg. No. 411,975, same; Reg. No. 759,201 same; Reg. No. 925,672 (C DESIGN), same; Reg. No. 1,071,823 (INTERLOCKING C DESIGN), same, filed Feb. 18, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0980, *Cartier, Inc. v. Albert Eida*. Defendant is permanently enjoined and restrained from further infringing plaintiff's trademarks. Filed May 4, 1982.

Reg. No. 411,240. (See Reg. No. 411,239.)

Reg. No. 411,975 (CARTIER), Cartier, Inc.; Reg. No. 925,672 (C DESIGN), same; Reg. No. 1,071,823 (INTERLOCKING C DESIGN), same, filed Mar. 29, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1977 MEL, *Cartier, Inc., et al. v. Luis Mejia, doing business as Lama Jewelry & Myriam's Manufacturer.*

Reg. No. 411,975. (See Reg. No. 411,239.)

Reg. No. 429,070 (VITA-SOY), Hong Kong Soya Bean Products Co., Ltd., filed May 14, 1982, D.C., S.D.N.Y., Doc. 82-Civ-3164 LBS, *The Hong Kong Soya Bean Products Co., Inc. v. International Oriental Food Corp., et al.*

Reg. No. 436,821. (See Reg. No. 53,237.)

Reg. No. 437,715 (SNAP-A-RAY), Bell L. Greene, filed May 13, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 3000, *Bell L. Greene v. Rinn Corp.*

Reg. No. 509,839 (ROBBINS & MYERS), Robbins & Myers; Reg. No. 786,814 (HUNTER), same, filed Apr. 12, 1982, D.C., N.D. Miss. (Clarksdale), Doc. DC81-61-LS-O, *Robbins & Myers, Inc. v. William A. Byford.*

Reg. No. 530,305 (ESTEE LAUDER), Estee Lauder, Inc.; Reg. No. 949,998 (YOUTH-DEW), same; Reg. No. 950,482 (ESTEE LAUDER), same; Reg. No. 1,119,604 (ESTEE LAUDER), same, filed Jan. 12, 1982, D.C.N.J. (Newark), Doc. 82-74, *Estee Lauder v. Sy Cosmetics, Inc.* Consent judgment for permanent injunction and dismissal of complaint for plaintiffs filed May 7, 1982.

Reg. No. 587,025 (AMANA), Amana Refrigeration, Inc.; Reg. No. 605,819, same; Reg. No. 715,075, same; Reg. No. 889,068, same, filed Feb. 22, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 1065, *Amana Refrigeration, Inc. v. Spiegel, Inc.* Same, filed Dec. 29, 1981, D.C. Neb. (Lincoln), Doc. CV81-L-378, *Amana Refrigeration, Inc. v. Ted Rookstool, et al.* Defendants are permanently enjoined from using the mark and name "AMANA" or any imitation on or in connection with the sale, offering for sale, etc., of major appliances, including microwave ovens, or related products. Filed Apr. 27, 1982.

Reg. No. 605,819. (See Reg. No. 587,025.)

Reg. No. 635,072 (CONTINENTAL), Conoco Inc.; Reg. No. 659,201, same; Reg. No. 1,088,479, same, filed Sept. 9, 1981, D.C., W.D. Okla. (Oklahoma City), Doc. 81-1216, *Conoco, Inc. v. Continental Resources Corp.* Clerk administratively terminated this action without prejudice on Apr. 28, 1982.

Reg. No. 635,072 (CONTINENTAL), Conoco, Inc., filed May 29, 1981, D.C., W.D. Okla. (Oklahoma City), Doc. CIV81-715-W, *Conoco, Inc. v. Continental Drilling Co., Inc.* Clerk administratively terminated this action on Apr. 28, 1982.

Reg. No. 655,860. (See Reg. No. 75,365.)

Reg. No. 657,756 (DESIGN OF CROWN), Montres Rolex S.A., filed Apr. 23, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-1992 CHH, *Rolex Watch U.S.A., Inc.*

*v. Eli Ivazov, doing business as ELI.* Same, filed May 3, 1982, D.C., S.D. Tex. (Houston), Doc. H-82-1230, *Rolex Watch U.S.A., Inc. v. Bobbie Tallent.* Same, filed May 3, 1982, D.C., S.D. Tex. (Houston), Doc. H-82-1231, *Rolex Watch, U.S.A., Inc. v. Ronald Branham.*

Reg. No. 659,201. (See Reg. No. 635,072.)

Reg. No. 660,183 (NABISCO & DESIGN), Nabisco, Inc.; Reg. No. 736,498 (TRIANGLE DESIGN), same; Reg. No. 922,467 (DESIGN MISCELLANEOUS), same; Reg. No. 974,656 (TRIANGLE WITH SLANT DESIGN), same; Reg. No. 1,112,407 (DESIGN MISCELLANEOUS), same, filed May 19, 1982 D.C., C.D. Calif. (Los Angeles), Doc. 82 2453, *Nabisco, Inc. v. Grand Imperial, Inc., et al.*

Reg. No. 700,385. (See Reg. No. 53,237.)

Reg. No. 704,772 (SERVICEMASTER & DESIGN), Servicemaster Industries, Inc.; Reg. No. 766,885 (MR. SERVICEMASTER), same; Reg. No. 782,584 (SERVICEMASTER), same; Reg. No. 794,943 (DESIGN BUST OF MAN), same; Reg. No. 810,884 (DESIGN PENNANT), same; Reg. No. 871,509 (SERVICEMASTER AND DESIGN), same; Reg. No. 887,665 (SERVICEMASTER AND DESIGN), same, filed May 5, 1982, D.C., E.D. Mo. (St. Louis), Doc. 82-695C(4), *Servicemaster Industries, Inc. v. James R. Alexander, et al.*

Reg. No. 709,460 (FOUR WINDS), Four Winds Travel, Inc. (N.Y.), filed Mar. 30, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1992 CLB, *Four Winds Travel (N.Y.), v. Four Winds Travel (Mo.).* Plaintiff is the owner of Reg. No. 709,460. Defendant is permanently enjoined and restrained from infringing plaintiff's trademark. Filed May 18, 1982.

Reg. No. 715,075. (See Reg. No. 587,025.)

Reg. No. 736,498. (See Reg. No. 660,183.)

Reg. No. 739,915. (See Reg. No. 53,237.)

Reg. No. 740,887 (SAGINAW), Saginaw Machine and Tool Co., filed Aug. 21, 1981, D.C., E.D. Mich. (Bay City), Doc. 81-10157, *The Wickes Corp., doing business as Saginaw Machine v. Saginaw Automation & Machine, Inc.* Court administratively closes this matter pending termination of related bankruptcy proceedings. Filed May 18, 1982.

Reg. No. 759,201. (See Reg. No. 411,239.)

Reg. No. 766,885. (See Reg. No. 704,772.)

Reg. No. 775,231 (TEXACO AND DESIGN), Texaco, Inc.; Reg. No. 814,388, same; Reg. No. 817,162, same; Reg. No. 835,841, same; Reg. No. 846,249, same; Reg. No. 867,112, same; Reg. No. 883,163, same; Reg. No. 921,776, same; Reg. No. 922,392, same; Reg. No. 922,526, same; Reg. No. 923,115, same; Reg. No. 926,387, same; Reg. No. 926,389, same; Reg. No. 926,628, same; Reg. No. 946,583, same; Reg. No. 1,071,054, same; Reg. No. 1,074,482, same; Reg. No. 1,082,404, same; Reg. No. 1,097,547, same; Reg. No. 1,180,780 (MISCELLANEOUS DESIGN), same, filed May 14, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 3033, *Texaco, Inc. v. Pep Petroleum Co., et al.*

Reg. No. 782,584. (See Reg. No. 704,772.)

Reg. No. 786,814. (See Reg. No. 509,839.)

Reg. No. 794,943. (See Reg. No. 704,772.)

Reg. No. 810,884. (See Reg. No. 704,772.)

Reg. No. 814,388. (See Reg. No. 775,231.)

Reg. No. 817,162. (See Reg. No. 775,231.)

Reg. No. 835,841. (See Reg. No. 775,231.)

Reg. No. 841,113. (See Reg. No. 53,237.)

Reg. No. 846,249. (See Reg. No. 775,231.)

Reg. No. 867,112. (See Reg. No. 775,231.)



- Reg. No. 867,342. (See Reg. No. 53,237.)  
 Reg. No. 867,953. (See Reg. No. 75,365.)  
 Reg. No. 871,509. (See Reg. No. 704,772.)  
 Reg. No. 871,882. (See Reg. No. 266,929.)  
 Reg. No. 871,883. (See Reg. No. 266,929.)  
 Reg. No. 871,884. (See Reg. No. 266,929.)  
 Reg. No. 871,885. (See Reg. No. 266,929.)  
 Reg. No. 872,290. (See Reg. No. 266,929.)  
 Reg. No. 877,221 (MISS WORLD), Mecca Ltd., filed May 24, 1978, D.C., S.D.N.Y., Doc. 78-Civ-2401LPG, *Alfred Patricelli, doing business as Miss World-U.S.A. Beauty Pageant v. B.B.S. Productions, Inc.*  
 Reg. No. 879,171. (See Reg. No. 75,365.)  
 Reg. No. 883,163. (See Reg. No. 775,231.)  
 Reg. No. 887,665. (See Reg. No. 704,772.)  
 Reg. No. 889,068. (See Reg. No. 587,025.)  
 Reg. No. 909,605. (See Reg. No. 266,929.)  
 Reg. No. 911,367 (TACO VILLA AND DESIGN), Taco Villa, Inc., filed Nov. 27, 1981, D.C., N.D. Tex. (Dallas), Doc. CA3-81-2095-R, *Taco Villa, Inc. v. John Buende, doing business as Taco Villa*. Defendant is permanently enjoined from further infringing Plaintiff's trademark. Filed May 18, 1982.  
 Reg. No. 916,485 (SIR SPEEDY), Sir Speedy, Inc.; Reg. No. 947,389 (DESIGN MISCELLANEOUS), same, filed Aug. 3, 1979, D.C., N.D. Ill. (Chicago), Doc. 79 C 3209, *Sir Speedy, Inc. v. Herbert Rothenberg*. Pursuant to stipulation of the parties, action dismissed with prejudice and without costs on May 3, 1982.  
 Reg. No. 917,866 (MR. TRANSMISSION), Mr. Transmission, Inc., filed May 6, 1982, D.C.S.C. (Columbia), Doc. 82-893-6, *Mr. Transmission, Inc. v. Paul P. Keener, et al.*  
 Reg. No. 921,776. (See Reg. No. 775,231.)  
 Reg. No. 922,392. (See Reg. No. 775,231.)  
 Reg. No. 922,467. (See Reg. No. 660,183.)  
 Reg. No. 922,526. (See Reg. No. 775,231.)  
 Reg. No. 923,115. (See Reg. No. 775,231.)  
 Reg. No. 925,672. (See Reg. Nos. 411,239 and 411,975.)  
 Reg. No. 926,387. (See Reg. No. 775,231.)  
 Reg. No. 926,389. (See Reg. No. 775,231.)  
 Reg. No. 926,628. (See Reg. No. 775,231.)  
 Reg. No. 946,583. (See Reg. No. 775,231.)  
 Reg. No. 947,389. (See Reg. No. 916,485.)  
 Reg. No. 949,998. (See Reg. No. 530,305.)  
 Reg. No. 950,482. (See Reg. No. 530,305.)  
 Reg. No. 953,743 (AZTECA AND DESIGN), Azteca Corn Products Corp.; Reg. No. 956,581 (AZTECA), same, filed May 14, 1982, D.C., N.D. Ill. (Chicago), Doc. 82C2991, *Azteca Corn Products Corp. v. Azteca Milling Co.*  
 Reg. No. 956,349 (ALCAN), Alcan Aluminum Corp.; Reg. No. 966,835 (ALCAN AND DESIGN), same; Reg. No. 984,768 (ALCAN AND DESIGN), same; Reg. No. 1,004,688 (ALCAN), same; Reg. No. 1,187,352 (ALCAN), same, filed Mar. 31, 1982, D.C.N.J. (Camden), Doc. 82-1012, *Alcan Aluminum Corp. v. Arbard Short, et al.*  
 Reg. No. 956,581. (See Reg. No. 953,743.)  
 Reg. No. 966,835. (See Reg. No. 956,349.)

Reg. No. 972,082 (TARGET DESIGN), Dayton-Hudson Corp., filed Aug. 17, 1981, D.C. District of Columbia (Wash. D.C.), Doc. 81-1929, *Dayton-Hudson Corp. v. Dart Drug Corp., et al.* Order dismissing complaint filed Mar. 26, 1982. Same, filed Oct. 19, 1981, D.C. District of Columbia (Wash. D.C.), Doc. 81-2535, *Dayton-Hudson Corp. v. Dart Drug Corp., et al.* Order dismissing complaint filed Mar. 26, 1982. Same, filed Oct. 27, 1981, D.C. District of Columbia (Wash. D.C.), Doc. 81-2605, *Dayton-Hudson Corp. v. Dart Drug Corp., et al.* Order dismissing complaint filed Mar. 26, 1982.

Reg. No. 974,656. (See Reg. No. 660,183.)

Reg. No. 976,866. (See Reg. No. 75,365.)

Reg. No. 978,212 (ULTRASUEDE), Springs Mills, Inc., filed Feb. 25, 1982, D.C., S.D.N.Y., Doc. 82-7085, *Springs Mills, Inc. v. Ultracashmere House, Ltd., et al.* Same, filed Oct. 20, 1981, D.C. Md. (Baltimore), Doc. JH-81-2702, *Springs Mills, Inc. v. Kavanaugh's of Maryland, Inc.* Defendant is permanently enjoined and restrained from further infringing Plaintiff's trademark. Filed Apr. 27, 1982.

Reg. No. 982,012. (See Reg. No. 75,365.)

Reg. No. 984,768. (See Reg. No. 956,349.)

Reg. No. 999,032. (See Reg. No. 75,365.)

Reg. No. 999,849 (ORGAN GRINDER), Organ Grinder, Inc.; Reg. No. 999,850 (ORGAN GRINDER AND DESIGN), same, filed Sept. 28, 1981, D.C., W.D. Pa. (Pittsburgh), Doc. 81-1655, *Organ Grinder, Inc. v. Barbara L. Reilly, et al.* Defendants are hereby enjoined from use of the name or mark ORGAN GRINDER in any form or combination. Filed May 20, 1982.

Reg. No. 999,849 (ORGAN GRINDER), Organ Grinder, Inc., filed May 6, 1977, D.C. Wis. (Milwaukee), Doc. 77-275, *Organ Grinder, Inc. v. James C. Bringe, doing business as Organ Grinder Pizza*. Consent judgment filed June 2, 1977.

Reg. No. 999,850. (See Reg. No. 999,849.)

Reg. No. 1,000,819 (CASA BONITA AND DESIGN), Casa Bonita, Inc.; Reg. No. 1,078,642 (CASA BONITA), same, filed May 4, 1982, D.C., S.D. Calif. (San Diego), Doc. 82-0541-T(M), *Frank D. Gilliam v. Ramon Galvan, doing business as Casa Bonita*.

Reg. No. 1,001,671 (MARIANO'S AND DESIGN), Mariano's Restaurants, Inc., filed May 5, 1982, D.C., N.D. Tex. (Dallas), Doc. CA3-82-0699-F, *Mariano's Restaurants, Inc. v. Jus-Made, Inc., et al.*

Reg. No. 1,004,688. (See Reg. No. 956,349.)

Reg. No. 1,017,132 (SUN LINE), Marriott Corp., filed Apr. 22, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2590 (LPG), *Sun Line Cruises v. Sun World Lines, Ltd.*

Reg. No. 1,045,985 (OP AND DESIGN), Ocean Pacific Sunwear, Inc., filed Sept. 21, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81 4917, *Ocean Pacific Sunwear, Inc. v. Tony Kaufman, et al.*

Reg. No. 1,045,985 (OP AND DESIGN), Ocean Pacific Sunwear, Inc.; Reg. No. 1,050,102 (OCEAN PACIFIC), same, filed July 10, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81-3438-LEW, *Ocean Pacific Sunwear, Inc. v. Richard Jensen, et al.* Final Consent and Order re permanent injunction restraining Defendants from printing, selling, etc. materials with stylized "OP" or OCEAN PACIFIC filed May 10, 1982.

Reg. No. 1,050,102. (See Reg. No. 1,045,985.)

Reg. No. 1,071,054. (See Reg. No. 775,231.)

Reg. No. 1,071,823. (See Reg. Nos. 411,239 and 411,975.)

Reg. No. 1,074,482. (See Reg. No. 775,231.)

Reg. No. 1,078,642. (See Reg. No. 1,000,819.)

Reg. No. 1,082,145 (OPIUM), Charles of the Ritz Group, Ltd.; Reg. No. 1,148,503 (MISCELLANEOUS DESIGN), same, filed Apr. 9, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2259 LBS, *Charles of the Ritz Group, Ltd., et al v. Jon Paul Perfumers Ltd., et al.*

Reg. No. 1,082,404. (See Reg. No. 775,231.)

Reg. No. 1,084,409. (See Reg. No. 75,365.)

Reg. No. 1,085,017 (TMC), Advo-System, Inc., filed Apr. 1, 1982, D.C., N.D. Ga. (Atlanta), Doc. C82-668A, *Advo-System, Inc. v. Front Door Dispatch, Inc. of Kentucky*.

Reg. No. 1,086,395 (BOTTEGA VENETA), Bottega Veneta, Inc., filed Mar. 23, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 1414 WMB, *Bottega Veneta, Inc. v. RHM Marketing Co., Inc., et al.*

Reg. No. 1,088,479. (See Reg. No. 635,072.)

Reg. No. 1,089,458 (PIZZERIA UNO), Pizzeria Uno, Inc., filed May 21, 1982, D.C.S.C. (Columbia), Doc. 82-1218-15, *Pizzeria Uno Corp. v. James W. Temple, Jr., doing business as Taco Uno*.

Reg. No. 1,089,893 (THE SKYLINERS AND DESIGN), Rock and Beaumont, filed May 6, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2911 HFW, *Joseph V. Rock and James L. Beaumont v. Drew Cummings, doing business as Drew Cummings Production, et al.*

Reg. No. 1,097,547. (See Reg. No. 775,231.)

Reg. No. 1,101,539. (See Reg. No. 75,365.)

Reg. No. 1,108,987. (See Reg. No. 75,365.)

Reg. No. 1,108,988. (See Reg. No. 75,365.)

Reg. No. 1,112,407. (See Reg. No. 660,183.)

Reg. No. 1,112,416 (CHIPWICH), Richard E. La Motta, filed May 13, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 2339, *Chipwich, Inc. and Richard E. La Motta v. John C. Marsh, Jr., et al.*

Reg. No. 1,115,250 (T SHIRTS AND DESIGN), T-Shirts Plus, Inc., filed Apr. 30, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 1873, *T Shirts Plus v. T-Shirts Plus, Inc.*

Reg. No. 1,118,190 (CAMP BEVERLY HILLS AND DESIGN), Camp Beverly Hills, Inc., filed May 4, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2838 (JMC), *Camp Beverly Hills, Inc. v. Camp Central Park, et al.*

Reg. No. 1,119,604. (See Reg. No. 530,305.)

Reg. No. 1,129,368 (VEGIBLE AND DESIGN), Jewell Lain, filed May 7, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 2262 WPG, *Jewell Lain v. Ron Cannon, et al.*

Reg. No. 1,136,435 (DALLAS COWBOYS CHEERLEADERS UNIFORM DESIGN), Dallas Cowboys

Cheerleaders, Inc., filed Apr. 30, 1982, D.C., N.D. Tex. (Dallas), Doc. 3-82-0672-D, *Dallas Cowboys Cheerleaders, Inc. v. Kasey Roberts, doing business as Kasey Roberts Incognito*.

Reg. No. 1,145,365 (TOGETHER AND DESIGN), Together Dating Service, Inc., filed Apr. 5, 1982, D.C., N.D. Ohio (Toledo), Doc. 82-211, *Together Development Corp. v. Rudolph Young, et al.*

Reg. No. 1,148,503. (See Reg. No. 1,082,145.)

Reg. No. 1,157,518 (GREEN COUNTRY SALADS AND DESIGN), Green Country Salads, Inc., filed Apr. 30, 1982, D.C., N.D. Okla. (Tulsa), Doc. 82-C-511-E, *Green Country Salads, Inc. v. J & M Farms, Inc.*

Reg. No. 1,161,160 (BOMBER), Americana Submarine, filed Apr. 16, 1982, D.C., Ill. (Chicago), Doc. 82 C 2316, *Americana Submarine, Inc. v. Andy Lavato, et al., doing business as Piasano's Pizza & Bomber Shop*.

Reg. No. 1,178,248 (GARY FREDERIC), Gary Frederic, Ltd., filed May 5, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2864, *Gary Frederic, Ltd. v. Gary Sefferman, et al.*

Reg. No. 1,180,592 (THE HOT POTATO AND DESIGN), Fast Food Mgmt., Inc., filed Mar. 9, 1982, D.C. Puerto Rico (San Juan), Doc. 82-496, *Fast Food Mgmt., Inc. v. Louis H. Dexter*. Judgment granting Defendant's motion to dismiss entered Apr. 30, 1982.

Reg. No. 1,180,780. (See Reg. No. 775,231.)

Reg. No. 1,183,753 (VIN-LOX), Vin-Lox Corp., filed Apr. 28, 1982, D.C., S.D. Fla. (Miami), Doc. 82-6263-CIV-SMA, *Vin-Lox Corp. v. Bel-Mar Paint Corp.*

Reg. No. 1,184,976 (KEY CARS), Kidco, Inc., filed Jan. 20, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 319, *Kidco, Inc. v. Lectron, Ltd.* Plaintiff's trademark is valid and infringed. Defendant is permanently enjoined and restrained from further infringing plaintiff's trademark. Filed Apr. 20, 1982.

Reg. No. 1,185,553 (ELECTRIC BLUE), Electric Blue, Inc., filed Mar. 29, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 1540 TJH (Px), *Kenyon Video, Inc. v. Novacom Productions, et al.*

Reg. No. 1,186,570 (LIGMAJECT), Ligmaject Produktionsgesellschaft fur Medizinische Gerate MBH, filed Feb. 11, 1982, D.C., M.D. Fla. (Orlando), Doc. 82-79-Orl-Civ, *Healthco, et al v. Command International, Inc.*

Reg. No. 1,187,352. (See Reg. No. 956,349.)

Reg. No. 1,191,820 (INTERGOLD), International Gold Corp. Ltd., filed Mar. 10, 1980, D.C., N.D. Tex. (Dallas), Doc. CA3-80-0288-F, *International Gold Corp. Ltd. v. Intragold, Inc., et al.*



# PATENT NOTICES

## Certificates of Correction for the Week of July 13, 1982

D. 263,241	4,304,569	4,316,191	4,323,875
3,745,295	4,304,947	4,316,515	4,323,946
4,021,372	4,305,538	4,317,110	4,324,035
4,042,890	4,305,815	4,317,671	4,324,634
4,143,467	4,306,110	4,317,702	4,324,662
4,154,770	4,306,438	4,318,087	4,324,679
4,223,855	4,306,536	4,318,464	4,324,898
4,225,310	4,306,779	4,318,904	4,325,280
4,226,427	4,307,235	4,319,032	4,325,290
4,227,933	4,307,551	4,319,248	4,325,457
4,229,355	4,307,678	4,319,751	4,325,585
4,230,857	4,308,145	4,320,012	4,325,702
4,233,859	4,308,349	4,320,024	4,325,728
4,240,170	4,308,557	4,320,407	4,326,090
4,240,934	4,309,350	4,320,786	4,326,534
4,263,124	4,309,973	4,321,051	4,326,702
4,264,732	4,310,441	4,321,065	4,326,788
4,267,043	4,310,688	4,321,795	4,326,841
4,270,980	4,310,803	4,321,827	4,327,461
4,272,448	4,311,240	4,321,865	4,327,503
4,273,051	4,311,861	4,322,060	4,327,825
4,275,333	4,311,889	4,322,168	4,327,892
4,280,177	4,312,556	4,322,415	4,328,073
4,284,160	4,312,927	4,322,418	4,328,223
4,284,430	4,313,052	4,322,495	4,328,331
4,285,120	4,313,195	4,322,752	4,328,418
4,287,500	4,313,254	4,322,829	4,328,842
4,291,176	4,313,551	4,322,932	4,328,943
4,291,548	4,313,574	4,323,018	4,329,011
4,292,091	4,313,849	4,323,172	4,329,036
4,293,432	4,314,057	4,323,269	4,329,085
4,293,955	4,314,216	4,323,409	4,329,149
4,295,983	4,315,035	4,323,541	4,329,237
4,299,665	4,315,878	4,323,587	4,330,470
4,303,027	4,316,098	4,323,806	

1020 OG 14

# Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

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table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	Name of Library	Telephone Contact
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
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Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
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Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

\*Collection organized by subject matter.

\*\*Call only between the hours of 10:00 a.m. and 5:00 p.m.

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**PATENT EXAMINING CORPS**  
**RENE D. TEGTMEYER, Assistant Commissioner**  
**WILLIAM FELDMAN, Deputy Assistant Commissioner**  
**CONDITION OF PATENT APPLICATIONS AS OF May 15, 1982**

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal- lurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthetics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-04-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-09-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170— R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufac- ture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-08-81
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	4-15-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Op- tics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Composi- tions; Thermal and Photoelectric Batteries.	8-29-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240— G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	6-04-80
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprin- kling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-11-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding; Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-02-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330— R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting, Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Infor- mation Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Genera- tion and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	1-07-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350— A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscel- laneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	6-26-80

**Expiration of patents:** The patents within the range of numbers indicated below expire during May 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

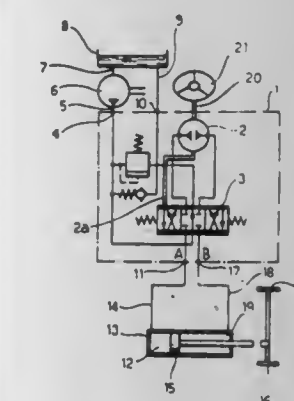
Patents . . . . . Numbers 3,181,175 to 3,186,003, inclusive  
Plant Patents . . . . . Numbers 2,502 to 2,521 inclusive

**REISSUES**

JULY 13, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

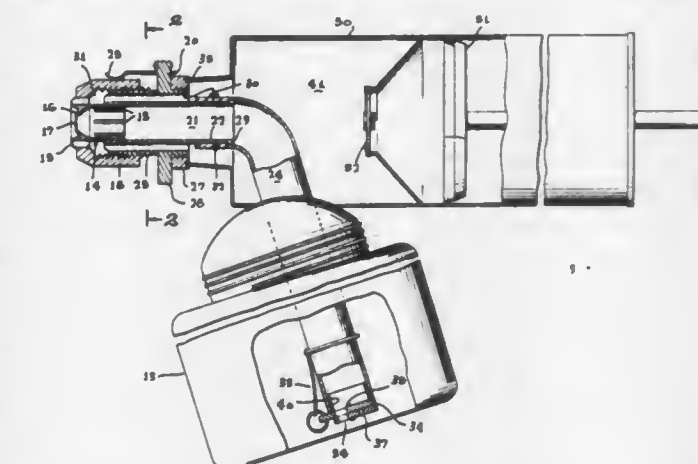
**Re. 30,992**  
**CONTROL UNITS FOR VEHICLE POWERSTEERING**  
**MECHANISMS**  
Battista Bertanza, Segrate, Italy, assignor to Riva Calzoni S.p.A., Milan, Italy  
Original No. 4,069,743, dated Jan. 24, 1978, Ser. No. 702,678, Jul. 6, 1976. Application for reissue Nov. 9, 1979, Ser. No. 93,036  
Claims priority, application Italy, Jul. 11, 1975, 25338 A/75  
Int. Cl.<sup>3</sup> B62D 5/08; F15B 13/04  
U.S. Cl. 60—384 7 Claims



2. A control unit for a vehicle powersteering mechanism comprising:  
a housing having an inlet for connection to a source of hydraulic fluid under pressure and an outlet for returning hydraulic fluid to said source;  
a double chamber hydraulic servomotor;  
a pair of ports in said housing selectively operatively connected to said double chamber hydraulic servomotor and selectively operatively connected to said inlet and outlet;  
a hydraulic motor provided with a rotatable element and a follower element being operatively disposed within said housing;  
a distributor valve means including a stationary member and one sleeve like displaceable body having an outer wall of a predetermined thickness with an outer surface, a plurality of circumferentially spaced longitudinally extending bores provided within the thickness of the outer wall of said sleeve like displaceable body, a plurality of radially extending passages in said sleeve like displaceable distributor body projecting through a portion of said outer wall to the outer surface thereof, each of said longitudinally extending bores being in communication in said outer wall with at least two longitudinally spaced apart radially extending passages, said rotatable element engaging a portion of said outer surface of said sleeve like displaceable body and enclosing one of said spaced apart radially extending passages;  
said distributor valve means being solely angularly displaceable with respect to a neutral position, and being operable on rotation of a control shaft connected thereto to simultaneously divert hydraulic fluid flowing from said inlet through a first series of selective radial passages and longitudinally extending bores to said hydraulic motor and through a second series of selective radial passages and longitudinally extending bores to one of said ports and thus to its associated chamber of said servomotor, hydraulic fluid being exhausted from the other chamber of the servomotor through said other port, said distributor valve means and said outlet;  
a mechanical connection formed between said follower element of said hydraulic motor and said sleeve like displaceable body; and  
means adapted to limit the displacement of said sleeve like displaceable body with respect to the stationary member of

said distributor valve means and with respect to said neutral position.

**Re. 30,993**  
**GENERAL PURPOSE COMPRESSION-TYPE SPRAYER**  
Leo A. Hopp, Canoga Park, Calif., assignor to Column Corporation, Van Nuys, Calif.  
Original No. 4,204,645, dated May 27, 1980, Ser. No. 906,467, May 17, 1978. Application for reissue Mar. 30, 1981, Ser. No. 248,722  
Int. Cl.<sup>3</sup> B05B 7/30  
U.S. Cl. 239—341 10 Claims



1. Apparatus for spraying material delivered to a nozzle assembly from a supply tank through a supply passage under impulsion of compressed gas from a source thereof applied to the surface of said material in said tank wherein compressed gas from said source is also mixed with said material, comprising:  
a cylinder having at least one aperture therethrough interposed between said gas source and said supply passage just upstream of the final aperture of said nozzle assembly, said cylinder having its outer surface in communication with said gas source and its inner surface in communication with said supply passage and being slidable axially in contact with the end of said supply passage; and  
positioning means including an adjustment nut connected to said cylinder and to said supply passage, at least one of said connections being by means of threads, associated with said nozzle assembly for moving said cylinder axially of the end of said supply passage and thereby controlling the portion of the aperture in the cylinder which is available for gas flow therethrough and thus variably restricting the flow of compressed gas into said material [and].

[adjustable means interposed between said supply tank and the inlet end of the supply passage for variably restricting the flow of material into said passage.]



Re. 30,994  
VERTICAL AXIS HERMETIC ROTARY HELICAL  
SCREW COMPRESSOR WITH IMPROVED ROTARY  
BEARINGS AND OIL MANAGEMENT

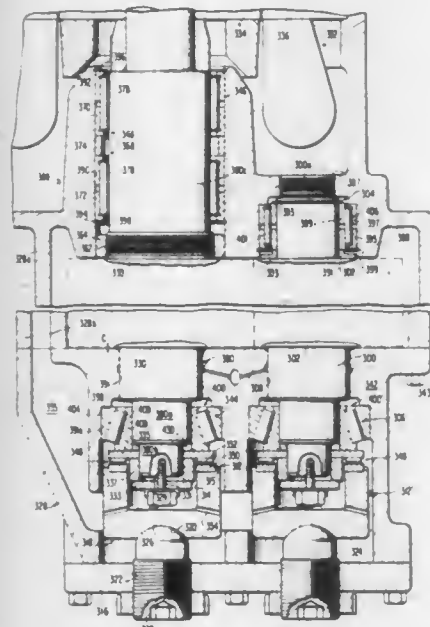
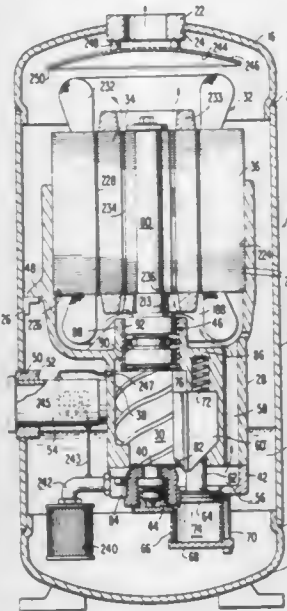
David N. Shaw, Unionville, Conn., assignor to Dunham-Bush,  
Inc., West Hartford, Conn.

Original No. 4,181,474, dated Jan. 1, 1980, Ser. No. 882,728,  
Mar. 2, 1978. Application for reissue Feb. 6, 1981, Ser. No.  
232,269

Int. Cl.<sup>3</sup> F01C 1/16, 21/06

U.S. Cl. 417—366

22 Claims



22. In a rotary helical screw compressor comprising:  
a cylindrical casing,  
intermeshed helical screw rotors borne by said casing,  
shaft means fixed to at least one of said helical screw rotors,  
a casing end plate closing off one end of said casing and facing  
one end of said rotors,  
said shaft means projecting through said casing end plate,  
a bearing pack assembly carried by said casing end plate for  
rotatably supporting said shaft means,  
the improvement wherein:  
said bearing pack assembly comprises a tapered roller bearing  
pack assembly having first and second oppositely directed  
tapered roller bearings,  
said shaft means comprises first and second reduced diameter  
portions defining respectively, first and second radial should-  
ers therebetween,  
said casing end plate including a small diameter opening on  
the side facing said at least one helical screw rotor for  
receiving said shaft means and an enlarged diameter open-

ing portion on the opposite side as an axial extension  
thereof,  
said first bearing comprising a first angular cup carried  
within said enlarged diameter opening of said casing end  
plate with one end of said cup abutting a radial shoulder  
formed within said casing end plate intermediate of said  
small and enlarged diameter openings, and  
an annular cone press fitted to said first reduced diameter  
portion of said shaft means,  
said second bearing comprising a second annular cone of  
smaller diameter than that of said first cone and having a  
radially outer face which is oblique and which faces axially  
away from said at least one helical screw rotor,  
a bearing pack assembly end plate including a bearing cup  
retainer of cylindrical form fixed thereto and extending  
axially towards said second bearing, within said enlarged  
diameter opening of said casing end plate and having its  
inner periphery stepped to define a bearing cup retainer  
shoulder,  
said second bearing further comprising an annular cup facing  
said second cone and having one end abutting the shoulder  
of said bearing cup retainer,  
a first annular shim mounted to said second reduced diame-  
ter portion of said shaft means and between the other end  
of said second cone and said shaft means second shoulder,  
said first shim having a thickness determined by the distance  
between the other end of said first cone and said second  
shoulder on said shaft means when said at least one rotor  
has its end face abutting the opposing surface of said casing  
end plate and a predetermined minimal clearance dimen-  
sion between the end face of said at least one rotor and the  
opposing surface of said casing end plate when said second  
cone is axially locked in abutment with said first cone,  
means for axially locking said second cone in axial abutment  
with said first cone and said first shim,  
a second shim interposed between said bearing pack assembly  
end plate and said casing end plate and having a thickness  
conforming to the desired clearance between the end face of  
said at least one helical screw rotor and the opposing sur-  
face of said casing end plate when said first cup is pressed  
against the shoulder of said casing end plate, and  
means for fixedly mounting said bearing pack assembly end  
plate against the opposing wall of said casing end plate with  
said second shim interposed therebetween;  
whereby, regardless of whether the compressor is under com-  
pressive load or not, said minimal clearance is maintained  
between the end face of said at least one helical screw rotor  
and said casing end plate for minimizing loss of com-  
pressed working fluid therebetween.

Re. 30,995  
HIGH INTEGRITY COCrAl(Y) COATED NICKEL-BASE  
SUPERALLOYS

John R. Rairden, III, Schenectady, N.Y., assignor to General  
Electric Company, Schenectady, N.Y.

Original No. 4,101,715, dated Jul. 18, 1978, Ser. No. 804,936,  
Jun. 9, 1977. Application for reissue Jul. 7, 1980, Ser. No.  
166,126

Int. Cl.<sup>3</sup> B32B 15/20

U.S. Cl. 428—680

2 Claims



Co-Cr-Al-Y COATED IN-700 S.A.

1. A high temperature oxidation and corrosion resistant

coated nickel-base superalloy article [having a thermal expan-  
sion coefficient value in inches per inch per °F. measured over  
a temperature range of

- (i) 100°–1200° F. of from 8.45 to 9.05, and
- (ii) 100°–1740° F. of from 9.45 to 10.05;] characterized by  
high coating-substrate interface integrity, said article com-  
prising:

- (a) a nickel-base superalloy, and
- (b) a [first] CoCrAl(Y) coating providing the outer surface of  
said article, said coating having a substantially uniform  
composition [consisting essentially] composed of, on a  
weight basis, approximately 26–32 percent chromium, 3–9

percent aluminum, and 0–1 percent yttrium, other rare  
earth elements, platinum or rhodium, and the balance  
cobalt and impurities ordinarily associated with the afore-  
mentioned constituents [ ], said nickel-base superalloy and  
said CoCrAl(Y) coating having substantially matching ther-  
mal expansion coefficient values with the maximum differ-  
ence between the thermal expansion coefficient value of said  
substrate and the thermal expansion coefficient value of said  
coating being about 4 percent over a temperature range from  
100° F. to 1740° F.



## PLANT PATENTS

GRANTED JULY 13, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,865

### FREESTONE PEACH

David L. Armstrong, Orange, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Oct. 10, 1980, Ser. No. 196,024  
Int. Cl.<sup>3</sup> A01H 5/00

U.S. Cl. Plt.—42

1 Claim

1. A new and distinct variety of peach of the freestone class, substantially as herein shown and described, and further having, in combination, the following characteristics, namely: a moderately vigorous habit of growth, being a regular and heavy bearer, bearing small non-showy salmon-pink flowers and bearing fruit in mid-August which is somewhat larger than average, white-fleshed and globose, of eating quality from

good to best, and having a moderate to abundant supply of rich, sweet juice.

4,866

### VARIETY OF GRAPEVINE

Harold P. Olmo, Davis, Calif., and James F. Guymon, deceased, late of Davis, Calif. (by Charlene S. Guymon, executrix), assigns to The Regents of the University of California, Berkeley, Calif.

Filed Sep. 22, 1980, Ser. No. 189,965  
Int. Cl.<sup>3</sup> A01H 5/03

U.S. Cl. Plt.—47

1 Claim

1. The new and distinct grapevine herein described and illustrated, and identified by the characteristics enumerated above.



## PATENTS

GRANTED JUL. 13, 1982

### ERRATA

For	See
CLASS	PATENT NO.
464-111 .....	4,338,796
464-167 .....	4,338,797
464-023 .....	4,338,798
073-863 .....	4,338,841
073-863 .....	4,338,842
148-403 .....	4,339,270
524-255 .....	4,339,275
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549-488 .....	4,339,387
549-332 .....	4,339,388
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426-250 .....	4,339,451
523-220 .....	4,339,556
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336-136 .....	4,339,739
250-490 .....	4,339,826



# PATENTS

GRANTED JULY 13, 1982

## GENERAL AND MECHANICAL

4,338,685

### CERVICAL COLLAR

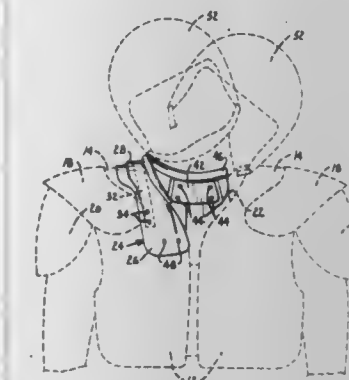
LaPorta, Jr., Phil, 1111 N. Glenstone, Springfield, Mo. 65802

Filed Jun. 2, 1980, Ser. No. 155,552

Int. Cl.<sup>3</sup> A41D 13/00

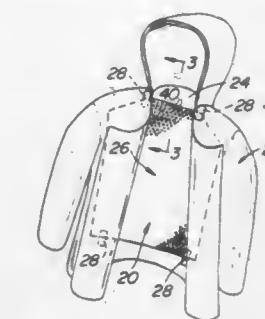
U.S. Cl. 2-2

10 Claims



1. A protective collar device for a user wearing a helmet and an athletic shoulder pad harness having a neck opening for receiving the neck, said device comprising:
  - a pair of spaced apart arch members constructed of a rigid material and adapted for rigid attachment to the harness with inside edge portions of the arch members extending inwardly into the neck opening adjacently above the surface of the harness surrounding the opening; and
  - a rigid connecting member rigid with and extending between said arch members with a front edge portion of said connecting member located to project forwardly into the neck opening adjacently above the surface of the harness surrounding the opening,
 said edge portions of the arch members and connecting member cooperating to reduce the size of the neck opening and to elevate the neck opening to a position wherein the helmet contacts said edge portions of the arch members and connecting member to limit bending of the neck to the sides and to the rear.

said surfaces including a moisture barrier thereon, each of said moisture barriers including plural openings therein exposing portions of said absorbent material to the air trapped between said covering and the body of the person to enable said absorbent material to absorb said moisture while exposing portions



of said absorbent material to the ambient air outside said covering to enable said fabric to breathe, one of said moisture barriers having a radiant energy reflective outer surface and the other of said barriers having a radiant energy absorptive outer surface.

4,338,687

### INTRAOCULAR LENS WITH SPRING MECHANISM

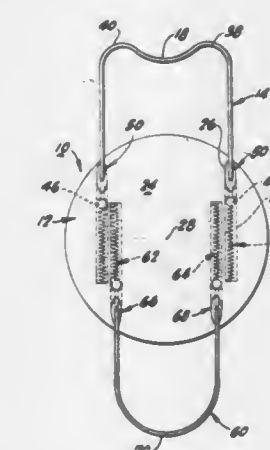
Edgar A. Rainin, 20 Shawn Ct., Danville, Calif. 94526

Filed Oct. 14, 1980, Ser. No. 196,281

Int. Cl.<sup>3</sup> A61F 1/16, 1/22

U.S. Cl. 3-13

9 Claims



1. An intraocular lens comprising:
  - a. a lens portion;
  - b. an appendage associated with said lens portion and extending away from said lens portion, said appendage including a proximal and a distal end portion;
  - c. means for coupling said proximal end portion of said appendage with said lens portion with said distal end portion of said appendage extending away from said lens portion;
  - d. spring means associated with said lens portion for permitting resilient movement of said appendage in relation to said lens portion, said spring means including a cavity

4,338,686

### GARMENT WITH ABSORBENT PAD

Michael Bell, P. O. Box 400, Warrington, Pa. 18976

Continuation-in-part of Ser. No. 83,726, Oct. 10, 1979,

abandoned. This application Oct. 6, 1980, Ser. No. 194,496

Int. Cl.<sup>3</sup> A41D 1/02

U.S. Cl. 2-93

11 Claims

1. For use in a garment adapted to be worn on the torso of a person and formed of a relatively impervious material and having an inner surface, the improvement comprising means for absorbing moisture in air trapped within said garment and releasable securement means for securing said moisture absorbing means within said garment and onto said surface, said moisture absorbing means comprising a pad having an inner and outer surface and formed of a moisture absorbent material, each of said surfaces including a moisture barrier thereon, each of said moisture barriers including plural openings therein exposing portions of said absorbent material to the air trapped within said garment, one of said moisture barriers having a radiant-energy reflective outer surface and the other of said moisture barriers having a radiant energy absorptive outer surface, said releasable securement means enabling either of said barriers to be disposed adjacent the inner surface of said garment when said moisture absorbing means is mounted within said garment.

6. An outer covering to be worn on the body of a person, said covering comprising a fabric having an inner and outer surface and formed of a moisture absorbent material, each of



within said lens portion, at least a portion of said cavity including a continuous peripheral wall area extending along the length of said cavity, and a spring being at least partially housed within said lens portion cavity and extending along said continuous peripheral wall area, said spring being adapted for receiving force exerted by said proximal end portion of said appendage.

4,338,688

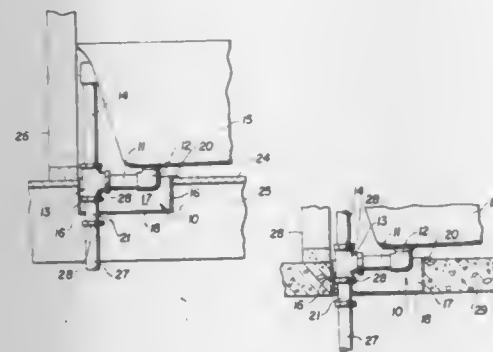
## ENCLOSURE FOR TUB DRAINS

William T. Petty, Rutherford, Tenn., assignor to Elbert L. Petty; Lloyd F. Petty, both of Rutherford and Robert M. Petty, Kenton, all of, Tenn.

Filed Aug. 5, 1980, Ser. No. 175,580  
Int. Cl.<sup>3</sup> A47K 17/00; E03C 1/00

U.S. Cl. 4—191

1 Claim



1. A dry enclosure for bath tub drains operable to exclude vermin and odors from entering a bathroom where the tub is situated through a floor opening adjacent to the drain, the dry enclosure comprising a rectangular open top box adapted to fit snugly into a floor opening and having at its top and around three of its sides only a narrow outwardly directed right angular support flange for the enclosure adapted to rest on the bathroom floor immediately surrounding the margin of the floor opening, the wall of said enclosure without said flange adapted to fit snugly against adjacent wall framing, and a tubular nipple anchored in the bottom wall of the box and projecting above and below said bottom wall substantially equidistantly and having its top end terminating within the box well below the open top thereof, the opposite ends of said nipple being threaded and adapted to be threadedly coupled within the box to an element of the tub drain and below the bottom wall of the box to a descending waste pipe.

4,338,689

## SELF-ALIGNING VALVE ASSEMBLY

Clifford V. Zieg, Costa Mesa, Calif., assignor to Kaiser Aerospace & Electronics Corporation, Oakland, Calif.

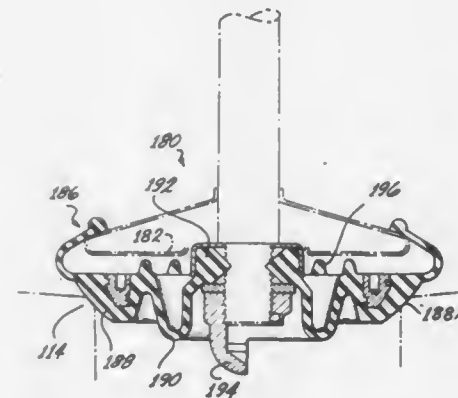
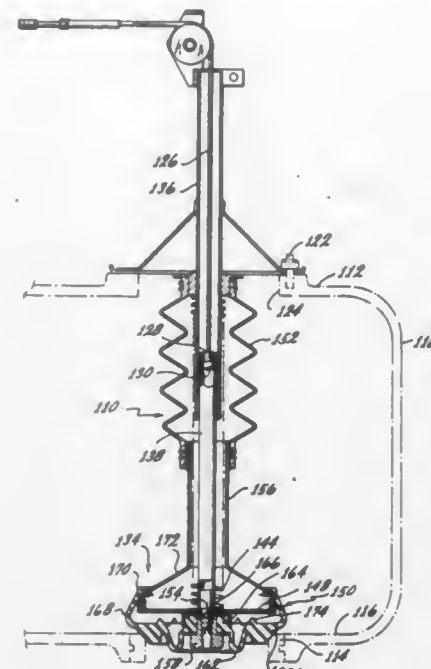
Filed Dec. 5, 1980, Ser. No. 213,478  
Int. Cl.<sup>3</sup> E03D 1/34

U.S. Cl. 4—378

10 Claims

1. A valve assembly for use inside of an enclosed container comprising:  
a support structure capable of being mounted on the outside of the container, opposite an annulus defining a drain hole, said drain hole having an inlet side and an outlet side;  
coupling means including a pressure plate joining said support structure to sealing means;  
sealing means including a circular valve plug centrally attached to said coupling means;  
said plug being of elastomeric material and having an integral spherical seating surface and an annular lip member enclosing said pressure plate;  
said plug including an annular fold intermediate said seating

surface and the plug center, for permitting movement of said seating surface relative to said coupling means;



whereby said seating surface can effect a fluid tight seal of the drain hole when said coupling means is not fully aligned with the drain hole.

4,338,690

## AUTOMATIC MECHANISM FOR FLUSH AND RAISING TOILET SEAT

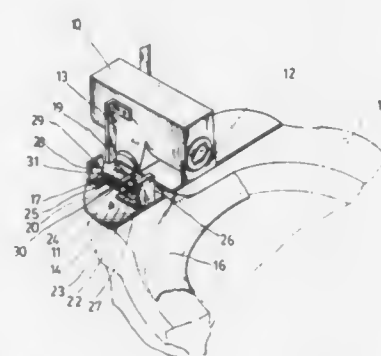
Jung H. Hsieh, and Jung K. Hsieh, both of 7, Alley 1, La. 225, Sec. 6, Chung Hsiao E. Rd., Taipei, Taiwan

Filed Dec. 28, 1979, Ser. No. 108,234

Claims priority, application Taiwan, Dec. 1, 1978, 6722913  
Int. Cl.<sup>3</sup> A47K 13/10; E03D 5/04

U.S. Cl. 4—300

6 Claims



1. An automatic mechanism for flushing a toilet and controlling the positioning of a toilet seat, comprising:  
a toilet seat having end plate means pivoted at the back of a toilet bowl;

an actuating device on the back of said toilet bowl and normally biasing said seat toward a vertical position;  
means for controlling movement of said toilet seat including means operable to hold said seat in a near horizontal position and to release said holding means when said seat is occupied by a user and moved downwardly from said near horizontal position so that said seat will be raised to a vertical position by said actuating device after termination of occupancy;  
means for automatically flushing said toilet including means operable in response to movement of said seat from a horizontal to a vertical position.

4,338,691

## BATHTUB AID FOR HANDICAPPED

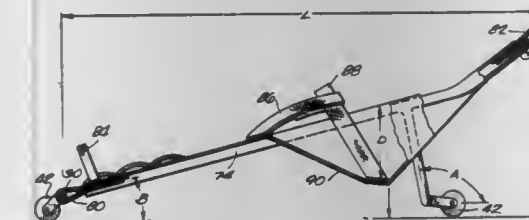
Edward J. Gaffney, Highway 55, Pewaukee, Wis. 53072

Filed Dec. 31, 1979, Ser. No. 108,882

Int. Cl.<sup>3</sup> A47K 3/12

U.S. Cl. 4—562

7 Claims



1. A device for transporting a patient to a bathtub and for supporting the patient in the bathtub during bathing, said device comprising an elongated generally rectangular frame including first and second side runs, a foot run and a head run, with said foot run being generally co-planar with said side runs to minimize the height thereof when said device is supported in a bathtub, a web connected to said runs to support a patient thereon and the patient's legs in a generally straight position, said web including a seat portion which forms a pocket extending substantially below the side runs and including means for loading the appliance and patient into a bathtub without requiring the attendant to handle the entire load, said means comprising a U-shaped fulcrum frame which surrounds the pocket to protect the hips of the patient and has a lower fulcrum run for supporting the device and patient on the rim of a tub for pivoting the frame about a vertical axis to swing the foot of the frame and the patient from a first position with the feet of the patient outside the tub to a second position with the foot of the frame in the tub and to support the patient in an inclined position in the tub, and support means on said fulcrum bar projecting rearwardly therefrom to minimize forward slippage of said device during swinging movement of said device while supported on the rim of the tub.

4,338,692

## BODY-SUPPORT FLOATATION SYSTEM

Philip J. Santo, 130 Larkspur La., Rochester, N.Y. 14622

Filed Feb. 11, 1977, Ser. No. 767,808

Int. Cl.<sup>3</sup> A47C 29/00

U.S. Cl. 5—451

1 Claim

1. A floatation system for supporting at least a portion of the human body, said floatation system comprising:  
a flexible enclosure; a gel-like substance encapsulating a plurality of air pockets within said enclosure for uniform distribution of body supportive forces by the floatation system, wherein said gel-like substance is water and a gelatinizing agent reversibly reactive with said water to form said gel, so that said gel-like substance is readily broken down into its original components, such agent being amoniated salt of Carbopol resin suspended in a carrier, said Carbopol being of a weight between 0.15% and 0.30% of said water with which it is ultimately mixed;

and a fungicide to prevent bacterial growth within said gel.

4,338,693

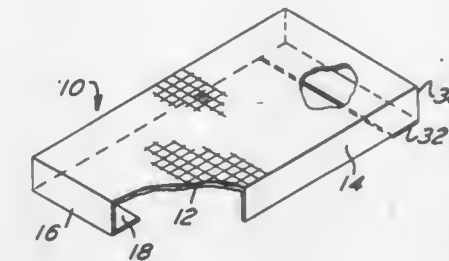
## ONE-PIECE QUILTED MATTRESS SHIELD

Joseph W. Vitale, Charlotte, N.C., assignor to Perfect Fit Industries, Inc., Monroe, N.C.

Continuation of Ser. No. 715,732, Aug. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 539,131, Jan. 7, 1975, abandoned. This application Jan. 18, 1980, Ser. No. 113,151  
Int. Cl.<sup>3</sup> A47G 9/02

U.S. Cl. 5—500

1 Claim



1. A quilted mattress shield comprising:  
a quilted top portion substantially the same size and shape of the top of the mattress which it is adapted to cover;  
a pair of quilted sidewall portions depending from and integral with said top portion, said quilted sidewall portions being adapted to cover the sidewalls of the mattress;  
a pair of quilted end wall portions depending from and integral with said top portion, said quilted end wall portions being adapted to cover the end walls of the mattress;  
means securing adjacent side edges of each pair of side and end walls portions together to form the vertical corners of the mattress shield;  
a plurality of non-elastic bottom portions each having at least two layers of fabric, each bottom portion being connected to at least one of the end and sidewall portions and being generally parallel to said top portion for contact with only a peripheral corner portion of the bottom surface of the mattress;  
said bottom portions being right triangular in configuration and connected to the corners of the shield;  
each triangular bottom portion being formed by a diagonal fold line of a rectangular piece of material, the side edges of the triangular portion being joined by stitch means to adjacent edges of said side and end wall portions.

4,338,694

## FASTENER ORIENTING, TAPPING AND COLLECTION SYSTEM

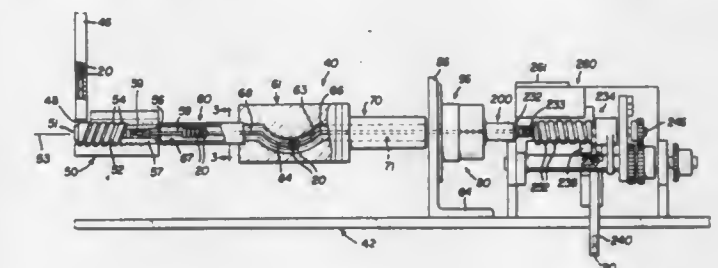
John H. Steward, Bloomfield Hills, and Harold A. Ladouceur, Livonia, both of Mich., assignors to Multifastener Corporation, Detroit, Mich.

Filed May 20, 1980, Ser. No. 151,549

Int. Cl.<sup>3</sup> B23G 1/18, 11/00

U.S. Cl. 10—72 R

6 Claims



1. In a continuous method of orienting and tapping nuts, each nut having a generally rectangular body portion comprising a rectangular central pilot-portion having top and bottom



faces, flange portions extending from opposed sides of said pilot portion and a central bore extending through said pilot portion generally perpendicular to said top and bottom pilot faces, said method comprising the steps of:

- advancing said nuts in continuous succession along an established feed path of travel of a machine parallel to the axes of said nut bores with said pilot portions of said nuts all facing in one direction and said flange portions in random orientation;
- continuously advancing and orienting said nuts by successively rotating each nut of a first group of said nuts in a first direction to an initial first predetermined angular orientation with said flange portions of said first group of nuts oriented in aligned parallel relation;
- continuously advancing and orienting said nuts by successively rotating the remaining second group of nuts in a second direction to an initial second predetermined angular orientation with said flange portions of said second group of nuts in aligned parallel relation;
- continuously advancing and orienting said nuts by successively rotating each nut of said first and second group of nuts into aligned relation with said flange portion of said first and second group of nuts in aligned parallel relation;
- successively tapping each nut bore as the nuts are advanced on the feed path of travel of said machine while maintaining the aligned relation of said flange portions of said nuts; and
- advancing said tapped nuts to a discharge position of the feed path for removal therefrom while maintaining the angular orientation of said nuts.

4,338,695

## SHOE UPPER CONFORMING MACHINE

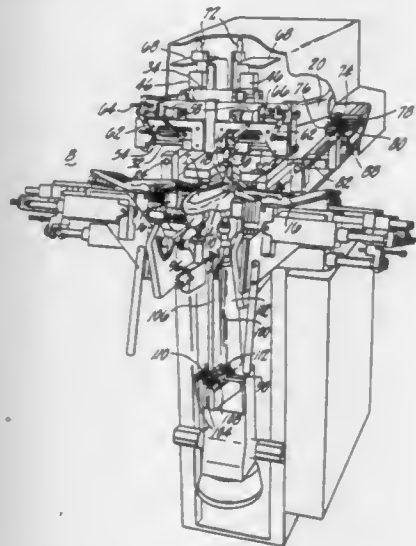
William H. Berrill, and George H. Bosworth, both of Leicester, England, assignors to USM Corporation, Farmington, Conn.

Filed May 31, 1980, Ser. No. 135,978

Claims priority, application United Kingdom, Apr. 28, 1979, 7914851

Int. Cl.<sup>3</sup> A43D 21/00, 23/00

U.S. Cl. 12—10.1



- A shoe upper machine for use in the lasting of side portions of shoe uppers comprising:

a support for a shoe last on which an upper, the side portions of which are to be lasted, and an insole are positioned, has thereadjacent a pair of side lasting assemblies arranged so as to act on opposite side portions of an upper placed on a last support by said support;

cement applying means and means for effecting relative movement between said means and the last support in a direction extending lengthwise of the bottom of a shoe supported on said support, whereby cement can be progressively applied, prior to the operation of said side lasting assemblies, between marginal portions of the insole and shoe upper in the region thereof to be lasted;

said cement applying means comprising a pair of nozzles which are arranged to apply the cement along opposite

marginal portions simultaneously and at least one of said nozzles is movable transversely of the shoe bottom under the control of a guide mechanism associated therewith from a first to a second predetermined position during the relative movement between the cement applying means and the last support as aforesaid;

actuating means being provided for actuating said guide mechanism to enable such transverse movement to take place at a selected stage in said relative movement, said nozzle guidance mechanism associated with said one nozzle comprises an abutment engageable by a portion of said nozzle.

4,338,696

## APPARATUS FOR SHAPING COUNTERS IN MAKING SHOES

Lucien Bichet, Draveil, France, assignor to Societe Immobiliere et Financiere Suchet-Alfort (S.I.F.S.A.), Maisons Alfort, France

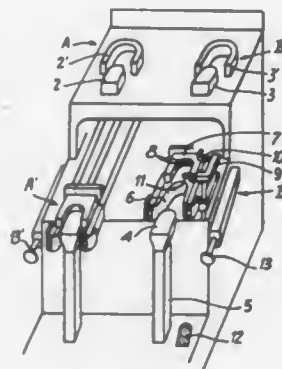
Filed Aug. 1, 1980, Ser. No. 174,654

Claims priority, application France, Aug. 3, 1979, 79 19929

Int. Cl.<sup>3</sup> A43D 11/00

U.S. Cl. 12—54.3

8 Claims



16 Claims

- In an apparatus for bending and shaping counters in the course of manufacturing shoes and which includes at least one preform shaper and at least one last operatively positioned and arranged to engage one another and clamp a shoe piece, which is to be formed into a shoe upper, tightly therebetween, the improvement comprising means for initially holding a shoe piece on said last and fitting it to a given height of a shoe upper, means for positioning the shoe piece including means for holding said preform shaper on the shoe piece under a slight pressure; and means for bending and shaping the shoe piece into a shoe upper by applying a pressure of from about 5 kg/cm<sup>2</sup> to about 6 kg/cm<sup>2</sup> to the shoe piece between said last and said shaper, wherein said means for initially holding and positioning a shoe piece on said last includes first stop means in form of a pin operatively positioned to come to rest on said last and second stop means operatively positioned to define the height of an upper and to come rest on an edge of a shoe piece when it is fit on said last.

4,338,697

## SIMPLIFIED POOL CLEANING APPARATUS

Caleb Broadwater, 21005 Reynolds Dr., #10, Torrance, Calif. 90503

Filed Aug. 14, 1980, Ser. No. 178,098

Int. Cl.<sup>3</sup> E04H 3/20

U.S. Cl. 15—1.7

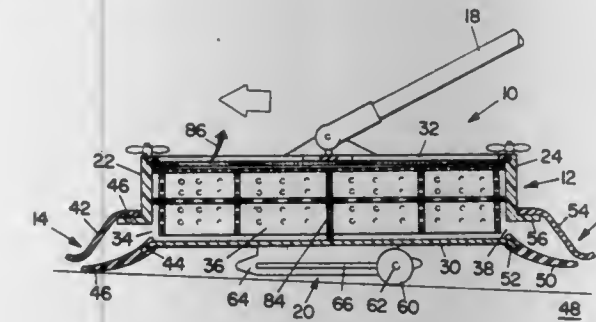
12 Claims

- A simplified, self-contained, pool cleaning apparatus adapted for the cleaning of pool surfaces comprising:
  - a filter body having a bottom, an open top, two sides, a front and a back defining a filtering zone;
  - first means associated with an opening in the front of said filter body for collecting and introducing pool water and debris into said filter zone during forward movement of said filter body, said first debris collecting means including a first lower resilient lip across said filter body front

for contacting and scraping debris from said pool surfaces, said first lower lip being sufficiently stiff to support said apparatus during forward movement of said apparatus;

second means associated with an opening in the back of said filter body for collecting and introducing pool water and debris into said filter zone during backward movement of said filter body, said second debris collecting means including a second lower resilient lip across said filter body back for contacting and scraping debris from said pool surfaces, said second lower lip being sufficiently stiff to support said apparatus during backward movement of said apparatus;

filter means located within said filtering zone for filtering said debris from pool water as it passes from said debris collecting means through said filter zone and out of said filter body;



handle means mounted to said filter body for providing manual movement of said filter body in said forward and backward directions, said handle means being mounted at a fixed location on the top of said filter body substantially equidistant from said filter body back and front; and

wheel means for facilitating forward and backward movement of said filter body on said pool surfaces for collection of debris in said first and second debris collecting means respectively said wheel means being mounted movably to the bottom of said filter body for movement forward and rearward of the fixed handle means mounting location whereby pressure may be exerted through said handle means to said lower resilient lips during forward and rearward movement of said filter body to provide scraping of debris from said pool surfaces.

4,338,698

## VEHICLE CLEANING BRUSH HAVING LIMITED PENETRATION

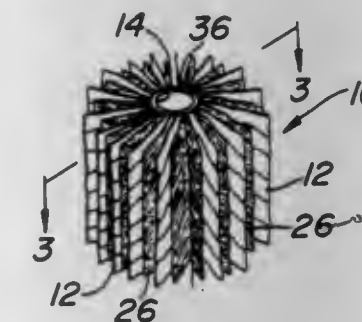
Carl C. Beer, Philadelphia, Pa., and Robert A. Seng, Waterford, N.J., assignors to Sherman Industries, Inc., Palmyra, N.J.

Filed Jun. 9, 1980, Ser. No. 157,593

Int. Cl.<sup>3</sup> A46B 7/10; B60S 3/06

U.S. Cl. 15—230.16

3 Claims



- A rotatable cloth scrubbing brush for cleaning the exterior of a vehicle comprising:
  - a rotatable shaft of hub;
  - a plurality of cloth wiping members for contacting the surface to be cleaned, said cloth wiping members being connected at one end to said rotatable shaft or hub; and
  - a plurality of bristle members having a shorter overall length

than said cloth wiping members said bristle members being interleaved between rows of said cloth wiping members and being connected at one end to said rotatable shaft or hub, so that said cloth wiping members overlap free ends of said bristle members when said shaft or hub is rotated whereby said bristle members support said cloth wiping members as said cloth wiping members overlap said bristle members and said bristle members limit the penetration of said cloth wiping members into that portion of the vehicle being cleaned.

4,338,699

## FURNITURE HINGE

Erich Röck, Höchst, Austria, assignor to Julius Blum Gesellschaft m.b.H., Höchst, Austria

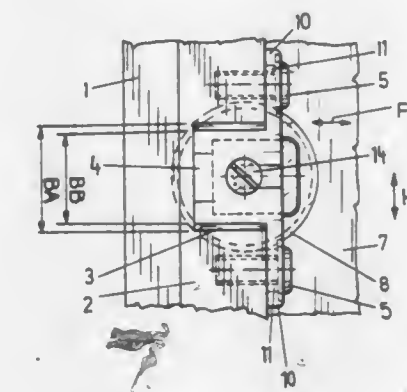
Filed May 1, 1980, Ser. No. 145,474

Claims priority, application Austria, May 7, 1979, 3369/79

Int. Cl.<sup>3</sup> E05D 7/04

U.S. Cl. 16—237

10 Claims



- A furniture assembly comprising furniture side walls, a door frame attached to said side walls and defining an opening, a door, and a least one hinge connected to said door and mounting said door to open and close said opening, said assembly further comprising:

a recess formed in a vertical portion of said frame;

a fastening member fastened to said frame and having a portion extending into said recess;

said fastening member having a rear wall having therein a generally horizontal slot open at an end thereof facing away from said frame;

said hinge including a hinge arm;

screw means extending through said slot and into said hinge arm for mounting said hinge arm on said fastening member, whereby the position of said hinge and said door are adjustable horizontally with respect to said frame and said fastening member; and

the height of said recess being greater than the width in the vertical direction of said portion of said fastening member, whereby the position of said fastening member, said hinge and said door are adjustable vertically with respect to said frame.

4,338,700

## APPARATUS FOR ELECTRICALLY STUNNING ANIMALS TO BE SLAUGHTERED

Johan W. Nijhuis, Winterswijk, Netherlands, assignor to Machinefabriek G.J. Nijhuis B.V., Winterswijk, Netherlands

Filed May 8, 1980, Ser. No. 147,827

Claims priority, application Netherlands, May 10, 1979, 7903681

Int. Cl.<sup>3</sup> A22B 3/06

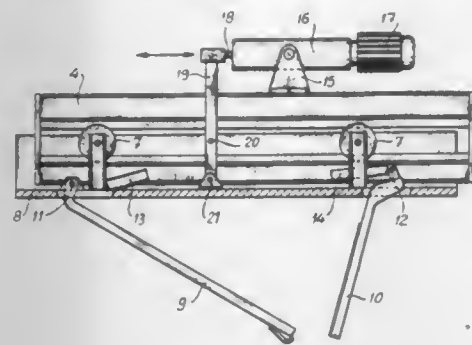
U.S. Cl. 17—1 E

12 Claims

- An apparatus for electrically stunning animals to be slaughtered, comprising:
  - two endless conveyors, said conveyors being operable to run parallel to each other and at a synchronized rate and being positioned to form a substantially V-shaped passageway therebetween; and



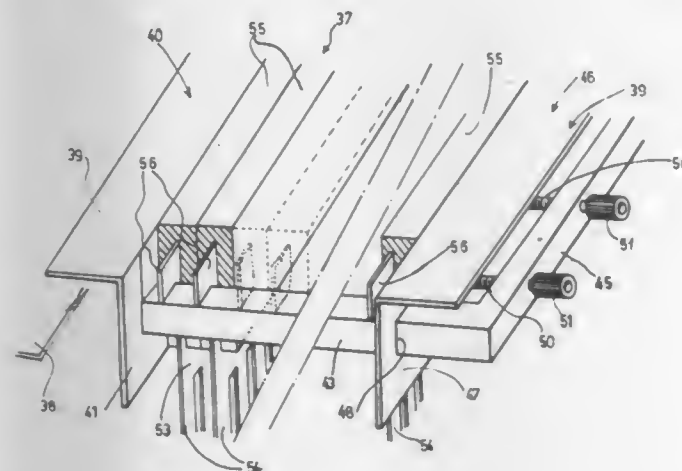
first and second electrodes, said electrodes being adapted to engage the head of the animal to be stunned as the animal is moving on the conveyors, said electrodes being further adapted to extend downwardly toward said V-shaped passageway and to clear said passageway, said electrodes being mounted in a frame, said frame being arranged above said conveyors and being operable to move in a



direction generally parallel to the conveyors, said frame being operably connected to a drive mechanism which is adapted to impart a reciprocating movement to said frame as the animal is moving on the conveyors, such that the rate of forward movement of the electrodes mounted in the frame substantially corresponds to the rate of movement of the animal moving on the conveyors.

**4,338,701**  
**MEAT TENDERING DEVICE**  
Philippe d'Arras, Paris, France, assignor to Societe Anonyme dite COUPAX, France

Filed Sep. 3, 1980, Ser. No. 183,801  
Claims priority, application France, Sep. 4, 1979, 79 22080  
Int. Cl.<sup>3</sup> A22C 9/00  
U.S. Cl. 17-25 5 Claims



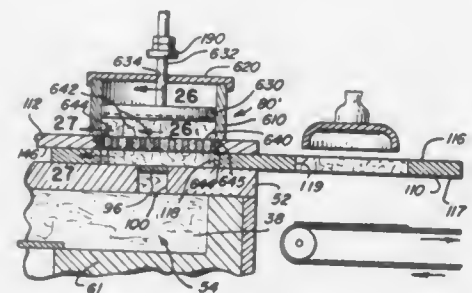
1. A meat tenderizing device comprising:
  - A. a supporting frame;
  - B. a base connected at the bottom of said supporting frame, said base adapted to receive the meat to be tenderized;
  - C. a movable blade holder assembly on said supporting frame, said blade holder assembly being movable toward and away from said base and further comprising:
    - i. a framework including:
      - (a) a pair of clamping flanges in spaced relation to each other;
      - (b) a pair of rods in substantially parallel spaced relation to each other extending between said clamping flanges;
    - ii. a plurality of independently removable cutting blades carried side by side in said framework each of said blades including:
      - (a) a back, said back being thicker than said blade, said back defining spaces between each of said blades

carried by said framework, said blades being mutually engaged by said clamping flanges;

- (b) said backs having ends, extensions from said ends, said extensions supported on said rods;
- iii. a plate having a lower surface located above said backs in substantially non-yielding engagement therewith; and
- D. grid elements located above said base, said grid elements defining spaces therebetween, said blade holder assembly facing said grid with said blades positioned to pass through said spaces.

**4,338,702**  
**APPARATUS FOR MAKING A GROUND FOOD PATTY**  
Harry H. Holly, 150 Key Palm Rd., Boca Raton, Fla. 33432  
Division of Ser. No. 25,031, Mar. 29, 1979, Pat. No. 4,272,864.  
This application Mar. 6, 1981, Ser. No. 241,468  
Int. Cl.<sup>3</sup> A22C 7/00

U.S. Cl. 17-32 22 Claims



1. An apparatus for molding a patty of plastic food material, such as ground meat and the like, which is subject to shrinkage during cooking, said apparatus comprising:
  - (a) a supply means for holding said food material;
  - (b) a pressurizable feed chamber communicating with said supply means to receive said food material therefrom;
  - (c) means for forming food material plugs, said plug forming means communicating with said pressurizable feed chamber and including a plurality of plug forming cavities with each plug forming cavity having an open end, said plug forming means further having a pressurizing piston slidably disposed within each plug forming cavity and means for moving each piston toward at least the plug forming cavity open end;
  - (d) pressurizing feed means for feeding said food material under pressure within said pressurizable feed chamber and into said plug forming means whereby said plug forming cavities are filled with food material; and
  - (e) a mold having a mold opening and means for moving said mold for aligning said mold opening with the open ends of said plug forming cavities whereby said pistons can be moved toward the open ends of their respective plug forming cavities to discharge plugs of food material into said mold opening in a closely packed array to form a patty within said mold.

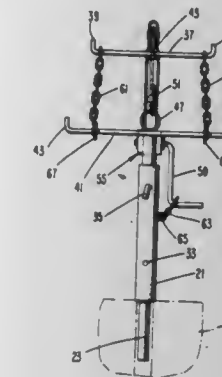
**4,338,703**  
**SUPPORTING DEVICE**  
James H. Tanner, Rte. 1, Waycross, Ga. 31501  
Filed Aug. 7, 1980, Ser. No. 175,942  
Int. Cl.<sup>3</sup> A22B 5/06

U.S. Cl. 17-44 14 Claims

1. A supporting device comprising:
  - a first elongated member;
  - a second elongated member having a first end fixedly attached perpendicularly to a first end of the first member;
  - a first cross bar fixedly attached perpendicularly to the second member at a second end of the second member; and
  - means for mounting the first member to a support such that the first member is rotatable about a longitudinal axis of the first member, said means for mounting comprising

a sleeve arranged around a portion of the length of the first member;

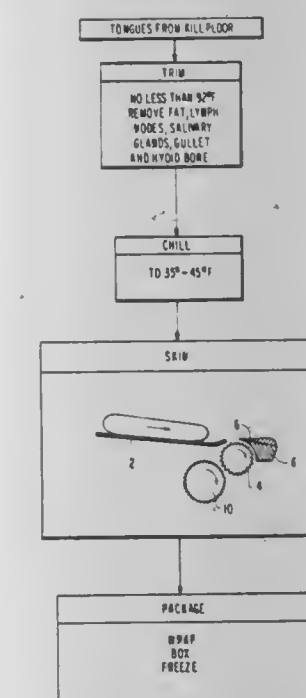
- a first plurality of bores arranged along diameters of the sleeve;
- a second plurality of bores arranged along diameters of the first member, each of said second plurality of bores being adapted to selectively align with one of the first plurality of bores in the sleeve; and



a removable pin for selectively holding the first member against rotational and longitudinal movement relative to the sleeve, said pin being selectively engagable with the first member and the sleeve through one of the first plurality of bores in the sleeve and an aligned one of the second plurality of bores in the first member.

**4,338,704**  
**METHOD FOR PROCESSING BEEF TONGUES**  
Myron L. Welton, and Gary L. Sheneman, both of South Sioux City, Nebr., assignors to Iowa Beef Processors, Inc., Dakota City, Nebr.

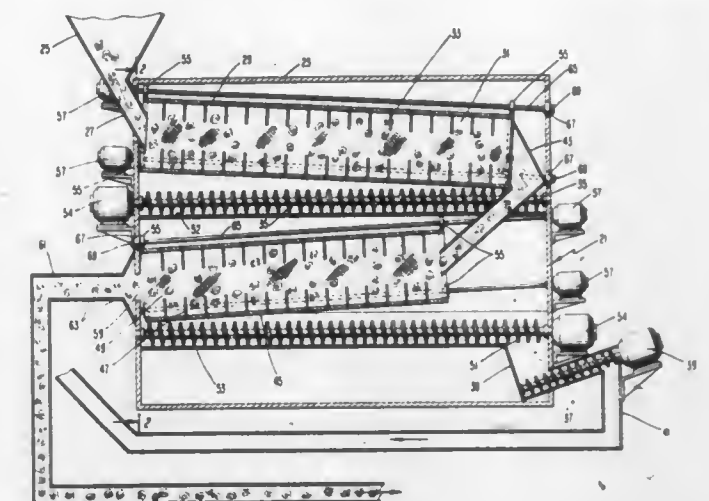
Filed Oct. 11, 1979, Ser. No. 83,695  
Int. Cl.<sup>3</sup> A22B 5/16; A22C 17/12  
U.S. Cl. 17-50 11 Claims



1. A method of processing beef tongues, comprising the steps of
  - increasing the rigidity of the tongue by chilling it,
  - slicing the skin from one surface of the chilled tongue while the tongue is in an unfrozen state, said slicing step being performed by supporting the tongue on a surface and moving it into a blade which has a cutting edge spaced above the surface, and repeating the slicing step to remove the skin from other surfaces of the tongue.

**4,338,705**  
**METHOD AND APPARATUS FOR REMOVING TRASH FROM MATERIAL**  
Joseph K. Jones, Raleigh, N.C., assignor to Cotton Incorporated, New York, N.Y.

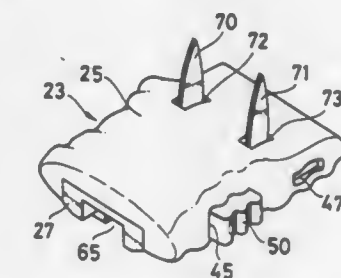
Filed Feb. 6, 1980, Ser. No. 118,977  
Int. Cl.<sup>3</sup> D01G 9/00  
U.S. Cl. 19-80 R 16 Claims



1. A method of removing trash from a material comprising the steps of:
  - feeding the material to an inside of a drum having a screen surrounding the drum;
  - rotating the drum;
  - cyclically lifting the material toward an upper portion of the drum and dropping the material directly onto the screen at a lower portion of the drum with a plurality of finger-shaped baffles arranged in two parallel rows disposed 180° apart within the drum and arranged parallel with each other with each of the baffles comprising an elongated thin rod extending inwardly along a radius of the drum to break up clusters of material and separate the trash;
  - producing a substantially vibratory action with the combined cyclical lifting and dropping of the material and the rotation of the drum; and
  - permitting the relatively heavy trash to drop through the screen while retaining the remaining material.

**4,338,706**  
**ADJUSTABLE FASTENER**  
Tsunetaka Aoki, Kamiichi, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan  
Filed Mar. 10, 1980, Ser. No. 129,072  
Claims priority, application Japan, Mar. 19, 1979, 54-35385[U]

Int. Cl.<sup>3</sup> A44B 21/00  
U.S. Cl. 24-70 R 9 Claims



1. An adjustable fastener for interconnecting a first part and a second part, comprising:
  - (a) an elongated rack adapted to be secured to the first part and having a row of teeth; and
  - (b) a slider adapted to be fastened to the second part and movable on and along said rack for locking engagement therewith at a selected position, said slider comprising:



- (1) a housing having a longitudinal channel for passage therethrough of said rack, said housing comprising a shell having a groove extending transversely of and opening toward said channel, a guide frame mounted in said shell and having said channel, and a retainer mounted on said shell holding said guide frame in said shell;
- (2) a locking member slidably held within said groove for locking engagement with one of said teeth; and
- (3) elongate resilient means extending in and along said channel for normally retaining in its free state said locking member in locking engagement with said one of said teeth, said locking member being movable along said groove out of locking engagement with said one of said teeth against the force of said resilient means.

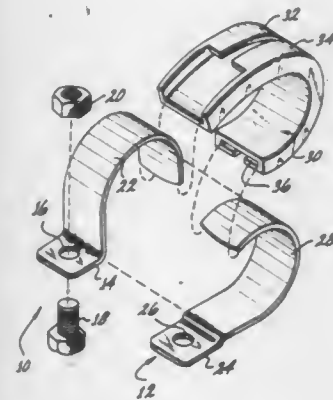
#### 4,338,707 CLAMP

Robert M. Byerly, Burbank, Calif., assignor to TA Mfg. Corp., Glendale, Calif.

Filed Mar. 10, 1980, Ser. No. 128,663  
Int. Cl.<sup>3</sup> B65D 63/00

U.S. Cl. 24—257

13 Claims



1. In combination for clamping a cable, a first strap having a flat portion and having a portion extending in a loop from the flat portion in a clockwise direction,
- a second strap having a flat portion and having a portion extending in a loop from the flat portion in a counter-clockwise direction,
- the looped portions having surfaces disposed in mating relationship to define a clamp and having their flat portions disposed in adjacent relationship, the surfaces on the first and second straps with the mating relationship being smooth to facilitate a slidable relationship between such surfaces,
- the first and second straps being made from a material having springlike characteristics to adjust the area encompassed by the clamp in accordance with pressures exerted on the flat portions for bringing the flat portions of the first and second straps into abutting relationship, and cushion means made from a resilient material and enveloping the looped portions defined by the first and second straps of the clamp and having properties of distributing the forces exerted by the cable on the clamp, the cushion means being constructed to provide a guide for the sliding movement of the looped portions of the first and second straps relative to each other.

#### 4,338,708

##### LAMP ASSEMBLY METHOD

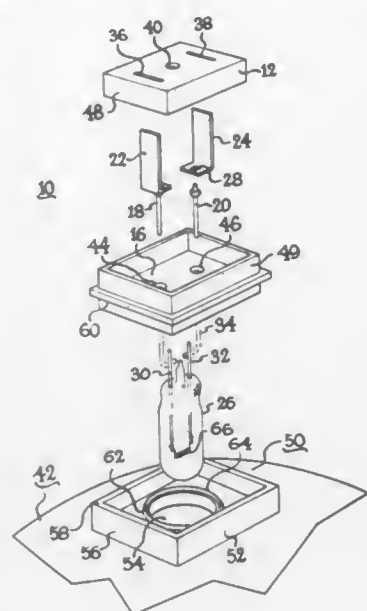
James M. Hanson, Euclid, and Irving Bradley, Novelty, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 58,061, Jul. 16, 1979, Pat. No. 4,282,565. This application Sep. 15, 1980, Ser. No. 186,902

Int. Cl.<sup>3</sup> H01J 9/30

U.S. Cl. 29—25.13

8 Claims



1. A method of assembling a prefocused light source mount for a reflector lamp which comprises:
- (a) inserting at least two lead wires which serve to connect to a light source each joined by electrical connecting means into the cavity of a plastic block member having mating parts comprising an inner container member fitted into an outer housing member,
- (b) assembling said inner and outer members together to form a leak-proof enclosure,
- (c) filling said cavity with an elastomeric polymer to further provide a leak-proof seal around the lead wires, and
- (d) joining a light source to the ends of said lead wires with the position of said light source being fixed with respect to a locating surface on the assembled block member.

#### 4,338,709

##### MAGAZINE FOR STORING TOOLHOLDERS WITH TOOLS MOUNTED THEREIN FOR MACHINE TOOLS

Hans F. Straub, Nuberstr. 31, 7347 Bad Überkingen; Adalbert Kindermann, Schwabstr. 7, 7332 Eisligen/Fils; Friedrich Burkhardt, Brunnenweilerstr. 13, 7332 Eisligen/Fils, and Hans Staiger, Oechsleinstr. 32, 7320 Göppingen, all of Fed. Rep. of Germany

Filed May 1, 1979, Ser. No. 35,058

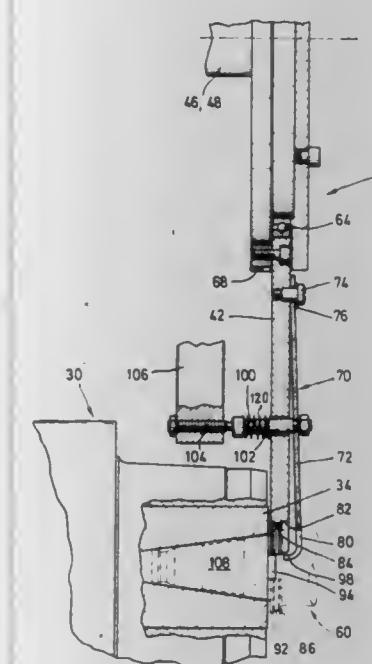
Int. Cl.<sup>3</sup> B23Q 3/157

U.S. Cl. 29—26 A

4 Claims

1. A tool holder support assembly for use in association with a machine tool, having a machine bed, a column assembly mounted on said machine bed, a tool spindle and slide assembly slidably mounted on said column assembly, a base having a worktable mounted adjacent said column assembly; the tool holder support assembly mounted on said column assembly for storing tool holders with a flanged end including a peripheral groove therein and opposite side recesses, the combination comprising: a tool holder magazine having an outboard face in a vertical plane, means for supporting said magazine for indexed movement into tool changing positions with respect to the tool spindle, said magazine having a peripheral edge configured to form a plurality of spaced, peripheral tool holder sockets on said magazine, each of said tool holder sockets including a semi-circular centering web adapted to engage the peripheral groove on the flanged end of a tool holder when supported by said magazine, a plurality of spaced, flat sector

shaped tool holder means having opposite ends, means mounting one end of each of said tool holder means on said tool holder magazine at the outboard face thereof, each of said tool holder means having a semicircular tool holder socket formed at the other end thereof, said tool holder means further including a pair of arms located on opposite sides of the circumference of a tool holder engaged by said centering web, a locking means mounted on each of said arms selectively movable into the side recesses of the flanged end of a tool holder for locking a tool holder in said magazine by urging the flanged end thereof in a direction to cause the peripheral groove thereof to



be held on one side by said centering web, each of said locking means including a bent end portion on each of said arms directed inboard of one of said magazine sockets so as to seat in the side recesses of a tool holder, thereby to securely lock the tool holder in engaged relationship with said centering web so as to prevent tilt of the tool holder from a para-axial alignment with the tool spindle when a tool holder is loaded to or from the tool spindle, and operating means independent of the tool spindle for moving each of said tool holder means from a locking position in juxtaposed position with said outboard face into a release position spaced from said outboard face to unlock each of said tool holders from said magazine.

#### 4,338,710

##### APPARATUS FOR FORMING BORES

Ken V. Stursa, 4895 Futura St., Eugene, Oreg. 97404, and Amos A. Horner, Star Rte., Box 92, Cascadia, Oreg. 97329

Filed Feb. 20, 1980, Ser. No. 122,982

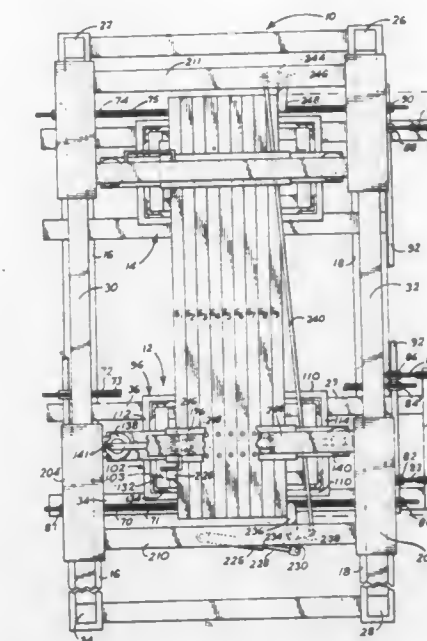
Int. Cl.<sup>3</sup> B23B 47/18

U.S. Cl. 29—26 A

10 Claims

1. Apparatus for forming bores in articles comprising: conveying means operable for transporting the articles to a work station;
- stop means disposed adjacent said work station selectively operable for arresting downstream travel of the course;
- charging means operable for isolating a predetermined course of the articles from said conveying means at said work station and maintaining the course substantially stationary;
- drilling means disposed adjacent said work station and beneath the course operable for selective shifting vertically upwardly for drilling bores in the course; and
- stabilizing means disposed above said conveying means, said

charging means also including lift means selectively operable for engaging and shifting the course upwardly from



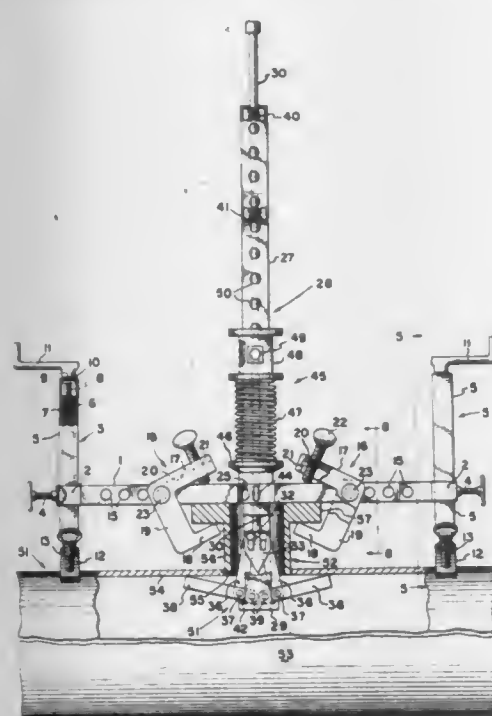


ceiving said regulated air pressure attached to the upper end of said upright portion, said cylinder having a pneumatic piston therein for vertical movement in response to pressure in said pneumatic cylinder, said compression die tube attached to said piston and centered over said housing die, and means for pressurizing said pneumatic cylinder, said pressurizing means including a three-way pneumatic control valve and actuating lever for controlling the operation of said three-way pneumatic control valve connected to said pneumatic cylinder, said control valve upon actuation biases said piston having said compression die tube attached thereon vertically downward thereby applying pressure to said brake adjuster so that retaining rings therein can be released and removed during disassembly and installed during assembly.

**4,338,712**  
**WELDING FIXTURE FOR USE IN JOINING TWO TUBULAR MEMBERS**  
 Timothy C. Dearman, P.O. Box 937, Pearland, Tex. 77581  
 Filed Sep. 2, 1980, Ser. No. 183,313  
 Int. Cl.<sup>3</sup> B23K 37/04

U.S. Cl. 29—281.6

14 Claims



1. A fixture for use in joining a tubular fitting to a base member having an opening therein, said fixture comprising a body for supporting said fitting; support means carried by said body for engagement with said base member at its exterior and operable to space said body at a selected distance from said base member; anchor means carried by said body, one end of said anchor means being movable into and out of said base member via said opening; retainer means carried by said anchor means at said one end thereof for movements between retracted and extended positions in which said retainer means is respectively disabled from and enabled to engage said base member at its interior; and operating means for moving said retainer means between said positions.

**4,338,713**  
**METHOD OF MANUFACTURE OF POWDERED METAL CASING**  
 Glenn B. Christopher, Fort Worth, Tex., assignor to Jet Research Center, Inc., Arlington, Tex.  
 Division of Ser. No. 887,567, Mar. 17, 1978, Pat. No. 4,220,687.  
 This application Apr. 21, 1980, Ser. No. 142,570  
 Int. Cl.<sup>3</sup> B22F 3/24

U.S. Cl. 29—420.5

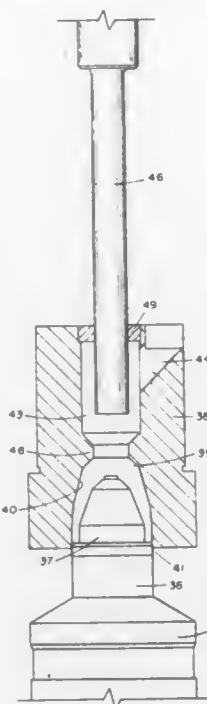
12 Claims

1. The method of forming a shaped charge powdered metal

casing for use in an oil well perforating gun comprising the steps of:

providing a mix of about 80 percent by weight of a powdered metal having a diameter of approximately 100 microns, about 19 percent by weight of powdered lead having a diameter of approximately 100 microns, and about one percent by weight of graphite powder;

placing said mix in a mold having one movable wall, said



§ mold having a generally bell shape with an open end and a closed end;

moving said movable wall of said mold and compressing the mix within said mold until approximately 120,000 PSI is exerted upon the mix within said mold to form a green compact;

removing the compressed mix from the mold; and

forming a hole through the closed end of said compressed mix.

**4,338,714**  
**METHOD OF LOADING HOLLOW RIVETS ON A MANDREL**  
 John Powderly, Birmingham, England, assignor to USM Corporation, Farmington, Conn.  
 Division of Ser. No. 912,373, Jun. 5, 1978, abandoned. This application Jun. 25, 1980, Ser. No. 162,829  
 Int. Cl.<sup>3</sup> B23P 19/04

U.S. Cl. 29—433

4 Claims



1. A method of loading a pull-through, blind-riveting mandrel with a column of headed hollow rivets having stem portions to be set thereby comprising:

assembling the rivets in a head-to-tail relation on an elongated tubular sleeve having an engagement means disposed at one end for retaining said rivets on said sleeve,

and positioning the head of the first rivet being placed nearest the engagement means;

introducing the mandrel inside the sleeve from an end of the sleeve opposite the engagement means;

while the mandrel is inside the sleeve; and then relatively withdrawing the mandrel from the sleeve transferring the rivets onto the mandrel.

**4,338,715**  
**METHOD FOR INSERTING A VOID PLUG INTO A LIFT INSERT FOR A CONCRETE PRODUCT**  
 Billy G. Capers, Canton, Tex., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jun. 12, 1980, Ser. No. 158,989

Int. Cl.<sup>3</sup> B23P 11/02

U.S. Cl. 29—451

9 Claims



1. A method for insertion of a threadless, tubular plug into a cylindrical insert for receiving a lifting device, prior to imbedment of said insert in a concrete product, and wherein said plug includes an elastomeric tubular body member closed at an upper end and open at a lower end and having an upper insert end abutment means adjacent said closed end and a lower insert end abutment means adjacent said open end, said method comprising:

- laterally inserting the flattened and then folded open end and lower insert abutment means of said plug into a longitudinal slot of a width sufficient therefore in a tubular tool member;
- longitudinally inserting said plug and said tubular tool member into the top of said cylindrical insert;
- longitudinally stretching said plug by frictional engagement thereof with said tubular tool member and engagement of said upper abutment means with said insert while, contemporaneously, longitudinally withdrawing said tubular tool member from said insert; and
- compressively affixing said lower abutment means in overlying intimate contact with the lower end of said insert upon total withdrawal therefrom of said tubular tool member so as to place the intermediate portion of said plug between said upper and lower abutment means in tension.

**4,338,716**  
**PLASTIC PIPE PROVIDED WITH A GROOVE**  
 Roelof H. Marissen, Bergentheim, and Joannes H. Beune, Hardenberg, both of Netherlands, assignors to Wavin B.V., Em Zwolle, Netherlands

Filed Dec. 28, 1979, Ser. No. 108,050

Claims priority, application Netherlands, Jan. 9, 1979, 7900173

Int. Cl.<sup>3</sup> B29D 23/00

U.S. Cl. 29—456

6 Claims

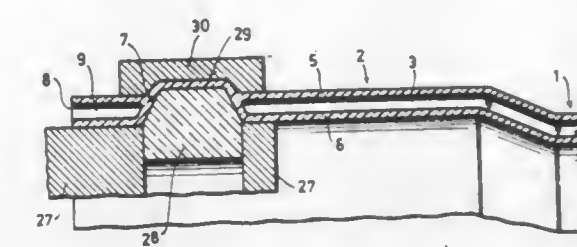
1. A method of forming a plastic pipe with at least one groove, said plastic pipe having a first pipe part with an inner wall, an outer wall, longitudinally extending channels, and longitudinally extending partitions therebetween, said method comprising the steps of:

heating the first pipe part;

applying a groove-forming member with a mold and a man-

drel core at least at a short distance from an end of the first pipe part; and

expanding the mandrel core toward the mold so that the



longitudinally extending channels between the mandrel core and the mold are pressed tightly toward each other; thereby forming at least one groove in the first pipe part of the plastic pipe.

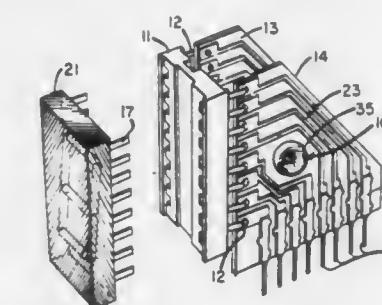
**4,338,717**  
**METHOD FOR FABRICATING A LIGHT EMITTING DIODE DISPLAY SOCKET**  
 Neil F. Damon, Fort Pierce, Fla., assignor to Augat Inc., Attleboro, Mass.

Filed Sep. 2, 1980, Ser. No. 183,181

Int. Cl.<sup>3</sup> B23K 31/02

U.S. Cl. 29—839

8 Claims



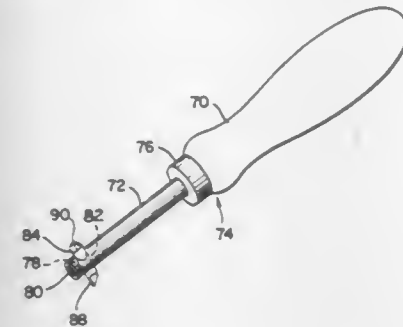
1. A method for fabricating a socket for a light emitting diode having a dual-in-line configuration of terminals extending from one side thereof, the socket being comprised of a receiving socket having contact terminals extending from one side thereof in dual-in-line configuration, said method comprising the steps of:

- forming at least two printed circuit cards with a plurality of contact pads adjacent each of first and second edges, one contact pad at each said edge being connected by means of a printed circuit path to a pad at the other said edge;
- forming a first hole through each of said contact pads along said first edge of each said printed circuit card;
- forming at least one second hole intercepting each of said contact pads along said second edge of each said printed circuit card;
- aligning first and second said printed circuit cards in adjacent spaced planar relationship with said first edges in parallel juxtaposition and said second edges aligned;
- placing a terminal against each said contact pad along said second edge, said terminal having a tab projecting into said at least one hole intercepting said contact pads;
- inserting said contact terminals of said receiving socket into said holes in said pads along said first edge of said printed circuit cards, said contact terminals in one line being inserted into said holes in one of said printed circuit cards; simultaneously soldering said terminals and said contact terminals to said printed circuit cards; then
- rotating said first and second printed circuit cards toward each other to a parallel spaced confronting relationship thereby deforming said contact terminals; and then
- fixing said first and second printed circuit cards permanently in said spaced relationship.



**4,338,718**  
**GROUT REMOVING TOOL**  
 E. Alfred Olkkola, 24 Wilson Rd., West Yarmouth, Mass. 02673  
 Filed Mar. 31, 1980, Ser. No. 136,167  
 Int. Cl.<sup>3</sup> B25B 17/00

U.S. Cl. 30—171



1. A grout removing tool for removing cracked and worn grout from between tiles comprising a handle having an elongated one piece shaft secured thereto and a single grout cutting blade member removably and adjustably secured within and adjacent to the end of the shaft, said blade member having an elongated and tapered cutting edge on one end thereof and a short stubby tapered cutting edge on the opposed end of the said blade member.

**4,338,719**  
**FILAMENT TYPE VEGETATION TRIMMER**  
 Robert F. Burkholder, Easton, Md., assignor to Black & Decker Inc., Newark, Del.  
 Filed Aug. 8, 1980, Ser. No. 176,288  
 Int. Cl.<sup>3</sup> A01D 50/00

U.S. Cl. 30—276



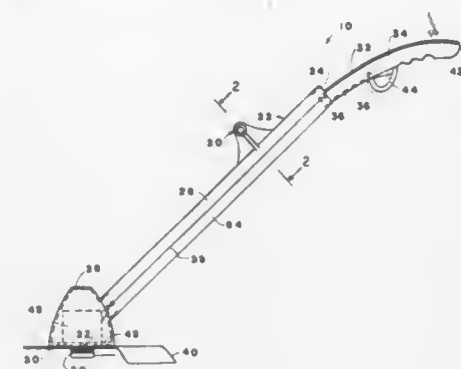
1. A filament type vegetation trimmer comprising:  
 a wand;  
 a housing, associated with said wand;  
 a prime mover carried by said housing and having a rotary output means associated therewith;  
 a slinger head drivably coupled with said rotary power output means;  
 means for storing a supply of filament, said storage means being longitudinally spaced from said slinger head;  
 means for guiding a cutting end of said filament through a longitudinal passage to said slinger head;  
 a filament support tube positioned within said slinger head for redirecting said cutting end of filament from said longitudinal passage to rotate in a radial path in response to the rotation of the rotary output means; and

means provided in said filament support tube for cooling filament supported therein.

**4,338,720**  
**HOUSING AND FRAME SYSTEM FOR VEGETATION FILAMENT TRIMMER**  
 Charles B. Pittinger, Sr., 902 N. Lake Dr., Weatherford, Tex. 76086, and Charles B. Pittinger, Jr., 320 Cockeys Mill Rd., Reisterstown, Md. 21136  
 Filed Sep. 5, 1980, Ser. No. 184,479  
 Int. Cl.<sup>3</sup> A01D 50/00

U.S. Cl. 30—276

10 Claims

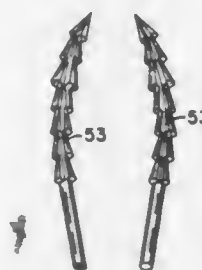


1. In a system for trimming vegetation, having a housing, a shank connecting with the housing and serving as a conduit tube for an electric lead, air venting means for conducting cooling air to a motor within the housing, and means for holding connecting with the shank and including an elongate handle and a balancing handle, the improvement comprising in combination: the shank including dual tubes co-extensive from the housing to the elongate handle, a first of said dual tubes located for serving as a said conduit tube, a second of said dual tubes located as an extension tube for carrying clean air from a point relatively free of trimmings at an upper part of the handle downward through said housing, means connecting said dual tubes along said co-extension, and means for protecting an electric lead within said system from abrasion upon assembly in said system comprising all said housing, dual tubes and handle portion being on unitary structure free of fasteners for interconnecting same.

**4,338,721**  
**TINED UTENSIL**  
 Dorothy O. Cauchon, 94 Prospect St., Belmont, Mass. 02178, and Rudolph Muto, 24 Williams St., Andover, Mass. 01810  
 Continuation of Ser. No. 965,942, Dec. 4, 1978, abandoned. This application Dec. 3, 1979, Ser. No. 99,635  
 Int. Cl.<sup>3</sup> B26B 19/02

U.S. Cl. 30—322

3 Claims



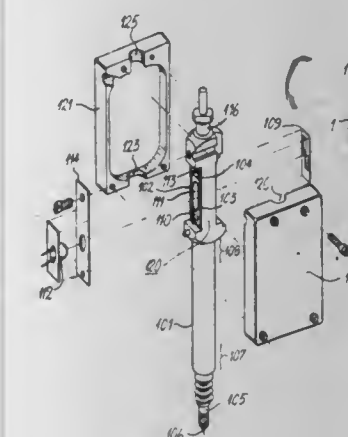
1. A utensil comprising:  
 an elongated handle having at one end at least one tine with a shank of predetermined diameter;  
 said tine having an enlarged spear head comprising a substantially conical free terminal tip and at least two substantially frusto-conical members, said members tapering, and having bases and peripheral edges of progressively

larger diameter from said free terminal, substantially conical, tip rearwardly toward said shank of said tine;  
 the said frusto-conical member of said spear head nearest said shank, being of substantially greater diameter at the base than the diameter of the shank of said tine to form the base of said spear head;  
 each said frusto-conical member including a plurality of longitudinally extending grooves at spaced angular distances therearound, each groove extending rectilinearly and continuously along the tapered exterior surfaces of said members from proximate said tip to proximate the base of said spear head;  
 whereby said grooves are each aligned along said tine.

**4,338,722**  
**OPTOELECTRONIC DISPLACEMENT SENSOR**  
 Jean R. Delmas, Vanves, France, assignor to Microlec, S.A., Fribourg, Switzerland  
 PCT No. PCT/FR79/00093, § 371 Date Jun. 16, 1980, § 102(e)  
 Date Jun. 16, 1980, PCT Pub. No. WO80/00873, PCT Pub. Date May 1, 1980  
 PCT Filed Oct. 15, 1979, Ser. No. 195,009  
 Int. Cl.<sup>3</sup> G01B 11/24

U.S. Cl. 33—174 L

8 Claims

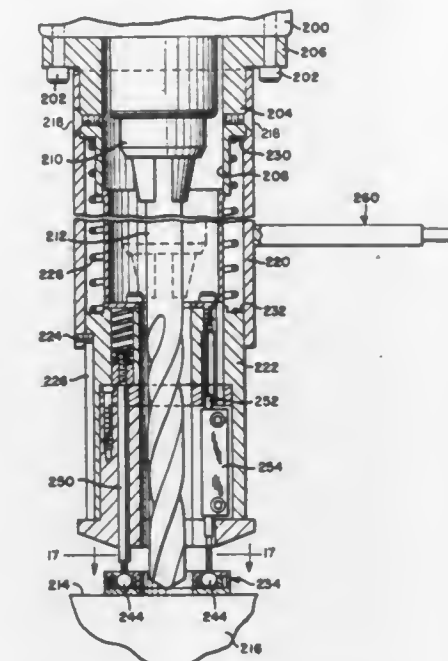


1. An optoelectronic high precision dimension and displacement measurement device comprising:  
 a body;  
 a moving sensor stem having displacement to be measured, two guides incorporated in the body along which said stem slides in the body;  
 a contact tip at an end of the stem;  
 a light source and two adjacent photoreceivers symmetrically positioned on opposite sides of a stem axis;  
 a cover carried by the said moving stem having transparent and opaque parts and situated between the source and the photoreceivers whereby movement of the cover in first and second directions has the effect of increasing and reducing respectively the areas of the sensitive surfaces exposed to the light source of the two photoreceivers, said cover being substantially symmetrical with the contact tip of the stem relative to a center point between the two guides; and  
 two parallel plates disposed in said body forming a slideway, said plates being at an end of the moving stem other than the contact tip, a slide block sliding in said slideway, said slide block having an oblong transparent portion allowing light to pass from the light source to the photoreceivers and carrying the moving cover.

**4,338,723**  
**ANGLE MEASURING DEVICE**  
 Harry L. Benjamin, Dayton, Ohio, assignor to Centro Cororation, Dayton, Ohio  
 Continuation-in-part of Ser. No. 843,414, Oct. 19, 1977, abandoned. This application Jan. 4, 1980, Ser. No. 109,722  
 Int. Cl.<sup>3</sup> G01B 7/30; G01C 9/06

U.S. Cl. 33—174 L

14 Claims

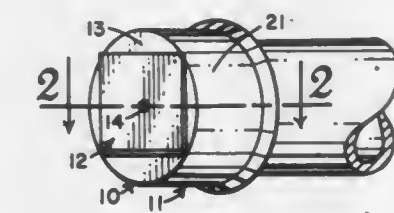


1. An angle measuring device, comprising:  
 a frame;  
 means providing a reference plane;  
 means interconnecting said frame and said reference plane means for two dimensional pivotal movement of said frame about a fixed location in said reference plane means, and for sensing the relative angular position between said frame and said reference plane means and providing electrical signals indicative of said position, and including a plurality of spaced sensing means disposed about an axis in said frame which intersects said reference plane at said fixed location, each said sensing means including a rod mounted in said frame for longitudinal movement parallel to said axis and pivotally connected to said reference plane means; and  
 means receiving said signals and providing an indication of said relative angular position.

**4,338,724**  
**TOOL FOR POSITIONING AND DEFINING HOLES IN WALL PANELS**  
 Russell D. Johnson, 2307 W. 14th Ave., Spokane, Wash. 99204  
 Filed Jun. 2, 1980, Ser. No. 155,557  
 Int. Cl.<sup>3</sup> G01B 3/14

U.S. Cl. 33—174 G

1 Claim



1. A tool to positionally define the periphery of holes to be created in wall panels to service rough utility fixtures that are positioned in wall support frames with orifices substantially coplanar with the surface of such support, frames comprising, in combination:  
 a rigid planar template configured with a peripheral shape



substantially the same as that of an electrical junction box for which a hole is to be established; mechanical means associated with the template to releasably maintain it on a rough utility fixture in position to define the periphery of a hole to be cut in a surrounding wall panel to service such electrical junction box comprising two fastening holes defined in the template to be coincident with two similar fastening holes in the junction box and two headed nails extending between cooperating fastening holes in the junction box and template respectively; and adhesive means, on the panel facing side of the template to releasably position and maintain it on the surface of a wall panel in which a hole is to be defined, comprising, a resilient tape body of some thickness structurally fastened to the template and having adhesive on its exposed surface.

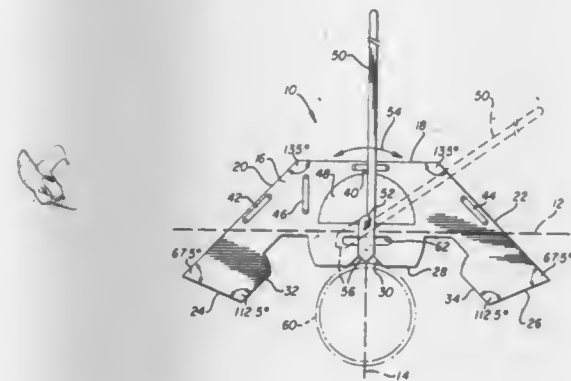
4,338,725

## PIPE FITTER'S QUICK SQUARE

Larry J. Martin, Rte. 8, Box 417, Longview, Tex. 75601, and John H. Gaddis, 618 Cynthia, Overton, Tex. 75684  
Filed Jan. 6, 1981, Ser. No. 222,991  
Int. Cl.<sup>3</sup> G01B 3/14, 5/24

U.S. Cl. 33—174 N

12 Claims



1. A pipe fitter's square comprising: a planar member having first, second, third, fourth and fifth linear exterior edges; said first edge extending parallel to the longitudinal axis of said planar member; said second edge intersecting a first end of said first edge at a 135° interior angle; said third edge intersecting a second end of said first edge at a 135° interior angle, said third edge essentially equal in length to said second edge; said fourth edge intersecting said second edge at an end thereof opposite said first edge, said fourth edge having an interior angle of 67.5° with respect to said second edge; and said fifth edge intersecting said third edge at an end thereby opposite said first edge, said fifth edge having an interior angle of 67.5° with respect to said second edge whereby said second and third edges when engaged with two intersecting pipes will position them at 90° and when said fourth and fifth edges are engaged with intersecting pipes will position them at 45°.

4,338,726

## LINE BORE GAUGE

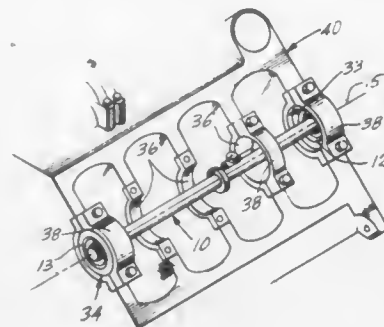
Charles W. Swales, 18125 Renwick Rd., Azusa, Calif. 91702  
Filed Jul. 14, 1980, Ser. No. 168,010  
Int. Cl.<sup>3</sup> G01B 5/08

U.S. Cl. 33—178 R

18 Claims

1. A line bore gauge for measuring, in an engine or the like having a series of at least three arcuate bearing seats with substantially common centers of curvature, a selected property of a selected bearing seat of the series at differing angular positions about a reference axis defined by the centers of curvature of a given pair of the remaining bearing seats of the series

chosen for purposes of defining the reference axis for seats of interest, the line bore gauge comprising:  
an elongate shaft;  
a pair of toroid-shaped adaptors on the shaft, the adaptors having outer diameters corresponding to the chosen bearing seats for alignment of the shaft when in use with the centers of curvature of such respective chosen seats;  
an axially positionable collar disposed upon the shaft between the adaptors;  
a radial distance indicator mechanism;



means for coupling the radial distance indicator mechanism between the collar and the surface of the selected bearing seat, thereby to provide measurement of such bearing surface relative to the reference axis; and means for changing the angular position of the radial distance indicator mechanism about the reference axis thereby to vary the angular relation of the mechanism to the adjacent bearing surface to obtain measurements at different locations on the bearing surface.

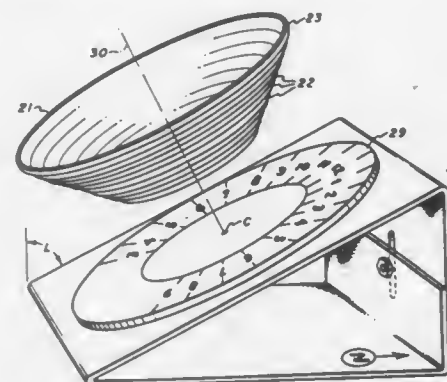
4,338,727

## SHADOWLESS SUNDIAL

Robert W. Gundlach, Victor, N.Y., assignor to Vencraft Corporation, West Henrietta, N.Y.  
Filed Sep. 17, 1980, Ser. No. 188,142  
Int. Cl.<sup>3</sup> G04B 49/00

U.S. Cl. 33—269

10 Claims



1. A shadowless sundial comprising:  
a. a body having a specularly reflecting surface forming at least a segment of a substantially annular surface perpendicular to its axis of curvature,

- b. mounting means connected to said body for maintaining said axis approximately parallel to the axis of rotation of the earth, and
- c. time scale means mounted in a plane parallel to said body at a distance from said body equal to the radius of curvature of said body so as to be coincident with the virtual image formed by the sun's reflection from said reflecting surface.

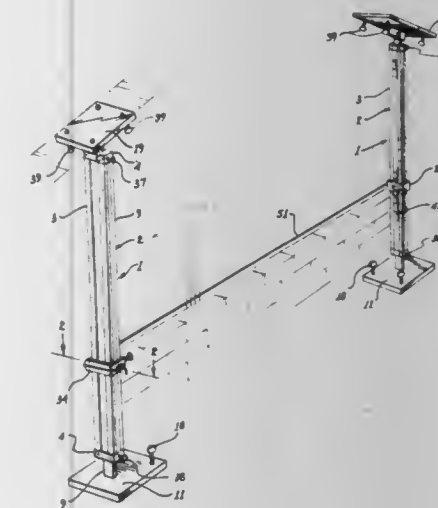
4,338,728

## MASON'S GUIDE

Rick R. Valead, Phoenix, Ariz., assignor to Castle Rock Enterprises, Phoenix, Ariz.  
Continuation of Ser. No. 116,354, Jan. 28, 1980, abandoned. This application Apr. 6, 1981, Ser. No. 251,578  
Int. Cl.<sup>3</sup> G01C 15/10

U.S. Cl. 33—406

3 Claims



1. A mason's guide system comprising at least two elongated rectangular bodies having indicia means longitudinally and adjustably disposed thereon; indicia locator means carried by each said body and adapted to longitudinal movement along said indicia means; line attachment means carried by each said locator means for securing a mason's line between said bodies; telescoping extensions carried by each said body interiorly and at both ends thereof having means for engagement with a floor and ceiling; said engagement means comprising a pedestal and a capital, respectively, at opposite ends of said extensions; said capital having screw means thereon for making fine adjustments and anchoring to a ceiling surface; said pedestal having screw means thereon for anchoring thereof to a floor surface; an articulated joint connection between said capital and the telescoping extension associated therewith; a rigid connection between said pedestal and the telescoping connection associated therewith; said indicia locator means comprises a collar slidably disposed on said body and a sight opening with a line indicator to indicate the precise position of the line relative to said indicia means; and wear members attached to said rectangular bodies at the corners thereof.

4,338,729

## ELECTROSTATIC METHOD AND APPARATUS FOR TREATING MATERIAL

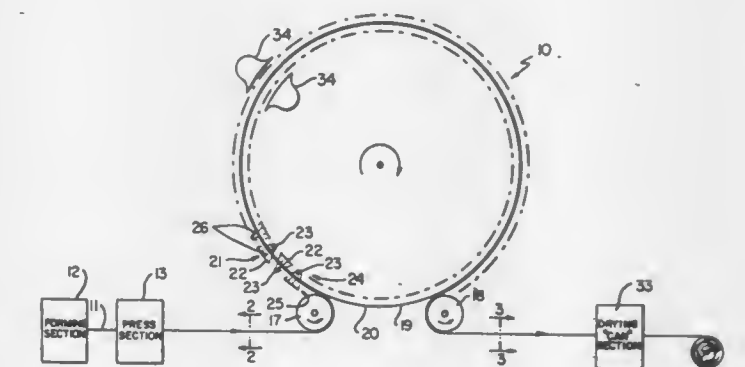
James T. Candor, 5440 Cynthia La., Dayton, Ohio 45429  
Division of Ser. No. 124,224, Feb. 25, 1980, Pat. No. 4,283,862, which is a division of Ser. No. 50,807, Jun. 21, 1979, Pat. No. 4,208,807, which is a continuation-in-part of Ser. No. 925,378, Jul. 17, 1978, abandoned, which is a division of Ser. No. 863,910, Dec. 23, 1977, Pat. No. 4,111,773, which is a continuation-in-part of Ser. No. 732,646, Oct. 15, 1976, Pat. No. 4,081,342, which is a continuation-in-part of Ser. No. 695,068, Jun. 11, 1976, Pat. No. 4,033,841, which is a continuation-in-part of Ser. No. 569,815, Apr. 21, 1975, Pat. No. 3,966,575, which is a continuation-in-part of Ser. No. 499,178, Aug. 21, 1974, Pat. No. 3,893,898, which is a continuation-in-part of Ser. No. 383,255, Jul. 27, 1973, Pat. No. 3,849,275, which is a division of Ser. No. 263,605, Jun. 16, 1972, Pat. No. 3,795,605, which is a continuation-in-part of Ser. No. 53,402, Jul. 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 25,938, Apr. 6, 1970, Pat. No. 3,687,834, which is a continuation-in-part of Ser. No. 864,851, Oct. 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 811,421, Mar. 28, 1969, abandoned, said Ser. No. 569,815 is a continuation-in-part of Ser. No. 548,666, Feb. 10, 1975, Pat. No. 3,965,581, which is a continuation-in-part of Ser. No. 469,820, May 14, 1974, Pat. No. 3,931,682, Ser. No. 405,023, Oct. 10, 1973, Pat. No. 4,060,449, and Ser. No. 499,178, Aug. 21, 1974, Pat. No. 3,893,898. This application May 8, 1981, Ser. No. 261,784

The portion of the term of this patent subsequent to Nov. 19, 1991, has been disclaimed.

Int. Cl.<sup>3</sup> F26B 3/34; B01D 57/02; C25B 7/00

U.S. Cl. 34—1

33 Claims



1. In a method for drying material by disposing said material in a heating means to have said heating means heat at least part of the liquid particles of said material, the improvement comprising the steps of disposing charged electrode means so as to be adjacent one side of said material when said material is disposed in said heating means and to define a plurality of alternately directed and oppositely charged electrostatic fields that are serially arranged with the positively charged portion of every other field at said electrode means being adjacent and between the negatively charged portions of the two fields adjacent thereto at said electrode means in a like repeating pattern and that are substantially constant and non-current consuming so that said fields at least partially extend through said material while said material is disposed in said heating means, and moving said material in one direction through said heating means to cause at least a portion of said material to have the particles of liquid thereof serially moved through an electrostatic field with its negatively charged portion disposed on said one side of said material and then into the next electrostatic field with its positively charged portion disposed on said one side of said material in a repetitive manner whereby said material is dried.



particles of liquid of said portion of said material are subjected to an alternately directed pumping action by said serially arranged electrostatic fields while said portion of said material is being heated by said heating means and said material is being moved through said heating means in said one direction.

#### 4,338,730 DRYER

Hisao Tatsumi, Nagoya, and Takashi Kawano, Seto, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

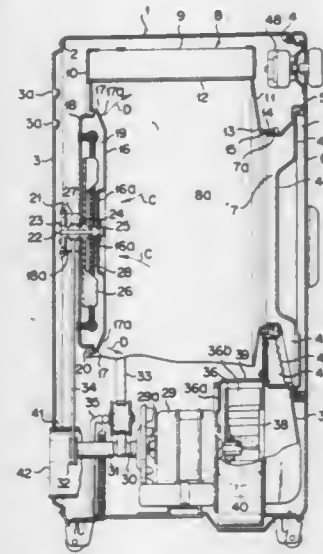
Filed Aug. 19, 1980, Ser. No. 179,564

Claims priority, application Japan, Aug. 23, 1979, 54-108332; Sep. 25, 1979, 54-132277[U]; Oct. 31, 1979, 54-141916; Nov. 22, 1979, 54-161983[U]

Int. Cl.<sup>3</sup> F26B 21/12

U.S. Cl. 34—54

28 Claims



1. A dryer comprising: a housing; a drying chamber formed in the housing for receiving wet clothing; an electric heater; means for directing hot air from the heater to the drying chamber to dry the clothing; a ventilation fan which draws off air from the drying chamber and introduces the same amount of air into the drying chamber during a drying cycle, an amount of air ventilated by the ventilation fan set at greater than zero and less than 1 m<sup>3</sup>/min per kilowatt of the heat-generating capacity of the electric heater while the electric heater is operated.

#### 4,338,731

##### VENT FOR A CLOTHES DRYER

Sidney J. Shames, Briarcliff Manor, and Harold Shames, Ardsley, both of N.Y., assignors to Melard Manufacturing Corporation, Passaic, N.J.

Filed Sep. 22, 1980, Ser. No. 189,663

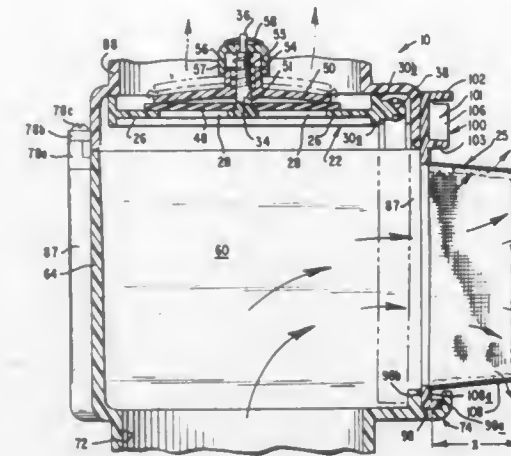
Int. Cl.<sup>3</sup> F26B 11/04

U.S. Cl. 34—82

25 Claims

1. In an energy saving hot air vent which includes a selectively swingable, air-directing, valve adapted to direct hot air emitted from a clothes dryer either outdoors, when said valve is in a first position, or indoors when said valve is in a second position; said energy saving vent including housing means having an upstream hot air entry means adapted to receive, therinto hot air from a clothes dryer exhaust hose segment, a downstream hot air exit means adapted to direct hot air from said housing to another exhaust hose segment when said valve is in said first position, and indoor venting port defined in said housing means and adapted to receive hot air from said hot air entry means for discharge therethrough when said valve is in said second position; the improvement comprising, in combination:

said housing means being molded from a heat-resistant plastic, a slideway formed integrally on the exterior of said housing adjacent to but positioned outwardly of the indoor venting port, a frame for selective slidable entry in and removal from said slideway, and a screen secured



along its periphery to said frame and arranged for positioning across the direction of air flow from said indoor venting port for capturing lint and particulate matter carried by the heated air being discharged through said indoor venting port.

#### 4,338,732

##### LIFTER CAGE FOR ASPHALT PLANT, DRYERS AND DRUM MIXERS

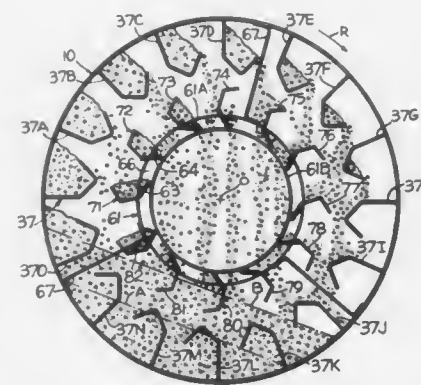
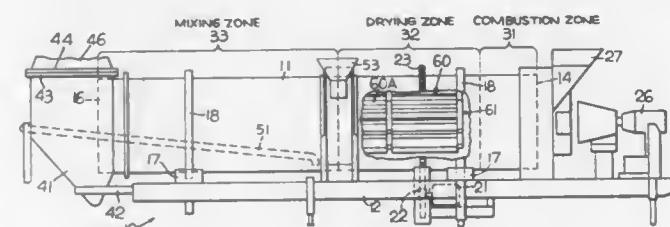
Major Coxhill, Appleton, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 15, 1980, Ser. No. 217,534

Int. Cl.<sup>3</sup> F26B 11/04

U.S. Cl. 34—135

4 Claims

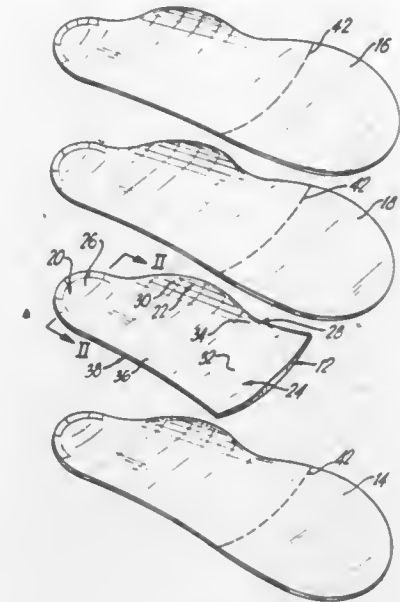


1. An asphalt plant having a rotatable hollow mixing drum provided with an aggregate inlet and asphalt concrete mix outlet, said mixing drum having an axis of rotation inclined downwards from said inlet to said outlet so the aggregate material entering said inlet of said rotating mixing drum forms a moving bed of material and including at least a drying zone through which the material traverses and hot exhaust gas enters, said mixing drum in the drying zone being provided with flights of spaced-apart, longitudinally extending drum lifters affixed to an inner surface of said drum which rotate with said mixing drum to effect a showering and veiling of the

aggregate material across the cross section of the mixing drum after said drum lifters have moved through the material bed carrying aggregate material in a rotational path of travel; the improvements comprising:

- a lifter cage supported in coaxial relationship within the mixing drum in the drying zone for rotational movement with the mixing drum;
- said lifter cage including a plurality of cage lifters disposed longitudinally within said mixing drums;
- means for supporting said cage lifters in a spaced cylindrical array coaxial with said mixing drum for rotation therewith;
- each of said cage lifters having in cross section a trough-like configuration opening toward said rotational path of travel with said trough-like configuration including a material retaining surface on a side of said cage lifter facing said axis of rotation;
- said cage lifters including a plurality of sets including a first set wherein said cage lifters within said first set are supported with material retaining surfaces fixed at a common angle with respect to a radial line extending from said axis of rotation; and
- said plurality of sets including at least a second set wherein said cage lifters within said second set are supported with material retaining surfaces fixed at a common angle with respect to a radial line extending from said axis of rotation said common angle of said second set being different from said common angle of said first set; said cage lifters within said plurality of sets are alternately arranged about said spaced cylindrical array;
- whereby said cage lifters collect material during rotation with said first set of cage lifters spilling material therein over an arc of said path of travel different from an arc over which said second set of cage lifters spills material therein providing an increased uniformity of material spilling from said cage lifters through said path of travel.

a heel-to-ball length and being made from a semi-rigid material, said shell including a medial heel post, having an angle in a range of from about 3° to about 10°, a lower surface and an upper surface, a navicular flange, having a lower surface and an upper surface which flows directly into said upper surface of said heel post, and a metatarsal raise, having a lower surface



and an upper surface which flows directly into said upper surface of said navicular flange; first covering means for covering said upper surfaces of said heel post, navicular flange and metatarsal raise; and second covering means for covering said lower surfaces of said heel post, navicular flange and metatarsal raise.

#### 4,338,735

##### DYNAMIC INTERNAL FITTING SYSTEM FOR A SPORT SHOE

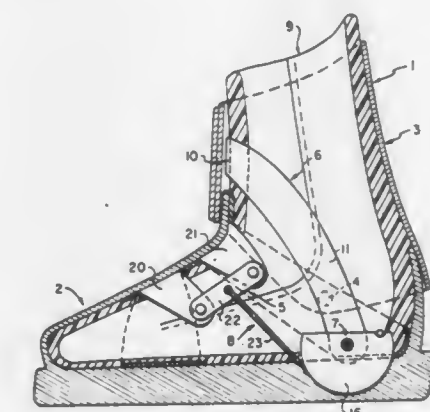
Richard G. Spademan, Box 6410, Incline Village, Nev. 89450

Continuation of Ser. No. 104,283, Dec. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 50,436, Jun. 20, 1979, and a continuation-in-part of Ser. No. 886,946, Mar. 15, 1978.

This application Jun. 15, 1981, Ser. No. 274,031

Int. Cl.<sup>3</sup> A43B 5/04

13 Claims



1. A sport shoe comprising: a foot-engaging means for engaging a foot; a leg-engaging means separate from said sport shoe for engaging the leg to which said foot is attached, said leg-engaging means extending from a first point above the ankle of said foot to a second point; means for movably mounting said leg-engaging means in said sport shoe for movement of said leg-engaging means relative to said second point in response to a movement of said leg relative to said foot; and means coupling said leg-engaging means and said foot-engaging means for tightening and loosening said foot-

#### 4,338,733

##### SAFETY DEVICE FOR CRAMPONS, AND CRAMPONS EQUIPPED THEREWITH

Jean-Paul Frechin, 215 Chemin de la Croix des Pecles, 74400 Chamonix, France

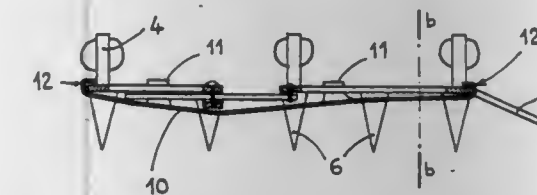
Filed May 13, 1980, Ser. No. 149,554

Claims priority, application France, May 14, 1979, 79/12382

Int. Cl.<sup>3</sup> A43B 1/10, 3/10, 5/00

U.S. Cl. 36—7.3

12 Claims



1. A safety device for fitting onto crampons such as those used by mountain climbers for traveling over snow-covered or ice-covered slopes, said device comprising: a sheet disposed a slight distance below the frame of the crampon, extending at least between the spikes on the crampon, forming a screen between the snow and the metal parts of said crampon for contacting the sole of the boot, said sheet being capable of elastically deforming or moving slightly in elastic fashion in all dimensions when a user walks.

#### 4,338,734

##### UNIVERSAL ORTHOTIC

Richard B. Schwartz, Woodcliff Lake, N.J., assignor to Apex Foot Products Corp., Englewood, N.J.

Filed Feb. 22, 1980, Ser. No. 123,850

Int. Cl.<sup>3</sup> A43B 13/38, 23/08

U.S. Cl. 36—44

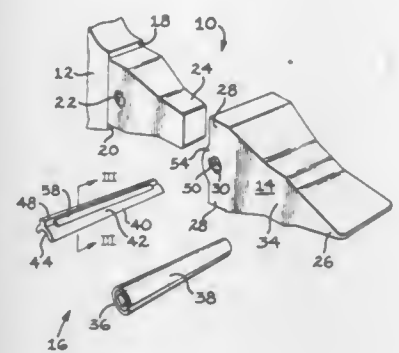
14 Claims

1. A universal orthotic, comprising a monolithic shell having



engaging means relative to said foot as said leg-engaging means is moved.

**4,338,736**  
**RETAINING PIN ASSEMBLY FOR EARTHWORKING TOOL**  
 Michael T. Radigan, Manhattan, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.  
 PCT No. PCT/US81/00329, § 371 Date Mar. 16, 1981, § 102(e) Date Mar. 16, 1981  
 PCT Filed Mar. 16, 1981, Ser. No. 278,509  
 Int. Cl.<sup>3</sup> E02F 9/28  
 U.S. Cl. 37—142 A 10 Claims



1. In an earthworking apparatus (10) having a tool supporting member (12) having shoulders (18,20) and an earthworking tool (14) having first and second end portions (26,28) and being releasably secured to said supporting member (12), said supporting member (12) and tool (14) each having a pin receiving opening (22,30) and being insertable one within the other with the pin opening (22,30) of each being generally aligned in the installed position of the tool (14) and the supporting member (12), and a pin (36) insertable through said openings (22,30) and connecting the tool (14) to the supporting member (12), the improvement comprising:

said pin (36) having an outer surface (38) and being of a spring type configuration;  
 said pin openings (22,30) of the supporting member (12) and the tool (14) being non-coaxial in the installed position of the tool (14) and the supporting member (12) with said second end portion (28) of the tool (14) in contacting relationship with said shoulders (18,20) of the supporting member (12);  
 a sleeve (40) having first and second surfaces (42,44), each of arcuate configurations, said sleeve (40) being positioned in the openings (22,30) of the supporting member (12) and tool (14) with said first surface (42) in forceable contact with one of the tool (14) and supporting member (12), and said second surface (44) in forceable contact with the outer surface (38) of said spring pin (36) in the installed position of the tool (14) and the supporting member (12), with the pin (36) extending through the openings (22,30) with one side of the outer surface (38) of said pin (36) in forceable contact with one of the supporting member (12) and tool (14) and the opposed side of the outer surface (38) of said pin (36) in forceable contact with the sleeve (40); and  
 means (46) for maintaining said sleeve (40) against rotation about the pin (36).

**4,338,737**  
**SAFETY CLIP-ON ORNAMENTAL BADGE**  
 Roger W. Lehmann, 3 Beverly Dr., Belle Mead, N.J. 08502  
 Filed Jan. 12, 1981, Ser. No. 224,307  
 Int. Cl.<sup>3</sup> A44C 3/00

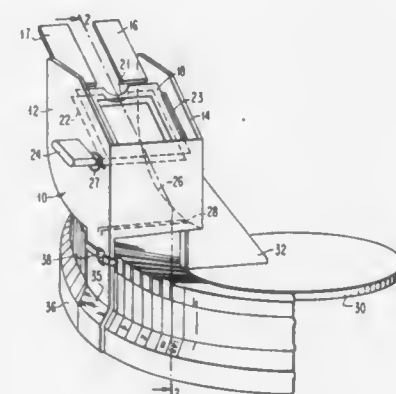
U.S. Cl. 40—1.5 3 Claims  
 1. A clip-on badge, comprising:  
 (a) a badge  
 (b) clip-on means, and

(c) means for removably and adjustably attaching the clip-on means to the badge;  
 (d) said badge being provided with a buttonhole, and  
 (e) said clip-on means being provided with a button-shaped stud which is engageable with said buttonhole to attach the clip-on means to the badge;  
 (f) the badge being formed of a pair of front and back walls which are peripherally secured to each other to define an inner pocket between them,  
 (g) said buttonhole being formed in the back wall of said badge,



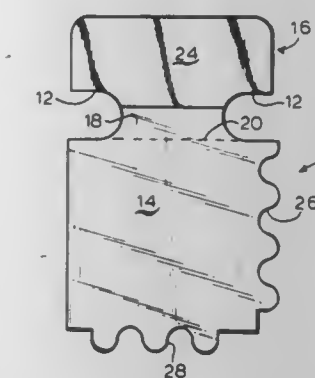
(h) a resilient filler being disposed in the inner pocket between the front and back walls, and  
 (i) the button-shaped stud being positioned between the back wall and the resilient filler,  
 (j) whereby the button-shaped stud is frictionally secured in place between the resilient filler and the back wall by reason of the resilient pressure applied to it by the resilient filler.

**4,338,738**  
**SLIDE PREVIEWER AND TRAY LOADER**  
 Owen L. Lamb, 662 W. Sunnyside Ave., Campbell, Calif. 95008  
 Filed Jan. 10, 1980, Ser. No. 110,804  
 Int. Cl.<sup>3</sup> G09F 11/30  
 U.S. Cl. 40—509 9 Claims



1. A slide-handling mechanism comprising:  
 means for holding a slide;  
 means for moving said holding means in the vertical plane from a first position to a vertical position;  
 means for restraining said slide in said holding means, including means for allowing said slide to drop from said holding means when said holding means is in said vertical position; and,  
 means for registering said slide-handling mechanism above a slide compartment of a slide tray, such that a slide in said holding means is allowed to drop into said compartment when said holding means is in said vertical position.

**4,338,739**  
**SHELF SIGN DEVICE HAVING SINUATED EDGES**  
 William Greenberger, White Plains, N.Y., assignor to The Hopp Press, New York, N.Y.  
 Continuation-in-part of Ser. No. 134,432, Mar. 27, 1980, abandoned. This application Feb. 23, 1981, Ser. No. 236,977  
 Int. Cl.<sup>3</sup> G09F 7/00  
 U.S. Cl. 40—584 8 Claims



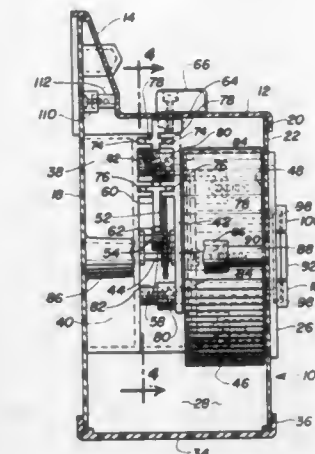
1. A display device for use in conjunction with a shelf molding, comprising: a substantially rectangular, planar resilient body including a first body portion of substantially square configuration, a second body portion, and a neck portion of reduced width integrally connecting said first body portion and said second body portion, said first body portion including a first sinuated edge.

**4,338,740**  
**PISTOL SIGHT BASE BRIDGE**  
 Fred R. Miller, 2620 E. 32nd St., Davenport, Iowa 52807  
 Filed Sep. 2, 1980, Ser. No. 182,908  
 Int. Cl.<sup>3</sup> F41G 1/02  
 U.S. Cl. 42—1 SR 8 Claims



1. In combination with a pistol having a slide and barrel having relative movement therebetween,  
 said barrel having a bridge thereon,  
 said slide having a cartridge ejection port thereon,  
 said bridge being attached to said barrel through said ejection port to avoid slide contact with said bridge when relative movement occurs, and  
 sight means on said bridge, said bridge having a relief cut in its underneath surface to ride over the front sight of said pistol on said slide.

**4,338,741**  
**TOY DRYER**  
 Kwok W. Tsui, and Sing C. J. Yuen, both of Hong Kong, Hong Kong, assignors to Arco Industries Ltd., Hong Kong, Hong Kong  
 Filed Apr. 9, 1981, Ser. No. 252,311  
 Int. Cl.<sup>3</sup> A63H 3/52 7 Claims



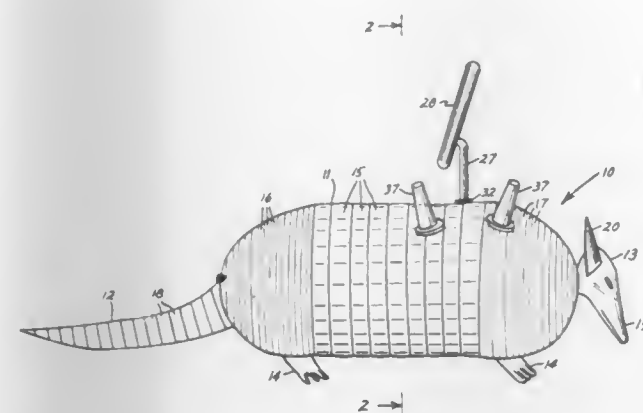
1. A toy dryer comprising in combination, a generally rectangular cabinet having a top, bottom, sides, back and also a vertical front wall provided with an opening, all of which are molded from plastic material and connected to form said cabinet, a cup-shaped drum open at one end and supported within the cabinet for unidirectional rotation about a horizontal axis with the open end immediately adjacent said opening and occupying the forward portion of said cabinet, an actuating slide movable within a vertical plane in said cabinet in successive driving and return directions and having a toothed rack along one edge and a projection extending through a slot in said top of the cabinet terminating in a knob, a pair of transversely spaced vertical interior frame members in said cabinet rearwardly of said drum therein and respectively having coaxial horizontal bearings and spaced parallel pairs of facing guide grooves, a drive shaft for said drum supported by said bearings and fixed at one end to said drum, a gear train in said cabinet supported upon shafts mounted in bearings in said frame members and including a driven gear fixed to said drive shaft and engaged by said rack for operation of said gear train to actuate said driven gear to rotate said drum when said rack member is moved in said driving direction, means operable to permit movement of said actuating slide in return direction without interfering with the unidirectional rotation of said drum, and means on one of said frame members connected to the back of said cabinet for support of said gear train and slide.

**4,338,742**  
**ARMADILLO TOY**  
 John E. Outtrim, I-10 at Magnolia, Channelview, Tex. 77530, and Michael P. Stagner, 12738 La Grove La., Houston, Tex. 77015  
 Filed Jul. 23, 1981, Ser. No. 285,965  
 Int. Cl.<sup>3</sup> A63H 33/26 3 Claims

1. Toy, comprising, in combination, a unitary body having the outward form of an armadillo, including a body portion, a tail portion, a head portion, and leg and feet portions, said body portion having a cavity therewithin and having an opening thereinto at the bottom side of said body portion, battery means, electric motor means, capacitor means, buzzer means, flasher oscillator means, plural lamp means, and switch means connected in series in a loop circuit, said electric motor means having a rotating shaft carrying a bevel gear, simulated antenna means mounted at the outer end of a shaft rotatably disposed through the wall of said body portion and having a bevel gear carried on its inner end within said cavity and



engaged with said first-named bevel gear, said lamp means being disposed in equally spaced circular dispositions about said antenna shaft, said switch means being accessible from the exterior of said body portion, whereby said switch means may



be turned "on" to cause simultaneous sounding of said buzzer means, rotations of said simulated antenna and flashing of said lamps and may be turned "off" to terminate said buzzer sounding, simulated antenna rotation, and flashing of said lamps.

#### 4,338,743 SAFETY SYSTEM FOR WEED DESTROYING APPARATUS OPERABLE TO ALTERNATIVELY SUPPLY AUXILIARY POWER

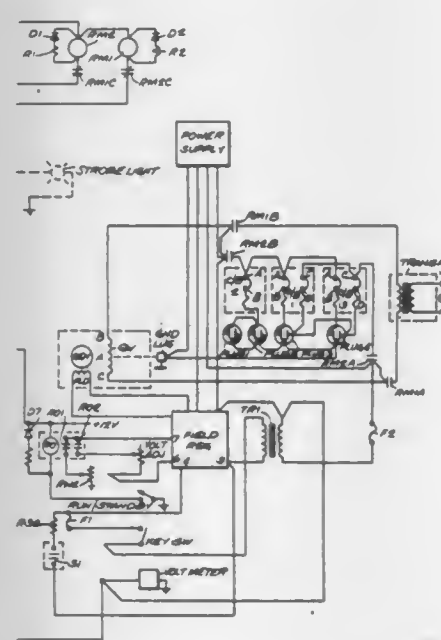
Thomas P. Gilmore, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 16, 1981, Ser. No. 243,839

Int. Cl.<sup>3</sup> A01M 21/00

U.S. Cl. 47—1.3

8 Claims



1. Weed destroying apparatus carried on a vehicle and having electrodes (E) for contacting and killing weeds when in a weed killing mode and electrical outlets (PLUG 1-PLUG 4) for supplying electrical power to auxiliary apparatus when in a standby mode comprising, in combination, a generator (GEN), a step-up transformer (TRANSF) having its secondary winding coupled to said electrodes (E), a programmable semiconductor logic array (A5) adapted to provide binary voltages on a plurality of its outputs as a function of the program entered therein and the binary instruction signals received on a plurality of its inputs, first contactor means (R1, RM1) coupled to a first output (F3) of said logic array (A5) for connecting said generator (GEN) to the primary winding of said transformer (TRANSF) to thereby place said apparatus in said weed killing mode, second contactor means (R2, RM2) coupled to a second output (F4) of said logic array for connecting said generator (GEN) to said electrical outlets to thereby place said apparatus

in said standby mode, first and second safety systems each of which has interlock means for preventing an unsafe condition in which high voltage from said generator (GEN) and said transformer (TRANSF) would be a hazard in said weed killing mode and sensor means (A4c, A4d; A1, A3) for providing binary signals to inputs (I4, I5, I6) of said logic array (A5) indicative of whether said interlock means is in a safe or said unsafe condition, and switch means (RUN/STANDBY, R0) for selectively applying binary signals to an input (I8) to said logic array (A5) indicative of whether said apparatus is to operate in said weed killing mode or in said standby mode.

#### 4,338,744 SAFETY SYSTEM FOR WEED DESTROYING APPARATUS

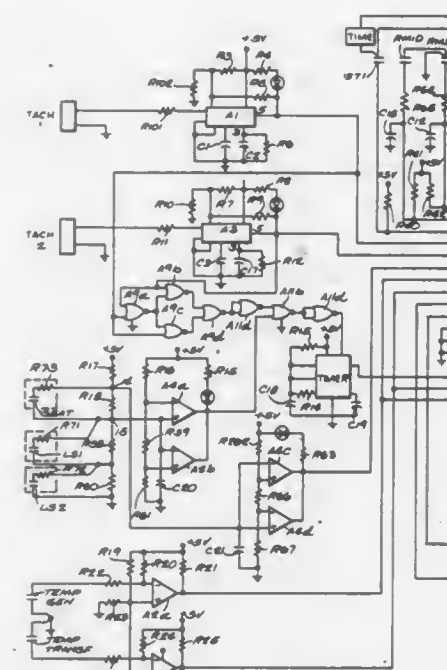
Thomas P. Gilmore, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 16, 1981, Ser. No. 243,841

Int. Cl.<sup>3</sup> A01M 21/00

U.S. Cl. 47—1.3

29 Claims



1. In weed destroying apparatus carried on a vehicle and having electrodes (E) for contacting weeds adjacent rows of crops along which said vehicle travels, a source of high voltage electricity (GEN), an electrical contactor (RM1) for connecting said source to said electrodes, first and second safety systems each of which comprises redundant interlock means for preventing an unsafe condition in which said high voltage source (GEN) would be a hazard, sensor means associated with each said safety system (LS1, LS2, A4c, A4d; TACH 1, TACH 2, A1, A3) for providing binary signals indicative of whether said interlock means are in a safe or an unsafe condition, and means including a programmable semiconductor logic array (A5) receiving said binary signals on inputs thereof (I4, I5, I6) for preventing closure of said contactor (RM1) if any one of said interlock means is in said unsafe condition.

#### 4,338,745 PROCESS FOR MASS PROPAGATION OF PLANTLETS

Masanaru Misawa, Tama; Shinsaku Takayama, Machida; Yoshiki Takashige, and Hiroshi Tsumori, both of Hofu, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1980, Ser. No. 127,276

Int. Cl.<sup>3</sup> A01G 1/00

U.S. Cl. 47—58

4 Claims

1. A process for mass propagation of a morphologically normal bulb of a plant selected from the group consisting of Liliaceae, Amaryllidaceae and Iridaceae, which process comprises cultivating a piece of morphologically normal bulb of

the said plant in a first medium selected from an agar medium and a liquid medium under sterilized conditions to give at least two bulblets differentiated from the said bulb piece, removing the bulbscales from the said bulblets, cultivating said scale in a second medium selected from an agar medium and a liquid medium with shaking under sterilized conditions to give at least one aggregate per one scale, removing new bulbscales from the said aggregate, cultivating the said new bulbscales in a liquid medium under sterilized conditions to obtain a new bulblet per one new scale, and cultivating the said new bulblet in a fourth medium selected from an agar medium and a liquid medium under sterilized conditions to obtain a morphologically normal bulb.

#### 4,338,746 ENHANCEMENT OF FLOWERING BY FLOWERING TREES

Lewis H. Sarett, Rolling Hill Rd., Skillman, N.J. 08558

Filed Feb. 17, 1981, Ser. No. 234,743

Int. Cl.<sup>3</sup> A01G 1/00

U.S. Cl. 47—58

5 Claims

1. A process for enhancing the flowering of flowering trees and reducing the foliage growth thereof during a predetermined flowering season which comprises penetrating the cambium of said trees with a metallic copper object at a point in time subsequent to the flowering thereof in the season previous to said predetermined season but prior to the setting of the fruiting wood during said previous flowering season and leaving said copper object in place until at least after said setting time.

#### 4,338,747 LIFTING MECHANISM FOR A MOTORCAR WINDOW

Peter Hess, Coburg, and Hans Rampel, Eich, both of Fed. Rep. of Germany, assignors to Metallwerk Max Brose GmbH and Company, Coburg, Fed. Rep. of Germany

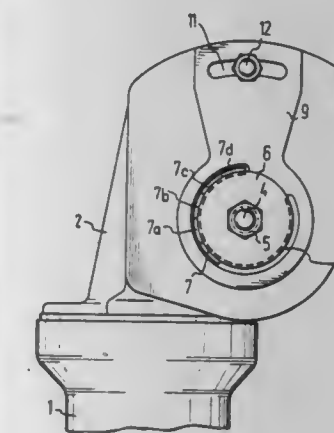
Continuation of Ser. No. 849,668, Nov. 8, 1977, abandoned. This application Oct. 22, 1979, Ser. No. 87,305

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1976, 2652076

Int. Cl.<sup>3</sup> E05F 15/08

U.S. Cl. 49—349

7 Claims



1. In a window drive mechanism including a window mounted for guided movement through a fixed path, drive means including a rotating output shaft, transmission means coupled to transmit a driving force from said drive means to said window, and limit means for limiting the rotative range of said output shaft in order to limit the driven range of said window, the improvement wherein said limit means comprise: stop means including a first and a second abutment spaced apart a predetermined distance; a driven member attached in driving engagement with said output shaft; means operatively associated with said driven member for bringing said driven member into motion-limiting engagement with said first abutment when said output shaft rotates in a first direction and into motion-limiting engagement with said second abutment when said output shaft rotates in a second direction opposite to said

first direction; said driven member, said operatively associated means and said stop means being arranged such that said output shaft must rotate through a rotative range greater than 360° in order for said driven member to be brought from motion-limiting engagement with one of said first and said second abutments into motion-limiting engagement with the other of said first and said second abutments; said stop means comprising a pair of plates both mounted for adjustable rotative movement about a common axis, each of said plates having formed therein an arcuate slot formed to coincide with the circumference of a circle having said common axis as its center, said slots being located to extend in overlapping juxtaposition with one end of one of said slots being adapted to define said first fixed abutment and with the opposed end of the other of said slots being adapted to define said second fixed abutment, said pair of plates being rotatively adjustable relative to each other to enable adjustment of the relative distance between said first and said second abutments thereby to effect adjustment of the rotative range of said output shaft, said operatively associated means including a part in driven engagement with said driven member and extending into both said slots for abutting engagement, respectively, with said first and said second fixed abutments.

#### 4,338,748 GRINDING TOOL METAL MACHINING

Karl Elbel, Pforzheim, Fed. Rep. of Germany, assignor to Firma Heinrich Lippert GmbH, Pforzheim, Fed. Rep. of Germany

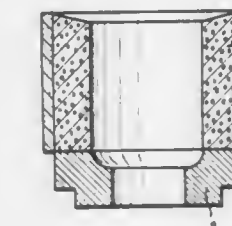
Filed Jun. 16, 1980, Ser. No. 159,697

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1979, 7918301[U]; Aug. 4, 1979, 2931695

Int. Cl.<sup>3</sup> B24B 5/00

U.S. Cl. 51—206 R

14 Claims



1. In a grinding tool for the machining of metal which is provided with matrix-bonded abrasive grains, the hardness of the matrix varying over the grinding area, along which the workpiece moves in a single operation, in the travel direction of the workpiece relative to the grinding tool, the grinding area consists initially of a rough-grinding area with a hard matrix and subsequently of a fine-grinding area which is fixedly connected to the rough-grinding area, the improvement comprising said fine-grinding area comprising a flexible matrix consisting of a textile material which is more flexible than the material of a hard matrix and has an open structure, the strength of the fine-grinding area relative to that of the rough-grinding area being so dimensioned that, with the workpiece abutting over the entire grinding area, at the outside portion of the fine-grinding area, that proportion of the entire grinding pressure is absorbed in the fine-grinding area that corresponds to the proportion of its contact surface with respect to the workpiece.

#### 4,338,749 TOOLHOLDER

Robert E. Kiser, 58770 Rd. 601, Ahwahnee, Calif. 93601

Filed Jul. 21, 1980, Ser. No. 170,915

Int. Cl.<sup>3</sup> B24B 3/34

U.S. Cl. 51—220

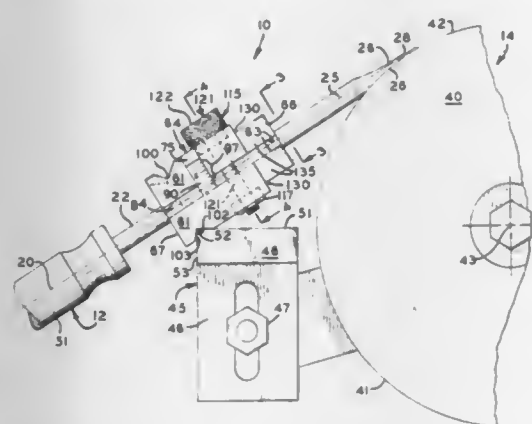
7 Claims

1. A toolholder for use with a tool shaping device having a



planar guiding surface and with a tool having a pair of opposite sides which are individually shaped by linear movement of the tool in a direction parallel to the surface, the holder comprising:

- A. a body having a pair of juxtaposed blocks adapted to receive the tool therebetween and individually bearing a pair of faces disposed oppositely of the body and individually corresponding to the sides of the tool, each face having a planar guided surface adapted to engage flatly the guiding surface of the shaping device for guidance of the body in sliding movement in said direction, and having a pair of portions disposed so as to be spaced in said direction when the guided surface of the blade is engaged with the guided surface for such guidance;
- B. means for clamping the tool in the body centrally between the faces so that one side of the tool is shaped by the device when one of the guided surfaces engages the guiding surface and the other side of the tool is shaped by the device when the other of the guided surfaces engages the guiding surface, the clamping means including a pair of



spaced, screwthreaded elements, each element individually connecting one portion of one block with the portion of the other block corresponding to said one portion along said direction when the guided surface of the blade is engaged with the guided surface for such guidance, so that rotation of the element in a predetermined direction urges the pair of portions associated therewith toward each other and so that selective rotation of the screwthreaded elements in said direction of rotation adjusts the guided surfaces precisely into normal relation to a plane of reference which is normal to said direction; and

- C. means for indicating the relative spacing of the pair of portions of the blocks associated with one of the screwthreaded elements and means for indicating the relative spacing of the pair of portions of the blocks associated with the other of the screwthreaded elements, each indicating means indicating the relative spacing of the pair of portions associated with the screwthreaded element of said means when the guided surfaces are disposed precisely in said normal relation.

4,338,750

#### METHOD FOR APPLYING ORGANOPOLYSILOXANE FLUIDS TO GRINDING WHEELS CONTAINING CUBIC BORON NITRIDE ABRASIVES

Ernest Ratterman, Worthington, Ohio, assignor to General Electric Company, Watford, N.Y.

Filed Oct. 28, 1980, Ser. No. 201,652

Int. Cl.<sup>3</sup> B24B 1/00

U.S. Cl. 51—281 R

5 Claims

1. A method of enhancing the performance of grinding wheels containing a cubic boron nitride abrasive comprising applying to the point of contact between the cubic boron nitride wheel and a workpiece, an organopolysiloxane fluid having a viscosity of about 20 centistokes to about 200 centistokes at 25° C., and an average formula:



where R represents alkyl radicals having from one to 22 carbon atoms, cycloalkyl radicals having from 5 to 7 carbon atoms in the ring, mononuclear and binuclear aryl radicals, mononuclear aryl lower alkyl radicals, lower alkenyl radicals having from 2 to 8 carbon atoms and halogenated derivatives of the above radicals and n has a value of from 2.002 to 3.0.

4,338,751

#### KNOCKDOWN SPIRAL STAIRWAY

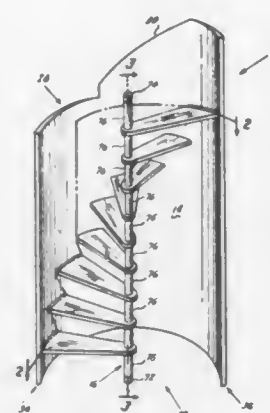
Forest E. Sanders, 210 Pershing St., Green City, Mo. 63545

Filed Jul. 30, 1980, Ser. No. 173,458

Int. Cl.<sup>3</sup> E04F 11/00

U.S. Cl. 52—187

4 Claims



1. A spiral stairway construction, comprising: an arcuate wall having a top end, a bottom end and defining first and second spaced wall edges each having an upper and lower end, said wall being vertically disposed with said bottom end adapted to rest on a supporting surface, said wall being provided with a plurality of slots that are vertically spaced and angularly offset from a predetermined point near the lower end of said first wall edge to a predetermined point near the upper end of said second wall edge to define a helical path, a plurality of individual steps each having a proximal end from which respective sides diverge to a distal end forming a tread surface of usual spiral stairstep design, the proximal end of each step provided with a mounting hole, a hook member on the distal end of each step affording removable engagement of each respective distal end with said wall through a respective slot, with said distal ends engaged in a respective wall slot the proximal end of each step extending to a point intermediate said first and second wall edges with said mounting holes disposed in vertically aligned registration, a post support means removably journaled through said aligned holes to engage the supporting surface whereby the assembled stairway is free standing with said steps effectively locked in position to said wall and cannot be displaced without removal of said post support means, and means on said post support means for effectively spacing adjacent steps.

4,338,752

#### COLLAPSIBLE SILO

Karl-Heinz Stanelle, Rosenstr. 4, D-7129 Güglingen, Fed. Rep. of Germany

Filed Dec. 28, 1979, Ser. No. 108,174

Claims priority, application Luxembourg, Jan. 2, 1979, 80749; Fed. Rep. of Germany, Dec. 7, 1979, 2949313

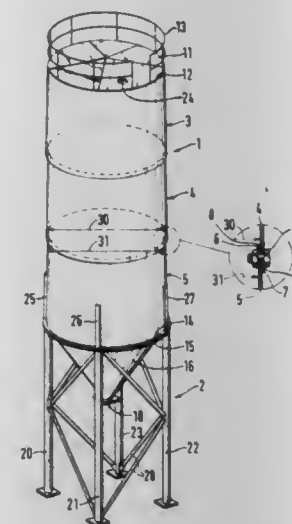
Int. Cl.<sup>3</sup> E04H 7/00

U.S. Cl. 52—194

5 Claims

1. A storage arrangement, particularly a silo, comprising a plurality of superimposed tubular sections having telescopically interfitted ends and including an uppermost and a lower-

most section, said lowermost section being dimensioned to receive the remainder of said sections internally thereof for transport and having a lower end provided with an outwardly extending first flange; a hopper below said lowermost section having an upper end portion provided with an outwardly extending second flange disposed adjacent said first flange and



supporting the same, said hopper being dimensioned so as to be receivable in the smallest of said sections substantially in its entirety with said flange abutting said first flange when said hopper is inverted and inserted into said sections for transport, and said flanges having alignable openings adapted to be connected with one another both in the upright and inverted positions of said hopper.

4,338,753

#### ARRANGEMENT FOR CONNECTING TWO PROFILE MEMBERS, PARTICULARLY CHANNEL MEMBERS FOR METAL WINDOWS

Bernhard Janke, Bindlach, Fed. Rep. of Germany, assignor to Hef Technische Entwicklung GmbH & Co. KG, Düsseldorf, Fed. Rep. of Germany

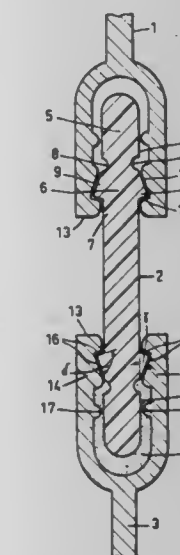
Filed May 16, 1980, Ser. No. 150,667

Claims priority, application Fed. Rep. of Germany, May 14, 1979, 7914521[U]

Int. Cl.<sup>3</sup> E04B 1/62, 1/343; G09F 15/00

U.S. Cl. 52—309.13

7 Claims



1. An arrangement for joining window frame members and the like, comprising a pair of frame strip members having in cross section a U-shaped receptor each of the arms of which having laterally inwardly directed projections, a connecting strip having in cross section a central portion and a catch lug at each end for entry within the receptor of an associated frame strip member, said catch lug being provided with outwardly directed projections on each of its lateral sides for cooperation with the inner edge of laterally inwardly directed projections

of the associated receptor, a head portion, and a recess on each of its lateral sides between said outwardly directed projection and the head portion, said catch lug having a height less than the depth of said receptor, the cavity defined by said receptor and catch lug being adapted to receive a hardenable filler material whereby said strip frame members and said connecting strips are held securely.

4,338,754

#### PANELLING EDGING

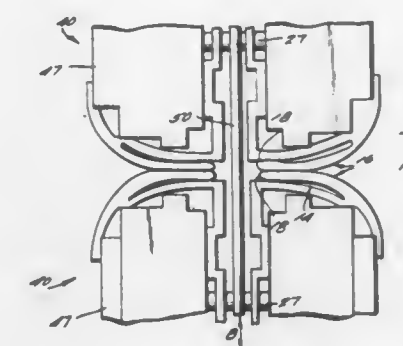
David C. Woods, Quakertown, Pa., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed May 27, 1980, Ser. No. 153,132

Int. Cl.<sup>3</sup> E04B 1/38

U.S. Cl. 52—393

8 Claims



1. A room dividing panel comprising a body portion, said body portion including an edge elongated in a first dimension with means defining a channel in said edge extending in a second dimension perpendicular to said first dimension and extending along said edge in said first dimension; an edge structure for cooperating with said edge to provide a light-tight engagement between said edge and a cooperating edge of an adjacent panel, said edge structure comprising a unitary extrusion, elongated in said first dimension, of flexible material and comprising: a hollow anchoring portion elongated in said second dimension and disposed within said panel edge channel; a pair of support portions extending outwardly from and on opposite sides of said anchoring portion, and engaging and overlapping said panel edge; a pair of flexible lips, each lip having one end thereof integral with a said support portion at a section thereof remote from said anchoring portion and extending toward the other of said support portions and terminating in a free end unconnected to any other structures; and wherein the free ends of said lips are spaced from each other in a third dimension perpendicular to both said first and second dimensions, and are spaced from said support portions in said second dimension; and wherein said hollow anchoring portion is open along said panel edge; and at least one panel interlocking hardware pin disposed and held in said channel, extending in said third dimension, and supported at least in part by said extrusion hollow anchoring portion.

4,338,755

#### FASTENER ASSEMBLY

S. Tebbs Chichester, Jr., 2529 P St. NW., Washington, D.C. 20007

Continuation-in-part of Ser. No. 45,872, Jun. 7, 1979, abandoned. This application Apr. 10, 1980, Ser. No. 138,924

Int. Cl.<sup>3</sup> E04B 5/52; F16B 35/00

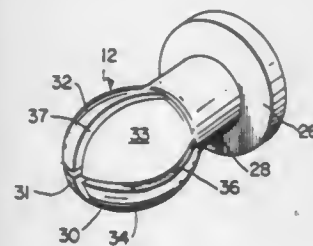
U.S. Cl. 52—484

16 Claims

5. The combination of ceiling panels and fastener assemblies for supporting said panels from a supporting structure comprising: (a) supporting members suspended from or attached to said



- supporting structure, said supporting members being formed with at least one opening;
- (b) a plurality of ceiling panels each of which is formed at a corner thereof with an opening therethrough, with said openings when said panels are juxtaposed defining a generally cylindrical opening, said panels being further formed at each corner with a relatively enlarged recess, with said recesses when said panels are juxtaposed forming a generally circular recess concentric with said openings, and
- (c) fastener assemblies for removably mounting said panels to said supporting members, each of said fastener assemblies comprising
- (i) a female nut member having a relatively enlarged head portion adapted to abut a supporting member having at least one opening therethrough, an intermediate section having an outside diameter slightly less than the diameter of said opening in said supporting member so as to be able to extend therethrough, and a leading end section comprised of a plurality of segments separated by slot means extending through said segments, said female nut member being formed of a resilient material, with the dimension of said segments, when uncompressed, being greater in at least certain regions thereof than the diameter of said opening in said supporting member, the construction of said leading end section being such that



said segments are compressed when said leading end is inserted through said opening in said supporting member, with said segments thereafter expanding away from each other to said greater dimension so as to temporarily and removably retain said nut member in said opening; a central opening extending through said head portion and said intermediate section of said nut and terminating short of said leading end section, said central opening being threaded along at least a portion of its length, and

- (ii) a male spring bolt comprising a bolt head and a flexible tightly wound helically coiled spring secured at one end in a recess provided therefor in said bolt head, the diameter and pitch of the coils of said spring corresponding to the diameter and pitch of the threads of said central opening thereby to permit threaded engagement of said coiled spring in said central opening, the threaded penetration of said coiled spring normally being such as to leave an outwardly exposed portion of said coiled spring so as to provide space between said bolt head and said supporting member to receive a thickness of said panels therebetween, the flexibility of said spring permitting movement of the exposed portion of said spring in any direction to facilitate removal of said panels or replacement of said panels with other panels.

4,338,756

## PANEL AND INSULATION SYSTEM

Charles J. Crothers, Cherry Hill, N.J., assignor to Thermocon Industries, Inc., Moorestown, N.J.

Filed Jun. 12, 1980, Ser. No. 158,666

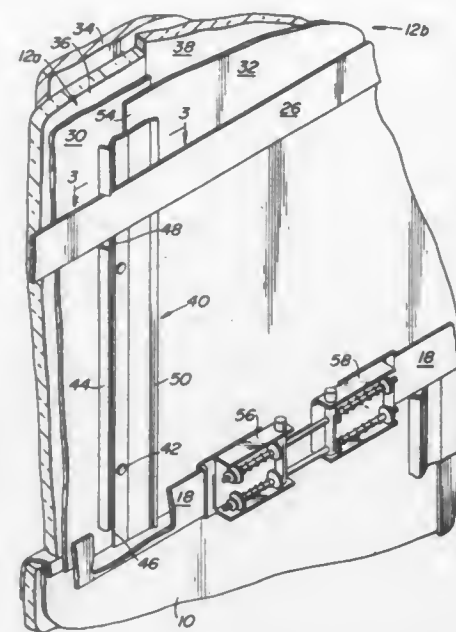
Int. Cl.<sup>3</sup> E04G 11/04; E04B 2/18, 1/68

U.S. Cl. 52—539

9 Claims

1. A panel for use in an insulation system, said panel having a top edge and a bottom edge interconnected by first and

second side edges, insulation secured to a rear surface of a facing layer of the panel in a manner so that the insulation is spaced from the bottom edge and from said first edge, means including a reinforcement member secured to said facing layer adjacent to but spaced from the second side edge of the panel



for clamping an edge on a similarly constructed panel, said reinforcement member having a portion terminating at an edge in a flange angled outwardly from the facing layer, said portion overlying said facing layer and being arranged therewith to clamp a portion of a similarly constructed panel inserted between.

4,338,757

## DEVICE FOR CONNECTING A STRUCTURE WITH A WALL TO BE POURED WITH CONCRETE

Heinz Witschi, Eigerweg 14, 3073 Gümligen, Berne, and Peter Fankhauser, Sonnenrainstrasse 13, 3510 Konolfingen, Berne, both of Switzerland

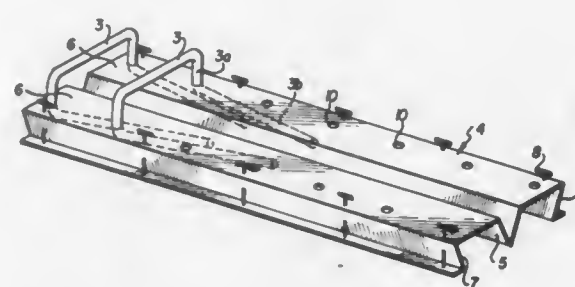
Filed Apr. 16, 1980, Ser. No. 140,782

Claims priority, application Switzerland, May 1, 1979, 4073/79

Int. Cl.<sup>3</sup> E04B 1/38

U.S. Cl. 52—699

15 Claims



1. A device for connecting a structure, such as a partition, a staircase or a false floor, with a wall to be poured with concrete in a planking, said device comprising at least one profile element having two side walls with laterally projecting flanges and at least one bottom connected with said two side walls to form a channel-shaped strip, at least one anchoring steel rod extended through said bottom in such a way that its first portion to be concreted lies on one side of said profile element, and its second portion, bent in right angles from the first portion, lies on the other side of said profile element resting against the bottom surface of the profile element confined by said side walls, said profile element being fitted to the inside wall of the planking in such a way as to rest with its side walls on the planking in order to create a cavity between said bottom and said planking, wherein the profile element comprises a malleable

ble sheet the surface of which is roughened and each side wall of which encloses an acute angle with the bottom.

4,338,758

## VIBRATION DAMPED STRUCTURES AND OBJECTS

Gunnar Hagbjer, Malmö, Sweden, assignor to Reduc Acoustics AB, Söndyberg, Sweden

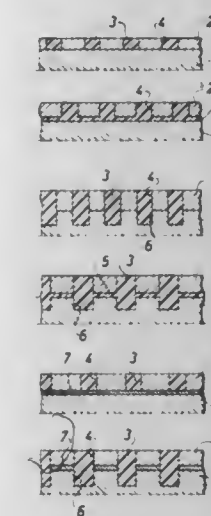
Continuation of Ser. No. 897,306, Apr. 18, 1978, abandoned.

This application Apr. 25, 1980, Ser. No. 143,668

Int. Cl.<sup>3</sup> E04B 1/00

U.S. Cl. 52—742

13 Claims



13. Vibration damping apparatus formed by a process comprising arranging a rigid structure to bear upon a structure subject to vibration such that the rigid structure participates in vibrational oscillations of the structure subject to vibration, forming a plurality of bores in said rigid structure extending to at least a border surface between said rigid structure and the structure subject to vibration, applying fluid viscoelastic damping material in said bores, and hardening the damping material to cause adherence between the material and the walls of the bores.

4,338,759

## METHOD OF BUILDING CONSTRUCTION USING CONCRETE REINFORCED WALL MODULES

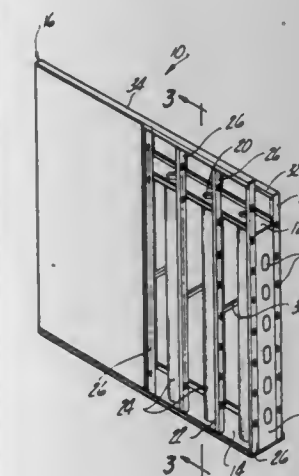
Albert Swerdlow, Oak Park, and George Szegedy, Dearborn Heights, both of Mich., assignors to Universal Component Systems, Inc., Detroit, Mich.

Filed Jul. 28, 1980, Ser. No. 172,576

Int. Cl.<sup>3</sup> E04B 2/68

U.S. Cl. 52—743

9 Claims



1. A method of constructing a multi-story, cast-in-place concrete building without the need for super-structure supports, comprising the steps of:

- (A) forming a first plurality of wall modules each adapted to receive structurally supporting concrete therein by
- (1) connecting the opposite extremities of each of a plural-

ity of elongate, concrete receptacles to a pair of spaced apart, generally parallel horizontal support members respectively,

- (2) connecting the opposite extremities of each of a plurality of elongate, vertical support members to said horizontal support members respectively at spaced intervals along said horizontal support members,

- (3) forming a U-shaped channel along one of said horizontal support members;

- (B) erecting said first plurality of wall modules to form a wall defining a first story of said building;

- (C) placing a floor on said wall;

- (D) supporting said floor using said vertical support members; and

- (E) then, following step (D), forming a plurality of structurally supporting vertical and horizontal concrete beams substantially simultaneously in said wall by introducing flowable uncured concrete into said receptacles and said channels of said first plurality of wall modules.

4,338,760

## CARRIER PACK FOR A NUMBER OF BOTTLES AS WELL AS THE PROCESS AND APPARATUS NEEDED TO CLOSE THE PACK

Werner Kuhn, Buchenberg, Fed. Rep. of Germany, assignor to International Actrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

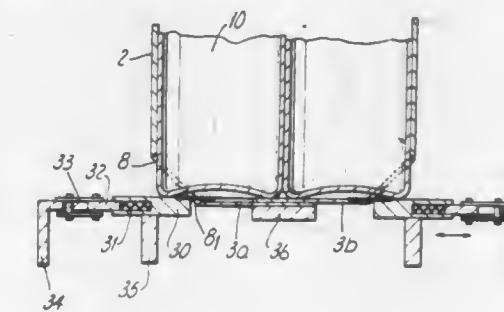
Filed Nov. 25, 1980, Ser. No. 210,160

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1979, 2948598

Int. Cl.<sup>3</sup> B65B 21/24

U.S. Cl. 53—48

3 Claims



1. Apparatus for closing a carrier package for bottles or similar articles by surrounding the articles with a package blank, the package blank having an elongated first end for forming a first side and part of a second side of the package to be formed, the end being divided into a plurality of tabs by a plurality of slits each extending generally transverse to the direction of elongation of the end, and extending in both the part of the end forming a first side and forming part of a second side, and the blank having a second end opposite the first end, the package blank second end comprising an elongated end parallel to the first elongated end and for forming a third side and part of the second side of the package to be formed, the second end being divided into a plurality of tabs by a plurality of slits each extending generally transverse to the direction of elongation of the end, and extending in both the part of the end forming the third side and forming part of the second side; the apparatus comprising:

transport means for transporting the objects to be packaged, package blanks, and resulting filled packages;

folding means associated with the transport means for folding the blank around the objects; and

closing means for pushing opposite ends of the blanks toward each other around the objects so that the blank tightly engages the objects even when objects of differing diameter or cross-sectional area are packaged together, said closing means comprising: a plurality of fingers mounted in operative association with said elongated package blank first end as said package blank and objects are being trans-

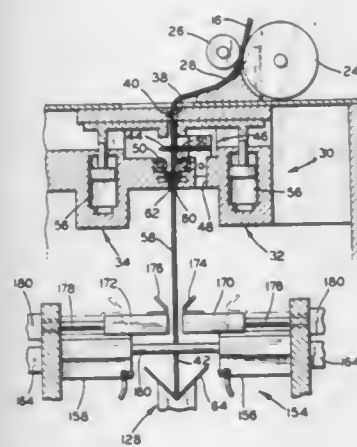


ported by said transport means; each of said fingers having an operative width no greater than the length of a tab of the package blank first end in the dimension of elongation thereof; and further comprising spring biasing means for biasing each of said fingers individually inwardly with respect to the package blank so that each of said fingers engages a tab and pushes that tab only toward the package blank second end so that the package tightly engages the objects being packaged; and

a plurality of fingers disposed in operative association with the package second end, each of said fingers having an operative width no greater than the length of a tab of the package blank second end; and spring biasing means for biasing each of said fingers individually inwardly with respect to the package blank so that each of said fingers engages a tab and pushes that tab toward the package blank first end so that the package tightly engages the objects being packaged.

#### 4,338,761 MACHINE FOR PRODUCING PACKAGES WITH LABELS

Larry C. Gess, 9270 Secor Rd., Temperance, Mich. 48182  
Continuation-in-part of Ser. No. 24,965, Mar. 29, 1979, Pat. No. 4,244,159. This application Jan. 12, 1981, Ser. No. 224,639  
Int. Cl.<sup>3</sup> B65B 61/00, 61/26  
U.S. Cl. 53—137 14 Claims

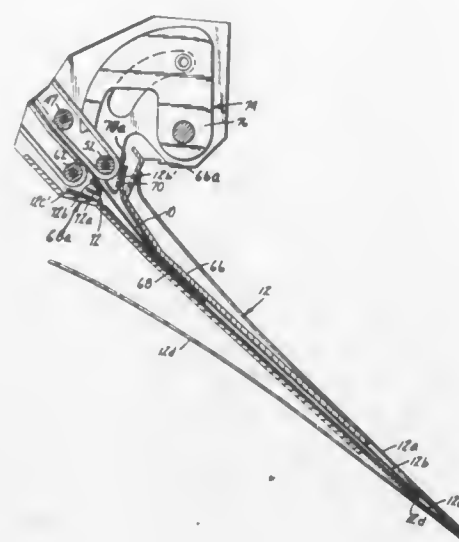


1. A machine for making labeled packages from a length of flexible tubing and a strip of labels, said machine comprising means for advancing the tubing lengthwise along a path and for stopping the advance, first sealing means along the path forming a first transverse sealed strip across the tubing, means along the path beyond said first sealing means for severing the tubing near the sealed strip and forming a severed section, means along the path beyond said first sealing means and beyond said severing means for holding the severed edges of the severed section to open and close the severed section, second sealing means along the path beyond said holding means for forming a second transverse sealed strip near the severed edges, means for feeding the strip of labels along a path, means for severing a label from the strip, a first block having a generally V-shaped recess, a second block having a generally V-shaped projection, means for moving said second block transversely of the label path into and out of said recess of said first block, moving means for moving said first block with said V-shaped recess between a position adjacent said severing means and a position in which the label carried thereby is over the edge of the severed section, and third sealing means along the tubing path beyond said second sealing means for affixing the label to the severed section near the first transverse sealed strip.

#### 4,338,762 PHOTOGRAPHIC FILM INSERTION APPARATUS

Patrick J. Gilligan, Bloomington, and Ted G. Merry, Lindstrom, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed May 5, 1980, Ser. No. 146,507  
Int. Cl.<sup>3</sup> B65B 63/02, 39/00  
U.S. Cl. 53—244 12 Claims



1. A photographic film inserting apparatus for inserting photographic film segments into an insertion opening of a multi-layer package strip and stacking the film segments into a film stack between a pair of the layers of the package strip, the apparatus comprising:

means for separating layers of the package strip to form a film insertion opening at a film inserting and stacking station;

film conveyor means for conveying cut photographic film segments along a film path into the film insertion opening; and

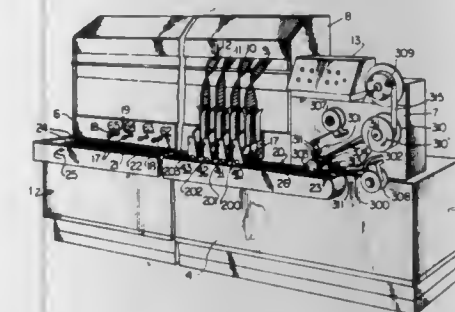
and means for driving any film segment not fully inserted into the multi-layer package strip a further distance into the insertion opening after the film conveyor means has completed conveying the film segments onto the film stack, by engaging a trailing edge of any film segment not fully inserted into the multi-layer package strip, the further distance being sufficient to avoid interference between the film conveyor means and the trailing edges of the stacked film segments as the multi-layer package strip with inserted stacked film segments is advanced away from the film inserting and stacking station, said means for driving comprising:

pusher means for pushing the trailing edge of any film segment not fully inserted into the multi-layer package strip, the pusher means being rotatable angularly from a normal position out of the film path to a position in which the pusher means pushes the trailing edge and having a trailing edge engaging surface sufficiently large to compensate for variations in the position of the trailing edge;

actuator means for rotating the pusher means to cause the pusher means to push the trailing edge; wherein the actuator means is actuated after all the film segments of a customer order have been conveyed by the film conveyor means and stacked in the film stack, and before the package strip and the stacked film segments are advanced away from the film inserting and stacking station.

#### 4,338,763 COMPONENT SEQUENCING METHOD

Philip A. Ragard, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.  
Continuation of Ser. No. 105,267, Dec. 19, 1979, abandoned, which is a division of Ser. No. 935,619, Aug. 21, 1978, Pat. No. 4,213,286. This application May 18, 1981, Ser. No. 264,956  
Int. Cl.<sup>3</sup> B65B 27/10, 57/10  
U.S. Cl. 53—399 1 Claim



1. A method of maintaining or increasing the component volume output of a sequencing machine for axial lead electronic components while preventing the bending of the leads of said components, said machine comprising dispensers equally spaced apart a spacing distance and having a cycling rate for selectively dropping said components onto a continuously moving conveyor in a preferred sequence, said conveyor moving at a first velocity past said dispensers and being adapted to receive said components so that they are equally spaced a first pitch distance apart at the output of said machine, said method comprising the steps of:

- providing plural opposed pairs of "V"-type notches in said conveyor for receiving said axial leads;
- equally spacing each opposed pair from the adjacent opposed pairs by a second pitch distance which is equal to a submultiple of said spacing distance;
- decreasing the velocity of said conveyor from said first velocity to a second velocity which is less than said first velocity and greater than or equal to the product of said first velocity multiplied by the ratio of said first pitch distance to said second pitch distance;
- increasing said cycling rate to that necessary for dropping a component into each adjacent "V"-type notch by the same dispenser; and
- dispensing each of said components from selected ones of said dispensers directly into a "V"-type notch, upon command.

#### 4,338,764 CLOSURE INSERTING METHOD

Edward P. Percarpio, North Haledon, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.  
Division of Ser. No. 942,113, Sep. 13, 1978, Pat. No. 4,226,333, and Ser. No. 880,474, Feb. 23, 1978, Pat. No. 4,136,794, and Ser. No. 729,643, Oct. 5, 1976, Pat. No. 4,111,326, and a continuation-in-part of Ser. No. 663,921, Mar. 4, 1976, abandoned. This application May 8, 1980, Ser. No. 147,868  
Int. Cl.<sup>3</sup> B65B 7/28; B67B 1/04, 3/24  
U.S. Cl. 53—432 1 Claim

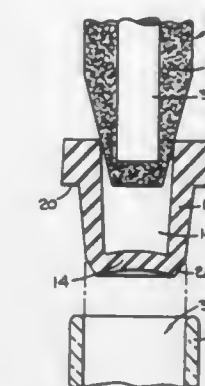
1. A method of inserting a cannula pierceable, self-sealing, gas-proof closure into an air evacuated tubular container which comprises:

- providing a tubular container having an open end;
- providing a closure member which comprises,
  - a tubular body having flexible elastic sidewalls, an open first end and a closed second end formed by a cannula pierceable, flexible, elastic end wall integral with said sidewalls; and
  - a flange disposed radially about the periphery of said sidewalls adjacent to said first end; said end wall having a convex inner surface and a concave outer surface when pressure on the inner surface equals the pressure on the outer surface; said closure member being of a

dimension adapted to mate with the open end of said tubular container so that said sidewalls form a gas tight frictional engagement therewith when inserted therein;

(c) providing an insertion tool which comprises a stiff elongated member having a member first end and a member second end said member first end being enclosed by a layer of resilient, compressible material, said member first end and enclosing layer together forming an insert end, of a dimension such that when inserted into the open first end of said closure member a frictional attachment is effected between said insert end and said closure member;

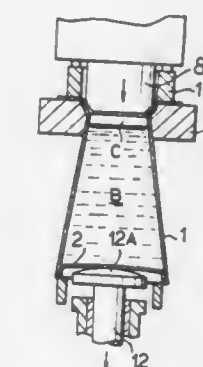
(d) inserting said insert end of said insert tool into the open first end of said closure member;



- compressing said enclosing layer of said tool by the sidewalls and the closed second end of said closure member so that the bore defined by the sidewalls and end wall of said closure member is substantially filled by said insert end and the insert end of said insert tool is attached to said closure member;
- evacuating air from said tubular container;
- inserting the attached closure member into the open end of said tubular container; and
- withdrawing the insertion tool from its attachment with said closure member.

#### 4,338,765 METHOD FOR SEALING A CONTAINER

Koichiro Ohmori; Yasuo Tashiro, and Heihachiro Nakayama, all of Tokyo, Japan, assignors to Honshu Paper Co., Ltd., Tokyo, Japan  
Filed Jun. 8, 1979, Ser. No. 46,806  
Claims priority, application Japan, Apr. 16, 1979, 54-45439  
Int. Cl.<sup>3</sup> B65B 3/18, 7/28; B67B 3/00  
U.S. Cl. 53—452 5 Claims



1. A method for sealing a cylindrical or truncated cone-like container body including a paper material as a main structure material, the lower end of which is sealed with a base, comprising the steps of:

pouring a hot liquid into said container body through its upper open end to a predetermined level;

slightly deforming upwards said base while not deforming said container body;



thereafter sealing the upper open end of said container body while said base is deformed upwards; permitting said base to deform outwardly or downwardly due to the weight of the liquid and a high gas pressure created by the hot liquid in the head space within said container body; and permitting said base to deform inwardly or upwardly due to vacuum within the head space as the liquid cools; whereby no pinholes or leaks are formed at the sealed portion of the upper end of said container body and a good appearance of said container body is obtained.

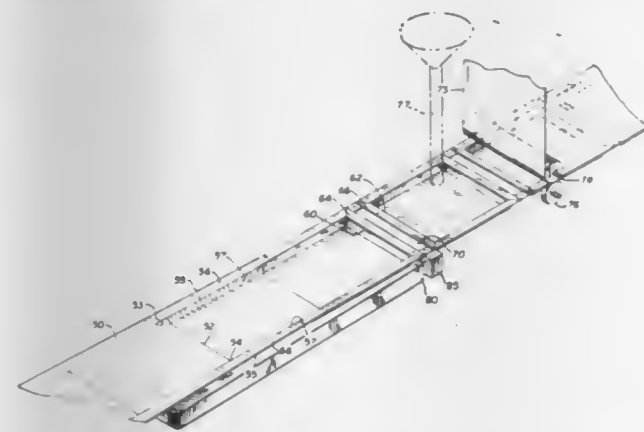
**4,338,766**  
**APPARATUS AND METHOD FOR PRODUCING A CONTAINER FOR FOODS AND THE LIKE**

Joel A. Hamilton, 101 Hardenburgh Ave., Demarest, N.J. 07627  
Continuation-in-part of Ser. No. 80,685, Oct. 1, 1979, and a continuation-in-part of Ser. No. 19,462, Mar. 9, 1979, abandoned. This application Nov. 5, 1980, Ser. No. 204,305  
Claims priority, application Canada, Feb. 18, 1980, 345843; Ireland, Feb. 19, 1980, 314/80; Israel, Feb. 22, 1980, 59449; PCT Int'l Appl., Feb. 22, 1980, US80/00172; Australia, Feb. 27, 1980, 55926/80; France, Feb. 28, 1980, 80 04456; Italy, Mar. 4, 1980, 48068 A/80; Belgium, Mar. 5, 1980, 199680; Argentina, Mar. 6, 1980, 280206; Mexico, Mar. 6, 1980, 181455; Philippines, Mar. 6, 1980, 23733; Chile, Mar. 7, 1980, 154/80; Colombia, Mar. 7, 1980, 189856; Spain, Mar. 7, 1980, 489,297; Venezuela, Mar. 7, 1980, 355; Rep. of Korea, Mar. 8, 1980, 961/80; Spain, Apr. 30, 1980, 491,079

Int. Cl.<sup>3</sup> B65B 3/02

U.S. Cl. 53—456

10 Claims



1. Apparatus for the in-line production of a package for a product which may be granular, solid, semisolid, liquid and/or combinations thereof, said produced package including a lower member and a cover member, said members having facing surfaces adapted for sealing one to the other, said apparatus including:

- (a) means for feeding and supporting a lower member of determined width and of a long length of sheet material;
- (b) means for forming a plurality of substantially transverse "I" cuts in said lower member and at substantially equal and regular intervals, these cuts being less than the width of the lower member thereby leaving side carrier portions on the lower member, each of said "I" shaped cuts having the bar portion of said "I" cut substantially transverse to the length of the lower member and at each end of the bar portion of the cut there are short cuts substantially parallel to the long edges of the lower member;
- (c) means for forming a trough in said lower member, said trough having substantially the same width as the lower member as the length of said transverse cuts;
- (d) die shaping means for forming an end stop on each side of each transverse cut and with these end stops and the trough providing a product receiving pocket, said end stops being formed in the lower member absent heat and stretching of said member so that the integrity of all wall

portions of the pocket remain substantially unchanged in their travel through the apparatus;  
(e) means to feed a desired quantity of product to and into the formed pocket of the lower carrier;  
(f) means for attaching a cover member to the rim portions around the pocket to retain the product in the pocket, and  
(g) means for severing the sealed pockets into separate packages.

**4,338,767**  
**APPARATUS AND METHOD FOR REMOVING PRESSURE SENSITIVE SEALING TAPE FROM CONTAINERS**

Donald D. Cochran, Bartlett, Ill., assignor to National Can Corporation, Chicago, Ill.

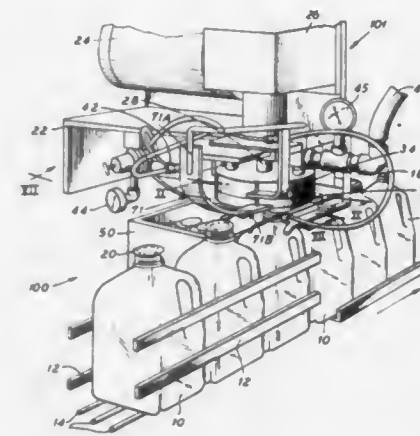
Filed Feb. 19, 1980, Ser. No. 122,469

The portion of the term of this patent subsequent to Feb. 12, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> B65B 43/40

U.S. Cl. 53—492

10 Claims



7. A method of removing oversized adhesive seals from container openings in a seal removal station as the containers are passed in seriatim into said seal removal station, said method comprising:

- rotating a rotor member over said flow of containers in said station, said rotor member having a circular surface formed with fluid passages extending therethrough,
- mounting a stator member in a fixed position relative to said rotor in adjacent abutting relation to said rotor circular surface at a side opposed from said flow of containers and communicating with the other side through said fluid passages, said stator having formed therein first and second spaced apart plenum chambers,
- communicating said first plenum with sub-atmospheric pressure and said second plenum with above atmospheric pressure,
- passing said seals beneath said first plenum, and directing pressure air beneath each said seal on its respective container opening as said each seal passes beneath said first plenum.

**4,338,768**  
**AUTOMATIC MACHINE FOR SORTING ITEMS OF CORRESPONDENCE, PARTICULARLY MAGAZINES, INTO BATCHES EACH HAVING A DIFFERENT GENERAL DESTINATION**

Aris Ballestrazzi, and Lamberto Tassi, both of Vignola, Italy, assignors to SITMA - Società Italiana Macchine Automatiche S.p.A., Spilamberto, Italy

Filed Apr. 15, 1980, Ser. No. 140,602

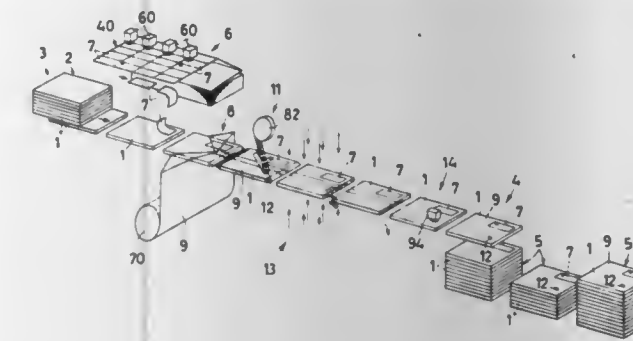
Claims priority, application Italy, Apr. 24, 1979, 22144 A/79  
Int. Cl.<sup>3</sup> B65B 61/26

U.S. Cl. 53—495

11 Claims

1. An automatic machine for the sorting of items of correspondence, particularly magazines, into batches of different general destination, comprising a station for the collocation of

labels, some of which bearing a final item identification mark, on the individual items, a station for the wrapping of the items plus labels in a film of heat-shrinkable plastics material, a station for sealing and cutting the film between one item and the next, a heating tunnel, a stacker, and conveying means adapted to feed the items one after the other through said stations and as far as the said stacker, characterized in that the machine comprises means for the reading of said identification marks, in association with said label collocating station, so as to detect the presence or absence of said identification marks on said labels before the collocation of the latter on the single items,



feeding means for recognition tabs which means are positioned between said sealing and cutting station and said heating tunnel and commanded by said sealing means to feed a tab in a constant pre-set position on the film which wraps each item onto which there has previously been collocated a label bearing an identification mark and means for detecting said tabs, such means being positioned between said heating tunnel and said stacker to detect the presence of said tabs on the related items and consequently to command the stacker to terminate the formation of a batch of articles with the top-stacking of the item with tab just detected.

**4,338,769**  
**OVEN REGULATOR FOR A SKIN PACKAGING MACHINE**

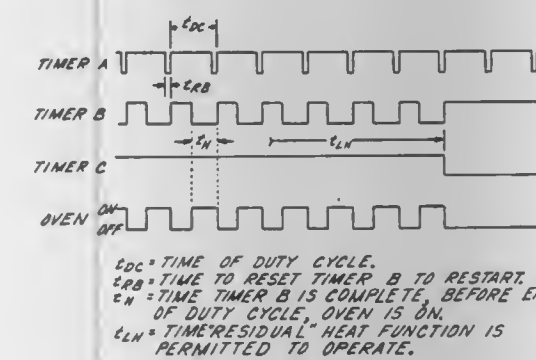
Stephen H. Jones, LaFrance, S.C., assignor to Nordson Corporation, Amherst, Ohio

Filed Mar. 20, 1981, Ser. No. 245,752

Int. Cl.<sup>3</sup> B65B 11/52

U.S. Cl. 53—509

8 Claims



- 1. Apparatus for skin packaging comprising: a base including a horizontal perforate surface adapted to receive a substrate and at least one article on said substrate,
- an oven overlying said perforate surface, said oven including at least one heater,
- a frame disposed between said oven and said perforate surface and adapted to receive a film to be heated by said oven and mounted on a substrate,
- an alternating current power supply connected to said heater,
- at least one solid state relay in series with said heater, means for controlling said relay to provide a period of low heat and a period of high heat,
- said controlling means providing a low heat duty cycle of

less than approximately one second, during one portion of said duty cycle power to said heater is full ON and during the remaining portion of said duty cycle power is full OFF.

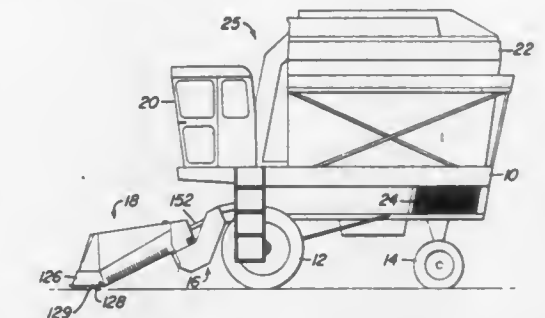
**4,338,770**  
**ROW UNIT FOR A COTTON HARVESTER**  
Francis E. Schlueter, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 26, 1981, Ser. No. 266,877

Int. Cl.<sup>3</sup> A01D 46/12

U.S. Cl. 56—33

59 Claims



1. In a harvester having a frame adapted for forward movement over a field planted with parallel rows of plants, a row unit adapted for attachment to the frame, comprising: a unit frame including a rear mounting structure, a pair of generally fore-and-aft extending support structures with generally upright sidewalls, means connecting the aft ends of the support structures to the rear mounting structure for supporting said support structures in side-by-side cantilever fashion with the non-connected free fore ends of the support structures spaced apart to define a fore-and-aft extending plant passage for receiving a row of plants therebetween and a generally open top portion which opens upwardly between the sidewalls; harvesting means carried by the support structures adjacent the passage and between the sidewalls for removing the crop from the plants; overhead panel structure; means for releasably securing the overhead panel structure to the unit frame above the support structure to generally close the top portion and define a substantially closed harvesting compartment behind the fore ends and above the plant passage; and wherein the support structures comprise stiffener means for affording both transverse and vertical stability to the support structures to maintain a preselected plant passage width when the overhead panel is in the released condition, said stiffener means including a fore-and-aft extending reinforcing member, and wherein said rear mounting structure includes transverse beam structure connected to the aft end of the reinforcing member.

**4,338,771**  
**CLAMPING SYSTEM FOR A KNIFE HAVING AN ANGULAR CROSS-SECTION**

Wolfgang Hummel; Gerhard Koch, both of Schmalkalden; Siegfried Wilhelm, Springstille, and Horst Zorn, Schmalkalden, all of German Democratic Rep., assignors to VEB Werkzeugkombinat Schmalkalden, Schmalkalden, German Democratic Rep.

Filed Nov. 3, 1980, Ser. No. 202,959

Claims priority, application German Democratic Rep., Dec. 20, 1979, 217924

Int. Cl.<sup>3</sup> A01D 55/00, 1/08.

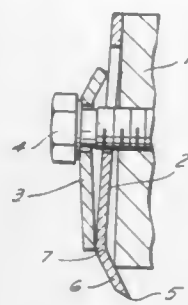
U.S. Cl. 56—294

3 Claims

1. A clamping system for a knife with an angular cross-section comprising, a transition zone on said knife, said transition zone extending parallel to a cutting edge of said knife to thereby form a bent cutting edge section relative to the remaining knife portion, a knife holder for holding said knife thereon, said knife holder having an edge portion located between, the



cutting edge and the transition zone of the knife, and a clamping element attached to said knife holder so that when said

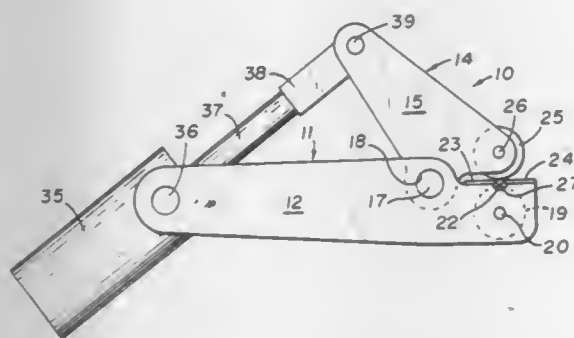


clamping element is fastened, the transition zone of the knife is straightened and firmly held in the knife holder.

**4,338,772**  
**MUSICAL INSTRUMENT STRING MODIFYING DEVICE**  
Stanley E. Rendell, Kalamazoo, Mich., assignor to Sterlingworth Music, Inc., Kalamazoo, Mich.  
Filed Mar. 11, 1980, Ser. No. 129,480  
Int. Cl.<sup>3</sup> G10D 3/10

U.S. Cl. 57—9

7 Claims



1. An apparatus for modifying a musical instrument string having a core and a cover wire of circular cross-section helically wound on said core, said apparatus comprising a frame, a first roller rotatably mounted on an axis fixed with respect to said frame, and a second roller rotatably mounted on an axis moveable with respect to said first roller, guide means for maintaining said string in proper position to pass between said rollers while said string rotates about its axis and additionally moves axially through said rollers, and power means for applying force to urge said second roller against said first roller, thereby compressing said string and flattening the crown of said cover wire on the outer surface of said string while maintaining substantially the original curvature of said cover wire in the remainder of said cover wire.

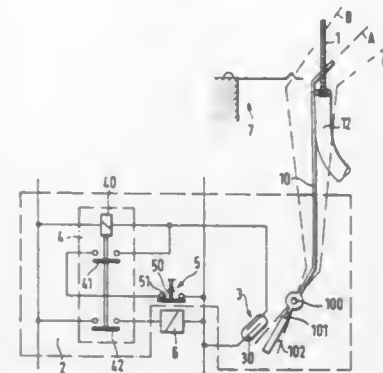
**4,338,773**  
**CONTROL MECHANISM FOR A FIBER FEED DEVICE ON AN OPEN END SPINNING MECHANISM**  
Hans Pozzo, and Joachim Dammig, both of Ingolstadt, Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany  
Filed Dec. 11, 1979, Ser. No. 102,545  
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2855924  
Int. Cl.<sup>3</sup> D01H 13/18, 13/16

U.S. Cl. 57—81

5 Claims

1. A control mechanism for a fiber feed device on an open-end spinning machine including a sensor sensing tension in yarn being produced, a control member controlling the operation of said fiber feed device, and a switching mechanism connected to said sensor and said control member controlling the operation of said fiber feed device responsive to a drop in tension in said yarn being produced comprising: said switching mechanism (2) including;

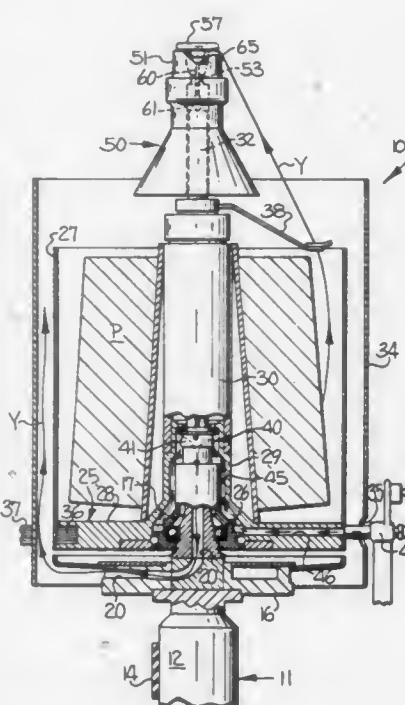
- (i) a switch-on member (3) activated upon drop in yarn tension,
- (ii) a main switch member (4) electrically connected to said switch-on member (3) being switched on upon actuation of said switch-on member (3) for putting said sensor (10) and said fiber feed device (60) out of service,



- (iii) said main switch member (4) including an interlock means for maintaining said main switch member (4) in said switched-on state even if said switch-on member is deactivated, and
- (iv) a switch off member (5) electrically connected to said main switch member (4) for putting said sensor (10) and said fiber feed device (60) into service.

**4,338,774**  
**YARN BRAKE**  
Norbert Welters, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Palitex Project Company GmbH, Krefeld, Fed. Rep. of Germany  
Filed May 15, 1980, Ser. No. 150,054  
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1979, 2923426  
Int. Cl.<sup>3</sup> D01H 7/86, 13/10, 15/00; B65H 59/12  
U.S. Cl. 57—58.86

12 Claims



1. In a yarn brake, for applying tension to a moving yarn, comprising a tube through which the moving yarn passes and having a first braking surface formed on a yarn entrance end of said tube, and a movable brake member resting on the entrance end of said tube and having a second braking surface on the underside thereof for cooperating with said first braking surface to define a yarn tensioning passageway therebetween to apply tension to the moving yarn as the yarn passes between said first and second braking surfaces upon entering said tube; the improvement of:

means formed in said tube at the yarn entrance end of said tube defining a slot extending through one side of said tube from the outside to the inside thereof and in communication with said yarn tensioning passageway for receiving a yarn during a threading operation of the yarn into and through said tube without requiring movement of said braking member from the entrance end of said tube, while allowing the yarn to pass from said slot into said tensioning passageway between said first and second braking surfaces upon continued movement of the yarn.

9. In a spindle assembly of a textile yarn processing machine, particularly a two-for-one twister, having a generally vertically and axially extending yarn passageway therethrough and yarn entry tube means positioned at the upper end of said passageway and forming a part of said passageway and including a pneumatic threading mechanism for creating a pneumatic flow in said yarn passageway including a suction in said yarn entry tube means to automatically thread a yarn therethrough during thread-up operation; the combination therewith of a yarn brake for applying tension to a yarn moving through said spindle assembly and comprising:

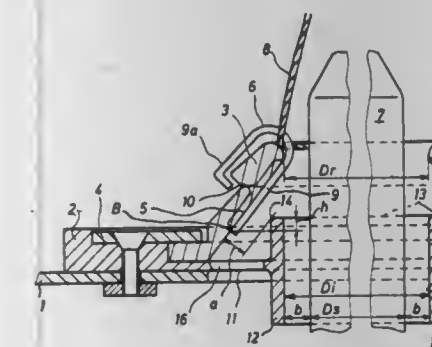
- a first braking surface formed on the upper end of said yarn entry tube;
- a movable brake member resting on the upper end of said tube and having a second braking surface on the underside thereof for cooperating with said first braking surface to define a yarn tensioning passageway therebetween to apply tension to the moving yarn as the yarn passes between said first and second braking surfaces upon entering said yarn entry tube; and
- means formed in said tube at the upper end of said tube defining a slot extending through one side of said tube from the outside to the inside thereof and in communication with said yarn tensioning passageway for receiving by suction a yarn during a pneumatic threading-operation of the yarn into and through said tube without requiring movement of said braking member from the upper end of said tube, while allowing the yarn to pass from said slot into said tensioning passageway between said first and second braking members upon movement of the yarn during operation of said spindle assembly.

**4,338,775**  
**INNER RING FOR SPINNING RING**  
Arthur Würml, Winterthur, Switzerland, assignor to Rieter Machine Works Limited, Winterthur, Switzerland  
PCT No. PCT/EP79/00079, § 371 Date Jul. 6, 1980, § 102(e) Date Jun. 20, 1980, PCT Pub. No. WO80/00982, PCT Pub. Date May 15, 1980  
PCT Filed Oct. 17, 1979, Ser. No. 193,945  
Claims priority, application Switzerland, Nov. 6, 1978, 11394/78

Int. Cl.<sup>3</sup> D01H 7/54

U.S. Cl. 57—119

10 Claims



1. An inner ring arrangement for a spinning ring of ring spinning or ring twisting machines, comprising: an inner ring arranged substantially coaxially within the spinning ring so as to maintain therebetween a gap-forming clearance; said spinning ring having an upper traveller guide surface

structured for taking-up an inner traveller leg of a traveller, said inner traveller leg extending downwardly and outwardly; said inner ring having an upper end serving to support an untensioned thread, said upper end of the inner ring being located at a higher position than a lower limit of the traveller guide surface for said traveller leg on the spinning ring; and at least one substantially slot-shaped opening extending in circumferential direction provided for one of said rings.

**4,338,776**  
**PROCESS FOR THE PRODUCTION OF A CRIMPED CONTINUOUS MULTIFILAMENT YARN**  
Eberhard Krenzer, Ennepetal-Rüggeberg, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid-Lennep, Fed. Rep. of Germany  
Filed Nov. 8, 1978, Ser. No. 958,644  
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1977, 2749867; Switzerland, Dec. 8, 1977, 014981/77  
Int. Cl.<sup>3</sup> D02G 1/16

U.S. Cl. 57—246

22 Claims

1. A process for the production of a linearly stable, crimped continuous multifilament yarn which comprises: guiding the initial non-crimped multifilament yarn between a first and second delivery system through an air-jet texturizing nozzle as a texturizing zone at an overfeed rate corresponding to a circumferential speed  $V_2$  of the second delivery system which is less than the circumferential speed  $V_1$  of the first delivery system, thereby forming multiple random loops in the individual filaments including a minor proportion of metastable loops; conducting the yarn immediately after it has left the texturizing zone into a heat-free stabilizing zone by means of a third delivery system having a run-out speed  $V_3$  greater than the run-in speed  $V_2$  of the second delivery system, such that metastable loops are pulled out of the yarn without causing any elastic or plastic deformation of the individual filaments; then conducting the stabilized yarn into a setting zone by means of a fourth delivery system having a run-out circumferential speed  $V_4$  which allows a shrinkage of the yarn to a predetermined amount, the yarn in said setting zone being subjected to a shrinking treatment and heat treatment at temperatures from 150° C. up to about 245° C.; and winding the yarn after said shrinkage onto a spool at a predetermined yarn tension and at a winding speed  $V_5$  which is less than  $V_1$ .

18. The air-jet texturized and linearly stabilized yarn product obtained by the process of claim 1, said yarn product having a boiling shrinkage of less than 3.3% and an instability of less than 1.0%, measured as the percentage increase in yarn length of a sample having an initial length of one meter under a base load of 1/100 g/den after being subjected to a load of 1/100 g/den for 30 seconds and then relieved again to the base load of 1/100 g/den for another 30 seconds.

**4,338,777**  
**METHOD AND APPARATUS FOR STARTING AND STOPPING AN OPEN END SPINNING MACHINE**  
Osamu Suzuki, Ohbu; Toshio Yoshizawa, Chiryu; Yoshiaki Yoshida, Ohbu; Keiji Onoue, and Kazuo Seiki, both of Kariya, all of Japan, assignors to Kabushiki Kaisha Toyota Jidoshokki Seisakusho, Kariya, Japan  
Filed May 5, 1980, Ser. No. 147,549  
Claims priority, application Japan, May 11, 1979, 54/56958  
Int. Cl.<sup>3</sup> D01H 15/02, 1/135

U.S. Cl. 57—263

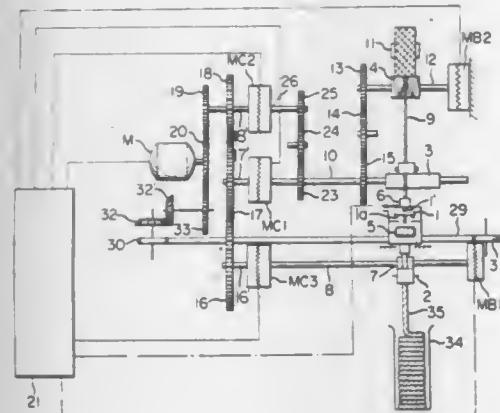
10 Claims

1. In a method of operating an open end spinning machine of the type including a spinning rotor, means for supplying opened fibers into said spinning rotor, means for rotating said



spinning rotor and thereby for forming said fibers into a yarn, means for creating a subatmospheric pressure in said spinning rotor during rotation thereof, a yarn take-up tube extending into said spinning rotor, means for taking-up said yarn through said yarn take-up tube from said spinning rotor, and means for winding the taken-up yarn onto a bobbin, said method of operating said spinning machine comprising stopping said spinning machine, thereby resulting in a free end of said yarn, and thereafter starting said spinning machine while connecting the leading end of newly formed yarn to said free end, the improvement of conducting said stopping and starting in a manner to prevent the occurrence of snarls in said free end regardless of the degree of twist in said yarn and to limit the length of said free end which becomes unraveled, said improvement comprising:

upon stopping said spinning machine:  
stopping said fiber supplying means and thereby stopping the supply of fibers to said spinning rotor;  
thereafter stopping said yarn taking-up means and said winding means, and simultaneously holding said yarn at a position adjacent a yarn outlet end of said yarn take-up tube and maintaining said free end within said yarn take-up tube; and  
thereafter stopping rotation of said spinning rotor and removing the effect of said subatmospheric pressure within said spinning rotor and within said yarn take-up tube and acting on said free end; and  
upon starting said spinning machine:  
starting rotation of said spinning rotor and producing said subatmospheric pressure;



maintaining said free end held at said position and in said yarn take-up tube until said subatmospheric pressure in said spinning rotor and said yarn take-up tube reaches a level sufficient to prevent the occurrence of snarls in said free end, and thereby limiting the length of said free end which becomes unraveled;  
then releasing said free end;  
operating said yarn taking-up means and said winding means in a direction opposite to normal operation of said spinning machine and thereby pushing said free end into said spinning rotor;  
starting said fiber supplying means to feed fibers to said spinning rotor, thereby forming new yarn, and connecting the leading end of said new yarn to said free end; and  
then operating said yarn taking-up means and said winding means in the direction of normal operation.

4. In an open end spinning machine of the type including a spinning rotor associated with means for producing therein a subatmospheric pressure, means for supplying opened fibers into said spinning rotor, means for rotating said spinning rotor and thereby for forming said fibers into a yarn, a yarn take-up tube extending into said spinning rotor, means for taking-up said yarn through said yarn take-up tube from said spinning rotor, and means for winding the taken-up yarn onto a bobbin, said spinning machine being capable of being stopped, resulting in a free end of said yarn, and thereafter started, while connecting the leading end of a newly formed yarn to said free

end, the improvement comprising means for, upon stopping and subsequent starting of said spinning machine, preventing the occurrence of snarls in said free end regardless of the degree of twist in said yarn and limiting the length of said free end which becomes unraveled, said preventing and limiting means comprising:

holding means positioned adjacent an outlet end of said yarn take-up tube for holding said yarn; and  
control means operatively connected for controlling the operation of said holding means, said subatmospheric pressure producing means, said fiber supplying means, said yarn taking-up means, and said winding means in accordance with a predetermined time sequence such that when said spinning machine is stopped:  
said fiber supplying means is first stopped;  
thereafter said yarn taking-up means and said winding means are stopped, while simultaneously said holding means operates to hold said yarn at said position and to maintain said free end in said yarn take-up tube; and  
thereafter said subatmospheric pressure producing means is stopped to remove the effect of the subatmospheric pressure from within said spinning chamber and within said yarn take-up tube; and such that when said spinning machine subsequently is started:  
said subatmospheric pressure producing means is started to produce the subatmospheric pressure;  
said holding means is maintained holding said yarn at said position with said free end in said yarn take-up tube until said subatmospheric pressure in said spinning rotor and in said yarn take-up tube reaches a level sufficient to prevent the occurrence of snarls in said free end, thereby limiting the length of said free end which becomes unraveled;  
then said holding means releases said yarn;  
said yarn taking-up means and said winding means are operated in a direction opposite to normal operation of said spinning machine to push said free end into said spinning rotor;  
said fiber supplying means is operated to feed fibers to said spinning rotor, and the leading end of a new yarn is connected to said free end; and  
then said yarn taking-up means and said winding means are operated in the direction of normal operation.

4,338,778

#### APPARATUS FOR DETECTING AN ERRONEOUSLY INSERTED EMPTY BOBBIN IN A SPINNING FRAME PROVIDED WITH AN AUTOMATIC DOFFING AND DONNING APPARATUS

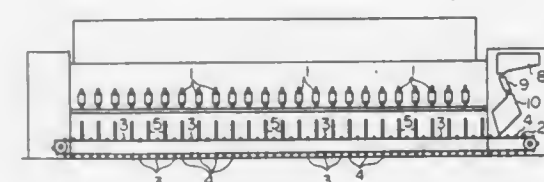
Osamu Suzuki, Oobu, Takayuki Morita, Kariya, Masashi Ushino, Hekinan, and Hideo Hirano, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Jun. 25, 1980, Ser. No. 162,807

Claims priority, application Japan, Jul. 10, 1979, 54/94802[U]  
Int. Cl.<sup>3</sup> D01H 9/18

U.S. Cl. 57—276

11 Claims



1. In a spinning frame provided with an automatic doffing and donning apparatus and an empty bobbin outlet, comprising a conveyor having empty bobbin supporting pegs mounted thereon, for feeding empty bobbins which are to be donned onto spindles of the spinning frame by means of said doffing and donning apparatus, the improvement comprising a detecting apparatus for detecting whether or not an empty bobbin is

correctly inserted onto any one of said empty bobbin supporting pegs, said detecting apparatus comprising:

two photodetector circuits each comprising a pair of light emitters and light receivers, one pair being disposed at the upper portion of an empty bobbin outlet of said spinning frame and the other pair being disposed at the lower portion of said empty bobbin outlet, so that said light emitters face the corresponding light receivers sandwiching said conveyor therebetween,  
one of said two pairs being displaced from the other pair in an empty bobbin transfer direction of said conveyor by a distance corresponding to the difference in diameters of said upper and lower portions of said empty bobbin, so that passage of the upper and lower portions of said empty bobbin inserted onto any one of said empty bobbin supporting pegs is cooperatively detected by said photodetector circuits.

4,338,779

#### APPARATUS FOR THE PRODUCTION OF ORNAMENTAL LINK CHAINS (VENETIAN CHAINS). READY FOR SOLDERING

Karl-Heinz Lange, Pforzheim, Fed. Rep. of Germany, assignor to FICO Fischer & Co. Maschinenbau GmbH, Pforzheim, Fed. Rep. of Germany

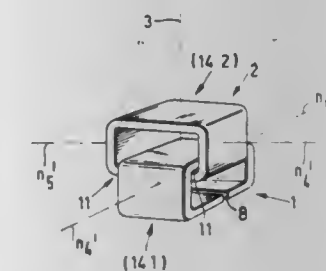
Division of Ser. No. 75,023, Sep. 13, 1979. This application Dec. 23, 1980, Ser. No. 220,012

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 2839746

Int. Cl.<sup>3</sup> B21L 11/00

U.S. Cl. 59—25

8 Claims



1. In an improved apparatus for production of ornamental link chains ready for soldering preparation with individual links bent at right angles out of flat wire each with two axial arms and a first and a second transverse web, which comprises:  
drawing in means for drawing a flat wire into the apparatus;  
a cutting device for cutting the wire to length;  
a preliminary bending device for bending the flat wire into a flat U with two short arms;  
a conveyor device for conveying the flat U;  
a bending means for finishing the flat U by bending to form an individual link such that the two short arms form the second transverse web with a butt-joint of their two free ends;  
an adjusting means for adjusting the individual link in height while the first transverse web is disposed in a predetermined assembly plane;  
a positioning means for detachably fixing the individual link and positioning the same for mounting of the following individual link which is now formed for the chain;  
a conveying means for conveying the individual link along an extraction section;  
a striking device for striking the chain to provide a preset adjustment of a minimum width of a gap to receive solder between the free ends;  
the improvement comprising:  
a first horizontal axis disposed in the plane of conveying of the conveyor device and along which axis are disposed the cutting device, the preliminary bending device, the conveyor device, the positioning means and the striking device which are separated from each other and along

which the conveyor device and the striking device have their direction of action;  
an upper knife movable in up-down direction and forming part of the cutting device;  
a lower knife fixed in height and forming part of the cutting device;  
an upper bending tool movable in up-down direction and forming part of the preliminary bending device;  
a first holding down means movable in up-down direction and forming part of the preliminary bending device;  
a lower preliminary bending mandrel fixed in height and forming part of the preliminary bending device;  
an upper closing tool movable in up-down direction and forming part of the bending means;  
a second holding down means movable in up-down direction and forming part of the bending means;  
a lower closing mandrel fixed in height and forming part of the bending means and forming together with the upper closing tool and the second holding down means a closing device, said lower closing mandrel being movable in the direction of its longitudinal axis and parallel to the first horizontal axis;  
a stopper device associated with the upper closing tool for adjusting the particular closed individual link in height;  
a device constructed in the form of a diagonal tie rotatable around a second longitudinal axis and forming part of the positioning means and of the conveying means;  
and four gripping elements each with a contact surface prism forming part of the device and disposed on an arc of a circle for deflection against a restoring force directed inwards toward the second longitudinal axis and defining with their contact surface prisms an upper portion of the extraction section, said extraction section traversing the first horizontal axis.

4,338,780

#### METHOD OF COOLING A GAS TURBINE BLADE AND APPARATUS THEREFOR

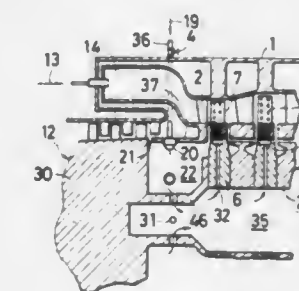
Takeshi Sakamoto, Shunichi Anzai, Nariyoshi Kobayashi, and Ryoichiro Oshima, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1978, Ser. No. 964,632

Claims priority, application Japan, Dec. 2, 1977, 52-143870  
Int. Cl.<sup>3</sup> F02C 7/18

U.S. Cl. 60—39.05

10 Claims



1. A method of cooling a moving blade of a gas turbine in which high-pressure air from a compressor is passed through a combustor to make it a combustion gas, the combustion gas is introduced into a main gas passageway with a cascade including the moving blade disposed therein, and power is taken out by expansion of the combustion gas, comprising the steps of:  
extracting part of the high-pressure air from the compressor in order to use it for cooling;  
spraying water into the extracted air, and mixing water drops with the air and cooling said air, to prepare a coolant for cooling the moving blade;  
introducing said coolant into coolant passageways inside said moving blade, to cool said moving blade; and  
emitting into the main gas passageway said coolant having cooled said moving blade, wherein the step of spraying water and preparing said coolant is performed in a water



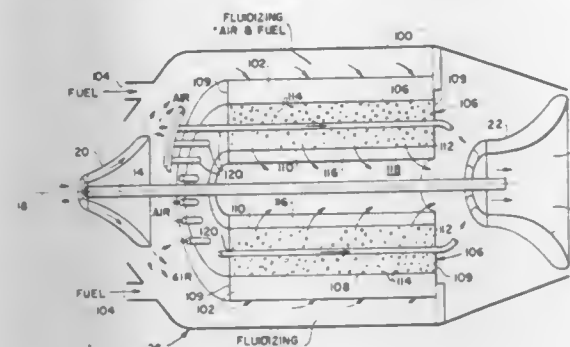
spraying chamber located outside a shaft between a final stage portion of said compressor and a disc of a first stage of said turbine by a nozzle communicating with a water pipe and mounted to a stationary wall on a radially outer side of the turbine.

4,338,781

**ROTATING FLUIDIZED BED COMBUSTOR**  
William H. Belke, Peoria, and George B. Grim, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.  
Filed Nov. 1, 1979, Ser. No. 102,199  
Int. Cl.<sup>3</sup> F02C 3/26

U.S. Cl. 60—39.35

17 Claims



1. A rotatable fluidized bed combustor (26) for exothermically reacting a gaseous agent and a fuel comprising:
  - a. an outer, substantially cylindrical, elongated perforated wall (108);
  - b. an inner, substantially cylindrical, perforated wall (110) spaced apart and substantially co-axial and co-extensive with said outer perforated wall (108);
  - c. enclosing walls (109) defining with said outer and inner perforated walls (108, 110) a substantially cylindrical annular fluidization chamber (112);
  - d. a fluidizable bed of pulverulent solid particles (114) in said chamber (112);
  - e. means (14) for rotating said chamber (112) about the axis (18) to cause the particles to centrifugally gravitate toward said outer perforated wall (108);
  - f. means (102) for feeding a combustible fuel in a gaseous agent stream into said chamber (112) through said outer perforated wall (108), said gaseous agent having flow characteristics suitable for fluidizing said particles in said chamber (112), said fuel reacting with at least a portion of said gaseous agent in said chamber (112) to form gaseous combustion products, said unreacted gaseous agent and said gaseous combustion products exiting said chamber (112) through said inner perforated wall (110);
  - g. means (116) for receiving said gaseous combustion products and unreacted gaseous agent exiting from said chamber (112) through said inner perforated wall (110); and
  - h. means (118), communicating with said means (116) for receiving, for directing said unreacted gaseous agent and said gaseous combustion products exiting said inner perforated wall (110) away from said chamber (112).

4,338,782

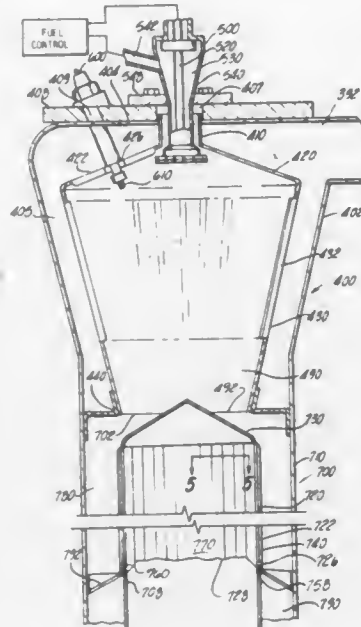
**GAS TURBINE COMBUSTION SYSTEM UTILIZING RENEWABLE AND NON-CRITICAL SOLID FUELS WITH RESIDUE REMOVER TO MINIMIZE ENVIRONMENTAL POLLUTION**  
William C. Marchand, 11339 Roxbury, Detroit, Mich. 48224  
Filed Nov. 23, 1979, Ser. No. 96,760  
Int. Cl.<sup>3</sup> F02C 3/26

U.S. Cl. 60—39.46 S

7 Claims

1. A combustor apparatus for burning solid fuel with oxidizing fluid and for removing solid residues from the products of combustion, said apparatus comprising: a combustion chamber; means for pulverizing said solid fuel and for injecting said

pulverized solid fuel into said combustion chamber, said pulverizing and injecting means being mounted into said combustion chamber, said means for pulverizing and for injecting said pulverized solid fuel further comprising: an injector having an outer body and an inner body rotatably mounted with respect to said outer body; means for repulverizing coagulated pulverized solid fuel, said repulverizing means being integral with said inner and outer body of said injector; and means for injecting the repulverized solid fuel into said combustion chamber;



means for supplying oxidizing fluid into said combustion chamber, said supplying means mixing said fluid with said repulverized solid fuel to form a mixture of combustion; means for igniting said mixture of combustion, said igniting means being mounted to said combustion chamber such that the mixture of combustion in said combustion chamber is ignited to form gaseous products of combustion and solid residues suspended in said gaseous products of combustion; and means for separating said solid residues from the gaseous products of combustion, said separating means further comprising an inertia separator mounted downstream of said combustor.

4,338,783

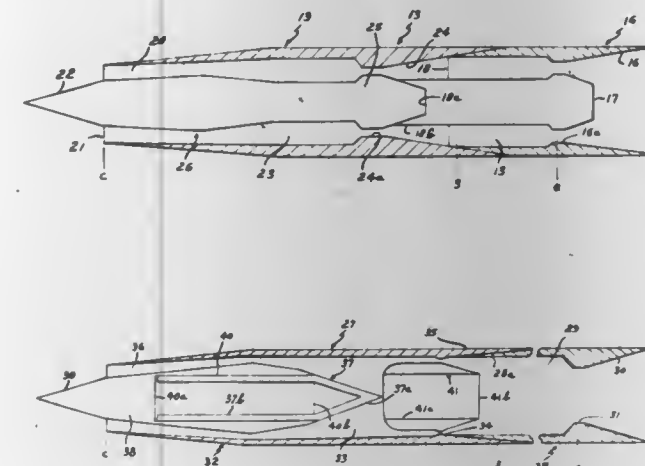
**TWO-STAGE HYPERSONIC RAMJET**  
John L. Leingang, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.  
Filed Sep. 4, 1975, Ser. No. 610,513  
Int. Cl.<sup>3</sup> F02K 7/18, 9/76

U.S. Cl. 60—225

1 Claim

1. A two-stage ramjet comprising: an inlet-diffuser section; a forward cruise stage disposed immediately downstream of, or made integral with said inlet-diffuser section and having a cruise-combustion chamber and relatively small, cruise exhaust nozzle specifically optimized for producing cruise flight varying between predesigned relatively high supersonic and hypersonic flight speeds; and an aft boost stage tandem mounted to the rear of said forward cruise stage and including a boost-combustion chamber and relatively large, boost-exhaust nozzle expressly optimized for generating an accelerative thrust or boost from a previously attained, ground- or air-launched speed of from low-to-mid-supersonic, to the said predesigned relatively high supersonic speed at which firing of the said forward cruise stage occurs; said boost-combustion chamber having an inlet section arranged in an interfitted, air sealed relation with, and adapted to be initially quick-releasably mounted to the outlet portion of said cruise-nozzle to thereby

provide a continuous flow path between said cruise and boost stages when said boost stage is being actuated to generate the boost phase of ramjet operation, and to be subsequently ejectable from said cruise stage when said boost phase of ramjet operation has been completed; said boost stage further including a first, relatively elongated plug member of a predetermined configuration and extending in a centrally-disposed relation along the longitudinal axis of said boost-combustion chamber to terminate in a first, aft, plug member-end portion at, and particularly assisting in the formation of the throat portion of the said relatively enlarged, boost-exhaust nozzle to that preselected to positively provide for the said optimization of the boost stage to ensure the boost phase of ramjet operation from the said speed of launch to the said predesigned relatively high supersonic speed; said cruise stage further including a



combined center body and second, relatively elongated plug member terminating in a first, forward end portion incorporating a spike element extending through and further upstream of the inlet diffuser section, and a second, aft plug member-end portion at, and particularly assisting in the formation of the reduced-sized, throat portion of the second relatively small, cruise-exhaust nozzle to that preselected to specifically provide for the optimization of the cruise stage to ensure the cruise phase of ramjet operation from the said relatively high supersonic speed to the selected hypersonic speed; the aft end portion of said second, plug member incorporating a tapered, integral end section projecting in a further aft direction in an air-sealed relation into a recess formed in a second, forward end portion of said first, plug member to thereby ensure the said continuous flow path between said boost and cruise phases during the operation of said boost stage.

4,338,784

**METHOD OF RECYCLING COLLECTED EXHAUST PARTICLES**

Benjamin Y. H. Liu, North Oaks; David B. Kittelson, Minneapolis; Daniel F. Dolan, St. Anthony, and David Y. H. Pui, Minneapolis, all of Minn., assignors to The Regents of the University of Minn., Minneapolis, Minn.  
Division of Ser. No. 68,703, Aug. 22, 1979, Pat. No. 4,316,360, which is a continuation-in-part of Ser. No. 38,077, May 11, 1979, Pat. No. 4,304,096. This application Dec. 11, 1980, Ser. No. 215,457

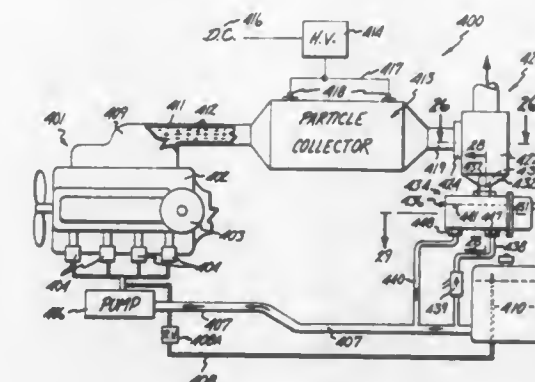
Int. Cl.<sup>3</sup> F01N 3/00

U.S. Cl. 60—274

10 Claims

1. A method of reducing the amount of particles emitted by a combustion apparatus comprising: forming particles during combustion of hydrocarbon fuel and air in a combustion chamber of a combustion apparatus, imparting electrical charges on a substantial portion of the particles that are formed during said combustion during said imparting of electrical charges on the particles a substantially equal number of particles are positively charged and negatively charged whereby the particles as a whole are a substantially electrical neutral mass of particles, moving the charged particles with combustion gas directly from the combustion apparatus to a particle collector without

an intermediate particle charging step whereby the charge on the particles remains substantially the same, said particle collector having particle collecting means, establishing an electric field by applying a voltage to the particle collecting means, and moving the charged particles without substantially changing the electrical charges on the particles into the electric field to collect at least some of the charged particles on the particle



collecting means, said particles collected on the particle collecting means separating from the collecting means as large particles, moving said large particles with said gas from said particle collecting means, collecting said large particles that become separated from the particle collecting means, and introducing said collected large particles into the hydrocarbon fuel for the combustion apparatus.

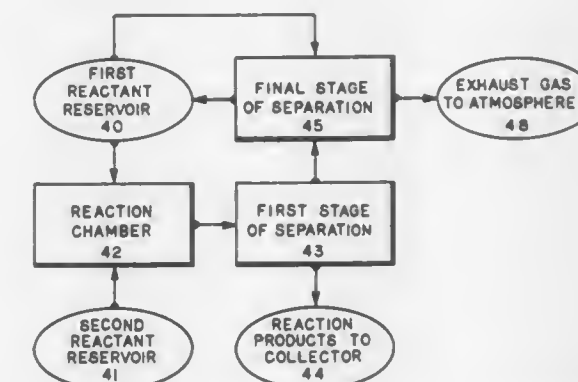
4,338,785

**EXHAUST GAS TREATMENT BY A REACTANT**  
Stephen F. Skala, 3839 S. Wenonah Ave., Berwyn, Ill. 60402  
Continuation-in-part of Ser. No. 301,285, Oct. 27, 1972, abandoned, Ser. No. 457,207, Apr. 2, 1974, Pat. No. 3,911,284, Ser. No. 463,454, Apr. 26, 1974, abandoned, Ser. No. 578,527, May 19, 1975, Pat. No. 4,020,798, and Ser. No. 779,788, Mar. 21, 1977, Pat. No. 4,189,916. This application Oct. 4, 1979, Ser. No. 81,668

Int. Cl.<sup>3</sup> F01N 3/02

U.S. Cl. 60—311

11 Claims

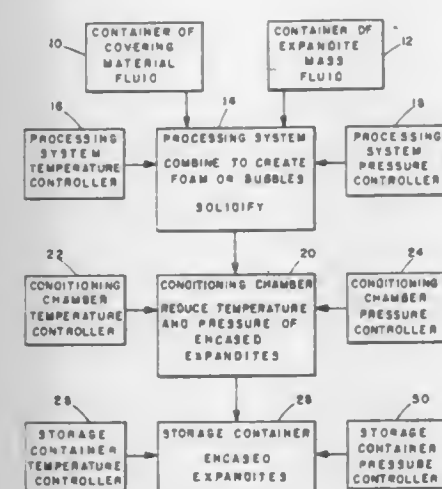


1. A method for separating and collecting reaction products from exhaust gases, comprising the steps of: reacting a first reactant and a second reactant in a combustion chamber to form the reaction products in the exhaust gases, separating a portion of the reaction products from the exhaust gases in a first stage of separation and collecting the reaction products in a concentrated form, separating substantially all of the remaining reaction products from the exhaust gases in a final stage of separation and releasing the exhaust gases to the atmosphere, incorporating the reaction products separated in the final stage of separation into the first reactant, and reacting the first reactant having incorporated therein the reaction products separated in the final stage of separation with the second reactant in the combustion chamber



whereby the incorporated reaction products are included in the separation of the first stage of separation and thus circulate until substantially all of the reaction products are collected in concentrated form by the first stage of separation.

**4,338,786**  
**PREVENTION OF PERMANENT DEFORMATION OF ENCASED EXPANDITES**  
 Jens O. Sorensen, Rancho Santa Fe, Calif., assignor to Trade Finance International, Georgetown, Cayman Islands  
 Filed May 5, 1980, Ser. No. 146,459  
 Int. Cl.<sup>3</sup> F03C 5/00; F03G 7/04  
 U.S. Cl. 60—531 **20 Claims**

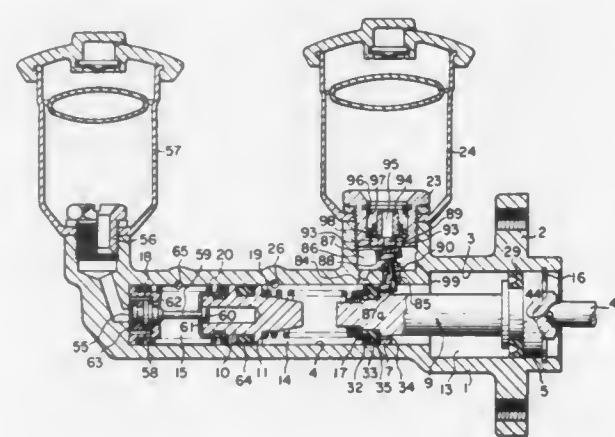


11. In a system for manufacturing encased expandites that constitute a thermodynamic working fluid for use in combination with a thermal fluid in a thermodynamic energy conversion system wherein the working fluid is made up of thousands of encased expandites, each of which includes a mass having a flexible covering encasing the mass for enabling rapid heat transfer between the mass and the thermal fluid, for enabling the encased expandite to maintain its integrity as a separate object when submerged in the thermal fluid and for enabling the volume of the encased expandite to change in accordance with the characteristic interdependent relationship between changes in the density, temperature and pressure of the mass when the encased expandite is submerged in the thermal fluid, wherein each of the flexible coverings has a maximum containing volume prior to becoming permanently deformed, a system for preventing permanent deformation of the encased expandites during use and storage, characterized by comprising, means for maintaining the encased expandites at a combination of temperature and pressure that is different than atmospheric conditions to thereby prevent the volume of the encased expandite mass from exceeding the maximum containing volume of the flexible cover.

**4,338,787**  
**VARIABLE RATIO BRAKE MASTER CYLINDER DEVICE**  
 Hiroshi Kawaguchi, Mishima, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan  
 Filed Sep. 25, 1980, Ser. No. 190,746  
 Claims priority, application Japan, Oct. 3, 1979, 54/128139  
 Int. Cl.<sup>3</sup> B60T 11/20 **6 Claims**

1. A brake master cylinder device, comprising:  
 (a) a body within which are formed a first cylinder bore and a second cylinder bore;  
 (b) a first piston member, comprising a first piston engaged with said first cylinder bore and a second piston engaged with said second cylinder bore, a first cylinder chamber and a second cylinder chamber being, respectively, defined by the cooperation of said first piston with said first

cylinder bore and by the cooperation of said second piston with said second cylinder bore, the displacement of said first piston member with respect to said body in a first direction tending to reduce the volume of said first cylinder chamber and also to reduce the volume of said second cylinder chamber;  
 (c) a first means for biasing said first piston member in a direction opposite to said first direction with respect to said body;  
 (d) a fluid reservoir for keeping fluid substantially at atmospheric pressure;  
 (e) a fluid conduit opening from said second cylinder chamber for connection to a first brake actuator in order to supply operating fluid pressure thereto;  
 (f) a first one way valve, which always allows fluid to flow substantially freely from said first cylinder chamber to said second cylinder chamber;  
 (g) a second one way valve comprising a valve port, a valve element having a disk portion adapted to close said valve port and a stem portion axially aligned with said disk portion, and a spring which biases said disk portion toward said valve port, said second one way valve being adapted to allow fluid to flow substantially freely from said fluid reservoir to said first piston chamber when the pressure in said first cylinder chamber is below substantially atmospheric pressure and to allow fluid to flow substantially freely from said fluid reservoir to said first cylinder chamber and from said second cylinder chamber

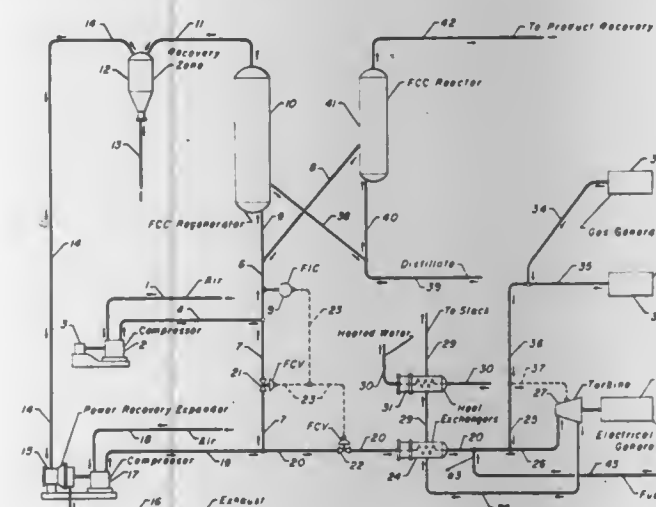


to said fluid reservoir when said disk portion of said valve element is tilted relative to said valve port by said stem portion being engaged with said first piston member displaced to its extreme position in said direction opposite to said first direction; and  
 (h) venting means for venting said first cylinder chamber, comprising at least one vent port located near said valve port of said second one way valve, and an annular valve element having a central opening and adapted to close said vent port while allowing said valve port of said second one way valve to be unobstructed by said central opening being aligned therewith, and a spring for biasing said annular valve element to the position where it closes said vent port, said venting means being adapted to allow fluid to flow from said first cylinder chamber to said fluid reservoir when the fluid pressure in said first cylinder chamber rises to a predetermined fluid pressure value;  
 (i) whereby, as said first piston member is displaced in said first direction from its extreme position in said direction opposite to said first direction, as the pressure within said fluid conduit and said second cylinder chamber rises so as to progressively operate said first brake actuator more and more, until the pressure in said first cylinder chamber reaches said predetermined pressure value, said pressure in said first cylinder chamber is substantially the same as that in said second cylinder chamber, said first one way valve allowing substantially free passage of fluid from said first cylinder chamber to said second cylinder chamber; and when the pressure in said first cylinder chamber

reaches said predetermined fluid pressure value; said venting means operates, so as to vent said first cylinder chamber to said fluid reservoir, to prevent further rise of the pressure within said first cylinder chamber, the further rise of pressure within said second cylinder chamber being unaffected by the action of said venting means, and reverse flow of fluid from said second cylinder chamber to said first cylinder chamber being definitely always prevented except in the said extreme position of the second piston member;  
 (j) whereby the pressure available in said fluid conduit, for a given amount of pressure exerted on said first piston member in said first direction, is higher in the latter period of operation of said master cylinder device, after said venting means has started to vent fluid to said fluid reservoir from said first cylinder chamber, than in the former period of operation of said master cylinder device, before said venting means has started to vent fluid to said fluid reservoir from said first cylinder chamber.

**4,338,788**  
**COGENERATION PROCESS LINKING FCC REGENERATOR AND POWER PLANT TURBINE**  
 Allen H. Fink, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.  
 Filed Jul. 22, 1980, Ser. No. 171,225  
 Int. Cl.<sup>3</sup> F01K 17/00 **13 Claims**

U.S. Cl. 60—648 **13 Claims**

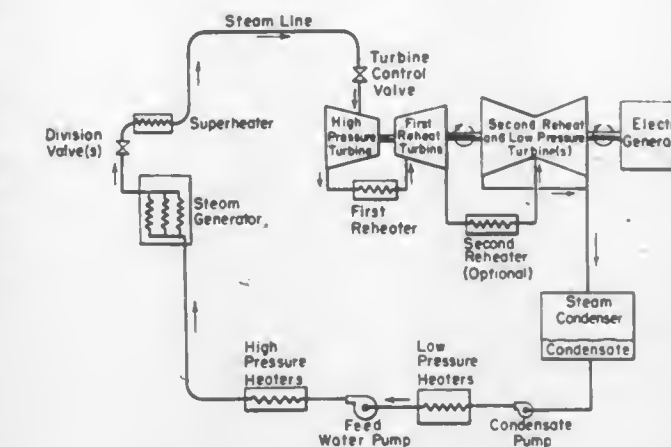


1. A process for generating electrical power which comprises the steps of:  
 (a) producing a pressurized air stream by compressing air to a superatmospheric pressure in a compressor driven by a power recovery expander which receives as a motive stream the flue gas stream of the catalyst regeneration zone of a fluidized catalytic cracking unit;  
 (b) heating the pressurized air stream by indirect heat exchange; and,  
 (c) passing the pressurized air stream and a high temperature gas stream through a turbine which drives an electrical generator and thereby producing a turbine effluent stream.

**4,338,789**  
**METHOD OF VARYING TURBINE OUTPUT OF A SUPERCRITICAL-PRESSURE STEAM GENERATOR-TURBINE INSTALLATION**  
 John E. Dolan, 171 Druid Ave., Dumont, N.J. 07628  
 Filed Feb. 1, 1980, Ser. No. 117,803  
 Int. Cl.<sup>3</sup> F01K 3/00 **7 Claims**

U.S. Cl. 60—652 **7 Claims**  
 1. A method of varying turbine output in an installation including a steam generator, a feed water pump for producing pressure in said generator to a predetermined amount in excess of the critical pressure of steam, a superheater, at least one controllable division valve positioned between said superheater and said steam generator for regulating the pressure of

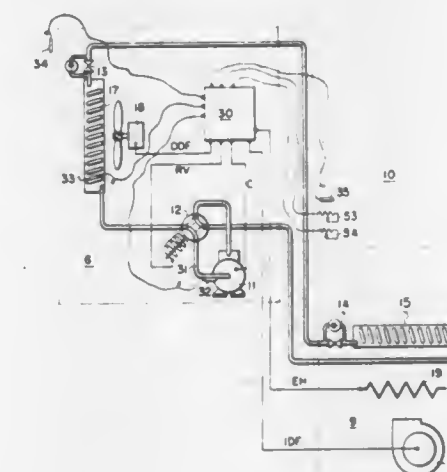
steam delivered from said steam generator to said superheater, a turbine receiving steam from said superheater and at least one turbine control valve for regulating entry of steam to said turbine; including the steps of setting a turbine control valve to a predetermined open position, maintaining said division valve in a fully open position, and varying the rate of delivery of said



feed water pump to vary steam pressure in said steam generator between said predetermined amount in excess of said critical pressure and an amount slightly above said critical pressure whereby the steam pressure at said turbine throttle valve is varied between said amount slightly above said critical pressure and said predetermined amount in excess of said critical pressure.

**4,338,790**  
**CONTROL AND METHOD FOR DEFROSTING A HEAT PUMP OUTDOOR HEAT EXCHANGER**  
 James F. Saunders, Onalaska, and Robert E. Krock, Stoddard, both of Wis., assignors to The Trane Company, La Crosse, Wis.  
 Filed Feb. 21, 1980, Ser. No. 123,308  
 Int. Cl.<sup>3</sup> F25D 21/00 **20 Claims**

U.S. Cl. 62—80 **20 Claims**



1. In an air source heat pump for temperature conditioning a comfort zone, including an outdoor heat exchanger, an indoor heat exchanger, a compressor connected to a reversing valve by a refrigerant suction line, and means for moving air through the outdoor and indoor heat exchangers in heat transfer relation therewith, a control for defrosting the outdoor heat exchanger to melt ice and frost accumulated thereon during operation of the heat pump in a heating mode, said control comprising  
 (a) a sensor for sensing the temperature in the comfort zone;  
 (b) a suction line temperature sensor;  
 (c) a sensor for sensing the temperature of outdoor ambient air; and  
 (d) control means responsive to the suction line, comfort



zone, and outdoor ambient air temperature sensors, and operative to determine as a continuous function of the magnitude of the temperatures of the comfort zone, the suction line, and the outdoor ambient air, the maximum permissible degradation of heat transfer in the outdoor heat exchanger at which the defrost cycle should be initiated to optimize the efficiency and reliability of the heat pump and operative to initiate the defrost cycle accordingly.

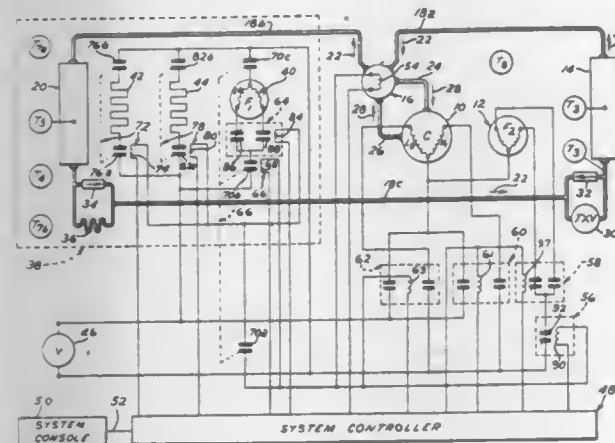
#### 4,338,791 MICROCOMPUTER CONTROL FOR HEAT PUMP SYSTEM

Custis L. Stamp, Jr., Tyler, Tex., and Rollie R. Herzog, Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Oct. 14, 1980, Ser. No. 196,425  
Int. Cl.<sup>3</sup> F25B 13/00, 29/00

U.S. Cl. 62—160

14 Claims



1. A method of controlling a multi-state heat pump system to minimize energy usage while the system is being operated to bring the temperature of an enclosed space to a desired temperature level, the method comprising: establishing a target temperature value representative of the desired temperature; sensing actual temperature of the enclosed space; initiating operation of the heat pump system in response to a differential between the actual and target temperatures; measuring the time rate of change in the actual temperature at the expiration of preselected time intervals during which an increase in operating state of the heat pump system to a higher level of energy usage is inhibited; and increasing the heat pump system to only the next higher operating state upon expiration of said preselected time intervals only when the time rate of change of actual temperature is less than a value required to substantially reach the target temperature within a predetermined time period.

#### 4,338,792 REFRIGERATED MERCHANDISER DISPLAY CASE WITH DEFROST DEVICE

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

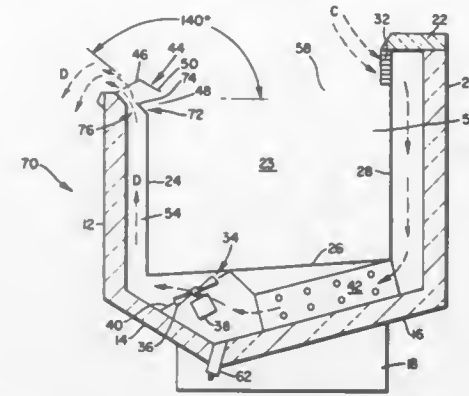
Continuation-in-part of Ser. No. 60,459, Jul. 25, 1980, Pat. No. 4,295,340, which is a continuation-in-part of Ser. No. 8,111, Jan. 31, 1979, Ser. No. 11,804, Feb. 14, 1979, Ser. No. 25,350, Mar. 30, 1979, Ser. No. 76,669, Sep. 18, 1979, and Ser. No. 145,859, May 1, 1980. This application Jan. 19, 1981, Ser. No. 225,997  
Int. Cl.<sup>3</sup> A47F 3/04

U.S. Cl. 62—256

32 Claims

1. In a refrigerated display cabinet having outer walls defining a product storage and display space and having an access opening in one of said walls for permitting products to be moved into and out of said storage and display space; at least one air conduit disposed about said storage and display space for containing an air band; a refrigeration means; air moving means enabling circulation of an air band within said conduit and across said access opening in a refrigeration cycle of opera-

tion; and said air moving means also permitting circulation of an ambient air band during a defrost cycle; the improvement comprising an air flow restriction baffle positioned within said air conduit adjacent to the discharge end of said air conduit



when said cabinet is operated in an air defrost cycle, and said air flow restriction baffle operable to increase the velocity of the air band in said conduit during a defrost cycle sufficiently to expel the defrost air band substantially out of said cabinet.

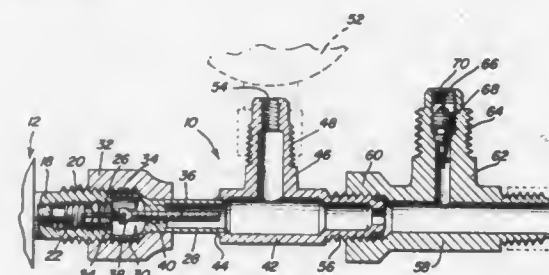
#### 4,338,793 ADAPTER FOR REFRIGERATION SYSTEM ACCESS VALVE

James E. O'Hern, Jr., 1359 Sanden Ferry Dr., Decatur, Ga. 30033

Filed Aug. 10, 1979, Ser. No. 65,577  
Int. Cl.<sup>3</sup> F25B 45/00

U.S. Cl. 62—292

2 Claims



1. In combination with a refrigeration system having an access valve which includes a valve stem connected to a valve member for actuation thereof, an adapter comprising a tubular member having a flow passage therethrough, bell-shaped means on one end of the tubular member for achieving alignment during coupling of the tubular member to the access valve, an abutment mounted in the tubular member engaging the valve stem to actuate the valve stem to open the access valve when the tubular member is coupled to the access valve, said abutment including a longitudinally extending threaded member, threadedly engaged with a portion of the interior of the tubular member to vary the longitudinal position of the abutment in relation to the tubular member thereby enabling the abutment member to be adjusted so that the tubular member will be at least partially coupled to the access valve before the abutment actuates the valve stem, said abutment being completely enclosed by the tubular member and inaccessible from a position exteriorly of the tubular member when the tubular member is connected to the access valve, said flow passage through the tubular member remaining continually open during adjustment of the abutment and movement of the access valve and means on said tubular member for communication with a refrigeration supply assembly to supply refrigeration through the tubular member and access valve into the refrigeration system, said access valve being externally threaded, said bell-shaped coupling means on the tubular member including an internally threaded coupling member for coupling the tubular member to the access valve with the axis of the tubular member being aligned with the access valve, said

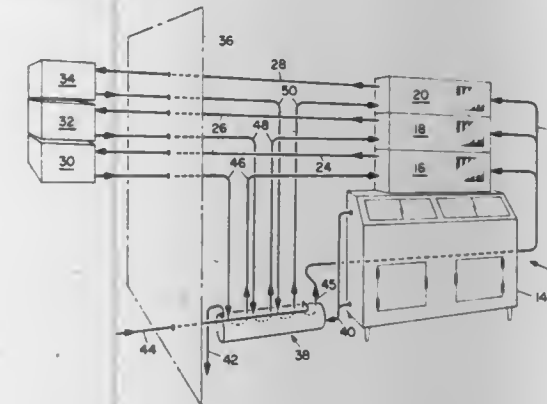
valve stem being disposed centrally of the access valve and the abutment being oriented along the longitudinal axis of the tubular member in alignment with the valve stem, said means on the tubular member for communication with a refrigeration supply assembly including at least one fitting having a laterally extending branch which is externally threaded for coupling with a refrigerant supply means, said branch being internally threaded, and a valve means duplicative of the access valve in the internally threaded portion of the branch for actuation to an open position when the refrigerant supply assembly is connected thereto.

#### 4,338,794 HIGH EFFICIENCY ICE-MAKING SYSTEM

Hans Haasis, Jr., 1421 Duarte Cir., Simi Valley, Calif. 93065  
Filed Mar. 17, 1980, Ser. No. 130,691  
Int. Cl.<sup>3</sup> F25C 1/00

U.S. Cl. 62—348

7 Claims



1. A high production ice-making system comprising: an ice-making system including a base having a storage bin and at least one ice-making and harvesting unit; heat-exchanger means including a first input cold section and a second section; means for supplying drain water from said ice-making unit to said heat exchanger means to flow through said heat exchanger means from said input cold section to said second section; a first coil mounted within the input section of said heat exchanger means; means for routing input water to be frozen through said first coil and then to said ice-making unit; at least one additional heat exchange coil mounted in the second section of said heat exchanger means; means for routing the condensed liquid refrigerant coolant for said ice-making unit through said additional coil to further cool said refrigerant liquid below the ambient temperature prior to the expansion of said refrigerant liquid within said ice-making unit; and said heat exchanger means being provided with means located between the first and second sections thereof to avoid undue mixing of the cold water supplied to said heat exchanger.

#### 4,338,795 BEVERAGE INSULATING AND COOLING RECEPTACLE

Robert C. House, Jr., 21689 Albion, Farmington Hills, Mich. 48024

Filed Apr. 13, 1981, Ser. No. 253,436  
Int. Cl.<sup>3</sup> F25D 3/08

U.S. Cl. 62—372

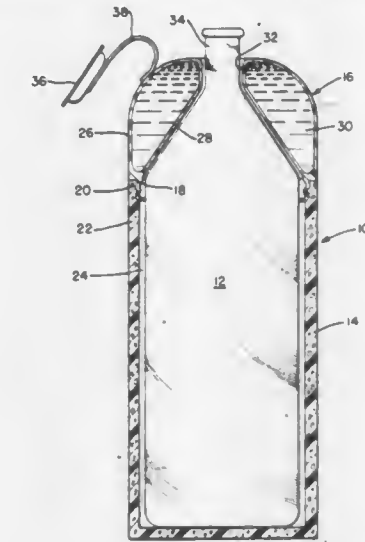
4 Claims

1. An insulating and cooling receptacle for a beverage-containing cylindrical bottle of the type having an elongated tapering neck terminating in a top portion of a diameter which is significantly less than that of the main body of the bottle, which comprises:

a hollow cylindrical base portion having an open top and dimensioned so its internal diameter leaves a thin annular

air gap between the side walls of said base portion and the beverage bottle to be removably received therein, said base portion being further dimensioned so its height substantially corresponds with the height of the straight-sided cylindrical portion of said beverage bottle;

a cap portion dimensioned to be removably secured to the open top of said base portion and of sufficient height to permit only enough of the top portion of the beverage bottle to project therefrom as is required to comfortably permit beverage to be poured from the bottle or to be drunk directly therefrom while the bottle is contained within the receptacle, said cap portion having a centrally located opening at its top to permit said projection of the top portion of the bottle, said cap portion having inner and outer concentric walls joined together near their upper



and lower extremities to create a fluid-tight annular chamber therebetween which is permanently filled with a freezable substance, said outer wall being generally cylindrical to form an upward extension of said base portion side walls when secured thereto, said inner wall being generally conical and converging upwardly from a lower junction with said outer wall toward an upper junction at said cap portion opening with a radially inwardly extending portion of said outer wall, said inner wall being shaped and dimensioned to be closely spaced from the tapered neck of the bottle, thereby permitting maximum enclosed volume within said annular chamber for a given external diameter of said base portion; and means for removably securing said cap portion to said base portion.

#### 4,338,796 SLIDABLE HOMOKINETIC TRIPOD JOINT AND A CORRESPONDING TRANSMISSION HAVING A FLOATING SHAFT

Michel A. Orain, Conflans Ste Honorine, France, assignor to Glaenger Spicer, Poissy, France

Filed Mar. 25, 1980, Ser. No. 133,683  
Claims priority, application France, Apr. 4, 1979, 79 08452  
Int. Cl.<sup>3</sup> F16D 3/30

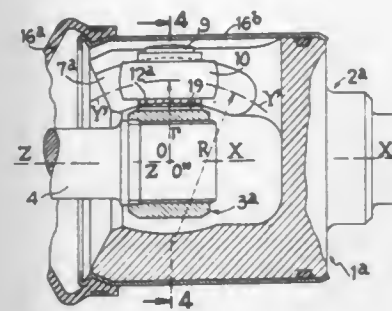
U.S. Cl. 464—111

6 Claims

1. A slidable homokinetic tripod joint comprising a tulip element which defines three raceways having a part-circular cross-sectional shape, a tripod element which has a cylindrical skirt portion for fixing the tripod element to a shaft and three arms which extend radially from the skirt portion, three part-spherical rollers which are respectively freely rotatably and slidably mounted on the three arms, and a needle bearing interposed between each roller and the respective arm, each roller being received in a respective raceway of said raceways and the tripod element being axially free inside the tulip element.



ment, the raceways of the tulip element having the shape of a torus and the ratio of the maximum distance between the axis



of the tulip element and the axis of the tori defining the raceways to the radius of said tori being between  $\frac{1}{4}$  and  $\frac{3}{4}$ .

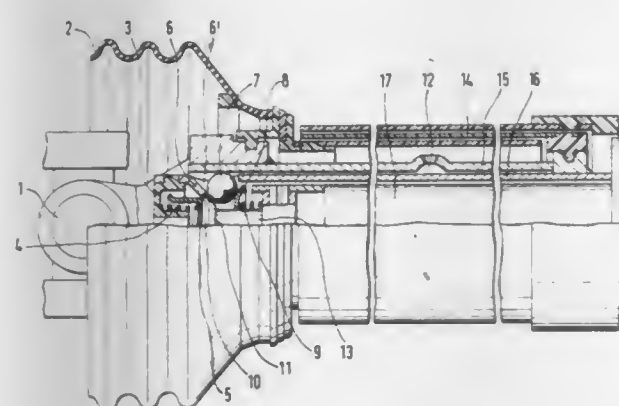
#### 4,338,797 TRISHAFT TELESCOPING ASSEMBLY FOR TORQUE TRANSMISSION

Paul Herchenbach, Ruppichterth, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Feb. 25, 1980, Ser. No. 124,147  
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1979, 2908029

Int. Cl.<sup>3</sup> F16D 3/06  
U.S. Cl. 464—167

6 Claims



1. A torque transmitting shaft assembly particularly suited for driving agricultural implements comprising: an inner hollow shaft member, an intermediate hollow shaft member and an outer hollow shaft member arranged for telescoping movement relative to each other; aperture means in said intermediate shaft member; interlocking ball means held in said aperture means in radially movable engagement for effecting releasable axial interlocking engagement between said inner, said outer and said intermediate shaft members; stop means having said ball means alternately engaging therein provided on said inner shaft member and said outer shaft member; cover means provided on said intermediate shaft member at an end thereof having said ball means; locking ring means adapted to be moved toward said aperture means by first spring means; conically shaped attachment means including a shaft portion extending axially from a conically shaped head thereof provided at a telescopically innermost end of said inner shaft member; a conical ring member axially movably mounted on said shaft portion; and second spring means biasing said ring member on said shaft portion in a direction toward said conically shaped head; said aperture means being provided at a side thereof with radially inwardly facing oblique surface means; said interlocking ball means having a radially inwardly facing side bearing against said oblique surface means upon locking of said intermediate shaft member relative to said inner shaft member and relative to said intermediate shaft member.

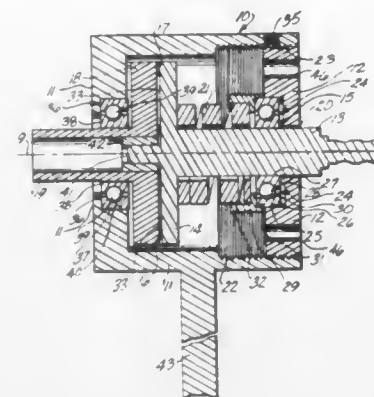
#### 4,338,798 ADJUSTABLE TORQUE LIMITING APPARATUS

Russell A. Gilman, 5241 Village Cir. Dr., Temple City, Calif. 91780

Filed Jun. 5, 1980, Ser. No. 156,658  
Int. Cl.<sup>3</sup> F16D 7/02

U.S. Cl. 464—23

43 Claims



1. Adjustable torque limiting apparatus comprising:  
a housing defining a cylindrical chamber open at one end and substantially closed at the other end;  
an adjustable plate covering the open end of the housing, means for adjusting the plate along the central longitudinal axis of the cylindrical chamber;  
a first rotatable shaft extending through the adjustable plate into the chamber with its longitudinal axis coincident with that of the chamber;  
a first disk having a first frictional circular surface, the disk attached to the end of the first shaft located in the interior of the chamber, the shaft having its central axis coincident with that of the chamber;  
a second rotatable shaft extending through the substantially closed end of the housing into the chamber with its longitudinal axis coincident with that of the chamber, the shaft being secured to prevent axial movement out of the chamber;  
a second disk having a second circular surface, the disk attached to the end of the second shaft having a central axis coincident with the central axis of the first disk, the first and second frictional surfaces being frictionally coupled; and  
means for urging the disk together.

#### 4,338,799 THREAD GUIDANCE SYSTEM

Eugen Eberwein, Leinfelden-Echterdingen; Heinrich Elsässer, Stuttgart; Willi Gaiser, Gäufelden; Eberhard Leins, Filderstadt; Klaus Pape, Reutlingen, and Manfred Walter, Aichtal, all of Fed. Rep. of Germany, assignors to Sulzer Morat GmbH, Fed. Rep. of Germany

Filed Jun. 11, 1980, Ser. No. 158,513  
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925217

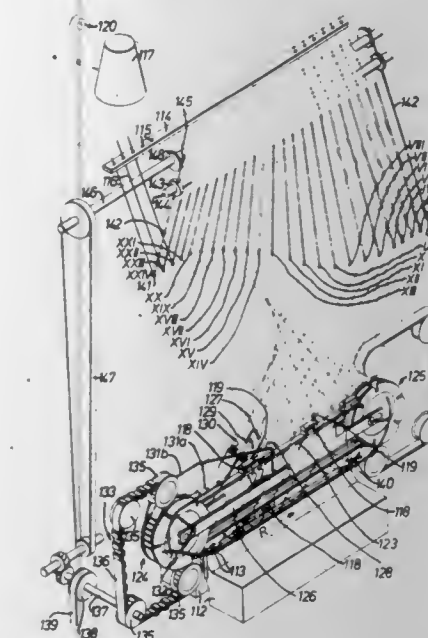
Int. Cl.<sup>3</sup> D04B 3/06, 15/52

U.S. Cl. 66—125 R

9 Claims

1. Thread guidance system for the feeding of a plurality of threads to a textile machine working the threads, having a plurality of thread carriers running successively on an endless path, the threads being carried from supply spools by movable

thread guides to the thread carriers, and a device being provided for preventing the twisting of the threads, characterized



in that the thread guides are movable individually and independently of one another.

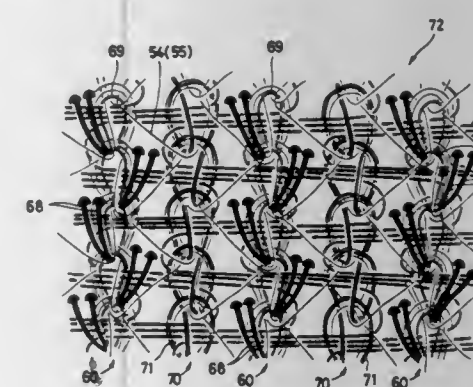
#### 4,338,800 VELVET-TYPE FASTENER WEB

Yoshio Matsuda, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed May 8, 1980, Ser. No. 147,760  
Claims priority, application Japan, May 9, 1979, 54-56789  
Int. Cl.<sup>3</sup> D04B 7/12, 9/12, 11/08, 23/08

U.S. Cl. 66—194

7 Claims



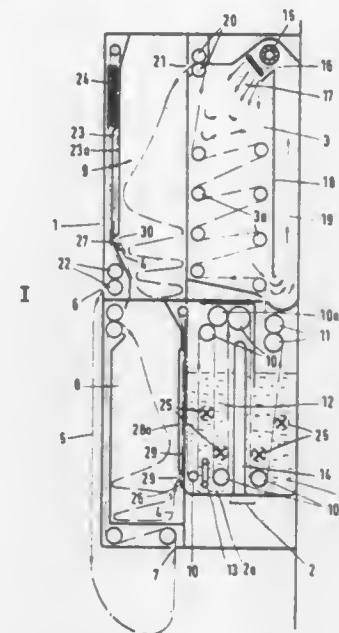
1. A velvet-type fastener web comprising:  
(a) a knitted ground structure including a first set of threads having stitches constituting wales and courses, and a second set of threads connecting said wales transversely; and  
(b) a series of loops of thermoplastic monofilament knitted with said stitches in each of selected wales, each of said loops including a pair of stems projecting from said knitted ground structure at one of said courses and having a pair of locking ends, respectively.

#### 4,338,801 AUTOMATIC TOWEL DISPENSER

Bernd Beitecke, Dortmund, and Reinhold Schmidt, Bochum, both of Fed. Rep. of Germany, assignors to LUK Lamellen und Kupplungsbau GmbH, Bielefeld, Fed. Rep. of Germany  
Continuation of Ser. No. 50,640, Jun. 21, 1979, abandoned. This application Mar. 18, 1981, Ser. No. 244,901  
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1978, 2827218

Int. Cl.<sup>3</sup> A47K 10/30  
U.S. Cl. 68—13 R

4 Claims



1. An automatic dispenser for an endless towel, comprising a housing having a delivery slot and an inlet slot; a washing and a drying chamber provided in said housing and defining first and second portions of an elongated path for the endless towel a cleaned section of which is available for use externally of said housing between said slots and which is movable along said path in a direction from said inlet slot, through said washing chamber, through said drying chamber and to said delivery slot; and means provided in said housing and defining additional portions of said path, including a first supply chamber for variably stacking and looping a plurality of superimposed soiled towel sections between said inlet slot and said washing chamber, a second supply chamber for variably stacking and looping a plurality of superimposed cleaned towel sections between said drying chamber and said delivery slot, said supply chambers having upper portions provided with inlets for admission of the towel sections into their interior from above and lower portions wherein the loops of towel sections begin to form and pile up on top of each other, and first and second unfolding shafts having entry slots respectively communicating with said first and second supply chambers at levels above the respective lower portions and at most halfway between the upper and lower portions of the respective supply chambers, said first shaft being disposed between said first supply chamber and said washing chamber and said second shaft being disposed between said second supply chamber and said delivery slot.

#### 4,338,802 AGITATOR MOUNTED FILTER FOR AN AUTOMATIC WASHER

William Ohmann, St. Joseph Township, Berrien County, and Edward E. Wiessner, Lincoln Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 27, 1980, Ser. No. 163,585  
Int. Cl.<sup>3</sup> D06F 13/02

U.S. Cl. 68—18 FA

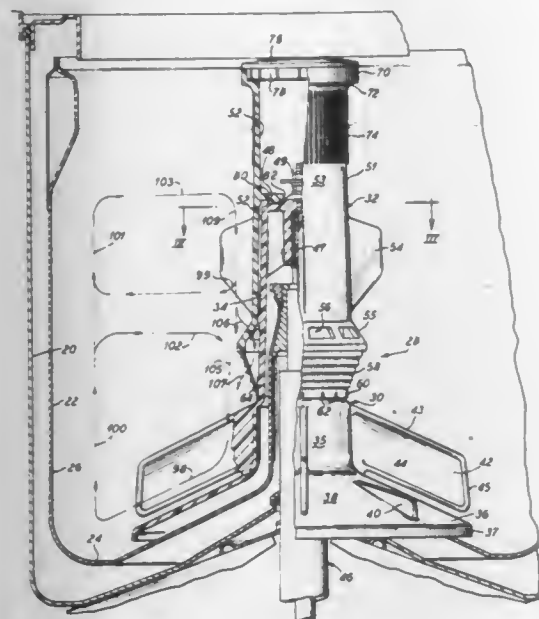
10 Claims

1. In a vertical axis washing machine having a wash receptacle, a drive means and an agitation means within said receptacle,



cle driven by said drive means; said agitation means comprising:

an inner oscillatory agitator section having a vertical central hub having an upper portion and including a bottom portion forming a skirt and a plurality of vanes, said vanes mounted adjacent said skirt formed at the bottom of said hub, and  
an outer oscillatory agitator section comprising a barrel fitting over said upper portion of said inner agitator hub,



said outer agitator section forming a lower portion and having a conical flange having openings therethrough formed near said lower portion, and an inverted conical section comprising a filter means affixed to said flange, said filter means forming a lower end of said outer agitator section, whereby said vanes impel liquid in said wash receptacle to flow down along the barrel of the outer agitator section, in through said flange openings and out through said filter means to separate filterable substances from said liquid.

#### 4,338,803 SKIVING MACHINE FOR HIDES AND SIMILAR MATERIALS

Danilo Paccagnella, Via Oltrebrenta No. 6, Noventa Padovana, Padova, Italy

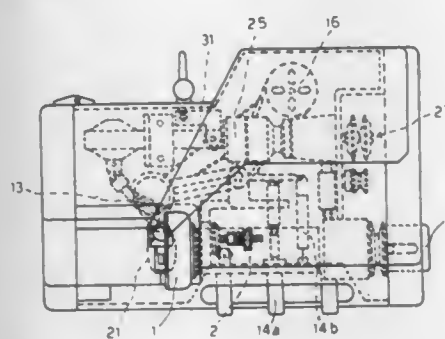
Filed Jul. 29, 1980, Ser. No. 173,419

Claims priority, application Italy, Jul. 31, 1979, 41605 A/79

Int. Cl.<sup>3</sup> C14B 1/14; A43B 8/34

U.S. Cl. 69—16

8 Claims



1. A skiving machine for hides and similar materials comprising a dish cutter rotary supported by a horizontal shaft connected to a driving shaft by means of a coupling device capable of permitting axial movement of the shaft of the cutter, the machine comprising more over a feeding roller for material to be skived, close to the cutting edge of the cutter and a device for grinding the cutting edge of said cutter, in which the device connecting the cutter shaft to the driving shaft comprises a first hollow shaft through which one end of the cutter shaft slides, said hollow shaft having at least one longitudinal slot in which slide a pin radially protruding from the extension

of the shaft of the cutter, and in which the device for grinding the cutting edge of the cutter comprises a grinding wheel operated by an independent motor and supported by an arm laterally hinged to the cutter, so that the axis of rotation of the grinding wheel moves along an arc of circle tangent to a straight line substantially at right angles to the cutting edge of the cutter.

#### 4,338,804 LATCH BOLT OPERATING DEVICE HAVING IMPROVED SHIELD CONSTRUCTION TO DETER PROBE MANIPULATION

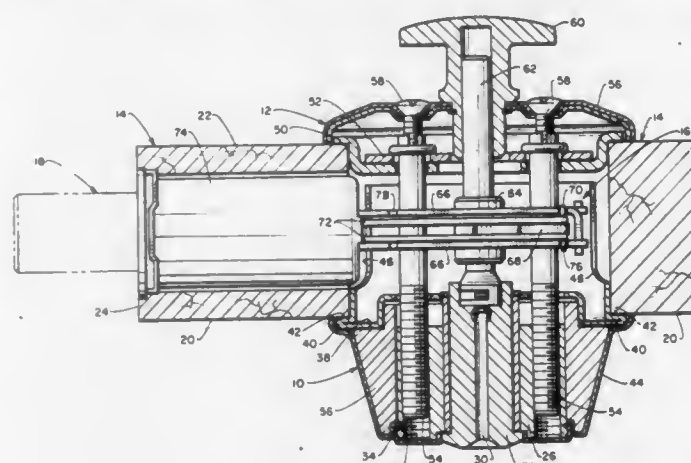
Paul G. Solovieff, Tustin, Calif., assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Sep. 26, 1980, Ser. No. 191,279

Int. Cl.<sup>3</sup> E05B 9/04

U.S. Cl. 70—134

10 Claims



1. In a latch construction of the type for mounting in doors and the like with a bolt extendable from a door edge, a latch driving mechanism mounted within the door operably connected to the bolt, exterior and interior operators respectively engaged with exterior and interior faces of the door operably connected to the latch driving mechanism and each operable for moving the bolt between extended and retracted positions through movement of the latch driving mechanism, the exterior operator including a lock cylinder telescoping a lock plug and telescoped by a transversely thickened and hardened metal guard collar, longitudinally reactive abutment means between the lock cylinder and the guard collar for the lock cylinder to retain the guard collar longitudinally inwardly in assembly, fastening means longitudinally between the interior and exterior operators retaining the exterior operator in assembly and through the abutment means the guard collar in assembly; the improvement comprising: a metal shield longitudinally outwardly transversely abutting said guard collar and longitudinally inwardly transversely abutting said door exterior face so that said guard collar is retained in assembly by said lock cylinder and fastening means and said shield is retained in assembly by said guard collar, said shield extending longitudinally inwardly into said door interior at least partially annularly around a portion of said latch driving mechanism shielding said latch driving mechanism portion to deter surreptitious manipulation thereof by penetration through the door exterior face.

#### 4,338,805 LOCK

Lennart Nygren, Smörblommervägen 2B, 73400 Hallstahammar, Sweden

PCT No. PCT/SE79/00208, § 371 Date Jun. 18, 1980, § 102(e) Date May 27, 1980, PCT Pub. No. WO80/00860, PCT Pub. Date May 1, 1981

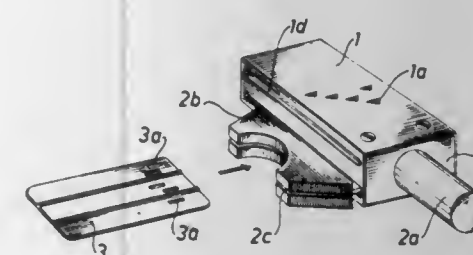
PCT Filed Oct. 15, 1979, Ser. No. 199,512

Claims priority, application Sweden, Oct. 18, 1978, 7810878

Int. Cl.<sup>3</sup> E05B 21/00, 25/00

U.S. Cl. 70—134

9 Claims



1. A lock including a lock casing, a locking mechanism displaceable in said lock casing and connected to a latch bolt, and annular blocking means, which are movable transversally to the displacement direction of the locking mechanism and resiliently loaded towards positions blocking the locking mechanism, the blocking means being adapted be brought to releasing positions by insertion of a card serving as a key and having recesses corresponding to the blocking means, said blocking means being entirely guided in the displaceable locking mechanism and movable between two blocking end positions, in which each blocking means is in locking engagement with the lock casing, and said card belonging to the lock having through-going, elongated slits located and dimensioned to receive arcuate portions of the blocking means, so that upon insertion of the card all the blocking means are brought to intermediate positions permitting the displacement of the locking mechanism.

#### 4,338,806 THEFT DETERENT LOCK

Roy L. Cox, Greenville, N.C., assignor to Frank Catricola, New York, N.Y., a part interest

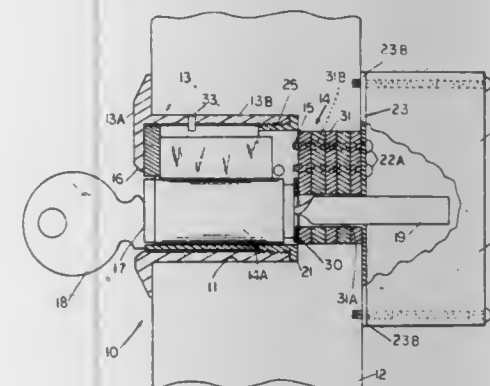
Continuation-in-part of Ser. No. 156,186, Jun. 3, 1979,

abandoned. This application Dec. 10, 1980, Ser. No. 215,035

Int. Cl.<sup>3</sup> E05B 9/04, 15/16

U.S. Cl. 70—417

20 Claims



1. A theft deterrent lock comprising a lock cylinder means having a keyway adapted to be received in a bore extending through a door, a protective sleeve circumscribing said lock cylinder means, said sleeve having a face plate adapted to extend in the plane of the door, said face plate having an opening therein adapted to be disposed in alignment with the keyway of said lock cylinder means, a lock nut connected to the end of said sleeve remote from said face plate for securing said lock cylinder means within said sleeve between said face plate

and said lock nut, said sleeve and connected lock nut being free to rotate relative to said lock cylinder means, and means for securing said lock cylinder means to the door within the bore therein whereby said protective sleeve prohibits one from tampering with said lock cylinder means.

#### 4,338,807

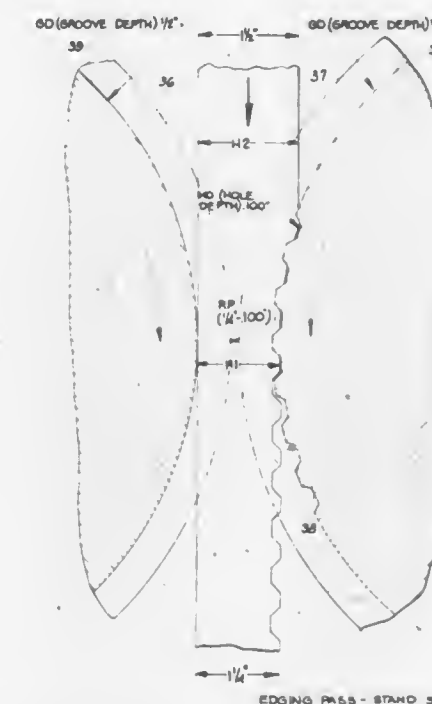
METHOD OF PRODUCING IMPROVED SERRATED FLATS USED IN THE MANUFACTURING OF GRATING  
Marion P. Ricono, Kansas City, and Harold D. Bridges, Independence, both of Mo., assignors to Armco Inc., Middletown, Ohio

Filed Aug. 26, 1980, Ser. No. 181,418

Int. Cl.<sup>3</sup> B21H 7/00

U.S. Cl. 72—187

20 Claims



1. A method of producing improved finished serrated flats having a predetermined width and thickness which comprises: continuously passing a hot billet of workable metal through a series of rolling stands to form an elongated hot flat; providing an edging pass comprised of a pair of spaced apart edging rolls having aligned, facing grooves, one of said grooves having trapezoidal holes therein; spacing said edging rolls so that the sum of the dimensions of the depth of the grooves and the parting distance of the edging rolls plus the depth of the holes is at least a specified amount less than the predetermined width of the hot flat entering the edging pass, the width of the grooves being at least as great as the thickness of the entering hot flat; and passing said hot flat through the bite of the edging rolls whereby to reduce the hot flat width to that desired in the finished serrated flat while imparting the desired serrations thereto by forcing hot metal to flow into the said trapezoidal holes to the extent necessary to obtain serrations of desired height on said flat.

#### 4,338,808

EAVESTROUGH CORNER BRACKET  
Jacob B. Weiss, 270 Bryden Rd., Kelowna, British Columbia, Canada V1X 3Y4

Filed Feb. 25, 1980, Ser. No. 124,317

Int. Cl.<sup>3</sup> B21D 53/36

U.S. Cl. 72—379

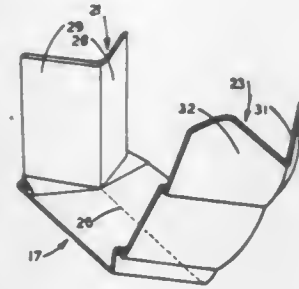
6 Claims

1. A method of folding an eavestrough corner bracket from an elongated bendable sheet strip having a longitudinal axis and inner, central and outer portions adapted to cooperate with corresponding inner, central and outer portions respectively of adjacent mitred ends of eavestroughing intersecting at a corner, the bracket having an intermediate portion disposed between the inner and central portions, the method of forming



a corner adjacent the inner portion of the bracket being characterized by the steps of:

- (a) folding the intermediate portion of the strip into a plurality of folds and folding the inner portion about the longitudinal axis to produce corner side portions inclined to each other to define side walls of a corner which is generally complementary to adjacent intersecting inner portions of the eavestroughing.



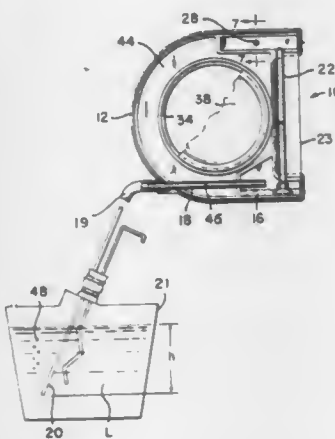
dinal axis to produce corner side portions inclined to each other to define side walls of a corner which is generally complementary to adjacent intersecting inner portions of the eavestroughing.

**4,338,809**  
**REMOTE READING, LIQUID PARAMETER MEASURING DEVICE AND IMPROVED PUMP**  
Richard L. Englund, 1831 127th Ave. Southeast, Bellevue, Wash. 98005

Filed Jun. 23, 1980, Ser. No. 161,657  
Int. Cl.<sup>3</sup> G01F 25/00, 23/14

U.S. Cl. 73-1 H

11 Claims

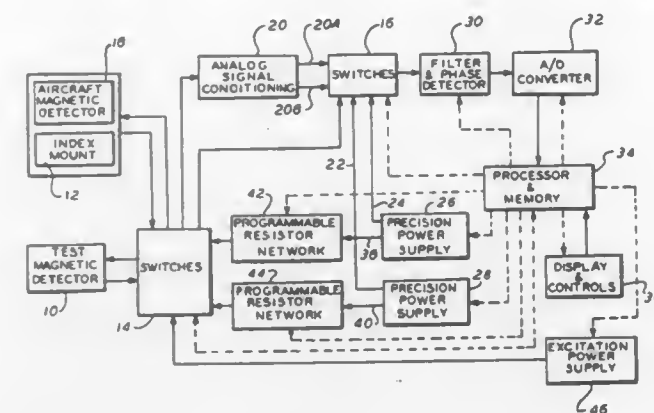


1. A hand-held, remote, reading, liquid parameter measuring device for measuring liquid in a container, comprising: means for manually creating a pneumatic pressure; a manometric measuring sight tube having spaced indicia calibrated to measure the parameter of the liquid to be determined; a reservoir of gauge liquid connected to a first end of said sight tube for movement into the sight tube upon pneumatic pressurization of the reservoir; means coupling the opposite second end of the sight tube to a pressure atmosphere equal to the atmosphere over the measured liquid in the container; pressure tube means coupling the gauge liquid reservoir and the measured liquid to said pressure-creating means; means for preventing loss of gauge liquid from said gauge liquid reservoir due to orientation in all directions of said measuring device in use; and means for rendering the sight tube inoperative when the device is tilted in all directions more than a predetermined angle to prevent substantial erroneous measurements.

**4,338,810**  
**CALIBRATOR FOR A MAGNETIC AZIMUTH DETECTOR**  
Bernard P. Gollomp, Far Rockaway, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.  
Filed Sep. 29, 1980, Ser. No. 191,988  
Int. Cl.<sup>3</sup> G01C 17/38

U.S. Cl. 73-1 E

15 Claims

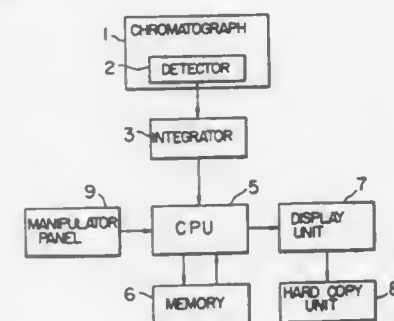


1. A calibrator for calibrating a service detector means of a craft, said service detector means being responsive to the magnetic field of the earth to provide a service heading signal, said service detector means being operable without said calibrator, said calibrator comprising: a test detector means for providing a test heading signal signifying the magnetic orientation of said test detector means with respect to the prevailing magnetic field of the earth; turntable means adapted to rotatably support said service detector means; and calibration means connected to said test detector means and responsive to said test heading signal, said calibration means being operable to determine the variation in said test heading signal due to changes in the magnetic field of the earth, said calibration means being operable to connect to said service detector means and determine the difference in said service heading signal when said craft is adjacent to and removed from said service detector means, said calibration means including: memory means operable to connect to said service detector means for storing a succession of values of said service heading signal.

**4,338,811**  
**METHOD AND APPARATUS FOR DIAGNOSIS OF DISEASE**  
Hiroyuki Miyagi, Mito; Yoshinori Takata, Ibaraki; Junkichi Miura, Hitachi, and Mamoru Taki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
Filed Oct. 29, 1980, Ser. No. 201,723  
Claims priority, application Japan, Oct. 30, 1979, 54-140613  
Int. Cl.<sup>3</sup> G01N 33/50

U.S. Cl. 73-23.1

10 Claims



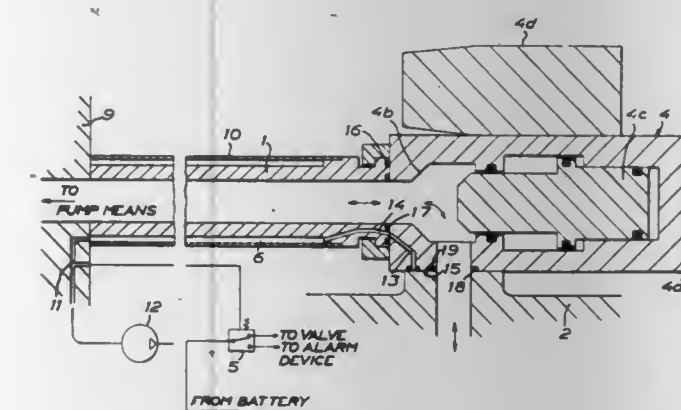
1. A method of diagnosing a disease of a subject by analyzing substances of a body fluid of the subject by means of chroma-

- tography and examining a chromatogram thus obtained, the method comprising the steps of:
- separating and detecting the substances in the body fluid of the subject to obtain a chromatogram including peaks corresponding to the individual substances;
  - integrating the individual peaks in the chromatogram of the subject;
  - forming a two-dimensional pattern diagram representing the relation between the integrated values of the peaks and the retention times in the chromatogram of the subject;
  - forming a two-dimensional upper limit pattern diagram and a lower limit pattern diagram relating to normal persons on the basis of previously stored data of the upper and lower limits of integrated values of peaks and the retention times in chromatograms obtained by separating and detecting the substances in a body fluid of normal persons;
  - judging the possibility of abnormality by comparing geographically the pattern diagram of the subject with the upper limit and lower limit pattern diagrams of the normal persons;
  - retrieving, when the result of judgment proves that the subject is abnormal, data corresponding to predetermined items of retrieval from a previously prepared file of data classified by diseases, said disease-classified data including upper and lower limits and mean values of integrated values of peaks and retention times in chromatograms obtained through separating and detecting substances of a body fluid of abnormal patients classified by diseases;
  - forming two-dimensional upper limit pattern diagrams and two-dimensional lower limit pattern diagrams of diseases on the basis of the upper and lower limits of the integrated values of peaks and the retention times in the retrieved data; and
  - selecting at least one disease having the pattern diagrams at least analogous to the pattern diagram of the subject by comparing geographically the pattern diagram of the subject with the upper limit and lower limit pattern diagrams of diseases.

**4,338,812**  
**SAFETY APPARATUS FOR AUTOMATIC SUPERVISION AND CONTROL OF A PRESSURE FLUID SYSTEM**  
Kenneth B. Lindgren, Borlänge, Sweden, assignor to Verkstad-sproduktion I Borlänge AB, Borlänge, Sweden  
Continuation of Ser. No. 967,325, Dec. 7, 1978, abandoned. This application Dec. 17, 1980, Ser. No. 217,331  
Claims priority, application Sweden, Dec. 9, 1977, 7714015  
Int. Cl.<sup>3</sup> G01M 3/02

U.S. Cl. 73-40.5 R

3 Claims



1. A safety apparatus for automatic leakage supervision in a system which includes a first and second member, said members each having a planar contact surface and a first fluid conducting passage which intersects this surface to form an opening therein, said members being sealingly interconnected such that their first fluid conducting passages are in communication with one another with said contact surfaces abutting against each other to form therebetween a contact zone which surrounds the openings, said first and second members each also having a second passage which leads to the contact zone

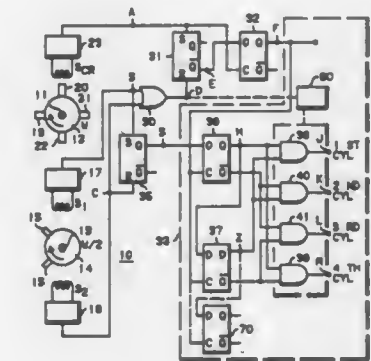
and is separate from the respective first passage, said second passages each extending along the entire length of the first passage in the respective member, means being provided for maintaining a predetermined fluid pressure in the second passage, and detector means being provided for detecting whether the pressure in the second passage deviates from the predetermined pressure whereby pressure deviations sensed by the detector will indicate leakage in the contact zone.

**4,338,813**  
**ELECTRONIC ENGINE SYNCHRONIZATION AND TIMING APPARATUS**  
Roy E. Hunninghaus, Des Plaines, and Randy L. Bolinger, Schaumburg, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Sep. 2, 1980, Ser. No. 183,657  
Int. Cl.<sup>3</sup> G01M 15/00

U.S. Cl. 73-116

17 Claims



1. An electronic engine synchronization and timing circuit comprising: an engine crankshaft driven by an engine at variable speeds and providing cyclic driving movement for engine cylinder pistons; a crankshaft body rotated by the crankshaft about an axis and having a plurality of peripheral portions spaced about said axis; crankshaft sensor means positioned stationary about said crankshaft body for sensing the rotational position of the crankshaft body and developing, in response to the passage of said peripheral portions of said crankshaft body, a crankshaft reference signal having alternating positive and negative logic states with state transitions of predetermined polarities at predetermined rotational positions of the engine crankshaft; an engine camshaft rotated at one half of the rotational speed of the engine crankshaft; a camshaft body rotated about an axis by the camshaft and having a plurality of spaced apart peripheral portions positioned within less than 180 degrees of angular rotation about said axis; at least a first stationary camshaft sensor means positioned about the camshaft body for sensing the rotational position of the camshaft body peripheral portions and providing in response thereto camshaft sensor signal pulses whose occurrence is related to predetermined camshaft positions; and circuitry means for receiving both said crankshaft reference signal and said camshaft signal pulses and providing at least one cylinder identification reference signal indicative of one particular camshaft rotational position by distinguishing between the various camshaft signal pulses by determining if said camshaft signal pulses occur during two sequential identical polarity states of said crankshaft reference signal, whereby said crankshaft reference signal is utilized not only to provide precise signal transitions related to specific rotational positions of the engine crankshaft, but is also utilized in identifying a specific camshaft reference rotational position.



4,338,814  
**DEVICE FOR MEASURING THE MASS OF A FLOWING MEDIUM**

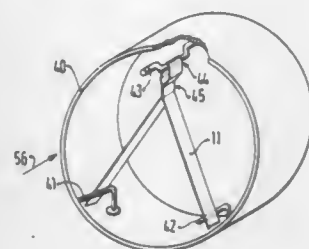
Peter Romann, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany  
 Filed Oct. 27, 1980, Ser. No. 200,722

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1979, 2947856

U.S. Cl. 73—118

Int. Cl.<sup>3</sup> G01F 1/68

9 Claims



1. A device for measuring the mass of a flowing medium, comprising a temperature-dependent resistor disposed in the flowing medium and a control means for controlling the temperature and resistance of the temperature-dependent resistor in closed-loop fashion in accordance with the mass of the flowing medium, a control variable of the control means being a standard for the mass of the flowing medium, wherein: said temperature-dependent resistor is embodied as a band having two wide faces and two narrow faces extending between opposite ends of the band; the device further comprises a sensor ring having a plurality of band support points positioned there, the support points including two terminal support points and an intermediate support point located between the two terminal support points; the band is disposed within the sensor ring and is guided from one end of the band to the other end of the band over the plurality of support points; and the guidance of the band is effected on the intermediate support point by a loop of the band, said band including portions extending away from the intermediate support point, and being connected in an electrically conductive manner with one another in a contact area of said band, the band being disposed in the flowing medium in such a manner that one of the narrow faces of the band performs as an exposed face disposed counter to the flow of the medium while the wide faces of the band extend substantially in the flow direction.

4,338,815  
**INDUCTIVE DISPLACEMENT TRANSDUCER**  
 Klaus-Jürgen Peters, Affalterbach; Franz-Ulrich Bosch, Stuttgart; Herbert Schindler, Hemmingen, and Hermann Nusser, Markgröningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany  
 Filed Nov. 14, 1980, Ser. No. 207,054  
 Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951648

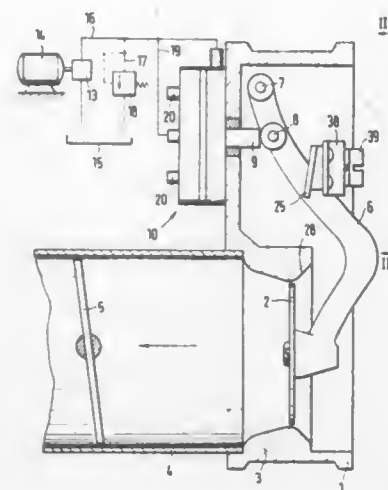
U.S. Cl. 73—118

Int. Cl.<sup>3</sup> G01M 15/00

7 Claims

1. An inductive displacement transducer for conversion of a mechanical movement into an electrical signal which in accordance with an arbitrarily predeterminable function depends on the movement of the object to be measured, in particular an air flow rate meter disposed in the intake tube of an internal combustion engine comprising at least one magnetic coil of ferromagnetic material disposed on a core, the inductivity of which magnetic coil is variable by means of a short-circuit ring displaceable on the core in accordance with the movement of the object to be measured, the core of the displacement transducer being made up of two E-shaped sets of arms disposed symmetrically relative to one another, one arm of which set acts as the

measuring arm set, the middle arm of which is surrounded on one end by a measuring magnetic coil and on the other end by a measuring short-circuit ring connected with the object to be



measured and the other arm set acts as the reference arm set, the middle arm of which is surrounded on one end by a reference magnetic coil and on the other end by a fixed reference short-circuit ring.

4,338,816  
**FUEL-CONSUMPTION MONITOR FOR DIESEL ENGINE**

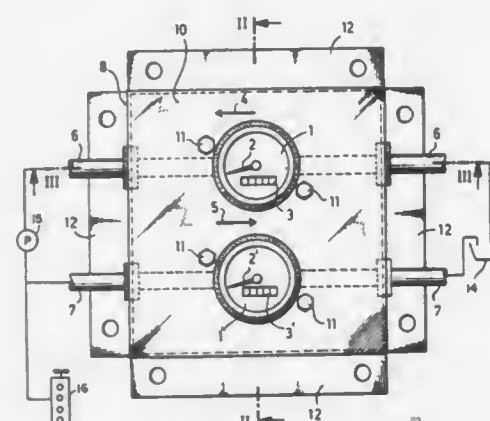
Georg Neff, Munich, Fed. Rep. of Germany, assignor to E. Gunter Bernstorff, Sinsheim, Fed. Rep. of Germany  
 Filed Jul. 15, 1980, Ser. No. 169,143

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2929045

U.S. Cl. 73—119 A

Int. Cl.<sup>3</sup> G01F 9/00

6 Claims



1. In combination with a diesel engine, a diesel-fuel tank, a fuel-feed line extending from said tank to said engine, a fuel pump in said line for drawing fuel out of said tank and supplying it to said engine, and a return line connected between said pump and said tank for conducting fuel not used by said engine back to said tank, a fuel-consumption monitor comprising: a housing; a feed flowmeter upstream of said pump in said feed line in said housing for measuring flow in said feed line; a return flowmeter in said return line in said housing for measuring flow in said return line, whereby the difference between the two measured flows constitutes the fuel consumed by said engine, said housing substantially surrounding said meters and having a wall on which both of said meters are mounted; and means connected to both of said meters for calculating the

difference between said flows and including a display mounted on said wall of said housing for displaying said difference.

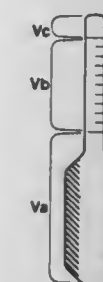
4,338,817  
**HYDROMETER WITH IMPROVED TEMPERATURE COMPENSATION**

George E. Callahan, Feldstrasse 34, 4000 Dusseldorf 30, Fed. Rep. of Germany

Filed May 2, 1980, Ser. No. 145,889  
 Int. Cl.<sup>3</sup> G01N 9/12

U.S. Cl. 73—448

3 Claims



1. A hydrometer for measuring the density of a fluid having a density within a predetermined range and a coefficient of thermal expansion that varies within this range, comprising a lower body volume  $V_a$  which is equal to the total mass of the hydrometer divided by the density of said fluid at the highest part of said range, and an intermediate scale volume  $V_b$  which together with said volume  $V_a$  is equal to the total mass of the hydrometer divided by the density of said fluid at the lowest part of said range, and an upper stem volume  $V_c$ , whereby said volume  $V_a$  is comprised of one or more materials so proportioned that the coefficient of thermal expansion of said volume  $V_a$  is approximately equal to that of the fluid at the highest part of said range, and said volume  $V_b$  is comprised of one or more materials so proportioned that the coefficient of thermal expansion of the combined said volumes  $V_a$  and  $V_b$  is approximately equal to that of said fluid at the lowest part of said range.

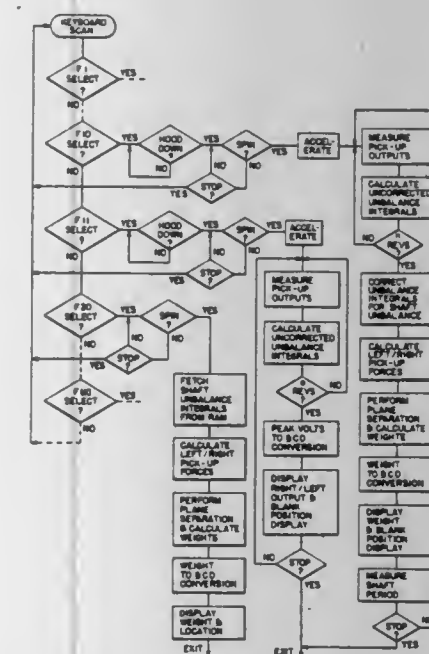
4,338,818  
**METHOD FOR DETERMINING ERROR SOURCES IN A WHEEL BALANCER**

Jerry M. Hill, North Little Rock, and Ronald W. Carter, Conway, both of Ark., assignors to FMC Corporation, Chicago, Ill.

Filed Jul. 28, 1980, Ser. No. 172,724  
 Int. Cl.<sup>3</sup> G01M 1/22

U.S. Cl. 73—462

30 Claims



1. A method of detecting errors affecting measurement of

wheel unbalance compensation weights taken in a wheel balancer having a rotatable wheel mounting shaft supported in a framework, a wheel mount on the shaft formed to accept a wheel for attachment thereto, a motor coupled to drive the shaft rotationally, left and right force transducers mounted between the framework and the shaft so that they detect mass unbalance in the shaft and in structure secured to the wheel mount during shaft rotation, a display, a processor operating to monitor output from the force transducers, to control the motor and to provide signals coupled to the display indicative of unbalance compensation magnitude and location, and memory associated with the processor operating to store unloaded shaft unbalance and force transducer calibration data, comprising the steps of

accelerating the shaft to assume a continuous speed within a predetermined speed range, measuring the force transducer outputs, calculating uncorrected unbalance integrals from the force transducer outputs, correcting the unbalance integrals with the unloaded shaft unbalance data, calculating the forces at the left and right transducers from the corrected unbalance integrals and the stored calibration data for a predetermined number of shaft revolutions, calculating the unbalance compensation weights using a set of arbitrary wheel parameters and the corrected unbalance integrals obtained over the predetermined number of shaft revolutions, and repeating all of the foregoing steps after each completion of the predetermined number of shaft revolutions, whereby a series of compensation weight values is obtained and the stability of the system may be observed.

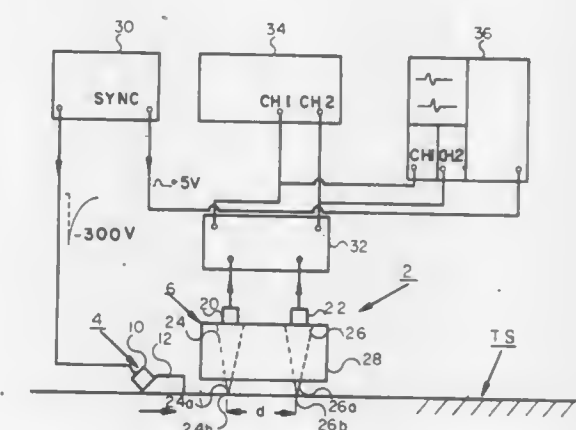
4,338,819  
**ACCELEROMETER INCLUDING AN OVERALL ARRANGEMENT FOR REDUCING TEMPERATURE RELATED ERRORS**

Richard D. Marquess, Concord, Calif., assignor to Systron-Donner Corporation, Concord, Calif.

Filed Sep. 8, 1980, Ser. No. 185,246  
 Int. Cl.<sup>3</sup> G01P 15/13

U.S. Cl. 73—497

7 Claims



1. In a pendulous type of accelerometer apparatus, a closed housing, a magnetic circuit arrangement located within said housing for the purpose of providing a magnetic field having a given constant flux density in a given area within said housing, means including a pendulous member mounted for pivotal movement within said housing and having a current carrying torque coil located within and responsive to said magnetic field for producing an electrical output signal corresponding to the acceleration to which said apparatus is subjected, said magnetic circuit arrangement containing temperature sensitive magnetic material which is sufficient to cause the flux density within said magnetic field to vary inversely with changes in temperature within said closed housing and thereby introduce a temperature related error into said electrical output signal



such that the latter does not correspond to said acceleration, and temperature compensating means for reducing said temperature related error, said compensating means including means for reducing the amount of change in flux density of said magnetic field as a result of said temperature changes so as to provide said temperature related error reduction said change in flux density reducing means including flux leakage means located within said housing and acting on said magnetic circuit arrangement for causing a constant amount of flux to leak from said magnetic field when the latter displays said given flux density at a corresponding temperature within said chamber, said flux leakage means varying the amount of flux which leaks from said field in response to and inversely with said temperature changes for providing said reduction in the amount of change in flux density of said magnetic field caused by said temperature changes, said flux leakage means including a flux conductive plate-like member located in spaced relationship with said magnetic circuit arrangement, and means supporting said member such that the spacing between the latter and said magnetic circuit arrangement varies directly with said temperature changes so as to provide said varying amount of flux leakage, said plate-like member and supporting means together forming a bellows which expands with decreases in said temperature changes and contracts with increases in said temperature changes, said housing being a sealed housing containing oil which surrounds said pendulous member, magnetic circuit arrangement and said bellows, said oil being of a type which changes in volume directly with said temperature changes, said bellows expanding with and as a result of decreases in said oil volume and contracting with and as a result of increases in said oil volume whereby to provide said spacing variation and to compensate for said changes in volume.

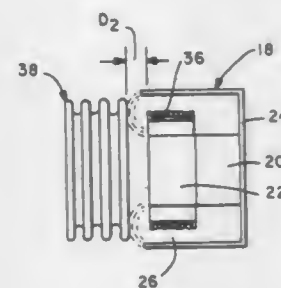
4,338,820

# METHOD AND APPARATUS FOR GENERATING AND DETECTING ACOUSTIC SURFACE WAVES PARTICULARLY USEFUL IN THE NON-DESTRUCTIVE TESTING OF MATERIALS

Kenneth Jassby, and Aaron Zeiger, both of Herzlia, Israel, assignors to Ramot University Authority for Applied Research & Industrial Development, Tel Aviv, Israel  
Filed Sep. 25, 1980, Ser. No. 190,616  
Int. Cl.<sup>3</sup> G01N 29/00

U.S. Cl. 73—597

21 Claims



1. The method of generating and detecting an acoustic surface wave particularly useful in the nondestructive testing of materials by measuring the velocity of an acoustic surface wave through a test sample, characterized in that:

- (a) the acoustic surface wave is generated by a generator transducer coupled to the test sample such as to cause the generation of an acoustic surface wave therealong; and
- (b) the acoustic surface wave is detected by detector means including two pick-up transducers each coupled to the surface of the test sample by a coupling device having a narrow end in contact with the surface of the test sample and its longitudinal axis perpendicular thereto such that said narrow end detects the shear component of the acoustic surface wave and generates a bulk wave which travels longitudinally through the coupling device, away from its narrow end, to the pick-up transducer, the narrow ends of the two coupling devices contacting the surface of the test

sample being spaced from each other a predetermined distance in the direction of travel of the acoustic surface wave therealong.

8. Apparatus particularly useful for generating and detecting acoustic surface waves for the nondestructive testing of materials, comprising:

- (a) generator means including a generator transducer, and a generator coupling device for coupling same to a test sample such as to cause the generation of an acoustic surface wave therealong; and
- (b) detector means including two pick-up transducers and two coupling devices, each coupling one of said transducers to the surface of the test sample, each of said pick-up coupling devices being disposed such as to have a narrow end exposed for contact with the test sample and its longitudinal axis perpendicular to said surface such that said narrow end is effective to detect the shear component of the acoustic surface wave and to generate a bulk wave which travels longitudinally through the coupling device, away from its narrow end, to the pick-up transducer, the narrow ends of the two coupling devices contacting the surface of the test sample being spaced from each other a predetermined distance in the direction of travel of the acoustic surface wave therealong.

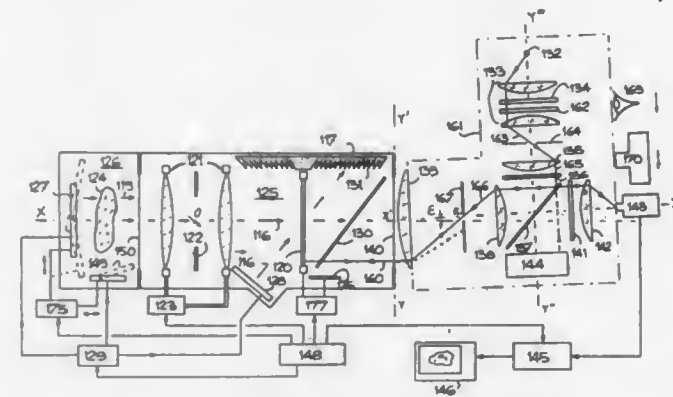
4,338,821

# LIQUID CRYSTAL CELL FOR ACOUSTICAL IMAGING

Jean-Luc Dion, 3760 rue Montpelier, Trois-Rivieres Ouest, Quebec, Canada G8Y 3P2  
Filed Oct. 12, 1979, Ser. No. 84,087  
Claims priority, application Canada, Oct. 13, 1978, 313460  
Int. Cl.<sup>3</sup> G01N 29/00; G02F 1/11

U.S. Cl. 73—603

12 Claims



1. Apparatus for acoustic imaging of an object, comprising: a main enclosure subdivided into a first and a second compartment, each containing a liquid medium allowing propagation of ultrasonic waves, the said compartments being separated by an acoustically transparent membrane; a first large area ultrasonic transducer located in the first compartment; a first system of hydro-acoustic lenses; an acoustic-optical cell comprising an oriented liquid crystal layer, contained between stratified walls having an acoustic impedance matched to the acoustic impedance of the propagation media adjacent to said walls for widely varying values of incidence angles, in such a way that the ultrasonic waves incident on said cell pass freely through said cell with minimum reflections on said walls of said cell, so producing maximum interaction with said liquid crystal, the molecules of said liquid crystal being induced to reorient perpendicularly to the acoustic displacement, the initial orientation of said molecules being preferably perpendicular to said walls, at least one of said walls being optically transparent,
- a plate made of an optically transparent and acoustically reflecting material; and
- an optical exit window, all located inside the second com-

partment and disposed along the same principal axis passing through the acoustically transparent membrane; an optical system to produce and send a light beam on the liquid crystal cell; and an acoustic absorber located inside the second compartment, but away from the principal axis, said absorber being placed so as to absorb the ultrasonic waves coming from the first compartment into which is placed the object to be visualized and being reflected by said acoustically reflecting plate which is for this purpose at an angle relative to the principal axis, the diopter or exit window being used to see the acoustic image.

wherein is comprised a second large area ultrasonic transducer, laterally located away from the principal axis, between the first lens system and the said liquid crystal cell, the said second transducer being placed in such a way as to emit a plane acoustic wave toward the said cell, a fraction of this obliquely emitted wave passing through the cell and being absorbed by the acoustic absorber which also receives the waves coming from the first compartment, another fraction of this obliquely emitted wave being reflected on said cell and also absorbed by the acoustic absorber which extends on both sides of said cell, said second transducer being excited by the same generator than the first transducer.

5. An acousto-optical cell, comprising an oriented nematic liquid crystal layer contained between multilayered walls, at least one of said walls being comprised of two rigid plates having substantially the same thickness, said plates being separated by a different material having a substantially lower acoustic impedance than the plates, said cell achieving good acoustic impedance matching with an adjacent propagation medium for widely varying angles of incidence of the acoustic energy.

4,338,822

# METHOD AND APPARATUS FOR NON-CONTACT ULTRASONIC FLAW DETECTION

Hisao Yamaguchi, Akashi, and Kazuo Fujisawa, Nishinomiya, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

PCT No. PCT/JP79/00151, § 371 Date Jan. 22, 1980, § 102(e) Date Jan. 22, 1980, PCT Pub. No. WO80/00099, PCT Pub. Date Jan. 24, 1980

PCT Filed Jun. 13, 1979, Ser. No. 191,338

Claims priority, application Japan, Jun. 20, 1978, 53/75016; Sep. 22, 1978, 53/117089

Int. Cl.<sup>3</sup> G01N 29/04

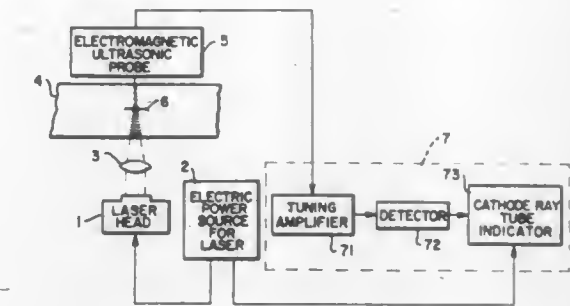
U.S. Cl. 73—643

7 Claims

2. An apparatus for non-contact ultrasonic flaw detection, comprising:

- a laser beam generator for emitting a pulsed laser beam;
- a plurality of half-mirrors and a total reflection mirror disposed substantially in parallel with one another in the path of the laser beam generated by said laser beam generator so as to intersect said laser beam substantially at equal angles;
- a plurality of rotary mirrors disposed in the paths of the portions of the laser beam reflected by said mirrors, respectively, and having driving means connected thereto for changing the angles of the reflecting surfaces of the rotary mirrors relative to the material to be inspected;
- a plurality of electromagnetic ultrasonic probes for a plurality of propagation modes, disposed close to the surface of the material to be inspected and each consisting of a static magnetic field forming member and a detector coil;
- a timing signal generator for generating a pulse signal in operative association with the movement of said rotary mirrors;
- a scanning control device connected to said probes and said timing signal generator for controlling the turning on-and-

off of said electromagnetic ultrasonic probes in response to said pulse signal; and



a flaw detector connected to said probes for receiving signals from said probes and displaying the results of the flaw detection.

4,338,823

# VIBRATION SENSOR

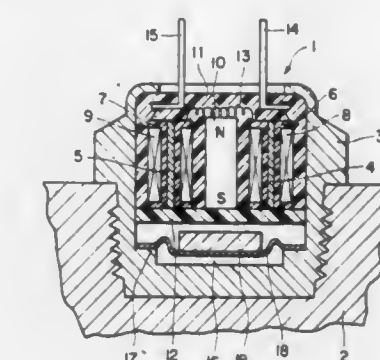
Shinichiro Iwasaki, Auburn Heights, Mich., assignor to Aisin Seiki Company, Ltd., Kariya, Japan

Filed Aug. 29, 1980, Ser. No. 182,701

Int. Cl.<sup>3</sup> G01H 11/00

U.S. Cl. 73—654

5 Claims



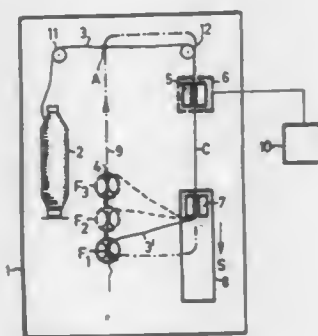
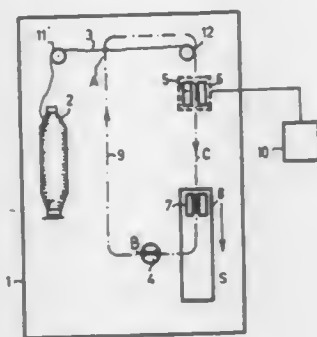
1. A vibration sensor arrangement which comprises: a body means mounted on a structural block susceptible to vibrations and adapted to vibrate with the structural block; resilient means disposed within said body; a ferromagnetic material member mounted on said resilient means and adapted to have a relative displacement caused by the vibrations of said body; permanent magnet means and at least one magnetically soft core means disposed adjacent to the range of the relative displacement of said ferromagnetic material member; an electrical coil wound around said magnetically soft core means; and
- detection means for applying a predetermined pulse voltage to said electrical coil to saturate said core means and for detecting changes in the external magnetic field strength provided by said permanent magnet means acting on said magnetically soft core means according to changes in the relative position of said ferromagnetic material member, comprising means for producing an output signal indica-



tive of said vibrations based on the time between application of said pulse voltage and saturation of said core means.

**4,338,824**  
**METHOD OF ADJUSTING A GIVEN PRETENSION IN THREADS ON TENSILE STRENGTH TESTING APPARATUS AND THE LIKE**  
 Peter Brassel, Uster, and Rudolf Zingg, Duebendorf, both of Switzerland, assignors to Zellweger, Ltd., Uster, Switzerland  
 Filed Jul. 1, 1980, Ser. No. 164,941  
 Claims priority, application Switzerland, Sep. 21, 1979, 8546/79

Int. Cl.<sup>3</sup> G01N 3/08  
 U.S. Cl. 73—828  
 5 Claims

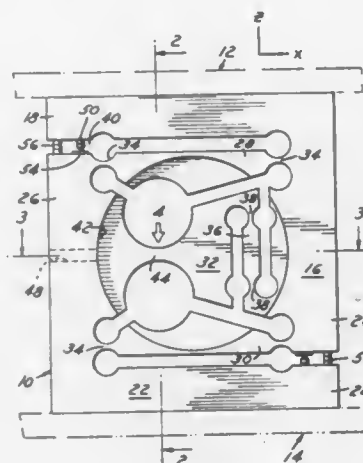


1. A method of adjusting a given pretension in threads on a tensile strength testing apparatus and the like having a thread insertion mechanism and a pair of thread clamps for securing the thread, one of which is connected to a force measuring device, comprising the steps of initially inserting the thread into the thread clamps by means of a transport clamp in the thread insertion mechanism, closing at least said one of the thread clamps, thereafter measuring the initial tension by means of the force measuring device and then applying a given pretension to the thread based on the measured initial tension by moving the thread clamps relative to each other.

**4,338,825**  
**STRAIN GAGE LOAD CELL**  
 Kish Amlani, Troy; Frederick J. Zink, Detroit; Craig Morgan, Novi, and Thomas Ellwood, Mt. Clemens, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio  
 Filed Oct. 15, 1980, Ser. No. 197,369  
 Int. Cl.<sup>3</sup> G01L 1/22

U.S. Cl. 73—862.65  
 7 Claims  
 1. In a load cell of the type which measures forces along and parallel to a first axis, comprising:  
 a substantially rigid force input structure to which the force to be measured is applied;  
 a substantially rigid force output structure adapted to be supported on a stationary reaction surface;  
 said force input and force output structures being in the form of oppositely oriented generally L-shaped structures, a first leg of said force input structure receiving the force to

be measured and a first leg of said force output structure engaging the reaction surface, said first two legs being generally parallel to each other and at right angles to the first axis, the second legs of each of said structures being generally parallel to each other and to the first axis, said force input and output structures being normally spaced from each other and interconnected for resilient relative movement in the direction of the first axis by resilient means including upper and lower flexure beams which are parallel to and between said first legs, said force input and output structures and said flexure beams defining a resilient parallelogram linkage lying in a plane parallel to the first axis, said flexure beams and their end connections being dimensioned and proportioned to be resilient to a relatively large degree to forces parallel to the first axis,

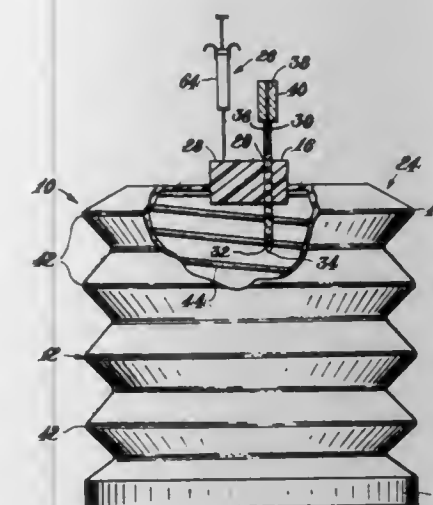


while being relatively stiffer to forces in all other directions;  
 said resilient means further including a sensing beam located between and parallel to said flexure beams, one end of said sensing beam being rigidly connected to said second leg of said force output structure and the other end of said sensing beam being connected to said second leg of said force input structure by a connection which is relatively flexible to the forces parallel to the axis of said sensing beam but which is substantially rigid to forces in the direction of the first axis;  
 said sensing beam being provided with strain gages which produce a signal responsive to the bending of said beam induced by forces applied to the load cell in a direction parallel to the first axis.

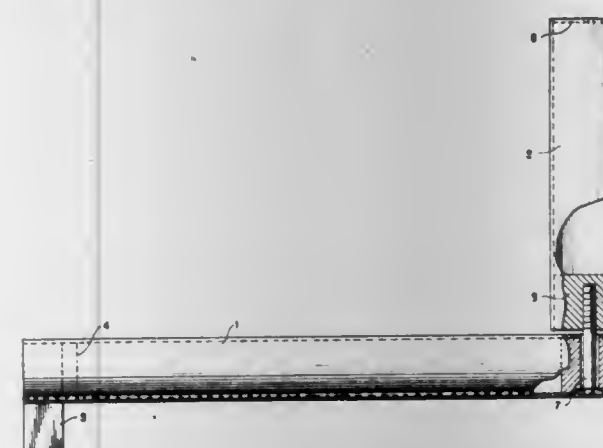
**4,338,826**  
**SAMPLING APPARATUS**  
 Marvin Jacoby; Stuart W. Jacoby; Robert E. Jacoby, and Robert A. Ellison, all of Rochester, N.Y., assignors to Air Test Labs, Inc., Rochester, N.Y.  
 Filed Sep. 11, 1980, Ser. No. 186,168  
 Int. Cl.<sup>3</sup> G01N 1/24

U.S. Cl. 73—864.62  
 18 Claims  
 1. An improved apparatus for the collection of atmospheric samples comprising:  
 a sealed manually collapsible receptacle including a hollow body comprising base and top elements and side walls, at least said side walls comprising a flexible thermoplastic or elastomeric material sufficiently flexible to allow easy manual compression;  
 venting means for the controlled introduction of the atmosphere surrounding said apparatus into said receptacle;  
 said venting mean comprising one or more resilient penetrable septum members fixedly attached and sealed to said receptacle, and  
 a hollow needle member having an aperture proximate its sharpened tip, said hollow needle member being insertable through said septum whereby gaseous atmosphere may pass into said receptacle; and

actuating means for automatically, controllably and progressively expanding said receptacle after the compression thereof, said expansion thereby creating a vacuum in said receptacle, said controlled expansion being effective to

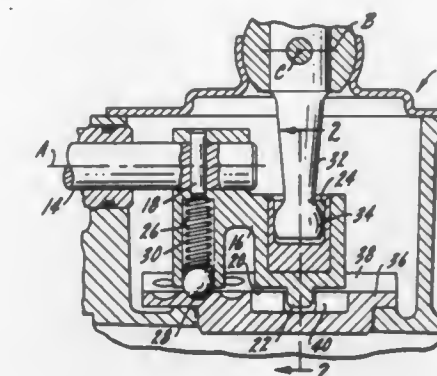


**4,338,827**  
**FLOATING MARINE WINCH HANDLE**  
 Rachael Hooker, 1312 N. Harper, W. Hollywood, Calif. 90046  
 Filed Apr. 24, 1978, Ser. No. 899,359  
 Int. Cl.<sup>3</sup> G05G 1/00; B62D 1/06  
 U.S. Cl. 74—545



1. A hollow laminated plastic three piece winch handle consisting of a hollowed tubular body, a hollowed tubular grip and a solid socket head; the socket head and body being bonded together; the grip being connected to the body by a stainless steel bolt and allowed to rotate freely; the design of the winch handle being at basic right angles ninety degrees apart, the body, head and grip being offset and perpendicular to one another; solid laminated plastic plugs being bonded into the ends of the hollowed tubes of the body and grip to create sealed air spaces; wherein the improvement comprises a winch handle that is bouyant; this bouyancy rendering the winch retrievable when dropped into deep water in that the design utilizes a thin tubular wall design that displaces its weight in water causing the winch handle to float; and the thin walled tubular handle to float; and the thin walled tubular design giving the winch handle maximum strength when used in conjunction with sailboat winches.

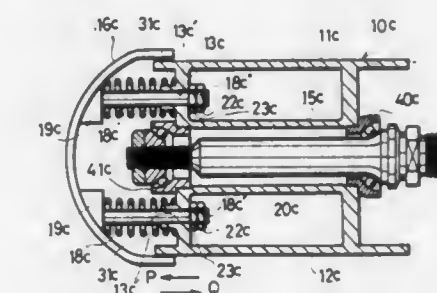
**4,338,828**  
**TRANSMISSION SHIFT CONTROL GUIDE AND DETENT APPARATUS**  
 Harold W. Ruhlman, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.  
 Filed May 21, 1980, Ser. No. 152,067  
 Int. Cl.<sup>3</sup> G05G 5/06  
 U.S. Cl. 74—475  
 4 Claims



aspirate a measured volume of atmosphere per unit of time through said venting means and into said receptacle; and sample removal means for permitting the withdrawal of a desired quantity of said retained atmosphere from within said receptacle, as required.

1. In apparatus for selectively engaging a plurality of gear sets in a manual transmission, said apparatus including a shift rail rotatable on and slidable along an axis, a shift lever secured to said rail, and a shift stick coupled with said lever, said stick being movable to a plurality of positions in one plane for effecting rotation of said lever and rail and movable to a plurality of positions in another plane for effecting sliding of said lever and rail; the improvement comprising a fixed plate member having a surface of partial cylindrical configuration about said axis, said plate member defining a track and a plurality of partially spherical depressions spaced therefrom in said surface, a pin projecting from said lever into engagement with said track, and a spring-loaded ball projecting from said lever for individual engagement with said depressions upon movement of said stick, said pin and track being constructed and arranged to define the path of movement of said stick in said planes, said ball and depressions being constructed and arranged to develop individually predetermined detent forces tending to resist movement of said stick to selected ones of said positions.

**4,338,829**  
**BICYCLE PEDAL**  
 Nobuo Ozaki, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan  
 Filed Nov. 21, 1979, Ser. No. 96,320  
 Claims priority, application Japan, Nov. 24, 1978, 53-145513; Nov. 24, 1978, 53-162158[U]  
 Int. Cl.<sup>3</sup> G05G 1/14  
 U.S. Cl. 74—594.4  
 6 Claims



1. A bicycle pedal comprising a pedal spindle connected to a bicycle crank, a pedal body rotatably supported by said pedal spindle, said pedal body having a cross plate, a front end plate in the form of a separate piece from said pedal body being disposed adjacent said pedal body, and at least one spring member interposed between said cross







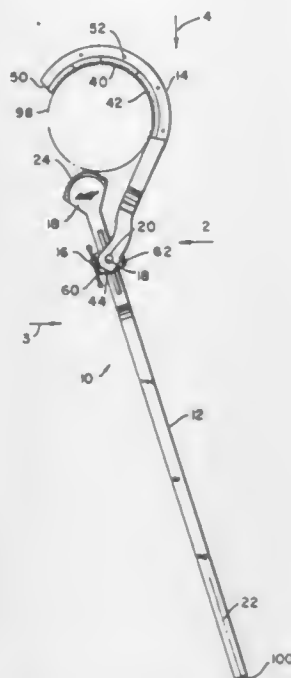
# 4,338,834 WRENCH

John J. Dobias, 1212 Sumach Dr., Windsor, Ontario, Canada  
(N8S 2S4)

Filed Jul. 10, 1980, Ser. No. 168,374  
Int. Cl.<sup>3</sup> B25B 13/28

U.S. Cl. 81—106

7 Claims



1. A wrench comprising a gripping member, a handle having a gripping portion on one end thereof, means for moving the gripping member axially of the handle to vary the position of the one end of the handle with respect to the gripping member without rotating the handle with respect to the gripping member including a slot in the handle extending axially thereof having rack teeth on the axially extending sides thereof, a gear housing surrounding the handle at the slot therein, a pair of gears mounted in the housing and extending through the slot for rotation therein in engagement with each other centrally of the slot and each engaging a separate side of the slot with gear teeth meshed in the rack teeth, and means external of the housing for rotating at least one of the gears whereby the housing is moved axially of the handle, and means for pivotally securing the gripping member to the handle through the means for moving the gripping member axially of the handle.

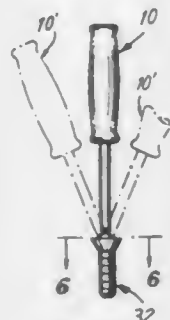
# 4,338,835 RECESSED HEAD FASTENER AND DRIVER THEREFOR

Leon Simons, 303 E. 57th St., New York, N.Y. 10022

Filed Jan. 24, 1980, Ser. No. 114,802  
Int. Cl.<sup>3</sup> B25B 13/48

U.S. Cl. 81—436

8 Claims



1. The combination of a fastener requiring a driver and a companion driver therefor, comprising:  
a fastener body;  
a fastener head attached to said fastener body, said fastener head having a socket recessed therein, the walls of said socket being a plurality of curved surfaces intersecting to form a plurality of cusps, said curved surfaces being sym-

metrically distributed about the longitudinal axis of said fastener;  
a driver shaft;  
means for engaging and rotating said driver shaft;  
a driver head attached to said driver shaft for rotation therewith and having a plurality of curved surfaces thereon, said surfaces intersecting to form a plurality of cusps, the number of cusps and curved surfaces on said driver head equaling the number of cusps and curved surfaces in said fastener socket, said curved surfaces of said driver head being symmetrically distributed about a longitudinal axis of said driver, said curved surfaces of said driver head and socket including circular arcs, the radii of said driver head arcs being less than the radii of said fastener arcs, the radii of said socket arcs exceeding the linear distance between said socket arcs and said fastener axis, and the radii of said driver head arcs exceeding the linear distance between said driver head arcs said driver axis, the origins of said head and socket arcs lying in cross-sections of said head and socket respectively, said cross-sections being transverse to said longitudinal axes, said head arcs being non-concentric with said fastener arcs when said driver head seats within said fastener socket, rotating said driver head within said socket producing areas of engagement between said curved surfaces of said head and fastener.

# 4,338,836

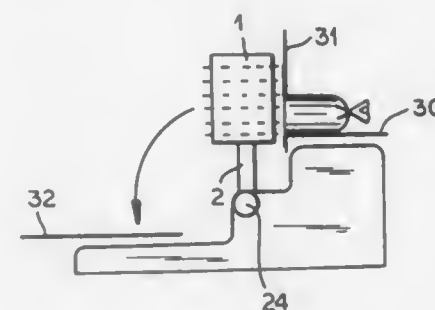
SLICING MACHINE WITH SLICE-DEPOSITING DEVICE  
Fritz Kuchler, Klagenfurt, Austria, assignor to Brain Dust Patents Establishment, Vaduz, Liechtenstein

Filed Sep. 26, 1980, Ser. No. 191,011

Claims priority, application Austria, Sep. 27, 1979, 6354/79  
Int. Cl.<sup>3</sup> B26D 7/00

U.S. Cl. 83—94

7 Claims



1. In combination with a slicing machine having an upright stop plate, a carriage shiftable relative to said plate for a product to be sliced, a rotary blade spaced from said plate and cooperating with said carriage to form slices of said product which pass between said blade and said plate, and a receiving table adapted to receive said slices, a transfer device for taking up said slices from said plate and depositing said slices on said table, said transfer device comprising:

a rotary cylindrical drum formed with retractable slice-engaging needles;  
means for juxtaposing said drum in an upright position with said blade whereby a slice served by said blade from said product is picked up by said drum;  
means for swinging said drum into a position wherein said drum lies above said table whereby retraction of said needles deposits the picked-up slice on said table, said needles being provided in an array extending over the entire cylindrical surface of said drum, said needles being provided in rows along respective generatrices of said drum, each of the needles along a respective generatrix being affixed to a common needle bar within said drum; and

spring means urging said bars inwardly, and a control member within said drum axially shiftable to displace said bars inwardly and outwardly, thereby effecting retraction and extension of said needles on said drum, said drum being

provided with a shaft tiltable about a horizontal axis and rotatable about the axis of said drum for rotation of said drum, said drum being hollow, said member being provided with a rod extending axially along said shaft and terminating in a cam follower, said device comprising a cam engaging said cam follower and effective upon tilting of said drum and said shaft about said horizontal axis for axially displacing said member relative to said drum.

# 4,338,837

## CUTTING APPARATUS

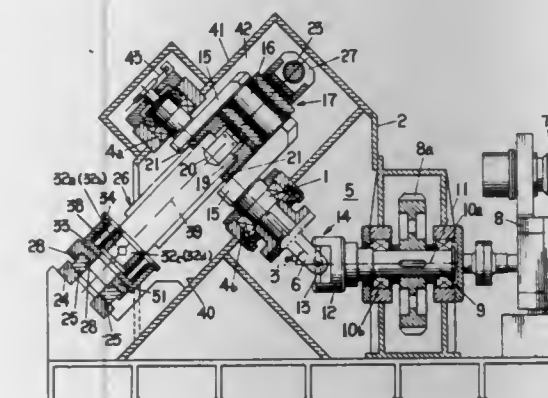
Shinichi Hori, Amagasaki, Japan, assignor to Asada Machinery Manufacturing Co., Ltd., Amagasaki, Japan

Filed May 12, 1980, Ser. No. 148,912

Claims priority, application Japan, May 28, 1979, 54-66521  
Int. Cl.<sup>3</sup> B23D 25/04

U.S. Cl. 83—319

10 Claims



1. An apparatus for cutting a continuously fed in elongated workpiece into lengths, comprising: die means receptive of the fed in workpiece therethrough; means engageable with the die means for clamping the die means to a workpiece; a cutter; and means mounting the die means, clamping means and cutter for movement in a uniform linear path parallel to the longitudinal axis of the workpiece with the simultaneous movement of the clamping means and the cutter perpendicular to the longitudinal axis of the workpiece to effect the clamping of the die means to the workpiece and the cutting of the workpiece by the cutter without interrupting the movement of the workpiece, the mounting means comprising rotary drive means including a rotary shaft, crank means including a crank shaft disposed at a given angle of inclination with respect to the rotary shaft, a crosstype universal joint operatively connecting the crank means and the rotary drive means with the given angle of inclination to enable the crank means to be driven thereby, a slide block having a guide groove therein and linearly moved by said crank means, horizontally juxtaposed guide members for guiding the slide block during linear movement and a slider linearly moved by said crank means in a direction normal to the direction of movement of said slide block along the guide groove in said block, and wherein the cutter projects from said slider, the clamping means comprises clamp members projecting from said slider on both sides of said cutter and said die means is mounted on said slide block for horizontal linear travel therewith and is clamped by said clamp members.

# 4,338,838

## APPARATUS FOR SLITTING WORKPIECES

Bernd Stursberg, Ennepetal, and Ludwig Regenbrecht, Gevelsberg, both of Fed. Rep. of Germany, assignors to Rolf Peddinghaus, Ennepetal, Fed. Rep. of Germany

Filed Dec. 4, 1980, Ser. No. 213,197

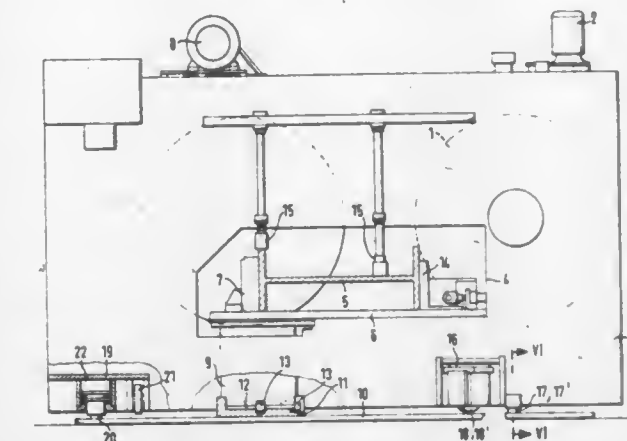
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949674

Int. Cl.<sup>3</sup> B23D 47/02

U.S. Cl. 83—467 R

11 Claims

1. An apparatus for slitting workpieces, comprising a machine frame have a sawblade slidably mounted thereon, said



stantially parallel to said workpiece feed path and to one side of said path, and a third foot elements located on the opposite side of said work feed path, said foot elements being engageable with a supporting bed, and means for adjusting the height of said third foot element with respect to that of said two foot elements, to tilt said frame about a tilt axis substantially parallel to said work feed path, and thereby to lower said work support relative to said feed path.

# 4,338,839

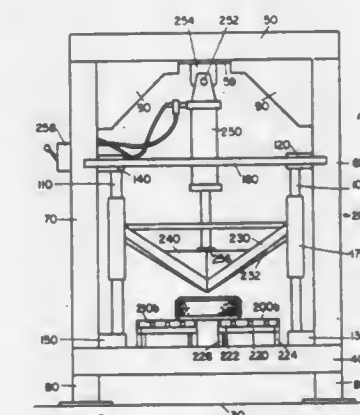
## TIRE CUTTING MACHINE

Warren M. Farrell, Sr., 308 S. Avenue A, and Warren M. Farrell, Jr., Rte. 4, Box 69, both of Elgin, Tex. 78621

Filed Sep. 9, 1980, Ser. No. 185,569

Int. Cl.<sup>3</sup> B26D 1/09, 5/12; B29H 19/02  
U.S. Cl. 83—620

1 Claim



1. Apparatus for cutting tires, which comprises:  
an upright-standing, elongate frame defining a tire cutting area accessible from the side;  
the frame including a base structure having a plurality of interconnected side members giving the base structure a generally square configuration, a diagonal cross brace member extending between two opposing corners formed by the interconnection of two of the side members, first and second cross brace members, each brace extending between the mid-point of the diagonal cross brace and a corner formed by the interconnection of two of the side members, and a lower cutting blade support member attached to each cross brace member;  
the frame including a top support structure;  
the frame including a plurality of vertical support columns



interconnecting the base structure to the top support structure;

an elongate guide track secured to said frame, the guide track comprising a plurality of vertical rods, each rod secured at its upper and lower ends to the frame;

a carriage mounted on the elongate guide track for reciprocating vertical movement thereon, the carriage comprising a slidable sleeve disposed on each of the vertical rods of the guide track and cross-bracing members interconnecting adjacent sleeves to form a unitary carriage structure;

first, second, third and fourth pairs of shear-cutting blades; each pair of blades having an upper blade and a lower blade; the lower blade of each pair being affixed to the base of the frame by mounting it to one of the blade support members, and being oriented with the cutting edge extending substantially horizontal,

the upper blade of each pair being affixed to the movable carriage and oriented with the cutting edge extending at an acute angle relative to the cutting edge of the lower blade,

the upper blades being displaced with respect to one another so as to correspond to the separation between the lower blades,

the upper blade of each pair being elongated, the elongated upper blades each being attached at one end to a sleeve on the carriage and jointly interconnected at the opposite end to one another,

each of said pairs of blades operating by action of opposed cutting edges to cut a tire placed on its side in the tire-cutting area within the frame; and

a hydraulic cylinder ram connected between the frame and the movable carriage for vertically moving the carriage relative to the frame to effect cutting action of the blades.

4,338,840

## TIRE CUTTING MACHINE

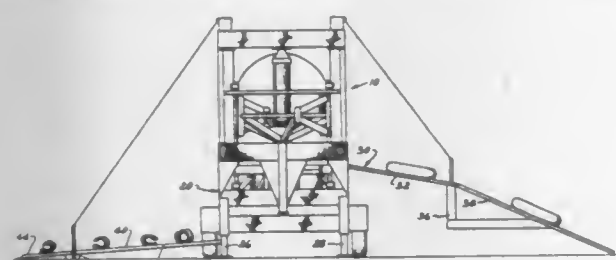
Warren M. Farrell, Sr., 308 S. Ave. A, and Warren M. Farrell, Jr., Rte. 4, Box 69, both of Elgin, Tex. 78621

Filed Sep. 9, 1980, Ser. No. 185,568

Int. Cl.<sup>3</sup> B26D 1/09, 5/12; B29H 19/02

U.S. Cl. 83—622

3 Claims



1. Apparatus for cutting tires, which comprises: a frame defining a tire-cutting area; an elongate guide track secured in fixed relation to the frame; a carriage mounted on the elongate guide track for reciprocating movement thereon along an axis of movement; first and second pairs of shear-cutting blades, one blade of each pair being affixed to the movable carriage and the other blade of each pair being fixed relative to the frame, each pair of blades operating by action of opposed cutting edges to cut a tire placed in the tire-cutting area of the frame, the blades of each pair being disposed at an acute angle with respect to one another, the angle of relative disposition of the first pair of blades being different from the angle of relative disposition of the second pair of blades, such that the first pair of blades will engage a tire for cutting before the second pair of blades so engages the tire; and

means for moving the carriage on the elongate guide track to effect cutting action of the pairs of blades.

4,338,841

## ENTRANCE TUBE FOR A SAMPLER FOR MOLTEN MATERIAL

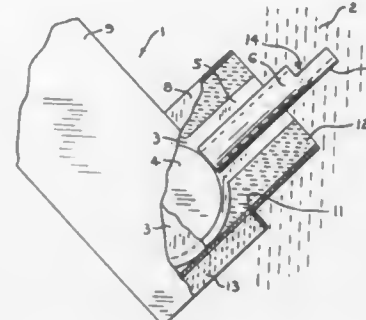
William J. Collins, 7005 Madison St., Merrillville, Ind. 46410

Filed Jul. 30, 1980, Ser. No. 173,486

Int. Cl.<sup>3</sup> G01N 1/20

U.S. Cl. 73—863.52

9 Claims



1. An elongated tube for the purpose described having a marginal end edge portion defining an entrance at one end of the tube for receiving a fluid, and a pair of offset contiguous notches of different depths provided in said tube adjacent said entrance whereby to facilitate entry of the fluid into the tube.

4,338,842

## SAMPLER FOR MOLTEN MATERIAL AND ENTRANCE TUBE THEREFOR

William J. Collins, 7005 Madison St., Merrillville, Ind. 46410

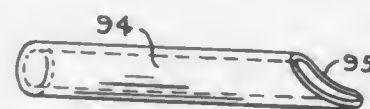
Division of Ser. No. 75,941, Sep. 17, 1979, Pat. No. 4,297,902.

This application Jun. 25, 1981, Ser. No. 277,264

Int. Cl.<sup>3</sup> G01N 1/20

U.S. Cl. 73—863.52

10 Claims



1. An elongated tube for use as a component of a device for obtaining a sample of molten material, and a split sleeve carried by a fore extremity of said tube and having a curved entrance extending a predetermined distance forwardly of said extremity thereof to facilitate entry of such a material into the tube.

4,338,843

## ASYNCHRONOUS INTERFACE FOR ELECTRONIC MUSICAL INSTRUMENT WITH MULTIPLEXED NOTE SELECTION

Stephen A. Wise, Macungie, Pa., assignor to Allen Organ Co., Macungie, Pa.

Filed Jan. 11, 1980, Ser. No. 111,458

Int. Cl.<sup>3</sup> G10H 1/00

U.S. Cl. 84—1.01

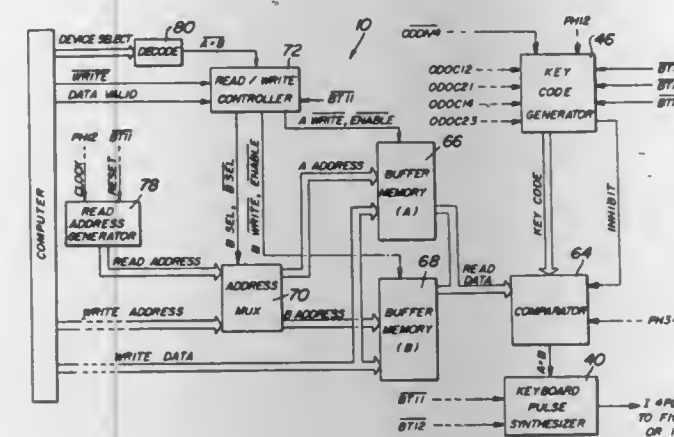
17 Claims

1. Apparatus for synthesizing a series of pulses for use by an electronic musical instrument in response to data provided by an external data input device, said data being indicative of one or more notes to be played by the instrument, the instrument having a multiplexer for producing a multiplexed signal asynchronously with respect to said data, said multiplexed signal comprising a series of time slots, each of which corresponds to a note which can be played by the musical instrument, comprising:

key number generating means for generating key numbers; at least first and second buffer memories; writing control means for alternately causing said data to be

written into said first buffer memory during a first interval of time and into said second buffer memory during a second interval of time;

reading control means for alternately causing data written into said second buffer memory to be read out of said second buffer memory during said first interval of time and for causing data written into said first buffer memory



to be read out of said first buffer memory during said second interval of time;

comparator means for comparing said data read out of a buffer memory to said key numbers and for producing a signal indicative of a match between data read out of the buffer memory and at least one of said key numbers; and means for synthesizing a series of pulses in response to said signal indicative of said match.

4,338,844

## TONE SOURCE CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENTS

Junya Murata, Shobu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

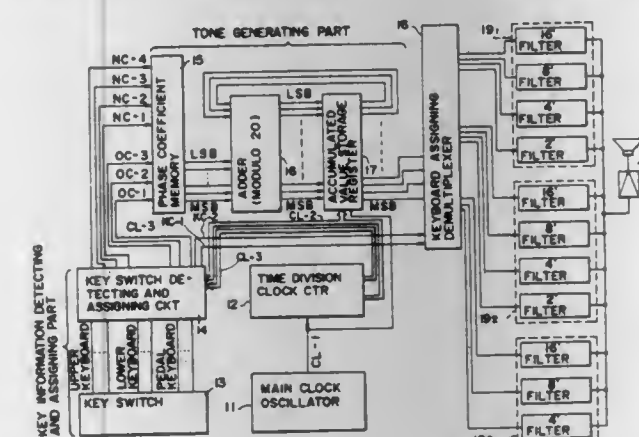
Filed Feb. 13, 1980, Ser. No. 121,136

Claims priority, application Japan, Feb. 17, 1979, 54-17665; Feb. 21, 1979, 54-19249; Feb. 21, 1979, 54-19250

Int. Cl.<sup>3</sup> G10H 1/08, 5/06

U.S. Cl. 84—1.01

4 Claims



1. A tone source circuit for electronic musical instruments, comprising:

a note assignor having a plurality of time division channels for assigning to a selective one of said channels a note code corresponding to a depressed key of the electronic musical instrument; a phase coefficient memory which is supplied with the note code and from which a unit phase coefficient corresponding to the note code is read out for each time division; an accumulator comprising an adder and an accumulated value storage register, said adder being supplied with the unit phase coefficient and with the value from the accumulated value storage register and provides the results of the addition as a new value to the accumulated storage register, to output from the accumulated value storage

register an accumulated value of a series of ordered bits for each time division channel; and a demultiplexer output device for taking out higher order bits for accumulated value and combining them as a rectangular wave signal to output a composite tone source signal.

4,338,845

## SYSTEM FOR EXPANDING THE DYNAMIC VOLUME RANGE OF ELECTRONIC MUSICAL INSTRUMENTS

Reinhard Franz, Tulpenstrasse 15, D-5401 Emmelshausen, and Wilfried Dittmar, Halsenbach, both of Fed. Rep. of Germany, assignors to Reinhard Franz, Halsenbach, Fed. Rep. of Germany

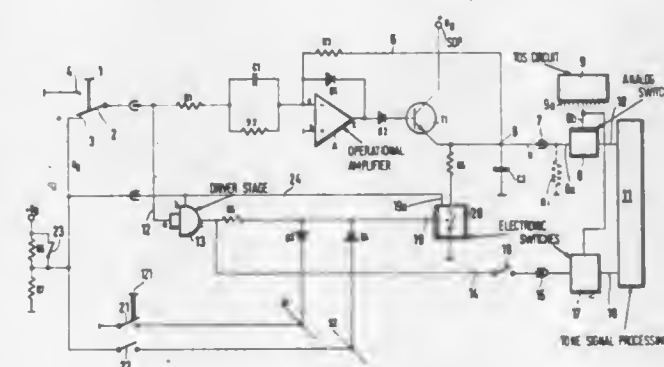
Filed Feb. 20, 1981, Ser. No. 236,241

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1980, 3006400

Int. Cl.<sup>3</sup> G10H 3/00

U.S. Cl. 84—1.1

26 Claims



1. In an electronic musical instrument, the combination of key means movable between first and second positions at a plurality of different speeds; and means for generating an envelope control signal, comprising first capacitor means, means for charging said capacitor means in the first position of said key means, means for effecting discharge of said capacitor means during movement of said key means to said second position so that the residual voltage of said capacitor means is a function of the speed of movement of said key means to said second position, amplifier means having an output and an input connected with said capacitor means for the application of said residual voltage to said input, a first feedback connection provided between said output and said input and including means for applying to said input a reference potential during movement of said key means from said first to said second position, second capacitor means connected with said output, and a second feedback connection provided between said second capacitor means and said input and including an ohmic resistance.

4,338,846

## REMOTE CONTROL FOR ELECTRONIC MUSICAL INSTRUMENT EQUIPMENT

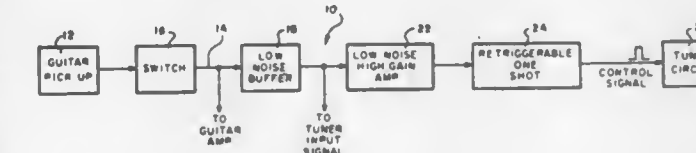
Gary S. Pogoda, 223 N. Douglass Ave., Margate, N.J. 08402

Filed Mar. 7, 1980, Ser. No. 128,268

Int. Cl.<sup>3</sup> G10H 1/02

U.S. Cl. 84—1.24

2 Claims



1. In an electronic musical instrument system including a musical instrument having an output jack, a remotely located audio device and an audio cable for carrying an audio signal from said instrument to said remotely located audio device,



said cable having a plug adapted to be plugged into said output jack, the improvement comprising:

a switch housing, said housing including a plug adapted to be plugged into said output jack of said musical instrument, said housing also having a jack adapted to be connected to the plug of said audio cable and circuit means within said housing electrically connecting said housing plug to said housing jack, and a manually operable momentary contact switch carried by said housing, said switch being adapted to short said circuit means when depressed to thereby electrically short said audio cable;

an additional circuit means located adjacent said remotely located audio device including means for sensing when said switch is depressed and means for controlling said audio device in response to said sensing means.

4,338,847

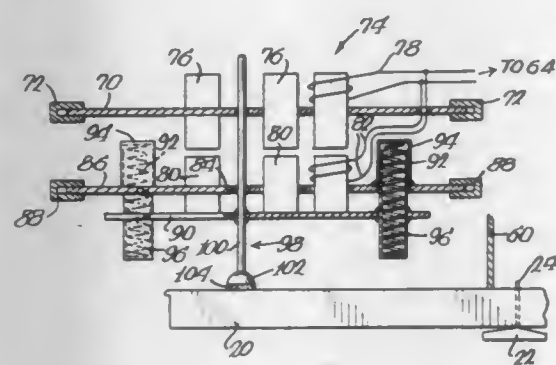
## ELECTROMAGNETIC DEVICES FOR ACTUATING PIANO KEYS

John F. Brennan, John F. Kennedy La., Lebanon, Ky. 40033  
Filed Nov. 14, 1980, Ser. No. 206,871

Int. Cl.<sup>3</sup> G10F 1/02

U.S. Cl. 84—20

12 Claims



1. In combination with a piano having a piano key mounted for pivotal movement about a fulcrum, said piano key having a forward end to a forward side of said fulcrum which is depressed or moved downwardly to play a note, a piano key actuating system comprising a first electromagnet having a winding across which an energizing signal may be applied; a second electromagnet having a winding across which an energizing signal may be applied; means for movably mounting said first electromagnet above an upper surface of said forward end of said key for movement toward and away from said upper surface; means extending between said first electromagnet and said upper surface of said key for depressing said forward end of said key upon downward movement of said first electromagnet; means for fixedly mounting said second electromagnet above said first electromagnet, said first and second electromagnets being mounted so that the same present opposed but spaced pole faces to each other; and means for interconnecting said first and second electromagnet windings such that upon application of an energizing signal thereacross like magnetic poles are developed at said opposed pole faces, whereby said first electromagnet is repelled away from said second electromagnet and toward said upper surface of said key to depress said key and strike a note on said piano.

4,338,848

## PIANO ACTION

Harold B. Rhodes, La Habra, Calif., assignor to CBS Inc., New York, N.Y.

Filed Jun. 23, 1980, Ser. No. 161,658

Int. Cl.<sup>3</sup> G10C 3/18

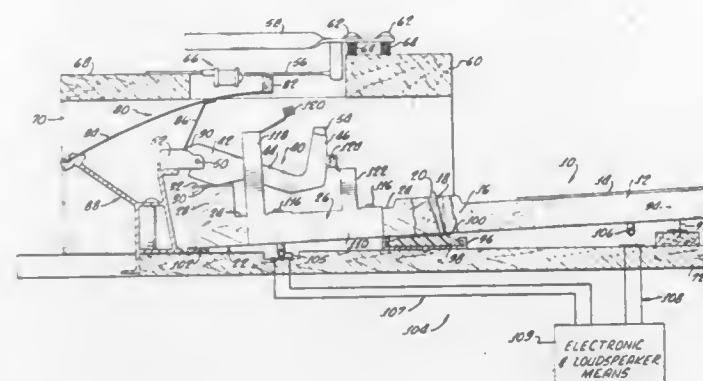
U.S. Cl. 84—253

10 Claims

1. In an action for a musical instrument of the piano type wherein a tone is generated by striking a key to impel a hammer which strikes a tine on a power stroke, then recoils therefrom, and thereafter returns to its original rest position when the key is released, said action including a key having a forward portion, a rear portion, and a mid portion therebetween,

means for pivoting said key about a transverse axis in the mid portion thereof, a hammer having a head portion for striking the tine, a foot portion for engaging the rear portion of said key, and a shank connecting the head portion and the foot portion, and means for rotating said hammer about a transverse axis through the foot portion thereof, the improvement comprising:

an escapement brake means for restraining said hammer to prevent it from rebounding and striking said tine more



than once for each strike of the key, said escapement brake means being affixed to the rear portion of said key for pivoting therewith and including:

engaging means responsive to the pivoting of said key for engaging a portion of the hammer remote from the foot thereof on said hammer's recoil after striking said tine, and

said means for rotating said hammer being adapted to cause said hammer to strike said tine on the power stroke before said engaging means contacts said hammer.

4,338,849

## ELECTRONIC TRANSFER ORGAN

William D. Turner, 12804 Cedarbrook La., Laurel, Md. 20811

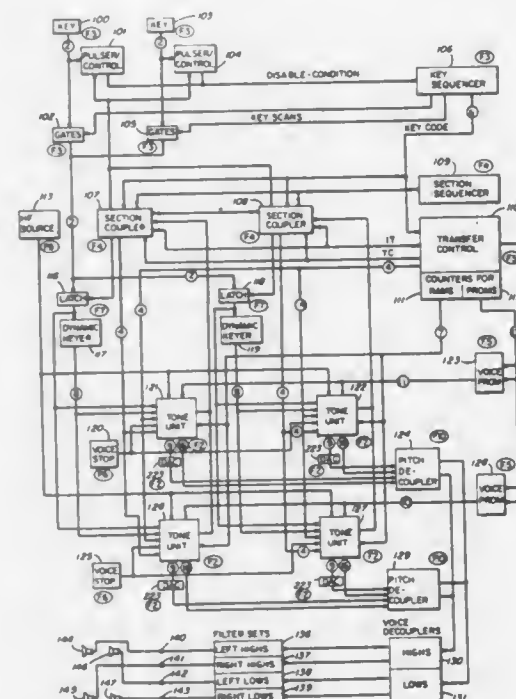
Continuation-in-part of Ser. No. 44,071, May 31, 1979,

abandoned. This application Aug. 17, 1981, Ser. No. 293,273

Int. Cl.<sup>3</sup> G10H 1/00

U.S. Cl. 84—345

15 Claims



1. An electronic transfer organ, comprising in combination: a keyboard having a multiplicity of keys, each said key corresponding to at least one of a multiplicity of nominal pitches to be sounded;

stop means having at least one stop, each said stop corresponding to a voice to be sounded;

at least one large memory for each voice, each said large memory having stored therein individualized information comprising at least the amplitude, waveform, frequency, keying phases, and spatial position in the distance-from-listener dimension of each of said nominal pitches to be sounded;

at least one array of small memories corresponding to each said large memory, said small memories being substantially identical to each other, the number of said small memories in each array being equal to the number of keys that may be desired to activate concurrently;

means responsive to depression of any key to activate one of said small memories in each array to receive information and cause transfer from each of said corresponding large memories of the said individualized information including said spatial position therein corresponding to that depressed key to the respective small memories corresponding to the depressed key for temporary storage therein;

means for causing activation of any stop to convert the information temporarily stored in each small memory corresponding to that stop and the depressed key into a signal corresponding to the information so stored, there being a said signal corresponding to each note, each said signal being individualized with respect to amplitude, waveform, frequency, and keying phases;

means responsive at least to said transferred spatial position information when a key is depressed, for generating at least four composite signals from said transferred individualized signals, each said composite signal representing a distinctive combination of the amplitudes, waveforms, frequencies and keying phases of its comprised individualized signals;

separate switch means for each voice for producing a pair of amplitude-multiplication factors characteristic of the lateral spatial position of that voice; and

means responsive to said four or more composite signals and said pair of amplitude-multiplication factors for generating sounds whose combined acoustic sound image approximates the acoustic sound image of a multiplicity of individualized sound sources distributed in at least two orthogonal spatial dimensions.

4,338,850

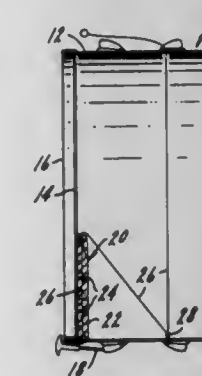
## ADJUSTABLE MUFFLER FOR PERCUSSION INSTRUMENT

Albert E. Payson, 2130 Glenview Ave., Park Ridge, Ill. 60068  
Filed Dec. 8, 1980, Ser. No. 213,959

Int. Cl.<sup>3</sup> G10D 13/02

U.S. Cl. 84—411 M

11 Claims



1. In a percussion musical instrument having a flat membrane for producing audible tones when struck and a rigid shell upon which said membrane is mounted, the improvement comprising an adjustable muffler for selectively muffling the audible tones of the instrument without perceptively changing the pitch of the audible tones, said muffler having

- a supple material situated contiguous to and laterally across a portion of said membrane,
- means to maintain said material in contiguous relation-

ship to said membrane without pressing against said membrane, and

c. means to selectively withdraw successive portions of said supple material from contiguous relationship to said membrane in order to alter the degree of muffling of the audible tones.

4,338,851

## CARTRIDGE BELT GUIDING MECHANISM IN AN AUTOMATIC WEAPON, THE ELEVATION OF WHICH IS ADJUSTABLE

Clemens Bremer, Duesseldorf, and Horst Menges, Ratingen, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

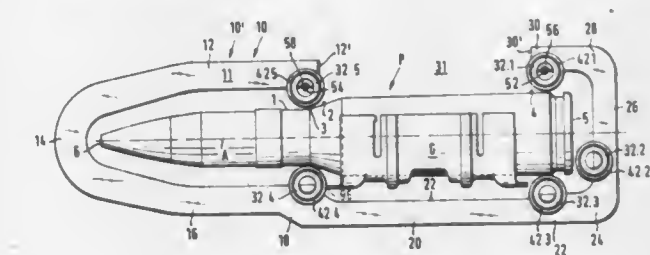
Filed Sep. 24, 1980, Ser. No. 190,419

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948685

Int. Cl.<sup>3</sup> F41D 10/40

U.S. Cl. 89—33 BB

4 Claims



1. A cartridge belt guiding mechanism for automatic weapons disposed between the outlet of an ammunition belt storage container and an ammunition belt inlet of the automatic weapon, comprising in combination,

a plurality of elements which at least partially surround the longitudinal axial contour of the cartridge at a predetermined distance therefrom,

each element having a plurality of guide members mounted thereon, coil springs mounted on said guide members and connecting adjacent elements to each other and being adapted to slidably guidingly engage the cartridge passing through the corresponding element so as to form a flexible guide channel for the ammunition belt from the outlet of the ammunition belt storage container to the inlet for the ammunition belt in the automatic weapon, the elements forming the ends of said channel being respectively connected to said outlet and inlet.

4,338,852

## BUMP STOP FOR TRUNNION-MOUNTED WEAPON

Richard L. Jarvis, Harford County, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 19, 1980, Ser. No. 150,872

Int. Cl.<sup>3</sup> F41D 11/24

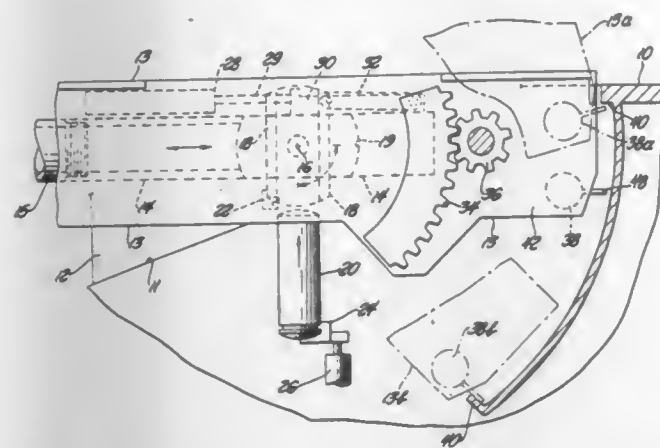
U.S. Cl. 89—37 E

6 Claims

1. In a trunnion-mounted weapon that includes a receiver adapted to swing in the elevational plane between stationary stops: the improvement comprising a torsion bar shock absorber carried by the receiver for resiliently absorbing shock loads as the receiver nears the limits of its swing motion; said shock absorber comprising a tube rotatably mounted on the receiver for motion around an axis parallel to the receiver swing axis, a striker arm carried by the tube for engagement with the aforementioned stationary stops to impart rotary motion to the tube, torsion bar means located within the tube, a first anchor means interconnecting one end of the torsion bar means and the receiver, and a second anchor means interconnecting the other end of the torsion bar means and the corre-



sponding end of the tube, the shock absorber being constructed so that shock is transmitted from the striker arm to the tube,



thence through the second anchor means to the torsion bar means.

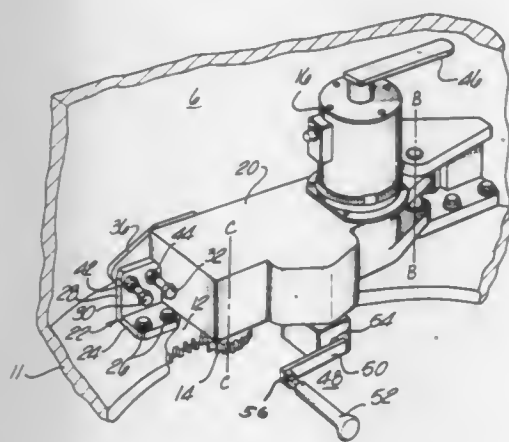
#### 4,338,853 MEANS TO MINIMIZE THE BACKLASH OF MESHING GEARS

Martin J. Neumeyer, Utica, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 26, 1979, Ser. No. 88,433  
Int. Cl.<sup>3</sup> F41F 21/02

U.S. Cl. 89—41 R

6 Claims



1. A precision power gear train assembly for imparting relative rotation between a relatively stationary member of a power user device and a relatively rotatable driven member mounted thereon about a given body axis via enmeshed output and compatible gears thereof, and embodying novel means for minimizing backlash of said enmeshed gears, said precision power gear train assembly comprising:

- a power drive gear train and a power train support therefor collectively mounted for oscillation upon the rotatable driven member and oscillatable about a first axis;
- the power gear train having an output gear mounted on said support and disposed for rotation about a second axis which is spaced from and substantially parallel to said first axis as well as to said given body axis;
- said output gear being adapted to mesh with a relatively stationary compatible gear of said power user device, with the compatible gear axis coinciding with said given body axis;
- the line of centers of the output gear and said meshing compatible gear forming a right angle with another line intersecting said first and second axes of rotation; and
- compression spring means for yieldably biasing the two gears into mesh to eliminate backlash under a load of gear tooth pressure imposed which is no greater than a given maximum and also to permit separation of the two gears when tooth pressure loads exceed said maximum.

#### 4,338,854 SERVO BOOSTERS FOR VEHICLE BRAKING SYSTEMS

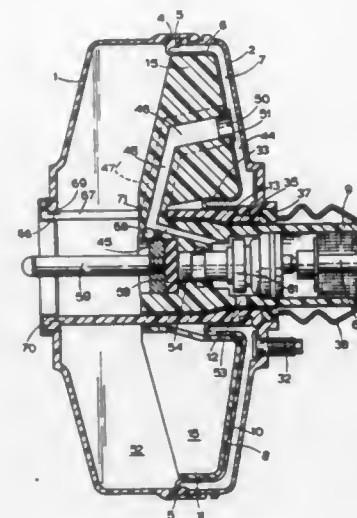
Hugh G. Margetts, Warwickshire, England, assignor to Lucas Industries Limited, Birmingham, England  
Filed Nov. 20, 1979, Ser. No. 95,961

Claims priority, application United Kingdom, Nov. 21, 1978, 45469/78

Int. Cl.<sup>3</sup> F15B 9/10

U.S. Cl. 91—369 A

3 Claims



1. A servo booster for a vehicle braking system comprising a booster housing, output and input members at the front and rear respectively of the booster, front and rear housing walls of said booster housing, a movable wall dividing the interior of said booster housing into front and rear chambers, said movable wall comprising a diaphragm support plate and a flexible diaphragm which seals said movable wall at its radially outer periphery to said booster housing, a valve body, an integral connection connecting said diaphragm support plate to said valve body, force transmitting means comprising a tube which is substantially co-axial with the movable wall and extends forwardly from said rear housing wall in fluid tight relationship therewith, said tube extending to said front housing wall and being stationary with respect to the vehicle in use and arranged substantially to relieve said booster housing of braking reaction forces, seal means fixedly sealing said movable wall at its radially inner extremity to the radially outer surface of said tube, said tube having at least one aperture therein, said integral connection connecting said diaphragm support plate to said valve housing comprising an arm extending through said aperture, a valve member located in said valve body, said valve body being provided with a valve chamber adjacent to said valve member, and a fluid conduit connecting said valve chamber and said rear chamber, said fluid conduit comprising intercommunicating first, second and third passages in said valve body, integral connection and diaphragm support plate, respectively, said first passage of said fluid conduit opening to said valve chamber, and said third passage of said fluid conduit opening to said rear chamber radially outwards of said seal means.

#### 4,338,855 RELIEF VALVE MECHANISM FOR A HYDRAULIC BOOSTER

Yasufumi Ideta, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 16, 1980, Ser. No. 112,526

Claims priority, application Japan, Jan. 17, 1979, 54/4096

Int. Cl.<sup>3</sup> F15B 9/10

U.S. Cl. 91—378

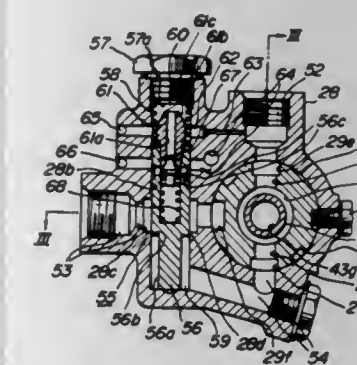
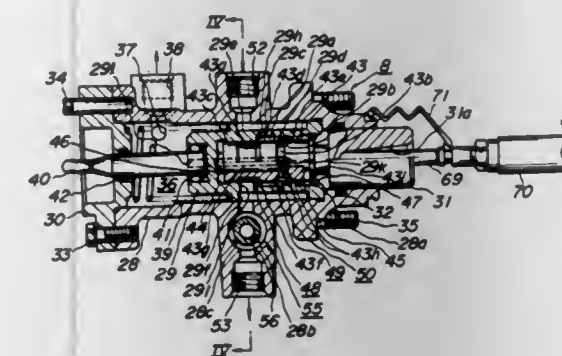
3 Claims

1. A relief valve mechanism of a hydraulic booster which includes a main throttle valve, through which hydraulic oil is supplied to a power steering, said main throttle valve being formed by a spool cooperating with a brake pedal to throttle hydraulic oil flow supplied thereto when the brake pedal is

depressed, and a power piston which moves in the depressed direction of the brake pedal to follow the spool by introducing oil pressure produced on the upstream side of the main throttle valve into a boost chamber which is normally communicated with a drain chamber;

said relief valve mechanism comprising a pilot chamber which is supplied with said upstream side oil pressure through an orifice;

and a main relief valve applied with said upstream side oil pressure in opposition to the pressure supplied to the pilot chamber;



said main relief valve including a pilot valve which communicates the pilot chamber with a drain passage when the oil pressure in the pilot chamber exceeds a predetermined value;

said main relief valve being in opened position for passage therethrough of said upstream side oil pressure to the power steering independently of said oil supply to the power steering through the main throttle valve; and said main relief valve further including a valve body cooperating, in said opened position of said main relief valve, with a wall of the pilot chamber to form a further throttle for the oil flow to be supplied to the pilot valve.

#### 4,338,856 DUAL PILOT COUNTERBALANCE VALVE

Robert Smilges, Columbus, Ohio, and Richard Wigmore, Brighton, England, assignors to Abex Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,484

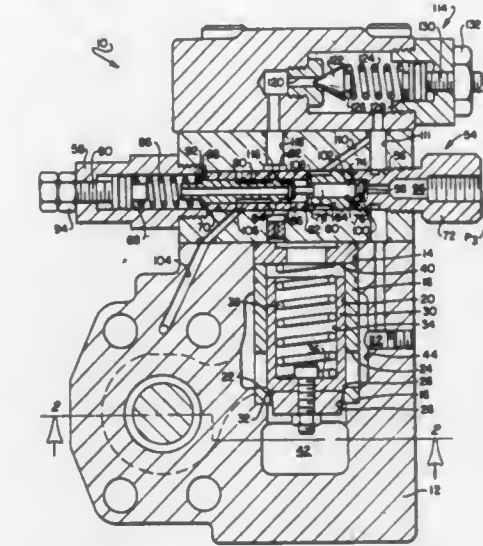
Int. Cl.<sup>3</sup> F15B 13/00

U.S. Cl. 91—420

3 Claims

1. A counterbalance valve for controlling the flow of high pressure fluid from a hydraulic motor which moves a load and is driven by a pump having an inlet and an outlet comprising a valve body, a fluid inlet in the body, a fluid outlet in the body, means for connecting the outlet of the motor to the fluid inlet whereby the motor supplies pressure fluid to the fluid inlet, a first fluid passage which connects the inlet and the outlet, a poppet bore, a seat, a poppet movable in the bore between a first setting in which the poppet engages the seat and blocks the first fluid passage and a second setting in which the poppet is spaced from the seat and cooperates with the seat to open the first fluid passage and form a control orifice through which pressure fluid flows from the inlet to the outlet, and spring means for biasing the poppet into the said first setting, charac-

terized by a second fluid passage connected to the top of the poppet, a control port at the entrance to the second fluid passage, means for connecting the control port to pressure fluid in the fluid inlet, second means for connecting the control port to the fluid outlet, a pilot valve movable between a first position in which the control port is open to receive inlet pressure fluid, a second position in which the control port is blocked and a third position in which the control port is open to the fluid outlet, second spring means for biasing the pilot valve into the first position, a pilot port connected to the pilot valve, and means for connecting the pump outlet to the pilot



port, wherein the pilot port receives pressure fluid from the pump to bias the pilot valve into the third position when the pump drives the motor and the counterbalance valve begins to operate to thereby open the control orifice to permit fluid to flow from the fluid inlet to the fluid outlet, and the pilot valve moves in response to changes in the pressure of the fluid in the pilot port alternatively between the first and third positions to modulate the opening of the control orifice and control the flow of pressure fluid from the hydraulic motor and the pilot valve remains in the second position and the control orifice maintains its opening when the pilot pressure is constant.

#### 4,338,857 ROTARY ACTUATOR FOR VALVE

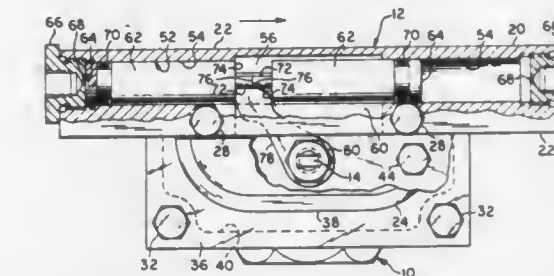
Edward M. Mason, St. Louis, Mo., assignor to Lee Engineering, Inc., St. Louis, Mo.

Filed Jul. 14, 1980, Ser. No. 168,571

Int. Cl.<sup>3</sup> F01B 7/00; F16K 31/122

U.S. Cl. 92—62

4 Claims



1. An actuator for rotating a shaft, the actuator comprising: (a) a housing including passage means having opposed ends, each end having fluid inlet and outlet means; (b) piston means slidably mounted in the passage means for reciprocative movement between the opposed ends of the passage means, said piston means including a pair of opposed, unconnected independent piston elements having cam-engageable inner end portions disposed in spaced relation axially of said piston means and having interengageable inner ends for moving the piston elements in unison, and (c) a radial arm attached to the shaft for rotation thereof, said



arm including a substantially symmetrical cam means at the remote end, said cam means having opposed cam faces, and said cam means being configured so that the overall distance across the cam faces adjacent corresponding cam-engageable inner end portions, during rotary movement of the arm, is less than the distance between the cam-engageable inner end portions, whereby when any one cam face engages an adjacent inner end portion, a gap is created between the other cam face and an adjacent inner end portion as the piston elements are moving in unison, wherein pressure is transmitted between the piston elements directly rather than through the medium of the radial arm by virtue of said gap.

4,338,858

**INTERNAL COMBUSTION ENGINE PISTON**

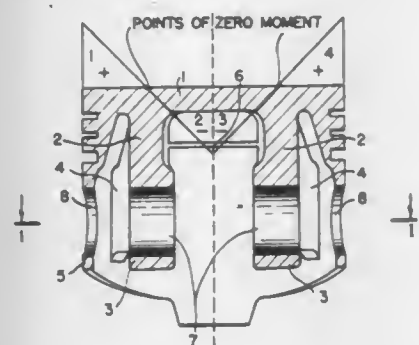
Johannes Reitz, Heilbronn-Kirschhausen, Fed. Rep. of Germany, assignor to Metallgesellschaft AG, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 771,123, Feb. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 583,492, Jun. 3, 1975, abandoned. This application Oct. 2, 1978, Ser. No. 948,183

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1974, 2430829

Int. Cl.<sup>3</sup> F02F 3/00; F16J 1/14  
U.S. Cl. 92—222

1 Claim



1. In a piston for an internal combustion engine, the piston comprising aluminum or an aluminum alloy, and having a head, a skirt depending from the head and two pin bosses extending downwardly from the underside of the head, the piston being provided with a horizontal transverse slot throughout a circumferential arc of 70°-110° between the head and skirt, the extending end portions of the bosses being provided with substantially planar and parallel inner and outer faces having aligned throughbores receptive of a piston pin and the skirt being provided with apertures in registry with said bores, the improvement which comprises having each of said bosses joined by one first rib to the underside of the piston head and by a pair of second ribs extending outwardly and diverging from adjacent to its outer face to the inner side of the piston skirt, the second ribs of each pair extending at an angle of 30°-45° to the plane of the inner face of the respective boss, and each first rib is disposed at the point of zero moment on the piston head.

4,338,859

**HUMIDIFYING AID**

Bette Claytor, 360 Cobblestone Dr., Colorado Springs, Colo. 80906

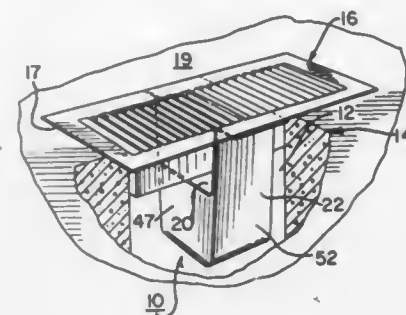
Filed Sep. 22, 1980, Ser. No. 189,266  
Int. Cl.<sup>3</sup> F24F 3/14

U.S. Cl. 98—105

7 Claims

1. A humidifying aid adapted to contain water or the like and to be mounted in a rectangular outlet opening of a furnace air recirculating system under an open grill cover having louvers depending into the outlet opening, comprising:  
a generally rectangular body having an open top for receive-

ing the water or the like, said body having a bottom wall and pairs of end and side walls;  
a pair of first and second upstanding arms integrally connected to and extending upwardly from said end walls, said arms being flat and being substantially the same width as the width of their respective end walls to form integral extensions thereof, said arms being substantially longer than the height of the side walls of said body to position said body below the louvers for enabling said body to be disposed, below the louvers, by a substantial distance from the rim of the opening;  
said arms terminating in a pair of transversely outwardly-



extending ears, said ears being flat and extending at approximately right angles to their respective arms for fitting between the grill cover and the rim of the opening; said arms and said body being composed of a unitary one-piece molded plastic material; and  
said side walls being substantially longer than said end walls and being almost the same length as the width of the rectangular opening to enable the body to extend thereacross, said end walls being substantially shorter in length than the length of the rectangular opening to enable the body to be positioned spaced from either end of the rectangular opening to provide air passage spaces at both sides thereof.

4,338,860

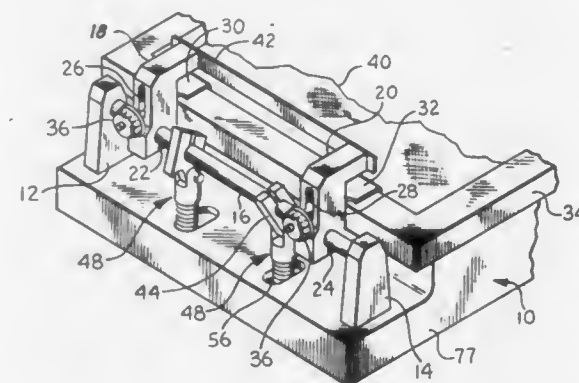
**HINGE AND SPACER APPARATUS**

Kaino J. Hamu, 25142 Wandering La., El Toro, Calif. 92630  
Filed Mar. 21, 1980, Ser. No. 132,389

Int. Cl.<sup>3</sup> B41F 15/00, 15/18

U.S. Cl. 101—126

14 Claims



1. Hinge apparatus for connecting first and second associated members which comprises:  
a pivot shaft pivotal between a first rotative position and a second rotative position,  
means for releasably fixing said shaft to the first associated member,  
means for mounting said shaft on the second associated member,  
first biasing means operative to bias said pivot shaft toward said second rotative position only when said pivot shaft is not in said first rotative position, and  
second biasing means operative to bias said pivot shaft

toward said first rotative position only when said pivot shaft is not in said second rotative position,  
each of said biasing means including a crank arm fixed to said shaft,  
a reciprocally mounted element and a helical compression spring urging said reciprocally mounted element which in turn biases its associated crank arm,  
said crank arm of said first biasing means being rotatively positioned relative to said shaft so that when said pivot shaft is in said first rotative position the force of the helical compression spring of said first biasing means is directed substantially through the axis of said pivot shaft, and when said pivot shaft is not in said first rotative position the force of said associated helical spring of said first biasing means is displaced to a first side of the axis of said pivot shaft so as to bias said pivot shaft toward said second rotative position,  
said crank arm of said second biasing means being rotatively positioned relative to said shaft differently than said crank arm of said first biasing means so that when said pivot shaft is in said second rotative position the force of the helical compression spring of said second biasing means is directed substantially through the axis of said pivot shaft and when said pivot shaft is not in said second rotative position the force of said associated helical spring of said second biasing means is displaced to a second side of the axis of said pivot shaft,  
whereby the helical compression springs are always acting to rotate said pivot shaft in opposite directions when said pivot shaft is between its first and second rotative positions.

4,338,861

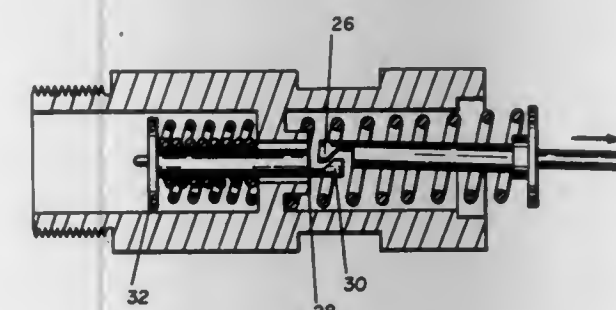
**HIGH "G" FIRING MECHANISM**

Richard R. Rhodes, Stroudsburg, and Robert L. Kenney, Jr., Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 8, 1980, Ser. No. 184,716  
Int. Cl.<sup>3</sup> F42C 15/20, 1/02

U.S. Cl. 102—261

8 Claims



8. The method of driving a device at a high force in a first direction in response to a lesser force in the opposite direction, comprising the steps of:  
precompressing a pair of opposing springs,  
holding said springs under precompression between a first member and a second member, which are releasably secured to each other,  
applying a force to said second member in one direction thereby increasing the compression on one of the springs tending to drive said first member in the opposite direction, the force on said second member being assisted by the precompression of the other of said springs,  
separating said first member from said second member in response to a predetermined force in said one direction and thereby driving said first member in the other direction in response to the force resulting from said precompression of said one of the springs plus the compression resulting from said force in one direction.

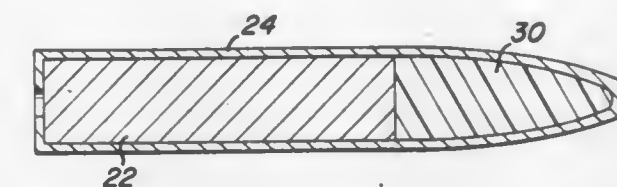
4,338,862

**BULLET NOSE FILLER FOR IMPROVED LETHALITY**  
Richard Kwatnoski, Lumberville, Pa., and Robert J. McHugh, Willingboro, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 3, 1975, Ser. No. 620,476  
Int. Cl.<sup>3</sup> F42B 11/08

U.S. Cl. 102—516

1 Claim



1. In a small arms cartridge, said cartridge having a case wall and a propellant therewithin; a head portion including means for igniting said propellant, the combination therewith of a projectile for increasing lethality of said projectile against soft targets by tumbling of said projectile therewithin substantially sooner than standard lead core and tracer bullets fired from similar cartridges and distances,  
a hollow metal jacket having a closed tip end,  
a structurally integral nose filler contained within a forward portion of said jacket, said nose filler comprising a thermoplastic resin having a specific gravity ranging between about 0.95 and 1.02 gm/cc, and about 20 to 40% of the length of said projectile,  
a heavy metal core within said jacket rearwardly adjacent said nose filler, said projectile forming a double wound tract in said soft target when said nose filler shears from said heavy metal core upon slight penetration of said projectile into said soft target.

4,338,863

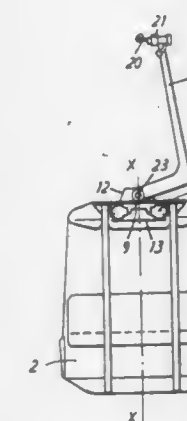
**PNEUMATIC SUSPENSION SYSTEM FOR ROPEWAY CARS**

Francis Tauzin, Veyrins, France, assignor to Pomagalski S.A. and Sigma Plastique, both of France

Filed Apr. 29, 1980, Ser. No. 144,816  
Int. Cl.<sup>3</sup> B61B 3/00

U.S. Cl. 104—89

4 Claims

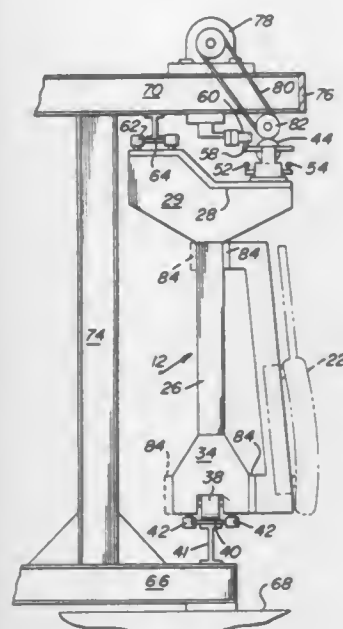


1. In a ropeway car of the type comprising a metal carrier framework suspended from a wire rope of the ropeway and a revetment carried by said framework, a pneumatic suspension system which comprises:  
(i) a top frame structure rigid with said car framework and including a platform,  
(ii) a carrying strap suspended from the wire rope of the ropeway, and including a bottom portion,  
(iii) a balloon tire interposed between the platform of the top frame structure and the bottom of said carrying strap, whereby said top frame is carried by said tire and is resili-



iently restrained against any movement relative to said carrying strap.

**4,338,864**  
**ASSEMBLY LINE DRIVERLESS VEHICLE**  
 Barry L. Ziegenfus, Saylorsburg, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.  
 Filed Apr. 8, 1980, Ser. No. 138,379  
 Int. Cl.<sup>3</sup> B61B 13/04, 13/12  
 U.S. Cl. 104—121 9 Claims

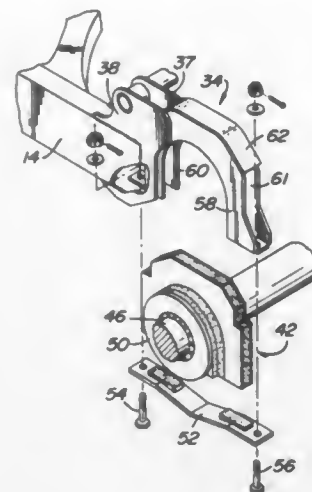


1. A driverless vehicle comprising a vertical frame whose primary function is to support a workpiece as the frame moves along an assembly line, said frame having a height which is greater than its width, at least one drive wheel mounted on the upper end of said frame and biased upwardly for contact with a driveshaft, at least one actuator on the frame and coupled to the drive wheel for oscillating the drive wheel about a vertical axis between drive and stop positions, aligned support wheels on the lower end of said frame for riding on a track, guide means on said frame for rolling contact with a guide generally parallel to the track, and a fixture on a side face of said frame for removably supporting the workpiece in an upright position so that the workpiece may be worked on at stations along an assembly line.

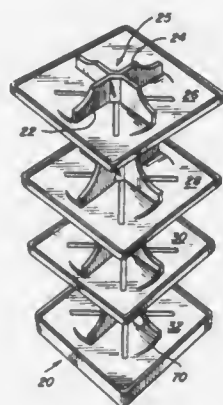
**4,338,865**  
**RAILWAY TRUCK ADAPTABLE TO RECEIVE A COMMON PRIMARY SUSPENSION AND VARIABLE JOURNAL BEARINGS**  
 Walter S. Eggert, Jr., Huntington Valley, Pa., assignor to The Budd Company, Troy, Mich.  
 Filed Jul. 7, 1980, Ser. No. 166,360  
 Int. Cl.<sup>3</sup> B61F 5/26, 5/06  
 U.S. Cl. 105—202 5 Claims

1. A railway truck comprising:  
 (a) a main body including a pair of spaced longitudinally extending parallel side frames connected by transverse connecting members, the ends of said side frame extending beyond said connecting frame members and disposed to receive mounting members;  
 (b) a plurality of mounting members for receiving suspension elements and journal mountings for wheel-axle assemblies,  
 (c) means for connecting said mounting members at predetermined locations on said truck side frames,  
 (d) a plurality of gusset members connecting the ends of said side frames to the sides of said mounting members to provide a principal structural load path between said end frames and mountings; and  
 (e) a pair of gussets are connected to each of said mounting member on opposite sides of each of said mounting mem-

ber, said connections between said side frames, said gussets and said mounting members comprise weld connec-



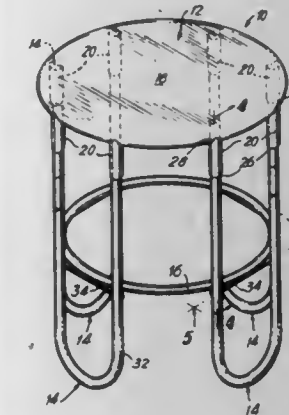
**4,338,866**  
**KNOCK-DOWN DISPLAY STAND**  
 Kenneth F. Streit, Mt. Prospect, Ill., assignor to Techplastics, Inc., Ill.  
 Filed Dec. 10, 1979, Ser. No. 101,888  
 Int. Cl.<sup>3</sup> A47B 3/06  
 U.S. Cl. 108—111 21 Claims



1. A display stand comprising:  
 (a) means for supporting shelves, said supporting means defining a longitudinal V-shaped, symmetrical structure having two integrally formed, generally flat, transversely extending wings, each wing being identical to the other, each wing having a plurality of parallel slots having one open end, each slot being substantially perpendicular to the longitudinal axes of said wings, said slots defining the thickness of the shelf to be supported, the longitudinal distance between said slots defining the space between successive tiers of said shelves, each wing having an edge substantially perpendicular to the longitudinal axis of said wing, said structure freely standing erect when resting on said edge; and  
 (b) a plurality of generally flat planar shelves, each shelf having at least one X-shaped opening in the plane of said shelf, said openings being substantially the same shape as the cross section of the structure formed by mating together a pair of supporting means apex to apex, said display stand being formed by joining said pair of supporting means so as to define a generally cruciform shaped column, said pair of supporting means being held together by adding shelves to said pair of supporting means, shelves being added by inserting each of said shelves over the top side of said pair of supporting means, each shelf being aligned to a set of paired slots in said pair of supporting means and rotated in the direction away from said shelf

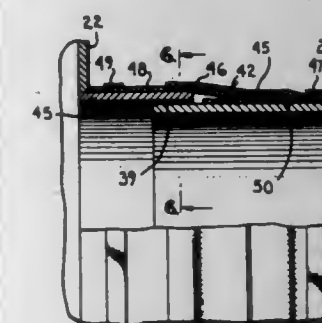
opening, positioning said wings over a closed surface of said shelf having the effect of interlocking said shelves and said pair of supporting means to form a self-supporting vertical array of parallel shelves.

**4,338,867**  
**TABLE ASSEMBLED WITHOUT FASTENERS**  
 Marion Imber, Stamford, Conn., assignor to Ray Control Corp., New York, N.Y.  
 Filed Feb. 11, 1980, Ser. No. 120,170  
 Int. Cl.<sup>3</sup> A47B 3/06  
 U.S. Cl. 108—159 12 Claims



1. A table comprising:  
 a top;  
 a plurality of engagement means, each said engagement means being connected to said top and extending downwardly therefrom in a direction approximately perpendicular to said top;  
 a plurality of legs, each leg being connected with one of said engagement means; and  
 spreader means contacting said legs and pushing said legs into frictional contact with surface portions of said engagement means to frictionally connect each leg to its associated engagement means, said spreader means not being joined to said legs and being compressively acted upon by said legs, said legs being unconstrained from separation from said engagement means when said spreader means does not push said legs.

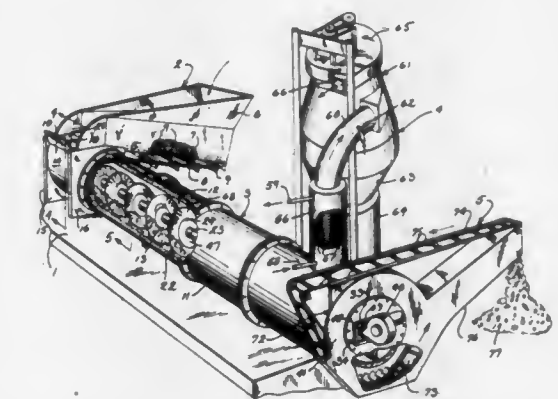
**4,338,868**  
**REFUSE BURNING PROCESS AND APPARATUS**  
 la Clede Lientz, P.O. Box 430, Branson, Mo. 65616  
 Filed Feb. 3, 1981, Ser. No. 231,163  
 Int. Cl.<sup>3</sup> F23G 5/06  
 U.S. Cl. 110—246 11 Claims



1. An apparatus for burning refuse having polyvinyl chloride therein comprising:  
 (a) a rotary furnace having a rotating middle section and stationary heads at opposite ends of said middle section;  
 (b) first delivery means for transmitting refuse to said furnace; said first delivery means being adapted to restrict

flow of oxygen through said delivery means into said furnace;  
 (c) second delivery means for conveying non-combusted refuse from said apparatus; said second delivery means being adapted to prevent flow of oxygen through said second delivery means to said furnace;  
 (d) a sealing mechanism between said furnace middle section and each of said heads respectively; each of said sealing mechanisms comprising a lower, an intermediate and an upper strap; said lower and upper straps being secured in overlapping manner to a first of said middle section or an associated head; said intermediate strap being secured to a second of said middle section or the associated head; said intermediate strap being flexible and slideably positioned between said upper and lower straps and sealably engaged therewith such that when said middle section is rotating with respect to said associated head, oxygen is substantially restricted from passing therebetween;  
 (e) whereby oxygen flow to said furnace can be controlled when the refuse is being combusted therein such that the temperature in said furnace is adapted to be controlled below about 1200 degrees F. so that phosgene is not produced by the burning of the polyvinyl chlorides in the refuse.

**4,338,869**  
**COMBUSTION APPARATUS UTILIZING AN AUGER HAVING AN INTEGRAL AIR SUPPLY SYSTEM**  
 Gordon H. Hoskinson, 1130 Caliente, Jacksonville, Fla. 32211, assignor to Gordon H. Hoskinson, Floral Park, N.Y.  
 Division of Ser. No. 573,269, Apr. 30, 1975, Pat. No. 4,231,304.  
 This application Mar. 31, 1980, Ser. No. 135,010  
 Int. Cl.<sup>3</sup> F23G 5/12  
 U.S. Cl. 110—346 4 Claims



1. A method of burning combustible waste material comprising the step of feeding waste material into an elongated combustion chamber, igniting the waste material, moving the ignited waste material through the chamber with a rotating screw conveyor having a hollow flight and having a plurality of ports providing communication between the interior of the hollow flight and the chamber, and introducing air into the hollow interior of the flight and discharging the air through said ports into the interior of the mass of waste material and into the upper portion of the combustion chamber above the level of the waste material to provide a secondary zone of combustion for combustible waste gases.



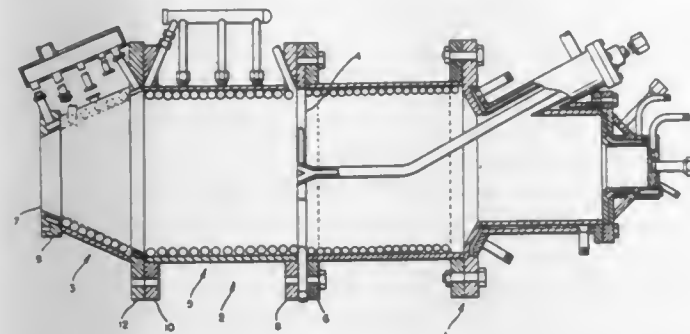
4,338,870  
HIGH TEMPERATURE OXYGEN HAZARDOUS WASTE  
INCINERATOR

John H. Lanier, Jr., Murfreesboro, Tenn., assignor to Holley Electric Corp., Jacksonville, Fla. and J. B. Dicks & Ass. Inc., Tullahoma, Tenn.

Filed Dec. 5, 1980, Ser. No. 213,636  
Int. Cl.<sup>3</sup> F23G 7/00

U.S. Cl. 110—346

20 Claims



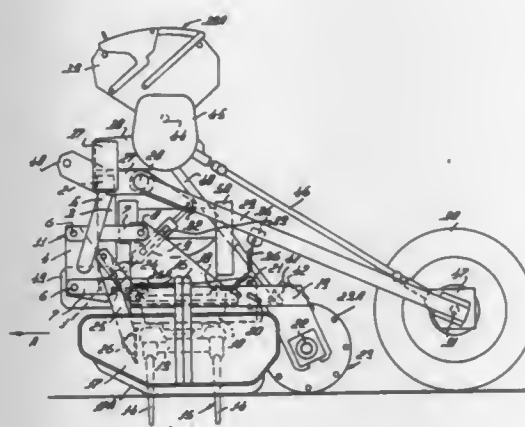
1. An apparatus for incinerating hazardous waste comprising:  
an incinerator shell;  
means for providing a mixture of a fuel and the hazardous waste to said incinerator;  
means for preheating oxygen to a temperature sufficient to produce a hypergolic combustion when mixed with the fuel provided by said means for providing; and  
means for mixing said mixture and said preheated oxygen and for producing a hypergolic combustion in said incinerator shell;  
said hypergolic combustion producing temperatures sufficient to oxidize said hazardous waste.

4,338,871  
SOIL CULTIVATING IMPLEMENT INCLUDING  
DISPENSER AND SUPPORT ROLLER  
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland  
Continuation of Ser. No. 796,355, May 12, 1977, abandoned, which is a division of Ser. No. 540,444, Jan. 13, 1975, Pat. No. 4,036,154. This application Nov. 16, 1978, Ser. No. 961,479  
Claims priority, application Netherlands, Jan. 18, 1974, 7400690

The portion of the term of this patent subsequent to Jan. 23, 1996, has been disclaimed.  
Int. Cl.<sup>3</sup> A01C 7/08, 7/20

U.S. Cl. 111—10

8 Claims



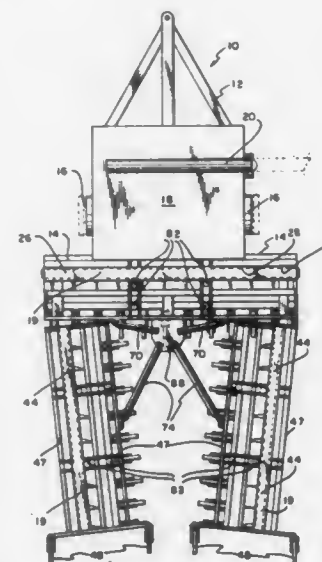
1. A cultivating implement comprising a frame and a plurality of mechanically driven soil working members rotatably mounted on an elongated portion of said frame, said elongated portion extending transverse of the direction of travel and being pivotably connected to a second portion of the frame, said elongated frame portion being interconnected to and at least partly supported by a ground engaging roller that governs the working depth of said soil working members and said

roller being positioned to the rear of the soil working members, a mechanism on said frame for applying material onto or/and into the soil being mounted on said second frame portion and said mechanism comprising hopper means with a plurality of downwardly extending delivery members that receive material from the hopper means, a common elongated support for said delivery members being positioned to the rear of said soil working members and in front of the rear side of said roller, the lower portions of said delivery members opening above said roller and being pivoted to said support, spaced apart arms interconnecting said roller to the opposite lateral sides of said elongated frame portion and said support being connected to said arms, said delivery members being movable relative to said support to avoid damage when the frame portion pivots during travel.

4,338,872  
MULTIPLE SECTION GRAIN DRILL  
Lester H. Decker, R.R. 3, Wichita, Kans. 67220  
Filed Apr. 14, 1980, Ser. No. 139,646  
Int. Cl.<sup>3</sup> A01C 5/00

U.S. Cl. 111—56

9 Claims



1. A multiple section grain drill for being towed by a tractor, or the like, comprising:  
(a) a main frame including a transverse segment;  
(b) at least two (2) wheels rotatably connected to said frame;  
(c) a grain container mounted on said frame for receiving grain;  
(d) a central flight means mounted on said transverse segment of said main frame and in communication with the grain in the container for bidirectionally moving said grain;  
(e) at least one wing frame slidably engaging said main frame;  
(f) a means connected to said main frame for shifting said wing frame from a fore-and-aft position with respect to said main frame to a transverse position with respect to same or vice versa in order to align the wing frame with the transverse segment of said main frame, said wing frame when in the transverse position being in the working position and when in fore-and-aft position being in the travelling position;  
(g) a wing flight means mounted on said wing frame, collinear with and being engaged by said central flight means when said wing frame is in the transverse position in order to unidirectionally transport grain away from said central flight means;  
(h) furrow opener means pivotally attached to said transverse segment and to said wing frame for generating furrows;  
(i) grain distributing means in communication with said central flight means and said wing flight means for depositing said grain in said generated furrows;

- (j) furrow closing and pressing means to direct soil into the furrow to cover the grain therein and to press the soil covering the grain, said furrow closing and pressing means being pivotally connected to said transverse segment and to said wing frame; and  
(k) power take off means from said tractor, or the like, for driving said central flight means which in turn drives said wing flight means, for pivoting said furrow opener means and said furrow closing and pressing means to adjust the height of same with respect to the ground, and for rendering power to said means for shifting said wing frame, said means connected to said main frame for shifting said wing frame from a fore-and-aft position with respect to said main frame to a transverse position with respect to same or vice versa in order to align the wing frame with the transverse segment of the main frame comprises a tongue attached to the aft of said transverse segment; said transverse segment having a channel traversing the aft section of same; at least one inside hydraulic cylinder pivotally connected to said tongue and having an inside hydraulic arm; a hinge bound to a corner of said wing frame and slidably lodged within said channel; said inside hydraulic arm pivotally attaching to said hinge; an outside cylinder pivotally attached to said tongue and including an outside hydraulic arm pivotally connected to said wing frame; a hydraulic power means for rendering power to said inside and outside hydraulic cylinder, said hydraulic power means being controlled and coming from said tractor, or the like.

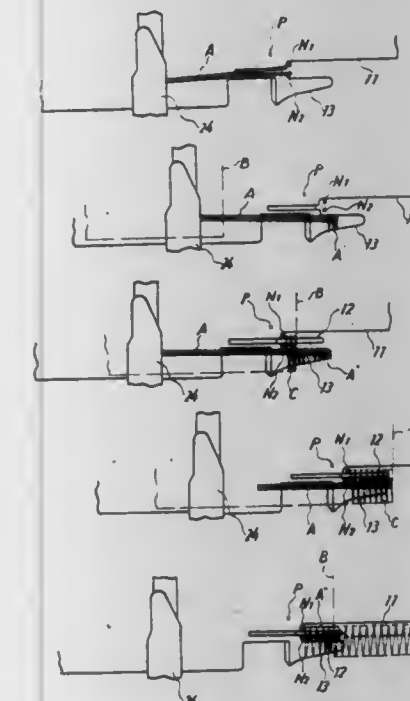
4,338,873  
THREAD CHAIN SEWING METHOD AND DEVICE FOR  
USE IN THE TWO-NEEDLE OVERLOCK SEWING  
MACHINE

Yoshinari Ueyama; Kikuo Mori, both of Osaka, and Hideo Matsushita, Hyogo, all of Japan, assignors to Pegasus Sewing Machine Mfg. Co., Ltd., Japan

Filed Jun. 24, 1980, Ser. No. 162,522  
Claims priority, application Japan, Mar. 14, 1980, 55-32909  
Int. Cl.<sup>3</sup> D05B 1/10

U.S. Cl. 112—262.1

12 Claims



1. A method for backtacking thread chains formed on a two-needle overlock sewing machine having an outer chaining-off finger on a needle plate of said machine and an inner chaining-off finger arranged alongside said outer chaining-off finger, needle drop points for the two needles being positioned on both sides of the inner chaining-off finger, the method comprising:

retractably arranging said inner chaining-off finger from an advanced position alongside the outer chaining-off finger; shifting said inner chaining-off finger to the advanced position during a prescribed period of sewing machine operation; and;  
shifting said inner chaining-off finger to a retracted position during the rest of the period of operation.

4,338,874  
INERT GAS SUPPLY AND SALVAGE SYSTEM FOR OIL  
TANKERS

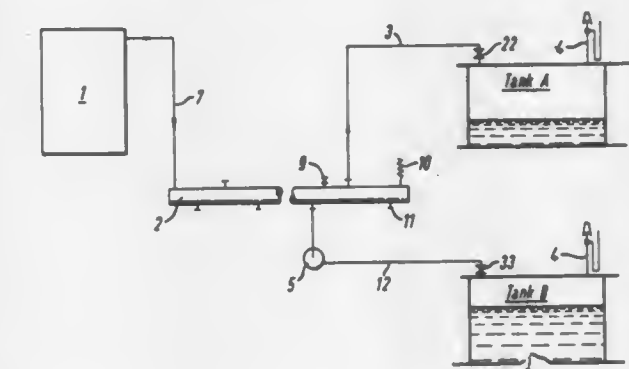
Peter V. Shaw, London, and Stewart Speed, Bromley, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Jan. 25, 1980, Ser. No. 115,341  
Claims priority, application United Kingdom, Feb. 17, 1979, 7905651

U.S. Cl. 114—50

Int. Cl.<sup>3</sup> B63C 7/12

5 Claims

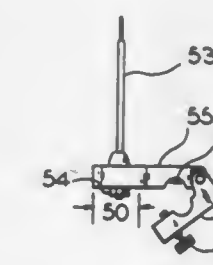


1. A method for salvaging an oil tanker comprising:  
purging combustible gasses from a compartment of said tanker;  
regulating the back pressure of purged gasses;  
connecting, via a covering plate, a source of inert gas to a first opening of said compartment;  
forcing said inert gas into said compartment via said first opening with a pressure equal to or greater than said back pressure to insure complete purging of said combustible gasses;  
lowering a pump and pump driving and discharge hoses via a lift cable through a second opening into said compartment; and  
slidably sealing said lift cable and said pump hoses to said second opening for containment of said gasses while pumping liquid via said pump discharge hose from said compartment.

4,338,875  
BOATS HARDWARE SYSTEM  
Walter E. Lisowski, P.O. Box 558, Addison, Ill. 60101  
Division of Ser. No. 834,416, Sep. 19, 1977, Pat. No. 4,194,451, and Ser. No. 761,793, Jan. 24, 1977, abandoned. This application Mar. 14, 1980, Ser. No. 130,264  
Int. Cl.<sup>3</sup> B63B 9/00

U.S. Cl. 114—221 R

8 Claims



1. A universal mount especially for use on boat rails, said



universal mount consisting of first and second opposing massive block members formed from a generally rigid plastic material which works internally to attenuate vibrations, said plastic having a surface character and a degree of softness such that it does not mar the surface of said boat rail, said material being light enough to float in water, one end of each of said blocks terminating in upstanding hinge sections which come together in an interleaving relationship to form a hinge when the blocks are placed in a face to face relationship, screw fastening means captured on the other end of one of said blocks, threaded nut fastening means located on the other of said blocks at a point where said screw fastening means engages said nut when said blocks are in said face to face relationship, said screw fastening means having a head which is shaped and dimensioned to enable said blocks to be drawn tightly together responsive to finger pressure, a single and exclusively straight cove formed in each of said blocks at opposed locations between said hinge sections and said screw and nut means, each of said coves lying generally perpendicular to a line extending from said screw means to said hinge means, each of said coves further having a cross section which generally corresponds to the cross section of slightly less than one-half of said rail so that an unobstructed straight section of said rail is snugly and tightly gripped between said massive blocks when said screw means is tightened responsive to said finger pressure, a resilient shock absorbant friction causing means positioned in the bottom of at least one of said coves for enhancing friction and for further reducing vibrations transmitted from the rail to said mount, and mounting means formed in at least one of said massive blocks for universally enabling gear to be clamped securely to said one massive block while said mount is secured to a rail.

4,338,876

## APPLICATION OF LIQUIDS TO TEXTILES

David E. P. Norton, Macclesfield, England, assignor to Sir James Farmer Norton & Company Limited, Manchester, England

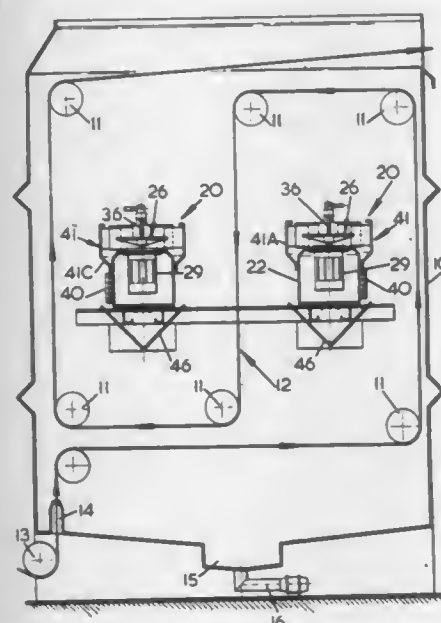
Filed Jul. 2, 1980, Ser. No. 165,437

Claims priority, application United Kingdom, Jul. 5, 1979, 7923500

Int. Cl.<sup>3</sup> D06B 1/02

U.S. Cl. 118—259

9 Claims



1. An apparatus for applying liquid to a moving fabric, comprising:
- a fabric treatment chamber;
  - roller means within the treatment chamber for guiding the fabric passing through the chamber so that the fabric follows at least one vertical path;
  - a plurality of adjacent side-by-side liquid delivery spinning discs rotatable about vertical axes, the discs being ar-

anged across a width of the fabric adjacent the at least one vertical path;

a delivery pipe mounted directly above a center of each spinning disc for supplying liquid to each disc, the spinning discs centrifugally impelling the liquid in the form of a fine mist-like spray uniformly across the fabric width with each spinning disc forming a pattern on the fabric;

a baffle located at each side of each spinning disc and being between adjacent spinning discs to control a degree of overlap between the spray patterns created by adjacent spinning discs, the baffles of each spinning disc being diametrically opposed and longitudinally displaced relative to one another in the direction of the fabric width; and

means for adjustably mounting each baffle relative to its spinning disc to permit the baffle to be adjusted so that each baffle can be moved closer to or further away from its disc and can also be moved lateral to its disc in the widthwise direction of the fabric to permit variation of spray pattern overlap control.

4,338,877

## APPARATUS FOR MAKING SEMICONDUCTOR DEVICES

Haruyoshi Yamanaka, Takarazuka, and Masaru Kazumura, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

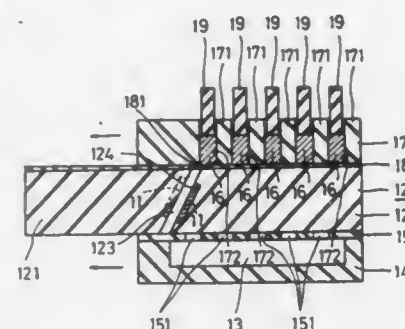
Filed Oct. 12, 1979, Ser. No. 84,297

Claims priority, application Japan, Oct. 20, 1978, 53-129615

Int. Cl.<sup>3</sup> B05C 3/09

U.S. Cl. 118—421

10 Claims



1. An apparatus for making semiconductor devices comprising a block having one slot hole which includes at least one space for holding a semiconductor substrate therein, a solution container which has a predetermined number of holes with separating wall parts for isolation of said holes from each other to contain semiconductor solutions therein, said at least one space being formed in said slot hole, which is defined by two substantially parallel walls disposed at an angle with respect to a horizontal plane, said slot hole having a solution inlet at its top and a solution outlet at its bottom, said at least one space being disposed in a manner to hold said semiconductor substrate with its principal face substantially parallel to the walls of said slot hole, characterized in that
- said solution container is movably disposed on said block in a manner to sequentially dispose said one slot hole under one of said holes containing one of said semiconductor solutions and sequentially pour said semiconductor solutions into said slot hole from selected ones of said holes,
- a movable outlet sheet having a predetermined number of outlet through-holes corresponding to the predetermined number of holes in the solution container to be sequentially disposed under said solution outlet and connected to said solution container, thereby discharging one of said semiconductor solutions out of said slot hole when one of said separating wall parts closes said solution inlet,
- said block having secured thereto a cover sheet having one inlet through-hole superimposed on said solution inlet for being sequentially disposed under one of said holes containing said semiconductor solutions, which solutions fall down into said slot hole by gravity, said movable outlet sheet (15) with said predetermined number of outlet

through-holes (151) being provided so as to control discharging of said solutions from said slot hole (123) with the capacity of each of said holes (172) in said solution container being larger than the capacity of said slot hole (123) thereby allowing said solution (16) to extend upwards continuously to the lower part of said hole (172) when a solution (16) is led into said slot hole (123).

4,338,878

## FLUIDIZED BED WITH SLOPED APERTURE PLATE

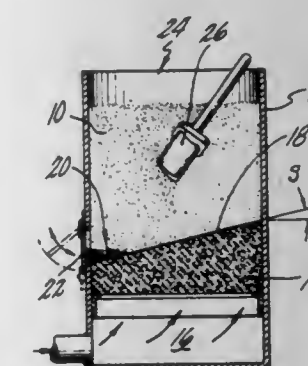
Kenneth R. Mason, Wethersfield, and Edward G. Day, Rocky Hill, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 26, 1980, Ser. No. 210,482

Int. Cl.<sup>3</sup> B05C 19/02

U.S. Cl. 118—429

8 Claims



1. A fluidized bed apparatus adapted to contain a mass of fine particles having desired characteristics, characterized by an aperture plate with its upper surface positioned at an incline with respect to a horizontal plane, the incline sufficient to cause undesired particles, which because of their size or mass tend not to be fluidized within the desired fine particles, to migrate to a collection point from which they may be removed from the apparatus; and means for regulating the flow through the aperture plate, the means providing a fluid pressure at the upper surface of the aperture plate which varies according to the height of particles containable above the plate, so that fluidization in the horizontal plane of the fluidized bed is relatively uniform.

4,338,879

## APPARATUS FOR APPLYING ENAMEL SLIP TO PIPE

Anatoly E. Makeev, ulitsa Chekhova, 79, kv. 14, Rostov-na-Donu, and Alexandr A. Sirotinsky, Fergansky proezd, 13, korpus 1, kv. 15, Moscow, both of U.S.S.R.

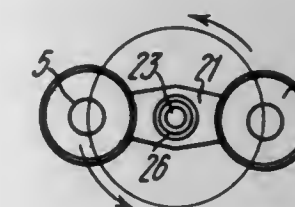
Filed Jan. 18, 1981, Ser. No. 223,431

Claims priority, application U.S.S.R., Mar. 30, 1978, 2596057

Int. Cl.<sup>3</sup> B05C 3/10

U.S. Cl. 118—602

7 Claims



1. Apparatus for applying enamel slip to a walled pipe, comprising:
- at least one housing designed to be filled with enamel slip;
  - pump means for supplying enamel slip to said housing;
  - a rod centrally mounted in said housing;
  - said housing and said rod forming therebetween a clearance space to be filled with enamel slip;

and a mechanism for moving said pipe in said clearance space.

4,338,880

## MAGNETIC BRUSH DEVELOPMENT APPARATUS FOR USE IN ELECTROPHOTOGRAPHIC COPYING MACHINE

Kenji Tabuchi; Susumu Tanaka; Kenichi Wada, and Tateki Oka, all of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

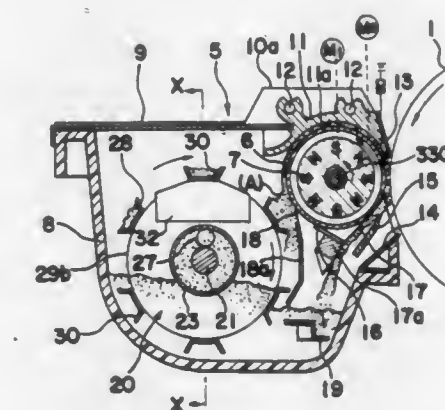
Filed Sep. 11, 1979, Ser. No. 74,812

Claims priority, application Japan, Sep. 19, 1978, 53-115252; Sep. 19, 1978, 53-115253; Sep. 19, 1978, 53-115254; Sep. 19, 1978, 53-115377

Int. Cl.<sup>3</sup> G03G 15/09

U.S. Cl. 118—652

15 Claims



1. A magnetic brush development apparatus for use in an electrophotographic copying machine for developing an electrostatic latent image, said apparatus being of the type for using a developer which is constituted by non-magnetizable particles and magnetizable particles with the diameters of the respective particles being approximately the same, said apparatus comprising:
- a developing casing having a developer powder supply position and a developer powder delivery position at which the developer powder is applied to the latent image;
  - a developing sleeve rotatably mounted in said developing casing with said positions being spaced around said sleeve, said sleeve being rotatable in a direction for moving the peripheral surface from said delivery position along a delivery path for the developer to said supply position in a direction opposite to the direction of movement of the developer along the delivery path around said sleeve from the supply position to the delivery position;
  - a multipolar magnet member rotatably accommodated in said developing sleeve, said multipolar magnet member being rotatable in the same direction as said developing sleeve for transporting developing material affected by said magnet member around said sleeve in a direction opposite to the direction of rotation of said sleeve and said magnet member;
  - driving means connected to said sleeve and to said magnet member for driving said sleeve and said magnet member and driving said magnet member at a much higher speed of rotation than the speed of rotation of said developing sleeve for moving the affected developer along said delivery path;
  - a least one cleaning member positioned along the portion of the periphery of said sleeve which is moving from said supply position to said delivery position, said cleaning member being urged into contact with the surface of said sleeve and directed in a direction opposite to the direction of rotation of said sleeve for removing part of the developer adhering to said sleeve and which is at most only slightly affected by said magnet member and transported in the direction of rotation of said sleeve; and
  - at least one scraping member positioned along the portion of



the periphery of said sleeve which is moving from said supply position to said delivery position and positioned between said cleaning member and said delivery position for scraping the affected developer from said surface of said sleeve, and said scraping member having a forward end portion urged into contact with said surface of said sleeve and directed in the direction of rotation of said developing sleeve, the forward end portion of said scraping member having a resiliency for being lightly pressed against said sleeve and for being movable away from the peripheral surface of the developing sleeve by the remaining slightly affected developer for forming a gap between said peripheral surface of the sleeve and said forward end, whereby the slightly affected developer is passed through said gap and does not accumulate between said scraping member and said sleeve.

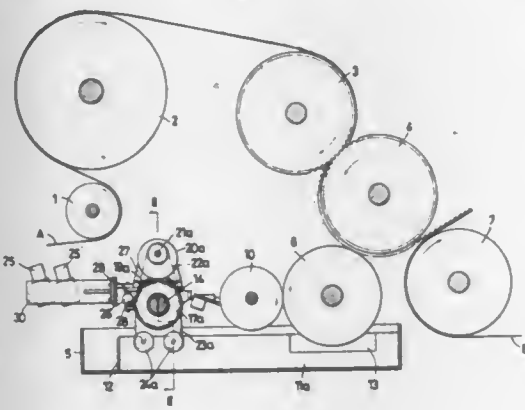
**4,338,881**  
**SYSTEM FOR CONTROLLING WIDTH AND POSITION OF GLUE OR THE LIKE APPLIED TO A ROLL**  
Masateru Tokuno, Nishinomiya, Japan, assignor to Rengo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 219,536, Dec. 23, 1980, abandoned, which is a continuation of Ser. No. 65,742, Aug. 10, 1979, abandoned. This application Feb. 23, 1981, Ser. No. 237,412

Claims priority, application Japan, Aug. 25, 1978, 53-117146  
Int. Cl.<sup>3</sup> B05C 1/08

U.S. Cl. 118-673

4 Claims



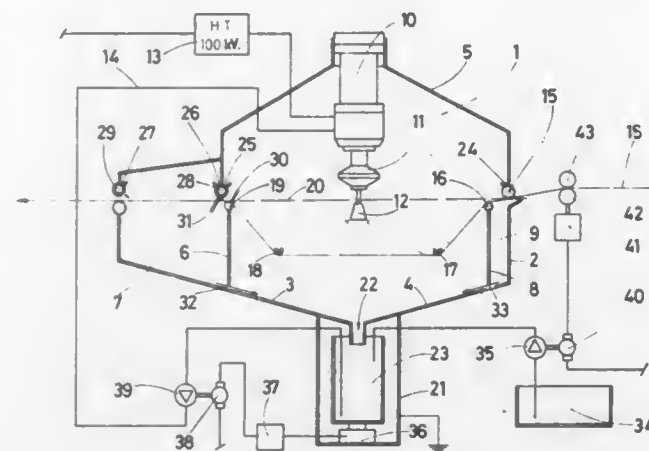
1. Apparatus for controlling the width and position of application of a liquid material such as glue or the like from a pan containing the material to a roll immersed in said pan so that the roll can apply the material to a running web, said apparatus comprising: a pair of dams for immersion in the material in said pan for confining the material in the pan between said dams, the roll being across said dams and extending below the level of the tops of the dams, said dams being movable in said pan in the direction of the length of said roll; sensor means for sensing any displacement of said running web laterally thereof or a change in the width thereof; a pair of reversible motors connected to said sensor means and actuated in response to the sensing by said sensor means of a displacement or change in width of the running web; and a threaded shaft and nut means coupled between each motor and a corresponding dam and said motors being connected thereto for producing relative rotation of said threaded shaft and nut means for moving the corresponding dam to a new position according to the displacement or change in width of the running web.

**4,338,882**  
**PLASTICIZER INSTALLATION FOR THE TREATMENT OF A ROPE OF FIBRES**  
Guy Siggen, Juriens, and Michel Berny, Bavois, both of Switzerland, assignors to Baumgartner Papiers S.A., Switzerland

Filed Sep. 29, 1980, Ser. No. 191,419  
Claims priority, application Switzerland, Jan. 30, 1980, 737/80

Int. Cl.<sup>3</sup> B05B 5/02  
U.S. Cl. 118-674

6 Claims



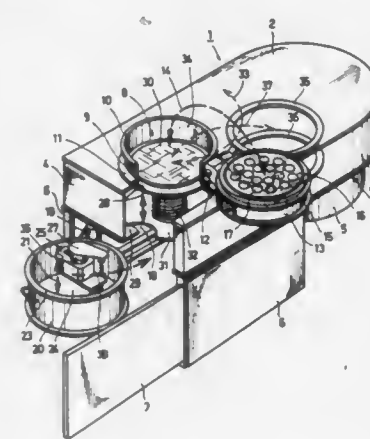
1. A plasticizer installation for the treatment of a rope of fibres intended for the manufacture of cigarette filters, the installation comprising a chamber through which the rope, spread out in the form of a sheet, is moved continuously in front of a device for spraying liquid plasticizer, which device comprises a turbine and a spray head connected to a source of D.C. voltage and located above the path of the rope, the chamber being connected to earth and housing means for guiding the rope, which means are arranged such that the rope is deflected below a truly rectilinear path, and the spray head being located below said truly rectilinear path.

**4,338,883**  
**VACUUM VAPOR-DEPOSITION INSTALLATION WITH A VACUUM CHAMBER, A VAPORIZING CHAMBER AND AN EVAPORIZING CHAMBER**  
Peter Mahler, Obertshausen, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Aug. 25, 1980, Ser. No. 181,456  
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2940064

Int. Cl.<sup>3</sup> C23C 13/08  
U.S. Cl. 118-719

4 Claims



1. In a vacuum vapour-deposition installation for batch-wise operation having a valve chamber with a suction opening for producing a vacuum, an upward directed first opening for vacuum-tight connection with a removable vaporizing chamber, and a downwardly directed second opening for connection with an evaporizing chamber, the first and the second

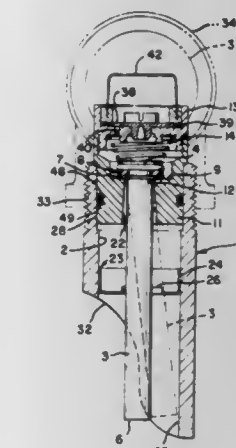
openings being substantially in alignment and each being surrounded by a valve seat towards the valve chamber and a two-way valve which is horizontally movable in the valve chamber with two valve discs which can be moved apart, the improvement comprising means permitting access to the interior of the evaporizing chamber from the exterior without interrupting the vacuum in the valve chamber.

**4,338,884**  
**ANIMAL BITE VALVE**  
Frank W. Atchley, Donald W. Vorbeck, and Ronald L. Wurz, all of Napa, Calif., assignors to ATCO Manufacturing Co., Inc., Napa, Calif.

Filed Mar. 9, 1981, Ser. No. 241,645  
Int. Cl.<sup>3</sup> A01K 7/06

U.S. Cl. 119-72.5

9 Claims



1. An animal bite valve comprising:  
a. a housing formed with an opening therethrough;  
b. non-flexible fulcrum means mounted within said housing;  
c. an elongated valve lever mounted in said housing having an inner end and a distal end, and having an inflexible flange formed with a fulcrum edge on its rim and positioned for tilting registration with said non-flexible fulcrum means and an annular channel formed therein between said inflexible flange and said inner end;  
d. valve seat means having an annular land mounted in said housing;  
e. a flexible cup seal member having an annular base registering with said annular channel for mounting on said lever for tilting movement therewith and having an annular wall extending from said base beyond said fulcrum edge of said inflexible flange for sealing and unsealing engagement with said annular land on said valve seat means; and  
f. biasing means mounted in said housing biasing said inflexible flange on said valve lever into engagement with said non-flexible fulcrum means.

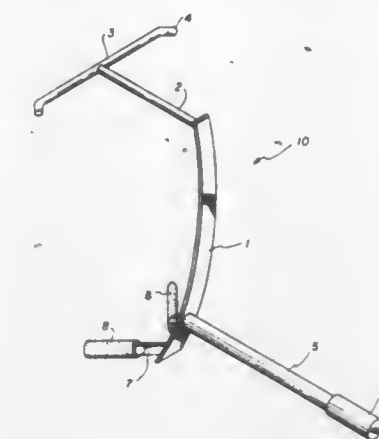
**4,338,885**  
**CATTLE HEAD HOLDER**  
Jasper A. Van Vliet, 3930 Claus Rd., and James E. Elder, 1443 Albers Rd., both of Modesto, Calif. 95355  
Filed Dec. 3, 1980, Ser. No. 212,689  
Int. Cl.<sup>3</sup> A01K 29/00

U.S. Cl. 119-96

8 Claims

1. A device for holding the head of livestock and the like which head extends through laterally translatable rails comprising, in combination:  
pivoting means on said device for moving said device about a horizontal axis between two of the rails,  
snout means on said device for engaging the snout of the livestock,  
and lever means on said device for forcing the head of the livestock to be constrained and stilled against the rails by exerting pressure on said snout means through said lever means while pivoting about said pivot means, whereby the head of the livestock can be worked on as by dehorning,

medicating or the like, wherein said device includes an arcuate, elongate strip of material from which said pivoting, snout, and lever means extend and are supported,

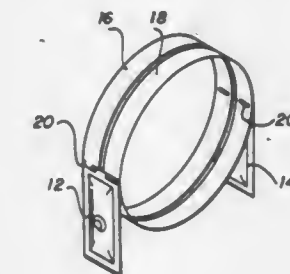


**4,338,886**  
**PREDATOR CONTROL TOXIC COLLAR**  
Roy T. McBride, P.O. Box 725, Alpine, Tex. 79830

Filed Dec. 31, 1980, Ser. No. 221,819  
Int. Cl.<sup>3</sup> A01K 27/00, 29/00

U.S. Cl. 119-106

15 Claims



1. A predator control collar for protecting livestock by repelling or killing predators with a predicide, comprising:  
a pair of sealed pouches forming leakproof containers for a predicide, said pouches being rupturable by a predator to release the predicide; and  
a collar supporting said pouches about the neck region of the livestock, said collar including means for expanding in circumference as the neck size of the livestock increases during its growth; whereby the collar may be initially placed upon a young livestock and remain in place to repel or kill a predator until the livestock has fully grown for market.

**4,338,887**  
**LOW PROFILE FLUID BED HEATER OR VAPORIZER**  
Albert M. Leon, Mamaroneck, N.Y., assignor to Dorr-Oliver Incorporated, Stamford, Conn.  
Continuation-in-part of Ser. No. 79,569, Sep. 27, 1979, abandoned. This application Aug. 27, 1980, Ser. No. 181,900  
Int. Cl.<sup>3</sup> B09B 3/00

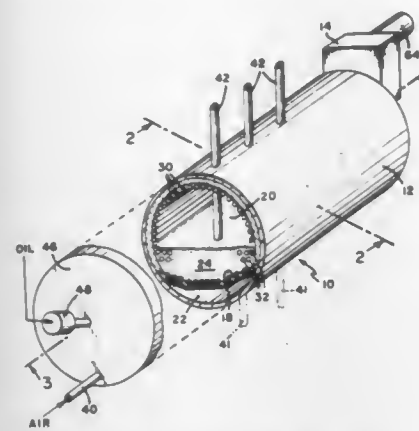
U.S. Cl. 122-4 D

22 Claims

1. A fluid bed heater or vaporizer comprising an enclosed vessel having means for introducing an oxygen-containing gas into the lower portion of said vessel to fluidize a body of particulate solids forming a fluidized bed within said vessel, heat exchange tubes within said vessel including convection/radiation heat exchange tubes in the freeboard above said fluidized bed and in-bed heat exchange tubes within said fluidized bed, means for regulating the supply of gas into said vessel to provide in the fluidized bed a combustion zone of high



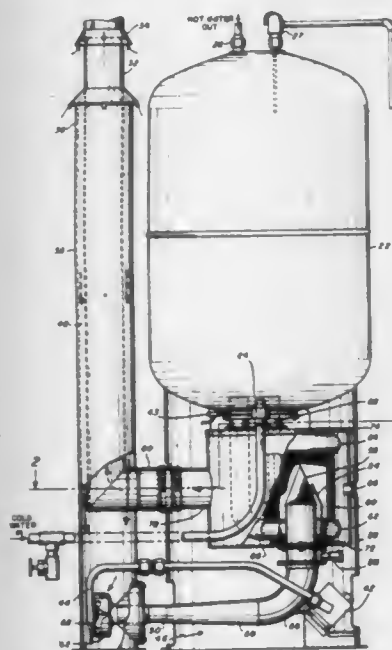
turbulence and low density and at least one heat transfer zone of relatively low turbulence and high density, said combustion



**4,338,888**  
**HIGH EFFICIENCY WATER HEATING SYSTEM**  
Joseph Gerstmann, Framingham, and Andrew D. Vasilakis, Bedford, both of Mass., assignors to Advanced Mechanical Technology, Inc., Newton, Mass.  
Filed May 14, 1980, Ser. No. 149,937  
Int. Cl.<sup>3</sup> F22B 5/00

U.S. Cl. 122-16

12 Claims



1. A storage water heater of the type having an insulated water storage tank, a water inlet and a water outlet to and from the water heater, and a gas fueled combustion assembly in which gas initially at line pressure or less naturally mixes with combustion air and is ignited in a combustion chamber to heat water in the storage tank, the water heater characterized in that:

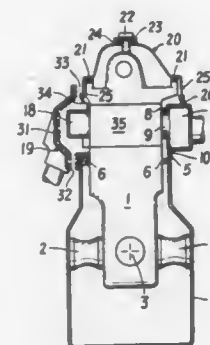
the combustion chamber is positioned below and external to the storage tank, the combustion chamber wall comprising a plurality of generally vertical riser tubes surrounding a burner and through which all of the products of combustion flow radially, the upper ends of the riser tubes being in fluid communication with the storage tank and the lower ends of the riser tubes being in fluid communication with the storage tank through at least one downcomer tube, the riser and downcomer tubes defining a heat exchanger water passage with high and low points in the passage in liquid communication with the interior of the storage tank for flow of water through the heat exchanger passage to the storage tank by natural convection;

a burner is surrounded by the riser tubes of the combustion chamber; and  
a fuel gas nozzle adjacent to the burner for supporting a pilot flame is positioned such that the pilot products of combustion flow in a strata past the riser tubes at the upper ends thereof, the heat imparted to the liquid in the heat exchanger water passage being insufficient to cause significant convective flow within the passage throughout the length of the heat exchanger passage.

**4,338,889**  
**LOW-NOISE LEVEL INTERNAL COMBUSTION ENGINE**  
Karl Kirchweyer, Heinz Fachbach, and Josef Greier, all of Graz, Austria, assignors to Hans List, Graz, Austria  
Filed May 5, 1980, Ser. No. 146,276  
Int. Cl.<sup>3</sup> F02M 33/02

U.S. Cl. 123-198 E

14 Claims



1. In a low noise-level internal combustion engine which includes an engine unit support, a crankshaft mounted for rotation in said engine unit support, a cylinder head, an induction manifold for delivering air or an air/fuel mixture to said cylinder head, a rocker cover and a crankcase constructed to surround a portion of said engine unit support and extend upwardly to a level above said crankshaft, the improvement wherein at least one vibration-absorbing connector element is connected between said engine unit support and said crankcase, wherein a number of vibration-absorbing and sealing intermediate rings are positioned between said induction manifold and said cylinder head, and wherein said rocker cover is directly attached to said cylinder head by at least one vibration-absorbing attachment element, said rocker cover and said induction manifold being constructed so as to at least partially enclose said cylinder head and the portion of said engine unit support which extends upwardly above said crankcase, said rocker cover and said induction manifold acting to suppress the radiation of body resonance and sound vibration emanating from and around said cylinder head and said engine unit support.

**4,338,890**  
**HOOD, MUFFLER AND AIR CLEANER MODULE FOR AN INTERNAL COMBUSTION ENGINE**  
Robert L. Shelby, Chillicothe, and Douglas A. Wilkins, Wyoming, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 72,260, Jan. 31, 1979, abandoned. This application Dec. 29, 1980, Ser. No. 220,711  
Int. Cl.<sup>3</sup> F02B 77/00

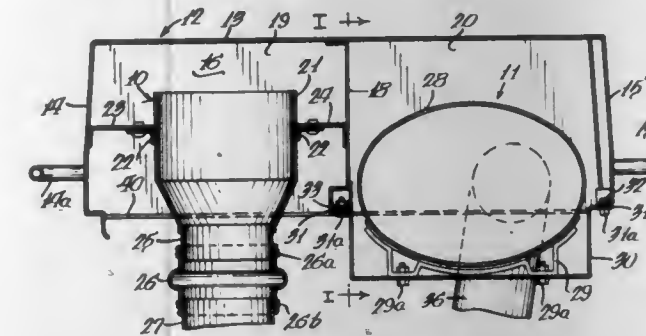
U.S. Cl. 123-195 A

6 Claims

1. In an upwardly open compartment (C) for an internal combustion engine (D) with an exhaust system having a manifold (M2) and having a muffler (11) above the engine (D), the improvement comprising:

a hood (12) detachably mounted on the compartment (C) in a position spaced above the engine (D), said hood providing a top closure for said compartment;  
a muffler (11) for the exhaust system which has an exhaust intake pipe (36);

means (29, 29a, 30, 31, 31a) secured to the hood (12) supporting the muffler (11) onto the underside of the hood (12); and releasable means (37) detachably connecting the exhaust intake pipe (36) to the manifold (38-M2), said releasable means (37) being constructed and arranged to be released

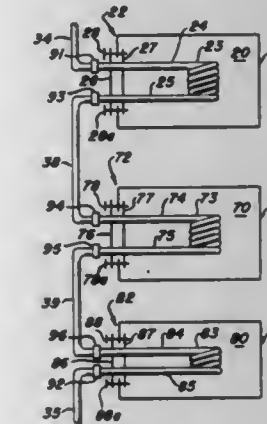


with the hood (12) in position, wherein the hood (12), supporting means and muffler (11) constitute a module means removable from the upwardly open compartment (C) as a unit to leave the internal combustion engine (D) completely accessible from above.

**4,338,891**  
**TEMPERATURE CONTROL SYSTEM FOR AUTOMOTIVE STORAGE COMPONENTS**  
James E. Blitz, 2832 Ross St., Highland, Ind. 46322  
Division of Ser. No. 115,996, Jan. 28, 1980, Pat. No. 4,286,551.  
This application Oct. 20, 1980, Ser. No. 198,438  
Int. Cl.<sup>3</sup> F01P 1/06, 3/12

U.S. Cl. 123-41.31

6 Claims



1. A system for controlling the temperature of the contents of a multiplicity of storage vessels integral with an automotive transport unit, said automotive transport unit including a fluid-cooled internal combustion engine, during periods when said internal combustion engine is not in operation, comprising:

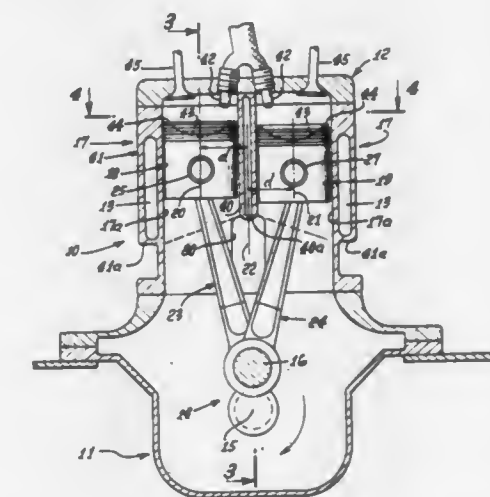
(a) a multiplicity of storage tanks, each having two end sections;  
(b) a like number of generally coiled lengths of pipe, each length of pipe being disposed within a separate storage tank and having two end sections, each pipe end section sealably inserted through a common end section of the separate storage tank and fitted, externally to said tank end section, to receive conduit couplings;  
(c) connective conduit means, coupled to respective pipe end sections and adapted to provide for serial flow through the multiplicity of coiled lengths of pipe;  
(d) two terminal conduit means, each having two ends, each coupled at a first end to a respective terminal pipe end section, the first terminal conduit means having interposed along its length heating and pumping means and coupled at a second end to an inlet fluid coolant line, the second terminal conduit means coupled at a second end to an outlet fluid coolant line, said fluid coolant lines being

normally in communication with the internal combustion engine;  
(e) temperature sensing means attached to at least one of said storage tanks;  
(f) valve means, inserted in the first terminal conduit means, operable responsively to the temperature sensing means;  
(g) an external electrical power source for operating said heating and pumping means and valve means;  
(h) a three-way cut-off valve positioned at the junction of said inlet fluid coolant line and said second end of said first terminal conduit means; and  
(i) by-pass conduit means connecting the cut-off valve to the outlet fluid coolant line; whereby the fluid coolant can be optionally diverted from passage through the internal combustion engine, heated and pumped in response to the power source and temperature sensing means through at least the respective pipe coils and conduit means, to control and maintain the temperature of the contents of the respective storage vessels.

**4,338,892**  
**INTERNAL COMBUSTION ENGINE WITH SMOOTHED IGNITION**  
Russell P. Harshberger, P.O. Box 601, Pasadena, Calif. 91102  
Filed Mar. 24, 1980, Ser. No. 133,013  
Int. Cl.<sup>3</sup> F02B 75/26

U.S. Cl. 123-54 A

1 Claim



1. In an internal combustion engine having piston means reciprocable in cylinder means, a crankshaft having an axis, and connecting rod structure, the improvement comprising:  
(a) said cylinder means including two generally side-by-side cylinders, at least one cylinder having an axis out of intersecting alignment with the crankshaft axis,  
(b) the piston means including two pistons respectively reciprocable in said two cylinders,  
(c) the two pistons having connections to said crankshaft via said rod structure characterized in that one piston arrives at top dead center position while the other piston is near top dead center position,  
(d) the crankshaft having a throw, the connecting rod structure include two connecting rods respectively connected with the two pistons, both said rods connected with said throw, in side-by-side relation,  
(e) the other cylinder also having an axis out of intersecting alignment with the crankshaft axis, said cylinder axes defining a plane generally normal to the connecting rod axis,  
(f) one connecting rod extending at a small negative angle relative to said plane, and the other connecting rod extending at a small positive angle relative to said plane,  
(g) the engine having a common cylinder wall with a section extending between the two cylinders, that wall section containing a slot at the bottom thereof to pass the connecting rods,  
(h) the cylinders having closed heads and the engine including



fuel injectors for Diesel operation, the injectors extending into said heads proximate and at opposite sides of said wall section, to direct injected fuel toward edge portions of cupped heads defined by the pistons,  
(i) the injectors to receive fuel from a common source, and being arrayed in forked relation above and adjacent to said wall section.

4,338,893

## DECOMPRESSION DEVICE

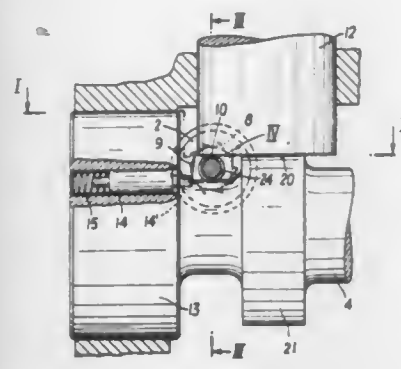
Colin T. Pomfret, and Fritz Freyn, both of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Apr. 2, 1980, Ser. No. 136,669

Claims priority, application Austria, Apr. 19, 1979, 2971/79  
Int. Cl.<sup>3</sup> F01L 13/08

U.S. Cl. 123—90.16

12 Claims



1. An internal combustion engine which includes an automatically discontinuing decompression mechanism, the engine including

- an elongated camshaft which is rotated by the engine, the elongated camshaft including a shoulder part and a cam, the cam having an outer surface which in part is cylindrical in shape and in part lobe-shaped, the portion of the elongated camshaft extending from the side of the cam opposite the shoulder part defining a first (root) diameter and the portion of elongated camshaft extending between the cam and the shoulder part defining a second diameter which is smaller than the first (root) diameter, the shoulder including a bore which extends in parallel with the elongated camshaft, the bore being located from the axis of the camshaft a distance greater than half the first (root) diameter,
- a transmitting member movably extending between said cam and a valve associated with a combustion chamber, the rotation of said camshaft causing the cam to move said transmitting member such that the valve to which said transmitting member is connected will open and close;
- a rotatable, elongated decompression element, the elongated decompression element including
- a control shaft,
- a ratchet wheel which is interconnected with the control shaft, the ratchet wheel including a number of teeth and a circumferential portion which is tooth free, and
- a decompression cam which is interconnected with the ratchet wheel, the decompression cam including a portion which has an outer surface which in part is cylindrical in shape and in part is flat, this portion of the decompression cam being located between the shoulder and the cam such that when rotated in order that its flat outer surface part faces the transmitting member, no contact therewith is made, but when rotated in order that its cylindrical outer surface part faces the transmitting member, contact therewith is made and the transmitting member is prevented from contacting the cylindrical outer surface part of the cam such that the associated valve is prevented from closing the associated combustion chamber, and
- a shifting member located in the bore in the shoulder part of the elongated camshaft, the shifting member including a projecting portion which extends outwardly of the shoulder part to a point adjacent the ratchet wheel of the rotatable, elongated decompression element, the shifting mem-

ber when rotated by the camshaft not contacting the ratchet wheel when the circumferential tooth-free portion of the ratchet wheel is opposite the projecting portion of the shifting member but otherwise contacting the teeth of the ratchet wheel to incrementally rotate the ratchet wheel and thus the decompression element as a whole with each revolution of the camshaft.

4,338,894

## SELF-CONTAINED HYDRAULIC LASH ADJUSTER

Hisashi Kodama, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

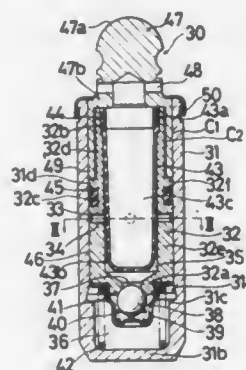
Continuation of Ser. No. 31,092, Apr. 18, 1979, abandoned. This application Jan. 29, 1981, Ser. No. 229,750

Claims priority, application Japan, Apr. 20, 1978, 53-53206[U]; Apr. 24, 1978, 53-54763[U]

Int. Cl.<sup>3</sup> F01L 1/24

U.S. Cl. 123—90.58

3 Claims



- 1. A self-contained lash adjuster comprising a body having an axially extending blind bore therein with an opening at one end and a closed wall at the other end, a plunger slidably mounted in said blind bore, a reservoir chamber located in said plunger, a pressure chamber disposed between said plunger and said closed wall of said body, a check valve for allowing fluid flow from said reservoir chamber to said pressure chamber through an aperture in said plunger, a return spring disposed between said closed wall of said body and said plunger to bias said plunger in the direction of said opening of said body, a leakage clearance between the inner surface of said body and the outer surface of said plunger, an annular groove provided on said outer surface of said plunger, radial passage means extending through said plunger in communication with said groove to connect said leakage clearance to said reservoir chamber, a transmitting member slidably inserted between the inside of said body and the outside of said plunger adjacent the opening at one end of the body, sealing means providing a seal between said plunger and said body intermediate said groove and said transmitting member, said one end of said transmitting member is disposed in engagement with a shoulder portion of said plunger, a tubular elastic bag fixed to said plunger within said reservoir chamber with one end thereof being normally disposed in contact with fluid in said reservoir chamber and the interior of said bag being disposed in communication with the atmosphere, said closed end of said bag extending past said radial passage means, and the clearance between the inner surface of said body and the outer surface of said transmitting member being smaller than the clearance between the inner surface of said transmitting member and the outer surface of said plunger.

4,338,895

## INSERTLESS DISTRIBUTOR CAP

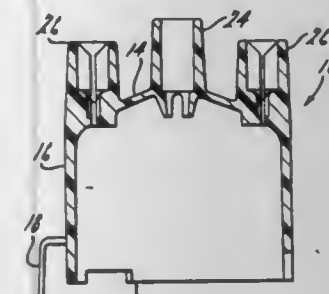
Ralph J. Lennis, Farmington Hills, and Ralph L. Handy, Troy, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 28, 1980, Ser. No. 182,179

Int. Cl.<sup>3</sup> F02P 7/00

U.S. Cl. 123—146.5 A

14 Claims



- 1. A dome-shaped distributor cap having a plurality of axially extending tubular walled towers equally angularly spaced about the outer periphery and projecting from the domed end of the cap for reception of one end of a respective one of a like plurality of high tension ignition cables,

said cap having a like plurality of equally angularly spaced openings located in and extending through the dome of the cap and into the interior of a respective one of the tubular tower projections for reception of one end of a readily insertable and removable elongated terminal electrode attached at its other end to a respective one of said ignition cables,

each of said tubular walled tower projections characterized by camming guide means integrally formed on the inner wall thereof and cooperating with a cable terminal electrode for guiding insertion of said one end of a cable terminal electrode through an opening in the dome of the cap and into the interior of the cap during assembly of the electrode to the cap.

4,338,896

## FIRE SUPPRESSION SYSTEM

Stamos I. Papisideris, Bristol, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00267, § 371 Date Mar. 13, 1980, § 102(e)  
Date Mar. 13, 1980, PCT Pub. No. WO81/02609, PCT Pub. Date Sep. 17, 1981

PCT Filed Mar. 13, 1980, Ser. No. 195,720

Int. Cl.<sup>3</sup> F02B 77/00

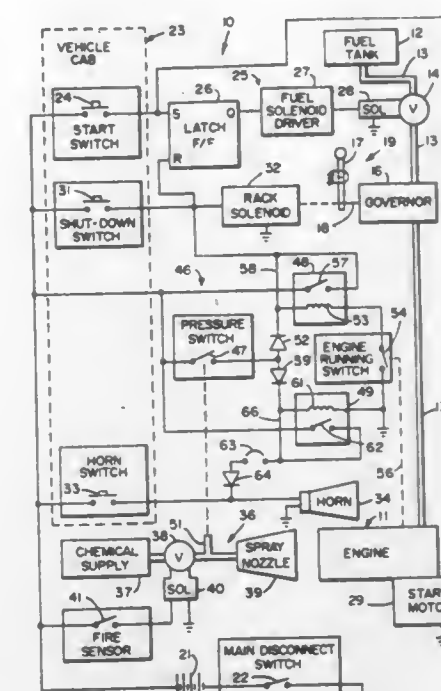
U.S. Cl. 123—198 D

13 Claims

- 1. An improvement in a fire suppression system (10) for a vehicle having an engine (11), a fuel tank (12), a fuel supply line (13) from said fuel tank (12) to said engine (11), flow-interrupting means (14 or 19) for shutting off flow of fuel through said flow line (13), a battery (21), a vehicle cab (23), a shut-down switch (31) located in said vehicle cab (23), said shut-down switch (31) being connected to said battery (21) and having a shut-down position, actuating means (25 or 32) for actuating said flow-interrupting means (14 or 19) to shut off flow of fuel through said fuel line (13) in response to movement of said shut-down switch (31) to its shut-down position, a manually-operable disconnect switch (22) connected in series with said battery (21) and located outside of said vehicle cab (23), and a fire extinguisher (36) located proximate to said engine (11), the improvement comprising:

a warning device (34),  
connecting means (46) for causing said actuating means (25 or 32) to actuate said flow-interrupting means (14 or 19) to shut off flow of fuel through said fuel line (13) in response to operation of said fire extinguisher (36) and without movement of said shut-down switch (31) to its shut-down position, and for connecting said warning device (34) to

said battery (21) in response to operation of said fire extinguisher (36) with such connection of said warning device



being maintained for as long as said disconnect switch is closed.

4,338,897

## AUXILIARY PRECOMBUSTION CHAMBER AND COMBUSTION DISTRIBUTOR FOR AN INTERNAL COMBUSTION ENGINE

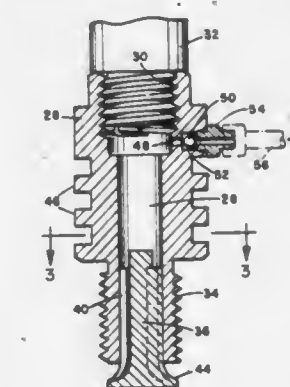
Dale G. Drumheller, 104 Willywood Ave., Oak Hill, W. Va. 25901; Robert M. Schell, 1719 Denstone Pl., Lemon Grove, Calif. 92045, and Edward O. Drumheller, 1835 E. Main St., El Cajon, Calif. 92021

Filed Aug. 6, 1980, Ser. No. 175,708

Int. Cl.<sup>3</sup> F02B 19/10

U.S. Cl. 123—267

10 Claims



- 1. An auxiliary combustion chamber for detachable mounting on a spark ignition internal combustion engine, said chamber comprising:

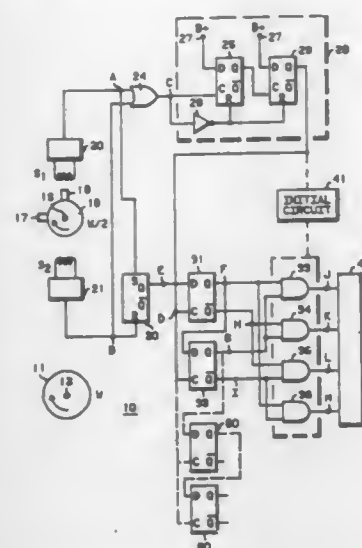
a generally cylindrical housing having a chamber therein defined by a generally cylindrical through bore, one open end of said bore communicating with said chamber and including internal threads adapted to receive a spark plug, a generally cylindrical projection extending from said housing and having external threads for threadably engaging the spark plug bore in the head of an engine and including a generally cylindrical central core member mounted in said bore and including a flared cap having a rim defining a flame distributor for extending beyond the bore into the combustion chamber of an engine, and a plurality of flame distribution ports defined by grooves in said core member and said cap and oriented for directing







electrical signal pulse in response to the passage of each of said peripheral portions of said rotary body past said sensors; and  
circuitry means coupled to said sensors for receiving said electrical signals from each of said sensors and effectively comparing signals indicative of which of said sensors is providing a present sensor signal pulse with signals indicative of which of said sensors provided the previous sensor



signal pulse that immediately preceded the present sensor signal pulse for providing at least one electrical output reference signal indicative of the occurrence of a single predetermined rotational position of said rotary body, whereby a small number of sensors is utilized to determine a predetermined angular position of said rotary body within a minimum amount of angular rotation of said rotary body.

#### 4,338,904 DEVICE FOR DISTRIBUTING FUEL TO A COMBUSTION ENGINE

Willem Brinkman, Velp, Netherlands, assignor to Holec N.V., Utrecht, Netherlands

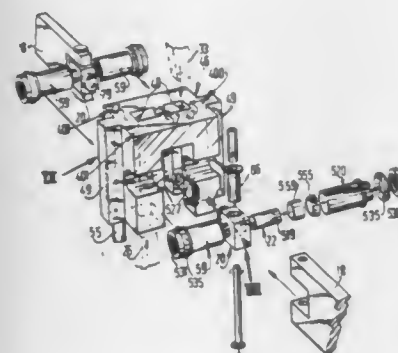
Filed Oct. 24, 1979, Ser. No. 87,719

Claims priority, application Netherlands, Oct. 25, 1978, 7810629

Int. Cl.<sup>3</sup> F02M 39/02

U.S. Cl. 123—499

11 Claims



1. A device for distributing fuel to a combustion engine, in which a pump chamber of a first fuel pump and a pump chamber of a second fuel pump are arranged coaxially at a distance from one another, can each be connected through an inlet valve with a fuel inlet and through a fuel outlet with an atomizer of the combustion engine and are bounded by a displacer body reciprocatorily driven by driving means, the displacer bodies being intercoupled by means of a coupling member arranged between the two fuel pumps and having stop means co-operating with at least one adjustable stop, which bears on a fixed stop support, the fuel chambers being bounded by pump sleeves arranged in coaxial bores in the two ends of a bridge piece, the two ends of which are interconnected by at least one intermediate piece, characterized in that the bridge piece and

the fixed stop support are integral so as to form part of one and the same monolith, said monolith being provided with aligning means for fixing the position of the stop support with respect to control-means for setting the stop.

#### 4,338,905 METHOD AND APPARATUS FOR PRODUCING AND SUPPLYING ATOMIZED FUEL TO AN INTERNAL COMBUSTION ENGINE

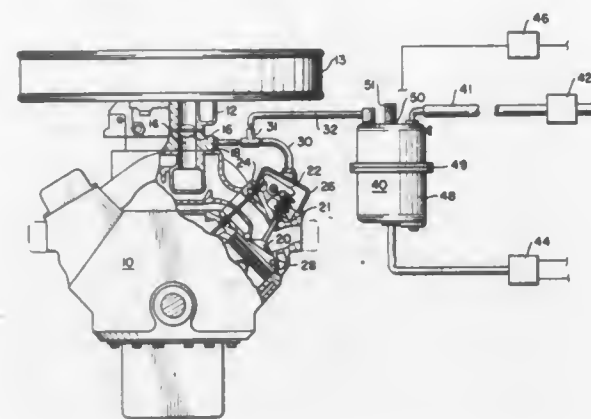
Carl L. Ulrich, 7293 S. Sherman St., Littleton, Colo. 80122

Filed May 1, 1980, Ser. No. 145,605

Int. Cl.<sup>3</sup> F02M 21/02, 17/26

U.S. Cl. 123—525

14 Claims



1. Apparatus for producing vaporized fuel and for supplying the vaporized fuel to combustion areas of a carburetor-equipped internal combustion engine, wherein said carburetor is supplied with fluid fuel from a fuel source, comprising:  
branch means for additionally supplying said fluid fuel to said apparatus,  
a container including means defining a vapor chamber therein,  
inlet valve means for controlling fuel flow from said branch means into said container,  
pressure regulator means in fluid communication with said inlet valve means for maintaining the pressure of fuel flow in said container at a predetermined value,  
metering means in fluid communication with said pressure regulator and for supplying fuel droplets to said vapor chamber at a selected rate,  
vapor producing means in said vapor chamber for converting said fuel droplets to a vapor of atomized particles, and  
outlet valve means in fluid communication with said vapor chamber for supplying the vapor therein to said internal combustion engine.

#### 4,338,906 FUEL CHARGE PREHEATER

Nathan Cox, 1517 40th St., Lubbock, Tex. 79412

Filed Oct. 29, 1979, Ser. No. 89,234

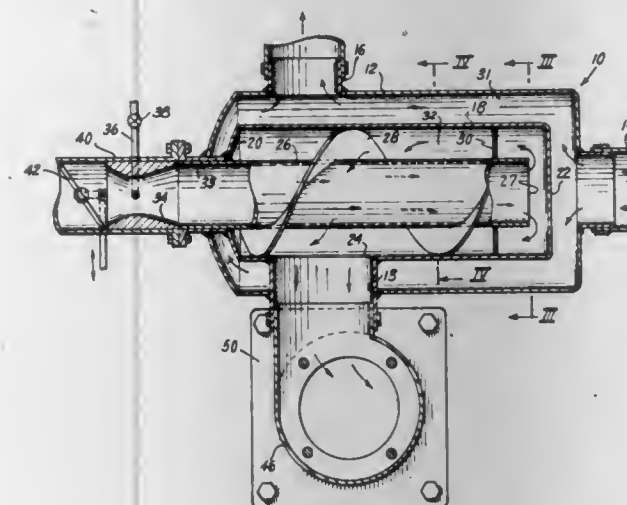
Int. Cl.<sup>3</sup> F02M 31/00

U.S. Cl. 123—545

7 Claims

1. A preheater for heating a fuel and air charge mixture intended for use in a system that converts the chemical energy of the charge to useful heat energy by combustion comprising:  
an outer shell having a heated gas inlet, a heated gas outlet and a charge flow opening;  
an inner shell supported within the outer shell in spaced apart relationship for providing a heated gas flow path between the shells;  
said inner shell having an open charge inlet end, an opposite closed end located adjacent and facing said heated gas inlet, and a side outlet port adjacent said charge inlet end;  
a charge inlet conduit extending within said inner shell and supported in spaced apart relationship relative thereto,  
said charge inlet conduit extending through said inner

shell open inlet and terminating at its distal end opening adjacent said inner shell closed end;  
said inner shell and charge inlet conduit being connected together in sealed relationship at the inlet end area of said inner shell so that a charge flow path is provided in the space between said charge inlet conduit and said inner shell, said charge flow path including said side outlet port in said inner shell;  
a connector duct connecting said side outlet port to said side opening in said outer shell;  
a helical guide vane extending along said charge flow path between said inlet ends of said inner shell and a point near



the distal end of said charge inlet conduit, said vane extending along the exterior surface of said charge supply conduit, and in close fitting engagement with the outer and inner surfaces respectively of said charge supply conduit and said inner shell;  
whereby charge mixture may be transported through said charge inlet conduit, adjacent said closed end area of said inner shell, and through the charge flow path in a helical path along said vane in a direction parallel to the incoming direction of said charge, and out through said side opening in said outer shell; and further whereby heated gas may be circulated through said heated gas flow path from the closed end of said inner shell to said inlet end thereof.

#### 4,338,907 GASOLINE FUME GENERATOR AND MIXER

Laurel B. Lindbeck, 1466D Rte. #1, Las Cruces, N. Mex. 88001

Filed Aug. 28, 1981, Ser. No. 297,382

Int. Cl.<sup>3</sup> F02M 31/00

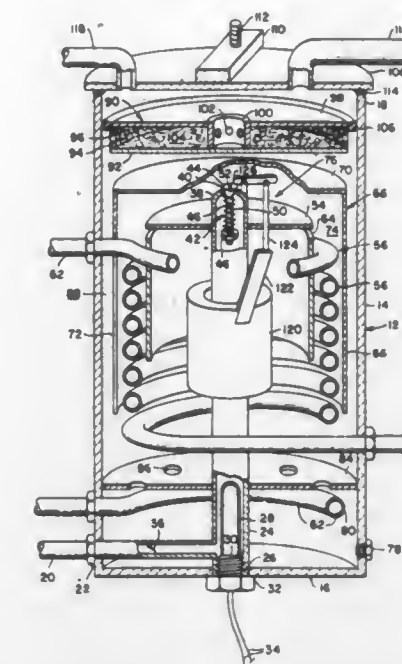
U.S. Cl. 123—557

10 Claims

1. A gasoline fume generator and mixer for use with an internal combustion engine, said fume generator and mixer comprising:

a generator tank having a bottom, side walls and a separable cover;  
a liquid riser pipe extending upwardly from said bottom of said tank, said riser pipe being supplied with liquid gasoline at a point adjacent said tank bottom;  
a metering valve in an orifice at an upper end of said riser pipe for regulating flow of the gasoline out of said riser pipe;  
a heat exchange unit spaced from, and surrounding said riser pipe, said heat exchange unit passing hot liquid coolant from the engine therethrough;  
means defining a first annular flow passage for said fuel, said heat exchange unit being positioned in said first annular flow passage, said liquid gasoline contacting said heat exchange unit to generate fumes;  
means for supplying air to said tank, said air mixing with said fumes and passing through an outer annular passage to an exit in said cover; and

a fume filter interposed between said outer annular passage and said cover, said fumes and air passing through said



filter for mixing and removal of entrained liquid particles in said fume and air mixture.

#### 4,338,908 OIL SAVER FOR VEHICLES

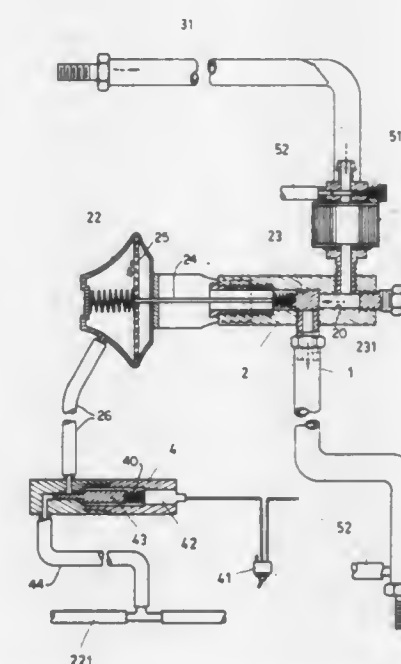
Ming-Ching Trong, 2nd Fl., No. 63, Lane 194, Sung Chiang Rd., Taipei, Taiwan

Filed Aug. 29, 1980, Ser. No. 182,582

Int. Cl.<sup>3</sup> F02M 25/06

U.S. Cl. 123—572

2 Claims

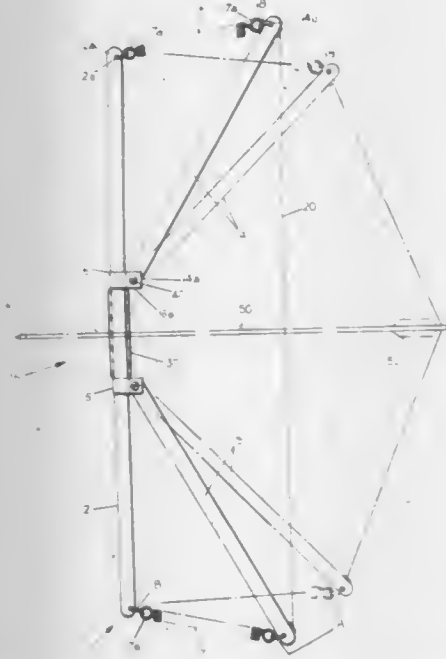


1. An apparatus for recovering a certain amount of fuel-air mixture exhausted out of clearances between piston rings and an inner wall of a cylinder provided in an automobile during compression cycle and sending the recovered mixture into an intake manifold of the automobile engine, which comprises,  
an air cleaner communicated with an exhaust hole provided on the cylinder,  
a controlling device having a through way therein whose one end is communicated with said air cleaner and the other end is communicated with the intake manifold of the automobile engine, an adjusting screw positioned within the through way for determining a communicating opening between said air cleaner and the through way, and a movable blocking mechanism partially positioned within



the through way for controlling a communicating opening between the through way and the intake manifold, and a switching device having a through way therein whose one end is communicated with the blocking mechanism of said controlling device and the other end is communicated with a vacuum pipe connecting a carburetor with a distributor, and a movable block normally positioned within the through way to close the communication between the vacuum pipe and the blocking mechanism of said controlling device and driven by an electrical magnet which is actuated by a battery and controlled by a switch, whereby when the temperature of the engine reaches a proper value one may turn on the switch to open the through way of said switching device so that the blocking mechanism of said controlling device can move backwards by a suction force generated by the vacuum pipe to open the communicating opening between the through way of said controlling device and the intake manifold thereby the fuel-air mixture exhausted from the clearances between the piston rings and the inner wall of the cylinder with a certain amount of air from the atmosphere will flow through said air cleaner into the intake manifold for reuse.

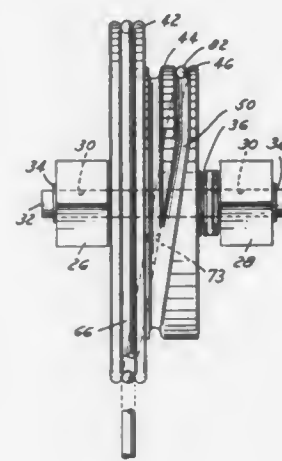
**4,338,909**  
**ARCHERY BOW CONSTRUCTION**  
 Marvin E. Plummer, 615 N. Decant Rd., Oregon, Ohio 43616  
 Filed May 7, 1980, Ser. No. 147,389  
 Int. Cl.<sup>3</sup> F41B 5/00  
 U.S. Cl. 124—16 **7 Claims**



1. An archery bow construction for propelling an arrow and embodying features of constructional simplicity, lightweight and compactness, said construction comprising:  
 a primary elongate beam member formed of lightweight tubular stock,  
 first and second lever arms formed of lightweight tubular stock,  
 means for securing said arms to said beam member in pivotal, adjustable, facility removable and spaced relationship on either side of the center of said elongate member as to define a hand-hold region,  
 a tubular member telescopically surrounding said region for maintaining said spaced relationship between said lever arms,  
 a bow string connecting the distal ends of said lever arms, first and second spring means connecting the distal ends of said lever arms to the adjacent distal ends of said elongate beam member, said bow string being adapted to be attached to the distal ends of the respective lever arms, the attaching of the bow string placing the bow in a strung and tensioned condition, pivotal movement of said assembled lever arms, upon drawing of said bow string, tensioning said first and second spring means, and upon sudden release of said assembled bow string said springs propelling an arrow.

elongate beam member causing angular, pivotal movement of said lever arms to define a lesser included angle and contemporaneous tensional extension of said first and second spring means, whereby sudden release of said bow string will allow contraction of said spring means to propel said arrow as urged by said bow string and recoiling spaced spring means and guided by said primary elongate beam member.  
 7. A "kit" composed of a plurality of interrelated parts in packaged array suitable for assembly to form an archery bow embodying features of constructional simplicity, light weight and compactness; said "kit" comprising  
 means to enclose or surround said parts to form a package and said parts being located therein;  
 a primary elongate beam member formed of lightweight tubular stock,  
 first and second lever arms formed of light-weight tubular stock,  
 a pair of split circular bands, each having end ear portions adapted to embrace an end of one of said lever arms, said ear portions and said lever arm ends being provided with holes which, in registry, receive an elongate bolt and nut assembly to tighten said lever arms and assembly onto said beam member in spaced relationship to define a hand-hold region,  
 a tubular member telescopically surrounding said region, for maintaining said spaced relationship between said split circular bands and connected lever arms,  
 a bow string adapted to connect the distal ends of said lever arms, and  
 first and second spring means adapted to connect the distal ends of said lever arms to the adjacent distal ends of said elongate beam member,  
 said bow string being adapted to be attached to the distal ends of the respective lever arms, the attaching of the bow string placing the bow in a strung and tensioned condition, pivotal movement of said assembled lever arms, upon drawing of said bow string, tensioning said first and second spring means, and upon sudden release of said assembled bow string said springs propelling an arrow.

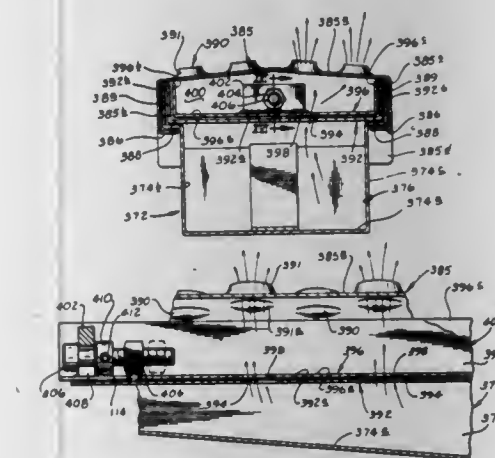
**4,338,910**  
**COMPOUND BOW WITH CENTER TENSION PULLEY**  
 Rex F. Darlington, 3540 Darton Rd., Hale, Mich. 48739  
 Filed Mar. 27, 1980, Ser. No. 134,195  
 Int. Cl.<sup>3</sup> F41B 5/00  
 U.S. Cl. 124—24 R **6 Claims**



1. In a compound archery bow having:  
 (1) a handle member,  
 (2) a pair of bow limbs projecting from opposite ends of the handle member and terminating in a distal end,  
 (3) an eccentrically mounted pulley unit on a shaft at the distal end of each bow limb,  
 (4) an anchor point at each distal end of each bow limb adjacent each pulley unit, and

(5) a bowstring cable with each end connected to an anchor point at the respective distal ends of each bow limb, that improvement which comprises:  
 (a) a pair of pulley units having three axially spaced peripheral pulley grooves, including a first groove, and a third groove, and a second groove between said first and third grooves, and means forming a diametrical cable cross passage between the first groove and the third groove,  
 (b) a peripheral cross-over switch groove on said pulley between said third groove and said second groove, and  
 (c) a combination pulley cable and bowstring having a bowstring portion passing at one end around first groove at a first end of the bow and through said diametrical cross-passage to said third groove at said first end of the bow and thence to the anchor point at the second end of the bow, and the other end of said bowstring passing around first groove at the second end of said bow and through said diametrical passage to said third groove and then to the anchor point at the first end of the bow,  
 (d) said cross-over switch groove being positioned between said third groove and said second groove whereupon rotation of said pulley units caused by a drawing of said bowstring will cause said cable to track from said third groove to said second groove so as to reduce torsion in the bow during a drawing operation by centralizing the cable on the first and second pulleys.

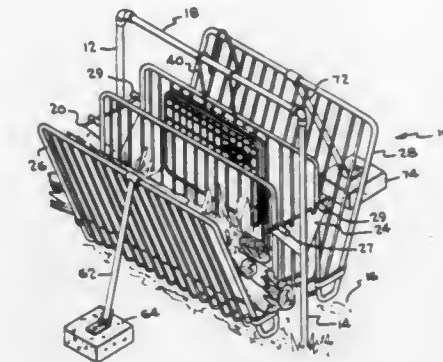
**4,338,911**  
**COOKING APPARATUS**  
 Donald P. Smith, 4530 Woodfin Dr., Dallas, Tex. 75220  
 Division of Ser. No. 687,982, May 19, 1976, Pat. No. 4,154,861.  
 This application Mar. 16, 1979, Ser. No. 20,970  
 Int. Cl.<sup>3</sup> A21B 1/00  
 U.S. Cl. 126—21 A **2 Claims**



1. Apparatus for heating a food product comprising: a cabinet; a conveyor arranged in said cabinet; means to drive said conveyor; a plurality of jet plates secured in said cabinet above and below said conveyor, each of said plates having a plurality of spaced apertures extending through the surface thereof; means to deliver heated pressurized fluid; a plenum which communicates with the means to deliver heated pressurized fluid; a plurality of tapered ducts communicating with said plenum, each said duct being adapted to direct the heated pressurized fluid to at least one of said jet plates to direct the heated pressurized fluid through the apertures in each of said plates for forming columnated jets of air to wipe away the boundary layer of air and moisture from localized portions of the surface of the food product when impinging upon the food product and thereby transfer heat to the food product to brown the food product.

1020 O.G.—19

**4,338,912**  
**OUTDOOR COOKING GRILL**  
 Thomas Gaskins, Palmdale, Fla. 33944  
 Filed Jul. 2, 1980, Ser. No. 165,947  
 Int. Cl.<sup>3</sup> F24B 3/00; F24C 1/16; F47J 37/00  
 U.S. Cl. 126—25 A **1 Claim**

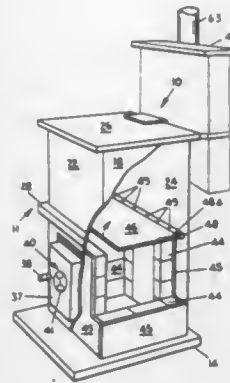


1. A cooking apparatus comprising a support member, vertically extending food holding means connected to and supported by said support member for holding food to be cooked;  
 first and second V-shaped vertically extending fire grates positioned and pivotally supported on opposite sides of said food holding means for holding first and second cooking fires; and  
 adjustment means for pivotally adjusting the position of the fire grates with respect to the food holding means;  
 wherein said food holding means comprises first and second vertically extending wire grill panels and clip connector means for detachably connecting said first and second wire grill panels for permitting food to be positioned between the grill panels for cooking and for constantly urging said first and second wire grill members toward each other through a substantial range of relative movement for permitting food portions of varying thicknesses to be retained in position between said grill panels;  
 wherein said connector means comprises a V-shaped holding clip having a through portion extending through openings in said first and second vertically extending wire grill panels and also having retainer arms limiting the extent of movement of the through portions in a first direction through said panels and a spring clip member having a spring arm engageable with said through portion for urging said first and second grill panels toward each other as a result of reactive force exerted between said V-shaped holding clip and said spring clip;  
 wherein said support member comprises first and second vertically extending post members and a horizontal carrier beam extending between and supported by said first and second vertically extending post members and additionally including carrier brackets on each of said vertically extending post members for partially supporting said first and second fire grates; and  
 wherein said carrier brackets include open slots along an upper surface thereof, each of said grates including lug means selectively positionable in said open slots for adjusting the inward position of the fire grates with respect to the food holding means and support brace means connected to the outer side of said fire grates at an upper end and connected at a lower end to a movable ground engaging anchor block which can be moved inwardly or outwardly for adjusting the angular orientation of the fire grates with respect to the food carrier means.



4,338,913  
**SOLID FUEL BURNING STOVE**  
 Lewis D. Good, 7579 100th St., Caledonia, Mich. 49316  
 Filed Mar. 17, 1980, Ser. No. 130,828  
 Int. Cl.<sup>3</sup> F24C 1/14  
 U.S. Cl. 126—77

22 Claims



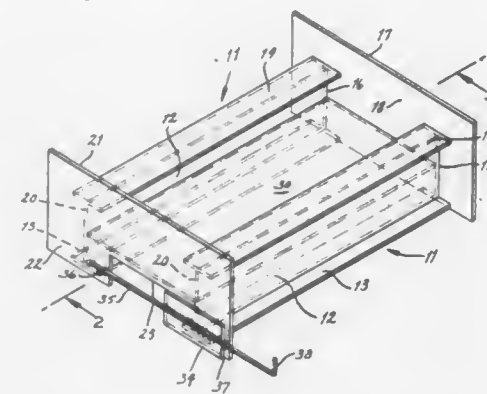
1. A solid fuel burning stove comprising:  
 a firebox including side, end and top walls and a base for supporting fuel thereon, said walls and base defining an enclosed body;  
 said firebox including  
 refractory means disposed about a portion of said side and end walls for inhibiting heat transmission therethrough;  
 a primary combustion chamber in which said fuel is burned, said primary chamber having primary air intake means for supplying combustion air to said chamber;  
 a secondary combustion chamber in communication with said primary combustion chamber, said secondary chamber having secondary air intake means for supplying combustion air to said chamber so that volatile gases released by fuel burned in said primary combustion chamber are burned therein;  
 said secondary air intake means supplying combustion air to said volatile gases;  
 baffle means for directing flow of combustion air across the top of fuel in said primary chamber for combusting fuel therein and mixing with said volatile gases and for controlling the flow of said volatile gases from said primary combustion chamber to said secondary combustion chamber;  
 said baffle means being a horizontally disposed sheet extending across said firebox so as to define said first and second combustion chambers in said firebox;  
 said baffle means directing said volatile gases across said fuel burning in said primary combustion chamber to thereby maintain said gases at a high temperature; and  
 means for regulating exhaust gas flow from said secondary chamber to a smoke outlet, said means including a flow diverter which reduces the velocity of the exhaust gases to thereby increase the amount of heat recovered from the gases when exiting the secondary chamber;  
 wherein burning of said hot volatile gases in said secondary chamber provides an additional source of heat for radiation by said firebox, thereby increasing the thermal efficiency of the fuel burned therein.

4,338,914  
**COMBINATION AIR TUNNEL-ANDIRON DEVICE AND FIREPLACE CONSTRUCTION THEREFOR**  
 Robert L. Braswell, P.O. Box 392, Alton, Mo. 65606  
 Filed Apr. 1, 1981, Ser. No. 249,989  
 Int. Cl.<sup>3</sup> F24B 13/02

3 Claims

1. For use on a fireplace floor having a rearward-positioned upward draft opening, a combination air tunnel and andiron device fabricated of fire-resistant metal and comprising a pair of spaced-apart fore-and-aft extending parallel beams,

each having a substantially vertical web portion and upper and lower beam chord portions,  
 a substantially horizontal tunnel plate joining those beam web portions facing each other at a height intermediate their upper and lower chord portions,  
 whereby to provide an air tunnel extending from the lower beam chord portions upward to the tunnel plate, and to provide andiron portions extending upward from the tunnel plate to the upper beam chord portions,  
 a substantially vertical aft plate extending across the rear ends of said beams and joining same and the aft edge at tunnel plate,  
 whereby its lower edge and the lower edges of said lower beam chord portions lie in a plane and when rested on such fireplace floor block off the rear of said air tunnel, said rear plate having an upward extending portion above said upper beam chord portions,

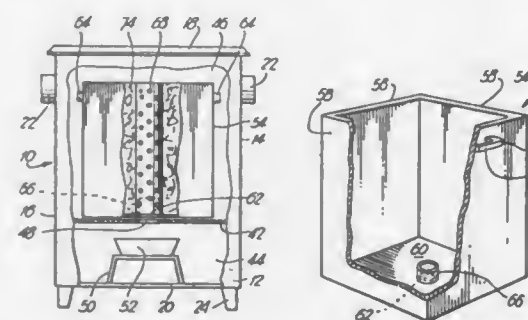


whereby to provide rear restraint for firewood resting on the said upper chord portions, and  
 a substantially forward vertical plate extending across the forward ends of said beams and joining same and the forward edge of said tunnel plate and having a draft outlet below said tunnel plate,  
 the said forward plate having an upward extending portion above said upper beam chord portion,  
 whereby to provide similar forward restraint for logs on said upper beam chord portions,  
 there being an open space between the said beams above said tunnel plate, whereby to accommodate ashes and provide draft beneath such logs and cooling of said tunnel plate, in combination with adjustable means to provide varied closure of said draft opening.

4,338,915  
**STOVE CONSTRUCTION**  
 Joseph Martonfi, Sr., 500 Rang St. Francois, Blainville, Quebec, Canada  
 Filed Feb. 26, 1981, Ser. No. 238,586

Claims priority, application Canada, Dec. 15, 1980, 366772  
 Int. Cl.<sup>3</sup> F23H 1/02  
 U.S. Cl. 126—163 A

8 Claims

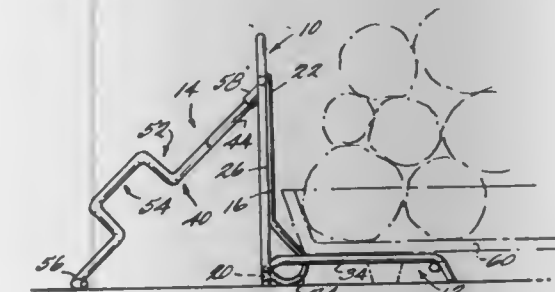


1. A stove for burning combustible material comprising:  
 a housing;  
 means for extracting flue gases from said housing;  
 a horizontal member dividing the interior of said housing into

an upper chamber and a lower chamber, said member having a generally central aperture therethrough,  
 upper and lower openable door means in a side wall of said housing for permitting access to said upper and lower chambers respectively;  
 said lower chamber being adapted to contain a starting fire therein below said aperture;  
 container means in said upper chamber and having side walls and a bottom wall, said bottom wall having a generally central opening therethrough, with said opening in registry with said aperture; and  
 flame propagation means positionable in said container means, and extending upwardly from said bottom wall, said flame propagation means comprising a generally elongated tube positionable in registry with said opening and having a plurality of holes extending through the tube wall;  
 whereby, with combustible material substantially filling said container means and surrounding said flame propagation means, and with said container means enclosed in said upper chamber, flames from a small temporary starting fire in said lower chamber will be drawn upwardly through said aperture and said opening into said flame propagation means and will pass through said holes to initiate combustion of the combustible material in said container means, combustion of said material containing generally radially outwardly of said flame propagation means.

4,338,916  
**FIRE DOG**  
 John F. Vaughn, P.O. Box 512, Saluda, S.C. 29138  
 Continuation-in-part of Ser. No. 105,375, Mar. 20, 1980, abandoned. This application Mar. 19, 1981, Ser. No. 245,605  
 Int. Cl.<sup>3</sup> F24B 13/00  
 U.S. Cl. 126—298

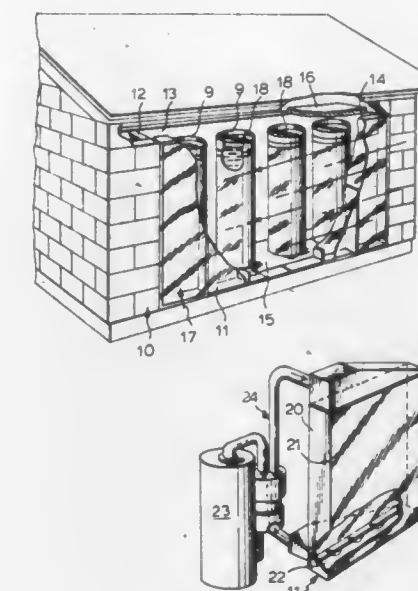
9 Claims



1. A fire dog for containing logs burning on a grate comprising:  
 a front member having a generally planar extent vertically disposed, said front member comprising a plurality of vertical members, upper and lower support members, said vertical members being attached between said upper and lower support members in a spaced relation, and two interconnecting members, each connected from an end of said upper support to a corresponding end of said lower support, each of said interconnecting members curving upwardly from said upper support member;  
 a leg assembly attached to said front member and adapted to slide under said grate, said leg assembly having a length and weight to keep said front member vertically disposed when said logs are resting against said front member; and  
 handle means removably connected to said front member for sliding said front member and leg assembly away from said grate while fire is burning on said grate.

4,338,917  
**LOW TEMPERATURE SOLAR FURNACE AND METHOD**  
 Robert R. Keller, Bedford, N.H., assignor to Keller Companies, Inc., Manchester, N.H.  
 Continuation of Ser. No. 49,736, Jun. 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 949,267, Oct. 6, 1978, abandoned, which is a continuation of Ser. No. 579,560, May 21, 1975, abandoned. This application Aug. 24, 1981, Ser. No. 295,377  
 Int. Cl.<sup>3</sup> F24J 3/02  
 U.S. Cl. 126—429

15 Claims



1. In combination with a building, an integrated low temperature, solar space and water-heating system comprising an insulated enclosure operatively associated with the building, at least one side of said enclosure comprising a solar transmitter panel forming a part of an outer wall of the building, said enclosure extending into the building a distance substantially in excess of the thickness of said outer wall, a heat sink within said enclosure spaced inwardly from the transmitter panel for receiving and absorbing solar energy through said panel and simultaneously storing the heat of said energy therein and thereat, said heat sink comprising at least one container with heat absorbing material therein, the heat absorbing material occupying a significant volume of the enclosure, means including powered air moving means connected to said enclosure for circulating air through another part of the building and through said enclosure in heat transfer relation with said heat sink, at least one water tank in said enclosure in radiant heat-receiving relation with said heat sink, said water tank forming part of a hot water supply system for the building, both said heat sink and said water tank being positioned in the enclosure for direct exposure to solar energy received through said transmitter panel, and movable insulating means within the enclosure, the insulating means being movable between a first position exposing the heat sink and water tank to heat energy transmitted through said transmitter panel and a second position screening the heat sink and water tank and minimizing heat transfer between the enclosure and the outer environment through said transmitter panel.

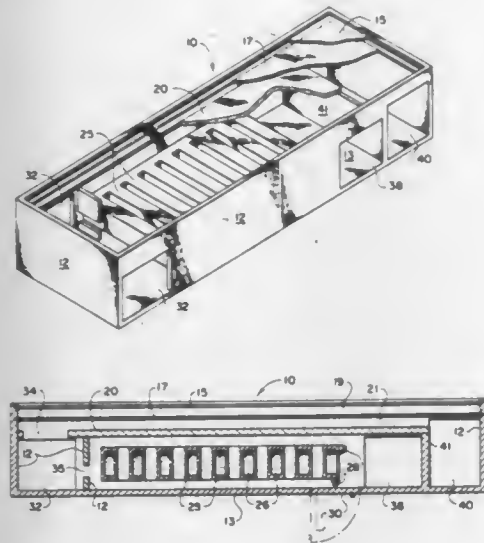
4,338,918  
**UNITARY STRUCTURE AND METHOD FOR UTILIZING SOLAR ENERGY**  
 William W. Milburn, Jr., Boulder, Colo., assignor to Thomas W. O'Rourke, Boulder, Colo.  
 Division of Ser. No. 970,287, Dec. 18, 1978, Pat. No. 4,250,871. This application Jan. 5, 1981, Ser. No. 222,447  
 Int. Cl.<sup>3</sup> F24J 3/02

10. A method for operating a unitary, modular enclosure for absorbing and storing solar energy for use in heating a selected volume, the enclosure including at least one layer of glazing



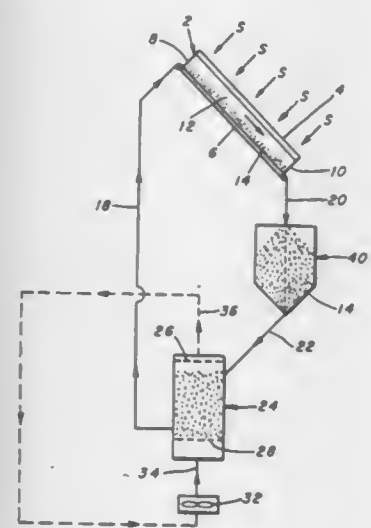
transparent to solar energy at an outer surface thereof, an absorber adjacent the glazing and within the enclosure, and a self contained, hollow heat reservoir including therein a flowable heat storage medium positioned within the enclosure and adjacent the absorber, the method comprising:

- passing radiant solar energy when available through the glazing and absorbing the solar energy upon the absorber to produce sensible heat;
- transferring the sensible heat from the absorber to a heat transfer fluid;



selectively flowing the heat transfer fluid from the absorber to at least one of the heat storage reservoirs and a heating system adapted to provide sensible heat to the selective volume; and terminating flow of heat transfer fluid from the absorber in the absence of radiant solar energy and initiating a flow of heat transfer fluid in the heating system from the volume to be heated to the heat storage reservoir and back to the reservoir and provide such heat to the volume to be heated.

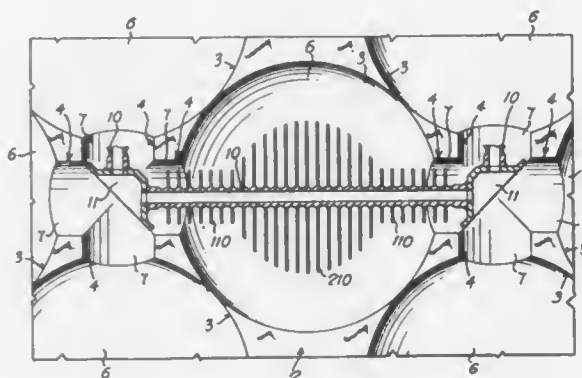
**4,338,919**  
**SOLAR COLLECTOR SYSTEM EMPLOYING PARTICULATE ENERGY COLLECTING MEDIA**  
Charles C. Hwang, Pittsburgh, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.  
Filed Jul. 21, 1980, Ser. No. 170,644  
Int. Cl.<sup>3</sup> F24J 3/02  
U.S. Cl. 126—435 13 Claims



1. A solar collector system comprising particulate energy collecting means for receiving solar energy, solar collector means for directly and simultaneously exposing

ing a plurality of said particulate energy collecting means to solar energy, said solar collector means has a first wall transparent to solar energy, said solar collector means defines a path for passage of said particulate energy collecting means therethrough, heat exchanger means for permitting transfer of heat from said particulate energy collecting means to another medium, transport means for delivering said particulate energy collecting means through said solar collector means, from said solar collector means to said heat exchanger means and from said heat exchanger means to said solar collector means, said transport means includes passageway means for defining a path of flow of said particulate energy collecting means and conveying means for moving said particulate energy collecting means through said passageway means, said conveying means includes endless conveyor means disposed within said passageway means, said passageway means connecting said solar collector means with said heat exchanger means for delivering said particulate energy collecting means from said solar collector means to said heat exchanger means and back to said solar collector means, whereby a plurality of said particulate energy collecting means will be heated simultaneously by direct exposure to solar radiation through said first wall as said collecting means moves along said path within said solar collector means, said heat exchanger includes a fluidized bed, conduit means for passing a fluid through said fluidized bed, whereby said particulate energy collecting means will pass through said fluidized bed and yield heat to said fluid, said conduit means have first conduit means for transporting fluid at elevated temperature emerging from said fluidized bed to a heat receiving zone and second conduit means for recirculating said fluid to said fluidized bed after said fluid has yielded at least some of its heat to said heat receiving zone, and said particulate energy collecting means has an average particulate size of about 0.1 mm. to 1.0 mm.

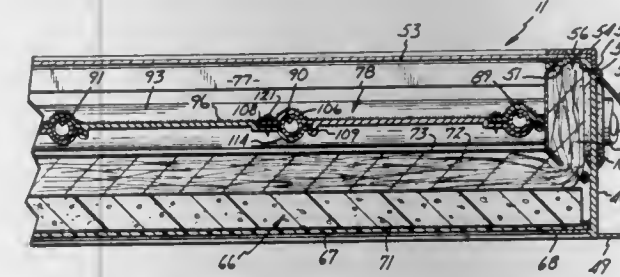
**4,338,920**  
**PLATE SOLAR-HEAT COLLECTOR**  
Angelo Camerano, 42/1A, Via Mignone, Savona, Italy  
Filed Apr. 11, 1980, Ser. No. 139,394  
Claims priority, application Italy, Apr. 24, 1979, 12560 A/79  
Int. Cl.<sup>3</sup> F24J 3/02  
U.S. Cl. 126—443 3 Claims



1. A solar-radiation collector comprising:  
(a) a plurality of elongated pipe means capable of absorbing solar radiation, for transporting a medium to be heated,  
(b) said plurality of pipe means being arranged in a generally planar array,  
(c) fins for absorbing solar radiation, on each of said plurality of pipe means and transverse to each of said plurality of pipe means,

- (d) an evacuated and at least partially transparent chamber surrounding said pipe means and said fin means,
- (e) a transparent element having a plurality of partially-cylindrical and a plurality of partially-spherical bulges, each partially-cylindrical bulge being coaxial with a partially spherical bulge,
- (f) a reflective element having a plurality of partially-cylindrical and partially-spherical bulges, each partially-cylindrical bulge being coaxial with a partially-spherical bulge,
- (g) said transparent and said reflective elements being joined together to form said evacuated chamber, said evacuated chamber having co-axial cylindrical and spherical portion, and
- (h) the perimeters of some of said fins lying in an imaginary cylindrical surface located within said cylindrical portion, and the perimeters of other of said fins lying in an imaginary spherical surface located within said spherical portion.

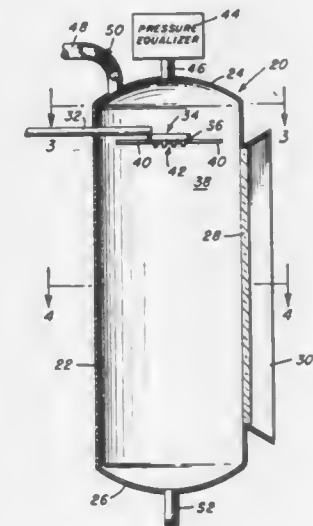
**4,338,921**  
**SOLAR LIQUID HEATING SYSTEM**  
Willard J. Harder, and James M. Pickett, both of Minneapolis, Minn., assignors to Bethany Fellowship, Inc., Minneapolis, Minn.  
Filed Jan. 30, 1980, Ser. No. 116,783  
Int. Cl.<sup>3</sup> F24J 3/02  
U.S. Cl. 126—446 3 Claims



1. In a solar energy collector having a frame, heat insulation means mounted thereon and forming the bottom, sides and ends of a chamber, cover means on said frame over the chamber of a material permitting solar energy to pass therethrough and into the chamber, solar energy collecting means mounted on the frame and located in the chamber to absorb energy for the sun and transmit heat energy to a liquid wherein the collecting means includes a plurality of plates disposed in side-by-side relation wherein said plates are similar and include respectively complementary laterally adjacent edges, a plurality of tubes mounted in engagement with the plates at their respective edges, and tubular inlet and outlet manifolds connected to the tubes for liquid flow therethrough for solar heating, the improvement comprising, each said plate having an extended planar central body between lateral edges thereof, one said lateral edge defining a first arcuate section disposed entirely on one side of said plate extending from a juncture with said central body and terminating in a planar flange which is substantially planar with said central body, and a hook extending from the other side of said plate and terminating in a laterally directed lip extending obliquely toward the concave face of said arcuate section, the other said lateral edge of said central body defining a substantially planar offset step on the opposite side of said plate from said first arcuate section, said planar step merging into a second arcuate section disposed entirely on said other side of the plate and terminating in a hook substantially coplanar with said offset portion, said hook having a lip extending obliquely outwardly from said plate, said plate including said body portion, said arcuate sections, and said step comprising thin sheet material of substantially uniform thickness, each said tube is received in one of said arcuate sections wherein said oblique hooks permit swinging movement of a complementary arcuate section of another said plate into

overlying relation with said tube to substantially entirely enclose the same within said thin walls of the plates, thereby to maximize heat transfer between said thin plates and said tubes, said arcuate section of adjacent plates surrounding said tube and so disposed so as to locate the tube in an outwardly extending position with respect to each side of said plate thereby to further maximize heat transfer, and means securing said terminal flange on one plate to said step section on said other plate.

**4,338,922**  
**SOLAR POWERED CHEMICAL PROCESSING METHOD AND APPARATUS**  
Walter T. Moore, Camarillo, Calif., assignor to Veda, Incorporated, Arlington, Va.  
Filed Jul. 15, 1977, Ser. No. 816,020  
Int. Cl.<sup>3</sup> B23K 3/02  
U.S. Cl. 126—452 17 Claims



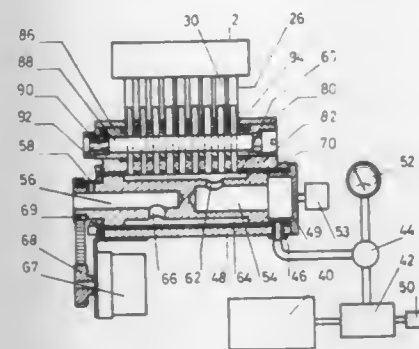
1. Apparatus for providing direct thermolytic and photolytic processing of a substance by interaction by absorption between a free-flowing, rainfall dispersion of the substance and electromagnetic radiant solar energy in a concentration sufficient to carry out said processing comprising:  
a vessel having a chamber generally closed to the ambient atmosphere, said chamber having opaque walls;  
means for producing a free-flowing, rainfall dispersion of the substance to be thermolytically and photolytically processed within the chamber; and  
means for subjecting the dispersion produced to thermolytic and photolytic processing by interaction by absorption with said direct incident concentrated electromagnetic solar energy to produce a resultant material from the substance, said means including an entry window:

**4,338,923**  
**INFLATABLE-CELL TYPE BODY TREATING APPARATUS**  
Vadim Gelfer; Yaakov Kaganovsky, both of Ramat Gan; Shimon Muchnik, Tel Aviv, and Shimshon Shmutter, Ramat Gan, all of Israel, assignors to Mego Afek Industrial Measuring Instruments, Afek, Israel  
Continuation of Ser. No. 945,796, Sep. 26, 1978, abandoned. This application Dec. 16, 1980, Ser. No. 217,041  
Claims priority, application Israel, Oct. 13, 1977, 53123  
Int. Cl.<sup>3</sup> A61M 1/00 8 Claims

U.S. Cl. 128—24 R  
1. Apparatus for the treatment of body parts, comprising an inflatable sleeve of flexible material divided into a plurality of internal inflatable cells extending along one dimension of the sleeve, each of said cells including a port for inletting and outletting fluid with respect thereto, thereby to individually inflate or deflate the cells; said sleeve being applicable to the



body part to be treated to enclose same with the inflatable cells extending annularly around the sleeve; inflating means for applying a pressurized fluid to said ports according to a predetermined sequence for inflating and deflating said internal cells; said inflating means comprising a source of pressurized fluid, a rotary distributor including a pressurized chamber connected



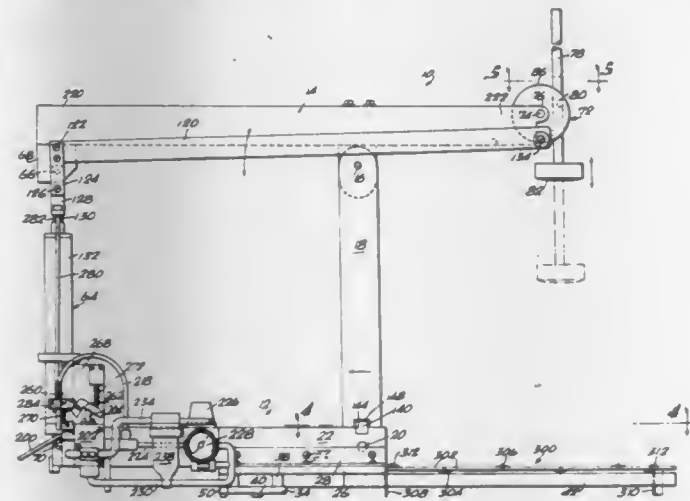
to the pressurized fluid source, a drain chamber vented to the atmosphere, and passageways coupling the pressurized and drain chambers to the ports of the inflatable cells according to a predetermined sequence during the rotation of the distributor; and an interchangeable apertured selector plate between the rotary distributor and the inflatable cell ports to select the ports to receive the pressurized fluid.

4,338,924

**CARDIOPULMONARY RESUSCITATION DEVICE**  
Charles S. Bloom, 1400 NW. 10 Ave., 19E, Miami, Fla. 33136  
Filed Nov. 20, 1980, Ser. No. 208,544  
Int. Cl.<sup>3</sup> A61H 31/00

U.S. Cl. 128—28

22 Claims



1. A device for administering cardiopulmonary resuscitation to a heart attack victim comprising, a main horizontally disposed base, a normally upstanding post from said base, pivotally attached at an upper end intermediate the length of a generally horizontally extending upper beam member, a spring-loaded pneumatic cylinder and piston assembly, pivotally connected between respective rear end portions of said base and beam, a chest abutment member adjustably suspended in a generally vertical attitude relative to a front end of said beam, and valve means connected in a pneumatic system to receive a flow of pressurized oxygen from a suitable source such as a commercially available pressurized oxygen tank, and means to continuously sequentially operate said valve means to, first, direct a flow of pressurized oxygen through said system to said cylinder to actuate said piston in a manner so as to rock said beam about said intermediate upper end pivot to cause said chest abutment to descend into contact with and to exert a pressure on the heart area of a heart attack victim positioned therebeneath, and, second, to exhaust said oxygen in said cylinder through said system under the influence of said spring-loading, and to direct said exhausted oxygen through

said valve means and a conduit connecting to a face mask for positioning over the nose and mouth area of the victim.

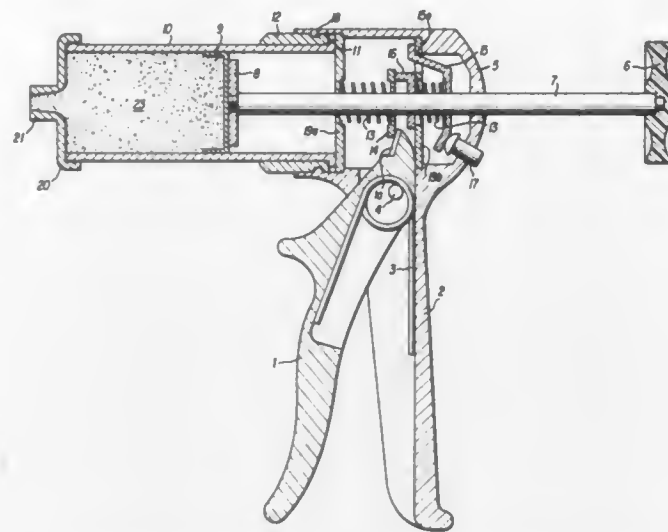
4,338,925

**PRESSURE INJECTION OF BONE CEMENT APPARATUS AND METHOD**

Jo Miller, 641 Argyle Ave., Westmount, Quebec, Canada  
Filed Dec. 20, 1979, Ser. No. 105,573  
Int. Cl.<sup>3</sup> A61F 5/04; A61M 3/00, 35/00

U.S. Cl. 128—92 E

7 Claims



1. A system for injecting a low viscosity pre-mixed penetrating bone cement into a bone cavity, prior to placement of a prosthetic device into the bone cavity, under sufficient pressure to cause the cement to penetrate between the trabeculae of the bone, said system comprising;

(a) cartridge means having an opening at one end thereof and a piston at the opposite end thereof, and a low viscosity bone penetrating cement having a viscosity, at 68° to 70° F., of less than 2,000 poises, up to about the sixth minute after the time of initial mixing of the cement, said opening functioning as both an inlet for loading said cement into said cartridge means and as an outlet from which said cement can be forced out of said cartridge means;

(b) extruding means for forcing a low volume of about 2 to 3 cubic centimeters of the penetrating bone cement in said cartridge means to move towards said outlet opening, said extruding means comprising a housing for engaging the end of the cartridge having the piston;

pressure means for forcing the piston into the cartridge means and comprising a rod supported in said housing in axial alignment with respect to said cartridge means, one end of said rod engaging the piston and a means for slideably engaging said rod; and

manual activating means for actuating the pressure means and comprising a lever pivotally connected to the housing by a pivot pin, said lever having one end manually movable with respect to the housing and having the opposed end thereof engaging the means for slideably engaging the rod;

wherein said opposed end of the lever which engages the means for slideably engaging the rod, said pivot pin, and said lever are configured such that a single manual actuation of said lever causes said slideable engaging means to move said rod which moves said piston into the cartridge means a distance sufficient to forcibly eject said low volume of low viscosity penetrating bone cement through said outlet opening under substantial pressure sufficient to cause said cement to penetrate between the trabeculae of the bone; and

(c) removable nozzle and pressure sealing means at the outlet opening of said cartridge means for applying the low volume of low viscosity penetrating bone cement forced

from the cartridge means by the extruding means to the bone cavity and for providing a pressure seal between said bone cavity and said outlet opening, whereby said low volume of low viscosity penetrating bone cement will be injected into the bone cavity under said substantial pressure and will penetrate between the trabeculae of the bone to thereby provide a bone/cement interface to securely hold said prosthetic device in place, wherein said removable nozzle and pressure sealing means comprises a removable closure cap fitting over the outlet opening of said cartridge means and having an outlet orifice and at least one nozzle removably connectable to said outlet orifice, at least one of said nozzles having an outlet portion shaped to close against an entrance to a bone cavity to thereby provide said pressure seal between said bone cavity and said outlet opening.

4,338,926

**BONE FRACTURE PROSTHESIS WITH CONTROLLED STIFFNESS**

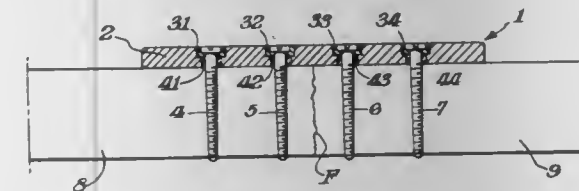
Frederick J. Kummer, Hackensack, N.J., and Richard D. Coutts, San Diego, Calif., assignors to Howmedica, Inc., New York, N.Y.

Filed Nov. 21, 1980, Ser. No. 208,906

Int. Cl.<sup>3</sup> A61F 5/04; A61B 17/18

U.S. Cl. 128—92 BC

9 Claims



4. A bone prosthesis for use in healing a bone fracture comprising a strong, rigid, biologically non-absorbable structural member, distinct means to secure said structural member to said bone, and a biologically absorbable element adapted to be held under compression between said securing means and said structural member when said prosthesis is secured to said bone, so that stress is transmitted from said bone through said element to said structural member,

whereby the stress transmitted to said prosthesis gradually decreases with time during the healing of said bone as said element is absorbed.

4,338,927

**DEVICE FOR RESTORING THE FUNCTION OF THE LOWER EXTREMITIES**

Mstislav V. Volkov, Stroitel'naya ulitsa, 6, korpus 1, kv. 63; Oganov V. Oganovskiy, ulitsa Pervomayskaya 74, kv. 87, and Leonid A. Povarov, Tsvetnoi bulvar, 25, kv. 34, all of Moscow, U.S.S.R.

Filed Mar. 16, 1981, Ser. No. 243,804

Int. Cl.<sup>3</sup> A61F 5/04

U.S. Cl. 128—92 A

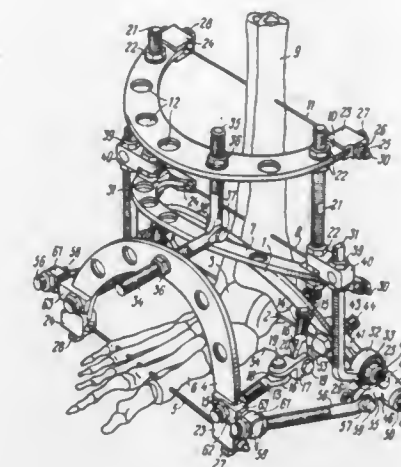
1 Claim

1. A device for restoring the function of the lower extremities comprising:

a mechanism for restoring the function of the ankle joint comprising:

two pairs of half-rings, one of said pairs including an axial half-ring, which is fastened to the axle of rotation of the ankle joint, and a locking half-ring, which is fastened to the metatarsal bones of the foot, said half-rings being rigidly secured to each other at their ends; the other of said pairs including a rotatable half-ring, which is fastened to the distal portion of the shin bone, and a locking half-ring, which is fastened to the middle portion of the shin bone, said half-rings being rigidly secured to each other; articulated distraction members mounted on the ends of said

axial and rotatable half-rings and adapted to join together said pairs of half-rings; a mechanism for correcting deformities of the foot, comprising: brackets rigidly secured to the ends of said axial half-ring; spindles fastened to said brackets; L-shaped connecting rods rotatably mounted on said spindles;



ties to couple respective ones of the arms of said L-shaped connecting rods with the ends of the locking half-ring, which is fastened to the metatarsal bones of the foot; a spoke that is driven through the heel bone and is fastened to corresponding ones of the arms of said L-shaped connecting rods.

4,338,928

**LIP SHIELD AND TREATMENT DEVICE**

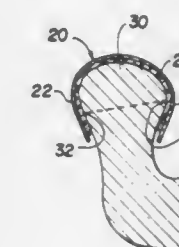
Leonard G. Martin, 301 Golden Isle Dr., Apt. 105, Hallandale, Fla. 33009, and Herbert S. Leb, 671 NE. 195 St., Apt. 121, North Miami Beach, Fla. 33179

Filed Sep. 5, 1980, Ser. No. 185,103

Int. Cl.<sup>3</sup> A61F 5/56

U.S. Cl. 128—136

10 Claims



1. An improved lip shield adapted for comfortable and effective mounting on a single human lip, said human lip characterized as having an exterior vermilion surface ending at the vermilion border, an intra-oral surface ending at the vermilion-mucosal border, and a generally U-shaped horseshoe configured cross-section with said cross-section having a maximum width along an imaginary line connecting the point on said cross-section representing said vermilion border to the point on said cross-section representing said vermilion-mucosal border,

said improved lip shield comprising a one-piece member having a first leg means for covering said exterior vermilion surface of said lip, a second leg means for covering said intra-oral surface of said lip, and further having a generally U-shaped horseshoe configured cross-section corresponding to said lip cross-section with the maximum distance between said first and second leg means being measured along an imaginary line connecting the point on said shield cross-section that covers said lip vermilion border to the point on said shield cross-section that covers



said lip vermilion-mucosal border when said shield is mounted on said lip,  
said shield cross-section having first, second, and third portions, said first portion located on one side of said imaginary line representing the maximum distance between said first and second leg means and said second and third portions located on the other side of said imaginary maximum distance line and wherein the distance between any two points on respective first and second leg means located on said first portion of said shield cross-section is less than said maximum distance, and wherein the distance between any point on said first leg means located on said second portion and any point on said second leg means located on said third portion is less than said maximum distance.

#### 4,338,929 EAR-PLUG

Tord R. Lundin, Billesholm, and Kalman Csiki, Landskrona, both of Sweden, assignors to Gullfiber AB, Billesholm, Sweden

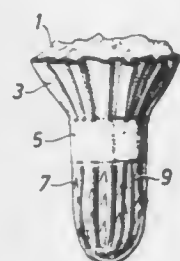
Division of Ser. No. 778,134, Mar. 16, 1977, Pat. No. 4,215,683. This application Jul. 29, 1980, Ser. No. 173,428

The portion of the term of this patent subsequent to Aug. 5, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> A61F 11/02

U.S. Cl. 128—152

5 Claims



1. An ear protecting plug comprising an elastic, plug-like body of fibrous material, at least a part of said body being adapted for insertion into an auditory canal of an ear, and a casing surrounding at least said part of the body, said casing being adapted for insertion in the auditory canal, having a surface with a friction coefficient substantially lower than that of the fibrous material and being a thin plastic film, the part of the plug-like body being adapted for insertion into an auditory canal of an ear being substantially cylindrical and the plug-like body further including an expanded end part adapted to at least partially fill out the concha of the ear outside the auditory canal, the plastic film being wrapped at least around the part of the plug-like body adapted to be inserted into an auditory canal thereby producing lengthwise folds in the casing, a circumferential heat weld in the plastic film being positioned at the junction of the substantially cylindrical part and the expanded end part to fix the plastic film and weld it to the fibrous material.

#### 4,338,930 AIRWAY INTUBATOR

R. Tudor Williams, 3423 Utah Crescent, Calgary, Alta. T2N 4A9, Canada

Filed Sep. 8, 1980, Ser. No. 184,612

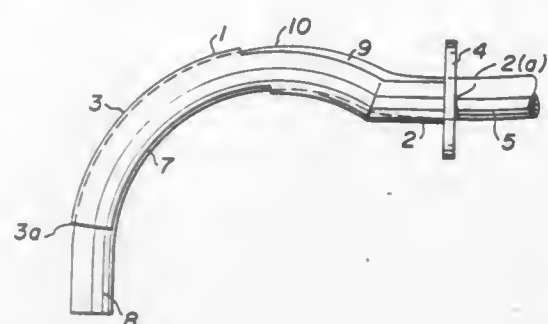
Int. Cl.<sup>3</sup> A61M 25/02

U.S. Cl. 128—200.26

4 Claims

1. An improved oro-pharyngeal airway adapted to function as a guide and passageway for an endotracheal tube for intubation of a human larynx, said airway having distal and proximal halves and ends of generally ellipsoidal, exterior cross-sectional shape, in which the airway has an air passage there-

through of a size sufficient to accommodate a complementary endotracheal tube and in which the distal half and end is open



along its lingual surface so as to permit the passage there-through of the aforesaid complementary endotracheal tube.

#### 4,338,931 DEVICE FOR THE QUICK INHALATION OF DRUGS IN POWDER FORM BY HUMANS SUFFERING FROM ASTHMA

Claudio Cavazza, 35, Via Marocco, 00144 Rome, Italy

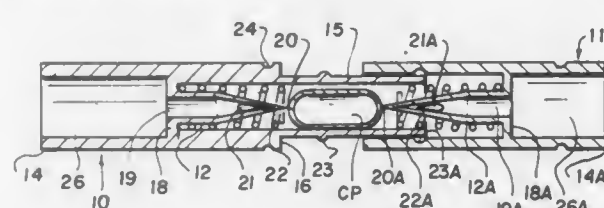
Filed Apr. 28, 1980, Ser. No. 144,016

Claims priority, application Italy, Apr. 27, 1979, 48883 A/79

Int. Cl.<sup>3</sup> A61M 15/06

U.S. Cl. 128—203.15

4 Claims



1. A device for the quick inhalation of drugs in powder form by persons suffering from asthma, said drugs being contained in a capsule made of a fairly rigid, pierceable material, comprising: a first and a second hollow cylindrical body, each of said first and second hollow cylindrical bodies having a bore open at both ends, and a hollow piercing element mounted in said bore integral with said body, said hollow piercing element comprising an open-ended small cylinder and a tip mounted at one end of said small cylinder, said tip having apertures extended therethrough for the passage of air, said first hollow cylindrical body including a cylindrical sleeve for receiving the capsule mounted at one end of said bore adjacent said second hollow cylindrical body and telescopically received in said bore of said second hollow cylindrical body, the capsule being mounted in said cylindrical sleeve intermediate said tip of each piercing element, said first and said second hollow cylindrical body being telescopically moveable toward each other to pass at least one of the respective piercing element relative to the other piercing element between a first position in which the capsule is still in its integral condition and a second position in which both of said piercing elements are passed into the capsule whereby the apertures are inside the capsule, mutually cooperating abutting means for stopping the insertion movement of one of said first and second hollow cylindrical members into the other, a helical spring means connected to each hollow cylindrical body and surrounding each piercing element for resiliently bearing against the capsule and urging said body away from the capsule in said second position, and cooperating means for holding said first and said second hollow cylindrical bodies in said second position counteracting said springs.

#### 4,338,932 METHOD AND APPARATUS FOR FLUID FLOW CONTROL

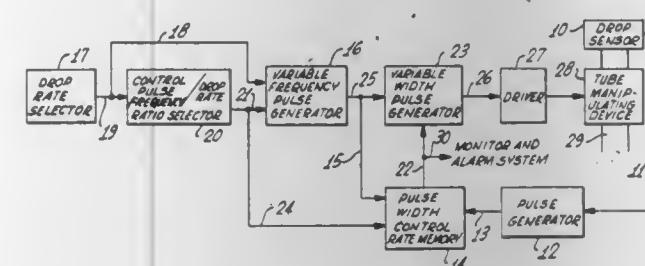
Heinz W. Georgi; Wallace L. Knute, both of Del Mar, and Richard L. Foreman, Lemon Grove, all of Calif., assignors to IVAC Corporation, San Diego, Calif.

Filed Nov. 7, 1980, Ser. No. 204,768

Int. Cl.<sup>3</sup> A61M 5/00

U.S. Cl. 128—214 E

30 Claims



1. In the parenteral administration of medical fluids by an intravenous set including drop forming means and fluid conduit means coupled to said drop forming means, a method of controlling the rate of drop flow through said fluid conduit means, comprising the steps of:

clamping said fluid conduit to a substantially shut-off state; repetitively opening and closing said fluid conduit to fluid flow, the frequency of opening said fluid conduit being at a higher frequency than the desired drop flow rate through said fluid conduit, the ratio of said frequency of opening and closing to said desired drop flow rate being higher for relatively low drop flow rates than for relatively high drop flow rates, whereby a plurality of cycles of opening and closing said fluid conduit are required to produce each individual drop of flow.

#### 4,338,933 COMBINATION QUICK DISCONNECT COUPLING AND LIQUID CUTOFF VALVE

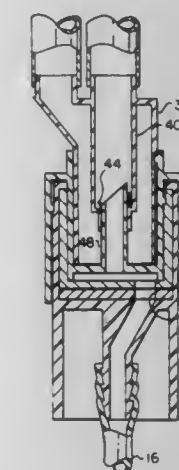
Michael A. Bayard, Chicago, and James A. Turnbull, Grayslake, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 22, 1980, Ser. No. 219,017

Int. Cl.<sup>3</sup> A61M 5/14

U.S. Cl. 128—214 R

23 Claims



1. A combination quick disconnect coupling and liquid cutoff valve comprising:

a first tubular member connected to at least one length of flexible tubing and having a fluid passageway there-through;  
a second tubular member connected to a plurality of lengths of flexible tubing and having a cylindrical sheath telescopically circumscribing a portion thereof and extending therefrom constructed and arranged for telescopic connection with respect to said first tubular member; said

sheath being movably disposed with respect to said second tubular member;

a third tubular member concentrically positioned within said second tubular member and having a penetrable resilient diaphragm member at a first end and a fluid connection to one of said lengths of said flexible tubing at a second end; and

piercing pin means inwardly disposed within and attached to said movable cylindrical sheath and adapted for penetration of said penetrable diaphragm member, said piercing pin means being constructed and arranged for the passage of a first liquid therethrough when said piercing pin means is spaced from said diaphragm member and the passage of a second liquid therethrough when said piercing pin means has been inserted through said penetrable resilient diaphragm member, thereby effecting selective flow of said first or said second liquid as required.

#### 4,338,934 INTRAVASCULAR CATHETER APPARATUS

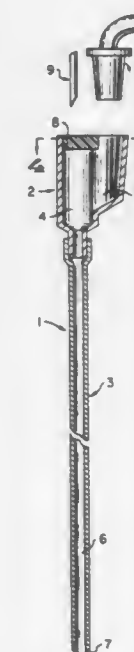
Richard G. Spademan, Box 6410, Incline Village, Nev. 89450

Filed Feb. 19, 1980, Ser. No. 122,362

Int. Cl.<sup>3</sup> A61M 5/14; A61J 1/06

U.S. Cl. 128—214.4

6 Claims



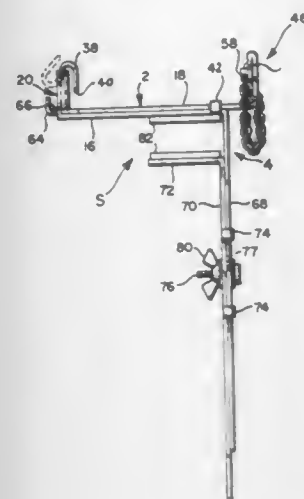
1. A catheter comprising:

a hub;  
means forming a first passageway in said hub; a canula extending from said hub and communicating with said first passageway; a puncturing means for inserting said canula in a body; a sealing means in the first passageway for removably receiving said puncturing means, said sealing means including a solid member of resilient material and being of a size to permit the puncturing means to pierce and to extend through the solid member; and means forming a second passageway in said hub adjacent to and communicating with said first passageway with said solid member partially extending into the second passageway and being located in a position to be contacted and compressed by a connector member inserted in said second passageway for compressing said sealing means to close a hole formed therethrough by said puncturing means after the withdrawal of said puncturing means from said solid member.



**4,338,935**  
**SYRINGE SUPPORT**  
 Elmer C. Wilson, 1951 Guy Way, Baltimore, Md. 21222  
 Filed Dec. 31, 1980, Ser. No. 221,898  
 Int. Cl.<sup>3</sup> A61M 5/00  
 U.S. Cl. 128—218 R

12 Claims

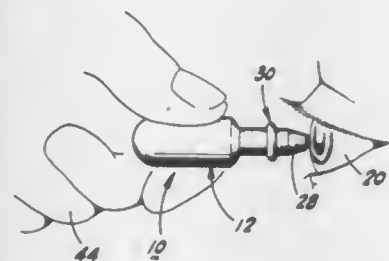


1. In a syringe support for clamping to a table top or the like a syringe having a plunger, a barrel slideable on said plunger, and said plunger having a plunger head, that invention which includes:

- (a) a horizontal body for supporting such syringe including a longitudinal axis
- (b) a first upright bracket member on one end of said body
- (c) means for locking said plunger head in said first bracket against longitudinal axial movement relative to said body
- (d) a second upright bracket member on the other end of said body
- (e) mounting means on said second bracket member for supporting said barrel for longitudinal slideable axial movement relative to said body, and
- (f) latch means on said first bracket for preventing upward displacement of said syringe when positioned in said first and second brackets.

**4,338,936**  
**DEVICE AND METHOD FOR DELIVERING SOLID MEDICATION TO AN EYE**  
 Byron Nelson, 3521 Perada, Walnut Creek, Calif. 94598  
 Filed Oct. 27, 1980, Ser. No. 201,180  
 Int. Cl.<sup>3</sup> A61M 11/00  
 U.S. Cl. 128—266

5 Claims



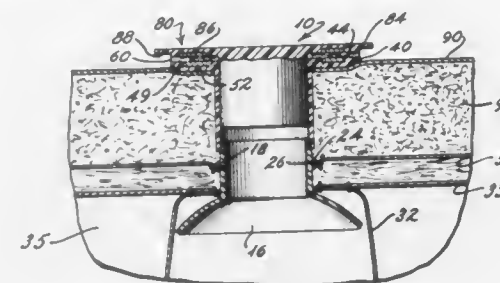
1. A device for delivering finely divided solid medication to an eye comprising:
- a. a flexible container having an air chamber therewithin and an opening, communicating with said air chamber for passage of air to and from said chamber;
  - b. means adapted for directing air from said air chamber to the eye comprising a hollow member having a first opening communicating the interior thereof with said air chamber and an opening second opening adapted for placement adjacent the eye;
  - c. means intended for holding a predetermined dose of the finely divided solid medication in the path of the air leaving

ing said chamber through said directing means before arrival of the air at the eye;

d. filter means intended for preventing the finely divided solid medication from entering the air chamber of the flexible container, said filter means defining an extremity of said air chamber, said filter means being located in said hollow member, said hollow member including an enlargement for holding said filter means.

**4,338,937**  
**MECHANICAL CONTINENT ILEOSTOMY OR COLOSTOMY**  
 Sheldon H. Lerman, 2202 Ken Oak Rd., Baltimore, Md. 21209  
 Filed Dec. 5, 1980, Ser. No. 213,337  
 Int. Cl.<sup>3</sup> A61F 5/44  
 U.S. Cl. 128—283

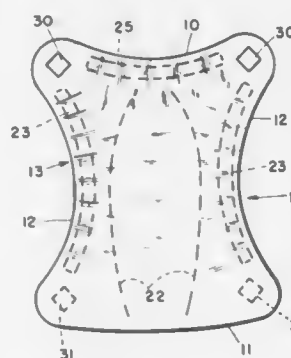
3 Claims



1. A mechanical continent ostomy device comprising:
- a body portion in the shape of a cylindrical stem surmounting a flexible flange with screw threads present on the stem at the end thereof opposing said flange;
  - an insert portion in the shape of a cylindrical stem with a rim at one end thereof, the rim having at least one permanent magnet therein, the insert stem having screw threads present thereon at the end thereof opposing said rim;
  - the screw threads on said body and the screw threads on said insert being matched whereby a male-female coupling of insert and body may be made;
  - a stopper member in the shape of a rimmed plug, the plug portion being sized to fit into said insert, and the rim portion being sized to fit superposed on the insert rim, said stopper having at least one permanent magnet being present inside the rim thereof, whereby said stopper and said insert may be magnetically coupled rim to rim; and
  - a disposable washer member, adapted to fit between the rims.

**4,338,938**  
**WASHABLE DIAPER**  
 Susan A. Seavitt, 975 Plymouth, SE., Grand Rapids, Mich. 49506  
 Filed May 19, 1980, Ser. No. 151,353  
 Int. Cl.<sup>3</sup> A61F 13/10  
 U.S. Cl. 128—284

1 Claim

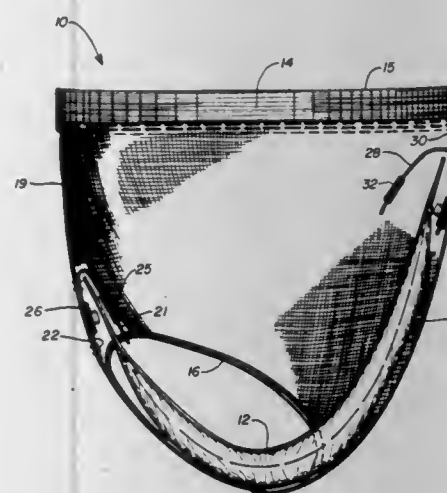


1. A washable, reusable diaper, said diaper having a body; said body having a pair of ends and a pair of sides, one of said

ends having a small outward curvature to give it convexity, said sides being shaped in the form of a segment of a curve extending substantially the full length of each side and convergent intermediate said ends whereby the least width of said diaper is substantially midway between the ends thereof; said body having an interior laminae, the exterior lamina having a latex inner face and a fabric exterior face; said body having an inner lamina of a multi-layered woven cotton, moisture absorbing fabric providing the only material forming the inside surface of the diaper; an elastic band secured to said body along each side intermediate said laminae, said band being spaced inwardly from the side edge of the diaper; the ends of said bands being spaced from the ends of said body; a third elastic band secured to said body along the other of said ends intermediate said laminae and spaced inwardly from the adjacent edge of the diaper; said other end when said diaper is released, having a shallow concave shape; the ends of said third band being spaced from the sides of said body; all said elastic bands being embedded within the body of said diaper whereby no portion thereof will contact an infant wearing the diaper, said elastic bands at said sides providing means for adjusting the diaper to fit closely about an infant's legs and the elastic band at the one end providing automatic means of adjusting to the waist of an infant the length of the combined ends of the diaper; detachable fastening means secured to said body at each of its four end corners and at each corner being spaced from the adjacent end of said elastic bands.

**4,338,939**  
**INCONTINENCE PANTS**  
 Helenne Daville, 1237 Admiral Dr., Apopka, Fla. 32703  
 Filed Feb. 27, 1980, Ser. No. 125,283  
 Int. Cl.<sup>3</sup> A41B 13/02  
 U.S. Cl. 128—286

9 Claims



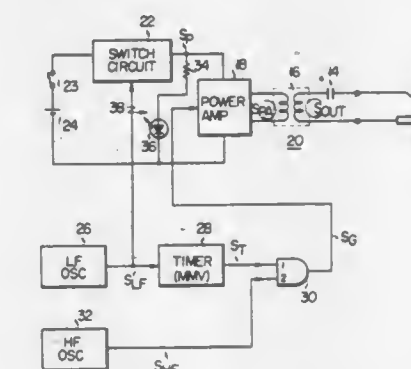
1. Incontinence pants adapted to be worn with a human waste absorbing disposable diaper by a person about the waist and between the legs by being pulled on over the legs comprising:
- (a) a unitary supporting garment of fabric content having an upper portion and a lower portion, the upper portion having a first expandable opening to surround the waist, the lower portion having a second and a third opening each adapted to receive a leg therethrough;
  - (b) an intermediate portion connecting the upper portion and the lower portion and having a front side and an opposing rear side both interconnected to form with the upper portion a continuous surface, the continuous surface having a midline that passes centrally through the front side and the opposing rear side;
  - (c) first diaper retaining means fastened to the front side having an inner flap and an outer flap and positioned at least partially along the midline;
  - (d) at least a second diaper retaining means fastened to the continuous surface on the opposing rear side having an

inner flap and an outer flap and positioned at least partially along the midline; and

(e) coupling means fastened to the inner and outer flaps of the first and second diaper retaining means so as to permit each diaper retaining means to receive between the inner and outer flaps the disposable diaper and to detachably hold the disposable diaper therebetween such that a fecal matter trap is formed between the legs of the wearer and a urine pocket is formed adjacent the front portion of the supporting garment when the disposable diaper is positioned between the wearer's legs and up and about at least a portion of the front and the back of the waist effective to retain human waste when the supporting garment is pulled up and about the waist.

**4,338,940**  
**APPARATUS FOR SUPPLYING POWER TO AN ELECTROSURGICAL DEVICE**  
 Yuji Ikuno, Ome, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan  
 Filed Aug. 13, 1980, Ser. No. 177,922  
 Claims priority, application Japan, Sep. 3, 1979, 54-112637  
 Int. Cl.<sup>3</sup> A61B 17/39  
 U.S. Cl. 128—303.14

4 Claims



1. Apparatus for supplying surgical current to an electrosurgical device, comprising:
- power output means for providing a surgical current to an electrosurgical device;
  - a source of power;
  - switch means coupled to said power output means and to said power source for supplying said power output means with a power signal to provide said surgical current;
  - first signal generation means coupled to said switch means for supplying said switch means with a switch signal to turn on and off said switch means with given timing;
  - second signal generation means coupled to said power output means for supplying said power output means with a surgical signal having a period corresponding to said surgical current;
  - timer means triggered by said switch signal and producing a timer signal for a given period of time after being triggered, said given period of time having a predetermined value which is such that energy delivered from the electrosurgical device may not incise the tissue of a living body; and
  - gate means coupled to said second signal generation means and to said timer means for allowing said surgical current to be delivered from said power output means to said electrosurgical device only for said given period of time while said timer signal is being produced;
- whereby said surgical current is supplied from said power output means to said electrosurgical device in accordance with the logical AND of said switch signal, said timer signal and said surgical signal.



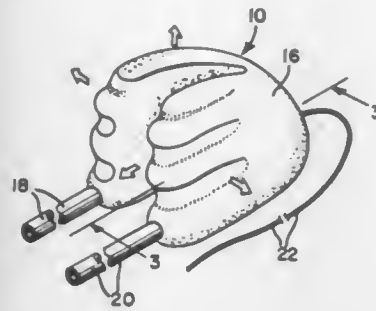
4,338,941

## APPARATUS FOR ARRESTING POSTERIOR NOSEBLEEDS

Hugh W. Payton, 36 S. Main St., Jeffersonville, Ohio 43404  
Filed Sep. 10, 1980, Ser. No. 185,707Int. Cl.<sup>3</sup> A61B 17/12

U.S. Cl. 128—325

6 Claims



1. A posterior nasal pack device adapted to be inserted through the mouth and oropharynx of a patient into the nasopharynx partially surrounding the posterior portion of the septum and thereafter expanded to apply hemostatic pressure to arrest posterior nasal hemorrhaging comprising:

an expandable, foamed elastomer pack molded to conform generally to the surfaces of the walls of both sides of the posterior portion of the nasal cavity, the anterior wall of said pack having a U-shaped channel adapted to partially surround the posterior end of the septum with the respective ends of said U-shaped channel extending into opposite sides of the nasal cavity prior to expansion, the interior of said elastomer pack containing two adjoining hollow, fluid impermeable chambers sharing a common wall, tube means attached to the anterior wall of said elastomer pack said tube means comprising a first and second hollow, flexible tube, each of said first and second tubes in fluid communication with a respective hollow chamber, and string means attached to said elastomer pack of sufficient length to traverse the distance between the nasopharynx and the mouth to aid in removal of the nasal pack.

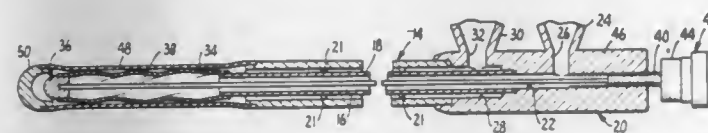
4,338,942

## DILATATION CATHETER APPARATUS

Thomas J. Fogarty, 770 Welch Rd., Palo Alto, Calif. 94304  
Filed Oct. 20, 1980, Ser. No. 198,342Int. Cl.<sup>3</sup> A61M 29/02

U.S. Cl. 128—344

6 Claims



1. A dilatation catheter comprising a pair of concentrically disposed spaced apart inner and outer flexible tube members, a first annular inner inflatable bag attached to the distal end of said inner tube member and attached at its other end to a first tip member, a second annular outer inflatable bag in superposed relation to said first bag attached to the distal end of said outer tube member and attached at its other end to a second tip member, a wire extending through said inner tube member and said first bag and secured to said first tip member operable upon axial rotation thereof to axially twist said first bag and thereby decrease its diameter in its non-inflated condition, first means to inflate and deflate said first bag through said inner tube member, and second means operable independently of said first means to inflate and deflate said second bag through said outer tube member.

4,338,943

## INSTRUMENT FOR INDUCTION OF LABOR

Tadao Okamoto; Eisuke Obata, both of Tokyo, and Yutaka Enomoto, Kawaguchi, all of Japan, assignors to Fuji Latex Co., Ltd., Tokyo, Japan

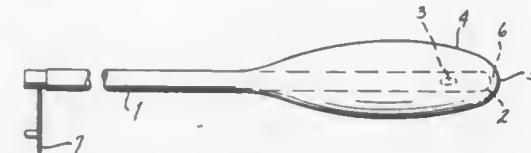
Division of Ser. No. 38,908, May 14, 1979, Pat. No. 4,270,541.

This application Feb. 19, 1981, Ser. No. 236,068

Int. Cl.<sup>3</sup> A61M 29/02

U.S. Cl. 128—344

6 Claims



1. An obstetrical instrument for induction of labor comprising an elongated, tubular member formed of flexible, durable, and soft material and having a leading end and a trailing end, said tubular member being closed at the extremity of its leading end and being opened at its trailing end, a relatively thin walled balloon fabricated of natural or synthetic rubber being disposed enclosingly about the leading end portion of said tubular member, said balloon being sealed in its rearward or trailing end portion about the outer face of said tubular member for development of a liquid leakproof joint therebetween, said joint being remote from the trailing end of said tubular member so that the latter between said joint and the trailing end thereof is fully exposed, said tubular member being provided with at least one opening adjacent its leading end for establishing communication between the interior of said tubular member and the interior of said inflatable balloon for permitting ingress into said balloon, and egress therefrom, of a compatible fluid for inflation of said balloon, said balloon being fabricated of fluid impervious material so that inadvertent loss of said fluid therefrom is inhibited, said tubular member and associated inflatable balloon being coordinately dimensioned for disposition between the uterine wall and the amniotic membrane whereby upon inflation of said balloon the uterine wall is stimulated with increase of internal pressure for promoting removal of the amniotic membrane, said tubular member being of such length in the direction of its trailing end from the balloon seal to permit introduction of the balloon through the cervical orifice and into the uterus.

4,338,944

## THERAPEUTIC DEVICE

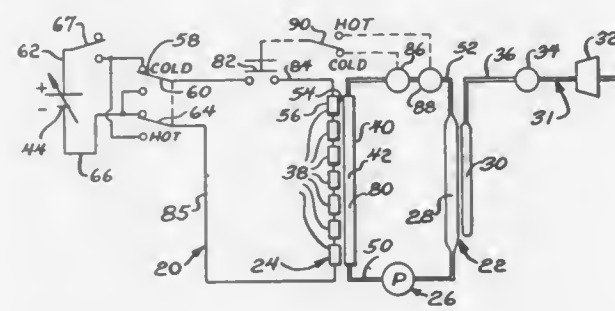
Edward J. Arkans, Schaumburg, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jan. 16, 1980, Ser. No. 159,708

Int. Cl.<sup>3</sup> A61F 7/00

U.S. Cl. 128—400

14 Claims



1. A therapeutic device, comprising:  
a sleeve for covering a portion of a patient's body and having a pair of opposed flexible liquid impervious walls defining a space to receive liquid, said sleeve having a sheet of substantially nonabsorbent open cell foam in the space between said walls;

means for circulating a liquid through said space of the sleeve; and  
means for selectively heating and cooling the circulated liquid at a location remote from the sleeve comprising a container having opposed metallic walls defining a chamber, a plurality of thermoelectric devices arranged on the outer surfaces of both walls, each thermoelectric device having one side in contact with a chamber wall, heat sink means on each side of the container, each thermoelectric device having a side opposite said one side in contact with said heat sink, a D.C. power supply, and control means for selectively directing current through said thermoelectric devices in one direction, whereby liquid in said chamber is caused to be heated, and in a direction opposite said one direction, whereby liquid in said chamber is caused to be cooled.

4,338,945

## METHOD AND RANDOMIZED ELECTRICAL STIMULATION SYSTEM FOR PAIN RELIEF

Yukio Kosugi; Jun Ikebe; Kintomo Takakura, and Yoriaki Kumagai, all of Tokyo, Japan, assignors to Clinical Engineering Laboratory Limited, Tokyo, Japan

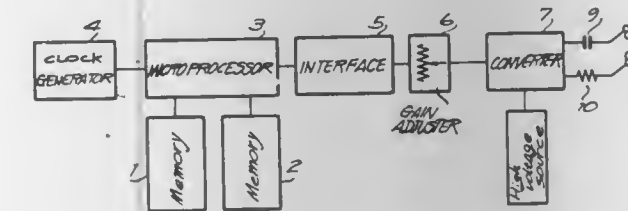
Filed Mar. 2, 1979, Ser. No. 17,013

Claims priority, application Japan, Mar. 3, 1978, 53-24346

Int. Cl.<sup>3</sup> A61N 1/36

U.S. Cl. 128—421

7 Claims



1. An electrical pulse generation system to be used for the stimulation of dorsal column and peripheral nerves, respectively, for pain relief comprising  
a pulse generator,  
means having output electrodes constituting means adapted to be applied to central and peripheral nerve areas of a patient for automatically continuously randomizing parameters of output pulses of said pulse generator to generate a series of pulses having a specified power spectrum so as to ceaselessly provide fresh sensations to a nervous system through said electrodes.

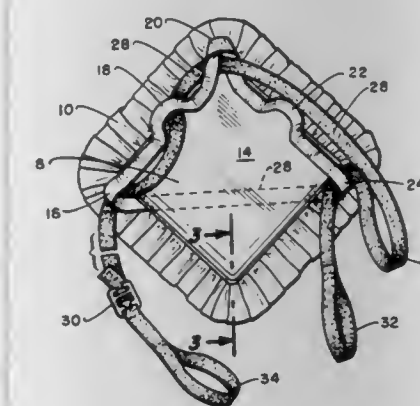
4,338,946

## VERSATILE POST MASTECTOMY DEVICE

Alice S. Donnelly, 24231 W. Trevino Dr., Valencia, Calif. 91355  
Filed Dec. 29, 1980, Ser. No. 221,342Int. Cl.<sup>3</sup> A41C 3/10, 3/00

U.S. Cl. 128—481

8 Claims



1. A post surgical device for covering the surgical situs on a human body comprising the combination of:  
a cover member of selected configuration and ornamenta-

tion and being of a size sufficient to cover said surgical situs;  
a plurality of spaced retaining means on the surface of said cover member adapted to overlie said surgical situs for cooperative association with a securement member to secure same on said human body; and  
a securement member releasably received in said spaced retaining means and being of sufficient size to encircle, in adjustable fashion and supportive relationship said cover member on said human body.

4,338,947

## POSITIVE FIXATION HEART WIRE

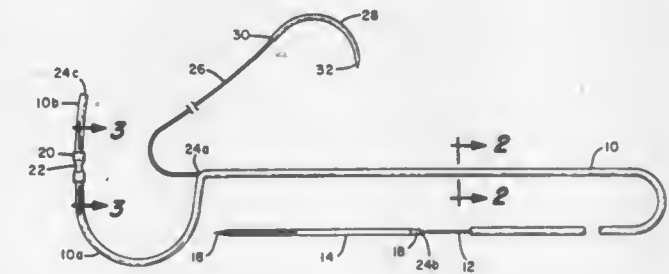
Terrell M. Williams, Coon Rapids, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 3, 1980, Ser. No. 202,978

Int. Cl.<sup>3</sup> A61B 5/04; A61N 1/04

U.S. Cl. 128—642

8 Claims



1. A heart wire for maintaining electrical contact between an electrical device and body tissue comprising:  
an elongated conductor having a distal end and proximal end;  
an insulative sheath having a distal end and a proximal end and encasing said conductor;  
an electrode fixedly attached to said conductor intermediate the distal end and the proximal end of said conductor and which is exposed to the exterior of said insulative sheath;  
a length of surgical thread having a distal end and a proximal end which is fixedly attached to said sheath proximal to said electrode.

4,338,948

## METHOD AND APPARATUS FOR DETECTING AND/OR IMAGING CLUSTERS OF SMALL SCATTERING CENTERS IN THE BODY

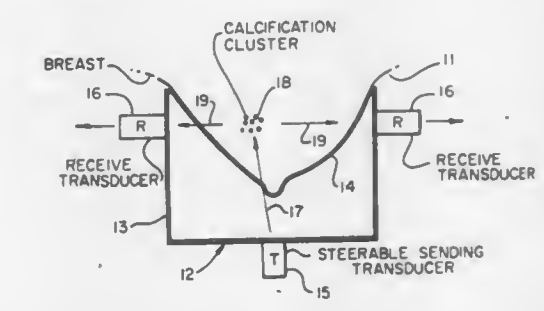
Victor Perez-Mendez, Berkeley, and Frank G. Sommer, Palo Alto, both of Calif., assignors to Regents of the University of California, Berkeley, Calif.

Filed Mar. 27, 1980, Ser. No. 134,624

Int. Cl.<sup>3</sup> A61B 10/00

U.S. Cl. 128—660

10 Claims



1. An apparatus for detecting clusters of scattering centers in a volume of a body, comprising:  
means for directing ultrasonic energy towards a given cluster of scattering centers in periodic bursts of ultrasonic energy at a predetermined frequency;  
means for receiving some of said directed ultrasonic energy at a plurality of different points circumferentially spaced around said body after said energy has come in contact with said

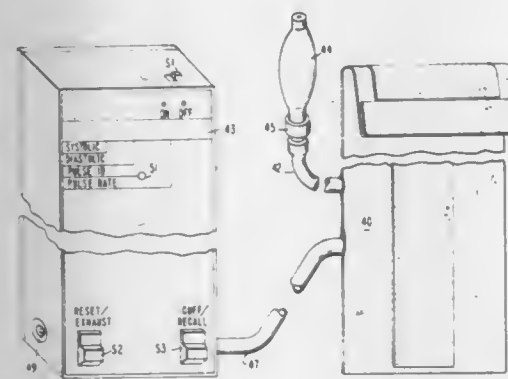


cluster of scattering centers, said receiving means distinguishing between received ultrasonic energy having substantially the same, common amplitude at the various receiving points from received ultrasonic energy having differing amplitudes at the various receiving points, whereby to distinguish scattered ultrasonic energy having substantially the same amplitude at all of the receiving points from noise or reflected ultrasonic energy; and means responding only to the scattered ultrasonic energy received and distinguished by said receiving means for producing a corresponding output signal.

**4,338,949**  
**METHOD FOR PERFORMING NON-INVASIVE BLOOD PRESSURE AND PULSE RATE MEASUREMENTS**  
 Michael E. Croslin, 37 Bow St., Forest Hills Gardens, N.Y. 11375

Division of Ser. No. 64,194, Aug. 6, 1979, Pat. No. 4,271,844, which is a continuation-in-part of Ser. No. 499, Jan. 2, 1979, abandoned, and a continuation-in-part of Ser. No. 774,970, Mar. 7, 1977, abandoned. This application Dec. 2, 1980, Ser. No. 212,120

Int. Cl.<sup>3</sup> A61B 5/02  
 U.S. Cl. 128—677 20 Claims



13. A method for determining when a sufficiently high occluding pressure exists in the cuff of a blood pressure measuring instrument; said instrument including means for pumping up the cuff pressure, means for allowing air in said cuff to bleed out, and means for periodically sampling the instantaneous cuff pressure; comprising the steps of:

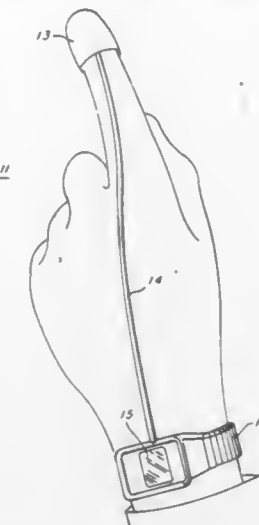
- maintaining a relative peak pressure value and continuously up-dating it in accordance with the value of a newly taken sample,
- maintaining a relative minimum pressure value and continuously up-dating it in accordance with the value of a newly taken sample,
- starting a time measure whenever said relative peak pressure value is up-dated,
- determining the pressure rises which occur during said time measure, and
- when said time measure reaches a predetermined length, determining that a sufficiently high occluding pressure exists if the maximum pressure rise during said time measure was less than a pre-set threshold value.

**4,338,950**  
**SYSTEM AND METHOD FOR SENSING AND MEASURING HEART BEAT**  
 Carl A. Barlow, Jr., and Lee R. Reid, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.  
 Filed Sep. 22, 1980, Ser. No. 189,400  
 Int. Cl.<sup>3</sup> A61B 5/02

- U.S. Cl. 128—687 23 Claims
1. A body-mountable instrument for detecting and measuring heart beat of a user, comprising:
- first sensor means for detecting pulsing of the user's blood resulting from the user's heart beat and body movement and generating a first electrical signal indicative thereof;
  - second sensor means for detecting the user's periodic

body movement and generating a second electrical signal indicative thereof; and

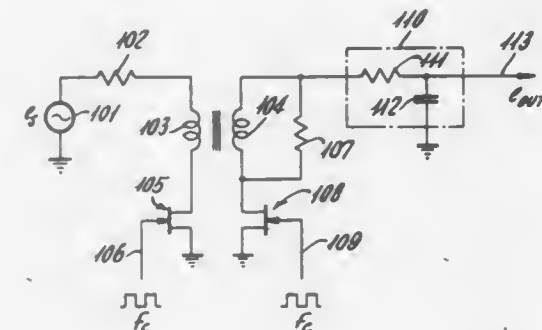
(c) processing means responsive to said first and second electrical signals for determining the period of the second electrical signal and for subtracting a first portion of the first electrical signal occurring during a first time interval



from a corresponding second portion of said first electrical signal occurring during a second time interval, said first and second time intervals being separated by a time period equivalent to  $nt$ , where  $n$  is an integer and  $t$  is the period of said second electrical signal, thereby separating body movement from heart beat in the first electrical signal.

**4,338,951**  
**MAGNETICALLY COUPLED ISOLATION INTERFACE CIRCUIT**  
 Thomas V. Saliga, Tampa, Fla., assignor to Critikon, Inc., Tampa, Fla.

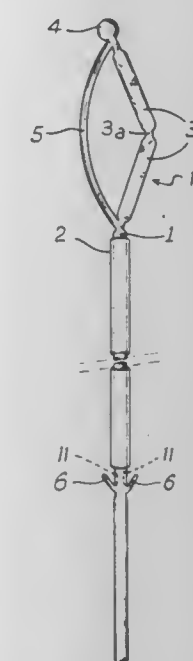
Filed Aug. 19, 1980, Ser. No. 179,614  
 Int. Cl.<sup>3</sup> A61B 5/00  
 U.S. Cl. 128—695 6 Claims



1. An isolation/interface circuit, for coupling signals having a given frequency bandwidth, from a source to a utilization apparatus comprising:

- a transformer having primary and secondary windings, said source providing signals to said primary and said utilization apparatus receiving signals from said secondary;
- first and second switch means, respectively serially connecting said primary and secondary windings to a datum;
- means for synchronously alternately enabling and disabling said switch means at a predetermined frequency larger than any in said given frequency bandwidth;
- low pass filter means serially intermediate said secondary winding and said utilization apparatus, said filter means having a frequency response characteristic which blocks signals at said predetermined frequency but which substantially passes said given frequency band.

**4,338,952**  
**DEVICE FOR TAKING SAMPLES OF ENDOMETRIUM**  
 Jacques Augros, Villiers le Bel, France, assignor to Arts et Techniques Nouvelles, Paris, France  
 Filed Jan. 18, 1980, Ser. No. 113,254  
 Claims priority, application France, Jan. 24, 1979, 79 01832  
 Int. Cl.<sup>3</sup> A61B 10/00  
 U.S. Cl. 128—757 7 Claims



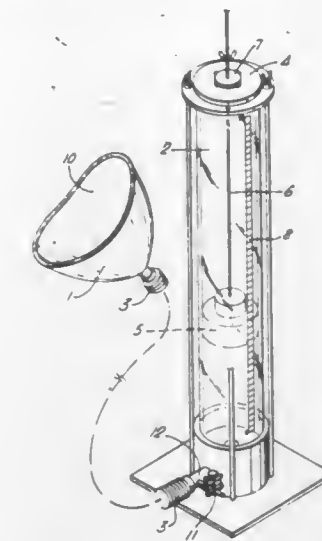
1. In a device for taking samples of endometrium, or curette, comprising a rod, a tube, at least one scraper element of elongated form and comprising at least one blade, said scraper element being fixed at the end of said rod which is slideable in said tube inside which said scraper element may be introduced by pulling said rod in said tube, and a bow-shaped member, said scraper element being arched and subtended by said bow-shaped member of which the convex side is facing away from said scraper element, said scraper element and said bow-shaped member lying in a common plane, the straight-line length of said bow-shaped member being shorter than the straight-line un-arched length of said scraper element so that, when said scraper element provided with said bow-shaped member is introduced into a cavity of a biological being wherein the cavity walls force the bow-shaped member toward said scraper element and said rod is pivoted about its axis, said scraper element undergoes a substantially helical torsion to angle said blade relative to said common plane.

**4,338,953**  
**BREAST MEASURING APPARATUS**  
 Christopher M. Ward, 44, Wensleydale Rd., Hampton, Middlesex, England  
 Filed Dec. 24, 1980, Ser. No. 220,253  
 Claims priority, application United Kingdom, Dec. 28, 1979, 7944551  
 Int. Cl.<sup>3</sup> A61S 5/10

U.S. Cl. 128—774 6 Claims

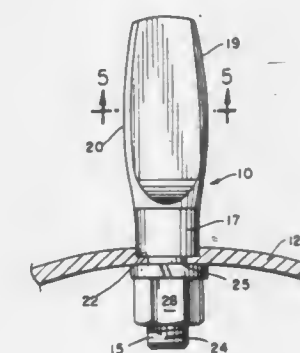
1. Apparatus for use in estimating the volume of a human breast, comprising a cup having an inner surface and being adapted substantially to cover the breast, a flexible membrane coupled to said cup in a fluid-tight relation, the membrane defining, together with the inner surface of the cup, a variable volume space within the cup, a fluid container, means to vary the volume of fluid within the container, means for indicating changes in the volume of fluid within the container and means for coupling fluid within the container to the said space, whereby the membrane is firmly applied to the breast so that

variations in volume of fluid in the said space result in corresponding variations in volume of fluid within the container to



thus indicate the volume of said breast without fluid contacting said breast.

**4,338,954**  
**COMBINE CYLINDER REEL TOOTH**  
 Robert J. Kirst, and Frederick H. Oppenhuizen, both of Buchanan, Mich., assignors to National-Standard Company, Niles, Mich.  
 Continuation of Ser. No. 73,683, Sep. 10, 1979, abandoned, which is a continuation of Ser. No. 827,555, Aug. 25, 1977, abandoned. This application Feb. 11, 1981, Ser. No. 233,662  
 Int. Cl.<sup>3</sup> A01F 12/22  
 U.S. Cl. 130—27 G 4 Claims

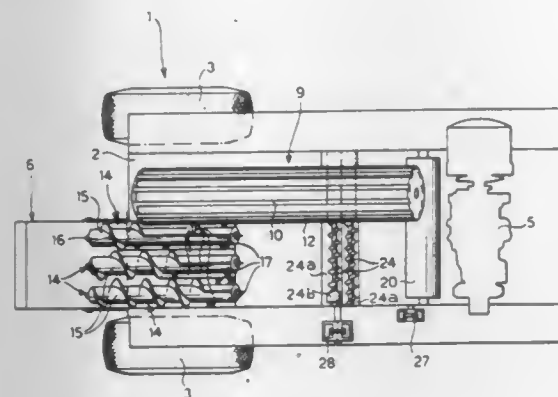


1. A cold-forged reel tooth mountable in a rotatable member of a threshing mechanism, said tooth being an elongated member comprising an elongated grain-contacting portion at one end, a stem portion at its other end and insertable into a recess in the rotatable member for fixedly mounting the tooth in the rotatable member, and a tapered seating portion intermediate the grain-contacting portion and the stem portion, the seating portion being adapted to be received in said recess, said grain-contacting portion being in the form of a blade having a thickness which decreases in the direction away from the seating portion of said blade and having planar surface sidewalls thereon and having a pair of oppositely facing edge surfaces each of which is convexly curved in two mutually perpendicular directions substantially to an arc of a parabola, one disposed in the elongated direction of the blade and the other transversely of the blade.



4,338,955

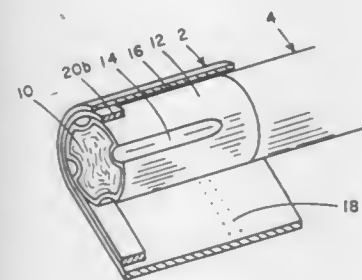
**COMBINE HARVESTER HAVING AN AXIAL-FLOW THRESHING AND SEPARATING UNIT**  
 Giuseppe Raineri, Bassano del Grappa, Italy, assignor to Pietro Laverda S.p.A., Breganze, Italy  
 Filed May 12, 1981, Ser. No. 262,880  
 Claims priority, application Italy, Jun. 19, 1980, 67960 A/80  
 Int. Cl.<sup>3</sup> A01F 7/06, 12/10  
 U.S. Cl. 130—27 AB 2 Claims



1. In a combine harvester including: an axial-flow threshing and separating unit comprising a threshing and separating cylinder disposed with its axis lying in a vertical plane extending longitudinally of the combine harvester, a counter-beater associated with said cylinder and in the shape of a concave grille, and a separator casing, substantially in the shape of a tubular body, having at least one portion constituted by a grille; and means for feeding the harvested crop to said threshing and separating unit; the improvement wherein the said threshing and separating unit is formed with a crop input opening arranged on one side thereof adjacent to its front end, and the said feed means comprises a series of feed cylinders arranged side-by-side, adjacent the said input opening, with their axes parallel to said longitudinal vertical plane, each of said feed cylinders having a first portion in the form of an auger, adjacent its front end, and a second portion adjacent its rear end, provided with at least one series of radial blades on its outer surface, the axial length of the said first portion being progressively greater for the feed cylinders the further away they are from said input opening of the axial-flow threshing and separating unit.

4,338,956

**CIGARETTE FILTER**  
 Robert A. Sanford, Prospect, and Robert R. Johnson, Louisville, both of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.  
 Filed Dec. 5, 1980, Ser. No. 213,441  
 Int. Cl.<sup>3</sup> A24D 3/04  
 U.S. Cl. 131—336 7 Claims



1. A filter rod for a cigarette tobacco column comprising: a porous filter rod of cylindrical configuration; a smoke impervious wrapper extending longitudinally along said rod from one end thereof and circumscribing said rod leaving flow-through opposed ends of said rod, said wrap-

per having at least one longitudinally extending groove embedded into the filter rod and that portion of the wrapper defining the groove remaining smoke impervious, said groove being open ended at and extending from one of said ends a distance less than the length of the filter rod; tipping material extending longitudinally of and circumscribing said wrapper, said tipping material being air pervious and permitting ventilating air flow therethrough into said groove, said ventilating air being the only fluid flowing through said groove when the filter is used in combination with a cigarette tobacco column during normal smoke draw; and, support means for said tipping material added at the mouth end of the filter to maintain circumferential consistency of said tipping material when in use.

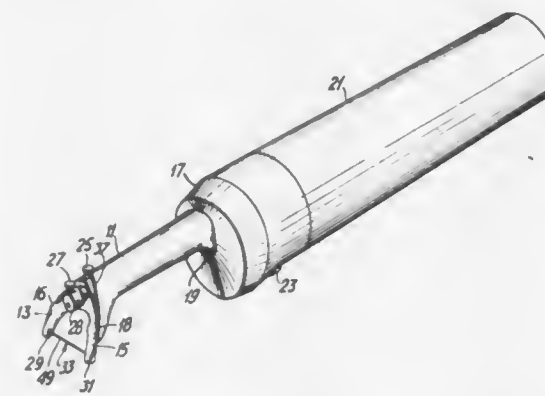
4,338,957

**DENTAL PROPHYLAXIS DEVICE AND PROCESS**  
 Robert H. Meibauer, 1106 Channel Club Dr., Monmouth Beach, N.J. 07750

Filed Nov. 5, 1980, Ser. No. 204,222  
 Int. Cl.<sup>3</sup> A61C 15/00

U.S. Cl. 132—91

21 Claims



1. In a device for dental prophylaxis, the combination comprising: housing means provided with an axial cavity and having a pair of spaced, stationary tyne provided with slotted openings disposed thereon and projecting outwardly therefrom, stationary support means on said housing in the vicinity of the base of said tyne, and oscillating support means located on said housing between the bases of said tyne and supported on a cylindrical sleeve disposed axially within said cavity, said housing means being adapted to be connected to driving means to drive said oscillating support means through said cylindrical sleeve.  
 16. A dental floss comprising a thread segment having a non-elastic loop at one end and an elastic loop at the opposite end, said elastic loop being under positive tension at all times and providing tension control of said floss and substantially eliminating point to point contact of dentition and said floss when in use to floss a dentition.

4,338,958

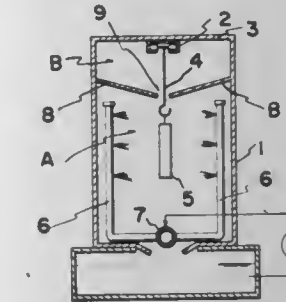
**SPRAY BOOTH ASSEMBLY FOR WASHING OR CHEMICALLY TREATING OBJECTS OF DESIRED KIND**  
 Junji Fujita, 781-1, Tateishi-machi, Tosu-shi, Saga-ken, Japan  
 Filed Jan. 26, 1981, Ser. No. 228,521  
 Claims priority, application Japan, Jul. 10, 1980, 55-97640[U]; Oct. 8, 1980, 55-144588[U]; Oct. 8, 1980, 55-144589[U]; Oct. 8, 1980, 55-144590[U]  
 Int. Cl.<sup>3</sup> B08B 3/02

U.S. Cl. 134—104

5 Claims

1. A spray booth assembly for washing or chemically treating objects of desired kind comprising  
 (a) a spray booth having an open-type tunnel-like construction, said spray booth provided with a longitudinal slit

opening on a ceiling thereof said longitudinal slit opening forming a hanger path,  
 (b) a hanger conveying means disposed above said ceiling of said spray booth in alignment with said hanger path,  
 (c) a plurality of vertical hangers movably suspended through said hanger path down into said spray booth from said hanger conveying means at desired intervals, said each hanger a lower extremity thereof provided with an object to be sprayed,



(d) spray means disposed within said spray booth for spraying water or other chemical solvent onto said object to be sprayed, and  
 (e) means for producing a vacuum zone at or below said hanger path, whereby said spray booth assembly can prevent the water or chemical moisture from flowing out through said hanger path toward said hanger conveying means.

4,338,959

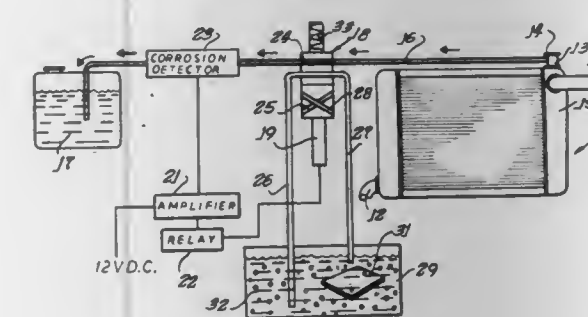
**DEVICE TO AUTOMATICALLY ADD A CONTROLLED AMOUNT OF CORROSION INHIBITOR IN AN ENGINE COOLING SYSTEM**

Robert H. Krueger, Palatine; Robert R. Kelly, Hoffman Estates; Rudolf M. Hempel, Palatine, all of Ill., and Bruce P. Miglin, Columbus, Ohio, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 29, 1980, Ser. No. 201,859  
 Int. Cl.<sup>3</sup> F28F 19/00

U.S. Cl. 137—93

12 Claims



1. A control system for the automatic addition of a chemical additive to a solution requiring treatment, comprising a circulating fluid system for the solution requiring treatment, a sensor inserted in the system in contact with the fluid to determine the level of treating chemical therein and issue a signal when the level decreases below a predetermined value, the improvement comprising a closed chemical treating solution reservoir containing solid treating chemical to be dissolved and chemical treating solution, a control valve controlling liquid flow from said fluid system to said reservoir for positive displacement of treating solution from said reservoir to said system and an inlet and an outlet for said reservoir in communication with the circulating fluid system, a solenoid to actuate said valve, and

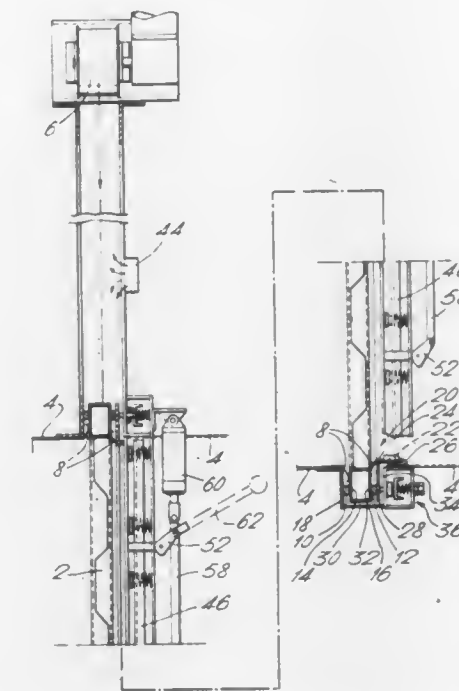
an electric circuit receiving the signal from the sensor and actuating said solenoid.

4,338,960

**GUILLOTINE TYPE DAMPER**  
 Ronald A. Ashdown, Redhill, England, assignor to Foster Wheeler Energy Corporation, Livingston, N.J.  
 Filed Aug. 5, 1980, Ser. No. 175,562  
 Int. Cl.<sup>3</sup> F16K 3/36

U.S. Cl. 137—240

5 Claims



1. A guillotine damper in combination with a duct comprising a duct, said duct being rectangular in cross section, a first flange extending perpendicular to and outward from said duct, an outer wall extending perpendicular to said flange and parallel to said duct, a second flange perpendicular to said outer wall and parallel to said first defined flange and defining with said first flange and said outer wall a plenum impervious to the ambient medium and open to said duct, a frame, said frame having an outwardly projecting fin extending into said plenum and parallel with said first and second flanges, an integral axial portion perpendicular to said fin and positioned within said duct, a roller mounted on said axial portion and bearing on the inside of said duct, a resilient seal between said axial portion and said duct for preventing the flow of fluid between said duct and said axial portion into said plenum, a damper blade movable across said duct to close same, first and second sealing surfaces extending within said plenum, said first sealing surface being mounted on said first flange and said second sealing surface being mounted on said second flange, means to urge said frame toward said first flange so that said fin compresses said second sealing surface against said blade and said blade compresses said first sealing surface so that the portion of the duct on one side of the blade is completely sealed from the portion of the duct on the other side of the blade.

4,338,961

**VALVE FOR HANDLING HOT CAUSTIC ALUMINA SOLUTION WITH PROVISION FOR GRINDING**  
 Anatole N. Karpenko, San Francisco, Calif., assignor to Anchor/Darling Valve Company, Bala Cynwyd, Pa.  
 Filed Aug. 7, 1980, Ser. No. 176,005  
 Int. Cl.<sup>3</sup> B24B 15/02

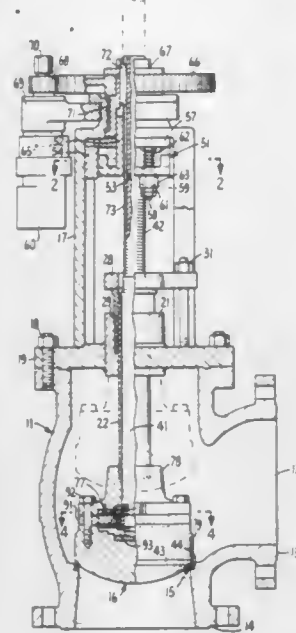
U.S. Cl. 137—243.2

11 Claims

1. A valve comprising, a valve body having a valve seat, a closure member formed to fit said seat and control the flow through said valve body, stem means for moving said closure member toward and



away from said valve seat to cause frictional engagement of said closure member on said seat, rotating means operatively connected to said valve stem means for rotating said closure member relative to said seat to effect a grinding thereof, and trip means being mounted on rotor means positioned on the lower end of said valve stem means capable of interrupting the rotational movement of said closure member at a



preselected frictional force between said closure member and said seat, said trip means including members slidably mounted in slots in said rotor means with one end of said slidable members engaging spring means located in recesses in said rotor means and the other end of said slidable members engaging cam means on a fixed member mounted within said closure member for radial movement, whereby said trip means operates independently of pressure within the body of said valve.

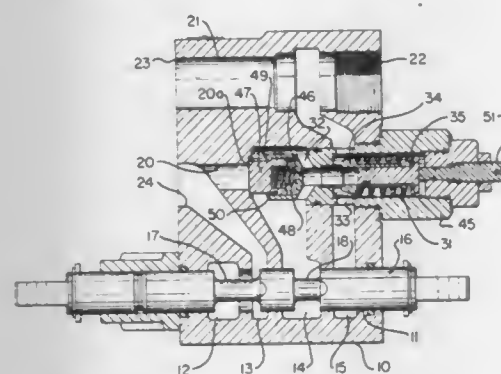
4,338,962

## CONTROL AND RELIEF VALVES

John D. Turko, and John D. Petro, both of Hubbard, Ohio, assignors to Commercial Shearing, Inc., Youngstown, Ohio  
Filed Aug. 13, 1980, Ser. No. 177,928  
Int. Cl.<sup>3</sup> F15B 13/04

U.S. Cl. 137—269

6 Claims



1. A pump control valve and relief assembly comprising a valve housing having a main bore therethrough, a spool movable in said bore and having a pair of spaced annular grooves therein, a spaced relief bore in said housing, a pump chamber and a work chamber in said housing intersecting both bores, a pair of tank chambers, one on each opposite side of the pump and work chambers intersecting said main bore, said tank chamber adjacent the work chamber intersecting the relief bore, a tank bore connecting said tank chambers, an inlet return bore intersecting said tank chamber adjacent the work chamber, an inlet port connected to a pump outlet port, a tank

port connected to said tank bore, a pump inlet port and a return port connected to said inlet return bore, said pump inlet port adapted to connect to a pump inlet port and the return port adapted to be connected to a source of return fluid, and a combination check and relief valve assembly in the relief bore at the cylinder chamber acting as a check between the inlet port and work chamber and relieving excess pressure from said work chamber to said adjacent tank chamber.

4,338,963

## HIGH TEMPERATURE GATE VALVE WITH FUSED SILICA BLADE

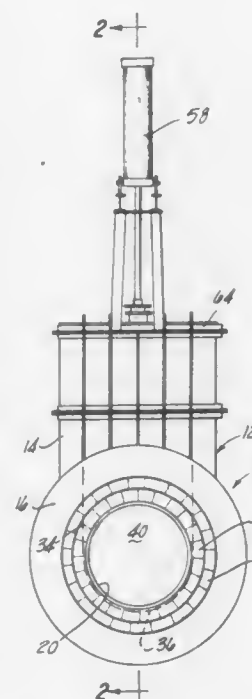
Douglas J. Frame, Pontiac, Mich., assignor to C & H Combustion, Troy, Mich.

Filed Jan. 28, 1980, Ser. No. 116,178

Int. Cl.<sup>3</sup> F16K 3/314

U.S. Cl. 137—375

9 Claims



1. In a valve for controlling the flow of high temperature fluids, the improvement comprising: a housing having an opening defining an inlet and an outlet for the fluid; an inner annular collar surrounding the opening and having a transverse passageway therein; a blade made of fused silica consisting of at least 95% pure silicon dioxide; actuator means coupled to said blade, operative to move the blade in said passageway to control fluid flow through the opening; and wherein said collar is made of refractory material and includes a silicon carbide insert adjacent the outlet side of said blade, operative to contact said blade when said valve is closed.

4,338,964

## SIDE INLET BALLCOCK HAVING FLOW AND STRUCTURAL IMPROVEMENTS

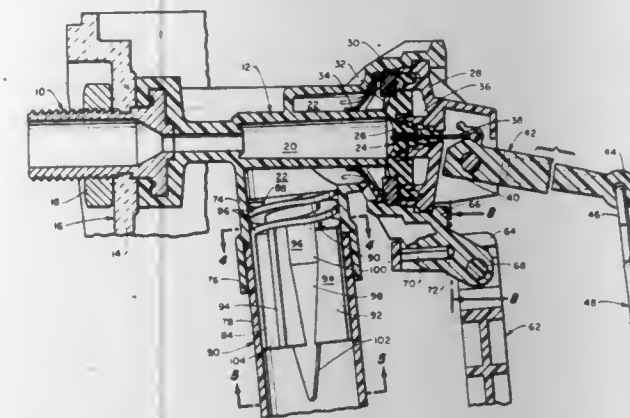
Adolf Schoepe, 1620 N. Raymond Ave., Fullerton, Calif. 92631  
Filed Dec. 29, 1980, Ser. No. 220,812  
Int. Cl.<sup>3</sup> F16K 31/18; F16L 15/02

U.S. Cl. 137—436

9 Claims

1. In a side inlet ballcock of the type having a generally horizontal valve inlet portion directing water through a float controlled valve into a generally horizontal valve outlet portion and from said valve outlet portion downwardly into a generally vertical outlet tube; the improvements including: a flow diverter at upper initiation of said outlet tube having a progressively downwardly extending, generally helical groove formed therein terminating downwardly in a generally vertical

groove formed therein, said helical groove having an upper, generally horizontally extending inlet positioned receiving a generally horizontal flow of water from said generally horizontal valve outlet portion directly into a spiral flow pattern and a lower outlet directing said spiral flow into an upper inlet of said vertical groove, said vertical groove having a lower outlet directing said flow downwardly into said outlet tube, said vertical groove being of greater horizontal cross-section



throughout than cross-section of said helical groove and of less horizontal cross-section throughout than horizontal cross-section of said outlet tube; said horizontal flow of water from said valve outlet portion being first directed horizontally into a downward spiral by said diverter helical groove and ultimately into a straight downward expanded flow by said diverter vertical groove for substantially straight downward and further expanded flow through and from said outlet tube.

4,338,965

## SELF-MONITORING DUAL-SPOOL SERVOVALVE

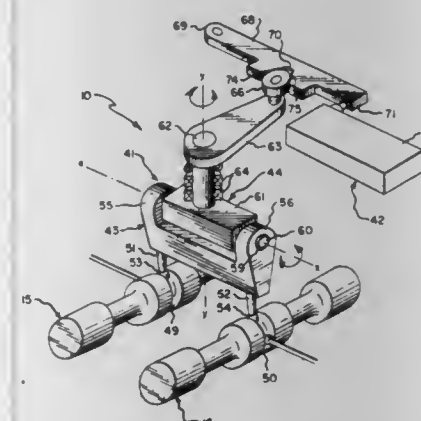
Kenneth D. Garnjost, Orchard Park, and John S. Ballard, South Wales, both of N.Y., assignors to Moog Inc., East Aurora, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,550

Int. Cl.<sup>3</sup> F15B 13/043, 20/00

U.S. Cl. 137—554

26 Claims



20. In a servovalve having first and second members mounted for independent sliding movement relative to a body along parallel axes, having a first driver operatively arranged to cause a desired motion of said first member, and having a second driver operatively arranged to cause a desired simultaneous motion of said second member, the improvement which comprises:

a differential position sensing mechanism arranged to sense the relative positions of said members and operative to move pivotally about one axis when said members move similarly and to move about another axis when said members move dissimilarly for causing an arcuate output position in a plane only when said members move dissimilarly; and

an indicating device supplied with said output position and

operative to indicate dissimilar movement of said members.

4,338,966

## DIRECT SOLENOID OPERATED DIRECTIONAL CONTROL VALVE

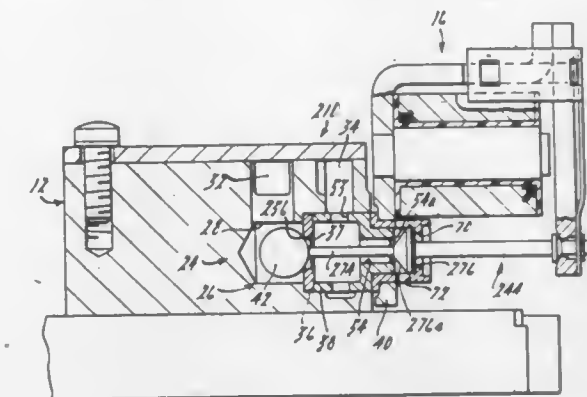
Robert H. Smith, Rochester, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 10,649, Feb. 9, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,843

Int. Cl.<sup>3</sup> F15B 13/044

U.S. Cl. 137—596.17

1 Claim



1. A normally vented solenoid operated directional control valve for a hydraulic fluid responsive device comprising:

- A. a housing;
- B. a stepped valve blind bore formed in said housing defining a reduced diameter inner portion and an enlarged diameter outer chamber portion;
- C. first and second passage means formed in said housing at longitudinally spaced locations along the axis thereof and adapted to be connected to a source of pressurized fluid and a fluid responsive device, respectively, said first passage means communicating with said valve bore inner portion;
- D. an hydraulic valve assembly comprising a seat member, a retainer member, a guide member, a ball and an actuating plunger; said seat member formed as a disc having a central bore, said seat member received in said chamber portion abutting the shoulder thereof, said retainer member including a large diameter portion and a reduced diameter neck portion formed with a central stepped through bore, defining an enlarged diameter valve portion and a reduced diameter connecting passage portion, said large diameter portion telescopically received in said stepped bore chamber portion, said enlarged diameter valve portion having cross ports communicating with said second passage means;
- E. a central bore in said disc forming a first valve seat defined about the axis of said valve stepped blind bore intermediate said first and second passage means locations;
- F. said ball carried in said reduced diameter inner portion intermediate said first passage means and said first valve seat and normally urged into a first position effecting sealing engagement with said first valve seat by said pressurized fluid;
- G. a cylindrical guide member including an elongated solenoid mounting portion having a central through guide bore sized to telescopically receive therein said retainer neck portion, said guide bore arranged coaxially with said stepped valve through bore, said guide bore having a plunger access opening at its outer end and a stop shoulder intermediate its inner and outer ends, said guide member having cross ports therein, said retainer neck portion defining a second valve seat intermediate said second passage means and said guide member cross port;
- H. said plunger member having a ball engaging tip portion, a chamfered valve portion, and a guide portion, said plunger member guide portion slidably received in said



guide bore and movable between a solenoid deenergized normal position wherein said tip portion is in close juxtaposition with said seated valve ball and a solenoid actuated position wherein said valve ball is driven by engagement of said plunger member tip portion to a second portion in said blind bore reduced diameter inner portion wherein said chamfered valve portion sealingly engages said second valve seat to block fluid communication between said second passage means and said guide member cross ports;

I. a solenoid assembly including a clapper-type solenoid having bracket means attaching said solenoid to said guide member elongated mounting portion, said solenoid selectively operative to exert force along an axis parallel to but spaced from said stepped bore longitudinal axis;

J. said solenoid including armature means pivotally connected to said solenoid bracket means for reciprocal movement with respect thereto responsive to said solenoid force;

K. armature retaining means for pivotally connecting said armature means to said plunger member whereby reciprocal pivotal movement of said armature means effects said axial movement of said plunger member and said driving abutting engagement of said ball to said second position;

L. said armature connecting means including a retaining member having a substantially U-shaped strap portion for securing said armature means to said bracket means and a leaf spring portion extending perpendicularly from said strap portion, said leaf spring operative to urge said plunger member guide portion into contact with said guide bore stop shoulder such that said leaf spring establishes the normal position of said plunger guide portion to locate said stem portion in juxtaposition with said ball to obviate impact loading of said ball; and

M. said plunger member having a rod portion extending outwardly from said plunger guide portion and terminating in a plunger connecting portion, said rod portion having a large diameter portion defining an outwardly facing chamfer joined at its outer diameter with said plunger connecting portion, said armature having a through aperture at its free end remote from its point of pivotal support on said bracket means, said through aperture inner terminus formed with a chamfer sized to cooperatively abuttingly engage said rod portion outwardly facing chamfer, effecting self-centering of said plunger member relative to said fluid chamber longitudinal axis, whereby when said solenoid is deenergized pressurized fluid is normally vented from said fluid responsive device through said second passage means, said retainer member cross ports, said retainer member central bore large diameter valve portion and said retainer member connecting passage for venting from said guide member cross port.

#### 4,338,967 UNIVERSAL LINK BAR OPERATOR AND ACTUATOR FOR ROTATING BLADE AIR, SMOKE, AND FIRE DAMPERS

Francis J. McCabe, Doylestown, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

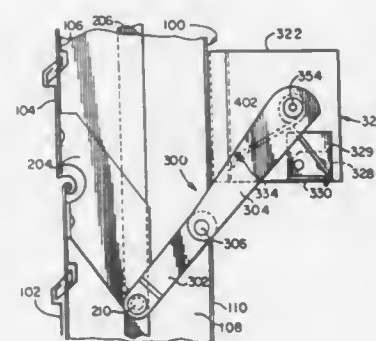
Continuation-in-part of Ser. No. 16,514, Mar. 1, 1979, which is a continuation-in-part of Ser. No. 905,211, May 12, 1978, Pat. No. 4,183,129, Ser. No. 896,237, Apr. 14, 1978, Pat. No. 4,219,041, Ser. No. 896,299, Apr. 14, 1978, Pat. No. 4,195,384, and Ser. No. 764,774, Feb. 2, 1977, Pat. No. 4,114,646, which is a continuation of Ser. No. 689,994, May 26, 1976, Pat. No. 4,081,173, said Ser. No. 905,211, is a division of Ser. No. 729,813, Oct. 4, 1976, Pat. No. 4,113,232, said Ser. No. 896,299, is a continuation-in-part of Ser. No. 799,044, Mar. 18, 1977, Pat. No. 4,099,292, which is a continuation of Ser. No. 676,483, Apr. 13, 1976, Pat. No. 4,041,570, and a continuation-in-part of Ser. No. 676,413, Apr. 13, 1976, Pat. No. 4,040,304. This application

May 30, 1980, Ser. No. 154,713

Int. Cl.<sup>3</sup> F24F 13/14; F16K 1/22

U.S. Cl. 137—601

20 Claims



1. An operator for operating a parallel, multi-blade damper having a frame and at least one blade adapted for rotation within the frame between an open position and a closed position, wherein said operator comprises:

(a) at least two, pivotally interconnected operator members, a first operator member being operatively associated with the frame of the damper and a second operator member being operatively associated with the damper blade; and  
(b) actuator means operatively associated with at least one of the two operator members;

wherein operation of the actuator means causes articulation of the operator members, which in turn causes rotation of the damper blade, so that the amount of rotation of the damper blade which is caused by a given amount of operation of the actuator means increases as the damper blade moves toward the open position.

#### 4,338,968 HIGH FLOW ACCUMULATOR DEVICE HAVING POPPET VALVE CONTROL MEANS

Jacques H. Mercier, Paris, France, assignor to Normand Trust, New York, N.Y.

Filed Sep. 19, 1980, Ser. No. 188,861

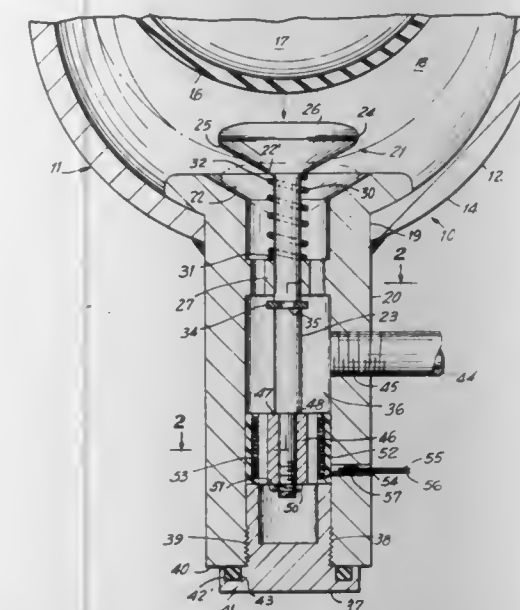
Int. Cl.<sup>3</sup> F16L 55/04

U.S. Cl. 138—30

6 Claims

1. A pressure accumulator comprising a rigid container having a gas port and an oil port, a deformable partition in said container intervening between said ports and defining a gas chamber in communication with said gas port and an oil chamber in communication with said oil port, a fitting connected to said oil port having a valve seat at its inner end, a poppet valve associated with said valve seat, a valve stem extending axially in said fitting and having one end thereof secured to said poppet valve, resilient means normally urging said poppet valve to open position with respect to said valve seat, said fitting having port means for charging of said oil chamber and for discharge of oil under pressure therefrom, additional means associated

with said valve stem to restrain movement of said poppet valve from said open position against the force resulting from high flow past said poppet valve into said fitting and discharging through said port means, and means cooperating with said



additional means to decouple said additional means from said stem to permit movement of said poppet valve to closed position against said seat when required to prevent extrusion of said partition through said oil port.

#### 4,338,970 RECOVERABLE SLEEVE

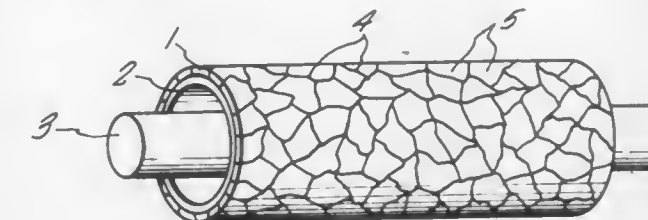
Joseph J. Krackeler, Los Altos Hills, and Fred E. Weir, Atherton, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jun. 16, 1975, Ser. No. 586,901

The portion of the term of this patent subsequent to Jan. 31, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> F16L 9/14; H01B 7/00; B29C 27/00; B32B 31/00  
U.S. Cl. 138—141

31 Claims



1. A recoverable tubular article comprising:  
a recoverable tubular sleeve held under tension in a radially expanded condition by an essentially tubular restraint disposed about and in bonded relationship to the radially outward exterior of said sleeve;  
said restraint being capable of being mechanically segmented so as to release said tension and permit recovery of said sleeve and being sufficiently rigid in its unsegmented condition to maintain said sleeve in the expanded, recoverable condition.

#### 4,338,971

#### DEVICE FOR TRANSFERRING A WEFT THREAD IN A SHUTTLELESS LOOM

Anton Lucian, and Rudolf Zwiener, both of Arbon, Switzerland, assignors to Aktiengesellschaft Adolph Saurer, Arbon, Switzerland

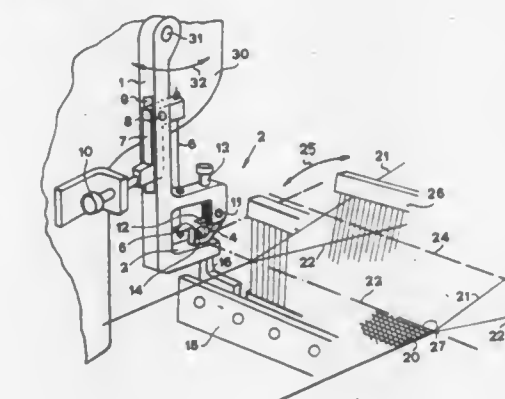
Filed Sep. 22, 1980, Ser. No. 189,012

Claims priority, application Switzerland, Oct. 1, 1979, 8828/79

Int. Cl.<sup>3</sup> D03D 47/12

U.S. Cl. 139—194

8 Claims



#### 4,338,969 THROUGH FAULT PRESSURE FILTER FOR FAULT PRESSURE RELAY

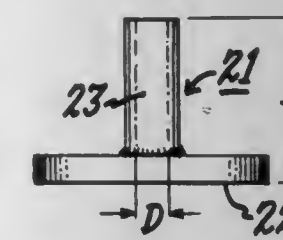
Gerald O. Usry, 13 Westlyn Dr., Rome, Ga. 30161

Filed Dec. 9, 1977, Ser. No. 858,966

Int. Cl.<sup>3</sup> F16D 1/02

U.S. Cl. 138—44

3 Claims



1. A through fault pressure filter for attenuating through fault pressure variations in a fluid media comprising:

a base member having a passage communicating from one end of the base member to another end of the base member; and

a stem portion extending from said base member and having a passage communicating with the passage through the base member and a length such that the diameter of the passage and the length of the stem provide an attenuation path for periodic varying pressure disturbances wherein the ratio of the length of the stem to the diameter of the passage ranges from 10 to 1 to 40 to 1 for attenuating periodic pressure disturbances having a frequency range of from 50 to 360 Hz.

1. A device for transferring a weft thread from a weft thread beaten-up position to a path of movement of a weft thread picker of a shuttle loom having a batten, particularly a gripper loom, comprising:

a transfer mechanism controllable in synchronism with the movement of a loom batten;

said transfer mechanism comprising:

a transfer lever mounted for executing an oscillatory movement;

said transfer lever including a fixed clamping surface cooperating with a movable clamping surface;

said movable clamping surface being constituted by a leaf spring extending substantially perpendicular to a picking direction of the weft thread;



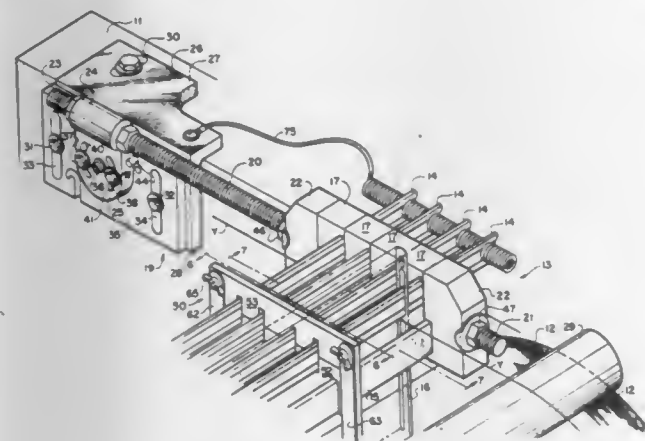
an actuating lever pivotably mounted on the transfer lever;  
said leaf spring having a tongue;  
means for connecting said actuating lever with said tongue of the leaf spring to effect momentary opening of said two clamping surfaces; and  
an adjustable stop provided at the region of the pivotal movement of the transfer lever and arranged to cause a relative countermovement of the actuating lever when the actuating lever strikes said stop, in order to thereby cause momentary opening of said two clamping surfaces.

**4,338,972**  
**PIVOTAL SUPPORT WITH POSITIVE STOP WARP STOP-MOTION**

John B. Sherrill, Hickory Grove Rd., Gastonia, N.C. 28052  
Filed Mar. 10, 1980, Ser. No. 129,105  
Int. Cl.<sup>3</sup> D03D 51/28

U.S. Cl. 139—369

5 Claims



1. In a loom having a frame, a warp beam and a stop-motion mechanism through which ends of yarn extend from the warp beam, a support assembly extending between said stop-motion mechanism and the frame of the loom, said support assembly including a pivotal bracket journaled for pivotal movement relative to the frame and operatively connected to the stop-motion mechanism, said support assembly including means for locating the stop motion mechanism in an optimum operating position and means for pivoting the stop-motion mechanism away from the loom and out of optimum operating position, and a fixed abutment located in the path of travel of the pivotal bracket during its pivotal movement relative to the frame to engage and support the pivotal bracket with the stop-motion mechanism in operative position.

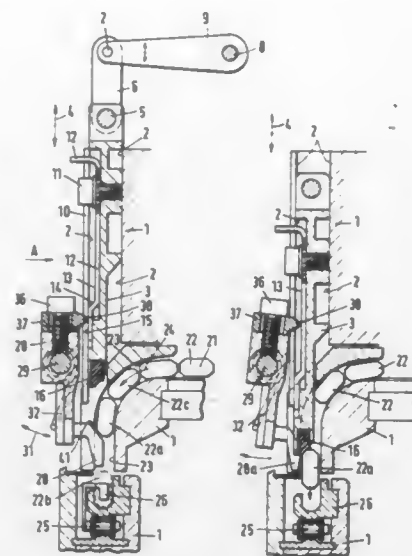
**4,338,973**  
**CATCH MECHANISM FOR A WEAVING MACHINE**  
Rudolf Stauner, Constance, Fed. Rep. of Germany, assignor to Sulzer Brothers Limited, Winterthur, Switzerland  
Filed May 23, 1980, Ser. No. 152,546  
Claims priority, application European Pat. Off., Jun. 1, 1979, 79101734.6

U.S. Cl. 139—439

10 Claims

1. A catch mechanism for a weaving machine, said catch mechanism having a channel for receiving a sequential series of weft insertion

gripper projectiles, said channel having a horizontal section and a vertical section; and



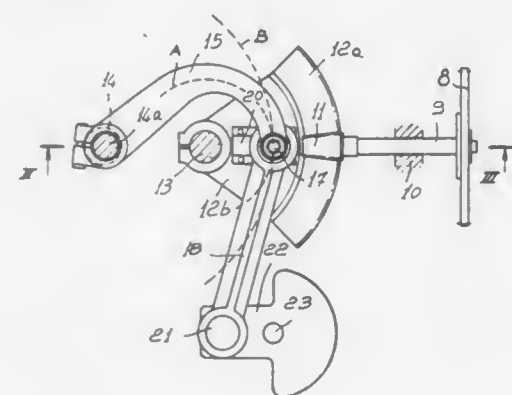
an ejector for sequentially ejecting each projectile from said channel, said ejector being reciprocally movable in a straight line path into and out of said vertical section.

**4,338,974**  
**CONTROL DEVICE FOR RECIPROCATING GRIPPERS IN SHUTTLELESS LOOMS**  
Mazzino Mazzini, Via Serragliolo, 39 - Agliana - (Province of Pistoia), Italy

Filed Apr. 11, 1980, Ser. No. 139,497  
Int. Cl.<sup>3</sup> D03D 47/00

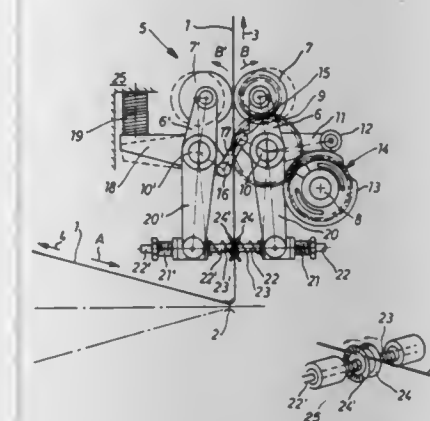
U.S. Cl. 139—449

9 Claims



1. In a shuttleless loom with reciprocating weft thread insertion grippers and a respective transmission system for carrying said insertion grippers and cooperating with a respective gear wheel driving said respective transmission system, an actuating device for imparting reciprocating movement to said transmission system comprising a rocker arm including a pin at one end thereof and a pivot at the other end thereof, a connecting rod and crank assembly driven by a cyclic shaft of the shuttleless loom and including a linkage member having an articulation end thereof, an oscillating gear sector in driving engagement with said gear wheel and having a bisecting line thereof, said gear sector having (substantially along) the bisecting line thereof a slotted link type coupling including a slider, said coupling providing articulation both with said end of said linkage member of said connecting rod and with said pin of said rocker arm following the oscillations of said gear sector, thereby to guide the movement of said articulation end of said linkage member.

**4,338,975**  
**THREAD BRAKE FOR A TEXTILE MACHINE**  
Allan W. H. Porter, Lustmühle, Switzerland, assignor to Adolph Saurer Ltd., Arbon, Switzerland  
Filed Jan. 14, 1980, Ser. No. 111,645  
Int. Cl.<sup>3</sup> D03D 47/34  
U.S. Cl. 139—450



1. A thread brake for a textile machine provided with a drive mechanism in which a thread is guided through a gap provided between two opposed brake shoes operatively connected to holders comprising:

means for moving at least one of said holders between two end positions in the direction of said gap towards said opposed shoe;

means indirectly connecting said means for moving at least one of said holders to said drive mechanism of said textile machine for synchronizing the movement of said one of said holders with the operation of said textile machine; and

said opposed brake shoes being constructed as disks and mounted rotatably on approximately coaxial journals on opposed bearing axes which are offset with respect to the path of the thread, and said brake shoe connected to the movable holder is axially displaceable against a spring which is unloaded in one of said end positions and in this end position is at a distance from the other brake shoe generally corresponding to the thread thickness so that a slight constant friction exists between said thread and shoes;

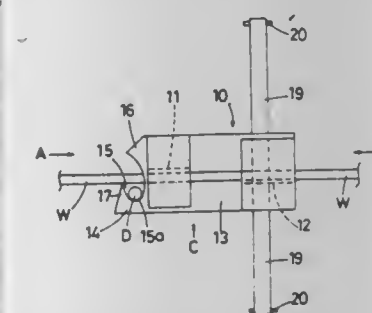
whereby said shoes are rotated and cleaned of fluff and the like.

**4,338,976**  
**TOOL FOR ATTACHING A DROPPER TO A FENCE WIRE**  
Neill F. Stevens, 47a Wellesley Rd., Napier, New Zealand  
Filed Apr. 18, 1980, Ser. No. 142,574  
Claims priority, application New Zealand, Apr. 19, 1979, 190227

Int. Cl.<sup>3</sup> B21F 27/08

U.S. Cl. 140—12

10 Claims



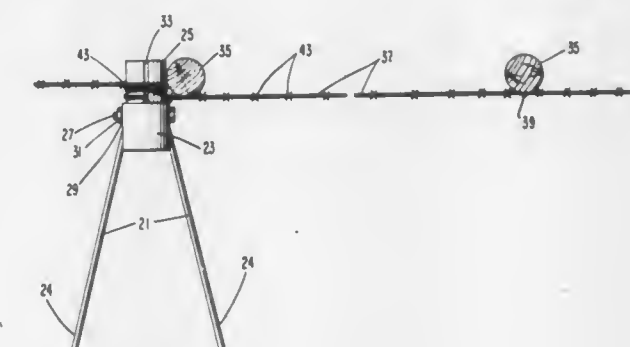
1. A tool for attaching a wire dropper to a wire of a fence line comprising a body with a first wire engagement means for reception of a fence wire, lever mounting means for the reception of a lever whereby said body is rotated by said lever about

a rotational axis of said body which is parallel with the longitudinal axis of said fence wire, when the fence wire is engaged in said first wire engagement means, second wire engagement means for the reception of a wire dropper, said second wire engagement means located substantially at right angles to said first wire engagement means so that a dropper engaged in said second engagement means lies at right angles to said fence wire, said second wire engagement means comprising a support recess which is located in said body in a position which is to one side of the rotational axis of said body, the support recess terminating at a distance from said rotational axis which is at least equal to the sum of the radii of said fence wire and said dropper, the body further including ramp means located adjacent said support recess whereby with a fence wire and a dropper wire received in the respective first and second wire engagement means and the body rotated about said rotational axis the dropper wire is wound around said fence wire and said ramp means engages with said dropper wire to cause deflection thereof such that said dropper wire is coiled about said fence wire.

**4,338,977**  
**MANUAL TOOL FOR STRETCHING WIRE HAVING DIVERGING HANDLES**  
Joseph B. McNully, Rte. 4, Box 393, Seminole, Okla. 74868  
Filed Jul. 14, 1980, Ser. No. 168,131  
Int. Cl.<sup>3</sup> B21F 25/00

U.S. Cl. 140—70

8 Claims



8. A tool for stretching barbed wire during securement thereof to a post, the tool comprising:

a handle including a pair of elongated arms diverging from forward ends thereof such that the distance between longitudinal axes of the arms increases;

an element connected to the forward ends of the arms, the element including a forwardly open cylindrical socket;

a cylindrical member mounted in the socket and projecting forwardly therefrom, the member including an open-sided slot extending rearwardly from a forward end of the member to receive barbed wire, said member being penetrable by barbs on the wire; and

connecting means for releasably connecting the member to the element such that rotation of the arms produces rotation of the member along a longitudinal axis thereof so that the member rolls along a side of a post while wrapping and stretching wire received in the slot.

**4,338,978**  
**LEAD CHLORIDE BATTERY PLATE**  
John L. Devitt, Denver; Douglas E. Johnson, Grand Junction, and Robert S. Willard, Denver, all of Colo., assignors to Sparton Corporation, Jackson, Mich.  
Division of Ser. No. 131,027, Mar. 17, 1980, Pat. No. 4,262,069.  
This application Oct. 28, 1980, Ser. No. 201,581  
Int. Cl.<sup>3</sup> H01M 4/82

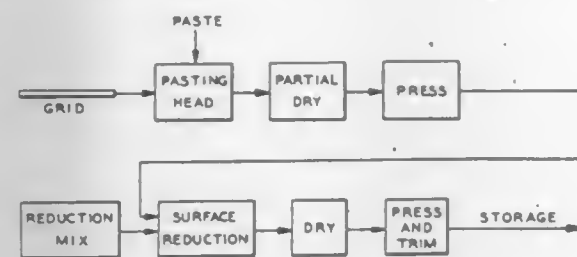
U.S. Cl. 141—1.1

3 Claims

1. The method of forming a positive plate for a battery wherein the active material reduced during electrical energy generation is primarily lead chloride comprising the steps of:

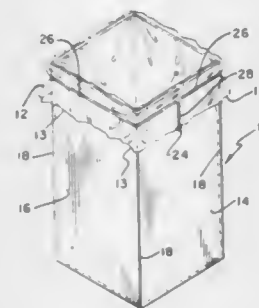


- (a) forming a spreadable paste consisting of lead chloride powder mixed with a resinous organic binder in liquid form;
- (b) spreading said paste in a substantially uniform thickness upon an open mesh grid formed of an electrical conducting material in a manner whereby the grid remains adjacent a primary surface of the plate and is exposed at said primary plate surface.



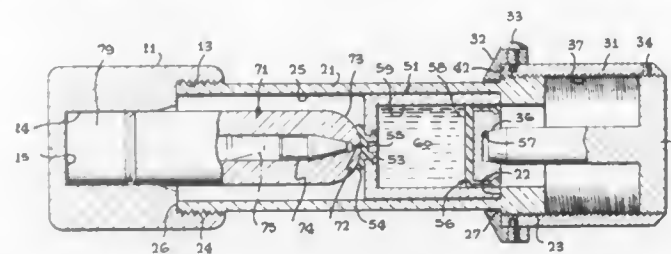
- (c) applying a mixture consisting of water and a reducing metal powder selected from the group consisting of zinc, iron, manganese, titanium, aluminum and magnesium to the primary surface of the plate at which said grid is exposed to convert the lead chloride adjacent said grid to metallic lead;
- (d) and drying the plate after the conversion of said primary surface of lead chloride to metallic lead.

**4,338,979**  
**BAG HOLDING DEVICE AND PROCESS**  
 Ray A. Dow, 412 NE. Wilshire, Bartlesville, Okla. 74003  
 Filed Nov. 12, 1980, Ser. No. 205,948  
 Int. Cl.<sup>3</sup> B65B 1/04  
 U.S. Cl. 141-10



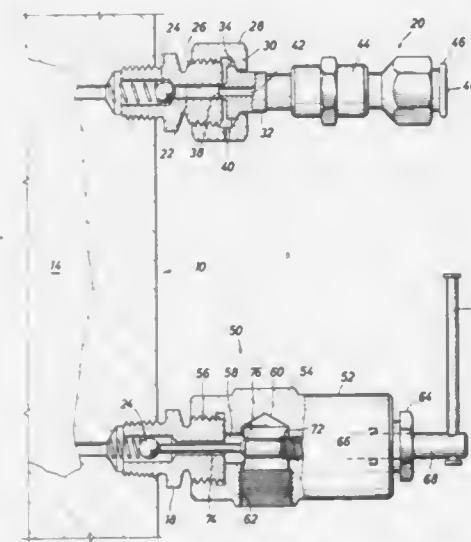
1. A device for holding a bag comprising a box-like structure including a pair of side walls joined to a pair of end walls along corner score lines, said structure folding along said corner score lines into a generally flat posture; said box-like structure having corner structure defining a notch in at least two of said corner score lines; elastic means for encircling the outside of the box-like structure while residing in said notch, said device being adapted for inserting the bag into the structure and overlapping the periphery of the mouth of the bag over an edge of the box-like structure and said elastic means encircling the overlapping portion of said bag and lodging within the notches at the corners of the box-like structure so as to hold the bag in an open position and prevent displacement of the bag from the device; at least one of said side walls and at least one of said end walls each having a structure defining a rubber band extension aperture, said elastic means being retained in said extension apertures of said side and end walls simultaneously to encircling said structure and residing in said notch.

**4,338,980**  
**DEVICE FOR FILLING MEDICAMENT INJECTORS**  
 Paul R. Schwebel, 44045 15th St. West, Lancaster, Calif. 93534, and Manuel N. Friend, 311 Bruce La., Turlock, Calif. 95380  
 Filed Jan. 14, 1980, Ser. No. 111,939  
 Int. Cl.<sup>3</sup> B65B 3/32  
 U.S. Cl. 141-18



1. A front-filling dispenser for introducing liquid medicament into a needleless injector having a tip containing an injection orifice, comprising:  
 a vial adapted to contain such medicaments;  
 a resilient plug effectively sealing one end of said vial, said plug having a self-sealing passage therethrough and being deformable to conform sealingly with the tip of said injector;  
 means releasably positioning said injector with respect to said vial, for bringing the passage in said plug into communication with said orifice and maintaining said plug in sealing contact with said tip;  
 means for varying the volume of said vial and thereby forcing said medicament through said passage and orifice; and manually manipulable means, precisely calibrated in terms of medicament volume, for operating said volume varying means and thereby controlling the volume of medicament transferred from said vial into said injector.

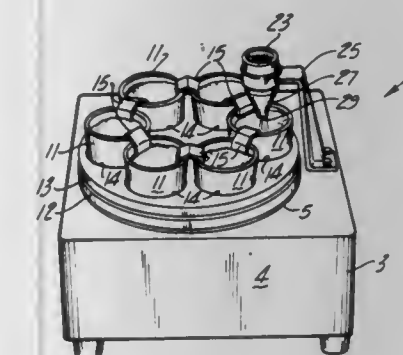
**4,338,981**  
**VALVE SERVICE APPARATUS**  
 Dennis M. Frauenberger, 7915 E. Elm St., Houston, Tex. 77012  
 Filed Apr. 4, 1980, Ser. No. 137,397  
 Int. Cl.<sup>3</sup> B65B 3/04  
 U.S. Cl. 141-85



1. For drainage of a cavity within a valve body wherein the valve body has first and second check valve fittings communicating from the exterior to the cavity, an apparatus which comprises:  
 (a) a fill fitting including:  
 1. an end-located threaded coupling having a mating joinder means to enable said coupling to be engaged with a check valve fitting opening into the cavity;  
 2. an elongate body secured by said coupling, said body having an axial internal passage communicated with an

- opening against the check valve fitting to introduce fluid flow therethrough;
3. an end-located connector on said body to enable connection with a pump delivering fluid for the cavity therethrough; and
4. a weep hole extending through said coupling which is selectively communicated with said axial passage on disconnecting said coupling to enable pressure relief to fluid outside the check valve fitting and in said axial passage; coupling;
- (b) a drain fitting which includes:  
 1. an elongate body having an external surface defined by a diameter enabling said body to be grasped by a hand tool such as a pipe wrench;  
 2. a tapped end-located hole in said body sized to thread to a check valve fitting opening into the cavity;  
 3. an axial internal passage along said body;  
 4. an elongate rod positioned in said passage, said rod held in said passage by mating threads which advance or retract the rod on rotation;  
 5. an end-located stinger rod portion on the end of said rod and having a length to extend through said passage within said body and to further extend in retractable fashion from said body into the check valve fitting where said stinger rod is adapted to contact the check valve and thereby defeat the check valve by forcing the check valve element open;  
 6. a lateral passage formed in said body;  
 7. joinder means cooperative with said lateral passage to enable a drain hose to be joined to said body, said lateral passage defining in conjunction with said axial passage a flow path from the check valve fitting for drainage; and  
 8. means for rotating said rod to advance or retract said rod between operative and nonoperative positions.

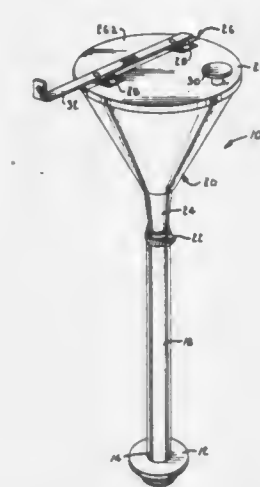
**4,338,982**  
**ROTATING RIFFLER**  
 Michael A. Terminiello, Carmel, Ind., and Stanley E. Gebura, Mountain Lakes, N.J., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.  
 Filed Nov. 24, 1980, Ser. No. 209,612  
 Int. Cl.<sup>3</sup> B65B 43/56  
 U.S. Cl. 141-132



1. An apparatus for obtaining representative samples of material from a bulk quantity thereof comprising a revoluble first disk, individual readily portable containers resting upon said disk in close proximity to the periphery thereof, and so placed that their upper edges are adjacent to one another; a second disk resting upon said first disk, a ring member affixed to said first disk having an inside diameter slightly larger than that of said second disk such as to provide a snug fit and permit easy removal of said second disk, said second disk having openings defined therein of such size and shape as to closely fit the outside of said containers when said containers rest upon said first disk, said containers being replaceable by at least one different set of containers and said second disk being replaceable by at least one other disk having openings defined therein to closely fit said additional set of containers; a hopper for said bulk quantity of material provided with a discharge opening

located over the path of travel of said containers for discharging a flow stream of the material thereinto; means to rotate said first disk thereby sequentially and repetitively moving said containers individually into intercepting relation with said flow stream whereby said sample containers each intermittently receives material which is only a portion of a sample from the bulk quantity so that a sample is built up in each of said sample containers over a period of time after repetitive movement of said sample containers into said intercepting relation with said flow stream.

**4,338,983**  
**OIL CAP WITH SELF CONTAINED FUNNEL**  
 Floyd J. Hatcher, 1017 Harmon, St. Joseph, Mo. 64504  
 Filed Jul. 7, 1980, Ser. No. 166,343  
 Int. Cl.<sup>3</sup> B65B 39/00  
 U.S. Cl. 141-331



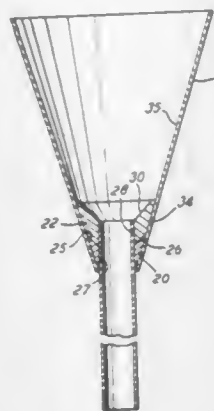
1. A device adapted to be permanently coupled with an engine for closing the oil intake port of the engine, said device comprising:  
 a cap which is engageable with said port and adapted to be sealingly received by said port, said cap having an opening communicating with said port; funnel means for directing oil into said port, elongated neck means coupling the end of said funnel means with said cap opening; and cover means coupled with said funnel means for closing said funnel, said cover means presenting a first generally flat section rigid with said funnel means and a second generally flat section hingedly coupled with said first section and movable between open and closed positions; and bracket means rigid with said first flat section for coupling the device with said engine.

**4,338,984**  
**AUTOMOTIVE FLUID SUPPLY FUNNEL UNIT**  
 Richard E. Kronberg, 2601 Knox Ave. N., Minneapolis, Minn. 55411, and Merlin L. Walters, 3214 Girard Ave. N., Minneapolis, Minn. 55412  
 Filed Aug. 11, 1980, Ser. No. 176,923  
 Int. Cl.<sup>3</sup> B65B 39/00

U.S. Cl. 141-331  
 1. A two part detachable funnel unit for use with automotive vehicles, comprising, a frustoconically shaped cone member, an elongated tube member positioned at one end of the frustoconically shaped cone member, a first generally conically shaped sleeve means attached to the lower end of the frustoconically shaped cone member, a second generally conically shaped sleeve means attached to the upper end of the elongated tube member, said first and second sleeve means being made of a yieldable material and having complementary conically shaped surfaces which provide sealing between said surfaces,



said members are assembled and said complementary conically shaped surfaces are pressed together to form a press fit, said



press fit serving to make said members readily attachable and detachable and to provide sealing between said members.

4,338,985

### TREE AND BRUSHWOOD HARVESTER

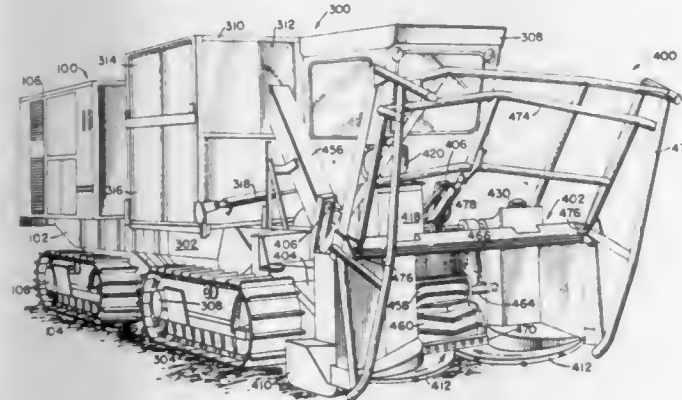
Frederick M. Smith, Ashley County, Ark., and James R. O'Dair, Rapides Parish, La., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Filed Oct. 19, 1979, Ser. No. 86,575

Int. Cl.<sup>3</sup> A01G 23/08

U.S. Cl. 144—34 R

23 Claims



1. A mobile, self-propelled brush and tree harvester for severing brush and trees above and close to the ground and reducing the severed material to chips, comprising:

- a chassis;
- drive means carried by said chassis for supporting said chassis on the ground and imparting forward motion thereto;
- chipping means carried by said chassis for reducing the severed material to chips;
- feeding means carried by said chassis ahead of said chipping means;
- cutting means carried at the front of said chassis ahead of said feeding means for severing brush and trees above and close to the ground as the harvester advances forwardly, and delivering the severed material rearwardly to said feeding means, said cutting means comprising:
- a pair of closely spaced, coplanar, side-by-side, substantially circular cutting disks mounted at the front of said chassis below and at least partially ahead of said feeding means for rotation about spaced, substantially vertical axes, said disks having exposed upper surfaces in the area ahead of said feeding means,
- cutting disk drive means for counterrotating said disks so that their converging peripheries are moving toward the rear of said chassis, whereby the exposed upper surfaces of said disks propel severed material rearwardly toward said feeding means, and
- a plurality of cutting teeth mounted on the periphery of each of said cutting disks for cutting a wide kerf in the

brush and trees as the harvester advances forwardly and lifting the severed material; and

stop means carried by said chassis for maintaining said cutting disks at at least a minimum predetermined height above the ground to prevent contact of said cutting teeth with the ground and any debris on or beneath the ground.

4,338,986

### LOG HANDLING METHOD AND APPARATUS

Robert K. Detjen, Eau Claire, Wis., assignor to McDonough Manufacturing Company, Eau Claire, Wis.

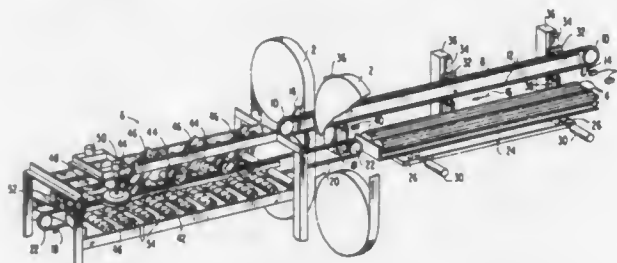
Continuation of Ser. No. 956,519, Oct. 31, 1978, Pat. No. 4,206,673, which is a division of Ser. No. 772,152, Feb. 25, 1977, Pat. No. 4,146,072, which is a continuation-in-part of Ser. No. 556,836, Mar. 10, 1975, Pat. No. 4,009,632. This application Jan. 28, 1980, Ser. No. 116,065

The portion of the term of this patent subsequent to Mar. 1, 1994, has been disclaimed.

Int. Cl.<sup>3</sup> B27B 15/08, 29/08; B27C 1/12, 9/00

U.S. Cl. 144—39

13 Claims



1. A sawmill log handling system for advancing logs longitudinally along a given path from an infeed side of a saw, through the saw and to an outfeed side of the saw, said system comprising,

- a pusher member for engaging a rearward end of a log,
- first carrier means attached to and supporting said pusher member,
- rear drive means for moving said first carrier means to advance the pusher member along said given path to carry said log from said infeed side, through the saw and to said outfeed side,
- a holdback member for engaging a forward end of said log while said log is being moved by said rear drive means,
- second carrier means for supporting one or more of said holdback members for movement from an initial position at the infeed side of the saw to the outfeed side of the saw as said log is cut by the saw,
- resistance means for retarding movement of the holdback member as the log is advanced through the saw by the rear drive means, whereby the log is grasped between the driven pusher member and the retarded holdback member, and
- forward drive means for moving said second carrier means to bring a holdback member thereon to said initial position after a log is cut by the saw.

4,338,987

### TOOL BOX

Frank N. Miles, 2500 Franklin Blvd., Sacramento, Calif. 95818

Filed Sep. 19, 1979, Ser. No. 77,132

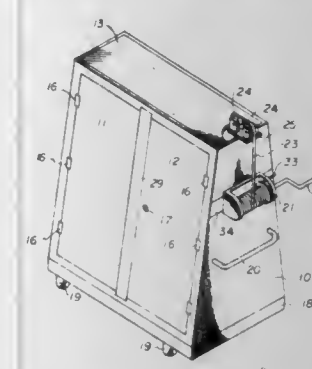
Int. Cl.<sup>3</sup> B27H 1/12

U.S. Cl. 144—285

5 Claims

1. A tool chest for storing tools and the like comprising, in combination, an enclosure having a pair of end walls and a pair of side walls defining an interior and an open upper end, a closure pivotally movable into closing relationship with said open upper end, a substantially planar peg board having a front surface and a rear surface for supporting a plurality of tools on both of said surfaces disposed within said enclosure interior intermediate said side walls in a substantially vertical plane; each of said side walls being provided with at least one access

opening for access to said board within said enclosure, a latchable door on each of said side walls closing said at least one access opening, guide means on said enclosure for slidably retaining said board for vertical movement in said vertical plane through said open upper end between a retracted position within said enclosure and an extended position above said open upper end for exposing said board front and rear surfaces to permit access through said at least one access opening in said



side walls to said plurality of tools supported on said surfaces and means accessible from the exterior of said enclosure for moving said board into a selected vertical position between said retracted position and said extended position wherein said guide means comprises a vertically extending rail mounted on the inner surface of each of said end walls and roller means on each of the side edges of said board for sliding engagement with the respective one of said rails for said sliding movement of said board.

4,338,988

### AUTOMATIC TIRE CHAINS

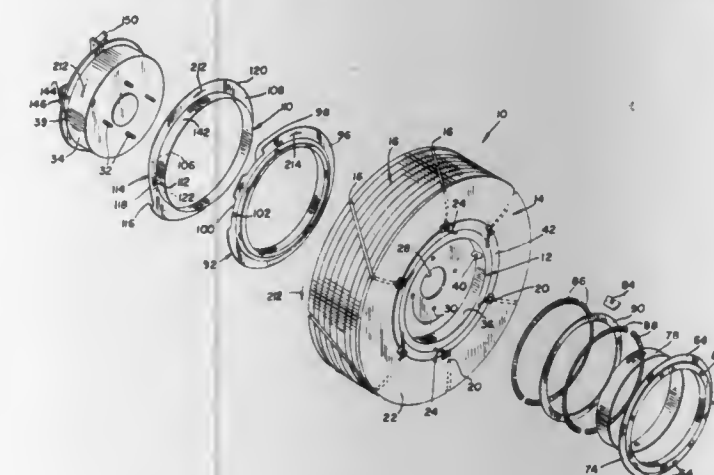
Ralph J. Brooks, 186 S. Clearview Ave., Langhorne, Pa. 19047, and George F. Mannices, 4123 Barnett St., Philadelphia, Pa. 19135

Filed Mar. 3, 1981, Ser. No. 240,208

Int. Cl.<sup>3</sup> B60C 27/14

U.S. Cl. 152—216

22 Claims



1. An automatic tire chain for driver operated vehicles that can be moved to the road contact surface of a tire from a position adjacent thereto comprising, in combination:

- (a) a wheel, including said tire disposed thereon, suitable for mounting on said vehicle, said wheel being provided with:
- (i) first and second rings disposed on the inwardly facing portion of said wheel, said first ring being rigidly affixed to said wheel, said second ring being slidably mounted on said wheel and nested within said rigidly affixed first ring, both said rings being provided with a parallelly disposed lip portion,
- (ii) a third ring slidably disposed on the outwardly facing portion of said wheel,
- (iii) chain means having one end thereof retained on said inwardly facing slidable second ring, the other end thereof being retained on said outwardly facing slidable

third ring and extending over said tire, said chain means having a portion thereof provided with links, said link portion being disposed on the inwardly facing portion of said tire in a first position and being disposed on the road contact surface of said tire in a second position,

(iii) spring means disposed on said third ring for biasing said chain means and maintaining said chain in said second position, and

(iiii) means disposed on said rigidly affixed first ring for locking said first and said second rings together in said first position; and

(b) means disposed on said vehicle for engaging said inwardly facing second ring causing said second ring to move relative to said first ring as said wheel rotates moving said chain means from said second position to said first position, said second ring being maintained in said first position by said locking means activating said engaging means again will cause said engaging means to release said locking means and cause said spring means to return said chain means and said second and third rings to said second position.

4,338,989

### POLY SPRING TIRES

Lawrence R. Sperberg, 6740 Fiesta Dr., El Paso, Tex. 79912

Continuation of Ser. No. 637,952, Dec. 5, 1975,

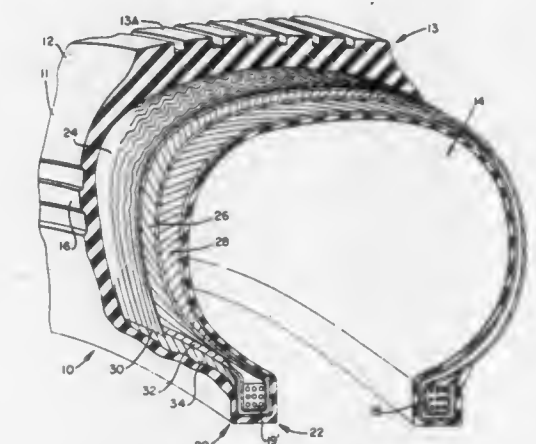
Continuation-in-part of Ser. No. 567,599, Apr. 14, 1975,

abandoned. This application Sep. 12, 1980, Ser. No. 186,707 Claims priority, application France, Apr. 12, 1976, 76 10681; Italy, Apr. 12, 1976, 22327 A/76; United Kingdom, Apr. 12, 1976, 14781/76; South Africa, Oct. 23, 1978, 78/5967; Australia, Oct. 24, 1978, 41012/78; New Zealand, Oct. 25, 1978, 188728; India, Oct. 30, 1978, 1175/78

Int. Cl.<sup>3</sup> B60C 9/10; B29H 17/14

U.S. Cl. 152—354 RB

22 Claims



1. A tire construction comprising a tire body of annular configuration and substantially U-shaped cross-section, having a pair of spaced annular edge portions and a tread wearing compound circumferentially extending thereabout; at least one bead embedded along each of said annular edge portions; a ply construction of at least three plies for supporting said tread wearing compound; the improvement comprising:

- at least two of said plies are oppositely and equally biased and have the cords thereof extending from a bead on one side to a bead located on the opposed side of the tire; means by which said cords are anchored to said beads, so that the pair of oppositely biased plies are the principal support of said tread wearing compound;
- and wherein said oppositely biased plies are the determining factor for establishing the building drum width to be employed for the particular sized tire having a desired inner peripheral dimension;
- the third ply being positioned atop and disposed at a greater angle to the equatorial line of the tire than the paired bias plies, said third ply being subjected to linear compression so that the measured length of any individual cord of said



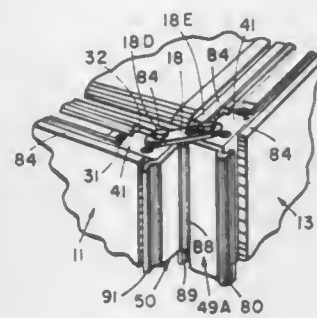
third ply is less than the length of said cord as applied to the building drum and wherein said linear compression imparted by tire shaping is retained essentially unchanged during vulcanization.

#### 4,338,990 PANEL WALL SYSTEMS WITH MODULAR COMPONENT BUILD-UP

Leif Blodde, Holland; Robert L. Knapp, and Simon W. Oppenhuizen, both of Grand Rapids, all of Mich., assignors to American Seating Company, Grand Rapids, Mich.  
Division of Ser. No. 934,729, Aug. 18, 1978, which is a division of Ser. No. 810,578, Jun. 27, 1977, Pat. No. 4,123,879. This application Feb. 7, 1980, Ser. No. 119,625  
Int. Cl.<sup>3</sup> E06B 9/00

U.S. Cl. 160—229 R

3 Claims



1. In a panel wall system, an improved panel connection for first and second panels, each panel including a frame, said connection comprising: first and second connector elements extending the length of each panel and connected to an associated vertical frame member, said connector elements each including a first curved longitudinal edge having an inner concave surface and a second curved longitudinal edge having an outer convex surface conforming to the inner concave surface of said first edge, and said connector elements being placed on adjacent panels in inverted relation, whereby the concave edge surface of one connector element on said first panel encompasses the convex edge surface of another connector element on said second panel defining a first pivot connection, and the convex edge surface of said one connector element is encompassed by the concave edge surface of said another connector element defining a second pivot connection, when said panels are placed in side-by-side parallel arrangement, but permitting one panel to be pivoted relative to the other panel about said first pivot connection away from said side-by-side arrangement in one direction, and to be pivoted relative to the other panel about said second pivot connection away from said side-by-side arrangement in the opposite direction while maintaining connection between the convex curved edge surface and the concave curved edge surface of the one of said pivot connections about which said panel is pivoted to thereby provide a light seal in the joint between said panels.

#### 4,338,991 COMBINED SOLAR HEATING AND PASSIVE COOLING APPARATUS

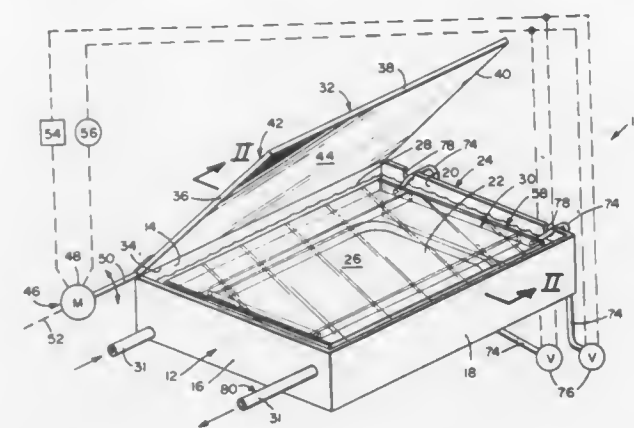
Harrison W. Sigworth, Jr., 2 Idyll St., Orinda, Calif. 94563  
Filed Apr. 28, 1980, Ser. No. 144,661  
Int. Cl.<sup>3</sup> F25B 29/00

U.S. Cl. 165—2

17 Claims

1. A combined solar heating and passive cooling apparatus (10), comprising:  
a reservoir (12) having walls (14,16,18,20), a bottom (22) and an open top (24);  
a liquid (26,26') filling said reservoir (12) to a desired liquid level (28), said liquid (28) having a top surface (30,30');  
a cover (32,32') having peripheral edges (34,36,38,40) and a reflective lower surface (44);  
cover positioning means (46,46') for selectively positioning said cover (32,32') in either closing relation with said open

top (24) or in open relation with said open top (24) with said lower surface (44) aligned generally to reflect sunlight generally towards said liquid (26);  
a raft (58,58') which when positioned on said top surface (30,30') always covers substantially all of said top surface (30,30') sufficiently to retard substantially all evaporation of said liquid (26);  
raft moving means (68,68') for selectively moving said raft (58,58') to a location (70,70') in which said top surface (30,30') is substantially entirely exposed to favor direct evaporation of said liquid (26,26') out of said reservoir (12) and into the surrounding atmosphere;  
wherein said cover positioning means (46,46') operates in response to ambient temperature and to time of day to place said cover (32,32'), when ambient daytime tempera-

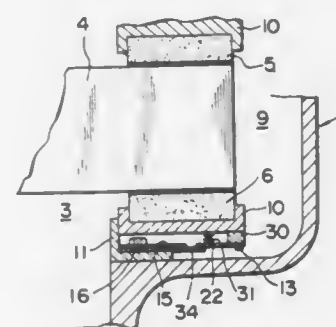


ture as measured during a selected time span is below a selected temperature, in said open relation during a first selected daytime period and in said closed relation during other than said first selected daytime period and to place said cover (32,32'), when ambient temperature as measured during said selected time span is above said selected temperature, in closed relation during a selected daytime period and in said open relation during other than said second selected daytime period; and  
wherein said raft moving means (68,68') operates, when ambient daytime temperature as measured during said selected time span is above said selected temperature, to remove said raft (68,68') from said top surface (30,30') at least during other than said second selected daytime period.

4,338,992  
SEALING STRUCTURE FOR USE IN A ROTARY, HEAT-REGENERATIVE HEAT EXCHANGER  
Noritoshi Handa, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan  
Filed Mar. 28, 1980, Ser. No. 134,899  
Claims priority, application Japan, Apr. 3, 1979, 54-39331  
Int. Cl.<sup>3</sup> F28D 19/00

U.S. Cl. 165—9

7 Claims



4. In a rotary heat exchanger comprising a housing and a heat regenerator which is formed as a cylinder rotatable about its axis and which intersects a first and a second passage formed

in said housing, said passages being adapted to conduct two fluids, the fluid in the first passage being at substantially higher pressure than the fluid in the second passage;

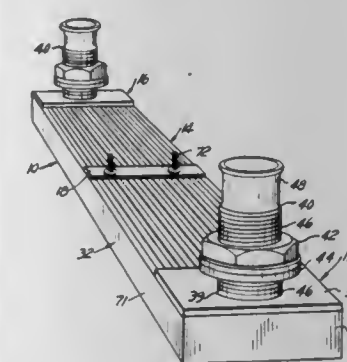
a sealing structure for sealing between the regenerator and an end of the second passage which opposes the regenerator, comprising:  
a cold side seal element extending around the periphery of said opposing end, with a face in contact with the regenerator;  
a circular seal holder attached to the cold side seal element;  
a first circular spring member fixed at the outer edge thereof to the seal holder;  
a second circular spring member coupled at the inner edge thereof to the housing;  
the inner free circular edge of the first circular spring member being in abutting contact with the outer free circular edge of the second circular spring member;  
the first passage communicating with the space on the other side of the combination of the first and second spring members from the regenerator.

#### 4,338,993 UNDERWATER OUTBOARD MARINE HEAT EXCHANGER

Paul W. Fernstrum, Menominee, Mich., assignor to R. W. Fernstrum & Co., Menominee, Mich.  
Filed Feb. 22, 1980, Ser. No. 123,888  
Int. Cl.<sup>3</sup> B60H 1/04; F28D 7/02

U.S. Cl. 165—44

1 Claim



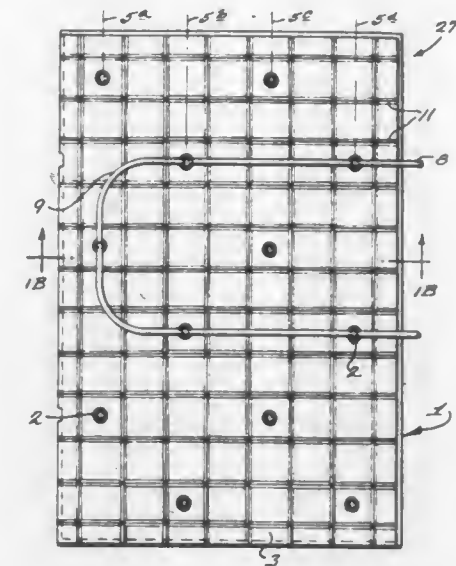
1. An underwater outboard marine heat exchanger for attachment to the outside of a hull of a water going vessel which comprises:

(a) a plurality of component tubes having a rectangular cross-section wherein each of said tubes has a broader wall at least three times the width of its narrower wall, said tubes being stacked vertically in multiples of two or more with the narrower walls adjacent and welded to each other, a multiplicity of said stacked tubes being arranged in parallel relation and spaced from each other to provide longitudinal passages between the components for contact with and flow of water in which a vessel is supported,  
(b) a header at each end of said tubes comprising cross plates fastened to said tubes to form a manifold chamber open to each of said parallel component tubes and to space said tubes laterally, and  
(c) a connector fitting rising from each said header in communication with said manifold chamber having a threaded exterior to serve to mechanically fasten said headers to a vessel hull and provide liquid connectors for water flow from within the vessel to said headers and the interior of said component tubes.

4,338,994  
MODULAR PANEL HEATER HAVING IMPROVED HOLDER DEVICES  
Bernd Hewing, Hellstiege 10, and Franz-Josef Hagemann, Eichendorffweg 8, both of 4434 Ochtrup, Fed. Rep. of Germany  
Filed Jan. 28, 1980, Ser. No. 115,663  
Int. Cl.<sup>3</sup> F24D 19/02

U.S. Cl. 165—49

24 Claims

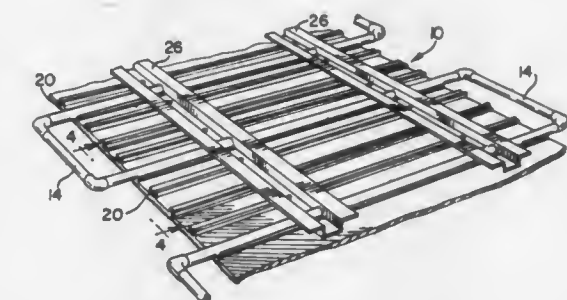


1. A modular panel heater, comprising:  
a panel fabricated from a polystyrene foam material that is thermally insulative and/or sound attenuating;  
a heating element attached to the panel; and  
a plurality of retaining members for attaching the heating element in a predetermined position with respect to the panel, the retaining members and panel being formed such that the retaining members are attachable and detachable at a plurality of locations, each retaining member including:  
a base portion; and  
a plurality of finger members extending from the base portion and distributed about said base portion in an axially symmetrical manner, the finger members curving toward one another in a direction away from the base portion so as to form pockets for press-fit retaining the heating element.

4,338,995  
RADIANT HEATING AND COOLING PANEL AND METHOD OF MANUFACTURING  
William Shelley, 456 W. Frontage Rd., Northfield, Ill. 60093  
Filed Nov. 13, 1980, Ser. No. 206,555  
Int. Cl.<sup>3</sup> F24D 19/00; F28F 1/22

U.S. Cl. 165—49

6 Claims



1. Radiant panel for absorbing and emitting heat the improvement comprising:  
an extruded sheet having a front surface and a back;  
a copper tube having a circular cross section;  
said sheet back having extruded, upstanding saddles means having a semi-circular, concave shape adapted to receive said copper tube;



said copper tube having a hollow core and being constructed to carry a heat conducting fluid;  
said sheet back having extruded channels forming trough-shaped members with upstanding legs on each side of the saddle means;  
a crossbrace extending transversely of the extruded saddles and having cutout portions extending about the copper tube;  
fastener means located on the crossbrace and connecting the crossbrace to the extruded channels whereby tightening of the fastener means urges the crossbrace into restraining contact with the extruded channels to hold the legs of each channel in a plane thereby orienting the front surface of the panel in a plane to provide a smooth appearing, continuous surface.

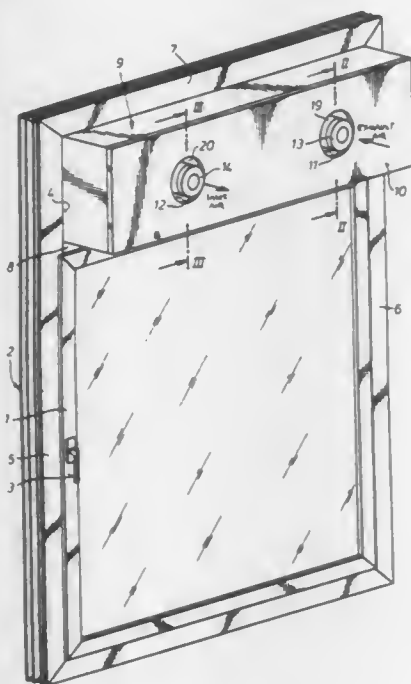
**4,338,996**  
**COMBINED ROLLING SHUTTER AND VENTILATING BOX**

Wilhelm Frank, Rohrer Str. 120, 7022 Leinfelden, Fed. Rep. of Germany

Filed Jun. 19, 1980, Ser. No. 161,652  
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1979, 7917750[U]

Int. Cl.<sup>3</sup> F28D 7/12  
U.S. Cl. 165—57

1 Claim



1. A combined rolling shutter and ventilating box arrangement mounted on a window frame defining a plane dividing an interior room from the atmosphere, which comprises a ventilating box mounted on the window frame and having a vertical cover facing the interior room, an outer wall facing the atmosphere and a horizontal wall interconnecting the cover and the outer wall, the vertical cover and the outer wall extending parallel to the plane, a housing holding the rolling shutter, the rolling shutter being arranged in the housing for unreeling through an opening in the housing, the opening communicating with the atmosphere and guiding the unreeling shutter for extension parallel to the plane whereby the unreeling shutter shields the plane from the atmosphere, the outer wall of the ventilating box forming one vertical wall of the housing and the housing having another vertical wall parallel to the one vertical wall and close to the vertical cover as well as a horizontal wall interconnecting the vertical walls and close to the horizontal wall of the ventilating box, the horizontal walls defining an air duct section above the housing and the vertical cover and other vertical wall defining another duct section communicating with the air duct section and extending perpendicularly thereto, the duct sections being divided into a first duct section part for receiving warm air to be exhausted from the interior room and a second duct section part for receiving fresh air from the atmosphere, the cover defining a first open-

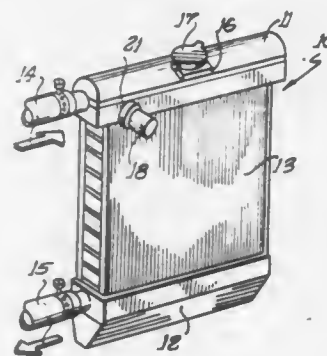
ing in communication with the first duct section part, a ventilator in the first opening for exhausting the warm air from the interior room, the ventilator forcing the exhausted warm air through the first duct section part in a path having a vertical component in the other duct section and a horizontal component in the air duct section, diversion of the exhausted warm air from the vertical to the horizontal path component causing turbulence therein, venting means in the box at the end of the path for venting the exhausted warm air to the atmosphere, a fresh air inlet in the horizontal wall of the housing in substantially vertical alignment with the opening in the housing, the housing defining a vertical fresh air inlet channel between the opening and the air inlet, the air inlet being in communication with the second duct section whereby fresh air is received from the fresh air inlet channel in the second duct section part, diversion of the fresh air from the vertical fresh air inlet channel to the horizontal second duct section part causing turbulence therein, the cover defining a second opening in communication with the second duct section part, a ventilator in the second opening for drawing the fresh air from the atmosphere through the air inlet channel and the second duct section part, and a heat exchanger in the air duct section, the heat exchanger being comprised of a series of heat exchange tubes extending transversely to the air flow through the first and second duct section parts, the heat exchange tubes being staggered in relation to each other and the fresh air and exhausted warm air flowing in turbulent condition over the staggered tubes.

**4,338,997**  
**HEAT EXCHANGER WITH BILAYERED METAL END CONTAINER FOR ANTICORROSIVE ADDITION**  
Robert H. Krueger, Palatine; John L. Zambrow, Lincolnshire, both of Ill., and Brian E. Cheadle, Bramalea, Canada, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 5, 1981, Ser. No. 222,456  
Int. Cl.<sup>3</sup> F28F 19/00

U.S. Cl. 165—134 R

8 Claims



1. A heat exchanger in combination with a container for the automatic addition of a corrosion inhibitor into a circulating fluid system for a heat exchanger subject to corrosion, including a container housing the corrosion inhibitor with a membrane for one end of said container which is in contact with the circulating fluid, said container end comprising a bimetallic membrane having a base metal layer which will corrode when exposed to the circulating fluid in a corrosive condition but will not corrode when the fluid contains a desired concentration of corrosion inhibitor, and a thin film of a second metal comprising titanium formed on the exterior surface of the base layer and exposed to said fluid protecting the base metal when the corrosive condition occurs.

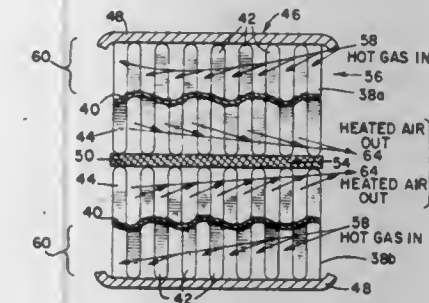
**4,338,998**  
**LOW PROFILE HEAT EXCHANGER AND METHOD OF MAKING THE SAME**

Alexander Goloff, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00857, § 371 Date Jul. 7, 1980, § 102(e)  
Date Jul. 7, 1980, PCT Pub. No. WO82/00194, PCT Pub. Date Jan. 21, 1982

PCT Filed Jul. 7, 1980, Ser. No. 250,749  
Int. Cl.<sup>3</sup> F28F 9/22, 3/00; F28D 9/00  
U.S. Cl. 165—165

25 Claims



1. A primary surface heat exchanger (46) comprising:
  - (a) at least one heat exchange core (38a) formed from a unitary strip of heat conducting material pleated to define a plurality of sequential sections (22,24) of substantially equal size, adjacent sections (22,24) forming two sidewalls joined at one edge to define a plurality of sequentially arranged, substantially parallel, open ended fluid passages (58,64) extending therethrough, each said fluid passage (58,64) opening along one side of said heat exchange core (38a) in a direction opposite to that of the next adjacent fluid passages on either side thereof, one side of each open end of every other one of said fluid passages being closed (44) to form a first group of fluid passages (58) having adjacent aligned closed portions (44) and open portions (43) at either end thereof, the remaining fluid passages (64) intermediate said first group of fluid passages (58) having one side of each open end thereof closed (42) to provide adjacent aligned closed (42) and open portions (45) at the ends thereof, the open portions (43) of said first group of fluid passages (58) being adjacent and intermediate the closed portions (42) of said second group of fluid passages (64), said sections (22,24) being formed to provide undulations in the sidewalls formed thereby extending between the ends of said fluid passages (58,64),
  - (b) first fluid inlet means (56) extending across the open portions (43) of said first group of fluid passages (58) and the closed portions (42) of said second group of fluid passages (64) at a first end of said heat exchange core (38a),
  - (c) first fluid outlet means (60) positioned at a second end of said heat exchange core (38a) opposite to said first fluid inlet means (56) and extending across the open portions (43) of said first group of fluid passages (58) and the closed portions (42) of said second group of fluid passages (64) at said second end, said first fluid inlet and outlet means (56,60) communicating with said first group of fluid passages (58),
  - (d) second fluid inlet means (62) extending across the open portions (45) of said second group of fluid passages (64) and the closed portions (44) of said first group of fluid passages (58) at said second end of said heat exchange core (38a),
  - (e) second fluid outlet means (66) positioned at the first end of said heat exchange core (38a) opposite to said second fluid inlet means (62) and extending across the open portions (45) of said second group of fluid passages (64) and the closed portions (44) of said first group of fluid passages (58), said second inlet and outlet means (62,66) communicating with said second group of fluid passages (64); and
  - (f) a strip (40) attached to said sequential sections (22,24) extending across at least one end of said heat exchange core (38a) between the closed and open sides (42,43,44,45)

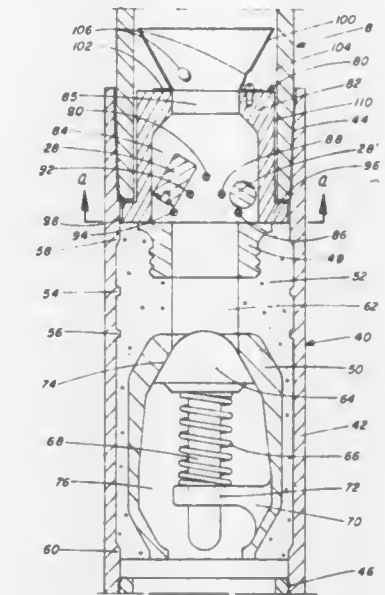
of said fluid passages (58,64), said strip (40) being corrugated to provide flexibility lengthwise thereof.

**4,338,999**  
**KNOCKOUT PIN TRAP**  
Ernest E. Carter, Jr., Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 19, 1980, Ser. No. 122,109  
Int. Cl.<sup>3</sup> E21B 31/08

U.S. Cl. 166—117

23 Claims



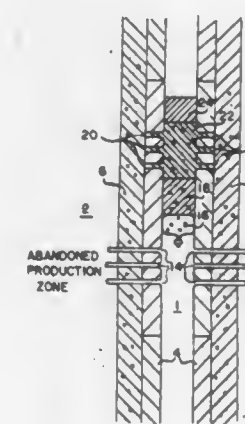
1. An apparatus for stopping the movement of solid objects therethrough, comprising:
  - a body having a bore therethrough;
  - baffle means across said bore, said baffle means adapted to permit fluid flow therethrough and to stop the movement of solid objects greater than a predetermined size; and
  - guide means leading to said bore and adapted to direct solid objects therein, said guide means being collapsible against said body.

**4,339,000**  
**METHOD AND APPARATUS FOR A BRIDGE PLUG ANCHOR ASSEMBLY FOR A SUBSURFACE WELL**  
Clifford P. Cronmiller, 8398 Leeward Dr., Huntington Beach, Calif. 92646

Filed Aug. 28, 1980, Ser. No. 182,289  
Int. Cl.<sup>3</sup> E21B 33/134, 43/112

U.S. Cl. 166—295

14 Claims



1. A method for anchoring a bridge plug within a casing of a subsurface well, said method comprising the steps of:
  - forming a plurality of perforations through the wall of said casing at a location above the bridge plug,
  - depositing a first supply of cement over the bridge plug for



filling a portion of said casing corresponding to that through which the perforations are formed, positioning a mass over said first supply of cement and applying pressure to said mass for compressing the cement of said first supply against the bridge plug and for forcing some of said cement through the perforations in said casing, and curing said cement for providing a footing for anchoring the bridge plug within said casing.

6. Apparatus to anchor a bridge plug within a casing of a subsurface well to reliably plug the well, said apparatus comprising:

- a resilient strip positioned in said casing at a location above the bridge plug, and
- at least one barb attached to said strip, said barb having a housing in which an explosive charge is stored, said barb adapted to be driven through a wall of said casing and into locking engagement therewith when said charge is detonated.

#### 4,339,001 SAFETY VALVE

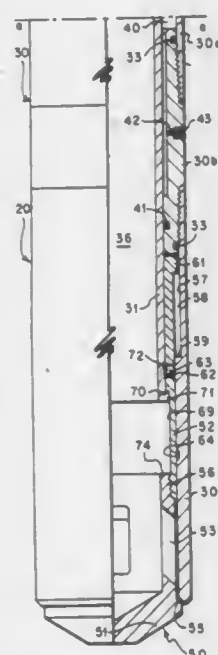
James H. Paschal, Jr., Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Oct. 14, 1980, Ser. No. 196,447

Int. Cl.<sup>3</sup> E21B 33/00

U.S. Cl. 166—322

16 Claims



9. A safety valve for installation within a well flow conductor comprising:
- a. a housing means;
  - b. means for locking the safety valve within the well flow conductor;
  - c. a longitudinal flow passageway extending through the housing means;
  - d. an actuator sleeve slidably disposed within the housing means and partially defining the longitudinal flow passageway;
  - e. an annulus formed between the exterior of the actuator sleeve and the interior of the housing means;
  - f. piston means slidably disposed within the annulus and attached to one end of the actuator sleeve;
  - g. seal means carried by the housing means and engaging the exterior of the sleeve spaced longitudinally from the piston means;
  - h. a variable volume gas chamber, formed within the annulus between the piston means and seal means, biasing the actuator sleeve to slide longitudinally in one direction with respect to the housing means when fluid pressure within the chamber is higher than fluid pressure in the longitudinal flow passageway;
  - i. a valve closure means at least partially disposed within the

housing means having a first position allowing fluid flow through the longitudinal flow passageway and a second position blocking fluid flow through the longitudinal flow passageway; and

- j. means for latching the valve closure means in its first position to the housing means until fluid pressure within the chamber exceeds fluid pressure within the longitudinal passageway by a preselected value.

#### 4,339,002

#### SEA BUOY DISCHARGE MANIFOLD SYSTEM

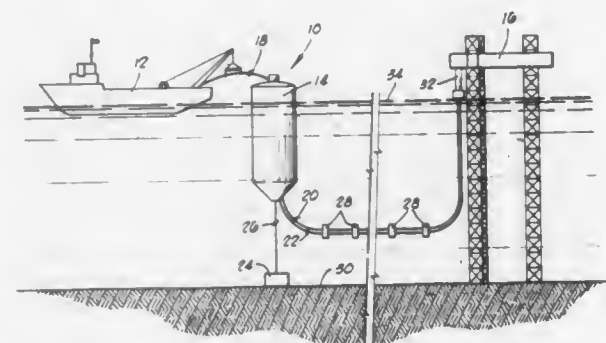
Max A. Gibbs, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Aug. 9, 1979, Ser. No. 65,164

Int. Cl.<sup>3</sup> E21B 43/013

U.S. Cl. 166—355

31 Claims



1. A discharge manifold system for connecting a pressurized fluid discharge from a floating vessel to an offshore well, comprising:

- a floating buoy;

a manifold means, supported by said buoy, said manifold means including an inlet and first and second outlets, each of said outlets being in fluid communication with said inlet;

fluid conducting swivel means connected to said inlet; flexible discharge conduit means having a first end connected to said pressurized fluid discharge from said floating vessel;

connecting means for connecting a second end of said flexible discharge conduit means to said fluid conducting swivel means, so that said discharge conduit means may pivot about said manifold means;

first and second valve means connected to said first and second outlets, respectively; and

first and second flexible intermediate conduits, extending laterally through a body of water from said floating buoy to said offshore well, and having first ends connected to said first and second valve means, respectively, and having second ends connected to said offshore well, so that pressurized fluid for treating said well can flow through said discharge conduit means, then through said fluid conducting swivel means, then through said manifold means, then through said first and second valve means and said first and second intermediate conduits to said well, said first and second valve means and first and second intermediate conduits comprising a means for providing selectable redundant fluid communication between said manifold means and said offshore well.

#### 4,339,003

#### SOIL CULTIVATING IMPLEMENTS

Cornells van der Lely, 7, Brüschelrain, Zug, Switzerland

Division of Ser. No. 864,471, Dec. 27, 1977, Pat. No. 4,187,915.

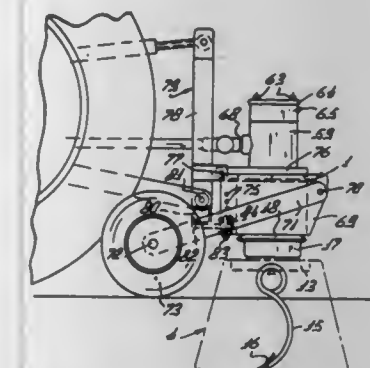
This application May 24, 1979, Ser. No. 42,154

Claims priority, application Netherlands, Dec. 29, 1978, 7614518

Int. Cl.<sup>3</sup> A01B 33/06

U.S. Cl. 172—47

9 Claims



1. A soil working implement, comprising a frame and a plurality of soil working members rotatably supported on said frame, driving means connected to rotate said members and said members being journaled in an elongated portion of said frame that extends transverse to the direction of implement travel, at least two supports connected to the upper part of said frame portion, said supports being pivotally connected to an upwardly extending coupling member by pin means, a lower shear pin coupling interconnecting said frame portion to said coupling member, said frame portion being pivotable rearwardly relative to said coupling member about a substantially horizontal axis defined by said pin means upon overload on said pin, said shear pin being located substantially directly below said horizontal axis and about midway between said supports when viewed in plan.

#### 4,339,004

#### SOIL COMPACTING ROLLERS

Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

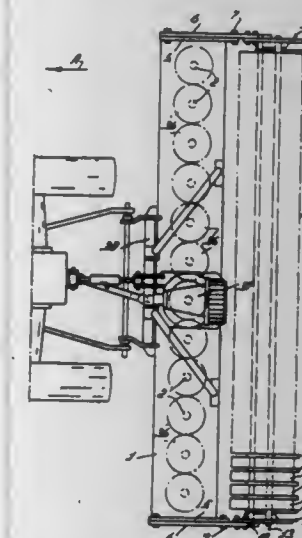
Filed Apr. 17, 1980, Ser. No. 141,062

Claims priority, application Netherlands, May 8, 1979, 7903571

Int. Cl.<sup>3</sup> A01B 29/04

U.S. Cl. 172—537

17 Claims



1. A soil compacting roller comprising a plurality of rings that are rotatable about a substantially horizontal axis, said rings being positioned in side-by-side relationship and being independently movable with respect to each other during operation, a carrier with bearing means supporting said rings, said bearing means including an upper fixed supporting mem-

ber and a lower cylinder, said supporting member and said cylinder being spaced apart a substantial distance from one another and extending through the openings in said rings, the openings in said rings being generally in alignment and said supporting member being located at a higher level than said cylinder, said horizontal axis being located between the supporting member and said cylinder, said carrier including an elongated support that extends above and along the length of the roller, a plurality of guide members depending from said elongated support and said rings being separated by said guide members, said guide members extending between said supporting member and said cylinder to terminate in lower free ends.

#### 4,339,005

#### CURVED WELL CONDUCTORS FOR OFFSHORE PLATFORM

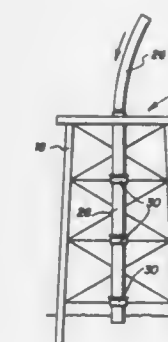
Frank J. Schuh, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 10, 1980, Ser. No. 167,544

Int. Cl.<sup>3</sup> E21B 7/08

U.S. Cl. 175—9

16 Claims



1. A method of installing a solid walled curved well conductor on an offshore platform located above a body of water, comprising the steps of:

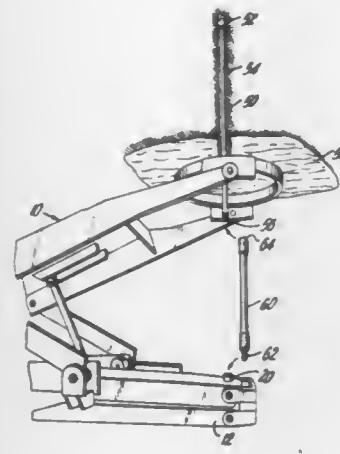
- providing a straight guide sleeve on the offshore platform;
- forming a predetermined curvature being greater than the inside diameter of the straight guide sleeve in the lowermost portion of said well conductor with the remaining portion thereof being substantially straight;
- releasably straightening the lowermost portion of said well conductor without yielding the material thereof;
- lowering said straightened well conductor through the straight guide sleeve downward from the offshore platform into contact with the floor of the body of water;
- releasing the lowermost portion of said well conductor upon exiting the straight guide sleeve such that the lowermost portion resumes substantially its original curvature; and
- advancing said well conductor into the floor of the body of water downwardly and outwardly along a curved path established by the lowermost portion of said well conductor.



# 4,339,006 METHOD AND APPARATUS FOR MINE ROOF DRILLING

Arnold B. Bower, Jr., and Randall W. Ojanen, both of Bristol, Va., assignors to General Electric Company, Detroit, Mich. Continuation of Ser. No. 100,214, Dec. 4, 1979, abandoned. This application May 1, 1981, Ser. No. 259,500

Int. Cl.<sup>3</sup> E21C 1/00; E21B 17/04  
U.S. Cl. 175—57 14 Claims

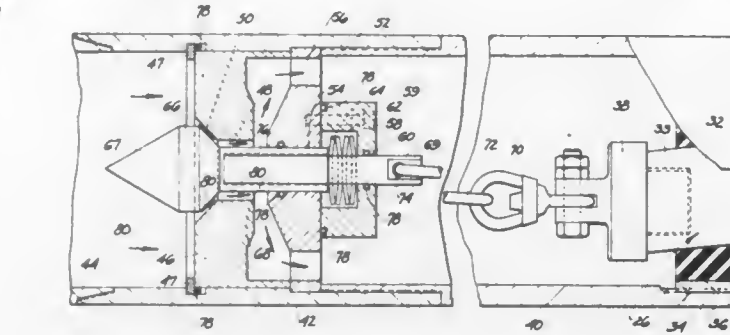


5. A method of drilling a bolt hole in a mine roof utilizing a roof bolting drill provided with a deep chuck having an upper female end, a drill bit having a lower shank portion, and at least two identical drill steel drivers, said drill steel drivers having an upper female end and a lower male end, wherein the upper female end of the drill steel driver is capable of engagement with either the lower shank portion of the drill bit or the lower male end of another drill steel driver, and wherein the lower male end of each drill steel driver is capable of engagement with either the upper female end of said deep chuck or the upper female end of another drill steel driver, said roof bolting drill being further provided with a drill head connected to said deep chuck, said drill head being movable in the vertical direction and capable of rotating said deep chuck, said method comprising the steps of:

- mounting the lower male end of one of said drill steel drivers into the upper female end of said deep chuck;
- mounting the shank of the drill bit into the upper female end of said one drill steel driver;
- raising said drill head until said drill bit abuts the mine roof;
- rotating said deep chuck while simultaneously raising said drill head such that said drill bit bores into said roof creating a bolt hole and continuing said rotating and raising until said one drill steel driver is at least partially disposed within said bolt hole;
- disconnecting said one drill steel driver from said deep chuck;
- lowering said drill head while said one drill steel driver and said drill bit is maintained in the hole;
- mounting the lower male end of another drill steel driver into the female end of said deep chuck;
- raising said drill head until the upper female end of said another drill steel driver abuts the bottom male end of said one drill steel driver;
- connecting the upper female end of said another drill steel driver to the lower male end of said one drill steel driver;
- rotating said deep chuck while simultaneously raising said drill head such that said drill bit bores further into said roof; and
- lowering said drill head with said drill steel drivers and said drill bit connected thereto from said bolt hole while being rotated.

# 4,339,007 PROGRESSING CAVITY MOTOR GOVERNING SYSTEM

Wallace Clark, Indianapolis, Ind., assignor to Oncor Corporation, Houston, Tex.  
Filed Jul. 25, 1980, Ser. No. 172,128  
Int. Cl.<sup>3</sup> E21B 3/12 20 Claims



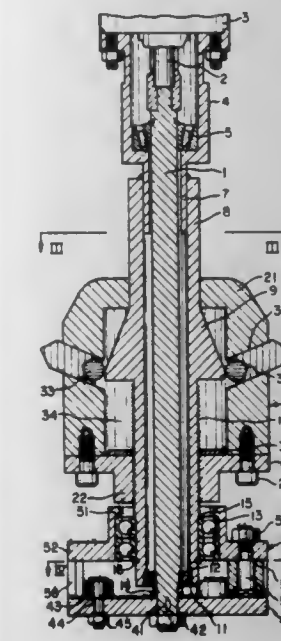
1. In an hydraulic down-hole earth drilling motor of the progressive cavity helical gear pair type constituted by an inner member having one or more external helical threads and a cooperating outer member having one or more internal helical threads, the number of helical threads on the inner and outer members differing by one, said outer member having an outer member housing into which hydraulic fluid is pumped down from the surface to drive said motor, a control system to control the pressure drop of the fluid flowing through said motor so that it does not become excessive, comprising a valve housing defining a chamber, one end of said valve housing being secured to said outer member housing of said motor; valve means positioned within said valve housing chamber to control the flow of fluid through said valve housing, said valve means being movable from an open to a closed position; pressure controlling means positioned within said valve housing chamber to normally bias said valve means toward the open position; and linkage means positioned within said valve housing chamber and joining said valve means and the upper end of said inner member, whereby axial displacement of said inner member acts to operate said valve means to control the fluid flow and therefore the pressure drop through said motor in order to protect said motor from overload.

# 4,339,008 WELL NOTCHING TOOL

Azel R. Ford, and David W. Ford, both of Brookville, Pa., assignors to D. B. D. Drilling, Inc., Brookville, Pa.  
Filed Jun. 9, 1980, Ser. No. 157,386  
Int. Cl.<sup>3</sup> E21B 29/06 11 Claims

1. A notch cutting tool comprising a rotary power shaft, a coaxial shell surrounding said power shaft, said shell having a taper formed on a portion of the exterior surface thereof and an exterior thread formed on a portion thereof adjacent said taper, a bell housing coaxial with and surrounding a portion of said shell including said taper, said bell housing having a base with an internal thread, said internal thread mating with the exterior thread on said shell, said bell housing having a bell portion formed with a plurality of angular passageways, a slip slidably carried in each of said passageways, and cutting means at the

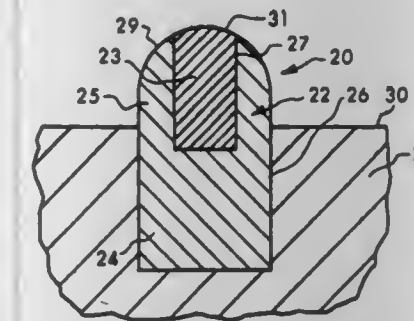
lower end of said rotary power shaft for cutting a notch in the sidewall of a hole, said slips contacting said shell taper



# 4,339,009 BUTTON ASSEMBLY FOR ROTARY ROCK CUTTERS

Donald W. Busby, 5060 Nome St., Denver, Colo. 80239  
Filed Dec. 27, 1979, Ser. No. 107,569  
Claims priority, application South Africa, Mar. 27, 1979, 79/1451

Int. Cl.<sup>3</sup> E21B 10/52 1 Claim  
U.S. Cl. 175—374



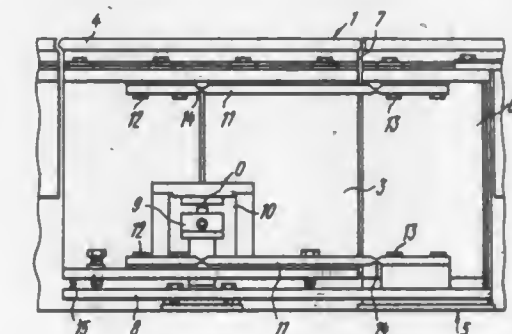
1. A non-replaceable and non-percussion button assembly fixedly secured into the matrix of a cutting tool, said cutting tool being capable of penetrating subterranean strata at load pressures up to 55,000 psi, said button assembly comprising: a cylindrically shaped button press-fittingly inserted into a formed bore within said matrix, fully engaging the sides and bottom of said formed bore, and extending above the surface of said matrix, said press-fitting insertion being sufficient to hold said button in said matrix under said load pressures, said button being molded from a non-machinable steel material having (1) a substantial hardness between 50 to 55 RC, (2) a transverse rupture strength greater than the transverse rupture strength of tungsten carbide, and (3) an abrasion resistance less than the abrasion resistance of tungsten carbide, the aforesaid steel material being capable of being ground, a cylindrically molded tungsten carbide insert being press-fittingly inserted into a centrally formed cylindrical bore within said button, and to fully engage the sides and bottom of the aforesaid bore, the aforesaid press-fitting insertion being sufficient to hold said insert in said button under said load pressures, the sides of said insert being parallel to the sides of said button and the cross-sectional area of said button being at least equal to the cross-sectional area of said insert, the length of said insert being at least equal to the diameter of said insert and less than the length of said

button, substantially the entire length of said insert in the aforesaid formed bore extending above the surface of said matrix, and said button being capable of cutting said strata at load pressures up to 55,000 psi when said insert wears down toward said button and being capable of providing transverse longitudinal support to said insert as said button and insert wear down wherein said button and said insert wear down from cutting said rock at a substantially equal rate.

# 4,339,010 APPARATUS FOR WEIGHING TRANSPORT VEHICLES IN MOTION

Georgy F. Malkov, Khlebozavodskol proezd, 8, korpus 1, kv. 56; Vladimir A. Chukhno, 3 Paveletsky proezd, 7, kv. 45; Leonid K. Timofeev, 2 ulitsa Bebel'skaya, 26, kv. 152, all of Moscow, U.S.S.R.; Khakim N. Ibragimov, deceased, late of Moscow, U.S.S.R., and by Maria F. Ibragimova, administrator, Svoobodnyy prospekt, 5/2, kv. 134, Moscow, U.S.S.R.  
Filed Jan. 2, 1981, Ser. No. 221,995  
Int. Cl.<sup>3</sup> G01G 19/02, 3/08, 21/24 3 Claims

U.S. Cl. 177—134



1. An apparatus for weighing transport vehicles in motion, wherein at least two measuring units are electrically connected with a recording unit, each including: a supporting structure; a load cell mounted on said supporting structure; a load platform bearing on said load cell at a supporting point; four horizontal rods installed in pairs at two sides of the load platform, directed to one end thereof and secured at one end on said supporting structure and at the other end of the side surfaces of said load platform in immediate proximity to the geometric line which is a projection of the vertical line through the supporting point of said load platform; said rods featuring rigidity which is substantially greater in a horizontal direction than in a vertical direction; said rods being connected with said supporting structure and said load platform in such a manner as to form, in conjunction therewith, an elastic parallelogram; said load platform bearing on said load cell at a geometric point whose vertical displacement due to an arbitrary moment of forces acting upon the load platform and causing elastic deformation of the rods is equal to zero.

# 4,339,011 NON-DEFLECTION PRESSURE SWITCH APPARATUS

Alfred W. DiMarzio, Bethany, Conn., assignor to General Electric Company, New York, N.Y.  
Filed Nov. 24, 1980, Ser. No. 209,790  
Int. Cl.<sup>3</sup> G01G 23/18 8 Claims

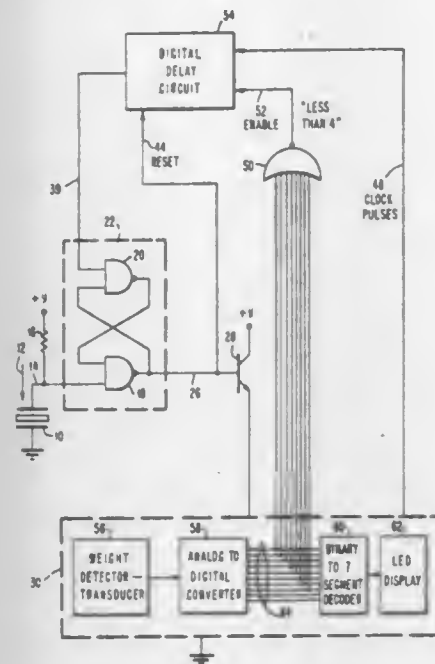
U.S. Cl. 177—177 1. In an electronic digital weighing scale, apparatus comprising: an electrically energized weight indicating means including means providing a plurality of distinct signals indicating in



combination the magnitude of a weight applied to the scale,

a piezoelectric element positioned and arranged to receive a mechanical pressure signal and to generate in response thereto a weight indicating voltage signal when a weight is initially applied to the scale,

a two-state circuit means having input means coupled to said piezoelectric element and output means coupled to said indicating means, the output of said two-state circuit operable from a first state deenergizing said indicating means



to a second state energizing said indicating means upon initial receipt of a weight indicating signal from said piezoelectric element, and  
a time delay circuit coupled to said two-state circuit and said indicating means for causing said two-state circuit to switch from said second state to said first state after a predetermined delay period, said time delay circuit being responsive to said distinct signals of said indicating means such that the delay period runs only when said distinct signals indicate that the applied weight is less than a predetermined level greater than zero.

4,339,012

BABY SCALE

Sönke Vogel, Hamburg, and Frohmüt Müller, Barsbüttel, both of Fed. Rep. of Germany, assignors to Vogel & Halke, Hamburg, Fed. Rep. of Germany

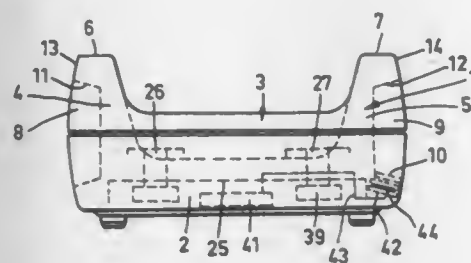
Filed Jan. 8, 1981, Ser. No. 223,419

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1980, 8001469[U]

Int. Cl.<sup>3</sup> G01G 21/22

U.S. Cl. 177-262

10 Claims



1. In a baby scale comprising a base, a housing which is mounted on said base and formed with an open-topped depression adapted to receive a baby to be weighed, and weighing means responsive to a weight applied to said housing, the improvement residing in that said housing has two side walls, which define said depression on opposite sides

thereof and each of which has at its top a continuous grip flange and is formed under said grip flange with an opening which together with said grip flange constitutes a carrying handle and is defined by a sparlike grip portion formed by said grip flange.

4,339,013

MOBILE AND ADAPTABLE WHEEL CHAIR

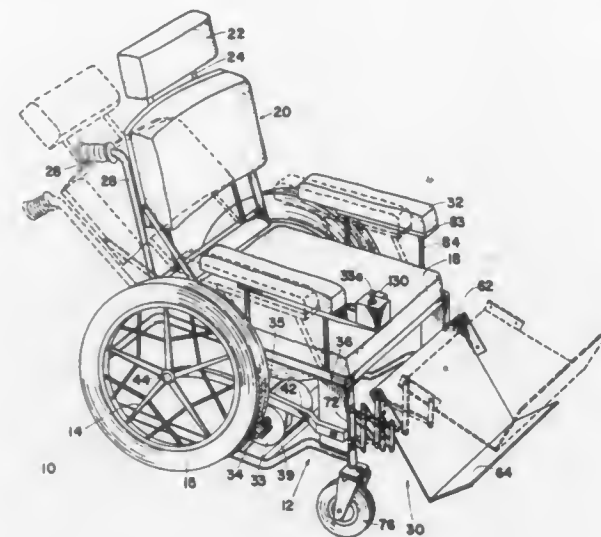
Gerald I. Weigt, 2530 Loyola Dr., Davis, Calif. 95616

Filed May 12, 1980, Ser. No. 148,793

Int. Cl.<sup>3</sup> B62D 11/04; A47C 7/50, 1/02

U.S. Cl. 180-6.5

15 Claims



1. A wheel chair comprising:

a frame;

a transverse torsion bar rotatably mounted near its ends on the forward portion of said frame;

a pair of rearwardly extending, elongated wheel support arms non-rotatably mounted on the ends of said torsion bar;

a rear wheel rotatably mounted at the trailing end of each of said wheel support arms;

a control arm non-rotatably secured to the mid-portion of said torsion bar; a hydraulic ram pivoted between said control arm and said frame so that the position of the piston in said hydraulic ram will determine the angular disposition of said wheel support arms, and said hydraulic ram when set holds said mid-portion against rotation, so that torsion at one end of said torsion bar is not transmitted to the other end thereof; and

at least one front wheel rotatably mounted at the forward end of said frame.

4,339,014

AIR COOLING SYSTEM FOR DRIVE ENGINE OF AN AUTOMOTIVE AGRICULTURAL MACHINE

Dieter Berth, Gottfried Hohlfeld, both of Neustadt in Sachsen; Klaus Ollva, Langburkersdorf, and Christian Noack, Gutttau, all of German Democratic Rep., assignors to VEB Kombinat Fortschritt Landmaschinen Neustadt in Sachsen, Neustadt in Sachsen, German Democratic Rep.

Filed Dec. 14, 1979, Ser. No. 103,424

Claims priority, application German Democratic Rep., Dec. 27, 1978, 210144

Int. Cl.<sup>3</sup> B60K 11/08

U.S. Cl. 180-54 A

1 Claim

1. An air cooling system for the drive engine of an automotive agricultural machine with spaced-apart radiators, an exhaust system and an air compartment having side walls and end walls characterized in that two fans (10, 11) are mounted on a common drive shaft (12) behind a drive motor (3) one of said fans located in each end wall of the air compartment (4), each side wall being formed by one of said radiators (6, 7), a pivotal air-deflection plate (16) mounted between the fans (10, 11) so as

4,339,016

TILTABLE FENDER FOR A TRACTOR LOADER

Jost Gerresheim, Libertyville, Ill., assignor to International Harvester Co., Chicago, Ill.

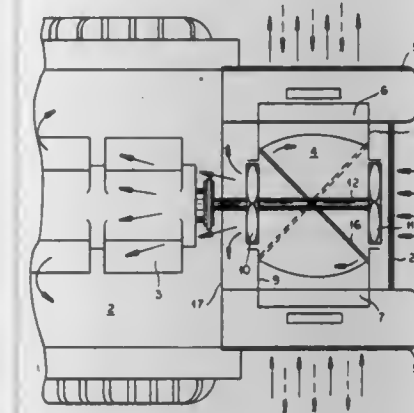
Continuation-in-part of Ser. No. 1,972, Jan. 8, 1979, abandoned. This application Oct. 14, 1980, Ser. No. 196,248

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, 7800896[U]; France, Jan. 10, 1979, 79 00528; Canada, Feb. 9, 1979, 321182

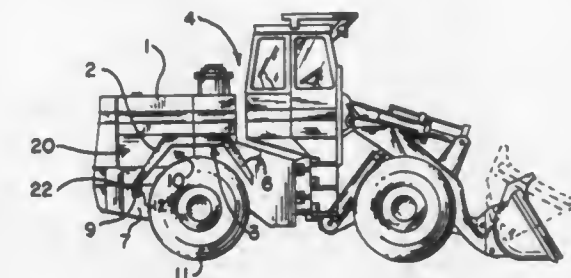
Int. Cl.<sup>3</sup> B62D 25/16

U.S. Cl. 180-89.17

7 Claims



ing down from an upper machine wall (18) to the common drive shaft (12) and to both sides of the partition (17) there are openings (19, 20) in the upper machine wall (18) and between the air compartment (4) and the upper machine wall (18) there is the exhaust system (21) of the drive engine (3).



1. A rubber tired tractor loader having a chassis, an engine compartment supported on the chassis, a plurality of ground engaging rubber tired wheels supporting the chassis, an engine compartment enclosing means hinged to the chassis and covering the compartment, at least one rubber tired wheel each of the plurality and including a fender therefor located at opposite lateral sides of the tractor loader below the compartment and the enclosing means, wherein the improvement comprises: the fenders having two sections, one section is a stationary fender section mounted to respective sides of the chassis and is longitudinally spaced from the enclosing means, the second section is a tiltable fender section extending longitudinally from the stationary fender section below and spanning a substantial portion of the enclosing means; means for locking the two fender sections together; supporting means for tiltable mounting each second fender section to the respective sides of the chassis and including a supporting strut having an upward end connected to a downward skirt portion of the second fender section and having a downward end connected to an outboard end of the supporting means, the supporting means including inboard end means for permitting laterally downwardly tilting of the supporting strut and connected second fender section upon unlocking of the two fender sections for gaining access to the enclosing means and to the compartment after moving the enclosing means and uncovering the compartment.

4,339,015

ELECTRICALLY DRIVEN VEHICLES

Ronald Fowkes, Solihull, and Geoffrey G. Harding, Allostock, near Knutsford, both of England, assignors to Lucas Industries Limited, Birmingham, England

PCT No. PCT/GB79/00031, § 371 Date Oct. 16, 1979, § 102(e) Date Oct. 1, 1979, PCT Pub. No. WO79/00630, PCT Pub. Date Sep. 6, 1979

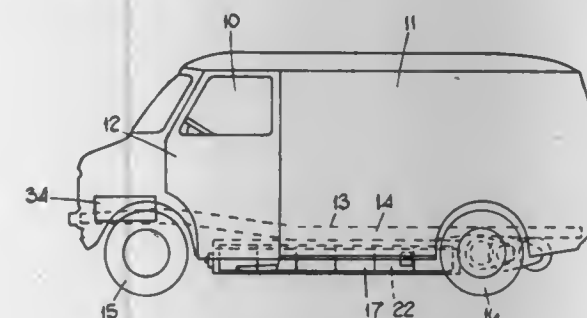
PCT Filed Feb. 13, 1979, Ser. No. 165,486

Claims priority, application United Kingdom, Feb. 16, 1978, 6121/78

Int. Cl.<sup>3</sup> B60L 11/12

U.S. Cl. 180-65 R

6 Claims



1. In an electrically driven motor vehicle including an electric motor (2) arranged to drive the vehicle through a transmission system (3, 4), a battery pack (5) arranged to provide power for driving the electric motor (2), and a charging unit (6, 7) for charging the battery pack (5), the improvement wherein the battery pack (5) and charging unit (6, 7) are mounted on a common structure (8) carried directly on the vehicle chassis and detachably secured thereto by releasable fasteners (9, 10) whereby the assembly comprising said battery pack, charging unit and common structure is detachable as a complete unit from the vehicle.

4,339,017

AIR CUSHION VEHICLE SKIRT MATERIAL AND METHOD

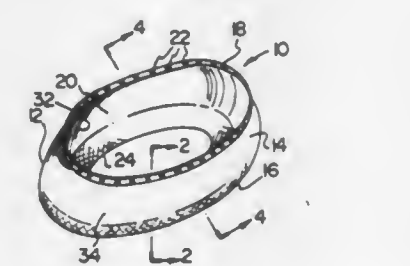
Carson R. Payne, 12 Yeomans Way, Markham, Ontario, Canada (L3P 3X2)

Filed Sep. 25, 1978, Ser. No. 945,605

Int. Cl.<sup>3</sup> B60V 1/16

U.S. Cl. 180-127

16 Claims





having a platform defining a support air outlet, the skirt comprising:

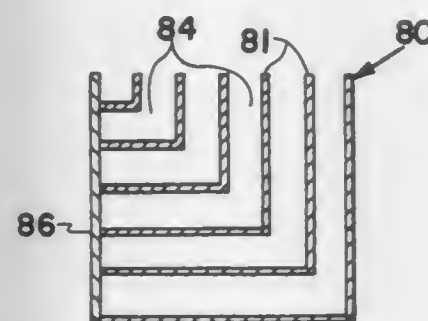
- a continuous annular wall having an inwardly curved upper wall portion and inwardly curved lower wall portion, so that the annular wall is C-shaped in cross-section;
- said upper wall portion having an upper peripheral edge portion defining an air inlet, the upper edge portion including means for attaching the skirt to a vehicle platform so that support air enters the air inlet;
- the lower wall portion having a lower peripheral edge portion adapted to be located above ground level by support air pressure inside the skirt;
- the annular wall including a foraminous fabric substrate formed of a plurality of filaments, the substrate having first and second parallel side surfaces; a first coating of polyurethane on the filaments on the first side surface; and a second coating of polyurethane on the filaments on the second side surface, the first and second coatings extending into the foraminous substrate and being integrally bonded together to envelope the filament and define interstices on the coated substrate between the filaments.

4,339,018

## SOUND ABSORBING STRUCTURE

Glenn E. Warnaka, Erie, Pa., assignor to Lord Corporation, Erie, Pa.  
Division of Ser. No. 955,543, Oct. 27, 1978, Pat. No. 4,243,117, which is a division of Ser. No. 692,834, Jun. 4, 1976, Pat. No. 4,141,433. This application May 19, 1980, Ser. No. 170,408  
Int. Cl.<sup>3</sup> E04B 1/99; G10K 11/04  
U.S. Cl. 181—286

5 Claims



1. A structure for absorbing sound waves comprising a plurality of impermeable wall means that are (1) fabricated of a material generally impermeable to a fluid in which the sound absorbing structure is to be immersed, (2) substantially free of openings therethrough, (3) generally lacking in sound absorbing capability, (4) acoustically reflective, (5) laterally spaced a distance not more than one wavelength of the predetermined highest frequency to be absorbed, and (6) formed in a non-linear configuration along the length thereof, said wall means forming an array of side-by-side elongate fluid filled cavities each having an open end and a closed end, said open ends of said cavities receiving said sound waves each of said cavities (1) having an uninterrupted dimension along said wall means greater than twice the spacing between and coextensive with said wall means, (2) having a length from said open end to said closed end at least equal to one-fourth of the wavelength of the predetermined highest frequency to be absorbed, and (3) having a uniform cross section substantially throughout the length thereof, and acoustically reflective barrier means forming the closed ends of the said cavities, said barrier means reflecting said sound waves received within said cavities through said open ends in a direction opposite to the direction of propagation of said sound waves, the length of said cavities being uninterrupted between the sound-receiving end of said array and said barrier means.

4,339,019

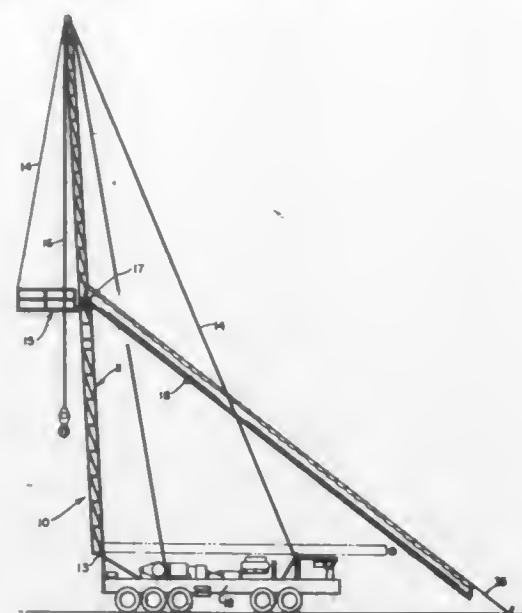
## SAFETY CHUTE

Thomas R. Tracy, Boise, Id., assignor to Palladium Corporation, Boise, Id.

Filed Apr. 7, 1980, Ser. No. 137,619  
Int. Cl.<sup>3</sup> A62B 1/20

U.S. Cl. 182—47

4 Claims



1. An emergency escape apparatus for a structure having a working or like platform disposed at considerable distance above ground level, said apparatus comprising means defining an escape chute entrance adapted to be flexibly mounted at said platform, a cable extending from said entrance at an acute angle to the ground below, a flexible longitudinally collapsible tubular escape chute secured at one end to said entrance and slidably connected to said cable, said chute normally being longitudinally collapsed into a releasable pack at said entrance and releasably held in folded condition by a bag like cover which extends over the folded chute and is closed at the side opposite the chute entrance by flaps secured by keeper pins, and means accessible to a person about to enter the entrance end of the chute for releasing the cover to allow automatic unfolding of the chute to deploy along the cable, comprising a rip cord arrangement actuatable to speedily remove all of the pins and allow the folded pack end to move through the open flaps, said chute being adapted when released to slide down the cable while longitudinally deploying along the cable to define a continuous escape tube suspended along said cable.

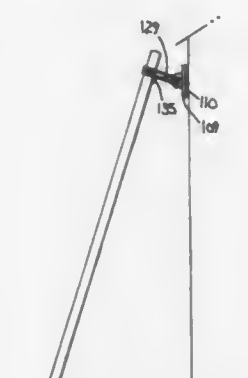
4,339,020

## LADDER SUPPORT

Donald H. Wiseman, 513 Tower St., Burlington, Wis. 53105  
Filed Oct. 23, 1980, Ser. No. 200,069  
Int. Cl.<sup>3</sup> E06C 7/48

U.S. Cl. 182—214

1 Claim



1. A ladder support comprising: a plate, one side of which is covered with a soft fabric; a first L-shaped bar the horizontal leg of which is attached to the plate; a flat bar, one end of

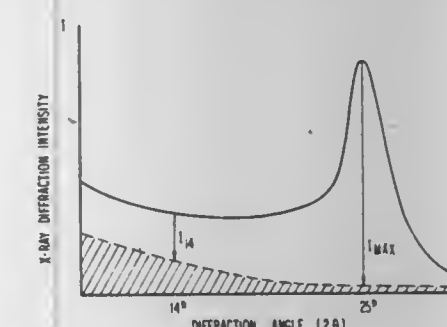
which is attached to the top surface of the horizontal leg of the first L-shaped bar and having a pair of feet on the other end, the feet being attached to the plate and displaced with respect to the bottom surface of the flat bar so that a pocket is formed between the bar and the plate; a second L-shaped bar, the horizontal leg of which is inserted in the pocket, and which is slidably attached to the plate; a first column, the bottom end of which is pivotally attached to the vertical leg of the first L-shaped bar; a first U-bracket which is attached to the upper portion of the first column; a second column, the bottom end of which is pivotally attached to the vertical leg of the second L-shaped bar; a second U-bracket which is attached to the upper portion of the second column; first and second clamp screws which are threaded through the first and second columns respectively and may be advanced into the space circumscribed by the first and second U-brackets; and adjustable pipe means connected between the columns for maintaining the position of the columns relative to each other.

4,339,021

## CARBON FIBER REINFORCED CARBON FRICTION ELEMENT AND METHOD OF MAKING

Hiroyuki Kosuda, Numazu, and Kenji Nijima, Shizuoka, both of Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan  
Filed Jul. 18, 1980, Ser. No. 170,221  
Claims priority, application Japan, Jul. 18, 1979, 54/90325  
Int. Cl.<sup>3</sup> B32B 5/02; C23C 9/06; B44D 1/46; F16D 13/60  
U.S. Cl. 191—50

29 Claims



1. A carbon fiber reinforced carbon friction element containing matrix carbon and, as a reinforcing fiber, at least one carbon fiber, wherein the crystallinity index R of the matrix carbon is from about 2.3 to 5.0, which carbon fiber reinforced carbon friction element contains an antioxidant in an amount of from about 0.02 to 0.5% by weight of the total weight of the carbon fiber reinforced carbon friction element, wherein the oxidation temperature  $T_0$  is at least about 800° C. due to antioxidant processing during the production of the carbon fiber reinforced carbon friction element after the formation of the matrix carbon or after the completion of production thereof by incorporating an antioxidant therein by impregnating a solution of the antioxidant therein, the amount of the antioxidant being sufficient to increase the oxidation temperature  $T_0$  of the carbon fiber reinforced carbon to about 800° C. or more, said matrix carbon being subjected to heat-treatment at a temperature of from about 1200° C. to about 2400° C. at least once during the production of the carbon fiber reinforced carbon friction element to control the R value thereof to be in a range of from about 2.3 to 5.0.

29. A process for producing a carbon fiber reinforced carbon friction element containing matrix carbon, and, as a reinforcing fiber at least one carbon fiber, wherein the matrix carbon is heat-treated at such a temperature that the crystallinity index R of the matrix carbon is from about 2.3-5.0 and antioxidant processing is carried out during the production of the carbon fiber reinforced carbon after the formation of the matrix carbon, or after the completion thereof, by incorporating an antioxidant by impregnating a solution of the antioxidant therein in an amount of from about 0.02 to 0.5% by weight of the total weight of the carbon fiber reinforced carbon friction element, which amount is effective to increase the oxidation temperature  $T_0$  of the carbon fiber reinforced carbon to about 800° C. or more.

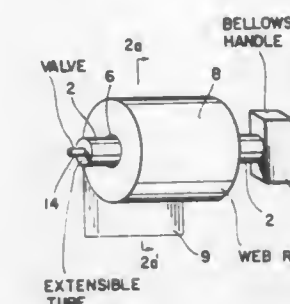
4,339,022

## FILM WRAPPING DISPENSER HAVING A FLUID PRESSURE ACTUATED, CONTROLLED DRAG SHAFT

Lawrence Hoover, 2074 Sunset Point Rd., Unit 131, Clearwater, Fla. 33515  
Filed Jun. 25, 1979, Ser. No. 51,866  
Int. Cl.<sup>3</sup> F16D 13/76

U.S. Cl. 192—14

8 Claims



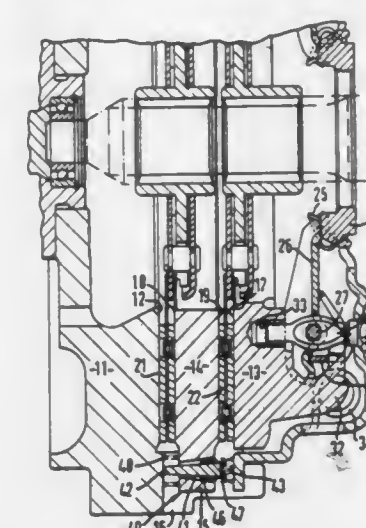
1. A fluid pressure actuated, manual, film wrapping dispenser, comprising: a cylindrical, hollow tube wall formed of an extensible material, enveloping a fluid tight cavity, for rotatably engaging an inner cylindrical bearing surface of a roll of film webbing to be dispensed for wrapping about an object; a manually squeezable bellows handle formed of a flexible, extensible material and shaped to be grasped by a human hand, connected to said tube for selectively applying fluid pressure within said cavity to radially expand said tube wall for selective frictional engagement with said inner cylindrical surface of said roll of film, for controllably tensioning said film by manually squeezing said bellows handle while wrapping said object.

4,339,023

## TWIN PLATE FRICTION CLUTCHES

Ian C. Maycock, Leamington Spa, England, assignor to Automotive Products Limited, Leamington Spa, England  
Filed May 28, 1980, Ser. No. 153,917  
Claims priority, application United Kingdom, Jun. 1, 1979, 7919237  
Int. Cl.<sup>3</sup> F16D 13/75  
U.S. Cl. 192—70.25

5 Claims

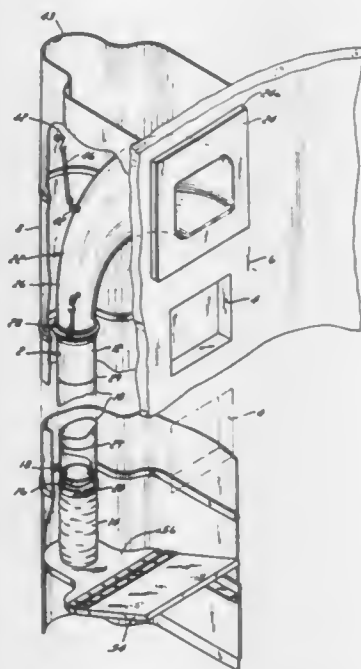


1. A twin plate friction clutch assembly comprising a flywheel, a first driven plate, an intermediate pressure plate, a second driven plate, a main pressure plate, a cover member and releasable clutch clamping means and having friction grip adjuster means arranged to automatically control the axial position of the intermediate pressure plate within the assembly in response to wear of the friction facings of one driven plate, the intermediate pressure plate having a peripheral aperture therethrough and said adjuster means constituting a one-way clutch device incorporating lost motion means and comprising:



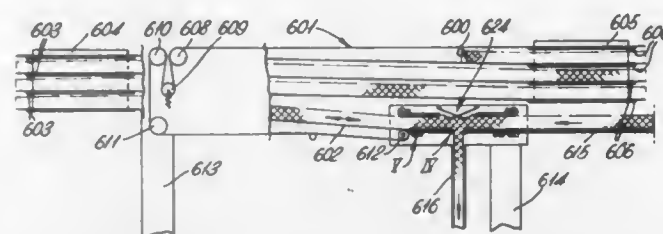
a spacing member passing through said aperture to define therewith a tapered space;  
first spring means to urge the spring member against an abutment of the flywheel;  
second spring means to urge the intermediate pressure plate away from said flywheel;  
an abutment for said spacing member on the cover member; and wedging means located in said space to lock the spring member and intermediate pressure plate together to resist relative separation in one direction of axial load on said intermediate pressure plate, said wedging means being operable on abutment of the spring member with said cover member.

4,339,024  
**DUST-TIGHT SILO DISCHARGE PIPE ASSEMBLY**  
Roger W. Wollin, Lake Mills, Wis., assignor to Fiberdome Incorporated, Lake Mills, Wis.  
Filed Sep. 4, 1980, Ser. No. 184,036  
Int. Cl.<sup>3</sup> B65G 11/02  
U.S. Cl. 193—34 28 Claims



1. A silo discharge pipe assembly for use with a vertically upright silo having a side wall with a plurality of vertically spaced-apart windows through which ensilage may be discharged; said assembly comprising an elongated, flexible, collapsible, ensilage discharge bag with an upper and a lower end and extending vertically along and spaced apart from said side wall, a rigid, stationary, tubular pipe extending into said lower end of said bag and having an upper end to which said bag is detachably connected, and also having an open lower end; clamp means for attaching said bag to said upper end of said pipe; funnel conduit means detachably and selectively connectable at one end to one of said windows and extending from said window and generally downwardly to said upper end of said bag for transferring ensilage from the interior of said silo to said bag; means for attaching said conduit means to said bag, and said bag being telescopically collapsible upon said pipe so as to permit said bag to be collapsed thereon when less than said bag's entire length is needed to transfer said ensilage.

4,339,025  
**APPARATUS FOR FEEDING ARTICLES**  
Alan K. McCombie, London, England, assignor to Molins, Ltd., London, England  
Division of Ser. No. 597,431, Jul. 21, 1975, Pat. No. 4,099,608, which is a division of Ser. No. 234,833, Mar. 15, 1972, abandoned, which is a continuation of Ser. No. 875,402, Nov. 10, 1969, abandoned. This application Apr. 14, 1978, Ser. No. 896,381  
Claims priority, application United Kingdom, Nov. 14, 1968, 54034/68; Jan. 24, 1969, 4195/69; Jan. 24, 1969, 4196/69; Feb. 14, 1969, 8313/69; Feb. 28, 1969, 10941/69  
Int. Cl.<sup>3</sup> B65G 37/00, 1/04  
U.S. Cl. 198—347 37 Claims

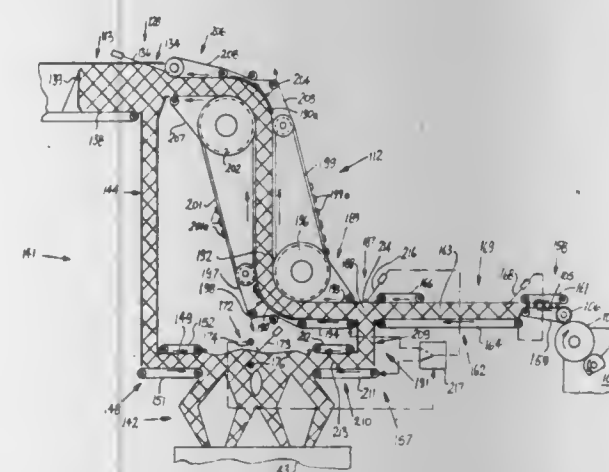


25. A mass flow conveyor system for feeding cigarettes or other similar rod-like articles of the cigarette industry sideways from an article-delivery device to an article-receiving device, including means defining a junction zone, a first horizontal overhead conveyor arranged to carry a stack of articles of predetermined thickness into said junction zone at one end thereof which is situated adjacent to said junction zone; means for supplying articles from said article-delivery device to said first conveyor; means defining an article flow channel extending downwards from said junction zone; a reservoir having its floor formed by a second overhead conveyor which is reversible and having one end extending horizontally from the junction zone on the side opposite to the first conveyor and at substantially the same level therewith, drive means for moving said second overhead conveyor in opposite directions to selectively draw articles from the junction zone which have been supplied thereto from said first conveyor or deliver articles into the junction zone for movement to said article flow channel; top wall means for setting the thickness of the stack of articles on the second conveyor at substantially said predetermined thickness at least at the end thereof adjacent said junction zone, said junction zone being unobstructed so as to permit articles to pass freely in said stack formation from said first conveyor through said junction zone to said second conveyor without materially changing direction; and sensor means for controlling said drive means to regulate the direction of motion of said second conveyor on the basis of the articles supplied to said junction zone.

4,339,026  
**APPARATUS FOR DELIVERING CIGARETTES OR THE LIKE FROM A MAKER TO A CONSUMING MACHINE**  
Horst Bäsé; Gerhard Tolasch, both of Hamburg, and Jürgen Bantien, Hamwarde, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany  
Continuation of Ser. No. 6,223, Jan. 24, 1979, abandoned, which is a continuation of Ser. No. 804,332, Jun. 7, 1977, abandoned. This application Mar. 14, 1980, Ser. No. 130,391  
Claims priority, application Fed. Rep. of Germany, Jun. 17, 1976, 2626157  
Int. Cl.<sup>3</sup> B65G 1/00 10 Claims

U.S. Cl. 198—347 10 Claims  
1. Apparatus for delivering streams of cigarettes, filter rod sections or analogous rod-shaped articles from a producing machine to a consuming machine which includes a magazine having a first side and a second side, comprising first advancing means defining a first path having a first inlet and a first outlet, said outlet communicating with one side of said maga-

zine and said advancing means including a first transporting unit which defines a first portion of said path starting at said first inlet, a second transporting unit which defines a second portion of said path ending at said first outlet, and a substantially horizontal variable-capacity reservoir having an open end communicating with said first path intermediate said first and second portions, said first transporting unit including a substantially horizontal conveyor upstream of said reservoir and said second transporting unit including a substantially vertical conveyor downstream of said open end; second advancing means including a third transporting unit defining a second path having a second inlet and a second outlet, said second outlet communicating with the other side of said magazine; switching means interposed between said producing machine and said inlets and operable to direct articles issuing from said producing machine into a selected inlet, including a junction which receives articles from said producing machine and communicates with said first and second paths; means for conveying articles sideways in the region of said switching means including a first conveyor arranged to transport a single row of articles, a second conveyor receiving articles from said first conveyor, means for driving said first conveyor at a first

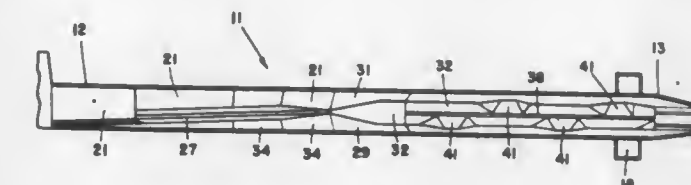


speed and means for driving said second conveyor at a lower second speed so as to effect the conversion of said single row into a multi-layer stream of articles in said second conveyor, said conveyors being disposed between said producing machine and said switching means; means for monitoring the quantity of articles in said magazine; means for monitoring the quantity of articles in said junction; means for operating said switching means to direct articles into said first inlet when the ratio of articles supplied by said producing machine to articles removed by said third transporting unit is above a predetermined value and to direct articles into said second inlet when said ratio drops to said predetermined value, said operating means including means for starting said first transporting unit when the quantity of articles in said magazine and said junction respectively rises to a first and a second predetermined value and for starting said third transporting unit when the quantity of articles in said magazine is below said first value but the quantity of articles in said junction reaches said second value; and means for varying the volume of said reservoir in dependency on the ratio of articles supplied by said producing machine through the first transporting unit to the articles fed to said consuming machine by the second transporting unit.

4,339,027  
**APPARATUS FOR ORIENTING HALVED FRUIT CUT SIDE DOWN**  
George E. Lauer, 6250 Melville Dr., Oakland, Calif. 94611  
Filed Nov. 10, 1980, Ser. No. 205,454  
Int. Cl.<sup>3</sup> B65G 47/24 6 Claims

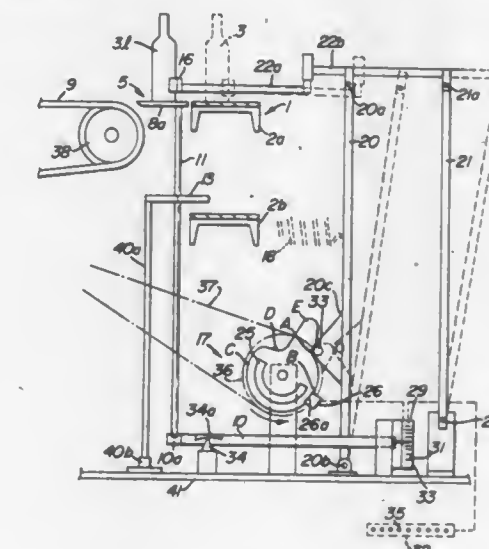
U.S. Cl. 198—383 6 Claims  
1. Apparatus for orienting halved, cored fruit pieces cut faces down and aligned along a common longitudinal axis, comprising a longitudinally extending table having a receiving end elevated above a discharge end; means for defining at least

one longitudinal channel on said table along which said fruit pieces translate, said means including a first side wall extending along the receiving portion of said channel; a bottom panel inclined laterally downwardly to intersect with said first wall; a second portion of said longitudinal channel coextensive with said receiving portion including a side channel disposed in concave fashion in said first side wall and extending therealong, said side channel adapted to engage an edge portion of each of said fruit pieces as they translate thereby; a third portion of said longitudinal channel contiguous with said second portion and including a trough formed in a portion of said bottom panel, said side channel urging said engaged edge



portions of said fruit pieces downwardly into said trough, said trough including generally planar, opposed sides and a V-shaped bottom, said opposed sides being spaced apart substantially less than the nominal width of said fruit pieces; a fourth portion of said longitudinal channel contiguous with said third portion and including a V-shaped bottom having walls extending the width of said longitudinal channel on which said cut faces of said fruit pieces impinge and slide; a fifth portion of said longitudinal channel contiguous with said fourth portion and including a planar, laterally extending bottom on which said cut faces land; and means for aligning said fruit pieces longitudinally.

4,339,028  
**METHOD AND APPARATUS FOR CHECKWEIGHING CONTAINERS**  
Thomas Meacle, Dun Laoghaire, Ireland, assignor to Powers Manufacturing Co., Elmira, N.Y.  
Filed Jul. 27, 1977, Ser. No. 819,305  
Claims priority, application Ireland, Oct. 13, 1976, 2256/76  
Int. Cl.<sup>3</sup> B65G 47/26; G01G 11/00  
U.S. Cl. 198—427 11 Claims



1. Apparatus comprising:  
(a) a delivery conveyor for conveying glass containers in a row in a first direction,  
(b) a Lehr conveyor for receiving glass containers and conveying them in a direction away from and generally perpendicular to said delivery conveyor,  
(c) a platform adjacent and between said conveyors, said platform being comprised of at least two portions, one portion of said platform being the pan of a weighing means,  
(d) a transfer means for simultaneously transferring a plural-



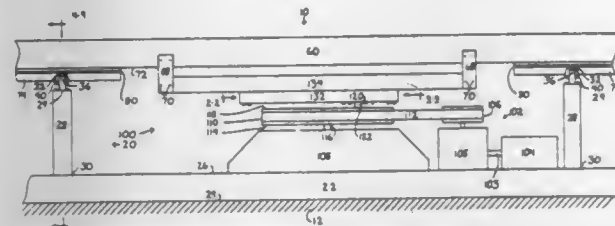
ity of glass containers off said delivery conveyor, across said platform, and to said Lehr conveyor, and  
(e) weighing means associated with said one platform portion weighing at least one container supported by said one platform portion before said containers are transferred as a row from the platform onto the Lehr conveyor.

#### 4,339,029 SHAKER CONVEYOR AND DRIVE MECHANISM THEREFOR

Dennis A. Wilson, 1805 S. Darrell Rd., McHenry, Ill. 60050  
Filed Feb. 9, 1981, Ser. No. 232,686  
Int. Cl.<sup>3</sup> B65G 25/04

U.S. Cl. 198—750

31 Claims



21. A shaker conveyor drive for use in affecting longitudinal reciprocating movement of a conveyor trough supported in a fixed guide way so as to be movable only longitudinally, said conveyor drive comprising, in combination, a fly wheel, means supporting said fly wheel for rotation about a first axis of rotation, an eccentric secured to said fly wheel on an upper fly wheel side, a reciprocating plate secured to said eccentric, said eccentric being eccentrically and rotatably mounted within said reciprocating plate and secured eccentrically thereto, and said shaker drive secured to a trough support for said conveyor trough, and said reciprocating plate rotatably and eccentrically mounted within said trough support.

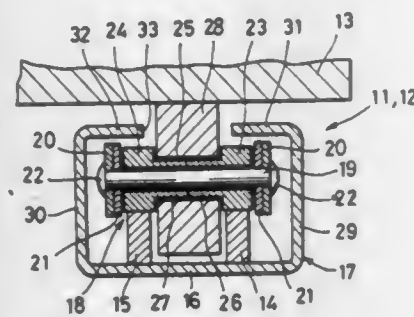
#### 4,339,030 CHAIN CONVEYOR FOR MOVING ARTICLES ACCUMULATABLY AT AN INCREASED SPEED

Yasunari Hirata, 5-21, Toroku 5-chome, Kumamoto-shi, Kumamoto-ken, Japan

Filed Sep. 8, 1980, Ser. No. 185,405  
Claims priority, application Japan, Apr. 3, 1980, 55-42871  
Int. Cl.<sup>3</sup> B65G 17/00

U.S. Cl. 198—779

8 Claims



1. A chain conveyor comprising:

- (a) rail means; and
- (b) a roller chain including a plurality of interconnected pins, a chain roller rotatably fitted over each of said pins and riding on said rail for being rollingly drivable therealong, and feed roller means having a diameter larger than that of said chain roller and loosely fitted over said chain roller for supporting thereon an article to be conveyed;
- (c) said feed roller means being frictionally engageable under the weight of the article with said chain roller for substantial corotation therewith upon said chain roller's being rollingly driven on said rail, whereby the article on

said roller can be conveyed at a speed larger than that of travel of said chain roller; and  
(d) said feed roller being rotatable in a direction opposite to the direction of rotation of said chain roller without substantial slippage against the article while the latter is being stopped, during rolling movement of said chain roller along said rail.

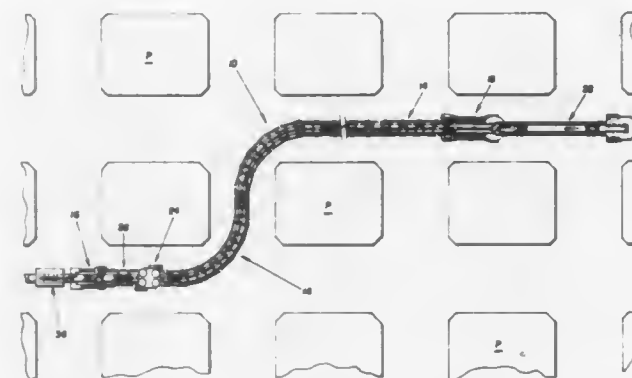
#### 4,339,031 MONORAIL SUSPENDED CONVEYOR SYSTEM

Neal W. Densmore, Franklin, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Oct. 1, 1979, Ser. No. 80,760  
Int. Cl.<sup>3</sup> B65G 41/02

U.S. Cl. 198—864

29 Claims



1. A material conveyor structure capable of traversing an elongated path having at least one curvilinear portion and which path is formed by a rail means spaced above a surface with respect to which material is to be transported comprising, a plurality of framework members arranged in tandem below such a path to form an elongated carriage train with each of said framework members having an upper elongated link extending at least in the general direction of such a path, connector means cooperable with the ends of said links, respectively, to support adjacent ones of said links for a universal type of relative movement therebetween, said connector means including means adapted to cooperate with such a rail means to provide for unitary movement of said carriage train along such a path, said framework members being swingable about axes extending longitudinally of said links, respectively, said framework members including means for supporting an orbitally movable conveyor belt below said links with a continuous conveying run thereof operable to convey material throughout the longitudinal extent of said carriage train, and cooperable means carried by adjacent portions of said framework members, respectively, to maintain said framework members in an alignment that said conveying run is capable of conveying material with respect to said carriage train as said carriage train travels along such a path.

#### 4,339,032 BOTTLE CARRIER WITH PERIPHERAL SKIRT

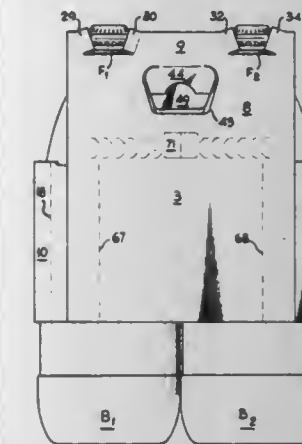
Prentice J. Wood, Hapeville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 10, 1980, Ser. No. 205,533  
Int. Cl.<sup>3</sup> B65D 85/62; B66C 1/10; B65D 75/00  
U.S. Cl. 206—158

16 Claims

1. A bottomless carrier for accommodating a plurality of bottles arranged in close side-by-side relationship, which carrier comprises a pair of opposing side walls flanking wall portions of the bottles, said side walls including mutually inclined upper portions directly hinged together and providing a top of the carrier, said top having a bottle-neck receiving aperture for each bottle and including bottle-neck engaging means provided by said upper portions of the side walls to

support the bottle when the carrier is lifted, an end wall connecting together lower portions of said side walls at each end of the carrier and providing, together with lower portions of said side walls, a peripheral skirt to maintain the bottles in close



side-by-side relationship, characterized in that at least one tie element connects together said upper portions of the side walls to limit movement of said upper portions away from one another.

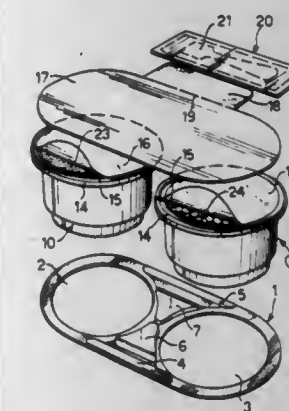
#### 4,339,033 PACK FOR CONFECTIONERY PRODUCTS

Lorenzo Cillario, Alba, Italy, assignor to Ferrero S.p.A., Alba, Italy

Filed Nov. 26, 1980, Ser. No. 211,539  
Claims priority, application Italy, Jan. 10, 1980, 52820/80[U]  
Int. Cl.<sup>3</sup> B65D 85/62

U.S. Cl. 206—216

12 Claims



1. A pack for confectionery products, comprising:  
a support plate formed to define two apertures therein;  
two pots inserted in respective ones of the said two apertures of the support plate and containing two different types of product, each pot having a mouth and being formed in correspondence therewith with a peripheral flange which rests on said support plate, each said pot being further provided with a seal of sheet material closing off the mouth of the pot;  
an adhesive label which has a profile corresponding to the outline of said support plate and is applied to this plate in such a manner as to adhere both to the plate and to the seals of the said two pots;  
a tongue extending from one portion of the boundary of the adhesive label, said tongue having an adhesive face and being separable from the said label by tearing; and  
a flexible flat container which can be torn open and contains a small spoon, said container being carried by the said tongue due to adhesion between the adhesive face of the tongue and the container.

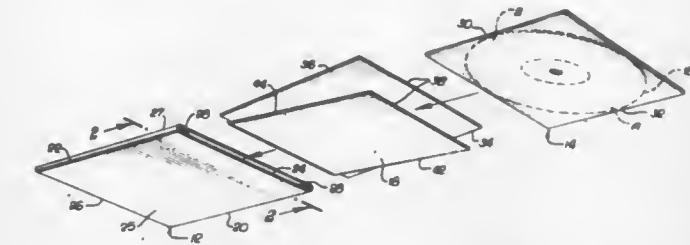
#### 4,339,034 DISC JACKET WARP FREE INSERT

Mike Panveno, Canoga Park, Calif., assignor to Albem Graph-ics, Inc., Hollywood, Calif.

Filed Aug. 3, 1981, Ser. No. 289,762  
Int. Cl.<sup>3</sup> B65D 85/30, 85/57

U.S. Cl. 206—313

7 Claims



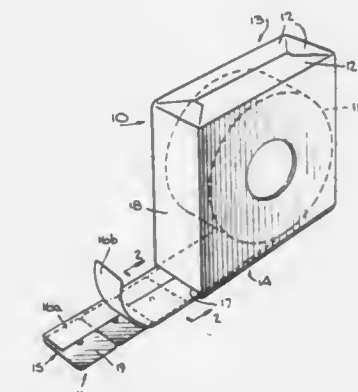
1. In a disc jacket having a plurality of flaps forming elongated ridges, the improvement comprising a removable disc protector having first and second members, with said first member disposed between said flaps and adjacent said ridges, and said second member having outwardly extending arms disposed beneath said flaps, said second member for urging said disc into contact with said flaps along the length thereof, whereby a disc is retained between said flaps and said protector so as to equalize the forces on the edges of said disc.

#### 4,339,035 DISPENSING PACKAGE FOR NIPPLE MARKERS

Robert Marcus, 8201 Henry Ave., Apt. M16, Philadelphia, Pa. 19128; Warren B. Geffer, 243 Wiltshire Rd., Wynnewood, Pa. 19151, and Wallace T. Miller, 3105 Coulter St., Philadelphia, Pa. 19129

Filed Dec. 18, 1980, Ser. No. 217,781  
Int. Cl.<sup>3</sup> B65D 5/72, 85/671; G21F 3/00  
U.S. Cl. 206—370

7 Claims



1. A dispensing package for nipple markers for use in chest X-ray procedures comprising tape supply means, an elongated base tape disposed in said supply means and dispensable therefrom, a plurality of flexible adhesive members releasably adhered to said base tape, each such member having a nipple marker of a material substantially opaque to X-rays adhered thereto, each said member being manually removable from said base tape together with its respective nipple marker for releasable adherence to the human body.

#### 4,339,036 CONTAINER VENTING ARRANGEMENT

James R. Jensen, Fremont, Calif., assignor to Container Corporation of America, Chicago, Ill.

Filed Dec. 18, 1980, Ser. No. 217,903  
Int. Cl.<sup>3</sup> B65D 85/50, 51/16

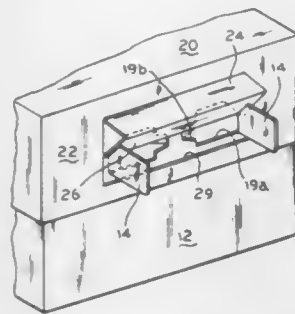
U.S. Cl. 206—423

3 Claims

1. A venting arrangement for a container having telescoping tray and cover members, comprising:  
(a) a tray member having at least one side wall including:  
(i) a pair of lock tabs formed from material of said side

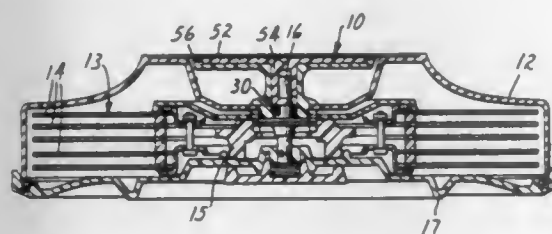


- wall and foldably joined thereto on vertical axes for movement outwardly from the plane thereof to provide vent openings therein;
- (ii) a pair of access tabs formed of material of said side wall and foldably joined thereto on vertical axes for movement inwardly from the plane thereof to provide openings for finger access to said lock tabs;
- (b) a telescoping cover member having at least one side wall disposed outwardly adjacent said tray member side wall and having a cover flap formed from material of said cover member side wall adjacent said tray member lock tabs and including:
- (i) a first section foldably joined to said cover member side wall on a horizontal axis;



- (ii) a second section foldably joined to said first section on a horizontal score line;
- (iii) said sections being foldable outwardly from the plane of said cover member side wall and into converging planes to expose said tray member side wall vent openings when said lock tabs are folded outwardly at an angle of 90° to said tray member side wall, said lock tabs being disposed in a parallel and spaced apart relationship;
- (c) said first and second sections being foldable at an angle to each other, lower edges of said second section being disposed within the side wall vent openings and being securely engageable with said tray member lock tabs to maintain said cover flap in open position.

**4,339,037**  
**MOLDABLE HANDLE FOR DISK PACK ASSEMBLY**  
 Arlin B. Doering, South St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.  
 Filed Nov. 6, 1980, Ser. No. 204,631  
 Int. Cl.<sup>3</sup> G11B 1/02; B65D 85/57, 25/28  
 U.S. Cl. 206—444 6 Claims

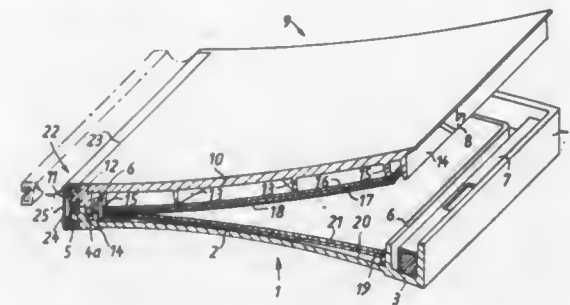


1. A handle adapted for releasably engaging an axle in a computer disk pack memory unit, said handle including:
- a first part comprising a stem portion having a contact surface, a through passageway having an axis and opening through said contact surface, and an inwardly projecting lip adjacent said contact surface decreasing the transverse area of said passageway to closely receive the axle;
- a plurality of pins fixed in said first part and having portions projecting from said contact surface in a direction generally parallel with said axis, said pins being adapted to engage the axle;
- a second part comprising a portion fixed in said passageway and entering said passageway on the end of said stem portion opposite said projecting lip, said second part hav-

ing a distal end spaced from said lip and having a cavity opening through said distal end; and

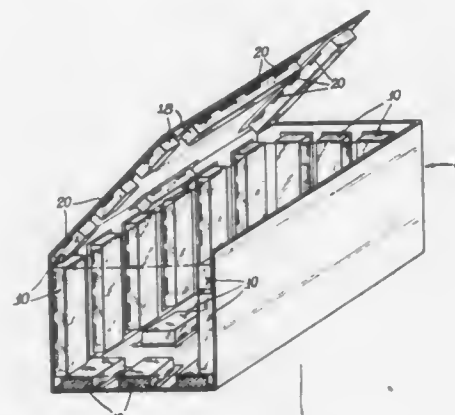
one of said parts includes a portion adapted for manual engagement extending generally transverse of said axis.

**4,339,038**  
**REINFORCED FLEXIBLE X-RAY FILM CASSETTE**  
 Walter Bauer, Munich, Fed. Rep. of Germany, assignor to AG-FA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
 Filed Apr. 21, 1980, Ser. No. 142,086  
 Claims priority, application Fed. Rep. of Germany, Apr. 30, 1979, 2917546  
 Int. Cl.<sup>3</sup> G03B 41/16  
 U.S. Cl. 206—455 30 Claims



1. A film cassette, especially for x-ray film, comprising a pair of cassette parts; hinge means connecting said cassette parts to one another for displacement between an open and a closed position; and means defining a film-accommodating space in the cassette including cooperating ribs on said cassette parts which at least partly bound said space, said ribs overlapping and being in shape-maintaining engagement with one another in said closed position, and each of said ribs having a pair of surfaces which are inclined relative to one another at a small angle so as to impart a wedge-shaped configuration to said ribs and cause the latter to be in said shape-maintaining engagement in said closed position.

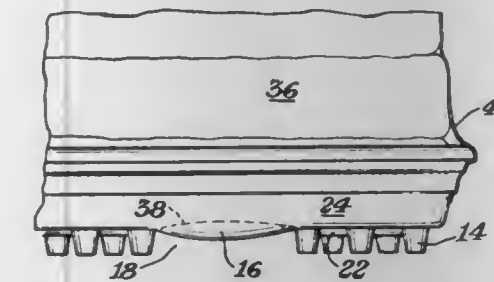
**4,339,039**  
**IMPACT RESISTANT FOAM CUSHIONED PACKAGES**  
 Laurie G. Mykleby, Palos Park, Ill., assignor to First National Packaging Co., Inc., Palos Park, Ill.  
 Filed Jul. 25, 1980, Ser. No. 172,276  
 Int. Cl.<sup>3</sup> B65D 81/04, 85/30  
 U.S. Cl. 206—523 12 Claims



10. A package for articles having improved dynamic resistance to applied forces comprising a container and a plurality of cushions secured to the inside of said container, said cushions comprising compressible foam material, pliable non-porous covering means for contiguously covering said foam material, and air flow controlling means in said covering means controlling the escape of air from said foam material when said foam material is compressed, whereby said article is supported

by said cushions and is held snugly in place by said cushions when said container is closed.

**4,339,040**  
**FORK LIFT PALLET CONSTRUCTION**  
 Charles A. Peil, Midland, and John W. McLaren, Beaverton, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.  
 Continuation of Ser. No. 904,836, May 11, 1978, abandoned.  
 This application Dec. 17, 1979, Ser. No. 104,209  
 Int. Cl.<sup>3</sup> B65D 19/00  
 U.S. Cl. 206—599 8 Claims



1. A lightweight pallet of from between about 2½ to about 9 pounds in weight and having a raised load supporting platform, the pallet comprising:
- (a) a thin flexible sheet of heat-formable thermoplastic material, said flexible sheet comprising the load supporting platform of the pallet;
- (b) a rigid base in the vertical direction, the base supporting said flexible sheet in a normally disposed horizontal, raised position, and being characterized by sufficient rigidity to resist substantial compressive deformation under a compressive load, uniformly applied over the horizontal load supporting area of the flexible sheet, of 300 times the weight of the pallet;
- (c) the rigid base comprising hollow thin-walled ground engageable column means, said base comprising from between about 10 to about 40 column means for each square foot of the horizontal load supporting area of the flexible sheet; said column means being from between about ½ to about 2 inches in depth and comprising depressions formed in the flexible sheet;
- (d) the flexible sheet comprising stiffening rib means integrally formed therein and further comprising a pair of non-ground supported, laterally spaced and parallel flexible sheet portions engageable at the underside with the tines of a lift fork;
- (e) said rigid base and flexible sheet being formed integrally of a heat formable sheet of thermoplastic of from between about 30 to about 120 mils average sheet thickness.

**4,339,041**  
**COMPOSITE PACKAGING SYSTEM INCLUDING AN OUTER PARALLELOGRAM CONTAINER ADAPTED TO HOLD A PLURALITY OF WEDGE SHAPED INNER CARTONS**

Harry H. Roberts, Roswell, Ga., and Raymond A. Cote, Taylorsville, N.C., assignors to Champion International Corporation, Stamford, Conn.  
 Continuation-in-part of Ser. No. 161,027, Jun. 19, 1980, Pat. No. 4,313,542, which is a continuation-in-part of Ser. No. 57,164, Jul. 13, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 179,109  
 Int. Cl.<sup>3</sup> B65D 5/54 9 Claims

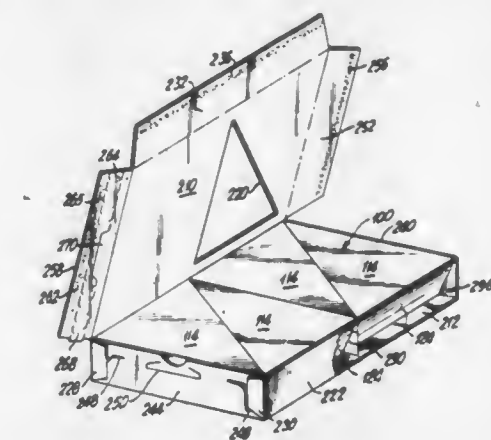
1. A composite packaging system including a plurality of individual wedge shaped cartons each configured to hold a piece of pie, and an outer parallelogram carton adapted to hold an even number of wedge shaped cartons, said composite packaging system comprising:
- at least two wedge shaped cartons, each wedge shaped

carton being formed of a one piece foldable cardboard blank and having a slanted end wall, said carton thereby conforming to the configuration of, and useful for containing a wedge shaped piece of pie having a slanted crust portion, said wedge shaped carton including

a triangular bottom panel having a base edge and two side edges;

a triangular top panel disposed in spaced, parallel relationship with said bottom panel and having a base edge and two side edges, with the length of the base edge of said top panel being greater than the length of the base edge of said bottom panel, and with the length of said top panel measured along an imaginary line extending perpendicularly from the associated base edge to the opposed apex thereof being greater than the length of said bottom panel measured along an imaginary line extending perpendicularly from the associated base edge to the opposed apex thereof;

a pair of side walls extending between the associated side edges of said top and bottom panels and disposed perpendicular thereto, each said side wall being formed of inner and outer side wall members, with the bottom edge of each said inner side wall member being hingedly connected to the associated side edge of said bottom panel, and with the top edge of each said outer side wall member being hingedly connected to the associated side edge of said top panel, and with each said outer side wall member overlying and being adhesively connected to the associated inner side wall member, and wherein each said outer



side wall member further includes a pair of spaced, intermittent cut lines extending along the length thereof and defining a tear strip to permit easy opening of the carton;

a trapezoidal end wall having top, bottom and side edges, with said top edge of said end wall and said base edge of said top panel being hingedly connected and of equal length and with said bottom edge of said end wall and said base edge of said bottom panel being hingedly connected and of equal length, and with said side edges of said end wall being respectively connected to the adjacent side edges of said side walls, and with said end wall sloping outwardly away from the interior of said carton, from said bottom edge to said top edge, such that said carton conforms to the shape of said pie piece with said sloping end wall functioning to provide increased protection and support to the slanted crust portion thereof;

said packaging system further including a tubular outer carton having a general parallelogram configuration in plan, said outer carton including, top and bottom panels disposed in spaced apart parallel relationship, each said top and bottom panels being substantially identical and having a parallelogram configuration; and

an upstanding tubular side wall including alternately hingedly connected opposed side and end panels, said side wall being hingedly connected around the periphery of said top and bottom panels and extending therebetween, with said hinged connections forming said side wall defining first and second pairs of opposed corner portions, with each corner portion of said first pair being an acute angle,



substantially equal to the included angle defined by a base edge and a side edge of the top panel of a wedge shaped carton, and with each corner portion of said second pair being at an obtuse angle substantially equal to the sum of two angles, the first of said two angles being said acute angle and the second of said two angles being the included angle defined by the side edges of a top panel of a wedge shaped carton, and with the length of each said side panel of said outer carton being substantially equal to the sum of the lengths of the base edges of each triangular top panel of the wedge shaped cartons, housed within said outer carton divided by two, with the width of said outer carton, measured along an imaginary line perpendicular to both said opposed side panels, being substantially equal to said length of a top panel of said wedge shaped carton, and with the height of said outer carton being substantially equal to the height of a wedge shaped carton, said wedge shaped cartons being disposed within said outer carton in an array wherein said base edges of said top panels are disposed in abutting relationship with one of said opposed side wall panels, with contiguous adjacent wedge shaped cartons being oriented in opposite directions, such that the side walls of each adjacent contiguous wedge shaped carton are disposed in coplanar abutting relationship, and wherein the wedge shaped cartons, which are located adjacent said end panels of said outer carton, are disposed such that one corner thereof, defined by the juncture of a base edge and side edge of said top panel of said wedge shaped carton, coincides with one said acute corner portion of said first pair, whereby said wedge shaped cartons are securely held and prevented from shifting within said outer carton thereby reducing the likelihood of damage thereto.

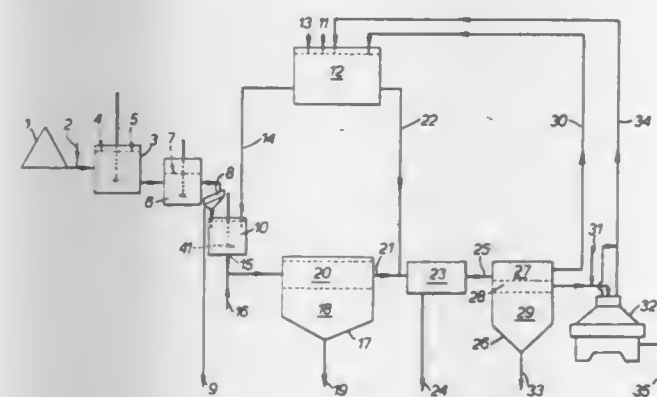
4,339,042

## TREATMENT OF MINERALS

William Windle; Charles H. Lofthouse, both of St. Austell, and Howard L. Shergold, Farnborough, all of England, assignors to English Clays Lovering Pochin & Company, Ltd., Cornwall, England

Continuation of Ser. No. 875,382, Feb. 6, 1978, abandoned, which is a continuation of Ser. No. 754,952, Dec. 28, 1976, abandoned, which is a continuation of Ser. No. 451,205, Mar. 14, 1971, abandoned. This application Feb. 28, 1979, Ser. No. 16,158 Claims priority, application United Kingdom, Mar. 19, 1973, 13174/73

Int. Cl.<sup>3</sup> C09C 1/42; B03B 1/04; B03D 3/06  
U.S. Cl. 209—5 14 Claims



1. In a process for separating from a mixture of mineral components at least one of said components, the mixture of mineral components being in the form of an aqueous suspension containing up to 60% by weight of said mixture of mineral components, the improvement which comprises:

(a) continuously feeding said aqueous suspension to an in-line mixer positioned downstream from the point of formation of said aqueous suspension, the aqueous suspension being fed to said in-line mixer at a dilution such that the

solids content thereof is not greater than about 20% by weight;

(b) feeding to said in-line mixer, from a reservoir, a non-polar organic liquid in which there has been dissolved or suspended an anionic collector for at least one component of said mixture of mineral components, the rates of feeding said aqueous suspension and said non-polar organic liquid to said in-line mixer being such that the volume ratio of said aqueous suspension to said non-polar organic liquid is in the range of from 1:1 to 9:1;

(c) mixing together said aqueous suspension and said non-polar organic liquid containing said ionic collector in said in-line mixer by causing said aqueous suspension and said organic liquid to flow through said in-line mixer while maintaining agitation therein, the residence time of said aqueous suspension and said organic liquid in said in-line mixer and the rate of agitation being such that:

(i) the total energy dissipated during said mixing is in the range of from  $3 \times 10^4$  to  $30 \times 10^4$  joules per kg of the mixture of mineral components, calculated on a dry weight basis, and the total time taken to dissipate said energy in the mixture does not exceed 8 minutes; and

(ii) one liquid is uniformly dispersed in the other but a stable emulsion is not formed, whereby at least said one component of the mixture of mineral components becomes concentrated at the interface between the non-polar organic liquid phase and the aqueous liquid phase, and the remaining one or more components of said mixture of mineral components becomes concentrated in the aqueous liquid phase;

(d) discharging from the in-line mixer a mixture comprising said non-polar organic liquid phase and said aqueous liquid phase;

(e) separating the two liquid phases discharged from the in-line mixer; and

(f) recovering from the non-polar organic liquid phase at least a portion of said organic liquid and returning it to said reservoir for recycling in said process.

4,339,043

## PORTABLE MINING APPARATUS

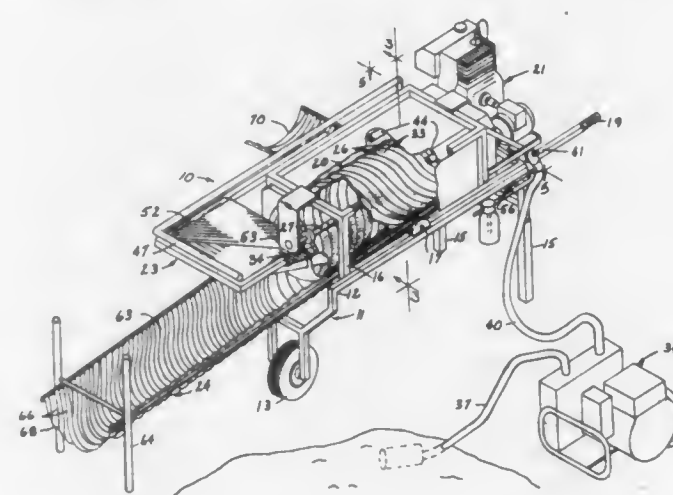
Richard P. Tice, and Isabelle L. Tice, both of N. 3211 Nelson, Spokane, Wash. 99206

Filed Feb. 2, 1981, Ser. No. 230,860

Int. Cl.<sup>3</sup> B03B 7/00

U.S. Cl. 209—44

28 Claims



1. A portable mining apparatus for classifying placer material into sized and oversized grades and recovering values therefrom, comprising:

a portable frame;

a hollow trommel mounted to the frame for rotation about a central trommel axis having an open feed end and an opposed discharge end;

said trommel having a continuous perforated wall formed about the central axis for passing the sized grade and retaining the oversized grade of the placer material; said perforated wall having spiral corrugations disposed angularly along the trommel axis in a helix configuration so that rotation of the trommel will result in axial movement of free placer material held therein to agitate the material to continuously present sized grade material to the perforations of the wall and for delivering oversized grade out through a discharge end; a hollow axle, coaxial with the central axis, mounting said trommel to the frame; wherein said axle includes a plurality of apertures spaced along its length; drive means on the frame for rotating the trommel about the central axis; pump means having a discharge connected to the hollow axle for pumping water through the axle apertures and into the trommel; elongated sluice means mountable below said trommel for receiving water and sized grade material at an intake end from the trommel and for concentrating values from the sized grade; a suction tube operably mounted to the frame; suction pump mounted to the suction tube for collecting water and concentrate from the sluice means; a settling tank connected to the suction tube for receiving water and concentrate; and a discharge tube leading from the settling tank to the intake end of the sluice for recycling water and placer material not collected within the settling tank.

4,339,044

## INSTALLATION FOR INSPECTING AND SORTING PRINTED SHEETS OF PAPER

Claude Grosvernier, Hauterive, Switzerland, assignor to Compagnie Industrielle Radioelectrique, Switzerland

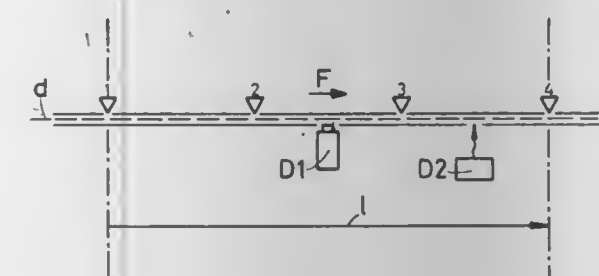
Filed May 14, 1980, Ser. No. 149,563

Claims priority, application Switzerland, May 31, 1979, 5066/79

Int. Cl.<sup>3</sup> B07C 5/00

U.S. Cl. 209—564

3 Claims



1. An installation for inspecting and sorting printed sheets of paper comprising means for continuously transporting said sheets along a linear transfer path along which are disposed a plurality of devices for inspecting the sheets according to different criteria, and a switch at the end of the transfer path, controlled by the inspecting devices, for sorting the sheets into "accepted" sheets and "rejected" sheets, wherein the installation comprises associated with each inspection device, a device for detecting the passage of the sheets and a cyclic counter for assigning a consecutive number of a repeating series to each sheet detected, a reference memory in respect of each number assigned by the counters, shift registers between each of the inspection devices and the reference memories, a logic circuit between the counters and the reference memories for directing information from the inspection devices to the reference memory which corresponds to the number assigned to a sheet by the counters, and means for determining the position of the switch from the memorized signals.

4,339,045

## SWITCH PLATE ARTICLE HOLDER

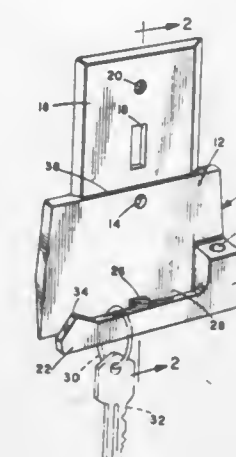
Leo Bodin, 2770 Dennis La., Lemon Grove, Calif. 92045

Filed Jun. 3, 1980, Ser. No. 156,184

Int. Cl.<sup>3</sup> A47F 7/00

U.S. Cl. 211—13

5 Claims



1. An article rack for mounting on a wall switch comprising: a mounting plate adapted to be detachably secured to a wall mounted electrical switch, an arm spaced outward from said mounting plate and extending horizontally, parallel to the plate for receiving and holding a key ring and the like, a first support block member supporting said arm on said mounting plate, a vertically open horizontally elongated slot extending across the face of said plate for receiving the side piece of a pair of glasses, a stop member extending upward from said upper surface at the outer end of said arm, a vertically oriented bore formed in said first block member for receiving and holding a pencil.

4,339,046

## NURSING BOTTLE

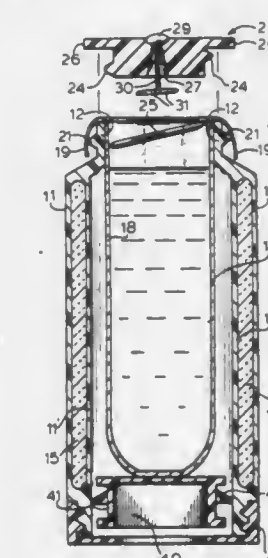
Robert Coen, 9 Briarcliff Dr., Port Washington, N.Y. 11050

Filed Jan. 26, 1981, Ser. No. 228,060

Int. Cl.<sup>3</sup> A61J 9/04

U.S. Cl. 215—11 B

8 Claims



1. A nursing unit comprising: an open-ended, elongated, tubular nursing holder having a hollow sidewall and a neck portion at one open end thereof; a disposable, collapsible, liquid-retaining bag open at one end thereof received within said tubular nursing holder, said bag having an upper marginal portion adjacent to said open end thereof folded outwardly and over the external surface of said neck portion;



a plug member at least partially received within said neck portion adapted to clamp a portion of said bag adjacent to said upper marginal portion thereof against the internal surface of said neck portion, said plug member having an axial bore formed therethrough and a one-way check valve associated therewith for allowing liquid to be withdrawn from said bag while serving to prevent the entry of air thereinto;

a nipple mounted on said neck portion; and

a piston slidably retained in an air-tight manner within said holder beneath said bag which, upon withdrawal of the liquid from the bag and as a result of the vacuum generated in the bag and the prevailing ambient atmospheric pressure, is caused to move against said bag causing the collapse thereof so that the effective inner volume of the bag always substantially equals the volume of the liquid remaining therein.

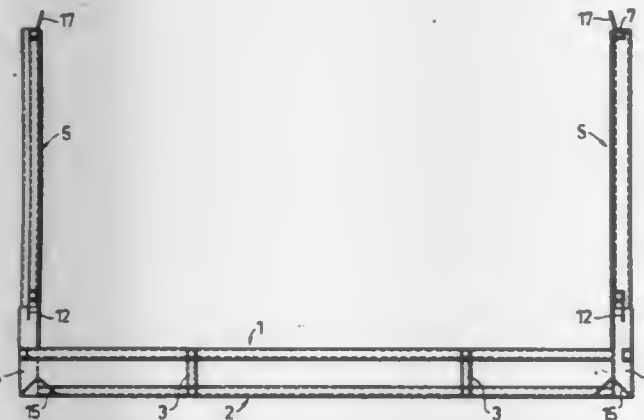
4,339,047

# **- COLLAPSIBLE STORAGE AND TRANSPORT CRATE CAPABLE TO BE STACKED**

Ingvar H. Johansson; Helle G. Johansson, both of Alvesta; Kurt Webing, Helsingborg, and Gunnar Thulin, Ängelholm, all of Sweden, assignors to AB Maskinarbeten, Alvesta, Sweden  
Filed Jul. 24, 1980, Ser. No. 171,819  
Int. Cl.<sup>3</sup> B65D 21/02, 88/02, 6/18

U.S. Cl. 220-1.5

3 Claims



1. A collapsible storage and transport crate capable of being stacked upon each other, each crate consisting of a square bottom (1,2) and two lateral pieces (5) arranged straight opposite to each other, which bottom is formed for handling the crate from all its four sides, and provided in each corner with an upwardly open pipe connecting piece (4) which is extended above the floor surface of the bottom by a portion of its shell surface (8) facing outward of the crate and is further provided with a slit (11) extending in the longitudinal direction of the connecting piece (4) in a plane parallel to the lateral piece, the lateral piece (5) being provided at its lower portion with downwardly directed pins (13), which are axially movable in two adjacent connecting pieces (4) and that heads (14) attached to the pins and extending perpendicularly to the pins extend into said respective slit (11), the bottom (1,2) having lower longitudinal frame stays extending between the lowermost ends of the connecting pieces (4), each connecting piece (4) having a guide boss (12) arranged with one guide surface (18) extending along the plane of the lateral piece towards the opposed connecting piece and starting from the inner edge of the upper end of the connecting piece and obliquely upwards to a point above the upper end side of the connecting piece (4) lying on a horizontal plane, a downwardly open V-shaped profile (15) starting from the inner edge of the respective connecting piece being arranged below and along the respective lateral piece (5), walls (16) being arranged in the profile converging towards each other to form two downwardly open pyramid-shaped pockets spaced from the connecting piece (4), the lower edges of the

profiles being on a level with the lower end sides of the connecting pieces, and each lateral piece (5) having on its upper edge two upwards wedge-shaped tongues (17) extending above the upper edge and inclined towards the center of the crate, each intended to fit into each its pocket of a crate placed above crates, so that when the crates are stacked upon each other, the lower end sides of the connecting pieces (4) of a crate placed above is guided by unfolded lateral pieces to a position resting on the upper end side of the respective connecting piece by means of the guide surfaces of the guide bosses (12) and the V-shape of the profiles.

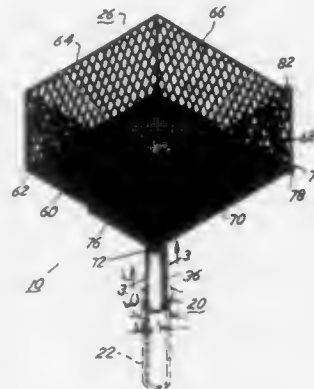
4,339,048

# **GARBAGE BAG HOLDER**

Bruce A. McMillen, and Beverly A. Cortier, both of 26013 U.S. 20, South Bend, Ind. 46628  
Filed Aug. 18, 1980, Ser. No. 178,699  
Int. Cl.<sup>3</sup> B65D 25/24, 6/08

U.S. Cl. 220-18

8 Claims



1. A garbage bag holder for minimizing accessibility to garbage bags by animals, comprising four side walls forming a rectangularly shaped basket for holding the bags to prevent them from tipping out of said basket, a perforated bottom on which the bags are placed, one of said side walls being pivoted to said bottom for swinging downwardly to open the respective side and provide free access to the basket, means joining the other three side walls to form a rigid structure, a pedestal disposed under said bottom of said basket for supporting said basket in spaced relation to the ground, and means having a vertical opening for releasably holding said pedestal in an upright position with the basket spaced above the ground.

4,339,049

# **CONTAINERS FOR USE IN A SELF SUPPORTING ASSEMBLY**

Peter J. Gillespie, Barrington, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 17, 1980, Ser. No. 141,075

Int. Cl.<sup>3</sup> B65D 21/02

U.S. Cl. 220-23.4

2 Claims

1. An assembly of battery cell containers stacked together with side walls in facing engagement adapted to prevent relative movement of containers in planes parallel to the side walls and further adapted to provide longitudinal channels for coolant flow between adjacent facing side walls, each of said containers comprising:

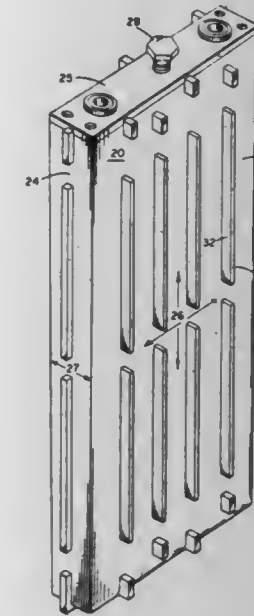
a pair of oppositely facing parallel side walls of generally rectangular shape and pairs of oppositely facing end walls defining an internal chamber for an electrochemical cell requiring cooling;

each of said side walls having rectangular external surfaces at the side surfaces of the container facing the corresponding side surface of an adjacent container;

each of the side surfaces having a first and a second plurality of ribs projecting perpendicularly therefrom with surfaces

contiguous to corresponding rib surfaces on an adjacent container side surface;

said first plurality of ribs including elongated first and second pairs of ribs longitudinally coextending along each side surface of each container, the first pair of ribs laterally spaced apart sufficiently to receive the second pair of ribs of an adjacent facing side surface between said first pair in coextensive contact at longitudinal rib surfaces perpendicular to the side surface of the container whereby relative lateral and rotational motion in planes parallel to the container side surfaces are restrained, and whereby longitudinal channels for coolant flow are provided between the ribs of the second pair;



said second plurality of ribs including first and second pairs of rib-like end posts at both outer lengthwise margins of the side surface beyond the length of the first plurality of ribs, each end post of both the first and second pairs being longitudinally offset from the other end post in the pair such that the first pair of end posts receives the second pair of end posts on an adjacent facing side surface in contact at lateral post surfaces perpendicular to the container side surface and perpendicular to the longitudinal rib surfaces of said first plurality whereby relative longitudinal and rotational motion in planes parallel to the container side surfaces are restrained.

4,339,050

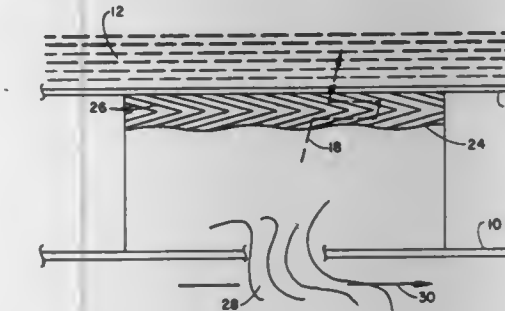
**LOUVRE BUFFER FIRE PREVENTION SYSTEM**  
Jack R. Bates, Ridgecrest, and William E. Collier, Jr., China Lake, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 3, 1980, Ser. No. 203,012

Int. Cl.<sup>3</sup> B65D 25/34

U.S. Cl. 220-437

6 Claims



1. A fire prevention system for fuel tanks ruptured by explosive incendiary projectiles comprising:

a collapsible plurality of louvres mounted to the outside of said fuel tank by epoxy bonding, said louvres being shaped to have a predetermined overlap with adjacent louvres,

said louvres having a noncollapsed configuration prior to the explosion of said explosive incendiary projectile and a collapsed configuration caused by the explosion of said explosive incendiary projectile, such that any straight line path through the uncollapsed configuration is disrupted by the collapsed configuration; and

a cover placed over said louvres on the opposite side of said louvres from said fuel tank, said cover forming a pressure surface that collapses with the collapsible louvres if a predetermined pressure occurs on the opposite side of said cover from said louvres.

4,339,051

# **SILVERWARE BASKET**

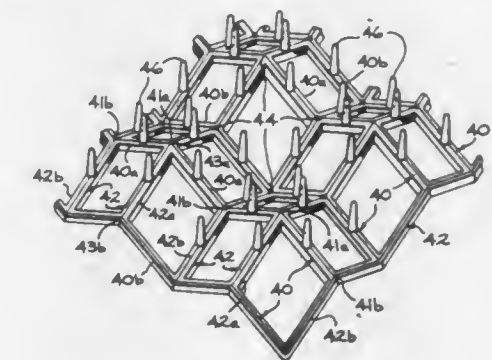
John G. Crawford, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Aug. 18, 1980, Ser. No. 179,344

Int. Cl.<sup>3</sup> B65D 7/20, 7/42; A47G 19/08; B08B 13/00

U.S. Cl. 220-66

9 Claims



1. A silverware basket for use in a dishwasher comprising: a perforate bottom wall and sidewalls extending upwardly from said bottom wall defining a space for receiving items to be washed; said bottom wall being formed of a first plurality of parallel undulating ribs, each rib being spaced apart horizontally and vertically from its adjacent ribs, and a second plurality of parallel undulating ribs extending at an angle to said first plurality of ribs, each one of said second plurality of ribs being spaced apart vertically and horizontally from its adjacent ribs, each one of said first plurality of ribs intersecting each one of said second plurality of ribs such that each point of intersection is displaced vertically from its adjacent points of intersection.

4,339,052

# **SECONDARY SEAL FOR FLOATING ROOF STORAGE TANKS**

Richard E. Hills, Corsapolis, and Thomas J. Tague, Pittsburgh, both of Pa., assignors to Pittsburgh-Des Moines Corporation, Pittsburgh, Pa.

Filed Jun. 11, 1981, Ser. No. 272,647

Int. Cl.<sup>3</sup> B65D 87/207

U.S. Cl. 220-226

10 Claims

1. A secondary seal for a floating roof located in a tank shell comprising:

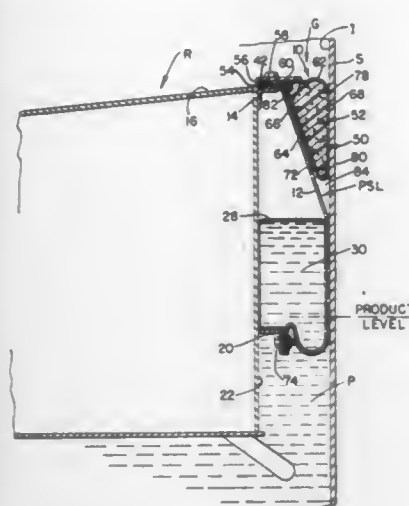
a body substantially in the shape of a right triangle having a pair of legs connected to a hypotenuse;

a mounting means connected to a floating roof substantially at the top of such floating roof;

said body being connected to said mounting means and oriented so that said hypotenuse extends from said roof top to a location below said roof top away from said floating roof, and one leg extends outwardly from said floating roof to form an extension of such roof and to be



essentially co-level with the rim of that roof, the other leg of the body being positioned to contact a wall of the tank

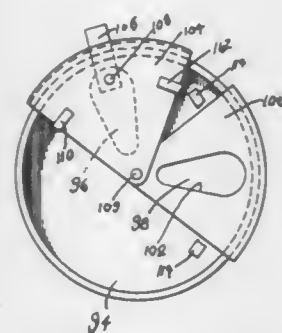
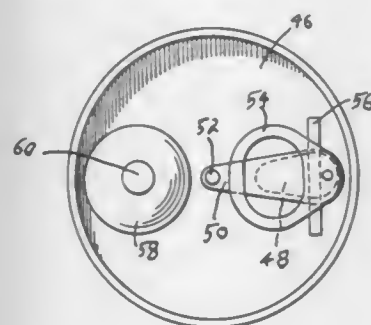


shell, and said hypotenuse being located to contact an upper portion of a primary seal.

**4,339,053**  
**CONTAINER WITH ATTACHED PULL TAB OPENER AND INDICATOR**  
Richard E. Tarro, 425 Broadway, Providence, R.I. 02909  
Continuation-in-part of Ser. No. 940,354, Sep. 7, 1978, Pat. No. 4,234,099, Continuation-in-part of Ser. No. 422,265, Dec. 6, 1973, Continuation-in-part of Ser. No. 603,590, Aug. 11, 1975, Pat. No. 4,008,823, Continuation-in-part of Ser. No. 744,196, Nov. 22, 1976, abandoned. This application Feb. 11, 1980, Ser. No. 120,671  
Int. Cl.<sup>3</sup> B65D 17/34

U.S. Cl. 220-269

9 Claims



4. A pull tab opener device for a container having a metal top comprising a scored portion outlining the opening of a generally oval shape aligning axially with a radius of the top, a pull tab attached to said scored portion adjacent one end thereof, and means for indicating that said container has been opened, a portion of said means remaining on said top after said container has been opened, said top being provided with an indicating area that is biased from the horizontal by either internal or external pressure, said area snapping back to the horizontal when said scored portion has been opened.

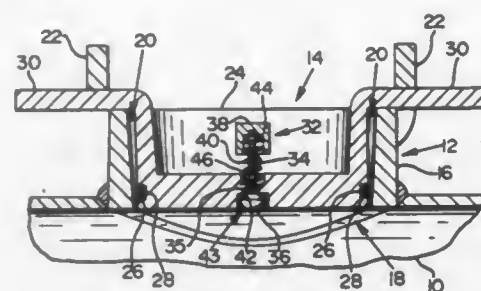
**4,339,054**  
**PRESSURE RELIEVED PLUG AND SOCKET CLEANOUT ASSEMBLY**

Charles W. Kellogg, 18220 NE. Cramer Rd., Battleground, Wash. 98604

Filed May 1, 1980, Ser. No. 145,689  
Int. Cl.<sup>3</sup> B65D 41/06, 41/36

U.S. Cl. 220-295

3 Claims



1. A plug and socket cleanout assembly for pressurized fluid transmission lines, storage tanks and like receptacles, the assembly comprising:

- (a) an annular socket member arranged for attachment to the outer side of a receptacle surrounding and extending outwardly from an opening through the receptacle,
- (b) a plug member configured for removable sealing reception within the socket member,
- (c) interengageable locking means on the socket and plug members arranged in the position of disengagement to allow removal of the plug member from the socket member and in the position of engagement to secure the plug member in sealing reception within the socket member,
- (d) the plug member being configured such that when it is in the position of sealing reception within the socket member the inner surface of the plug member substantially matches and lies substantially in the same plane as the inner surface of the receptacle, and
- (e) normally closed pressure relief valve means on the plug member arranged in said normally closed position within the plane of the inner surface of the plug member.

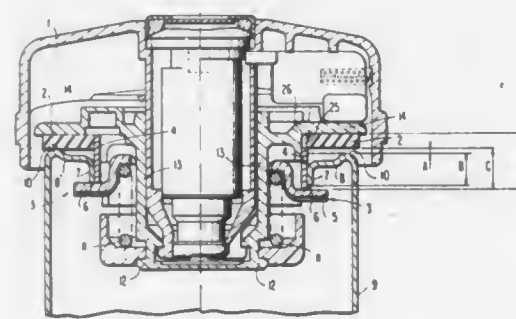
**4,339,055**  
**TANK CLOSURE ARRANGEMENT**  
Rolf Huttenlaub, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 234,628  
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005419

Int. Cl.<sup>3</sup> B65D 41/06, 41/36

U.S. Cl. 220-295

17 Claims



1. A closure arrangement for a tank provided with a tank neck having a means for defining a bayonet-type thread, the arrangement including a tank cap means adapted to be mounted on the tank neck, a pair of tension clamp means, means for mounting the tension clamp means so as to be axially displaceable, a closing pipe means guided in tank cap means, the closing pipe means including a flange means, and a sealing

means mounted on the flange means, characterized in that a spacer sleeve means is inserted between the flange means and the tension clamp means for maintaining a predetermined spacing between the flange means and the tension clamp means over a predetermined rotation of the tank cap means, means are provided for maintaining the spacer sleeve means stationary during a rotation of the tank cap means, and in that means are provided on the spacer sleeve means for reducing the predetermined spacing when the tank cap means is rotated to a final position whereby the sealing means is brought into contact with a sealing surface of the tank neck.

**4,339,056**  
**LID TIDY**

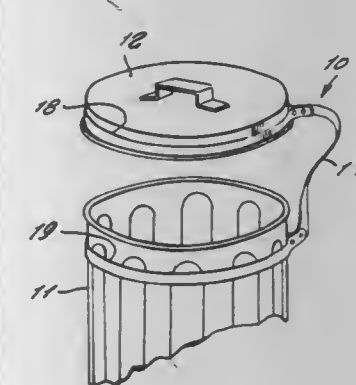
Harold Berkstresser, Jr., c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Nov. 3, 1980, Ser. No. 203,065

Int. Cl.<sup>3</sup> B65D 55/16

U.S. Cl. 220-375

3 Claims



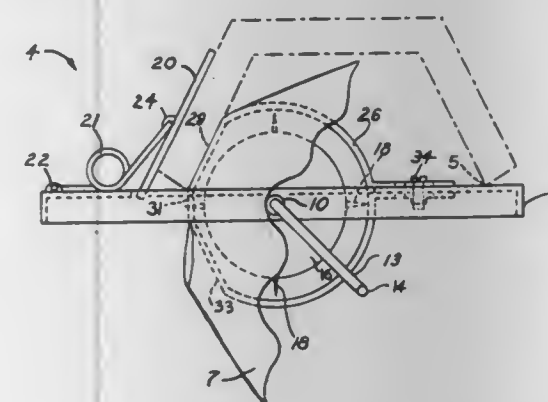
1. A tethering device attached between a removable cover and refuse container of similar diameter comprising in combination a flexible elongated strap with means at opposite ends for firm securement to said cover and container, said means having flat surfaces adapted to contact said cover and container along a surface wider than the strap thickness, wherein said means comprises said ends being made into a loop shape and secured in said shape by interconnecting transverse snap fasteners one of which includes a flat tab receivable through a narrow slot into a spherical interior of a dome integral with the other said fastener, wherein said tab is integrally compressible to fit into said slot.

**4,339,057**  
**FILTER PAPER DISPENSER**  
David L. Winters, 13677 Brainbridge, Warren, Mich. 48089  
Continuation of Ser. No. 845,594, Oct. 26, 1977, abandoned, which is a continuation of Ser. No. 696,204, Jun. 15, 1976, abandoned. This application Mar. 30, 1979, Ser. No. 25,342

Int. Cl.<sup>3</sup> B65H 1/06, 3/22

U.S. Cl. 221-213

8 Claims



1. A dispensing device for dispensing nested dished papers comprising means including a base for holding a stack of nested

dished papers, said base having an opening therethrough, the dishing of said papers being such that each paper has a bottom wall and a substantially conical side wall, a paper sticking member movably mounted on said base adjacent said opening, means disposing said stack on said base so that said paper sticking member is positioned within the nearest paper of said stack of nested dished papers, means relatively moving said stack of nested dished papers and said paper sticking member so that the conical side wall of said nearest paper of said stack of nested dished papers through said opening is stuck with said paper sticking member, and means using the conical side wall and continued relative movement of said paper sticking member for pulling said paper from said stack of nested dished papers and dispensing the same.

**4,339,058**  
**APPARATUS FOR DISPENSING MATERIAL FROM A CONTAINMENT VESSEL IN PRESELECTED MEASURED AMOUNTS**

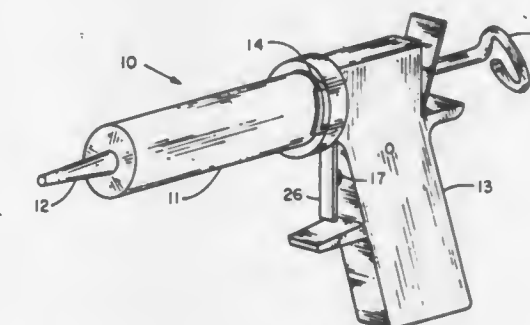
Robert J. Wendt, 743 E. Military, Fremont, Nebr. 68025

Filed Dec. 7, 1979, Ser. No. 101,211

Int. Cl.<sup>3</sup> G01F 11/06

U.S. Cl. 222-309

8 Claims



1. An apparatus for dispensing materials in measured amounts comprising:

- (a) a material containment vessel having a nozzle;
- (b) a rod having a first end and a second end wherein a diaphragm is attached at said first end of said rod and is operably inserted into said containment vessel distal said nozzle;
- (c) movement means for advancing said rod and diaphragm in said containment vessel and operably attached to said rod wherein said movement means comprises a first pivot arm, a second pivot arm having a first end located adjacent to but spaced from said rod and a second opposite end, and a slideable rod engagement wherein said first pivot arm is operably connected to said first end of said second pivot arm, and said slideable rod engagement is directly connected to said second end of said second pivot arm and a handle means and wherein said movement means further comprises a ratchet and pawl;
- (d) housing means attached to said movement means wherein said handle means is attached to said housing means;
- (e) attachment means for attaching said containment vessel to said housing means;
- (f) stop means for limiting the amount of travel of said movement means, said stop means operably attached to said movement means; and
- (g) spring biasing means for biasing said movement means, said spring biasing means operably attached to said movement means;
- (h) an elongate member including said pawl being directly and operably attached to the first end of said second pivot arm and slideably attached to said rod.



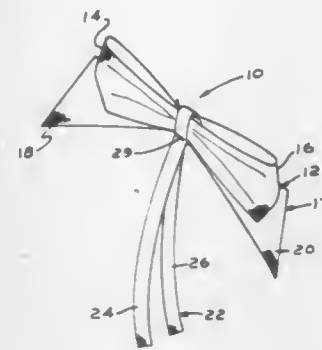
4,339,059

## DECORATIVE TIE BOW

Douglas A. Kenyon, Brimfield, Mass., assignor to Wm. E. Wright Co., West Warren, Mass.

Filed Nov. 7, 1980, Ser. No. 204,892

Int. Cl.<sup>3</sup> A41H 43/00; D04D 7/06; A41D 25/02, 27/08  
U.S. Cl. 223—46 2 Claims



## 1. A bow-making process comprising:

- forming a convolution of ribbon and crimping the same at its center to provide a pair of oppositely extending loops;
- twisting and crimping another length of ribbon to form wing-like members;
- superimposing the wing members on the loops with the crimped portions adjacent one another by impaling both the loops and wing members on a pair of spaced needles to hold the crimped portions in adjacent fixed relationship;
- looping an elongated strip of ribbon over the crimped portions while the latter are so impaled;
- securing the strip to itself to hold the loops, wing members and strip together in bow form and removing the bows from said needles.

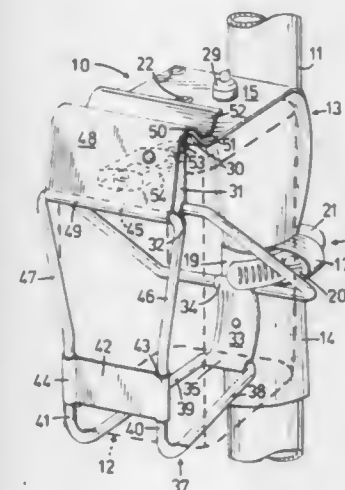
4,339,060

## BATTERY BRACKET FOR BICYCLES

Richard L. Braida, Jr., 1104 Cherry Point Rd., West River, Md. 20881

Filed Mar. 3, 1981, Ser. No. 239,937

Int. Cl.<sup>3</sup> B62J 11/00  
U.S. Cl. 224—32 R 12 Claims



## 1. A support bracket for a battery mounted on a bicycle frame or the like, said bracket comprising:

- a generally L-shaped frame with a means for attaching the first leg of said frame to a support surface;
- a generally L-shaped jaw connected to said first leg, the two members in combination defining a generally rectangular space in cross-section within which a battery is secured;
- a latching means, depending from the free end of the jaw for releasably engaging the second leg of said frame; and
- a pair of spaced parallel arms arranged on each side of the rectangular space formed by the two members for

restricting the lateral movement of a battery supported in said bracket.

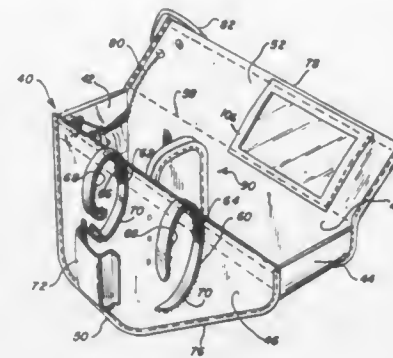
4,339,061

## ACCESSORY CASE FOR A WHEEL CHAIR

Philip Dunn, Morton Grove, Ill., assignor to Philbag Co., Inc., Chicago, Ill.

Filed Nov. 13, 1980, Ser. No. 206,352

Int. Cl.<sup>3</sup> A45C 3/00, 13/00, 15/00; B60R 11/00  
U.S. Cl. 224—42.42 10 Claims



## 1. An accessory case for use with a conventional wheel chair, the wheel chair having a frame providing a substantially horizontal arm rest and a drive wheel rotatably connected to the frame, the drive wheel including a manually rotatable ring spaced a distance from the frame outward from the arm rest; said accessory case comprising:

front and rear end walls, a bottom wall, opposed side walls including an inner side wall positionable adjacent the wheel chair arm rest and an outer side wall spaced therefrom, and a top wall interconnected together to form a covered container, the top wall extending between said side walls and being hingedly connected along one edge thereof to a top edge of the outer side wall, the top wall being swingable between an open position in which the top of the container is open, and a covered position in which the top of the container is covered by the top wall with the top wall overlying the top edge of the inner side wall and defining means to enable direct access to the interior of the case by an occupant of the chair;

said bottom wall including a substantially horizontal forward portion positionable generally forward of the drive wheel and a rearward portion angled upwardly and rearward relative to the forward portion to position the rearward portion in spaced overlying relation to the wheel chair drive wheel, the width of the container from side wall to side wall being less than the distance from the rotatable ring to the wheel chair frame; and

fastening means on the inner side wall selectively engageable with the wheel chair for mounting the container adjacent and immediately outward of the arm rest with the top wall in the closed position being substantially at the level of the arm rest.

## 7. An accessory case for a conventional wheel chair, the wheel chair having a frame providing a substantially horizontal arm rest and a drive wheel rotatably connected to the frame, the drive wheel including a manually rotatable ring spaced outward from the frame, the case comprising:

front and rear end walls, a bottom wall, opposed side walls and a top wall interconnected together to form a covered container, the top wall being hingedly connected along one edge thereof to a top edge of one side wall, the top wall being swingable between an open position in which the top of the container is open, and a covered position in which the top of the container is covered by the top wall; a portion of the bottom wall being angled rearwardly and upwardly relative to the remainder of the bottom wall and the width of the container from side wall to side wall being less than the distance from the rotatable ring to the wheel chair frame;

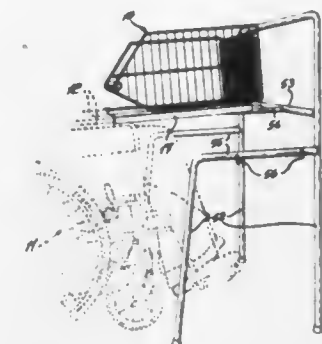
4,339,063

## CONTAINER BASKET FOR WHEELCHAIR

Antoine Trubiano, 1410 7th Ave., Pointe aux Trembles, Montreal, Quebec, Canada

Filed Dec. 30, 1980, Ser. No. 221,516

Int. Cl.<sup>3</sup> B60R 9/00  
U.S. Cl. 224—273 11 Claims



## 1. A container basket adapted to be transported by a wheelchair, said container comprising a bottom wall and opposed side walls defining a container area, an opening for access to said basket to permit insertion of articles on said bottom wall, two elongated channel members secured under said bottom wall and connectable to at least one side armrest of a wheelchair for supporting said basket above said armrest and forwardly of a person occupying said wheelchair, each channel member being constructed to slidably receive and retain a side armrest of opposed side arms of a wheelchair in a respective one of said channel members.

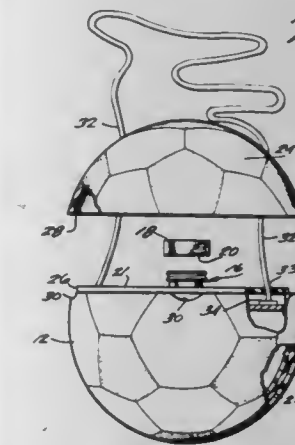
4,339,062

## CONVENIENCE FLASK

Frank H. Witt, Jr., Trumbull, Conn., assignor to Rosalie S. Levine, Trumbull; Mildred S. Bisacca, Fairfield and GRRN Company, Easton, all of Conn., a part interest to each

Filed Nov. 7, 1980, Ser. No. 204,908

Int. Cl.<sup>3</sup> B65D 25/22  
U.S. Cl. 224—148 11 Claims



## 1. A flask comprising: a bottom portion defining and enclosing a volume for containing liquid; a neck extending outwardly from said bottom portion and defining an open tubular passageway in liquid communication with the liquid-containing volume of said bottom portion; removable cap means for covering said neck to prevent passage of liquid through said tubular passageway; a top portion; surface means formed on said top and bottom portions for releasably holding said top portion to said bottom portion so that said neck and cap means are covered by said top portion and not visible from the exterior of the flask with said top portion in a position held by said bottom portion, and are visible from the exterior of the flask when said top portion is in a detached position, not held by said bottom portion; a cord; means for attaching said cord to said bottom portion adjacent said neck so that the areas of attachment of said cord to said bottom portion are not visible from the exterior of the flask when said top portion is in the position held by said bottom portion; means defining at least one opening in said top portion providing passage of said cord from said bottom portion through said top portion so that said top portion is movable with respect to said bottom portion and slides with respect to said cord, with said cord maintained in association with said at least one opening receiving said cord; and said cord being dimensioned and said cord attaching means being constructed so that said cord can hang around a human being's neck and support said bottom portion resting on the human being's chest area.

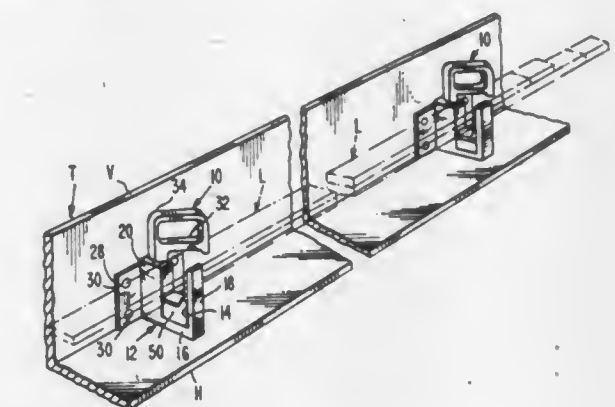
4,339,064

## CARRIER CLAMP FOR FIRE LADDERS

Theodore Ziaylek, Jr., 140 Riverview Dr., Yardley, Pa. 19067

Filed Oct. 14, 1980, Ser. No. 196,949

Int. Cl.<sup>3</sup> B60R 9/04  
U.S. Cl. 224—324 5 Claims



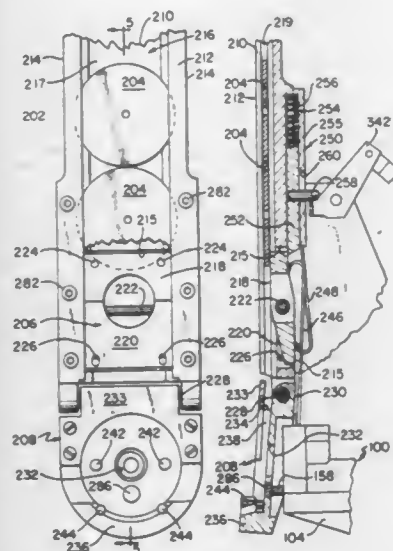
## 1. A carrier clamp for fire ladders, comprising:

- a body having a ladder-receiving recess;
- means for mounting said body on a support surface of an emergency vehicle;
- a closure element for said recess, mounted upon the body for movement between a first position in which it closes the recess to confine the supported ladder therein, and a second position in which it is shifted clear of the recess to permit removal of the ladder; and
- means normally biasing the closure element toward the body when in its first position, so as to clampably engage the supported ladder therebetween, said clamp further including a spacer block adapted to be mounted in the body, within the ladder-receiving recess, whereby to adjust the size of the recess to different widths of folded fire ladders, the spacer block having a cam surface adapted to bear against a supported fire ladder so as to bias



the ladder into engagement with a sidewall of the ladder-receiving recess.

**4,339,065**  
**PNEUMATIC TOOL**  
 Harry M. Haytayan, Sunnyside La., Lincoln, Mass. 01773  
 Continuation of Ser. No. 927,296, Jul. 24, 1978, abandoned. This application Mar. 12, 1980, Ser. No. 129,713  
 Int. Cl.<sup>3</sup> B25C 1/04, 7/00  
 U.S. Cl. 227—8 16 Claims

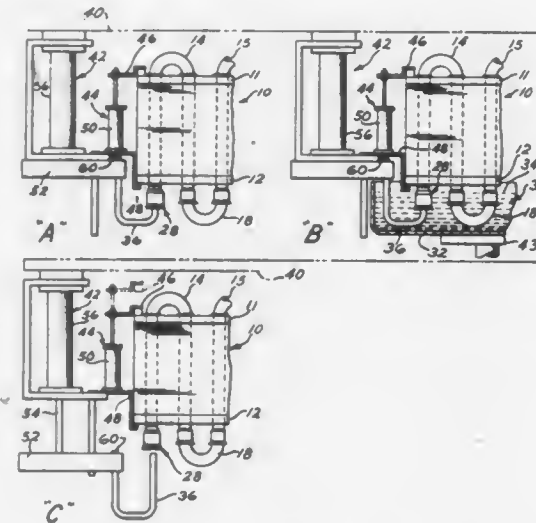


1. A fastener driving tool comprising:  
 a hollow housing having first and second opposite ends;  
 first end means for closing off said first end of said housing, said first end means having a first opening therein for communicating with the interior of said housing;  
 a hammer longitudinally disposed within said housing along an axis which extends between said first and second opposite ends and which is aligned with said first opening, said hammer being movable lengthwise within said housing and along said first opening in said first end means between a first retracted position and a second extended position;  
 means for driving said hammer from one to the other of its first and second positions, at least some of said means for driving said hammer being disposed within said housing;  
 means for positioning a fastener where it may be engaged by said hammer so as to be driven from said first opening in said first end means as said hammer is driven from its first retracted position to its second extended position; and  
 metal washer dispenser means comprising (a) a rack having first and second opposite ends and oppositely disposed parallel guide means for slidably constraining washers in edge to edge relationship along said rack and delivering them in series at said first end of said rack, (b) a gate mechanism for individually dispensing said washers from said first end of said rack, and (c) a holder adjoining said first end of said rack and adapted to receive said washers from said rack and releasably hold said washers one at a time in front of said first opening by means of at least one magnet attached to said holder, said holder also being provided with a central aperture for alignment with said first opening in said first end means and able to pass a fastener therethrough.

**4,339,066**  
**ULTRASONIC DIP SOLDERING PROCESS**  
 Gerald N. Matthews, and Frank H. Sanders, both of Tyler, Tex., assignors to General Electric Company, Louisville, Ky.  
 Filed Apr. 7, 1980, Ser. No. 137,709  
 Int. Cl.<sup>3</sup> B23K 1/06, 1/08  
 U.S. Cl. 228—183 8 Claims

1. The method of relieving the interior air pressure of a heat exchanger fluid circuit of a heat exchanger coil during a sol-

dering operation, the circuit including a plurality of heat exchange tubes having open ends connected by return bends prefitted into the open ends and the circuit terminating in open-ended tubular members having an inner surface wherein the return bends are immersed in a bath of molten solder, the method comprising the steps of:  
 arranging the heat exchanger coil on a conveyor means;  
 providing a snorkel tube having one end dimensioned to be inserted in one of said open-ended tubular members;  
 inserting said one end of said snorkel tube in said one open-ended tubular member, the inserted end of the snorkel tube having an outer diameter smaller than the inside diameter of said one open-ended tubular member so that a circumferential space is provided between the inserted end of said snorkel tube and the inner surface of said one open-ended tubular member and maintaining said circumferential space between an inserted length of said snorkel tube and the inner surface of said one open-ended tubular

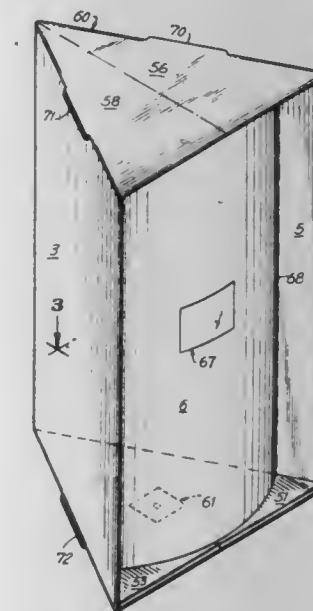


member sufficient to prevent solder from bridging the space to form a bond between said snorkel tube and said inner surface of said one open-ended tubular member;  
 immersing the portion of the heat exchanger coil having the open ends of the heat exchange tubes with the prefitted return bends and said one open-ended tubular member with said snorkel tube end into the solder bath with the other end of the snorkel tube communicating with the atmosphere, relieving the internal pressure in the circuit, thereby enabling the molten solder to flow into the joints between heat exchange tubes and the return bends while continuing to maintain said circumferential space;  
 removing the immersed portion of the heat exchanger coil from the solder bath;  
 moving said snorkel tube relative to said one open-ended tubular member so that said one end of said snorkel tube is removed from said one open-ended tubular member; and  
 removing said heat exchanger coil from said conveyor means.

**4,339,067**  
**TRIANGULAR PRISMATIC CARTON**  
 Dorothy K. Bessey, Charlotte, N.C., assignor to Rexham Corporation, Charlotte, N.C.  
 Filed Dec. 30, 1980, Ser. No. 221,447  
 Int. Cl.<sup>3</sup> B65D 5/06, 5/10  
 U.S. Cl. 229—22 3 Claims

1. A display carton in the shape of a generally triangular prism, comprising:  
 (a) two rectangular first and second side panels and a rectangular bowed front panel, all having the same length;  
 (b) the first side panel being articulated to the second side panel along respective first lengthwise edges at an angle of less than 180°, forming an interior within the side panel, having the same length;  
 (c) a rectangular indent panel, having the same length as but

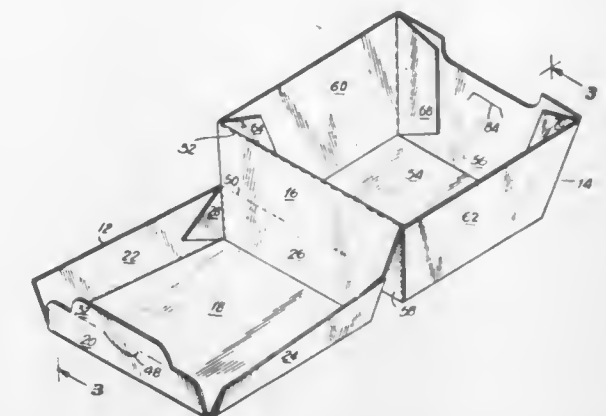
a lesser width than the first side panel articulated along a first lengthwise edge to the first side panel's second lengthwise edge;  
 (d) the indent panel lying on the interior surface of the first side panel;  
 (e) said front panel articulated along a first lengthwise edge to the second lengthwise edge of indent panel;  
 (f) a rectangular closure panel, of the same length as but a lesser width than the second side panel, articulated along a first lengthwise edge to the second lengthwise edge of the second side panel and lying on the inside surface of the second side panel;  
 (g) said front panel being of a width greater than the shortest straight line distance between the second lengthwise edge of the indent panel and the second lengthwise edge of the closure panel;  
 (h) a rectangular closure tab, at the same length as but having a width no greater than the closure panel, articulated along a lengthwise edge to the second lengthwise edge of the front panel;  
 (i) the closure tab engaging the closure panel to limit the outward displacement of the front panel within the carton;  
 (j) top and bottom triangular end flaps articulated to the first



side panel along its widthwise edges, substantially filling the triangular area delimited by adjoining widthwise edges of the side panels;

(k) top and bottom triangular bracing panels articulated to the second side panel along its widthwise edges and completely covering the triangular area, lying on the outside surfaces of the top and bottom end flaps;  
 (l) said bracing panels having one score line each running the entire distance across the bracing panels and bisecting the angle between the side panels;  
 (m) top and bottom bracing flaps articulated to front edges of the bracing panels, substantially covering the triangular area and lying on the inside surfaces of the bracing panels;  
 (n) said bracing flaps having one score line each running the entire distance across the bracing panels and aligned with the score lines in the bracing panel;  
 (p) said bracing flaps engaging the side panels to prevent the displacement of the bracing flaps;  
 (q) first positioning tabs articulated to the widthwise edges of the closure panel and lying between the end flaps and the bracing flaps;  
 (r) second positioning tabs articulated to the widthwise edges of the indent panel and lying between the end flaps and the bracing flaps.

**4,339,068**  
**PAPERBOARD FOOD CARTON**  
 Arne H. Brauner, Peekskill, N.Y., assignor to International Paper Company, New York, N.Y.  
 Filed Oct. 27, 1980, Ser. No. 200,715  
 Int. Cl.<sup>3</sup> B65D 5/24 8 Claims  
 U.S. Cl. 229—33



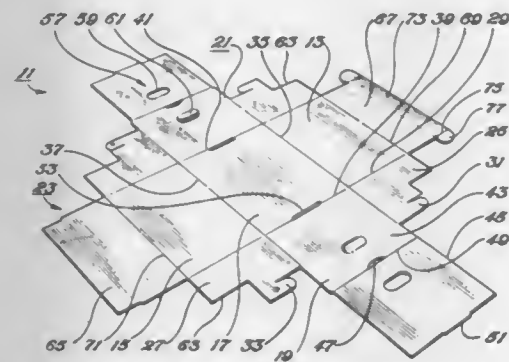
1. A food carton formed from a unitary blank of foldable paperboard comprising:  
 a bottom tray; a top cover; means to connect said bottom tray to said top cover; and means on said bottom tray and said top cover to securely close said carton;  
 said bottom tray comprising:  
 a base wall; a front wall; a rear wall; and a pair of side walls, each such wall hingedly connected to, and extending from, said base wall;  
 said top cover being dome-shaped and comprising:  
 a top wall; a front wall; a rear wall; and a pair of side walls, each such wall hingedly connected to, and extending from, said top wall;  
 said connecting means comprising:  
 a floating hinge panel pivotable about and connected by a first score line to the outer edge of the rear wall of said bottom tray and pivotable about and connected by a second score line to the outer edge of the rear wall of said top cover, said floating hinge panel being adapted to permit said top cover to substantially overlie, cover, and extend to the base wall of said bottom tray when the carton is in the closed position, and to pivot about said first and second score lines to open the closed carton and thereby to place the base wall of the bottom tray and the top wall of the top cover in the same horizontal plane to form two food serving compartments.

**4,339,069**  
**UNITARY KNOCKDOWN FILE BOX**  
 Wendell A. Poteet, Fort Worth, Tex., assignor to O'Grady Containers, Inc., Fort Worth, Tex.  
 Filed Aug. 19, 1980, Ser. No. 179,508  
 Int. Cl.<sup>3</sup> B65D 5/22 3 Claims  
 U.S. Cl. 229—36

1. A storage box used for a file container or the like comprising:  
 a single piece, corrugated cardboard blank that is foldable into a completed configuration that has openable and closable top without requiring strings, latches, latch buttons and the like;  
 said blank including two outer side walls, each side wall having hingedly connected at respective ends via foldable creases respective fold-over end portions that have respective interlocking tabs for allowing said end portions to be folded into position and locked with said tabs to facilitate additional folding into a finished box;  
 said end portions having corrugations traversing longitudinally upwardly from said bottom in the finished box position;



bottom hingedly connected with said two sides at their bottoms with a foldable crease;  
two respective box ends having respective inner and outer portions and hingedly connected at a respective inner end of said inner portions to said bottom by a foldable crease;  
each said box end having adjacent its midpoint a lock aperture and a 180° foldable crease such that its inner and outer portions can fold over and encompass said respective end portions of said sides and leave said lock aperture exposed to receive a lock tab for holding a top closed;  
said ends thereby comprising triple strength panels with vertical corrugations for high strength for stacking;  
said ends having longitudinally disposed corrugations such that said corrugations are vertical in the finished box and parallel with the corrugations in said end portions of said sides in said finished box for stacking strength;



said ends having respective lifting means for lifting said box, each lifting means in said ends comprising mating apertures in each respective pair of said inner and outer portions of said ends and a cut out recess in said end portions of said sides,  
said cut out recess also providing space for receiving a lock tab of a foldable flap of a top panel;  
two respective oppositely disposed top panels hingedly connected respectively at one end with the respective tops of respective said side walls by a foldable crease;  
one of said top panels having a foldable flap adapted to fold over the free end of the oppositely disposed top panel, said foldable flap having hingedly connected at each end by a foldable crease a lock tab adapted to be lockingly inserted within said lock aperture and said cut out recess of said ends for holding said top closed and being lifted from said lock aperture for easy opening of said top panel to allow access to the interior of said storage box as infrequently desired.

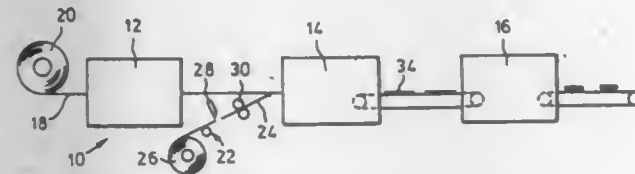
#### 4,339,070 CARTON HAVING INTEGRALLY FORMED SUPPLEMENTARY COMPONENTS

Frank H. Davies, Toronto, Canada, assignor to Lawson Paper Converters Limited, Scarborough, Canada

Filed Aug. 1, 1980, Ser. No. 174,646  
Int. Cl.<sup>3</sup> B65D 5/46

U.S. Cl. 229—52 B

19 Claims



1. A carton including a pair of planar members adapted to overlie one another, one of said planar members having first and second portions interconnected by at least one deformable connection, an abutment edge on each of said portions, said edges being arranged in spaced relationship to permit relative movement between said first and second portions, a reinforcing tape adhered to said one planar member and completely overlying said first portion and extending onto the inner pe-

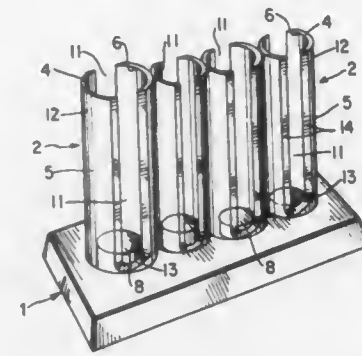
riphery of said second portion, an aperture formed in the other of said planar members to permit access to said first portion and restraining means acting between said planar members to prevent separation thereof whereby upon a force being applied to said one portion, said connection deforms and permits relative movement between said first and second portions.

#### 4,339,071 COIN BANK

A. Douglass Hall, David's Hill Rd., Bedford Hills, N.Y. 10507  
Filed Jun. 10, 1980, Ser. No. 158,219  
Int. Cl.<sup>3</sup> A47G 29/00

U.S. Cl. 232—5

10 Claims



1. The improvement in a coin bank having a support, a plurality of generally tubular members upstanding from one side of the support with each tubular member including a base and top at opposite ends of a cylindrical wall with an inner wall surface thereof defining a predetermined cross-sectional area configured to receive coins having a preselected lesser cross-sectional area and an effective height equal to the height of a stacked plurality of coins sufficient to fill a standard coin wrapper suited for the particular denomination of coins to be received therein, and a clearance space defined by the inner wall surface of the tubular member and the circumference of the stack of coins stored therein, said clearance space having a width sufficient to permit the insertion of a wrapper into the tube and around the stack of coins, the improvement characterized in that:

(a) the cylindrical wall of each tubular member includes at least two diametrically located longitudinally extending slots extending at least the full height of the stacked coins from the bottommost coin to the top of the tubular member so that upon insertion of the wrapper into the tube, the wrapper can be grasped through said diametrically opposed slots and pressed into holding relationship with the bottommost coin.

#### 4,339,072 CENTRIFUGE FOR SEPARATING SOLIDS/LIQUIDS MIXTURES

Georg Hiller, Vilsbiburg, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany  
Filed Oct. 17, 1980, Ser. No. 197,943

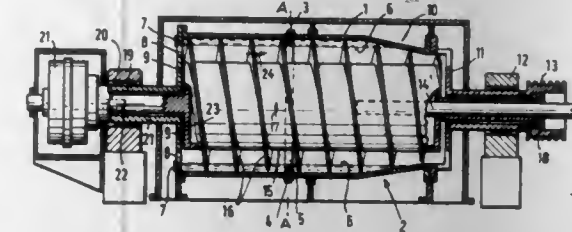
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942451; Sep. 27, 1980, 3036550  
Int. Cl.<sup>3</sup> B04B 1/20

U.S. Cl. 233—7

39 Claims

1. A centrifuge for separating solids/liquids mixtures, comprising: a centrifuge drum having a drum housing as an outer jacket and a rotating body substantially within the drum having separating means associated therewith; aperture means in the jacket for at least partially discharging at least one concentrated solids phase therethrough; at least one control device means connected to the rotating body for periodically opening and closing said aperture means as the rotating body rotates relative to the drum; drive means for rotating the rotating body relative to the drum; and the control device means comprising

means for movement past the aperture means in the rotating direction of the rotating body at a given interval in a closing position to effectively block the aperture means for a significant small period of time to prevent discharge at the aperture means, the interval being sufficiently small to prevent any substantial flow through the aperture means.



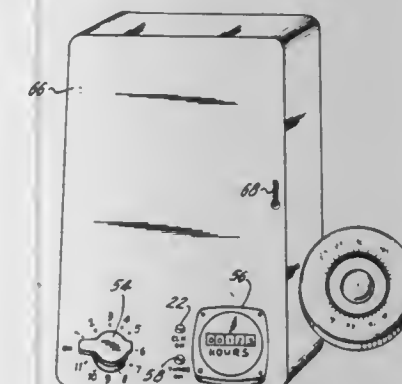
#### 4,339,073 ENERGY CONSERVING THERMOSTAT

Arthur Staloff, 9 Hollis Rd., East Brunswick, N.J. 08816

Filed Sep. 24, 1979, Ser. No. 78,104  
Int. Cl.<sup>3</sup> F23N 5/20; G05D 23/00

U.S. Cl. 236—46 R

3 Claims



1. An apparatus for controlling the supply of energy in a heating zone and recording any excess supply of the energy, when required in said zone, comprising:

- (a) a day thermostat allowing a temperature necessary for normal comfort conditions during an occupancy period;
- (b) a night thermostat allowing a temperature necessary for a maintenance of said zone during a non-occupancy period;
- (c) a seven-day timer clock calibrated for time of each day with manually adjustable pins on said clock to set a time interval on each day during which normal comfort conditions with the day thermostat are required;
- (d) a mechanical switch means responsive to the pins of said clock;
- (e) an electrical switch means including a relay energized by an operation of said mechanical switch means; and
- (f) an override timer including a time clock meter and a manually operable switch to increase the time on any given day when a usual supply of energy is required in said zone; said time being recorded on the time clock meter.

#### 4,339,074 METHOD AND APPARATUS FOR CONTROLLING THE TEMPERATURE IN GREENHOUSES

Jim A. Nissim, Repslagarevägen 8; Jan A. Sundin, Travvågen 14, both of S-245 00 Staffanstorps, and Lars B. Sjöström, Södra Parkgatan 39, S-214 22 Malmö, all of Sweden

PCT No. PCT/SE79/00203, § 371 Date Jun. 11, 1980, § 102(e)  
Date Jun. 10, 1980, PCT Pub. No. WO80/00648, PCT Pub. Date Apr. 17, 1980

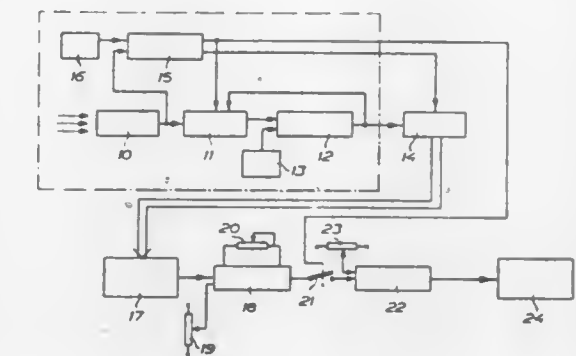
PCT Filed Oct. 10, 1979, Ser. No. 195,419

Claims priority, application Sweden, Oct. 11, 1978, 7810611

Int. Cl.<sup>3</sup> A01G 9/00; G05D 23/00

U.S. Cl. 236—47

4 Claims



1. A method of controlling the temperature in greenhouses wherein the nominal value of the temperature is adjusted between a higher daytime temperature and a lower night temperature, comprising the steps of measuring the sunlight intensity incident into the greenhouse, activating a sunlight energy measuring means when the incident sunlight intensity exceeds a predetermined level and deactivating the sunlight energy measuring means when the incident sunlight intensity falls below said predetermined level, measuring the sunlight energy incident into the greenhouse when the sunlight energy measuring means is activated, connecting an adjusting means to a temperature regulator for a greenhouse heating unit when said sunlight intensity falls below said predetermined level and disconnecting said temperature regulator adjusting means from said temperature regulator when said sunlight intensity exceeds said predetermined level, and causing said adjusting means to adjust said greenhouse heating unit to a higher night temperature when said sunlight energy measuring means measures a higher sunlight energy quantity and to a lower temperature when said sunlight energy measuring means measures a lower sunlight energy quantity.

#### 4,339,075 BIMETALLIC-CONTROLLED STEAM TRAP

Friedrich Schitteck, Stühr, and Volkmar Jahn, Bremen, both of Fed. Rep. of Germany, assignors to Gustav F. Gerds KG and Gestra-Ksb Vertriebsgesellschaft mbH & Co. Kommanditgesellschaft, both of Bremen, Fed. Rep. of Germany

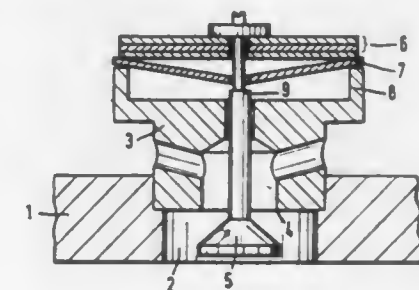
Filed Jan. 16, 1981, Ser. No. 225,829

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1980, 3002294

Int. Cl.<sup>3</sup> F16T 1/08

U.S. Cl. 236—59

3 Claims



1. In a steam trap of the type having a valve seat, a fixed



abutment, a control member including a bimetallic element disposed on the prepressure side of said valve seat and a stroke-movable locking element which cooperates with the valve seat and is biased in an opening direction with respect to the valve seat by the prepressure, wherein said bimetallic element has one side disposed for cooperative engagement with said locking element so as to urge the same in a closing direction with respect to the valve seat and an opposite side by which it is supported, and at least one spring supported on said fixed abutment and disposed for cooperative engagement with said control member which executes a stroke movement in the direction of the stroke axis of said locking element, the improvement comprising:

said bimetallic element being supported on its other side on a fixed abutment and said spring being a monostable snap spring which acts on said control member in the opening direction of said locking element, said snap spring having a spring constant which is numerically larger than the spring constant of said bimetallic element.

#### 4,339,076 CONTROL SYSTEM FOR AUTOMOBILE AIR CONDITIONERS

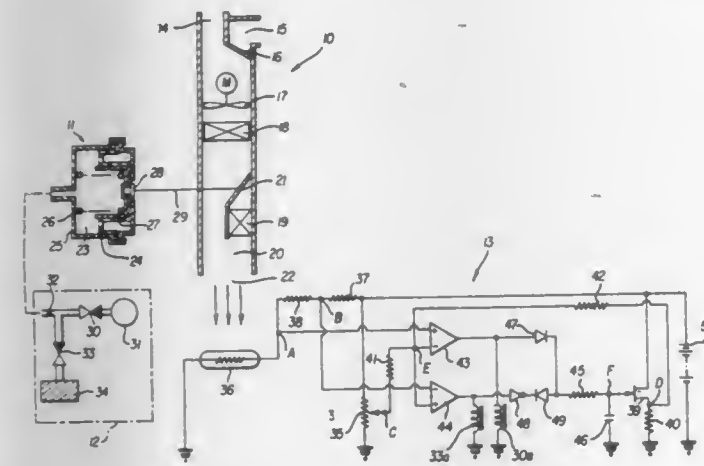
Naoki Sakakibara, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 11, 1980, Ser. No. 129,477

Claims priority, application Japan, Mar. 16, 1979, 54-31374  
Int. Cl.<sup>3</sup> G05D 23/00; B60H 3/00

U.S. Cl. 236-84

4 Claims



1. A control system for an automobile air conditioner comprising:
  - an air blend door for adjusting the output of the air conditioner;
  - a vacuum actuator including a hermetic chamber and a control member, said control member being connected to control said air blend door proportionally to the pressure within said chamber;
  - a vacuum modulator including a first valve for exhausting air from said chamber to a vacuum reservoir;
  - a second valve for admitting air from atmosphere to said chamber and a restriction member arranged at the entrance side of said chamber;
  - a control circuit for providing a first electrical driving signal for operating said first valve so as to open said first valve and a second electrical driving signal for operating said second valve so as to open said second valve proportionally to the difference between a selected temperature within said automobile and an actual temperature within said automobile;
  - an integrating circuit for providing integrated outputs of said first electrical driving signal and said second electrical driving signal with a time constant determining the volume of said chamber and the diameter of said restriction wherein said first electrical driving signal and said second electrical driving signal are integrated by a time

constant corresponding to ventilation resistances of the volumes of said chamber and said restriction member; and a feedback loop for applying said integrated outputs to the input of said control circuit.

#### 4,339,077 RAIL MOUNTING SYSTEM

Peter Dahlhaus, Radevormwald; Horst E. Steinfeld, Schwerte, and Wilhelm Striepeke, Bochum-Langendreer, all of Fed. Rep. of Germany, assignors to Estel Hoesch Werke AG, Dortmund, Fed. Rep. of Germany

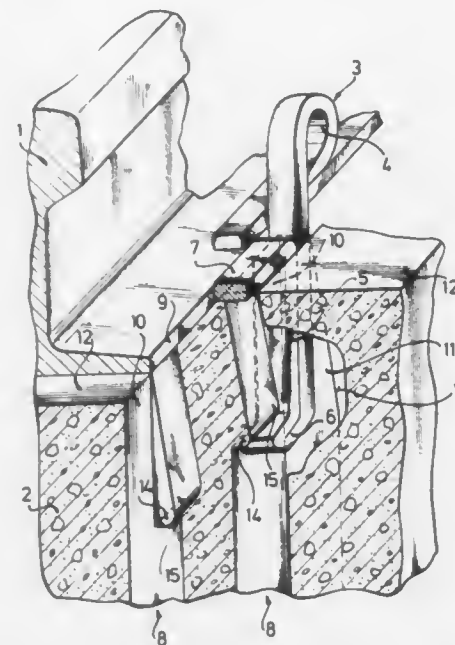
Filed Oct. 2, 1980, Ser. No. 193,173

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1979, 2944725

Int. Cl.<sup>3</sup> E01B 9/30

U.S. Cl. 238-349

8 Claims



1. A resilient mounting system for vehicle rails, comprising at least one rail mounting member having an elongated shaft, a resilient rail engaging portion projecting from an upper end of said shaft and a claw projecting to one side of said shaft at a lower end thereof; and at least one concrete tie having an upper surface and an opening extending inwardly thereof, said opening being dimensioned to surround tightly said shaft and claw and having at said surface an inlet of a shape and dimension corresponding to a projection of the claw perpendicular to said shaft, said opening also having a lower end and a cross-section which diverges continuously about the shaft thickness from said inlet towards said lower end in direction transverse to the elongation of said claw, said fastener being removable for replacement of ties, said rails being resiliently connected to said ties.

#### 4,339,078 TANK CAR COATING APPARATUS

Charles Ford, McCall Creek; Arthur Gill, Jr., Bude; John W. Smith, Meadville, and Louis L. Freeman, Jr., Bude, all of Miss., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Jul. 30, 1980, Ser. No. 173,552

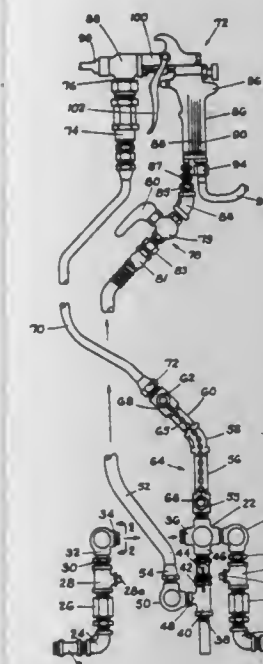
Int. Cl.<sup>3</sup> B05B 15/02

U.S. Cl. 239-1

13 Claims

1. Coating apparatus comprising:
  - first conduit means for carrying an inert solvent containing a coating material to be reacted into a mixing chamber;
  - second conduit means for carrying a liquid activator in a particulate state to be reacted with the coating material into said mixing chamber;
  - third conduit means for carrying an inert solvent for said coating material and activator into said mixing chamber;
  - said coating material and said activator being fed into a mixing chamber into intimate

contact in said mixing chamber; said mixing chamber being provided with agitating means for obtaining effective mixing of the coating material with the agitator; fourth conduit means for feeding the mixed coating material, solvent and activator into a coating applicator gun; valve means in said third conduit means for preventing flow of said inert solvent into said mixing chamber during said coating operation and allowing flow of inert solvent into said mixing chamber after said coating operation; fifth



conduit means extending from said valve means and connected to a rear portion of said gun for carrying inert solvent into the rear portion of said gun; said gun comprising means for applying the mixed coating material and activator onto a container or transportation vehicle; second valve means in said fifth conduit means for preventing flow of said inert solvent into said rear portion of the gun during said coating operation and allowing flow of inert solvent into said gun after said coating operation.

#### 4,339,079 FRAGRANCE EMITTER

Osamu Sato, 3-148-5 Aratacho, and Masahiro Shibagaki, 2-3-23 Minatocho, both of Hyogo-ku, Kobe, Japan

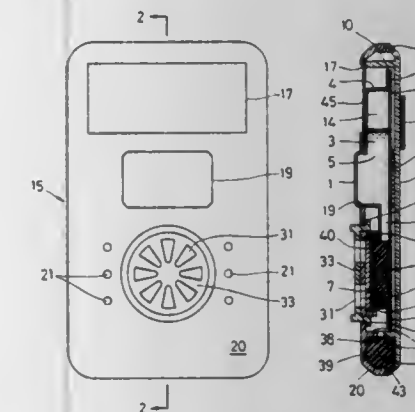
Filed Feb. 3, 1981, Ser. No. 231,096

Claims priority, application Japan, Jul. 11, 1980, 55-98460[U]

Int. Cl.<sup>3</sup> A61L 9/12

U.S. Cl. 239-43

4 Claims



1. A device for emitting a fragrant scent, comprising a container adapted to receive a fragrant liquid, said container including walls forming a front wall and a back wall and said walls forming a reservoir portion and a chamber portion which is below said reservoir portion and an open flow passage between said reservoir portion and said chamber portion allowing for relatively unimpeded flow of liquid between said reservoir and chamber portions, said reservoir and chamber por-

tions and said passage having a single piece construction, a housing which encloses said container therein, said housing having an opening therein which exposes said front wall of said reservoir portion, and said housing further having at least one window adjacent said front wall of said chamber portion, said front wall of said reservoir portion being substantially transparent and said front wall of said chamber portion being pierceable by a needle or pin inserted through said window, a liquid absorbent member filling said chamber portion, an evaporation sheet tightly fitted between said window and said front wall of said chamber portion, the liquid in said chamber portion impregnating said absorbent member and seeping through holes formed by piercing said front wall of said chamber portion, said liquid further seeping into said evaporation sheet and being emitted through said window, and means connected to said housing for varying the size of said window.

#### 4,339,080 FUEL INJECTION NOZZLE

Odon Kopse, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

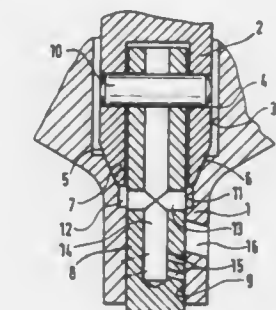
Continuation of Ser. No. 946,271, Sep. 27, 1978, abandoned. This application Sep. 2, 1980, Ser. No. 183,554

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1977, 2749378

Int. Cl.<sup>3</sup> F02M 61/00

U.S. Cl. 239-533.3

4 Claims



1. A fuel injection nozzle for internal combustion engines having a nozzle body with a control bore and a fuel exit; a valve needle extending within the control bore toward the fuel exit; a piston on said valve needle and arranged in a fluid-tight fit within the control bore of the nozzle body in the vicinity of the fuel exit, wherein said valve needle and piston are displaced against the direction of fuel flow through a given stroke within the control bore relative to the fuel exit; and a channel in said piston which serves to carry fuel; the improvement wherein at least one injection port is located in the piston in communication with said channel, and the fuel exit defines a control opening located in the nozzle body, said control opening having a larger cross-section than said at least one injection port and serving to control the opening and closing of said at least one injection port during the stroke of the valve needle and piston; and wherein the nozzle body defines a valve seat within the control bore and wherein the piston extends downstream of the valve seat.

#### 4,339,081 LIQUID FLOW CHANNEL

Lars A. Lindqvist, Sigtuna, Sweden, assignor to Spar Vatten Och Energi AB, Sigtuna, Sweden

PCT No. PCT/SE79/00045, § 371 Date Nov. 2, 1979, § 102(e) Date Nov. 2, 1979, PCT Pub. No. WO79/00690, PCT Pub. Date Sep. 20, 1979

PCT Filed Mar. 1, 1979, Ser. No. 187,840

Claims priority, application Sweden, Mar. 2, 1978, 7802369

Int. Cl.<sup>3</sup> B05B 1/18

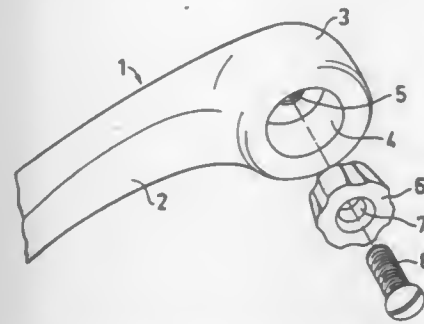
U.S. Cl. 239-552

7 Claims

1. A shower nozzle having a plurality of side-by-side flow



channels for liquid, each flow channel having an inlet end and an outlet end and having a length substantially exceeding its width, the transverse cross-section of the flow channel being



oblong along essentially its whole length and having a greater width and height in the area of the inlet and outlet ends than in the intermediate area between said ends.

4,339,082

## RAPID TRANSIENT ELECTROINJECTOR

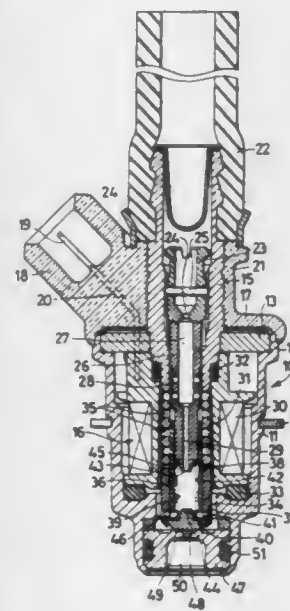
Dario Radaelli, Legnano, and Walter Giraudi, Milan, both of Italy, assignors to Alfa Romeo S.p.A., Milan, Italy

Filed Jul. 29, 1980, Ser. No. 173,326

Claims priority, application Italy, Aug. 3, 1979, 24927 A/79  
Int. Cl.<sup>3</sup> B05B 1/30

U.S. Cl. 239—585

5 Claims



1. An electroinjector for delivering intermittent feeds of fuel at low pressure to an internal combustion engine of the Otto cycle, the electroinjector comprising an outer casing, a feed duct for the low pressure fuel, at least one injection nozzle, a valve member for said nozzle, and an operating coil provided with a core in the form of a ferromagnetic hollow cylinder, said coil being arranged to cyclically control the opening of said valve member by the effect of suitable control signals, said feed duct for the pressurised fuel being disposed inside said core, said valve member forming the coil armature and being in the form of a cup having a lateral wall of ferromagnetic material and a base wall of a material suitable for sealing the low pressure fuel, resilient means within said cup and urging said base wall into contact with the injection nozzle, a guide sleeve within said core and projecting into said cup, said cup being slidably supported by said guide sleeve, said coil being wound on a spool inside which said coil core and said cup are partly received and aligned in an axial direction, between the core and cup there being present a first annular air gap which corresponds to the cup stroke and is therefore variable, between the lateral wall of the cup and an outer casing there being present a second annular air gap of fixed thickness, wherein in the electroinjector said first air gap and said second air gap have a reluctance of substantially equal value when the first air gap corresponds to the maximum stroke of said cup.

4,339,083

## APPARATUS FOR THE GRINDING OF CEREAL

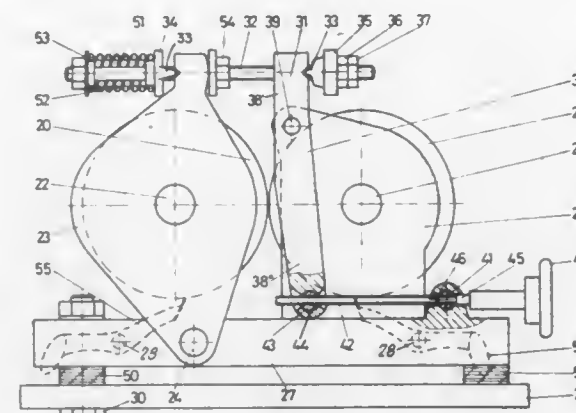
Robert Linzberger, Abtwil; Leendert Ketting, Oberuzwil, and Ernst M. Heer, Zuzwil, all of Switzerland, assignors to Gebrüder Buehler AG, Uzwil, Switzerland

Continuation of Ser. No. 1,071, Jan. 5, 1979, abandoned, which is a continuation of Ser. No. 815,559, Jul. 14, 1977, Pat. No. 4,140,285. This application Apr. 21, 1980, Ser. No. 141,903

The portion of the term of this patent subsequent to Feb. 20, 1996, has been disclaimed.  
Int. Cl.<sup>3</sup> B02C 4/06, 4/32

U.S. Cl. 241—37

25 Claims



1. A roller mill for the milling of cereal or the like comprising:  
a main base frame arranged to be mounted on the floor of a mill house;  
first and second mill rolls;  
a pair of fixed bearing housings supported on said main base frame to carry said first mill roll;  
a pair of movable bearing housings supported on said main base frame to carry said second mill roll and adjustable loading means operative between said fixed bearing housings and said movable bearing housings to contain the separating forces acting on said mill rolls in operation of the mill; independently from said main frame;  
said adjustable loading means having a tie member;  
first roll gap adjusting means arranged between said fixed and movable bearing housings and second roll gap adjusting means operatively interposed between said first roll gap adjusting means and said tie member;  
said fixed and movable bearing housings being respectively mounted on said tie member independently of said main base frame, said first roll gap adjusting means including a loading member arranged between said fixed and movable bearing housings and said second roll gap adjusting means including a lever means pivotally mounted on one of said bearing housings and associated with said first roll gap adjusting means so that the pivoting of said lever means adjusts the roll gap and a screw adjustment device operatively arranged between said lever means and said tie member.

4,339,084

## PULP REFINING APPARATUS WITH ADJUSTABLE TREATING GAP

Erik F. Eriksson, YmsenvUMLa/ gen 9J, S-121 42 Johanneshov, Sweden

PCT No. PCT/SE79/00104, § 371 Date Dec. 28, 1979, § 102(e) Date Dec. 17, 1979, PCT Pub. No. WO79/01002, PCT Pub. Date Nov. 29, 1979

PCT Filed Apr. 27, 1979, Ser. No. 178,462

Claims priority, application United Kingdom, Apr. 28, 1978, 17034/78

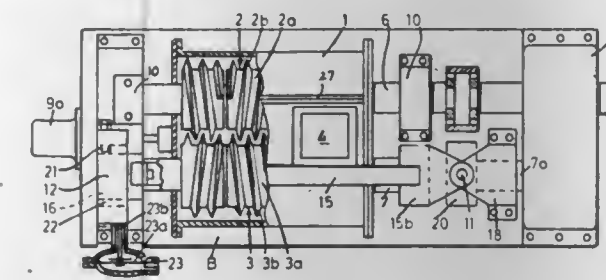
Int. Cl.<sup>3</sup> B02C 18/16

U.S. Cl. 241—37

10 Claims

1. Apparatus of the type used for treating cellulose pulp,

comprising two intermeshing rotary screws (2, 3) having shafts (6, 7) associated therewith and driven synchronously within housing (1) having a material inlet (4) and a material outlet (8), said screws being provided with mutually intermeshing screw-thread sections (2b, 3b) compressively treating and conveying material from the inlet to the outlet at a high dry-matter concentration of at least 12.5% and preferably at least 25%, one end of at least one screw shaft (7) comprising a bearing (17) and being pivotally mounted relative to at least one output shaft



(7a) for pivotal swinging movement of at least one screw (3) in a common central axial plane of both screws, the opposite end of said screw shaft (7) comprising a bearing (16) and being supported for lateral movement of said opposite end in said plane towards and away from said other screw shaft 6, said bearing (16) being supported for movement in said plane under the control of means (12, 21, 22, 23) selectively determining the width of the treating gap between the intermeshing screw-thread sections and selectively controlling the treating conditions to which the material is exposed.

4,339,085

## REVERSIBLE MATERIAL REDUCING MILL

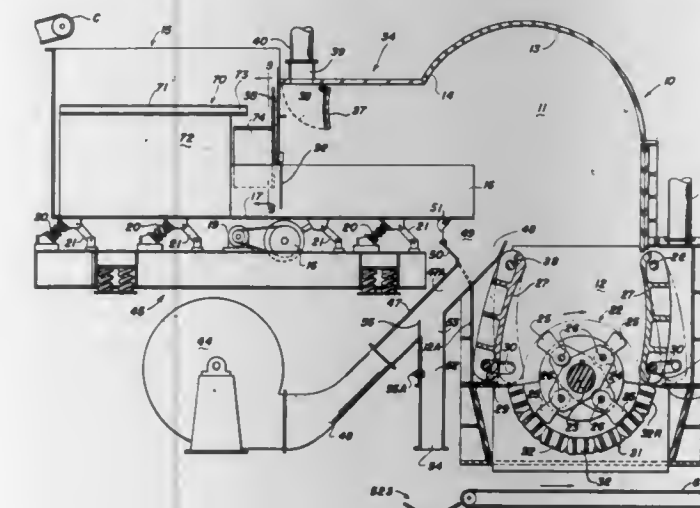
Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Filed Apr. 14, 1980, Ser. No. 139,844

Int. Cl.<sup>3</sup> B02C 13/288

U.S. Cl. 241—62

7 Claims



1. In material reducing apparatus for handling trash and waste material having an enclosure defining an upper material mixing portion and a lower material reducing portion in communication, a rotary impact assembly operably mounted in said lower material reducing portion of said enclosure, an air flow conduit having a discharge end, the discharge end opening into said upper enclosure mixing portion, a material chute having an open end communicating with said air flow conduit, air flow generating means connected to said air flow conduit for moving air through said conduit into said upper mixing portion of said enclosure, and primary trash and waste material feeding means having a discharge end opening into said upper mixing portion adjacent said air flow conduit discharge end, the improvement comprising: means forming a pocket disposed beneath said discharge end of said primary feeding means and at one side of said air flow conduit discharge end; and air flow velocity control means operable in said air flow conduit between said air flow generating means and said pocket, said

control means restricting the cross-section of said air flow conduit to create air flow velocity with a consequent creation of a negative pressure gradient in said pocket for causing material passing off said discharge end of said feeding means to enter into said pocket at a velocity to effect specific gravity separation of material such that high specific gravity material falls against the air flow into said material chute and the lesser specific gravity material is propelled in the air stream flowing into said upper mixing portion of said enclosure.

4,339,086

## GRINDING PAN BEARING ARRANGEMENT AND DRIVE OF A ROLLER MILL

Horst Brundiek, Neuss, Fed. Rep. of Germany, assignor to Loesch GmbH Company, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 870,092, Jan. 17, 1978, Pat. No. 4,218,023. This application May 21, 1980, Ser. No. 151,930

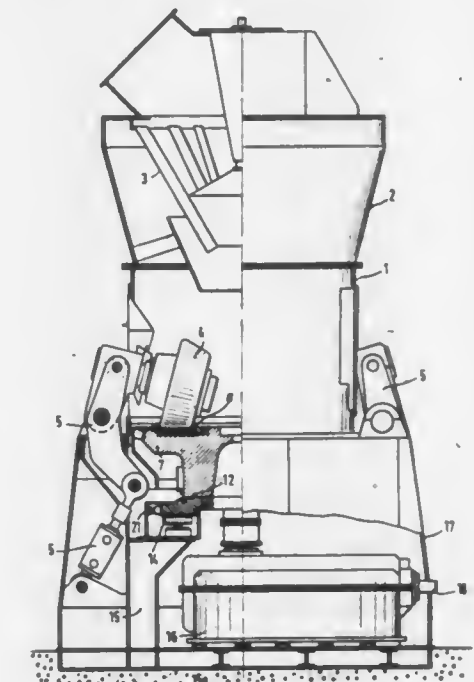
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 2703535

The portion of the term of this patent subsequent to Aug. 19, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> B02C 15/00

U.S. Cl. 241—121

6 Claims

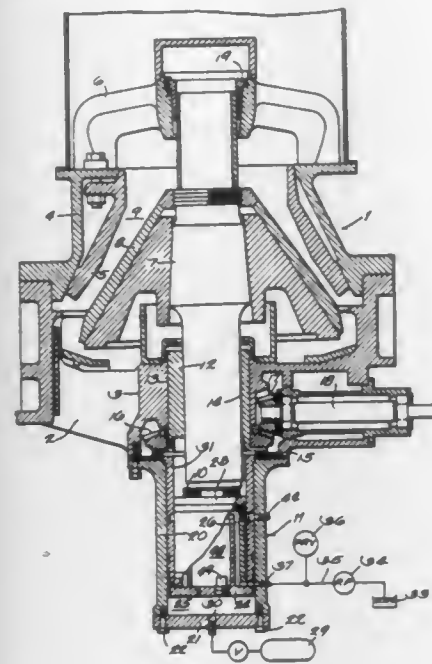


1. A roller mill of the type having a housing structure supported on a foundation, a substantially horizontal grinding pan supported for rotation about a substantially vertical mill axis, at least one grinding roller supported by pivotable journals for rolling contact on the grinding pan, means to pivot the rotational axis of the roller to move the roller into and out of engagement with the grinding pan, and driving means below the grinding pan to rotate the grinding pan, comprising the grinding pan having a horizontal pan section and an integral substantially vertical depending section, a support ring in contact with the lower end of said depending section and having a larger diameter than said depending section to extend radially therebeyond, at least three hydrostatic bearings symmetrically arranged for supporting said support ring at said radially extending location for coaxial rotation with said grinding pan, at least three radial hydrostatic bearings symmetrically arranged to guide said support ring radially, each bearing being adjustably mounted on a base support element of the housing structure so that they distribute the entire load of the grinding operation through the grinding pan, support ring, and base support elements to the foundation, said base support elements being radially outwardly spaced with respect to said mill axis so that said driving means is readily accessible when in operating position.



**4,339,087**  
**CRUSHER HEAD SUPPORTING UNIT FOR A**  
**GYRATORY CRUSHER**  
 Robert J. Pollak, Appleton, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.  
 Filed Sep. 8, 1980, Ser. No. 184,633  
 Int. Cl.<sup>3</sup> B02C 2/04  
 U.S. Cl. 241-211

10 Claims



1. A supporting unit for a gyratory crusher including a crusher bowl and a gyratable crusher head supported by the unit in normally selectively spaced relation to the bowl which accommodates momentary displacement of the crusher head by noncrushable materials moving through the crusher between the head and the bowl during crushing operations, comprising:

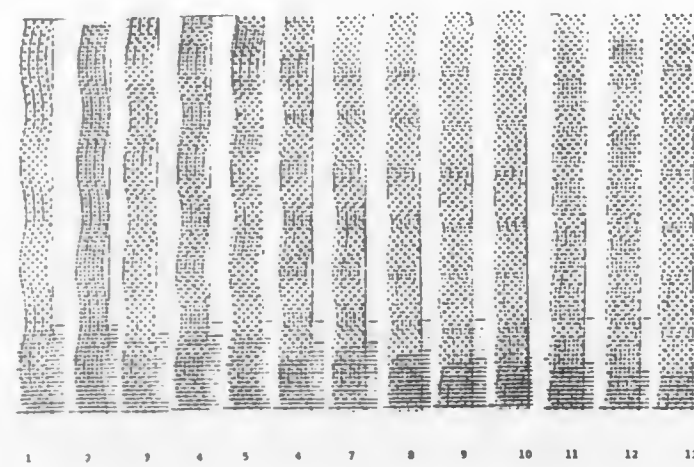
- a piston cylinder closed on one end;
- first piston means for carrying the crusher head mounted within the cylinder;
- second piston means mounted within the cylinder between said first piston means and the closed end of the cylinder to divide the interior of the cylinder into two chambers, one of said chambers being prechargeable with pressurized fluids to form a first fluid cushion within said chamber, and the other of said chambers being selectively chargeable with pressurized fluids to form a second fluid cushion operatively associated with said first fluid cushion for positioning said first piston means carrying the crusher head within the cylinder;
- said second piston means enclosing a pressure relief chamber and having valve means providing fluid communication between said one chamber and the pressure relief chamber; and
- said valve means accommodating one-way flow of fluids from said one chamber into the pressure relief chamber attendant to displacement of the crusher head by noncrushable materials and attenuated flow of fluids from the pressure relief chamber into said one chamber during movement of the crusher head back to its normal operating position.

**4,339,088**  
**EMBOSSING METHOD TO AVOID NESTING IN**  
**CONVOLUTELY WOUND ROLLS AND PRODUCT**  
 William P. Niedermeyer, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.  
 Filed Apr. 7, 1980, Ser. No. 137,599  
 Int. Cl.<sup>3</sup> B65D 85/67, 85/671; B31B 1/14  
 U.S. Cl. 242-1

17 Claims

17. A convolutely wound roll comprising web material wound on itself and having a pattern of embossments arranged in a repeat pattern, said repeat pattern having a length at least

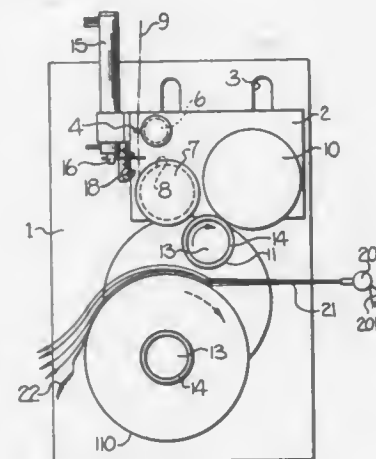
equal to the circumference of the finished roll and wherein the embossments of any top convolutely wound web sheet will be



substantially displaced from the embossments of the underlying sheet.

**4,339,089**  
**YARN WINDING APPARATUS AND METHOD**  
 Donald J. Dobbins, Waxhaw, N.C., assignor to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany  
 Filed Nov. 24, 1980, Ser. No. 209,372  
 Int. Cl.<sup>3</sup> B65H 54/06, 67/04  
 U.S. Cl. 242-18 A

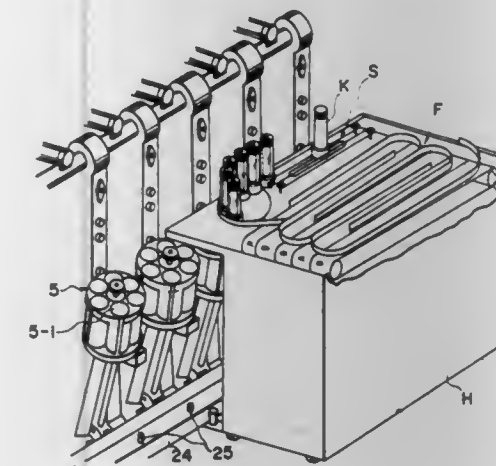
10 Claims



1. An apparatus for continuously winding a high speed running yarn onto bobbins serially delivered to a winding position and without yarn stoppage or loss of yarn between bobbin changes, and comprising a bobbin revolver mounting at least one bobbin receiving chucks, means for sequentially rotating the bobbin revolver so as to bring an empty bobbin mounted one chuck to a winding position while moving a full bobbin mounted on another chuck from the winding position to a doffing position, means for traversing the yarn in a traverse plane across the bobbin which is in the winding position, means for rotatably driving the bobbin in the winding position, and yarn changeover means for transferring the running yarn being wound on a full bobbin to a position wherein the yarn may be caught by an empty bobbin which is moved to the winding position and so as to sever the yarn and commence winding the running yarn onto the empty bobbin, the improvement wherein said yarn changeover means includes air jet means for restraining the outward radial movement of the severed yarn end which extends from the rotating full bobbin, so as to prevent the same from contacting and becoming entangled with the empty bobbin then being wound at the winding position.

**4,339,090**  
**COP SUPPLYING METHOD FOR AUTOMATIC**  
**WINDING MACHINE**  
 Isamu Matsui, Kyotoshi, and Buro Suganuma, Nagaokakyoshi, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan  
 Division of Ser. No. 928,599, Jul. 27, 1978, Pat. No. 4,212,333.  
 This application Jul. 14, 1980, Ser. No. 168,023  
 Claims priority, application Japan, Jul. 29, 1977, 52-92081  
 Int. Cl.<sup>3</sup> B65H 54/20, 67/06  
 U.S. Cl. 242-35.5 A

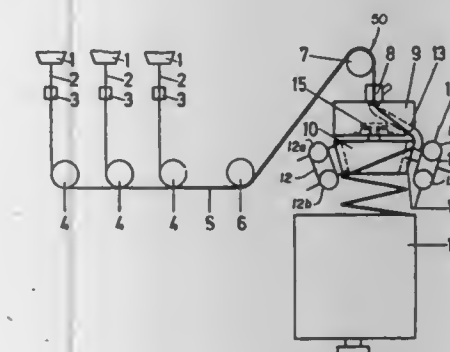
3 Claims



1. A method for transferring and supplying cops to an automatic winding machine having a plurality of winding units including the step of providing a magazine including magazine cans with each unit, driving a cop supplying truck in front of the winding units and along a train of magazines and feeding cops contained on the cop supplying truck to the magazines one by one, characterized by running the supply truck continuously, positioning on a conveyor device of the supply truck a plurality of cylindrical cop containers without bottom plates which contain a cop erected vertically therein, and feeding the cop in a falling manner from the supplying truck in to a magazine can of a magazine requiring a supply of a new cop.

**4,339,091**  
**DEVICE FOR DEPOSITING CABLE INTO A RECEIVING**  
**CONTAINER**  
 Heinrich Enneking, Karlsruhe; Günter Schubert, Malsch; Ludwig Hauger, Karlsruhe, and Rolf Mladek, Bruchsal-Untergrombach, all of Fed. Rep. of Germany, assignors to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Fed. Rep. of Germany  
 Division of Ser. No. 953,120, Oct. 20, 1978, Pat. No. 4,304,366.  
 This application Apr. 21, 1981, Ser. No. 256,008  
 Claims priority, application Fed. Rep. of Germany, Oct. 25, 1977, 2747706  
 Int. Cl.<sup>3</sup> B65H 54/76, 51/20  
 U.S. Cl. 242-47

8 Claims

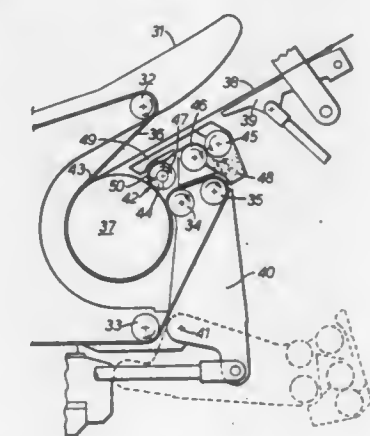


1. A chemical-fiber cable depositing device comprising: a rotatable distributor including a rotatable cable distributing tube extending obliquely downwardly along the distributor and having a top end with a cable inlet disposed

adjacent the center of rotation of said distributor tube and having a bottom end with a cable discharge disposed at a location spaced radially outwardly of said cable inlet; a rotatable cable receiver located adjacent said distributor tube in a position to receive cable directly therefrom and having a plurality of guide slots therein, whereby the cable is wound around said receiver; drive means to effect driving rotation of one of said distributor and said receiver relative to the other and to effect a deposit of coils of cable from the relative rotation and feeding of cable out of said outlet onto said receiver; a receiving container disposed below said receiver in a position to receive the cable which is wound around said receiver; and pusher means adjacent said receiver engageable with the cable as it is wound around said receiver and effective to push the cable downwardly along said receiver and off of said receiver into said container; said pusher means comprising an outer support member disposed radially outwardly of said receiver, and a plurality of outer rotary members rotatable mounted to said support member each having at least one pusher pin connected thereto and movable in a direction of deposit of the coils, each said at least one pusher pin being movable into a respective guide slot of said receiver for keeping said receiver from rotating with respect to said support member.

**4,339,092**  
**ROTARY CUTTER FOR SHEET OR STRIP MATERIAL**  
**AND ITS USE IN A BELT WRAPPER**  
 David C. Benoy, Swanage, and George T. F. Kilmister, Christchurch, both of England, assignors to Loewy Robertson Engineering Co. Ltd., Poole, England  
 Filed Nov. 19, 1979, Ser. No. 94,211  
 Claims priority, application United Kingdom, Nov. 21, 1978, 45385/78; Nov. 21, 1978, 45386/78  
 Int. Cl.<sup>3</sup> B65H 19/20  
 U.S. Cl. 242-56 R

9 Claims

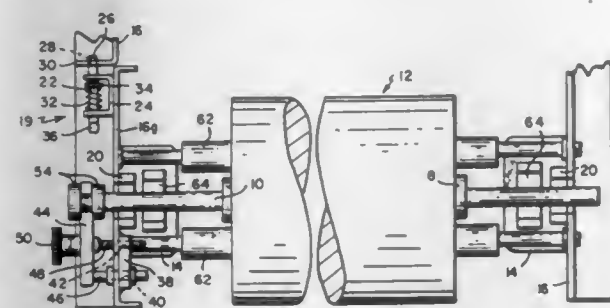


7. A belt wrapper for starting a coil of sheet or strip material issuing from a sheet or strip processing plant, comprising: a spool arranged to contact a portion of the periphery of said spool about which the strip material is to be wound, and moved in a direction which draws the leading portion of the strip around the spool; and a rotary cutter arranged to lie adjacent the periphery of the spool outside the portion contacted by the belt, the rotary cutter comprising: a roller, having an air-pervious surface; means alternatively apply negative and positive air pressure to that portion of the air-pervious surface adjacent the spool periphery; at least one longitudinally disposed knife mounted in the roller; and means to intermittently cause the knife to project radially



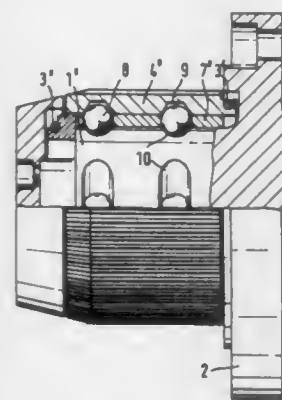
from the roller and cut said material when held over the adjacent portion of the roller by negative air pressure; whereby when negative pressure is applied the material is cut by the knife and discarded from the spool and, when positive pressure is applied, the material follows the periphery of the spool to form a coil.

**4,339,093**  
**PNEUMATIC ROLL LIFTER**  
Frank G. Shanklin, Groton, Mass., and Francis X. King, Nashua, N.H., assignors to Shanklin Corporation, Ayer, Mass.  
Filed Nov. 24, 1980, Ser. No. 209,395  
Int. Cl.<sup>3</sup> B65H 19/30, 17/02; B21C 47/24  
U.S. Cl. 242—58.6 **25 Claims**



1. Apparatus for loading a roll of sheet material wound on a core onto supporting bearings for unwinding comprising a spindle, aligned bearings for rotatably receiving the ends of the spindle, means supporting the bearings with one bearing stationary and the other movable to an out-of-alignment position, and lifting means situated below the line of centers of the bearings for engaging the ends of the spindle of a roll supported below the bearings in a position of axial displacement with respect to the stationary bearings for lifting the roll to a position in which the axis of the spindle is above the level of the line of centers of the bearings, said movable bearing being thereafter movable to bring it into alignment with the stationary bearing beneath the spindle when the latter has been lifted to said level above the line of centers of the bearings and said lifting means being operable to lower the ends of the spindle onto said aligned bearings.

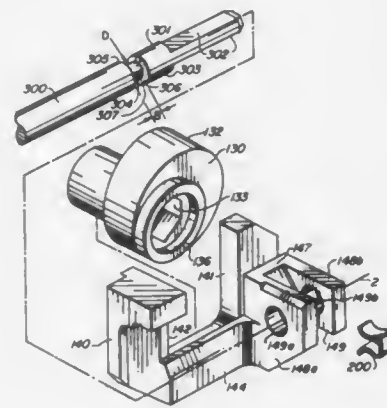
**4,339,094**  
**DEVICE FOR CHUCKING TUBULAR WINDING CORES**  
Karl Thievsen, Grevenbroich; Peter Weiss, and Knut Welkers, both of Neuss, all of Fed. Rep. of Germany, assignors to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany  
Filed Jul. 3, 1980, Ser. No. 165,901  
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1979, 2929934  
Int. Cl.<sup>3</sup> B65H 75/24  
U.S. Cl. 242—68.2 **1 Claim**



1. In a device for chucking tubular winding cores of the type wherein chucking segments forming a cylindrical surface are radially positioned by a core trunnion having an equilateral polygonal cross section, each of said chucking segments bearing on an individual surface of said trunnion through a support

member having a rounded profile and producing a line contact, the improvement wherein: the support members comprise rollable balls and means mounting same between the chucking segments and the core trunnion with substantially no play comprising conical recesses in the inner circumference of the chucking segments configured to receive the balls to make contact with only the side walls thereof with substantially no play, tracks in the surface of the core trunnion for receiving the balls and a cage for the balls disposed coaxially between the chucking segments and the core trunnion for free rotation and receiving said balls with substantially no free play.

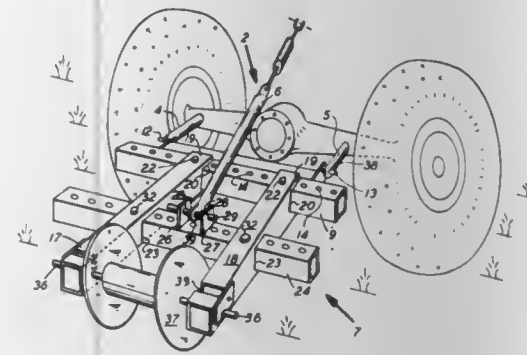
**4,339,095**  
**OSCILLATOR SYSTEM FOR FISHING REEL**  
Richard L. Gifford, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.  
Filed Oct. 18, 1979, Ser. No. 85,927  
Int. Cl.<sup>3</sup> A01K 89/01  
U.S. Cl. 242—84.21 R **18 Claims**



1. In a spinning reel having a housing with a front spool end, a back drag assembly end and first and second side bearings, a pinion assembly mounted in the housing and defining a central axis, a center shaft coaxially slidably mounted in the pinion assembly and having a front end projecting forward of the housing's spool end and a drag end projecting into the housing, a spool mounted on the front end of the shaft, a crank handle shaft and gear train assembly including a tubular shaft co-mounted in the second side bearing substantially perpendicular to a vertical plane containing the central axis and operable with the pinion assembly causing a rotor mounted on the pinion assembly to revolve winding fishing line about the spool, the spool reciprocating forward and backward as fishing line is wound thereon to even out the fishing line package, improved reciprocating means being an oscillator mechanism comprising:

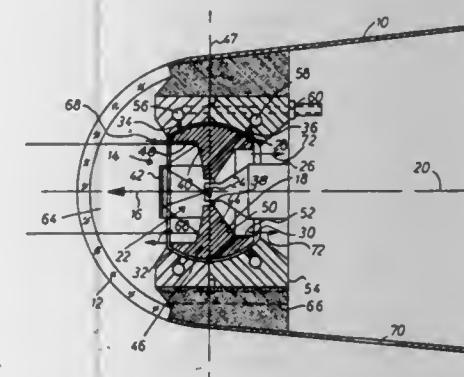
- (1) oscillator means mounted in the housing rotatable by the crank handle shaft and having:
  - (a) bearing collar means received into the first side bearing having a collar axis coaxial with the crank handle shaft,
  - (b) cam element means secured to the collar means having a cam surface parallel to the collar axis, and,
  - (c) lip means secured to the cam element means and coaxial with the collar axis the tubular shaft having one end mounted in the lip means;
- (2) open end yoke means mounted in the housing and secured to the center shaft near the drag end, the yoke means being adjacent the cam element means and in substantially constant contact therewith; and,
- (3) rotation of the oscillator means about the collar axis supplies a pre-selected reciprocating motion to the spool relative to the rotation of the rotor about the spool to provide a pre-selected line package.

**4,339,096**  
**CABLE LAYING APPARATUS**  
Amos May, P.O. Box 964, Alvin, Tex. 77511  
Filed Jan. 7, 1981, Ser. No. 223,222  
Int. Cl.<sup>3</sup> B65H 75/40  
U.S. Cl. 242—86.5 R **18 Claims**



1. Cable laying apparatus comprising the combination with an agricultural tractor having a rear three-point hydraulically operated hitch with two laterally spaced jointly movable arms and a single separately movable arm operated by hydraulic motor means driven by the tractor engine, of a cable supporting frame comprising a plurality of supporting members of hollow steel tubing arranged in a rectangular frame, one of said supporting members extending crosswise at the rear of said tractor and including means removably connected to said two jointly movable arms of said three-point hitch, two of said supporting members being adjustably supported on said cross-wise member in spaced relation at selected points thereon and extending rearwardly therefrom, each of said rearwardly extending members having a notch in the upper surface at the rear end thereof for supporting the shaft or axle of a spool of wire to be carried thereon, and a second supporting member extending cross-wise of said rearwardly extending members at points intermediate the ends thereof and adjustably secured thereto in parallel relation to said first named cross-wise member and including means connecting the same to said single movable hitch arm.

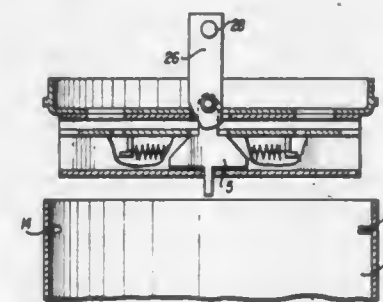
**4,339,097**  
**TARGET SEEKING HEAD FOR A MISSILE**  
Hans Kordulla, Singen; Hans H. Gerlach, Owingen, and Dirk Jansen, Überlingen, all of Fed. Rep. of Germany, assignors to Bodenseewerk Geratetechnik GmbH, Überlingen, Fed. Rep. of Germany  
Filed May 22, 1980, Ser. No. 152,202  
Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921228  
Int. Cl.<sup>3</sup> F41G 7/22  
U.S. Cl. 244—3.16 **7 Claims**



1. Target seeking head for a missile, comprising: a gyro rotor mounted for rotation about a spin axis, which rotor is mounted in the missile for angular movement of its

spin axis with two degrees of freedom, and a target field scanning device with an optical system arranged on the gyro rotor, and a central, stationary detector, characterized in that  
(a) the gyro rotor (18) has a convex calotte-shaped peripheral surface (28),  
(b) this surface (28) is surrounded by a concave calotte-shaped bearing surface (30) substantially concentric thereto and stationary with respect to the missile, while forming a narrow air gap (32), and  
(c) pressurized gas conduits (34,36) open into the bearing surface (30), through which conduits pressurized gas is permitted to be introduced into the air gap (32) for centered air bearing of the gyro rotor (18), freely movable to all sides.

**4,339,098**  
**RELEASE MECHANISM FOR AIRCRAFT RELEASED LOADS**  
Jacques Tardot, Gond Pontouvre, and Roger Lambert, Soyaux, both of France, assignors to L'ETAT FRANCAIS, represente par le Delege General pour l'Armement, Paris, France  
Filed Feb. 21, 1980, Ser. No. 123,405  
Int. Cl.<sup>3</sup> B64D 17/38  
U.S. Cl. 244—151 B **6 Claims**



1. A release mechanism for separating a storage container from a parachute comprising:  
a parachute container for holding a parachute;  
means for attaching a storage container to the bottom of said parachute container comprising: an attachment component having one end extending through a centrally located opening in the bottom of said parachute container for connecting to said parachute, said parachute providing a tension to said attachment component when deployed;  
linear slide means located on the bottom of said parachute container, said slide means having at least one horizontally movable end for engaging an opening in said storage container, said slide means being biased into engagement by a catch on the remaining end of said attachment component when tension is applied to said one end;  
means for maintaining tension on the one end of said attachment component until deployment of said parachute, said means for maintaining tension comprising a lever having one end pivoted to said attachment component, the remaining end of said lever being attached to the connecting lines of said parachute, said lever having a diameter less than said centrally located opening, and being pivoted into horizontal position with respect to said container bottom, whereby said storage container remains fixed to the bottom of said parachute container until tension is relieved from said attachment component.

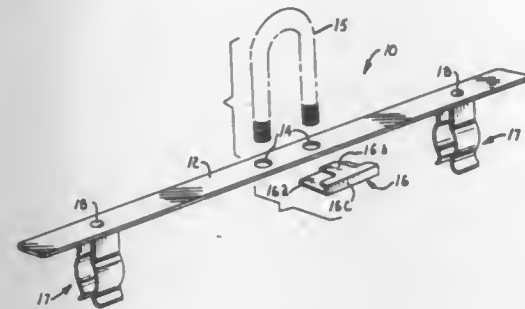


# 4,339,099 DEVICE FOR HOLDING AND SPREADING TRASH BAGS

C. Dickinson Barton, 236 W. 54th St., Kansas City, Mo. 64112, and Glen Maurer, Regent's Walk Apartments, 91st & Riggs La., Apt. 9115, Shawnee Mission, Kans. 66212  
Continuation-in-part of Ser. No. 854,609, Nov. 25, 1977, abandoned. This application Oct. 4, 1979, Ser. No. 81,900  
Int. Cl.<sup>3</sup> B65B 67/04

U.S. Cl. 248—101

9 Claims



1. Apparatus for supporting above ground or floor level and simultaneously spreading and holding spread a substantial portion of the bag wall at the mouth of a flexible bag so that the unsupported portion of the bag wall adjacent the mouth can be drawn away from the supported and spread portion thereby to open the mouth of the bag for reception of material, said apparatus comprising, in combination, an elevated support member located above ground or floor level and having a bag draping surface over which a portion of the exterior bag wall adjacent the bag mouth can be draped and conformed thereto with a substantial portion of the bag wall in surface to surface contact with the bag draping surface, and combined bag gripping and spreading means having parts engageable over the outside of the draped surface to grip and maintain the draped surface in support contacting condition during opening of the bag mouth and loading of the bag, said combined means including an integral spreader bar operable to cause a substantial segment of the bag wall to remain stationary when the unsupported portion is drawn away from the supported portion thereby to open the mouth of the bag.

# 4,339,100 ARRANGEMENT AT A STAND FOR AN OPTICAL OBSERVATION DEVICE

Rudolf Heller, and Walter Schindler, both of Zurich, Switzerland, assignors to Contraves AG, Zurich, Switzerland  
Filed Jul. 10, 1980, Ser. No. 167,538  
Claims priority, application Switzerland, Jul. 24, 1979, 6848/79

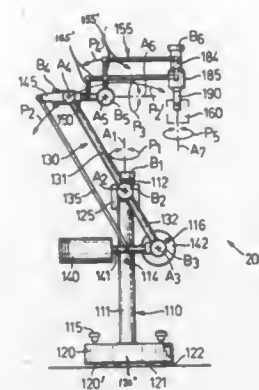
Int. Cl.<sup>3</sup> F16L 3/00; A47G 29/00

U.S. Cl. 248—123.1

6 Claims

1. An arrangement at a stand for an optical observation device, comprising:  
a stand column;  
a pivotal arm mounted at said stand column;  
a counterweight provided for said pivotal arm;  
a support arm cooperating with said pivotal arm;  
hinge parallelogram means cooperating with said support arm;  
a plurality of rotary and brake bearings provided for said stand;  
said hinge parallelogram means being structured at its front region for receiving an optical observation device;  
said pivotal arm having opposed ends;  
a guide lever pivotably mounted at one end of the pivotal arm for pivotable movement about a first horizontal axis;  
a weight disk arranged at the other end of the pivotal arm at a second horizontal axis;  
one of said rotary and brake bearings being arranged at the

other end of said pivotal arm at said second horizontal axis;  
a rod member secured to said one brake bearing;  
said rod member supporting said counterweight;  
said rod member extending transversely with respect to said

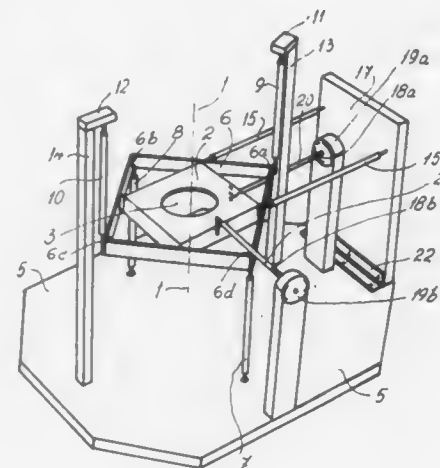


second horizontal axis and essentially parallel to said guide lever;  
a thrust rod for operatively connecting said rod member with said guide lever; and  
said thrust rod extending essentially parallel to said pivotal arm.

4,339,101  
DEVICE FOR DISPLACING A MEMBER, PRIMARILY A STAGE FOR OPTICAL INSTRUMENTS, IN ARBITRARY DIRECTIONS IN ONE AND THE SAME PLANE  
Leon Carlson, Lievägen 16, S-183 38 Täby, Sweden  
Filed Jan. 12, 1981, Ser. No. 224,391  
Claims priority, application Sweden, Jan. 22, 1980, 8000491  
Int. Cl.<sup>3</sup> F16M 11/04; G02B 7/00

U.S. Cl. 248—178

3 Claims



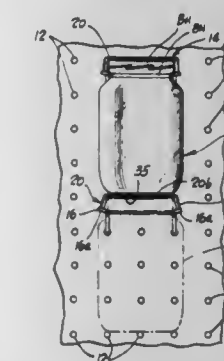
1. A device for displacing a displaceable member in two arbitrary directions in one and the same plane, said device comprising  
(a) a base,  
(b) two support means,  
(c) two first rigid elongate members,  
(d) two second rigid elongate members,  
said second rigid elongate members being supported each at one end by said base,  
(e) a substantially square frame,  
(f) two articulate rod members, and  
(g) means for preventing said displaceable member from rotating around an axis orthogonal to said plane,  
said displaceable member being basically square and being circumscribed by said substantially square frame and having each of its corners engaging the central portion of a respective side of the square frame,  
each of said first rigid elongate members being suspended at

one end by a respective one of said support means and being at the other end secured to a respective corner of said square frame, said respective frame corners being located diagonally with regard to each other,  
each of said second rigid elongate members supporting at the second end a respective remaining corner of said square frame, said remaining corners also being located diagonally with regard to each other,  
said two first rigid elongate members and said two second rigid elongate members being of equal length and being parallel to the perpendicular of the plane of displacement of the displaceable member when the displaceable member is in quiescent position, and  
said two articulate rod members being located orthogonally to each other in the plane of displacement of said displaceable member for causing the displaceable member to be displaced.

4,339,102  
READILY SEPARABLE JAR MOUNTING DEVICE  
Earl O. Schweitzer, 29353 Luxona Rd., Wickliffe, Ohio 44092  
Filed Apr. 18, 1980, Ser. No. 141,384  
Int. Cl.<sup>3</sup> E04G 3/00

U.S. Cl. 248—221.1

14 Claims



1. A one piece mounting device formed of plastic for mounting a necked container to a generally vertically oriented board support comprising a generally resilient, C-shaped, in plan, base, adapted to receive and hold the neck of a container for assembly of the container to the mounting device, upon generally linear movement of the container in the direction of the open portion of the C, and permitting disassembly of the container from the device upon reverse generally linear movement of the container, and means projecting laterally outwardly of said base for coupling said base to a board support, and wherein said base is adapted for generally horizontal orientation on a board support, with the open portion of the C facing outwardly for receiving the neck portion of the container, the distance between the distal ends of the arms of the C being less than the transverse distance across the neck of the associated container, whereby the arms of the C-shaped base are forced outwardly during the insertion and/or removal of the container from the mounting device, the closed portion of the C being of predetermined generally minimum width dimension and adapted to provide for mounting of the container close to but without interference with the board support.

4,339,103  
DEVICE FOR ADJUSTING INCLINED ANGLE OF SEATING SURFACE OF SEAT CUSHION  
Mamoru Mori, Okazaki, and Takami Terada, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisin Seiki Kabushiki Kaisha, both of Aichi, Japan  
Filed Jun. 5, 1980, Ser. No. 156,627  
Claims priority, application Japan, Jul. 26, 1979, 54/103418[U]

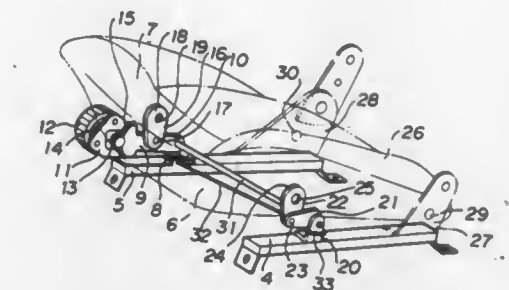
Int. Cl.<sup>3</sup> A47C 1/025

U.S. Cl. 248—397

5 Claims

1. A device for adjusting the inclined angle of the seating surface of the seat cushion of an automotive seat having a pair

of seat slide adjusting units disposed at both sides and secured to seat slide upper rails, said device comprising:  
a sector gear plate so journaled at the rear portion thereof at a fulcrum at the position corresponding to the front side position of the seat cushion frame of the one seat slide adjusting unit and including teeth formed at the front face thereof,  
a handle mounted through a first bracket at the seat slide adjusting unit;  
a pinion gear with a non-reversing unit to be rotated by said handle and engaging in mesh with the teeth of said gear plate to allow said gear plate to elevationally rock upon rotation of said pinion gear,

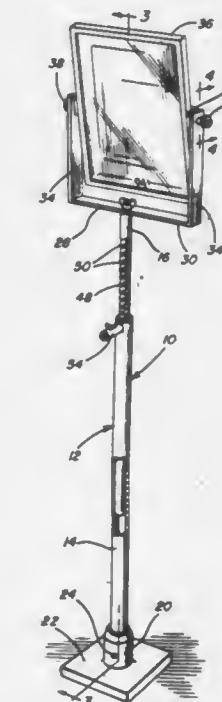


a first link pivotally secured at an intermediate portion between the rear portion and the front teeth of said gear plate and pivotally secured at the upper portion thereof to the seat cushion frame,  
a second bracket so journaled at the other seat slide adjusting unit as to rock in substantially the same manner as said gear plate,  
a second link pivotally secured to said second bracket in substantially the same orientation as said first link at the lower portion thereof and pivotally secured at the upper portion thereof to the seat cushion frame, and  
means for pivotally securing the seat cushion frame at the rear end thereof to both the seat slide adjusting units.

4,339,104  
FLOOR STAND MOUNTED MIRROR  
Marilyn V. Weidman, 615 Clifford St., Allentown, Pa. 18103  
Filed Apr. 23, 1980, Ser. No. 143,088  
Int. Cl.<sup>3</sup> F16M 11/00; A47F 7/14

U.S. Cl. 248—407

4 Claims



1. A floor stand mounted mirror construction, said construction including an upright standard having upper and lower relatively telescoped and slidably adjustable end portions, the



lower end of the lower end portion including a horizontally enlarged floor engaging base, retention means operatively connected between the upper and lower end portions for releasably preventing downward movement of said upper end portion relative to said lower end portion from said selected extended positions of said upper end portion relative to said lower end portion, a support frame, means mounting said support frame on the upper end portion of said standard for angular adjustment about an upstanding axis relative to said standard, a mirror mounting frame supported from said support frame for angular displacement about a horizontal axis, said mirror mounting frame including at least one mirror element thereof generally paralleling the axis of angular adjustment of said mirror mounting frame relative to said support frame, said upper end portion being cylindrical, said retention means including longitudinally spaced downwardly inclined and facing ratchet teeth spaced longitudinally along one side, only, of said upper end portion, said lower end portion being tubular and having said upper end portion rotatably and telescopically received therein, said retention means further including a pawl supported from one wall portion of said lower end portion for guided oscillation generally radially of said wall portion between a first inner position engaged with said teeth when said one side and wall portion are registered and a second outer position retracted outwardly from said teeth, means operatively connected between said pawl and lower end portion yieldingly biasing said pawl toward said first position, said pawl and lower end portion including coating structure operative to selectively releasably lock said pawl in said first and second positions, said upper end portion being rotatable relative to said lower end portion to angularly displace said one side out of registry with said one wall portion, said upper end portion, exclusive of said one side being smooth, whereby when said one side is angularly displaced out of registry with said one wall portion said upper end portion may be longitudinally shifted, in either an up or down direction, relative to said lower end portion even when said pawl is yieldingly biased into engagement with said upper end portion.

**4,339,105**  
**CLAMP FOR SECURING LARGE CAN-TYPE CAPACITORS TO A CIRCUIT CHASSIS**  
 Eugene F. Witt, Lake Hopatcong, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
 Filed Jun. 16, 1980, Ser. No. 159,943  
 Int. Cl.<sup>3</sup> A47B 97/00  
 U.S. Cl. 248—500

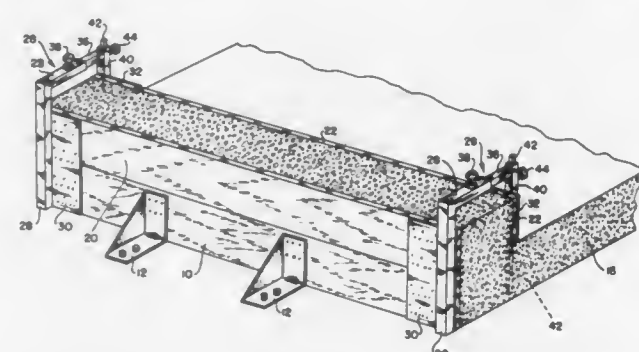


1. A clamping arrangement to secure a can-type electrical component to a base plate surface comprising, first and second tie rods, each having a cross-section with a width substantially greater than its thickness and further including T-shaped tine means at one end and clamping means at an end opposite the one end, the clamping means comprising a nodule to engage an edge or lip of the electrical component, a hinge means about which the nodule is fulcrumed and fastening means to apply clamping force about the hinge means the clamping means including a first member connected to

the tie rod and to the hinge means, a second member connected to the hinge and including the nodule and the fastening means including a threaded hole in the first member, a hole in the second member and a screw to join the second member to the first member by passing through the hole and engaging the threaded hole and applying pressure to secure the nodule in the second member to an edge of the can-type electrical component, and first and second slots precut into the base plate surface, each slot having a width less than a width of the tine means, and a longitudinal dimension greater than a width of the tine means, the longitudinal dimension being positioned so that it is located almost substantially entirely under the body of the can-type electrical component after it is positioned on the base plate surface leaving only sufficient longitudinal dimension outside the electrical component to accommodate the thickness of the clamping means engaged with the slot.

**4,339,106**  
**REUSABLE BRACKET ASSEMBLY FOR CONCRETE FORM**  
 Ramon Navarro, 10138 E. Rush St., El Monte, Calif. 91733  
 Filed Jul. 31, 1980, Ser. No. 174,036  
 Int. Cl.<sup>3</sup> E04G 17/04, 17/06, 17/12  
 U.S. Cl. 249—219 R

3 Claims



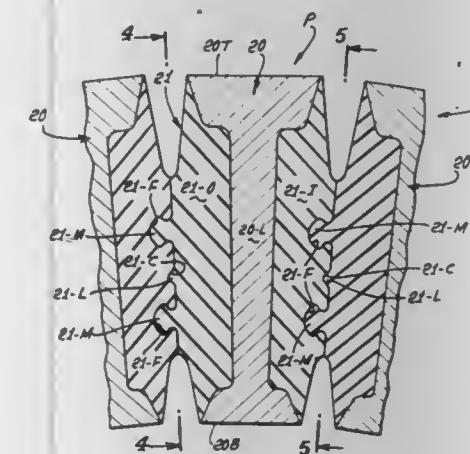
1. A bracket assembly for supporting and bracing a pair of spaced and parallel wooden form members during the pouring of a concrete tilt-up panel on a horizontal base, a bracket assembly including: a first plate and a second plate adapted respectively to be affixed to the wooden form members; a U-shaped support bracket for supporting the first and second plates in upright vertical positions spaced and parallel from one another, said U-shaped supporting bracket including a horizontally disposed elongated member and first and second vertically disposed elongated members mounted at opposite ends of said horizontally disposed elongated member, said first vertically disposed elongated member being inextensible and being long enough to engage said horizontal base and to hold said horizontally disposed elongated member above said base, said second vertically disposed elongated member having a first portion substantially shorter than said first vertically disposed elongated member, said first plate being attached to said first vertically disposed elongated member and said second plate being attached to said first portion of said second vertically disposed elongated member, and said second vertically disposed elongated member having a second portion extensible to said base.

**4,339,107**  
**WELL BLOWOUT PREVENTER PACKER ASSEMBLY AND PACKER MODULES THEREFOR**  
 Steven L. Schroder, Buena Park, Calif., assignor to Oil Tool Molded Products, Inc., Anaheim, Calif.  
 Filed Aug. 17, 1981, Ser. No. 293,685  
 Int. Cl.<sup>3</sup> B65D 53/00; E21B 33/06  
 U.S. Cl. 251—1 B

9 Claims

1. In a well blowout preventer packer, the combination

comprising a plurality of reinforced elastomer modular elements, individually molded, for defining a central opening when the elements are assembled together in a side-by-side relationship in a substantially circular arrangement to function as a well blowout preventer packer, the circular arrangement of the modular elements being secured together mechanically without any additional bonding, each of the plurality of elements being similarly defined, each element being constructed and defined in a wedge-like fashion and with each modular element including a reinforcing member extending substantially vertically in the element with an elastomeric material being bonded and molded to the reinforcing member to opposite sides thereof, one side of the element having the elastomeric material constructed and defined with radially extending interlocking means and the opposite sides of the element having the elastomeric material constructed and defined with a radially extending complementary interlocking means, the complementary interlocking means extending essentially the



entire lengths of said sides and being adapted to interfit with one another, one side of the elastomeric material including a locating locking means arranged at a preselected location intermediate the ends of each section and the opposite elastomeric material having a complementary location locking means at a corresponding location intermediate the ends of the elements, the modular elements being assembled by sliding said interlocking means of one element along the complementary interlocking means of another element until the locating locking means of one element locks into place at the complementary locating locking means of the another element whereby when the elements are all assembled together in a circular arrangement, the wedge-like shape of the elements in combination with the lengths of the interlocking channels and interlocking elements prevent the elements from moving inwardly and downwardly and the secured locating locking means prevents the elements from normally moving outwardly.

**4,339,108**  
**ACTUATOR FOR REMOTELY OPERATING A MOVING MECHANISM**  
 Philip M. Daniluk, P.O. Box 1391, Edmond, Okla. 73034  
 Filed May 5, 1980, Ser. No. 146,598  
 Int. Cl.<sup>3</sup> F16K 31/122

U.S. Cl. 251—58

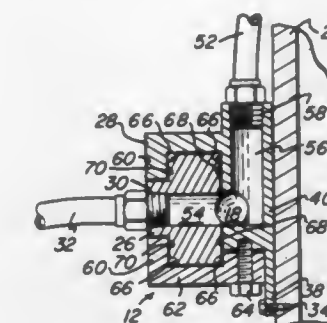
19 Claims

1. A fluid powered actuator for remote control of rotating mechanisms, comprising:

(a) first and second means, each for at least partially defining a common fluid reservoir, wherein the first and second means are joined for relative rotation, the second means including an annular channel-defining housing having an open outer circumference and a circumferential wall opposite from the open side, wherein the circumferential wall partially defines the reservoir, the channel-defining housing further having at least one flange partially closing the open side of the channel and overlapping a portion of the first means, and the first means including an annular

ring-shaped body at least partially receivable in the channel in a position overlapped by said flange and having a circumferentially inward face further defining the reservoir in combination with said opposite circumferential wall of the channel-defining housing;

(b) means for attaching said first means, in use, to a supply of fluid;



(c) means for receiving fluid into said common reservoir, in use, from a supply of fluid;  
 (d) means for attaching said second means, in use, to a fluid powered motive means; and  
 (e) means for conducting fluid, in use, between said common reservoir and motive means.

**4,339,109**  
**ELECTROMAGNETICALLY OPERATED VALVE UNIT**  
 Shoji Kawata, Okazaki, and Kazutaka Kuwana, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

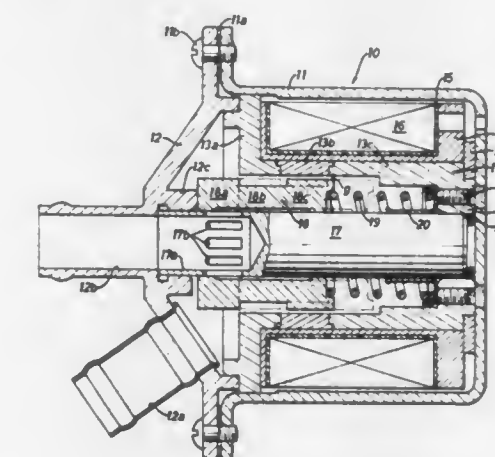
Filed Apr. 3, 1980, Ser. No. 136,826

Claims priority, application Japan, Apr. 4, 1979, 54-44097[U]; Apr. 6, 1979, 54-46209[U]

Int. Cl.<sup>3</sup> F16K 31/06; H01F 7/08

U.S. Cl. 251—129

2 Claims



1. In an electromagnetically operated valve unit for controlling the quantity of fluid flow in proportion to an electric current applied thereto, said valve unit comprising:

a casing of magnetic material having inlet and outlet ports; a support shaft of non-magnetic material fixed in position within said casing and having an axial bore in open communication with one of said inlet and outlet ports and an axial hole formed in the peripheral wall of said axial bore to provide fluid communication between said inlet and outlet ports;  
 a plunger of magnetic material in the form of a sleeve member axially movable on said support shaft and cooperating with the axial hole of said support shaft to open and close the fluid communication;  
 resilient means for biasing said plunger in one direction to normally close the axial hole of said support shaft;  
 a tubular yoke assembly including a pair of tubular members of magnetic material and an annular member of non-mag-



netic material concentrically arranged with said support shaft and facing at their inner circumferences the outer circumference of said plunger with a predetermined annular clearance; and  
a solenoid coil wound around said tubular yoke assembly to be energized by the electric current;  
the improvement wherein said plunger includes a pair of large diameter portions and a small diameter portion between the large diameter portions, the axial length of each of the large diameter portions being substantially equal to the axial length of each of said tubular yoke members, and wherein the large diameter portions of said plunger face the inner circumference of said yoke assembly with said predetermined annular clearance and are formed respectively at their outer circumferences with a plurality of grooves in such a manner that the outer circumference area of each of the large diameter portions is substantially equal to the cross-sectional area of the small diameter portion.

4,339,110

## BUTTERFLY VALVE

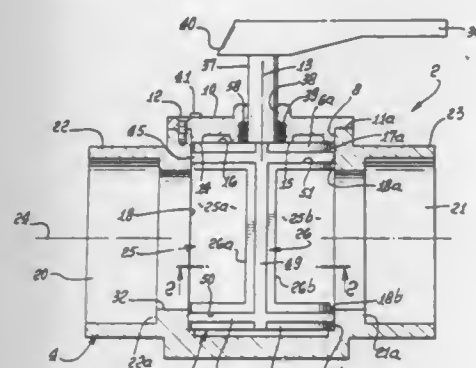
Robert Ortega, Rancho Mirage, Calif., assignor to Purex Corporation, Lakewood, Calif.

Continuation-in-part of Ser. No. 116,033, Jan. 28, 1980, Pat. No. 4,278,109. This application Nov. 3, 1980, Ser. No. 203,414

Int. Cl.<sup>3</sup> F16K 5/04

U.S. Cl. 251—309

1 Claim



1. A butterfly valve, that comprises
  - (a) a valve body having a generally cylindrical cavity defining a longitudinal axis, the body having first and second ports communicating with said cavity,
  - (b) a rotary valve member in said cavity, said member having a generally cylindrical exterior surface and a side opening therethrough generally normal to said axis,
  - (c) the valve member having a butterfly closure that extends crosswise of said side opening,
  - (d) the valve member having an open position in which said side opening is in alignment with said ports with said butterfly closure in edgewise flow passing alignment with said ports to pass fluid flow through said side opening, and the valve member having a closed position in which said side opening is also in alignment with said ports but with said butterfly closure in flow blocking relation to said ports to block fluid flow through said side opening,
  - (e) said valve member including upper and lower circular sections which are axially spaced apart, the member having legs interconnecting said sections, said closure extending between said legs, said legs extending longitudinally at diametrically opposite sides of said valve member,
  - (f) and seal means sealing off between said valve member and said valve body and about said sections and along said legs, the valve member containing grooving receiving said seal means about said sections and along said legs, the seal means including first and second rings about said sections and longitudinal branches interconnecting said rings, said rings and branches having generally rectangular cross sections, the branches associated with said legs, the rings received in grooves in said sections but projecting there-

from and the branches received in grooves in said legs but projecting therefrom,

- (g) said valve body having longitudinally spaced first and second ends, there being a valve handle proximate one of said ends, and longitudinally extending stem interconnecting said handle with one of said sections, the stem extending through said first end of the valve body, said first end including a cap in slidable engagement with one of said sections in axially spaced relation to the ring associated with said section,
- (h) said legs having widths greater than the thickness of said closure, and the legs projecting widthwise beyond planes defined by opposite faces of the closure.

4,339,111

## CLEAN IN PLACE DIAPHRAGM VALVE

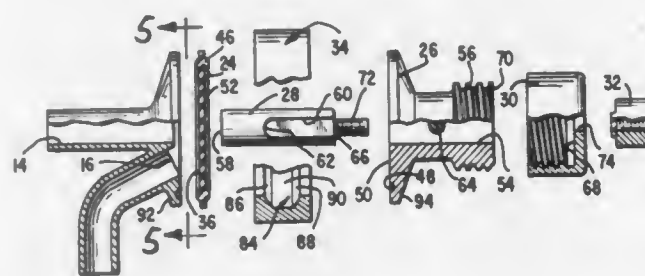
Elmer S. Welch, Silver Lake, Wis., assignor to Superior Stainless, Inc., Delavan, Wis.

Filed May 13, 1980, Ser. No. 149,328

Int. Cl.<sup>3</sup> F16K 7/16

U.S. Cl. 251—331

10 Claims



1. A diaphragm valve comprising;
  - a valve body portion including a fluid inlet and a fluid outlet in fluid communication with a valve chamber, said fluid inlet being centrally disposed within said valve body portion and said fluid outlet being radially spaced from said fluid inlet within said valve body portion;
  - wall means surrounding said fluid inlet within said valve chamber, including a first diaphragm seating surface adapted to maintain said fluid inlet and said fluid outlet in fluid separation when a diaphragm is sealed against said first diaphragm seating surface to close the valve;
  - a second diaphragm seating surface on said valve body portion surrounding said fluid inlet and said fluid outlet to prevent passage of fluid into or out of said valve except through said fluid inlet or fluid outlet when said valve is operatively assembled to seal said diaphragm against said second diaphragm seating surface;
  - a flexible diaphragm disposed over said valve chamber to define said valve chamber between an inner surface of said diaphragm and an interior surface of said valve body portion;
  - a bonnet disposed to compress said diaphragm against said second diaphragm seating surface, including means for maintaining said diaphragm in sealing engagement against said second diaphragm seating surface surrounding said fluid inlet and fluid outlet, said bonnet including an aperture for receiving a valve stem, said bonnet aperture including a transverse stop member extending into said aperture for contact against a valve stem stop surface;
  - a valve stem axially disposed with respect to said fluid inlet, said valve stem including a longitudinal groove extending from one longitudinal end thereof over a portion of the valve stem length to form a stop wall in said valve stem for contact against said stop member when said valve stem is axially adjusted to sealingly engage said diaphragm against said first diaphragm seating surface to achieve a valve closed position;
  - said valve body portion including a dished interior valve chamber surface in which said fluid outlet is disposed, said dished surface tapered inwardly toward said wall means,

said fluid outlet being disposed in said dished surface to completely span said dished surface between said second diaphragm seating surface and a base of said wall means; and

- a U-shaped clamp adapted to compressingly engage an exterior surface of said valve body portion and an exterior surface of said bonnet to compress said valve body portion and said bonnet toward each other against said diaphragm to sealingly engage said diaphragm against said second diaphragm seating surface.

4,339,113

## SCREW OPERATED JACK

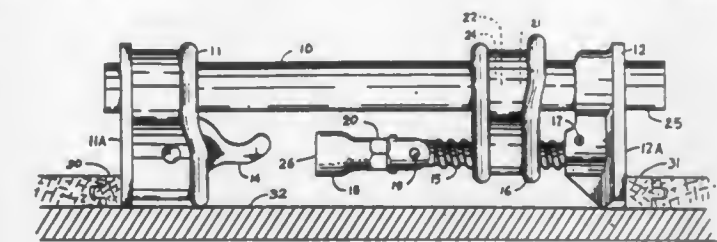
George W. Vosper, 149 Earl St., Kingston, Ontario, Canada (K7L 2H3)

Continuation-in-part of Ser. No. 60,487, Jul. 25, 1979, abandoned. This application Jun. 16, 1980, Ser. No. 159,646

Int. Cl.<sup>3</sup> B25B 1/02

U.S. Cl. 254—13

7 Claims



1. A jack comprising:
  - (a) a first pipe threaded at one end thereof;
  - (b) a first jaw member slidable longitudinally along said first pipe for quick positioning and having means to lock the same at any position therealong;
  - (c) a mounting bracket having first and second threaded bores extending therethrough parallel to and spaced apart from one another;
  - (d) a second pipe threaded at one end thereof, said first and second pipes being threaded into said first threaded bore respectively from opposite ends thereof;
  - (e) a second jaw member slidable along said second pipe;
  - (f) a threaded rod extending through said second threaded bore in the bracket and rotatably connected to said second jaw member to move the same during rotation of the threaded rod, said threaded rod being axially parallel with said pipes; and
  - (g) handle means swingingly connected at one end thereof to one end of said threaded rod for rotating the same, said first and second jaw member each having an article engaging face and wherein said faces are directed away from one another.

4,339,114

## FENCING SYSTEM

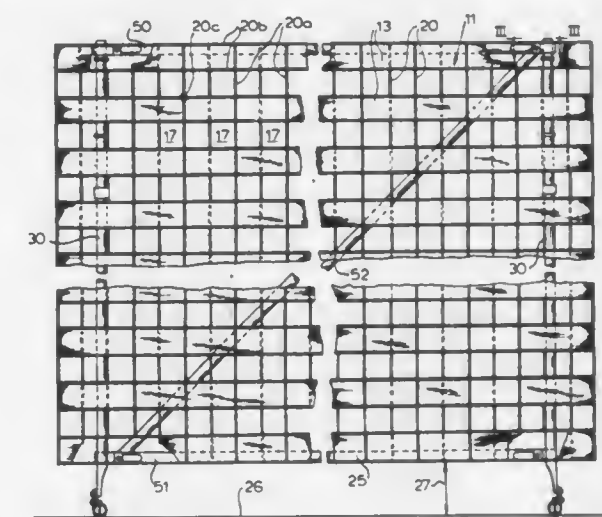
Robert F. Deike, Cheyenne, Wyo., assignor to Foresight Industries, Inc., Cheyenne, Wyo.

Filed Mar. 17, 1980, Ser. No. 131,034

Int. Cl.<sup>3</sup> E01F 7/02; F16B 7/00

U.S. Cl. 256—12.5

29 Claims



1. For a ball valve body having a generally cylindrical tubular main body band with an annular end surface and a valve ball journaled therein, the width of said body band being less than the diameter of said ball;
  - means forming a generally circular, end closure for said body band from a single thick flat steel plate;
  - said means further forming an integral tubular hub on said end closure;
  - a circular flow passageway through said integral end closure and hub;
  - the steel of said end closure being swaged axially outward around said flow passageway to form said hub with an inner surface of pipeline diameter at the axially outer end thereof flaring radially outward to extend closely adjacent the surface of said valve ball to merge with generally radially portions of said end closure extending in the outer diameter thereof;
  - an annular recess for a seal ring assembly out in said outwardly flaring portion axially outward of said radial portions; and
  - means attaching said end closure to said annular end surface of the body band.

1. An open bottom fence providing a barrier of only about 40 to 60% of its total area above the bottom and effective to create downstream air flow from an upstream particulate material laden wind that will deposit particulate material in a downstream drift initially spaced behind the fence at a distance about equal to the fence height and building up to a height greater



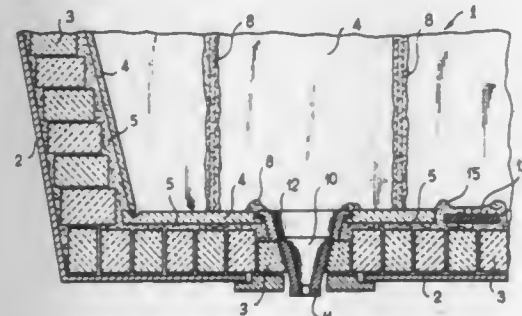
than the fence height which comprises a frame having longitudinally spaced supports, means holding said supports upright at a rearwardly inclined angle of from about 10° to about 20° to a line normal to a base surface on which the fence is installed, an open mesh face secured to said uprights spanning the space therebetween and terminating substantially above said base surface, said face composed of intersecting rows of rods defining openings therebetween, spaced parallel slats secured to said rods covering some of said openings with spaces therebetween leaving open from about 40% to about 60% of the area of said face, and the termination of said face substantially above said base surface providing an unobstructed choke opening cooperating with said 40% to 60% open face area of the mesh face to create said downstream air flow.

#### 4,339,115 HEAT INSULATING LINING FOR METALLURGICAL VESSELS

Jean-Charles Daussan; Gerard Daussan, both of Metz, and Andre Daussan, Longeville les Metz, all of France, assignors to Daussan et Compagnie, Woippy, France  
Filed Mar. 11, 1980, Ser. No. 130,175  
Claims priority, application France, Mar. 22, 1979, 79 07287  
Int. Cl.<sup>3</sup> C21B 7/04

U.S. Cl. 266—280

9 Claims



1. In a heat insulating lining for metallurgical vessels intended to contain liquid metal, comprising a permanent layer in a refractory material and a consumable layer to be fitted to the interior of the vessel and intended to be in direct contact with the liquid metal, said consumable layer comprising a plurality of plates made of a mixture of inorganic particles and of fibers, said particles and fibers being embedded in a binder; the improvement comprising, between the above-mentioned permanent and consumable layers, a compressible layer of fibers resistant to the temperature obtaining at the interface between said compressible layer and said consumable layer, the last-named fibers being partially embedded in a binder, the amount of binder being about 10 to 30% by weight of the said compressible layer in order to impart to said compressible layer a compressibility between about 5 and 10% under a pressure of 10 kg/cm<sup>2</sup> applied on said compressible layer, and said compressible layer covering substantially the whole surface of the permanent layer.

#### 4,339,116 APPARATUS FOR CENTERING AND CLAMPING CIRCULAR WORKPIECES

Gottlieb Benz, Flums, and Hans-Jakob Egg, Ellikon, both of Switzerland, assignors to George Fischer Limited, Switzerland  
Filed Oct. 8, 1980, Ser. No. 195,053  
Claims priority, application Switzerland, Oct. 11, 1979, 9163/79

Int. Cl.<sup>3</sup> B25B 1/20

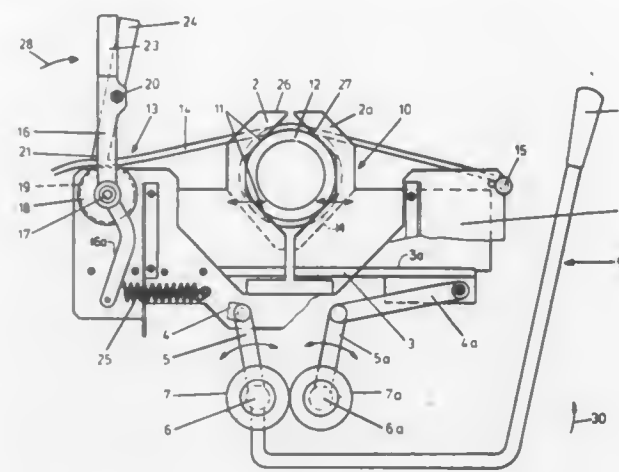
U.S. Cl. 269—132

15 Claims

1. A clamping apparatus for centering and clamping workpieces having circular cross sections and diameters within a predetermined range of diameters along a predetermined axis, comprising

a support frame;

first and second jaws shaped to center and partially engage a workpiece;  
means for mounting said jaws on said frame for sliding movement toward and away from each other to permit said jaws to at least partially surround the workpiece;  
means, coupled to and interconnecting said jaws, for moving said jaws simultaneously and uniformly toward each other into engagement with the workpiece to locate the workpiece at a centered position coaxially along the predetermined axis; and



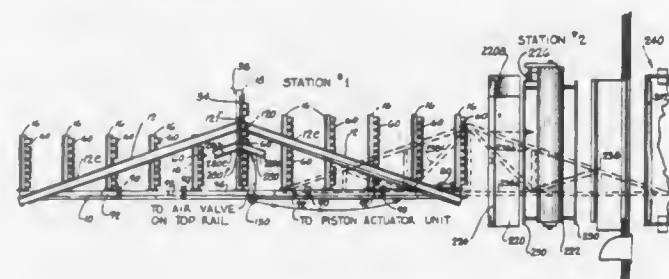
clamping means, attached to said frame, for firmly clamping the workpiece in said centered position, said clamping means including  
an elongated pliable clamping means, fixedly attached at one end to said frame, for extending in a loop of at least 360°, crossing itself and circumscribing the workpiece, and  
means for gripping said clamping means at a point spaced from said one end.

#### 4,339,117 WOOD TRUSS FORMING APPARATUS

Harley R. Tison, 409 Orchard St., Oswego, Ill. 60543  
Division of Ser. No. 21,576, Mar. 19, 1979, Pat. No. 4,252,058.  
This application Nov. 6, 1980, Ser. No. 204,499  
Int. Cl.<sup>3</sup> B30B 3/00

U.S. Cl. 269—289 MR

16 Claims



1. Apparatus for making a wood roof truss, or the like, comprising: wood member positioning means for substantially horizontally arranging wood members in positions corresponding to the ultimate positions of the wood members in a completed wood roof truss, or the like, and for enabling the wood members to be at least loosely fixed in position with relation to one another to form a unitary structure having a configuration corresponding to that of a completed wood roof truss, or the like, said positioning means including adjustable wood member support means for receiving the wood members forming the upper chords of a wood truss, or the like, and wood member engaging and elevating means for raising as a unit the wood members as arranged and loosely fixed in their ultimate positions in a completed wood roof truss, or the like, to a level above the horizontal plane of the wood member positioning means whereby the wood members in their loosely fixed condition can be moved in any desired direction as a unit while still in a substantially horizontal position without inter-

ference from the wood member positioning means, said wood member engaging and elevating means including roller means selectively movable from a normally inoperable position to an operable position to enable the roller means to engage only those wood members desired.

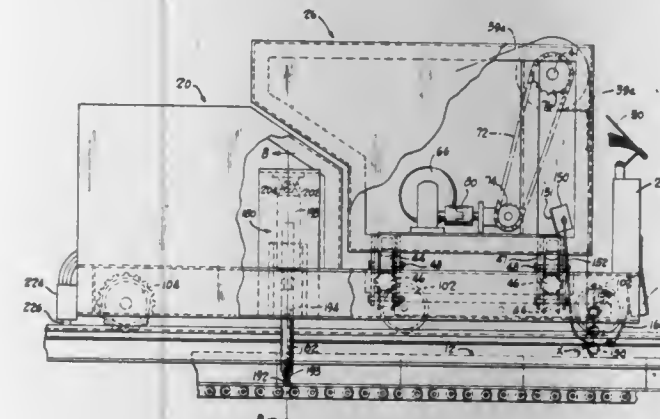
#### 4,339,118 CLOTH SPREADING METHOD AND APPARATUS

James O. Burton, Brunswick; Christopher J. Dannels, Lakewood, and Frank J. Ahlin, Willoughby Hills, all of Ohio, assignors to The Richman Brothers Company, Cleveland, Ohio

Filed Jan. 2, 1980, Ser. No. 109,099  
Int. Cl.<sup>3</sup> B65H 29/46

U.S. Cl. 270—31

10 Claims



1. A cloth spreading apparatus, comprising:

- (a) a spreader frame;
- (b) a longitudinally moveable cloth laying surface;
- (c) spreader drive means for moving said spreader frame longitudinally relative to the laying surface;
- (d) a transversely moveable cloth feed carriage mounted to said frame and operative to maintain lateral alignment between the cloth to be laid and said laying surface;
- (e) cloth feed drive means for dispensing cloth from said carriage onto said cloth laying surface, said cloth defining an angle of incidence with respect to said laying surface;
- (f) feedback means for controlling the speed of the spreader drive means and the cloth feed drive means;
- (g) cloth angle detecting means for sensing said angle of incidence of the cloth being laid and operative to control said cloth feed drive means to maintain a predetermined cloth incidence angle when said spreader is laying cloth; and,
- (h) spreader advancing means including engaging means mounted to said spreader frame, operable to engage said cloth laying surface for advancing said spreader to a predetermined position upon movement in said cloth laying surface.

2. A cloth spreading apparatus, comprising:

- (a) a spreader frame;
- (b) a cloth laying surface;
- (c) spreader drive means for moving said spreader frame relative to the laying surface;
- (d) cloth feed carriage mounted to said frame including a cloth feed roll and a drive means for said roll;
- (e) a feedback means for controlling the speed of the spreader drive means and the cloth feed drive means;
- (f) said cloth feed carriage operative to dispense cloth along a feed path extending between said cloth feed roll and said cloth laying surface, the cloth dispensed by said carriage defining an angle of incidence with respect to said laying surface;
- (g) cloth angle sensing means positioned along said cloth feed path and operative to sense the angle of incidence over a continuous range of angles to generate a varying electrical control signal which varies as a function of said cloth incidence angle to indicate a number of different angles of incidence of said cloth; and,
- (h) angularity control means cooperating with said cloth

angle sensing means for maintaining a desired cloth incidence angle.

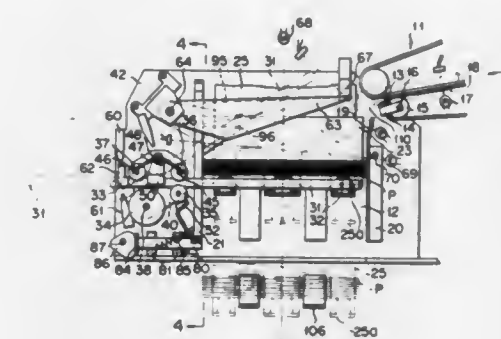
#### 4,339,119 PAPER SHEETS SEPARATING APPARATUS

Hiroshi Sasaki, and Yoshio Ariga, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 4, 1980, Ser. No. 127,985  
Claims priority, application Japan, Mar. 13, 1979, 54-31236[U]; Mar. 15, 1979, 54-32362[U]; Mar. 15, 1979, 54-32363[U]; Mar. 15, 1979, 54-32364[U]; Mar. 15, 1979, 54-32365[U]; Mar. 15, 1979, 54-32366[U]; Mar. 15, 1979, 54-32367[U]; Mar. 15, 1979, 54-32368[U]; Mar. 26, 1979, 54-37859[U]; Apr. 4, 1979, 54-39755[U]  
Int. Cl.<sup>3</sup> B65H 29/44, 31/32, 31/20

U.S. Cl. 271—180

7 Claims



3. A paper sheets processing apparatus for separating continuously fed paper sheets every predetermined number comprising:

- a chamber adapted to receive sheets stacked therein;
- means for introducing paper sheets into the stacking chamber, said means having an opening facing the stacking chamber and through which paper sheets can be introduced;
- elongated separating means including plurality of rod-like members spaced parallel from one another;
- means for driving the separating means in the longitudinal direction to thereby cause the separating means to be completely drawn out of the stacking chamber;
- rocking means for rocking the separating means from their normal horizontal position to a position slanted upward by a predetermined angle;
- said driving means including
- a driving roller capable of rotating selectively in both directions around an axis and having an outer friction circumference, the driving roller contacting the rod-like separating members on the outer circumference thereof;
- a guide roll assembly contacting the rod-like separating members, respectively in cooperation with the driving roller and sliding the rod-like separating members in the longitudinal direction thereof upon rotation of the driving roller; and
- a frame assembly rockable around said axis of the driving roller for mounting the guide roller assembly thereon.

#### 4,339,120 AMUSEMENT DEVICE FOR CREATING AN ILLUSION

Alex G. Czarny, 1055 W. Stanford Ave., Englewood, Colo. 80110  
Filed Sep. 12, 1980, Ser. No. 186,575  
Int. Cl.<sup>3</sup> A63J 5/00, 21/00

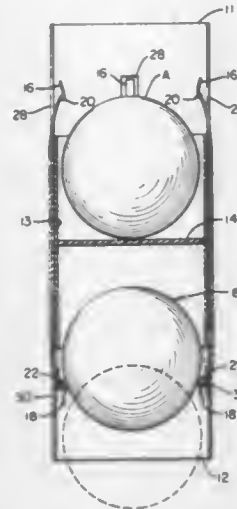
U.S. Cl. 272—8 R

13 Claims

1. An illusory device comprising in combination:  
an open-ended, generally cylindrical holder having radially inwardly projecting, axially spaced yieldable retainers on the inner wall of said holder;



an inner concentric cylinder slidably disposed within said holder and constrained for axial movement between said axially spaced yieldable retainers, said inner concentric cylinder having a baffle member projecting radially inwardly therefrom;  
first means releasably retained between one of said retainers and said baffle member; and



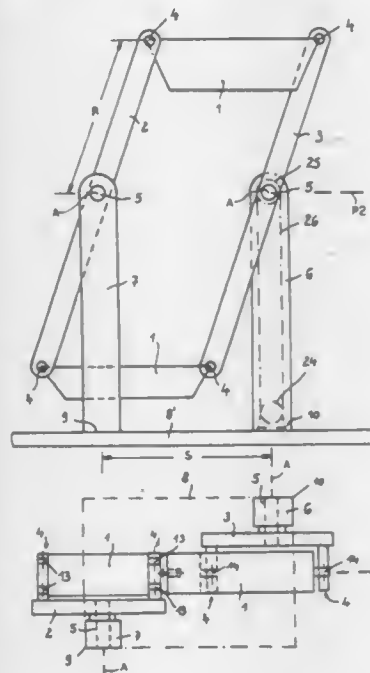
second means operative when advanced through one end of said holder on one side of said baffle member opposite to said first means to engage said baffle member with sufficient momentum to cause said inner concentric cylinder to be driven against said one retainer so as to urge said one retainer away from engagement with said first means whereby to permit release of said first means from said holder.

#### 4,339,121 ORBITAL AMUSEMENT-PARK RIDE

Anton Schwarzkopf, Münsterhausen, Fed. Rep. of Germany, assignor to Firma Anton Schwarzkopf Fahrzeug- und Stahlbau, Münsterhausen, Fed. Rep. of Germany  
Filed Mar. 3, 1981, Ser. No. 240,218  
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1980, 3042872

Int. Cl.<sup>3</sup> A63G 1/08  
U.S. Cl. 272—38

11 Claims



1. An orbital amusement ride adapted to stand on the ground and comprising:
  - a pair of diagonally spaced-apart posts standing on the ground and having respective upper ends defining respective pivot axes, said axes being generally parallel and defining a generally horizontal plane with said posts being

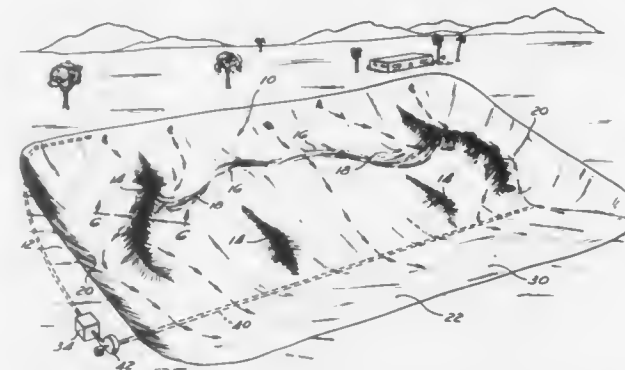
generally perpendicular to said plane and spaced apart thereon parallel to said axes;  
respective generally parallel arms pivotal on said posts about the respective axes and having respective diametrically opposite first and second arm ends;  
drive means for rotating said arms jointly and synchronously about the respective axes with said first ends spaced horizontally from each other and said second ends spaced horizontally from each other; and  
a first passenger-receiving car pivoted on and bridging said first arm ends and a second passenger-receiving car pivoted on and bridging said second arm ends, whereby on joint synchronous rotation of said arms each of said cars describes a generally elliptical orbit lying in a vertical plane and generally bisected by said horizontal plane.

#### 4,339,122 SURFING SLIDE

Richard D. Croul, 427 Fernleaf, Corona Del Mar, Calif. 92625  
Filed May 12, 1980, Ser. No. 148,991  
Int. Cl.<sup>3</sup> A63G 21/18

U.S. Cl. 272—56.5 R

18 Claims



1. An amusement apparatus for simulating riding motion over an ocean wave as encountered in ocean surfing, comprising:
  - a shaped slope having a generally downward inclination to provide a desired rate of descent;
  - a plurality of prefabricated panel sections positioned on said slope forming a relatively seamless covering with a smooth surface finish on which a user may slidably travel, said panel sections adapted to deform to direct a user's path in response to forces exerted against them by said user in sliding travel, each of said sections comprising:
    - an upper and a lower thin surface sheet, said upper sheet having a smooth surface finish to provide a slippery surface when wet;
    - a resilient core disposed between said surface sheets;
  - means for interconnecting said panel sections to provide a relatively seamless upper smooth surface including means for anchoring said panel sections to said slope; and means for applying a thin film of water upward through openings distributed throughout the upper surface to the smooth surface of said upper sheet in continuum.

#### 4,339,123 T-JOINT STRUCTURE FOR TRAMPOLINES AND THE LIKE

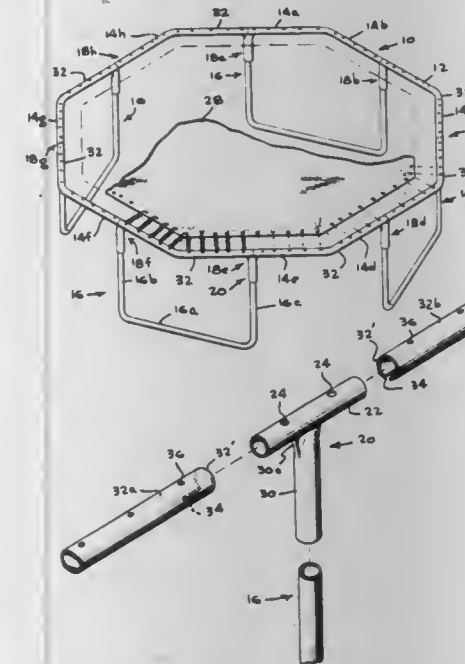
Rolland W. Rich, P.O. Box 3828, Albany, Ga. 31706  
Filed Jun. 10, 1981, Ser. No. 272,111  
Int. Cl.<sup>3</sup> A63B 5/08

U.S. Cl. 272—65

7 Claims

1. A demountable trampoline capable of being separated into components suitable for compact packaging for shipment, comprising a segmented tubular top rail frame forming a closed loop frame to be supported in elevated horizontal position by vertical ground-engaging leg members and support a trampoline sheet in encircled relation within the top rail frame sus-

ended by plural suspension springs interconnecting margins of the trampoline sheet to the frame, the top rail frame being formed of elongated top rail tube member sections of predetermined length having a uniform inner diameter bore opening through the opposite ends of each section and having a transversely narrow elongated interlocking end slot opening through each respective end of each section and extending inwardly along the lowermost wall portion thereof a predetermined short distance longitudinally parallel to the center axis of its adjacent tube member end portion, a T-joint connector for interconnecting adjacent ends of each top rail section and supporting the same from one of the leg members comprising a horizontal top cross-head member of circular cross-section having an outer diameter corresponding to said uniform inner diameter bores of the top rail tube members and a vertical tubular socket leg member to form the leg of the T-joint joined at its uppermost end to the lowermost portion of the cross-head member at the midlength portion thereof and having a



downwardly opening cylindrical bore in the lower portion thereof sized to telescopically receive the upper end portion of one of said leg members therein, the uppermost portion of said vertical socket leg member being flattened immediately adjoining the top cross-head member to a transversely narrow elongated tongue-like cross-section sized to interfit in and closely conform to said interlocking end slots in the adjacent confronting ends of a pair of said top rail tube member sections, whereby said tongue-shaped uppermost end portion interfits into said slots when the end portions of the adjacent pair of tube member sections are telescopically assembled onto the top cross-head member to positions disposing their confronting ends in abutment aligned with the center axis of the vertical socket leg member serving to restrain the top rail tube member sections against rotation about their axes, and connector means for restraining the top rail tube sections against axial displacement relative to the T-joint top cross-head member on which they are assembled.

#### 4,339,124 NECK EXERCISING DEVICE

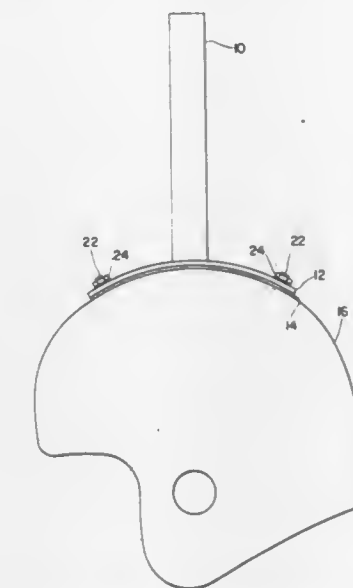
Daniel Vogler, 505 W. Gear St., Raymondville, Tex. 78580  
Filed Oct. 3, 1980, Ser. No. 193,589  
Int. Cl.<sup>3</sup> A63B 23/00

U.S. Cl. 272—94

1 Claim

1. A neck exercising device comprising in combination
  - a football helmet that is adapted to be strapped securely on the head;
  - an elongated steel bar located immediately above the central top portion of said football helmet with the longitudinal axis of said steel bar extending in an essentially vertical direction,
  - a curved steel plate which is about  $\frac{1}{8}$  inch thick, 2.5 inches

in width and 6-7 inches in length, the curvature of said plate corresponding to the curvature of the top portion of said football helmet,  
the bottom end of said elongated steel bar being welded to the convex surface of said curved steel plate,  
(d) a rubber bushing having approximately the same size and shape as said curved steel plate,  
the entire undersurface of said rubber bushing being secured flush against the upper central surface of said football helmet and the entire undersurface of said curved steel plate being secured flush against the upper surface of said rubber bushing, said securement being



- effected by a plurality of fastening means that are located at spaced apart portions of said curved steel plate and which fastening means extend through both said curved steel plate, said rubber bushing and the upper central portion of said football helmet,  
(e) at least one bar bell disc with a central bore mounted on said vertically disposed steel bar, each said bar bell disc being disposed in a generally horizontal plane and bearing its weight downwardly on the top of said curved steel plate, and  
(f) a locking collar mounted on said steel bar at a point immediately above the upper most bar bell disc so as to secure said bar bell disc against upwardly movement.

#### 4,339,125

SINGLE COLUMN EXERCISING APPARATUS  
Tim M. Uyeda, South San Gabriel, and Parker E. Mahnke, Glendale, both of Calif., assignors to Marcy Gymnasium Equipment Co., Alhambra, Calif.

Filed Dec. 18, 1979, Ser. No. 104,885  
Int. Cl.<sup>3</sup> A63B 23/02

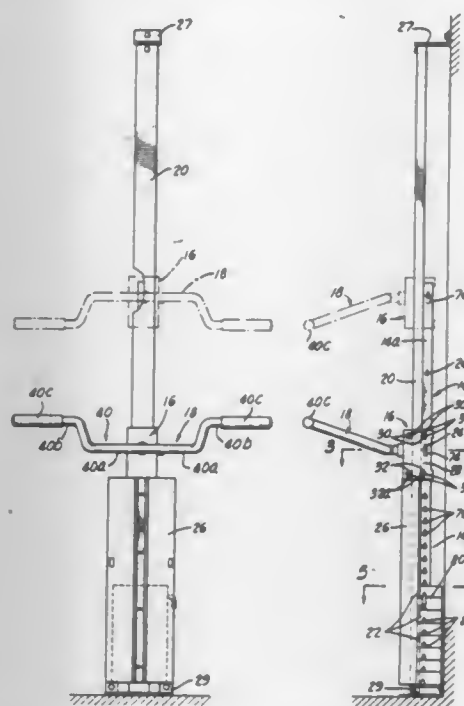
U.S. Cl. 272—118

10 Claims

1. An exercising apparatus, comprising:
  - a substantially vertically disposed selector bar;
  - a reciprocating means connected to said selector bar for mutual reciprocal movement therewith;
  - a plurality of weights, each of said weights having a centrally located aperture adapted to receive said selector bar;
  - means for selectively interconnecting said selector bar with each of said weights;
  - a substantially vertically disposed single central guide element having substantially vertically extending external surfaces closely receivable in said apertures formed in said weights, said central guide element being located adjacent to and externally from both said selector bar and said reciprocating means, said central guide element having means adapted for operable association with said selector bar to permit said selector bar to be guided along the outer



surfaces of said central guide element, said central guide element being further adapted for operable association with said reciprocating means and including guide means for guiding reciprocal movement of said reciprocating means along a substantially vertical path said guide means comprising at least one of said external vertically extending external surfaces of said single central guide element; and



(f) body engaging means projecting laterally outwardly from said reciprocating means for engagement by a trainee to impart vertically reciprocating movement thereto, whereby a lifting force exerted on said body engaging element tends to apply an eccentric force to said reciprocating means, said guide column being adapted to counteract the tendency to apply said eccentric force.

#### 4,339,126 ROLLABLE DEVICE FOR RECEIVING A USER'S LIMBS DURING EXERCISE

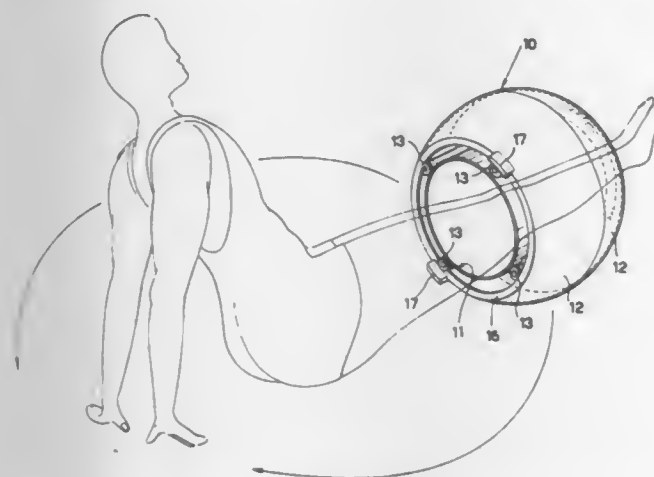
Gianfranco Marletta, Via Calamandrei 1, Cinisello Balsamo (Milan), Italy

Filed Sep. 10, 1980, Ser. No. 186,020

Claims priority, application Italy, Oct. 4, 1979, 26265 A/79  
Int. Cl.<sup>3</sup> A63B 21/00

U.S. Cl. 272-127

11 Claims



1. An apparatus for use in the performance of gymnastic movements comprising an elongated tubular support means for receiving and supporting the lower limbs of a gymnast, an outer generally barrel shaped casing housing said supporting means, means for rotatably journalling said generally casing relative to said support means, said support means further comprising substantially spaced apart rotatable journalling

means positioned substantially at the ends of the tubular support means, and said generally casing including peripheral exterior surface means for continuously and uninterruptedly contacting the ground upon motion being imparted to said apparatus by the lower limbs of a gymnast.

#### 4,339,127 AXLE-MOUNTED WHEEL EXERCISING DEVICE

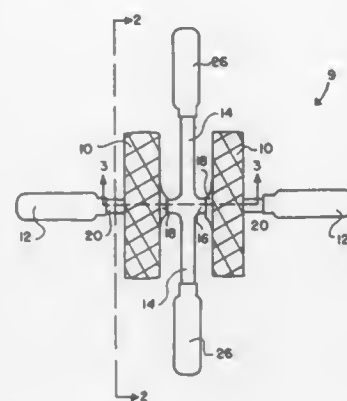
Elston Mitchell, 164 N. Summit, Decatur, Ill. 62522

Filed Oct. 20, 1980, Ser. No. 198,390

Int. Cl.<sup>3</sup> A63B 21/00

U.S. Cl. 272-127

4 Claims



1. An exercise device to be employed by pushing and pulling along a surface including:  
a pair of wheels,  
an axle having said pair of wheels rotatably mounted coaxially thereon,  
said wheels of said pair of wheels being spaced apart along said axle,  
a shaft connected to said axle between said wheels,  
said axle and said shaft being alternately engagable by the limbs of a user for pushing and pulling operation to roll said wheels over a surface, and  
said shaft being perpendicular to said axle and extending in two directions from said axle.

#### 4,339,128 BOWLING BALL PATH INDICATOR WITH ROM BALL PATH SELECTOR

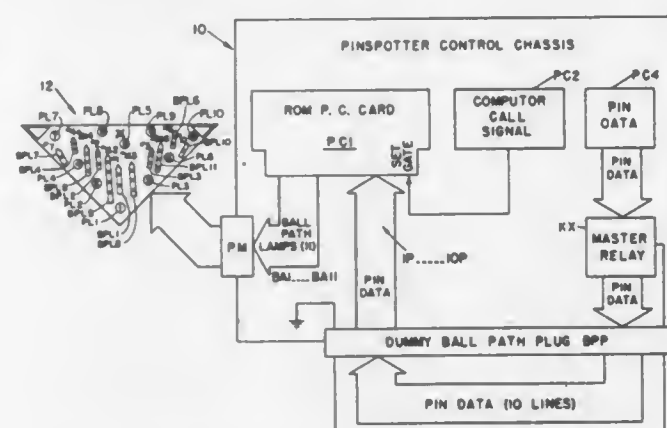
James H. Multner, Los Angeles, Calif., assignor to AMF Incorporated, White Plains, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,429

Int. Cl.<sup>3</sup> A63D 5/04

U.S. Cl. 273-54 D

16 Claims



1. In an optimum ball path indicator means for a bowling alley including a pin spotter, a pin spotter mask having selectively illuminated ball path arrows thereon and pin sensing means responsive to pins left standing after the bowling of a first ball in a bowling frame, the invention comprising:  
means for selecting and illuminating an optimum ball path

and a ball path arrow corresponding thereto for the bowling of a second ball in said bowling frame comprising:  
a plurality of standing pin data input means corresponding one to each standing position on a bowling alley and responsive to the presence and absence of standing pins at said standing pin positions to generate representative first and second logic state signals, respectively;  
read only memory means having a plurality of address input means correlated, respectively, with said standing pin data input means and connected therewith to receive standing pin information represented by a combination of said first and second logic state signals with said combination of first and second logic state signals corresponding to a discrete address in said read only memory means;  
said read only memory means converting combinations of said first and second logic state signals at said address input means to a coded output peculiar to an optimum ball path for each said combination; and outputs for converting a known group of said coded outputs to a predetermined enabling output for selectively enabling a ball path arrow on said pin spotter mask representing the optimum ball path.

#### 4,339,129 MULTI-GRAPHIC MASKING UNIT

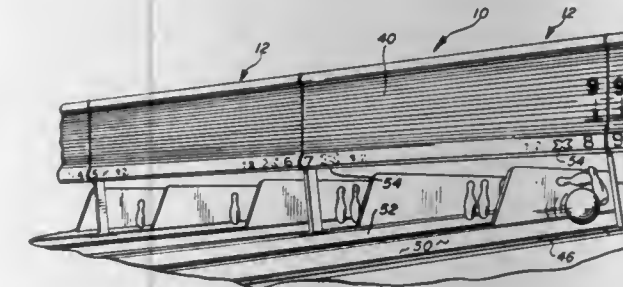
Michael G. Gautraud, Muskegon, Mich., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jan. 23, 1981, Ser. No. 227,788

Int. Cl.<sup>3</sup> A63D 5/04

U.S. Cl. 273-54 R

16 Claims



1. A display device for displaying at least one display panel comprising a support straddling at least one bowling lane forward of a kickback nose block on the lane, a panel masking unit having a frame pivotally mounted on said support, said frame having a center of gravity above and forward of the pivotal mounting so as to maintain said masking unit in an upright position, an elongate masking member projecting rearwardly and angularly from a forward edge of a top wall of said frame, a second elongate masking member projecting upwardly and angularly from a forward edge of a bottom wall of said frame, said masking member being co-terminous with the extremities of the top wall and bottom wall, said frame having a portion in spaced relation from said two masking members to form a pocket therebetween, and at least one display panel seated in said pocket with the masking members overlapping the upper and lower edge portions of said panel and with the side edges of the panel being substantially co-terminous with the extremities of the top wall and bottom wall of the frame.

#### 4,339,130 GAME RACKET

Royce H. Husted, 711 Lakeside Dr., Wheaton, Ill. 60187

Continuation-in-part of Ser. No. 16,522, Mar. 1, 1979,

abandoned. This application Feb. 25, 1980, Ser. No. 124,571

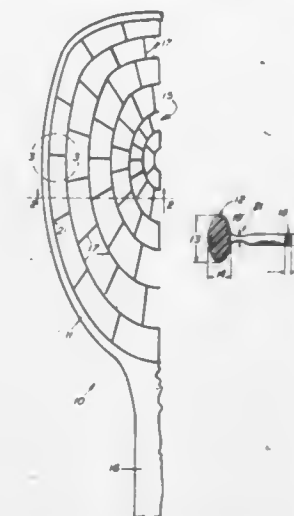
Int. Cl.<sup>3</sup> A63B 49/02, 51/02

U.S. Cl. 273-73 R

3 Claims

1. In a molded game racket comprising, in combination,  
(a) a handle,  
(b) a frame, having a frame cross-section with a frame thickness and a frame width, and  
(c) an elastic net molded in unison with at least said frame,

said net comprising a plurality of elastic elements integrally connected to said frame, each such element having an element cross-section with an element thickness and an element width, said element width being substantially smaller than said frame width, wherein the improvement comprises: said elements having a progressively increasing thickness from the frame towards the center of said net



so as to provide a higher stiffness or spring rate thereat when said net is considered independent of said frame, the end portions of said elastic elements being cantilevered from said frame so as to stiffen the periphery of said net thereby resulting in a net with a more uniform stiffness so that the recoil effect of a ball bouncing off the various parts of said net is evened.

#### 4,339,131 RACKET STRINGING DEVICE

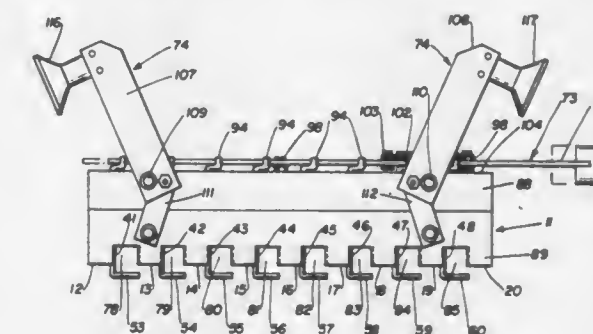
John A. Balaban, 4142 Graham St., Pleasanton, Calif. 94566

Filed Dec. 8, 1980, Ser. No. 214,578

Int. Cl.<sup>3</sup> A63B 51/14

U.S. Cl. 273-73 A

8 Claims



1. A device for aiding in the placement of cross strings in a racket previously strung with substantially coplanar longitudinal strings comprising:

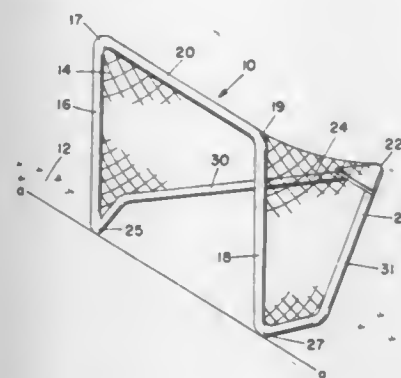
a support having a plurality of substantially coplanar string bearing surfaces transversely spaced for placement on a first set of alternate longitudinal strings in said racket;  
a plurality of members mounted for rotation on said support about parallel spaced axes substantially perpendicular to said bearing surfaces and also being mounted for axial displacement relative to said bearing surfaces, each of said members having an offset end rotatable with said members to first and second positions parallel and perpendicular to said longitudinal strings respectively;  
said ends in second position being juxtaposed to a second set of longitudinal strings intermediate said bearing surfaces and said first set of alternate longitudinal strings;  
means for jointly rotating said members to said first and second positions; and  
means for jointly axially displacing said members while in said second position to effect relative displacement of said first and second sets of longitudinal strings to provide a



clear lateral path therebetween for receipt and tensioning of a cross string.

**4,339,132**  
**LACROSSE GOAL**  
Lee D. Stevens, 65 Bishop Dr., Aston, Pa. 19014, and Harry C. Grau, 1329 Colton Rd., Gladwyne, Pa. 19035  
Filed Mar. 19, 1981, Ser. No. 245,384  
Int. Cl.<sup>3</sup> A63B 63/02  
U.S. Cl. 273—400

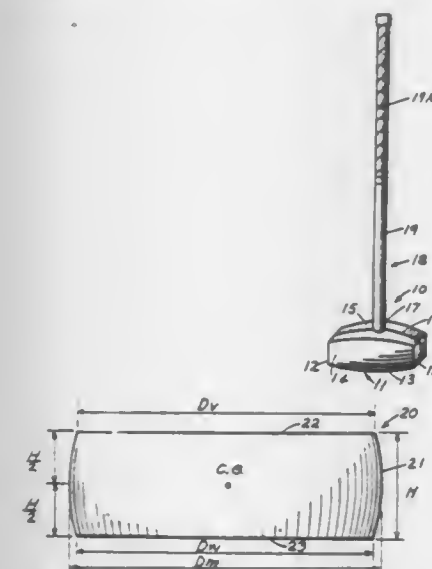
4 Claims



1. A frame for a lacrosse goal comprising:
  - a two upright frame members;
  - a crossbar frame member joining the upper ends of the upright members, said crossbar together with the upright members defining a vertical plane and enclosing that portion thereof which constitutes a goal mouth;
  - a base having two leg members, each leg member having a first end interconnecting with the other leg at the rear periphery of the frame and a second end which connects to the lower end of one of the upright members, said base extending rearward in the plane perpendicular to the plane of the goal mouth, thereby defining a goal enclosure;
  - in which a first portion of each said leg immediately rearward of the goal mouth forms an obtuse angle with the plane of the goal mouth, and a second portion of each said leg, beginning at a point disposed at a slight distance from the plane of the goal mouth forms an acute angle with the plane of the goal mouth.

**4,339,133**  
**MALLET DRIVEN SLIDING DISC GAME AND APPARATUS**  
Norwood R. Warehime, 704 W. 34th St., Baltimore, Md. 21211  
Filed Sep. 15, 1980, Ser. No. 187,536  
Int. Cl.<sup>3</sup> A63F 3/00  
U.S. Cl. 273—126 R

10 Claims

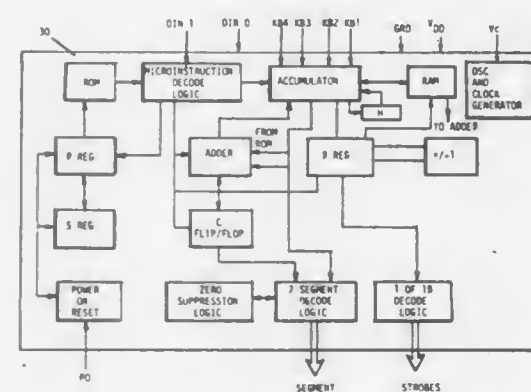
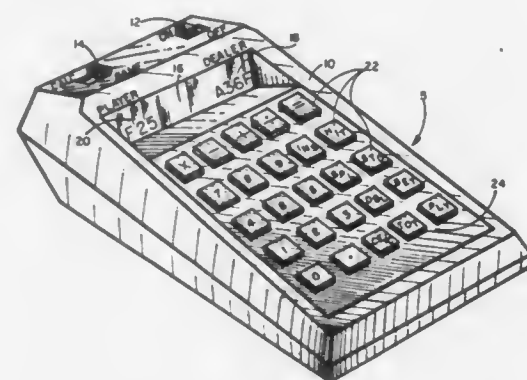


1. Mallet driven sliding disc game and apparatus therefor, wherein the apparatus comprises a smooth and horizontal

playing surface means, said playing surface means including a game area means, at least one striking mallet, and a set of five sliding game pieces of resilient material being circular discs with maximum diameter of about 4 inches (10.2 cms) to about 7 inches (17.7 cms), with two of said five pieces having first type distinguishing markings, two others of five said pieces having second type distinguishing markings, and remaining one of five said pieces having a third type distinguishing marking, said mallet comprises a handle member having a gripping surface means at one end and is secured perpendicularly to the top central portion of an elongated head member at its other end, said head member being essentially rectangular in cross section normal to the nominal longitudinal axis at the central portion of said head member, with top and side surfaces of said head member tapering gradually downwardly and inwardly respectively while moving toward the faces at each end of said head member, said faces being essentially rectangular in shape and positioned normal to the nominal longitudinal axis of said head member, bottom surface of said head member being flat, whereby players competing in a prescribed manner, on said playing surface means, drive said game pieces with said mallet to position said game pieces for game advantage and to make maximum contact and proximity point scores in attempt to win game.

**4,339,134**  
**ELECTRONIC CARD GAME**  
Gary W. Macheel, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.  
Filed Jul. 5, 1977, Ser. No. 813,199  
Int. Cl.<sup>3</sup> A63F 1/00  
U.S. Cl. 273—138 A

9 Claims

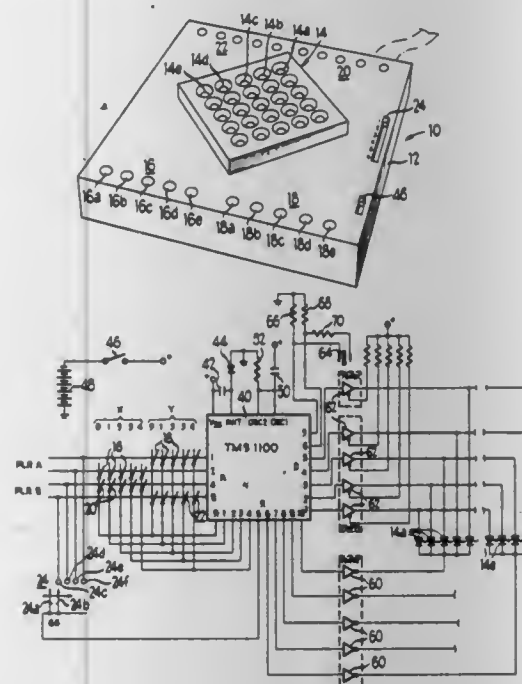


6. An electronic true blackjack card game for hand-held operation by a player comprising:
  - a hand-held housing constructed and arranged to include; keyboard means having keys for selection of player decision operations including the play of the game and the placement of bets in accordance with the complete rules of blackjack;
  - display means for simultaneous display of card hands held by a player and a dealer, display of player betting and the current stake; and

microprocessor means for controlling the game in accordance with the rules of blackjack and for calculating the betting status of the player in accordance with the outcome of the game and displaying player bet and current stake.

**4,339,135**  
**ELECTRONIC MATRIX BOARD GAME APPARATUS AND METHOD**  
Jeffrey D. Breslow, Highland Park; Alex Imatt, and Christian H. Oberth, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.  
Filed Oct. 22, 1980, Ser. No. 199,468  
Int. Cl.<sup>3</sup> A63F 9/06  
U.S. Cl. 273—237

50 Claims



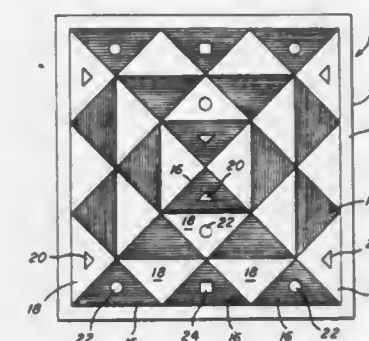
46. A microprocessor controlled portable game comprising:
  - a generally rectangular, portable housing;
  - a microprocessor within said portable housing;
  - an array of light emitting devices arranged in rows and columns on said housing and visible from atop thereof;
  - first and second series of push buttons one for each of two players connected to said microprocessor and positioned on opposite sides of said array, each series including a push button for each of said rows and a push button for each of said columns;
  - means including said microprocessor and responsive to simultaneous actuation of a row push button and a column push button in one of said series for energizing the light emitting device in the row and column corresponding to said simultaneously actuated push buttons; and
  - means within said microprocessor for identifying a simultaneous actuation of a row and column push button in either of said series corresponding to a previously selected light emitting device by one player or a device adjacent to a device previously selected by the other player and in the same row or column as said device previously selected by said other player as an invalid move and means responsive to said identifying means for preventing the energization of said adjacent device.

50. The method of playing a microprocessor controlled game of the type which includes an array of light emitting devices arranged in rows and columns and two sets of manually operable switches, one for each of two players, for identifying different ones of said devices, which comprises the steps of establishing a predetermined time period, sequentially energizing different ones of said devices in a predetermined one of said rows at random, then maintaining one of the devices in said predetermined row illuminated continuously for the predetermined time period, identifying said one device by one of the players, and responding to the identification of a device adjacent to said one device and in the same row or column as

said one device by one of the players within said time period by sequentially energizing different ones of said devices at random in the row or column which contains said adjacent device and is perpendicular to a line connecting said one device and said adjacent device.

**4,339,136**  
**BOARD GAME HAVING TRIANGULAR PLAYING SPACES**  
Neil A. Gittings, 7320 Red Ledge Dr., Scottsdale, Ariz. 85253  
Filed Jan. 8, 1981, Ser. No. 223,276  
Int. Cl.<sup>3</sup> A63F 3/00  
U.S. Cl. 273—242

2 Claims



1. A board game comprising a game board with a playing field having a plurality of triangular spaces of two distinguishable colors delineated thereon and arranged in concentric rows, all adjacent triangular spaces being distinguishably colored, all of the spaces having the same shape and dimensional characteristics, the apices of the innermost row of triangular spaces being disposed inwardly and in contacting relation to form the center of the playing field with only two intersecting lines passing through the center of the playing field, the innermost row of spaces comprising only four triangular spaces, the outer rows of triangular spaces having adjacent spaces inverted in relation to each other, a plurality of game pieces positionable on and movable along the triangular spaces, said game pieces being divided into two sets which are distinguishably colored with each set including a game piece designated as a square, three game pieces designated as a triangle and three game pieces designated as a circle, the game pieces designated as a triangle capable of moving one space, the game pieces designated as a circle capable of moving two spaces and the game piece designated as a square capable of moving three spaces with the object of the game being to block movement of the opponent's game piece designated as a square in which none of the pieces can jump each other and the game pieces must move their full capability during each turn of movement.

**4,339,137**  
**TETHERED BALL AND TUBE TARGET**  
Kenneth Kemp, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007  
Filed Mar. 16, 1979, Ser. No. 21,013  
Int. Cl.<sup>3</sup> A63B 65/00

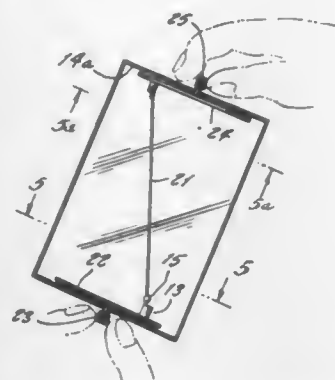
U.S. Cl. 273—331

3 Claims

1. A puzzle, comprising in combination, a hollow transparent rectangular box having a ceiling and a floor including a bead suspended from the ceiling and a tube mounted above

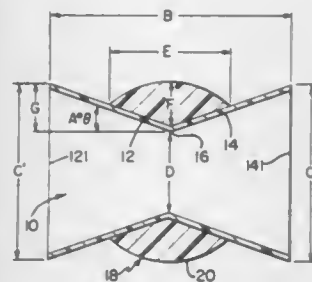


said floor, said tube being adapted to receive and retain therein said bead, including means for adjustably suspending the bead



in said box from said ceiling, whereby the point of suspension is movable.

**4,339,138**  
**THROWING DEVICE**  
Carl M. Di Manno, P.O. Box 2111, Duxbury, Mass. 02332  
Filed Apr. 21, 1980, Ser. No. 142,267  
Int. Cl.<sup>3</sup> A63B 65/00  
U.S. Cl. 273-428 13 Claims

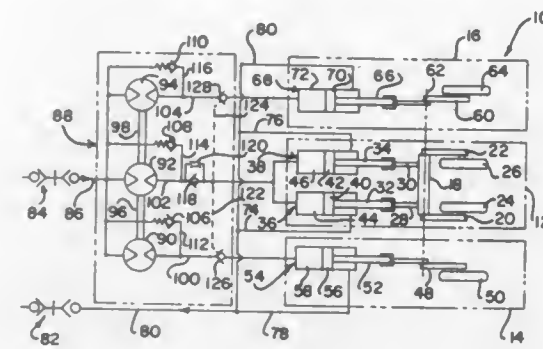


1. A throwing device of hand-fitting external proportions comprising a tubular core comprising two hollow substantially frusto conical members placed small end to small end to define a common throat at the central portion of the device, said central portion being substantially surrounded by gripping means comprising a grip which covers part but not all of the exterior surface of the tubular core, leaving a portion of larger end of each member protruding exposed at each end of the device, said grip lying substantially within the imaginary surface contained by the larger ends of the two members and defining with the exposed protruding ends of the tubular core a trough or valley between each end and the central portion of the tubular member.

**4,339,139**  
**HYDRAULIC CIRCUIT FOR SYNCHRONOUS LIFT OF FLEXIBLE FRAME IMPLEMENTS**  
William C. Swanson, Clarendon Hills, Ill., assignor to International Harvester Co., Chicago, Ill.  
Filed Jun. 5, 1980, Ser. No. 156,897  
Int. Cl.<sup>3</sup> A01B 63/22  
U.S. Cl. 280-43.23 9 Claims

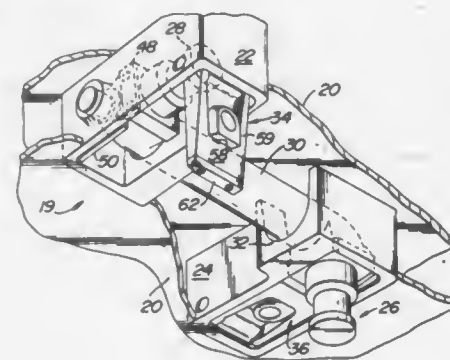
1. In an implement having a main frame and at least one wing frame flexibly connected thereto, a wheel assembly on each frame for raising and lowering the associated frame, a hydraulic circuit for controlling said wheel assemblies comprising:  
a hydraulic ram means connected to each wheel assembly, each wheel assembly ram means releasing a flow of hydraulic fluid to lower the associated frame;  
a rotary flow divider having a rotor for metering flow to each hydraulic ram means;  
a check valve between the ram means on said main frame and its associated rotor for permitting flow only toward said ram means;  
an orifice in parallel with said check valve effective to generate

ate a valve-piloting back pressure while affording only restricted flow from the ram means on said main frame for slowed lowering of the latter;  
a pilot-operated check valve interposed between the ram means on said wing frame and its associated rotor;  
and



a pilot line hydraulically interposed between said orifice and ram means on said main frame for connecting said pilot-operated check valve thereto for insuring contemporaneous flow from both said ram means whereby the wing frame lowers in unison with said main frame.

**4,339,140**  
**VEHICLE KING PIN ASSEMBLY**  
Andrew Abolins, Langhorne, Pa., assignor to Strick Corporation, Ft. Washington, Pa.  
Filed Jun. 4, 1980, Ser. No. 156,310  
Int. Cl.<sup>3</sup> B62D 53/08  
U.S. Cl. 280-433 10 Claims



1. A king pin assembly adapted to be mounted on a first vehicle for coupling said vehicle to a second vehicle comprising first and second king pins integral in one piece with a common shaft, said king pins being 90° out of phase with each other so that pivoting of said shaft about its longitudinal axis alternately moves the king pins between operative and inoperative positions, a discrete first cam means for adjustably and alternately preloading each king pin in a direction parallel to said axis when each king pin is in its operative position, a discrete second cam means for adjustably preloading each king pin in a direction perpendicular to said axis when each king pin is in its operative position whereby the king pins in an operative position are preloaded in mutually perpendicular planes.

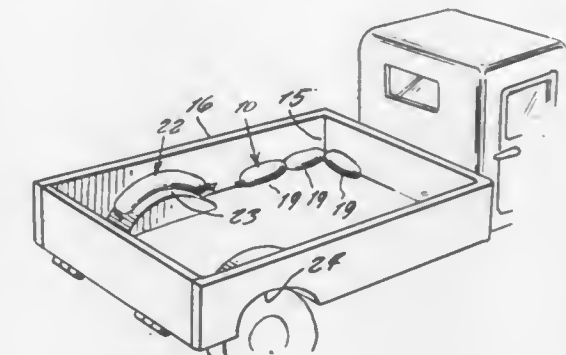
**4,339,141**  
**COLLAPSIBLE FOLDING CART**  
Robert Thiboutot, Lac St. Charles, Canada, assignor to Les Entreprises Rotot Ltee, St-Etienne de Beaumont, Canada  
Filed Sep. 17, 1980, Ser. No. 187,988  
Int. Cl.<sup>3</sup> B62B 3/02  
U.S. Cl. 280-652 5 Claims

1. A collapsible folding cart movable between a first, erected condition and a second, collapsed condition, said cart comprising:

a pair of front corner posts;  
a pair of rear corner posts;  
means carried by said rear corner posts for rotatably supporting wheels;  
a front framework comprising a plurality of vertically spaced link assemblies, an X-frame formed of crossed members having lower ends connected to a lower one of said link assemblies and upper ends connected to an upper one of said link assemblies, and means for releasably locking said front framework in a position holding said link assemblies horizontal each of said link assemblies being comprised of a pair of link members having distal ends pivotally connected to said front corner posts and proximal ends pivotally connected to each other in a central region of the link assembly so that the central region of the link assembly is movable vertically upwards to move the front corner posts towards each other to reduce the width of the front framework;  
a rear framework comprising a plurality of vertically spaced link assemblies, an X-frame formed of crossed members having lower ends connected to a lower one of said link assemblies and upper ends connected to an upper one of said link assemblies, and means for releasably locking said front framework in a position holding said link assemblies horizontal, each of said link assemblies being comprised of

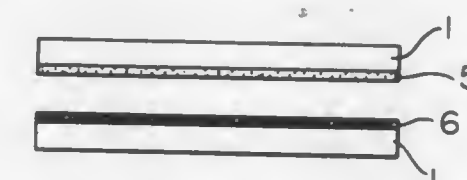
upwardly from the front to the rear of the cart, and are positioned in the second condition of the cart with their axes extending generally parallel to the corner posts.

**4,339,142**  
**INNER TUBE TRACTION DEVICE**  
Douglas Tanner, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of, New York, N.Y. 10007  
Filed Aug. 20, 1980, Ser. No. 179,677  
Int. Cl.<sup>3</sup> B60S 9/00  
U.S. Cl. 280-759 2 Claims



1. A ballast weight for an automotive vehicle comprising in combination, a flexible tubing, a quantity of sand inside said tubing, means for closing opposite ends of said tubing, and a plurality of narrow constrictions longitudinally spaced along said tubing dividing the same into a plurality of longitudinal links of different weight values including indicia for indicating the total weight of the ballast, said constrictions being formed of tightening means mounted about the tubing periphery which are tightened adjustably to provide constrictions of desired diameters which permit selective flow of sand between adjacent links to selectively adjust the weight of any link in the ballast and allow folding of the ballast to accommodate the available space contour.

**4,339,143**  
**PRESSURE-SENSITIVE RECORDING MATERIAL**  
Isamu Yoshino, Kunitachi; Yasohachi Takahashi, Urawa, and Osamu Fujii, Osaka, all of Japan, assignors to Mishima Paper Co., Ltd., Tokyo and Naigai Ink. Mfg. Co., Ltd., Osaka, both of, Japan, part interest to each  
PCT No. PCT/JP79/00318, § 371 Date Aug. 18, 1980, § 102(e) Date Jul. 18, 1980, PCT Pub. No. WO80/01263, PCT Pub. Date Jun. 26, 1980  
PCT Filed Dec. 18, 1979, Ser. No. 205,962  
Int. Cl.<sup>3</sup> B41M 5/22  
U.S. Cl. 282-27.5 6 Claims



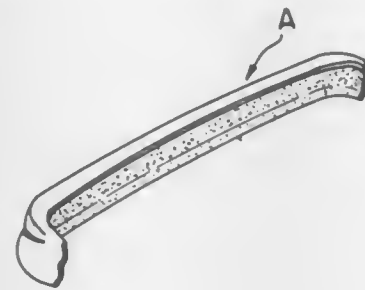
a pair of link members having distal ends pivotally connected to said rear corner posts and proximal ends pivotally connected to each other in a central region of the link assembly so that the central region of the link assembly is movable vertically upwards to move the rear corner posts towards each other to reduce the width of the rear framework;  
a pair of side frameworks comprising a plurality of link elements having end portions pivotally connected to vertically spaced regions on the corner posts on each side of the cart so that the depth of the cart is reduced by moving the front corner posts towards the rear corner posts;  
a bottom framework hingedly and pivotally connected to lower portions of said side frameworks and hingedly connected to lower portions of said front and rear frameworks;  
longitudinally-extending handles positioned on both sides of the cart and having lower portions extending downwardly from the front of the cart to form legs for supporting the cart and upper portions extending upwardly from the rear of the cart to form grips that are gripped to facilitate cart movement; and  
means for pivotally connecting said handles to said cart so that said handles are positioned in the first condition of the cart with longitudinal axes thereof extending diagonally

1. A pressure-sensitive recording material in which two color-forming components capable of forming a colored substance upon reaction with each other are formed on the surfaces of separate supports as a completely transferable coated layer and a receptive coated layer respectively, said transferable coated layer being a layer of a hot-melt type coating containing one color-forming component, and said receptive coated layer being a layer having absorbent micropores and composed of 10 to 35% of microcapsules containing a liquid containing the other color-forming component, 70 to 50% of a fine powder which does not react with the color-forming



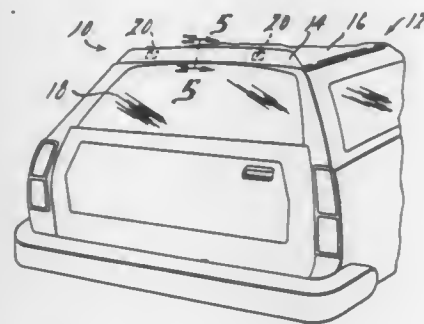
components to form a color, and 20 to 15% of a binder which does not react with the color-forming components to form a color, the diameter of said micropores being less than 10 microns, and the total volume of the micropores being greater than the total volume of the liquid within the microcapsules.

**4,339,144**  
**AUTO BUMPER AND ITS MANUFACTURING PROCESS**  
 Yasumasa Nagasaka, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan  
 Filed Nov. 14, 1979, Ser. No. 93,974  
 Claims priority, application Japan, Feb. 21, 1979, 54-19386  
 Int. Cl.<sup>3</sup> B60R 19/04  
 U.S. Cl. 293—120



1. An auto bumper comprising: an outer visible part comprising a stainless steel plate having a first thickness; a layer of one from the group consisting of aluminum and aluminum alloy bonded to one side surface of said plate, said layer being bonded to said plate by shot peening said metal surface and flame spraying said layer upon substantially said entire one side surface, said layer having a second thickness smaller than said first thickness; and an inner part comprising a fiber reinforced plastic material bonded to said layer, whereby said layer is sandwiched between and bonds said inner and outer parts to form a unitary bumper having low mass and high lustre.

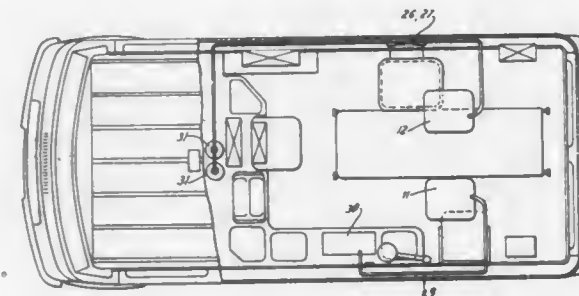
**4,339,145**  
**VEHICLE WIND DEFLECTOR**  
 John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236, and John S. Cucheran, Lake Orion, Mich., assignors to John A. Bott, Grosse Pointe Shores, Mich.  
 Filed Nov. 12, 1980, Ser. No. 206,307  
 Int. Cl.<sup>3</sup> B62D 35/00  
 U.S. Cl. 296—1 S



1. An automobile wind deflector assembly for attachment to an automotive vehicle comprising: a wind deflector blade, having at least one pair of alignment flanges and a pair of attachment flanges; a pair of mounting brackets operable to mount the blade on an automobile body, each having at least one flange cooperating with one of said alignment flanges of said blade and a mounting flange cooperating with one of said wind deflector mounting flanges;

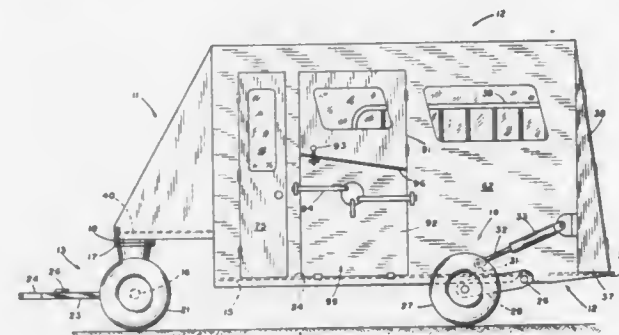
means for fastening said mounting brackets to said automotive vehicle; and means for securing said blade to said mounting brackets comprising means for fastening each of said blade mounting flanges to one of said bracket mounting flanges, wherein said mounting flanges of said wind deflector blade includes means for obscuring both said means for securing said blade to each said mounting bracket and both of said mounting brackets from view when said wind deflector assembly is fully assembled on said vehicle.

**4,339,146**  
**COACHWORK FOR A MEDICALLY EQUIPPED VEHICLE**  
 J. C. Ludwig Lehmann, Lorch, Fed. Rep. of Germany, assignor to Binz GmbH & Co., Lorch, Fed. Rep. of Germany  
 Filed Aug. 28, 1980, Ser. No. 182,323  
 Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936858; Feb. 1, 1980, 3003687  
 Int. Cl.<sup>3</sup> A61G 3/00  
 U.S. Cl. 296—19



1. Coachwork for a medically equipped vehicle including a cabin for accommodating medical apparatus for emergency cases and means for receiving said medical apparatus, said means being pivotally arranged between a first upward position in which it lies adjacent a ceiling or associated part of said cabin and is fastened thereto, and a second downward position in which the means is freely accessible from within the cabin, said means comprising at least one container protectedly housing said medical apparatus and accommodating at least one infusion flask or bag and infusion instruments.

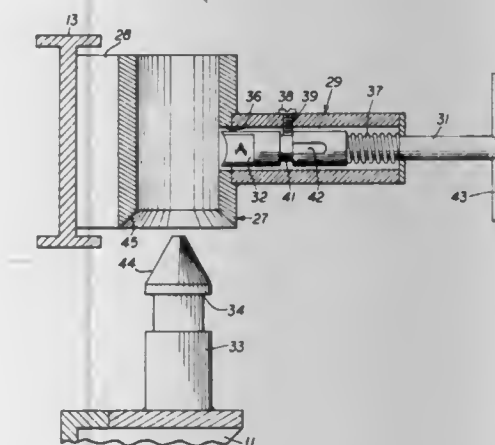
**4,339,147**  
**EQUINE AMBULANCE**  
 John S. Kimzey, P.O. Box 1001, Woodland, Calif. 95695  
 Filed Nov. 3, 1980, Ser. No. 203,728  
 Int. Cl.<sup>3</sup> B60P 3/32  
 U.S. Cl. 296—24 C



1. An equine ambulance comprising: a. an elongated chassis extending from a forward end to an after end; b. a housing carried on said chassis including a floor and lateral fore and aft side walls; c. ground engaging wheel means for supporting said after end of said chassis; d. a vertical fore and aft press wall located within said housing;

- e. cable means for moving said press wall between a first position adjacent one of said side walls to a second position removed from either of said side walls;
- f. door means on the perimeter of said housing for providing ingress and egress to an equine;
- g. means for controlling the movement of said cable means so that said press wall can be urged gently but firmly against an equine in standing position between said press wall and the side wall adjacent the equine as said press wall is moved from said first position toward said second position; and,
- h. means for coupling said forward end of said chassis to a tractor for transporting said ambulance.

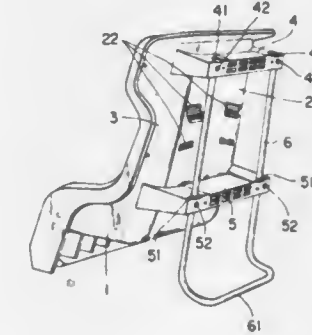
**4,339,148**  
**APPARATUS FOR DETACHABLY CONNECTING A REMOVABLE FRAME TO A VEHICLE FRAME**  
 Lloyd K. Smith, and James P. Ryan, both of Box 5624, Rome, Ga. 30161  
 Filed Jul. 7, 1980, Ser. No. 166,139  
 Int. Cl.<sup>3</sup> B62D 23/00  
 U.S. Cl. 296—35.3



1. Apparatus for detachably connecting a removable frame to a supporting frame of a vehicle which comprises: (a) a plurality of spaced apart, vertically extending sleeve-like members mounted on said removable frame with the lower ends of said sleeve-like members being beveled to provide downwardly and outwardly flaring lower end portions, (b) an upwardly projecting member having a tapered upper end portion mounted on said supporting frame in position to telescope into the downwardly and outwardly flaring lower end portion of each of said sleeve-like members, (c) a horizontal tubular housing mounted on one side of each said sleeve-like member and projecting outwardly thereof, (d) a passageway through each said sleeve-like member in axial alignment with said tubular housing, (e) a locking element having an annular recess therein mounted for axial movement in said tubular housing selectively from a first position outwardly of said sleeve-like member to a second position inwardly of said sleeve-like member; (f) a recess in said upwardly projecting member in alignment with said passageway with the uppermost wall of said recess in position to receive a notch provided at the inner end of said locking element upon movement of said locking element to said second position, (g) a compression spring urging said locking element toward said second position and into engagement with said recess in said upwardly projecting member, (h) there being an opening through one side of said horizontal tubular housing in alignment with said annular recess in said locking element when said locking element is in said first position, (i) a pin-like member extending through said opening in position to engage said annular recess and positively retain said locking element in said first position, (j) an axially extending slot in said locking element having

one end thereof communicating with said annular recess and receiving said pin-like member upon movement of said locking element to said second position, and (k) a handle carried by the outer end of said locking element for selectively imparting axial and rotary motion thereto.

**4,339,149**  
**CHILD'S AUTOMOTIVE SAFETY SEAT**  
 Shinroku Nakao, Yokohama; Yoshiyasu Ishii, Tokyo; Susumu Matsumoto, Tokyo, and Kiyoshi Hoshino, Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan  
 Filed Apr. 2, 1980, Ser. No. 136,639  
 Claims priority, application Japan, Apr. 10, 1979, 54/47056[U]; Apr. 13, 1979, 54/49222[U]; Apr. 24, 1979, 54/54802[U]  
 Int. Cl.<sup>3</sup> B60R 21/10  
 U.S. Cl. 297—250



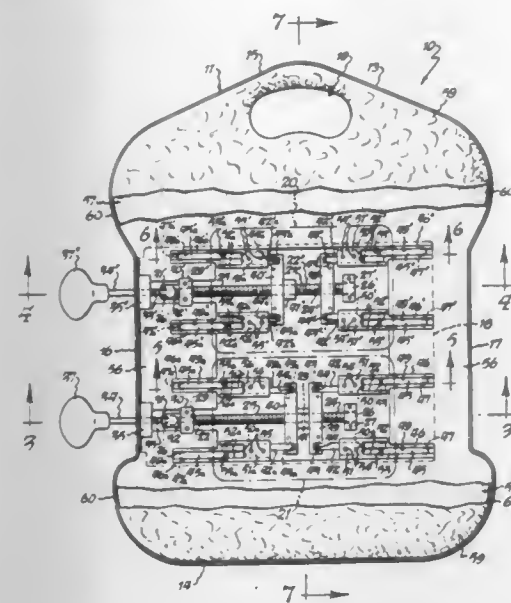
1. A safety seat for children for use on an automotive seat having an automotive seat belt comprising: a seat body having through-holes formed therein including a bottom portion, a backrest portion and side walls, at least one upper arm means and at least one lower arm means, each arm means extending from a rear side of said backrest portion and having second through-holes formed therein, a hollow main support pipe having a substantially L-shape from a side view and a substantially U-shape from a front view being disposed in said second through-holes formed in said arm means, and adjusting and fastening means for determining a relative position between said main support pipe and said upper and lower arm means for adjusting the height and slant angle of said seat body in accordance with the shape of said automotive seat and size of a child, said adjusting and fastening means fastening said main support pipe to an end of said lower arm means so that said automotive seat belt can be fastened over said lower arm means so as to keep said safety seat from moving in a forward direction.

**4,339,150**  
**BACK SUPPORT CONSTRUCTION**  
 Daniel E. McNamara, and Gerald Sinatra, both of Snyder, N.Y., assignors to GMSR Ortho Enterprises, Inc., Amherst, N.Y.  
 Filed May 5, 1980, Ser. No. 146,209  
 Int. Cl.<sup>3</sup> A47C 3/00, 7/02  
 U.S. Cl. 297—284

11. An adjustable back support comprising a substantially vertical base, first and second vertically spaced back support plates each defining a surface area for placement in contiguous relationship to a person's back, and mechanical linkage means for positively bodily moving said first and second back support plates in their entireties-independently of each other in a sub-



stantially horizontal direction toward and away from said base to thereby provide two vertically spaced surface areas entirely



independent of each other at selectively variable distances from said base for supporting the back of a person.

4,339,151

## HEAD RESTRAINT

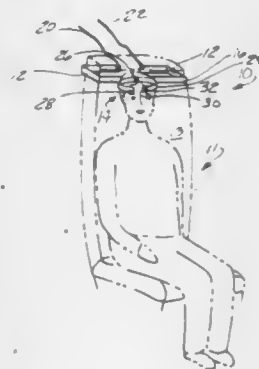
Eric D. Riggs, 20010 Ferguson St., Detroit, Mich. 48235-

Filed Jan. 14, 1980, Ser. No. 111,955

Int. Cl.<sup>3</sup> A47C 31/00; A47D 15/00

U.S. Cl. 297-464

4 Claims



1. A head restraint for supporting the user's head while seated in a chair comprising:

a strap having ends adapted to be secured in an encircling manner around a chair back; and  
an adjustable headband secured to a central forward portion of the strap and adapted to encircle the user's head, the adjustable headband comprises a head strap secured to the central forward portion of the strap and having an adhesive patch with adhesive on opposed surfaces affixed to one end of the head strap with another end of the head strap being engageable with the adhesive patch to secure the head strap around the head of the wearer; and wherein the headband and strap encircling the chair back are made from paper strips.

# 4,339,152 METHOD AND APPARATUS FOR MIXING GASEOUS OXIDANT AND LIXIVANT IN AN IN SITU LEACH OPERATION

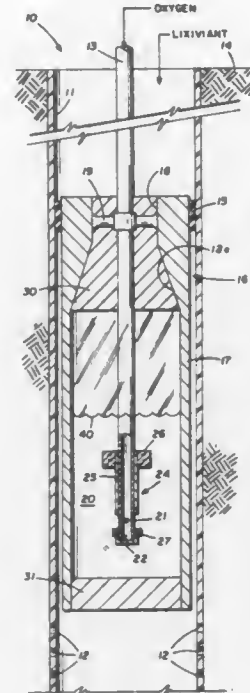
Bert J. Warner, Dallas; Melwyn L. Mathis, Arlington, and Warren F. Johnson, Dallas, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 31, 1977, Ser. No. 846,874

Int. Cl.<sup>3</sup> E21B 43/28

U.S. Cl. 299-5

15 Claims



1. A method of mixing a gaseous oxidant and a lixiviant at a downhole location within a well, said method comprising: supplying said gaseous oxidant to a mixing zone near the lower end of said injection well; trapping said gaseous oxidant within said mixing zone; passing said lixiviant through said trapped gaseous oxidant within said mixing zone to mix and dissolve said gaseous oxidant into said lixiviant; and removing undissolved gaseous oxidant from said lixiviant after said lixiviant has passed through said trapped gaseous oxidant.

4,339,153

# APPARATUS FOR EXTENDING AND RETRACTING THE CUTTER BARS OF A BORING TYPE MINING MACHINE

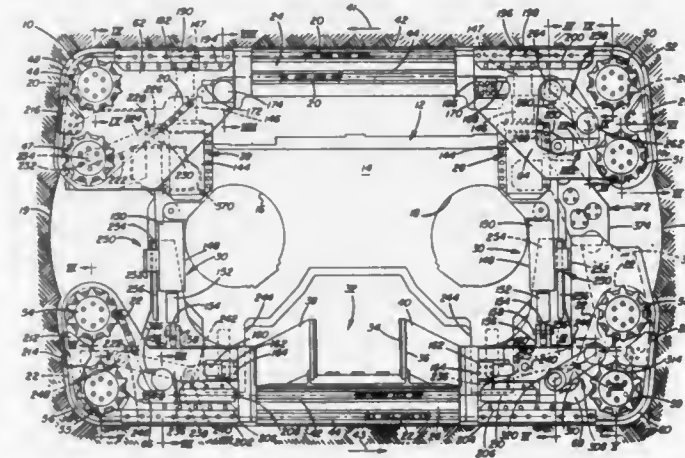
Maurice K. LeBegue, Argillite, Ky., and Earl C. Michael, Hoyleton, Ill., assignors to National Mine Service Company, Pittsburgh, Pa.

Filed Jun. 16, 1980, Ser. No. 159,581

Int. Cl.<sup>3</sup> E21C 27/24

U.S. Cl. 299-59

8 Claims



1. A mining machine comprising,

a mobile frame, said mobile frame having a front end portion adapted to advance to a position opposite a mine face, a cutter chain carrying bar movably positioned on said mobile frame front end portion, power means mounted on said mobile frame front end portion for moving said cutter chain carrying bar between a first position extended outwardly from said mobile frame and a second position retracted inwardly on said mobile frame, a chain guide member carried by said cutter chain carrying bar, said chain guide member being positioned for lateral movement on said cutter chain carrying bar, a control link pivotally connected to said mobile frame for moving said chain guide member laterally on said cutter chain carrying bar upon actuation of said power means, said control link being pivotally connected at one end to said mobile frame and connected at the opposite end to said chain guide member, said chain guide member having a horizontal slot, retainer means connected to said cutter chain carrying bar and positioned in said horizontal slot to permit said chain guide member to move horizontally relative to said retainer means and said cutter chain carrying bar, said power means being operable upon actuation to vertically move said cutter chain carrying bar to a preselected position between said first and second positions on said mobile frame front end portion, said retainer means being vertically movable with said cutter chain carrying bar to transmit vertical movement to said chain guide member, said control link being adapted upon movement of said cutter chain carrying bar to pivot on said mobile frame and move said chain guide member between a fully extended position and a fully retracted position relative to said mobile frame to a preselected position corresponding to the preselected position of said cutter chain carrying bar, and said chain guide member being restrained to vertical and horizontal movement upon pivoting of said control link by the engagement of said retainer means in said horizontal slot as said chain guide member moves vertically to move said chain guide member along a combined horizontal and vertical path simultaneously with movement of said cutter chain carrying bar.

4,339,154

## VEHICLE BRAKE SYSTEM

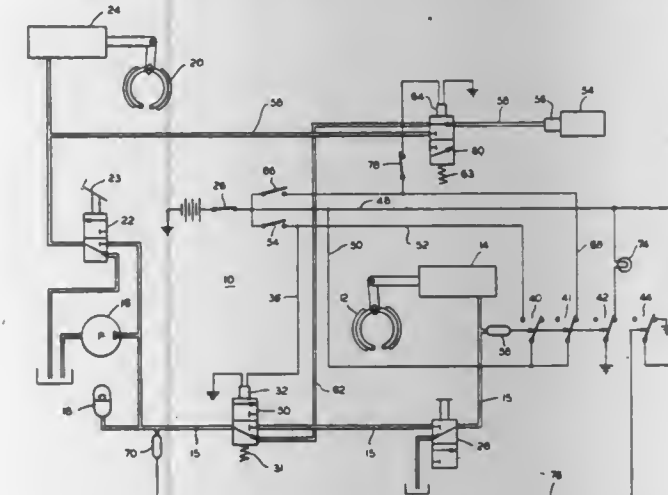
Ralph M. Duttarier; Michael H. Estkowski, and Russell P. Smith, all of St. Joseph, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Jul. 3, 1980, Ser. No. 165,839

Int. Cl.<sup>3</sup> B60T 13/22, 13/74

U.S. Cl. 303-3

10 Claims



1. A vehicle brake system having a spring applied fluid pressure released actuator, a source supplying pressurized fluid to said actuator for brake release, and a two position valve in

the fluid circuit between said source and said actuator having a brake applied position and a brake release position, comprising

a solenoid operated valve in said fluid circuit between said source and said two position valve maintaining the circuit normally closed, a momentary contact switch for closing an electrical circuit for energizing said solenoid and moving said solenoid operated valve to pressurize said brake actuator when said two position valve is in the brake release position, a pressure sensor responsive to the fluid pressure in said actuator which closes a second electric switch when a predetermined pressure is reached in said sensor and a connection from said second switch to said solenoid to maintain the solenoid energized even though said momentary contact switch is opened.

4,339,155

# CONTROL VALVE ARRANGEMENT FOR COMBINED BRAKE AND AIR RESERVOIR DEVICE

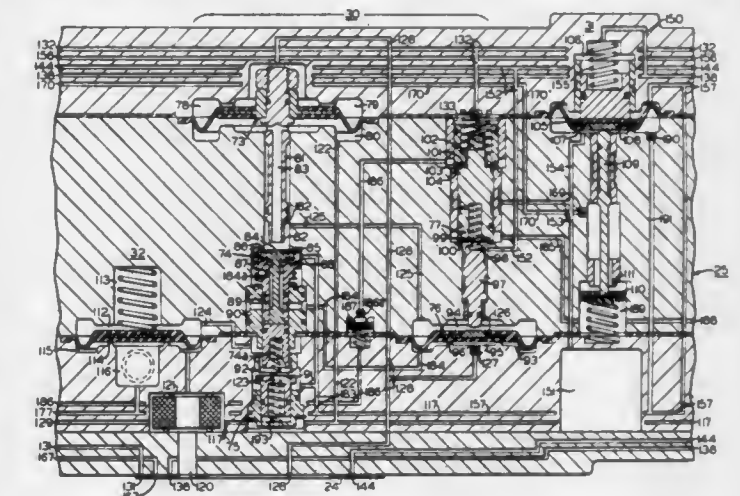
James E. Hart, Trafford, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Filed Oct. 8, 1980, Ser. No. 195,149

Int. Cl.<sup>3</sup> B60T 15/32

U.S. Cl. 303-38

31 Claims



1. Fluid pressure brake apparatus for a railway vehicle operative in response to variation of fluid pressure in a brake pipe of the vehicle comprising:

(a) a brake cylinder device including:

- (i) a power cylinder;
- (ii) a first piston in said power cylinder and cooperating therewith to form first and second chambers on opposite sides thereof;
- (iii) a positioning cylinder having a diameter less than the diameter of said power cylinder;
- (iv) a second piston in said positioning cylinder and cooperating therewith to form third and fourth chambers on the opposite sides thereof, said first and second piston abutments being interconnected; and
- (v) biasing means for urging said first and second pistons in a brake release direction;

(b) application and release control valve means having a release position for effecting the charging of said first and second chambers with said brake pipe fluid pressure and the venting of said third chamber, whereby said biasing means is effective to move said first and second pistons to a brake release position;

(c) service valve means operative in response to a reduction of said brake pipe fluid pressure at either a service or emergency rate for effecting actuation of said application and release control valve means to an application position, whereby said charging of said first and second chambers and said venting of said third chamber is terminated and fluid pressure communication is established between said first and third chambers, whereby



- said first and second pistons are moved from said brake release position to a brake application position;
- (d) said application and release control valve means in said application position thereof further establishing fluid pressure communication between said first and second chambers to provide fluid pressure communication therebetween during said movement of said first and second pistons from said brake release position to said brake application position;
- (e) transfer valve means operative in response to said fluid pressure in said third chamber exceeding a predetermined value for interrupting said fluid pressure communication between said first and third chambers and concurrently venting fluid pressure from said first chamber, whereby said first and second pistons exert a service braking force corresponding to the fluid pressure differential across each of the respective first and second pistons; and
- (f) said transfer valve means being further operative, prior to said fluid pressure in said third chamber exceeding said predetermined value, for establishing fluid pressure communication between said first and second chambers to provide fluid pressure equalization therebetween during such time that fluid pressure communication is established between said first and third chambers following said movement of said first and second pistons from said brake release position to said brake application position.

4,339,156

### ROLLER-IDLER ASSEMBLY FOR CRAWLER UNDERCARRIAGE

Richard E. Livesay, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

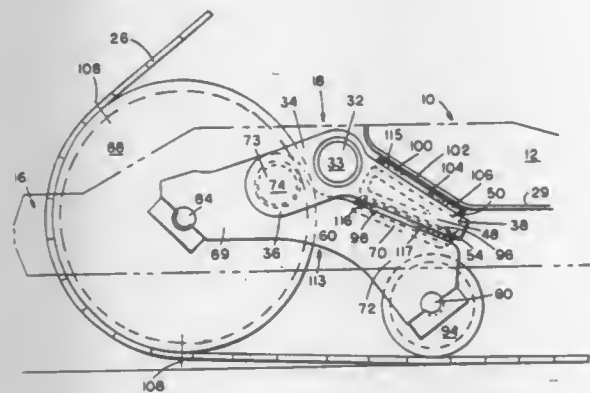
PCT No. PCT/US80/01118, § 371 Date Aug. 29, 1980, § 102(e) Date Aug. 29, 1980, PCT Pub. No. WO82/00810, PCT Pub. Date Mar. 18, 1982

PCT Filed Aug. 29, 1980, Ser. No. 261,113

Int. Cl.<sup>3</sup> B62D 55/10, 55/30

U.S. Cl. 305—22

12 Claims



1. A mounting assembly (113) for an idler (88) and a roller (94) of an endless track vehicle having a track roller frame (12) comprising:
- a support link (34) having an aft end (36) and a fore end (38) pivotally connected at a support link pivotal connection (32) intermediate its ends (36,38) to said frame (12); means (100) for limiting upward rotation of the support link fore end (38);
- a bogie link (60) having an aft end (69) on which is mounted said idler (88) by an idler axle (84) and a fore end (72) rotatably mounting said roller (94) said bogie link (60) being pivotally connected intermediate its ends (69,72) to the aft end (36) of said support link (34) at a bogie link pivotal connection (73); and
- means (48,70,98) interposed between the fore end (38) of said support link (34) and the fore end (72) of said bogie link (60) for resiliently cushioning upward movement of said roller (94) and downward movement of said idler (88).

4,339,157

### LINEAR MOTION ROLLING BEARING

Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eusenheim; Lothar Walter, Schweinfurt, and Horst M. Ernst, Eltingshausen, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

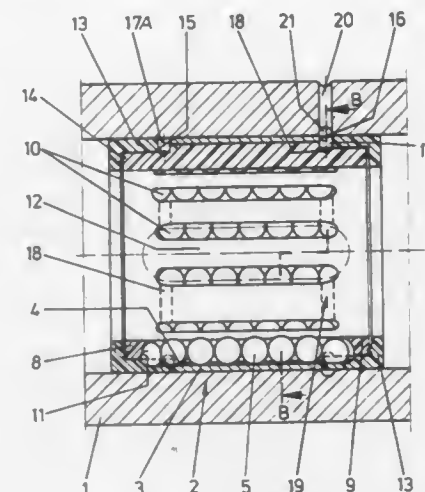
Filed Mar. 27, 1980, Ser. No. 134,493

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 7911040[U]

Int. Cl.<sup>3</sup> F16C 29/06

U.S. Cl. 308—6 C

8 Claims



1. In a linear motion rolling bearing including an outer sleeve with outer end faces and a bore, a cage seated in said bore with a plurality of circumferentially distributed endless channels, a plurality of rolling elements in said channels, each channel being comprised of axial races for the rolling elements under load and not under respectively, semicircular turnarounds connecting said races with each other in pairs, a plurality of rolling elements filling said channels, and two end rings, each covering one end of the cage radially on the outside and each having an inner end closely adjacent one of the corresponding outer end faces of the outer sleeve, the improvement of lubricant supply means for the rolling elements in said channels comprising at least one aperture extending radially inward and defined by a recess in at least one of said adjacent end faces of said outer sleeve and one end ring, said improvement further comprising a passage extending circumferentially between each two adjacent endless channels and formed between the outer periphery of the cage and the adjacent outer surface of at least one of the outer sleeve and end ring elements, said aperture communicating with said passage and thence with the endless channels that said passage extends between.

4,339,158

### END CAP ASSEMBLIES FOR CONVEYOR ROLLERS

Brian Greener, Welwyn Garden City, and Simon J. Pedder, Luton, both of England, assignors to SKF (U.K.) Limited, Bedfordshire, England

Filed Mar. 10, 1980, Ser. No. 128,893

Claims priority, application United Kingdom, Mar. 9, 1979, 7908393; Dec. 21, 1979, 7944104

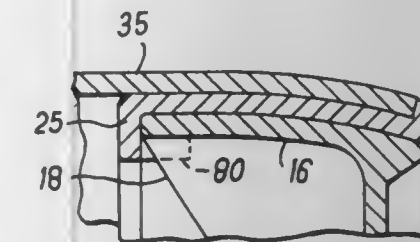
Int. Cl.<sup>3</sup> F16C 35/04, 35/12; B65G 13/00

U.S. Cl. 308—20

11 Claims

1. An end cap assembly for a roller tube of a conveyor roller, comprising a substantially rigid annular housing, a collar mounted on and surrounding the housing, the collar being of a size to be a sliding fit within an end of the roller tube and form a support therefor, and a bearing for rotatably mounting the assembly on a shaft, wherein the housing has an axially extending inner wall and an axially extending outer wall, the outer surface of said outer wall being curved radially inwards in an axial direction of the housing over at least part of the length of said outer wall so that the housing has a larger diameter end

and a smaller diameter end, the bearing is mounted as a force fit in the bore defined by said inner wall of the housing, and the collar has an inwardly projecting radial flange at one end thereof and an outwardly projecting radial flange at the other end thereof, said collar being mounted as a close fit on said larger diameter end of the housing with the inwardly projecting flange abutting said larger diameter end of the housing and the remainder of the collar spaced radially from said curved outer wall of the housing and movable radially inwards against



its own resilient resistance to deformation into abutting contact with said curved outer wall of the housing, whereby the end cap assembly may be firmly secured in an end of the roller tube by positioning the assembly in the tube with the outwardly projecting radial flange abutting the end of the tube and swaging the end of the tube radially inwards so as to force the collar against the housing with at least part of the collar lying along the curved outer surface of the outer wall and deformed to the curvature thereof and the end portion of the roller tube lying along the curved collar and deformed to the curvature thereof.

4,339,159

### CONVEYOR ROLLER BEARINGS

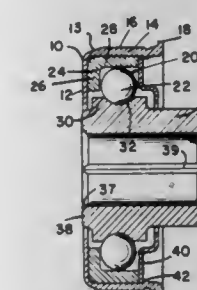
Donald A. Miller, 7315 Glastonbury Dr., Hudson, Ohio 44236

Filed Sep. 8, 1980, Ser. No. 184,640

Int. Cl.<sup>3</sup> F16C 13/00

U.S. Cl. 308—20

5 Claims



1. Conveyor bearing apparatus for registration in the end of a cylindrical tubular roller of a conveyor having an inner race, an outer race and discrete bearing elements positioned between the inner race and outer race for reducing friction in relative rotation between the inner race and outer race, casing means on one of the races for connecting the race to an object to be rotated with respect to the other of said races, the casing means and the object to be rotated having complementary concentric mounting surfaces, said casing is mounted radially outward on the outer race, one of said complementary surfaces being a cylindrical outer race of said casing, said casing having first and second axial ends, said first end has a radially outward extending flange, said second end comprises a radially inward extending rim and wherein the outer race is supported axially against the inward extending rim and said outer race has a cylindrical surface supported radially by a complementary cylindrical portion of the casing, the improvement comprising: a plurality of substantially parallel axially extending extensions formed integrally on said casing, said extensions are inwardly tapered toward said radially inward extending rim and terminates short of said radially inward extending rim and flares circumferentially into said radially outward extending flange whereby an interference fit is effected between said conveyor

4,339,160

### SEALING ARRANGEMENT FOR HOT BEARING HOUSINGS

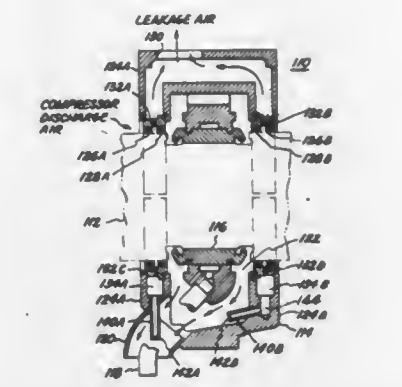
James D. McHugh, 1152 Rosehill Blvd., Schenectady, N.Y. 12309

Filed Jan. 12, 1981, Ser. No. 224,323

Int. Cl.<sup>3</sup> F16C 33/74

U.S. Cl. 308—36.3

13 Claims



1. A machine having a shaft, a journal bearing rotatably supporting said shaft, said bearing having a bearing housing and a lubricating fluid sump within the housing, a feed tube supported to the housing for feeding lubricating fluid to said bearing, a drain pipe in communication with the lubricating fluid sump for draining lubricating fluid from said bearing, said drain pipe and lubricating fluid sump together defining a lubricating fluid drain flow path, first seal means about the shaft for minimizing lubricating fluid leakage from said bearing to outside of said bearing housing, and a first leakage drain tube for receiving lubricating fluid which has leaked at least partially past said first seal and for carrying said leaked lubricating fluid to said drain flow path, said first leakage drain tube having a first end supported to said bearing housing and a second end extending into said drain flow path, said first leakage drain tube adapted to be cooled by lubricating fluid in said drain flow path.

4,339,161

### BEARING SEAL FOR A DRILL HEAD ASSEMBLY

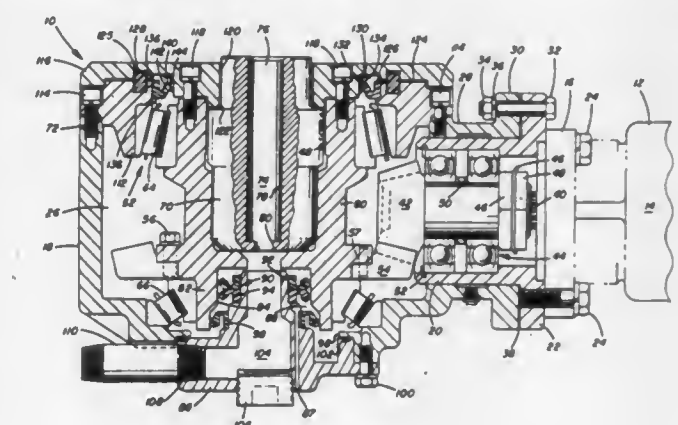
Francis A. May, Pittsburgh, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.

Filed Aug. 11, 1980, Ser. No. 176,645

Int. Cl.<sup>3</sup> F16C 33/78

U.S. Cl. 308—187.1

15 Claims



1. A drill head assembly comprising, a drill housing having a chamber, said chamber including an upper open end portion and a lower end portion, a rotatable drill retaining member positioned in said drill



housing chamber and extending through said chamber upper open end portion,  
 a hub member positioned in surrounding coaxial relation with said rotatable drill retaining member,  
 said hub member and said rotatable drill retaining member being drivingly connected,  
 a drive means secured to said hub member for transmitting rotation through said hub member and said rotatable drill retaining member,  
 sealing means positioned in said chamber adjacent said lower open end portion thereof and abutting said hub member for sealing said chamber lower open end portion,  
 bearing means for rotatably supporting said hub member in said chamber,  
 said bearing means including a first main bearing positioned in said chamber adjacent said upper open end portion thereof,  
 a bearing carrier secured to said drill housing, said bearing carrier supporting said first main bearing in said chamber, said drive means being positioned in said chamber below said first main bearing,  
 a cover plate surrounding said rotatable drill retaining member to close said chamber upper open end portion, said cover plate being connected to said hub member to rotate with said hub member and said rotatable drill retaining member,  
 an annular seal device sealingly engaging said bearing carrier above said first main bearing between said first main bearing and said cover plate,  
 said annular seal device being operable to seal said chamber upper end portion from the entrance of foreign matter therein and to prevent the escape of lubricant from said chamber,  
 load stress relieving means for preventing wear of said cover plate,  
 said load stress relieving means being positioned between said cover plate and said annular seal device and including a first surface abutting said cover plate and a second surface abutting said annular seal device, and  
 said load stress relieving means being rotatable with said cover plate to prevent wear forces from being applied to said annular seal device and failure of the seal maintained at said chamber upper open end portion.

4,339,162

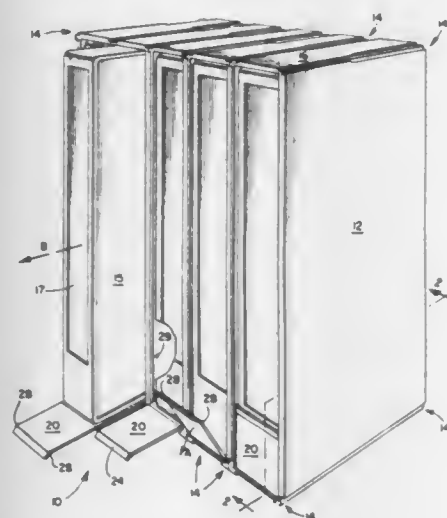
## VIDEO CASSETTE STORAGE BOX

Anthony L. Gelardi; Paul J. Gelardi, both of Cape Porpoise, and Robert B. MacLeod, Jr., Kennebunkport, all of Me., assignors to Shape, Inc., Biddeford, Me.

Filed Feb. 28, 1980, Ser. No. 125,446  
 Int. Cl.<sup>3</sup> A47B 81/06; F16B 12/00

U.S. Cl. 312—10

7 Claims



1. A cassette storage device comprising:  
 a one-piece box having an opening along one area thereof;

a tray slidably mounted in said box for movement in and out of said opening;  
 pivotally mounted opening and closing means provided with said tray for association with the box opening;  
 limit means provided with each tray for determining the amount that said tray can be moved out of said opening;  
 the opening and closing means including a movable tab pivotally connected to the slidable tray by a flexible hinge portion;  
 the movable tab being provided with a handle portion to enable quick and easy grasp by a user of the device, and further including locking means on the tab for association with the storage box to secure the tab in a closed position thereof;  
 said limit means including a projection provided on the slide tray which complements with a slot provided in the storage box;  
 a tongue for engagement with a cassette mounted on said tray, and a recessed portion provided within said storage box for complementary reception of said tongue there-within.

4,339,163

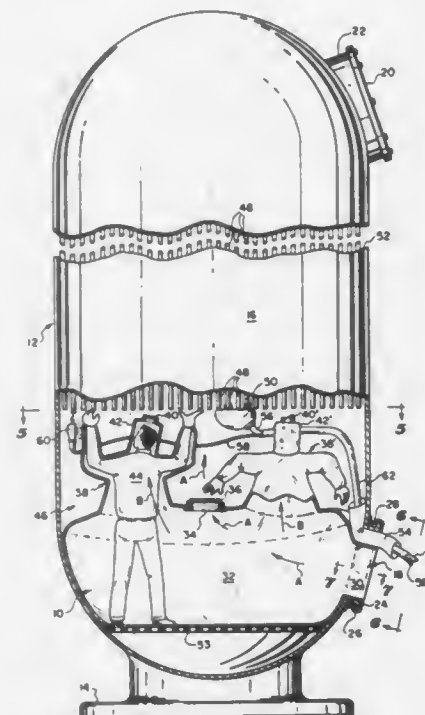
## BAG-LIKE CONTAMINANT CONTROL WORK MODULE

Earl B. Jacobson, Crystal Lake, Ill., and H. F. Buchanan, Port St. Lucie, Fla., assignors to Nuclear Power Outfitters, Crystal Lake, Ill.

Filed Apr. 4, 1980, Ser. No. 137,124  
 Int. Cl.<sup>3</sup> A61B 19/00; G21C 11/00

U.S. Cl. 312—1

9 Claims



1. A contaminant control work module comprising:  
 bag-like flexible membrane means having a first passageway in said membrane means of a size to permit passage of a worker therethrough and a shape and size adapted, when inflated by a pressure differential, to substantially enclose at least one worker therein;  
 filter means in said membrane means to allow air flow through said membrane means only in one direction from said passageway through said membrane means;  
 at least one glove box means in said membrane means having a head piece, said head piece having substantially transparent portions therein and a pair of glove fitted arm extensions adapted for a worker to fit therein to work in said membrane means shielded from outside contaminants;  
 each said head piece including separate filter means therein to provide air flow through each said glove box means only in one direction from said passageway through said membrane means;  
 said membrane means are adapted to be placed in a substan-

tially enclosed contaminant containing workspace through workway portal means opening into said workspace, said workspace having a predetermined configuration and being defined by an upper and lower portion therein, said membrane means when inflated substantially filling said lower portion of said workspace and allowing said glove box means to be moved about said upper portion;  
 said first passageway having means adapted to be secured around said portal means to secure said membrane means in said workspace while allowing workers to pass through said first passageway;  
 said workspace is in a radioactive environment; and  
 said membrane means are collapsible and invertible to contain contaminants in contact with the other surface thereon when said membrane means are removed from said workspace and disposed of.

4,339,164

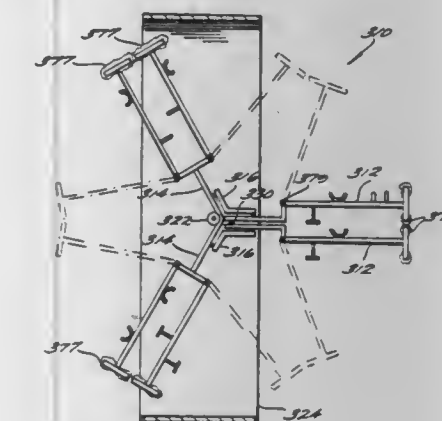
## ARTICLE SUPPORTING ASSEMBLY

Stephen T. Spevak, Germantown, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.  
 Division of Ser. No. 38,719, May 14, 1979, Pat. No. 4,286,832, which is a continuation-in-part of Ser. No. 907,321, May 18, 1978, Pat. No. 4,170,392. This application Aug. 1, 1980, Ser. No. 174,699

Int. Cl.<sup>3</sup> A47B 97/00, 81/00

U.S. Cl. 312—283

23 Claims



1. An article supporting assembly comprising a center structure; at least two cover plates; article supporting structures formed on at least one of the center structure and the cover plates; at least two spanners comprising hollow prisms having article supporting drawers formed therein; first hinges for connecting the cover plates to the spanner prisms so that the cover plates are pivotal with respect to the spanner prisms; second hinges for connecting the spanner prisms to the center structure so that the spanner prisms are pivotal with respect to the center structure; and said first and second hinges being formed along opposed edges of each of said spanner prisms.

4,339,165

## CONNECTOR PROTECTIVE DEVICE AND CONNECTOR PROVIDED WITH SUCH A PROTECTIVE DEVICE

Christian Malsot, and Michel Guerrero, both of Suresnes, France, assignors to Socapex, Suresnes, France

Filed Jun. 19, 1980, Ser. No. 160,845

Claims priority, application France, Jun. 20, 1979, 79 15803

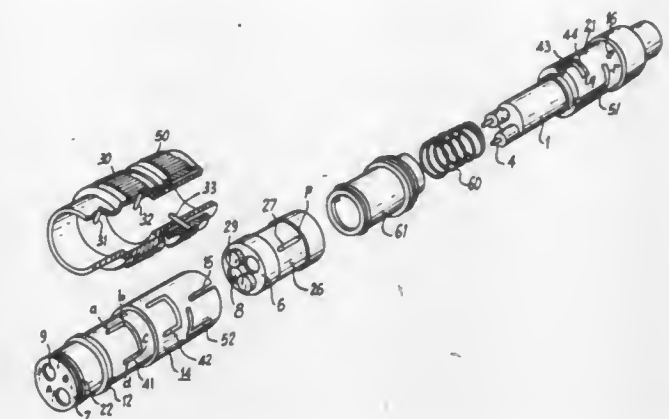
Int. Cl.<sup>3</sup> H01R 13/44

U.S. Cl. 339—41

13 Claims

1. A connector protective device for protecting an end of a connector having two disconnected ends, each end including an insulating unit exhibiting a front contact face having a longitudinal axis perpendicular thereto, and a plurality of spatially arranged contact elements projecting from said face, said device comprising for each said end:  
 two disks including an outside disk and an inside disk respectively centered on said longitudinal axis, disposed parallel

to the contact face, and having openings of the same spacial arrangement as the contact elements, and capable, on the one hand, of rotational movement in relation to one another about said longitudinal axis between a first angular position in which said contacts are uncovered by said two disks aligned with said openings, and a second angular position in which said contacts are covered by said two



disks aligned with said openings, and on the other hand, of translational movement along said axis perpendicular to the contact face, placing the projecting elements in a position through said openings when said disks are in said first angular position,  
 said device further comprising control means, limiting said rotational movement and said translational movement to a preestablished order.

4,339,166

## CONNECTOR

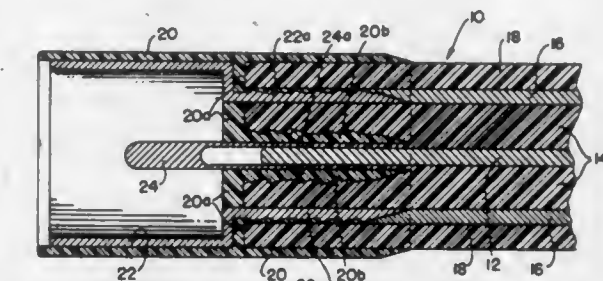
John P. Dayton, 10707 Camarillo, Apt. 105, Toluca Lake, Calif. 91602

Filed Jun. 19, 1980, Ser. No. 161,039

Int. Cl.<sup>3</sup> H01R 4/24

U.S. Cl. 339—100

4 Claims



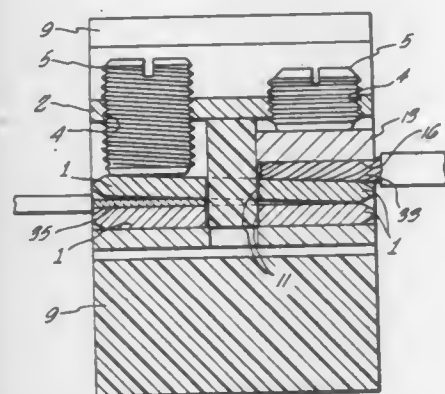
1. A connector for mounting on the end of a coaxial shielded cable of the type having a central conductor surrounded by an inner dielectric sleeve which, in turn, is surrounded by a tubular braided conductor, the tubular braided conductor being surrounded by an outer dielectric sleeve, said connector comprising: a tubular housing formed of insulating material, said housing being open at each end and having an inner diameter corresponding to the outer diameter of the coaxial cable for receiving the coaxial cable through one end of said housing, said tubular housing having an intermediate partition therein against which the end of the coaxial cable abuts, and said partition having a central tubular portion extending coaxially towards said one end of the tubular housing and having an inner diameter corresponding to the outer diameter of the central conductor of the cable and in a position to extend between the inner surface of said inner dielectric sleeve and the outer surface of said central conductor to receive the end of the central conductor, said tubular portion having a plurality of external barbs thereon for engaging the inner surface of said



inner dielectric sleeve; an electrically conductive insert mounted in said housing and having at least one prong extending through said partition toward said one end of said housing in position to extend between said tubular braided conductor and said inner dielectric sleeve to engage and establish electrical contact with said braided conductor; and an electrically conductive pin mounted in said central partition and extending coaxially within said housing toward the other open end thereof, and said pin also extending into said tubular portion toward said one end of said housing, and having a hollow end portion at said one end of said housing to receive the end of said central conductor so as to establish electrical contact between said pin and said central conductor.

**4,339,167**  
**FLAT CONDUCTOR TO ROUND CONDUCTOR CONNECTION SYSTEM**

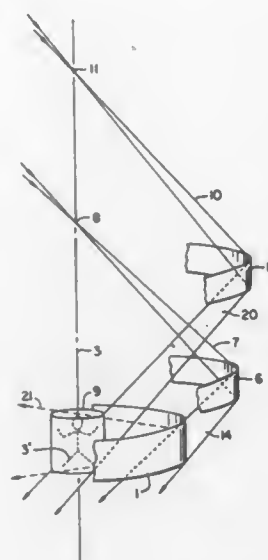
David W. Liedholm, Fremont, Calif., assignor to Raychem Corporation, Menlo Park, Calif.  
Continuation of Ser. No. 937,889, Aug. 29, 1978, abandoned.  
This application Mar. 13, 1980, Ser. No. 129,896  
Int. Cl.<sup>3</sup> H01R 9/10  
U.S. Cl. 339—272 A 3 Claims



1. In a connection apparatus having a terminal block of nonconducting material with a terminal block contact of conducting material attached thereto, said terminal block contact having a channel therethrough and at least two positions for receiving conductors and having clamp means for clamping said conductors to said terminal block contact at each position for receiving conductors, the improvement which comprises: a contoured clamp pad not connected to said clamp means and having a surface conforming to the shape of a nonflat conductor for disposition between said clamp means and such nonflat conductor for transmitting clamping pressure from said clamping means to the surface of such a nonflat conductor, said contoured clamp pad being sized to fit within said channel and extend over only a first portion of the length of the channel so that a second portion of the terminal block contact can be used for a flat conductor; and two flat connection plates sized to fit within said channel and extend over the length thereof and adapted so that a flat conductor can be clamped between the plates in the second portion of the channel, the flat connection plates being positioned so that the non-flat conductor can be clamped between the contoured clamp pad and one of the plates.

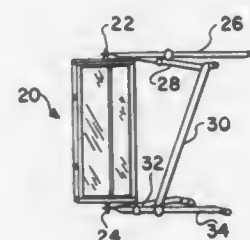
**4,339,168**  
**HOLOGRAMS CREATED FROM CYLINDRICAL HOLOGRAM MASTERS**  
Kenneth A. Haines, San Jose, Calif., assignor to Eldetic Images, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 875,172, Feb. 6, 1978, abandoned, and Ser. No. 922,228, Jul. 5, 1978, abandoned. This application Dec. 10, 1979, Ser. No. 102,430  
Int. Cl.<sup>3</sup> G03H 1/20, 1/26  
U.S. Cl. 350—3.69 50 Claims



1. A method of producing a second hologram from at least a portion of an original transmissive cylindrical hologram comprising the steps of: illuminating said at least a portion of the original cylindrical hologram by passing therethrough only once a coherent illumination wave which comes to focus as a line located substantially on a virtual axis of the cylindrical hologram, placing within the cylinder an image-receiving surface to intercept real image rays diffracted from said original hologram, directing onto said image-receiving surface, at a finite angle with respect to the real image rays, a reference wave which is coherent with the illumination beam of the original hologram, thereby producing a pattern of interference fringes on the image-receiving surface, and detecting and recording as a second hologram said interference fringes.

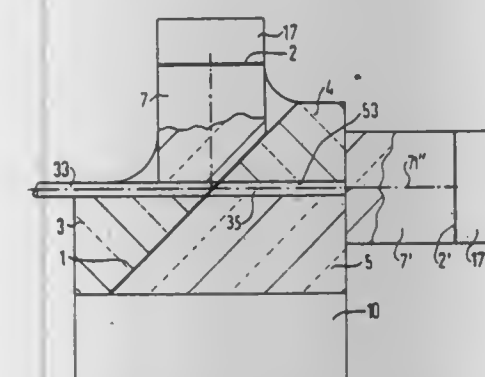
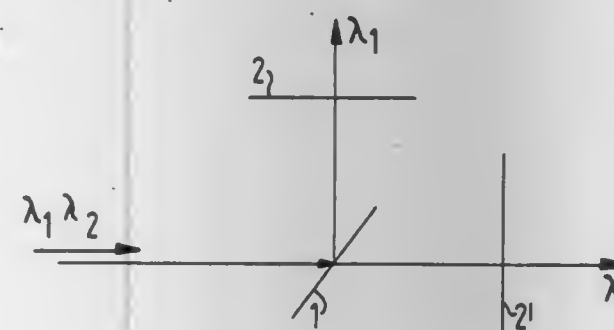
**4,339,169**  
**REAR VIEW MIRROR AND WIPER ASSEMBLY FOR VEHICLES**  
Kenneth F. Addison, Jr., P.O. Box 27291, Tulsa, Okla. 74127  
Filed Feb. 8, 1980, Ser. No. 119,668  
Int. Cl.<sup>3</sup> B60S 1/08, 1/24  
U.S. Cl. 350—61 10 Claims



1. A rear view mirror and wiper assembly including: (a) a frame member of elongated rectangular shape (b) a mirror of elongated rectangular shape (c) means for mounting said mirror in spaced adjacent relation to one face of said frame member (d) power means centrally mounted on the rear face of said

- frame member and having an output shaft extending through the frame member into the space between said frame member and mirror
- (e) a crank arm, one end of which is fixedly connected to said output shaft to effect circular motion of the crank arm
  - (f) a ball bearing rotatably mounted on the opposite end of said crank arm
  - (g) a reciprocating member extending longitudinally of said mirror and frame member and comprising a scotch yoke type mechanism including an arm having a longitudinal slot in which said ball bearing is mounted for effecting rolling engagement of the latter with the arm upon rotation of said crank arm
  - (h) a wiper blade in wiping engagement with the outer face of said mirror
  - (i) means connecting the ends of said wiper blade to the ends of said reciprocating member whereby, upon actuation of said power means, said arm is rotated and said reciprocating member and wiper blade are moved in a reciprocating transverse motion to effect wiping of the mirror
  - (j) guide shafts extending transversely of said frame member and mirror in parallel spaced relationship and extending through the end portions of said reciprocating member, and
  - (k) linear motion bearings interposed between said guide shafts and reciprocating member for facilitating transverse movement of the latter.

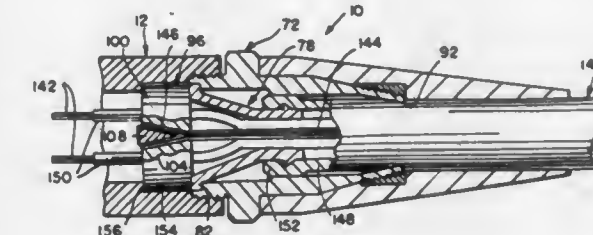
**4,339,170**  
**OPTICAL DEVICE FOR FREQUENCY-SELECTIVE DISTRIBUTING LIGHT AND THE PROCESS OF PRODUCING THE DEVICE**  
Gerhard Winzer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany  
Filed Aug. 15, 1979, Ser. No. 66,694  
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1978, 2840493  
Int. Cl.<sup>3</sup> G02B 5/14  
U.S. Cl. 350—96.16 33 Claims



1. In an optical device for frequency selectively distributing light by separating light of one wavelength from light of another wavelength, particularly for demultiplexers in optical waveguide systems, said device comprising means for guiding a beam of light, beam divider means for selectively dividing the

beam into a pair of partial beams of different wavelengths, said beam divider means being a frequency-selective divider layer being disposed obliquely with respect to the direction of incident light in said means for guiding, said divider layer passing the greatest part of the light of the one wavelength in one of the pair of partial beams and reflecting the greatest part of the light of the other wavelength in the other of the pair of partial beams, one color filter being disposed in the path of the one partial beam, and another color filter disposed in the path of the other partial beam, the improvements comprising the one color filter disposed in the one path of the one partial beam of the light passed by the divider layer being transmissive to the one wavelength and being impermeable to the other wavelength and the other color filter in the other path of light reflected by the divider layer being transmissive to the other wavelength and being impermeable to said one wavelength so that light of the other wavelength contained in the one partial beam to the slightest degree is removed by the one color filter while light of the one wavelength which is contained in the other partial beam to the slightest degree is removed by the other color filter.

**4,339,171**  
**FIBER OPTIC CABLE RETAINER MEMBER**  
John A. Makuch, Danbury, and Kevin J. Monaghan, Middlebury, both of Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.  
Division of Ser. No. 879,186, Feb. 21, 1978. This application Mar. 4, 1980, Ser. No. 127,191  
Int. Cl.<sup>3</sup> G02B 5/14  
U.S. Cl. 350—96.20 2 Claims



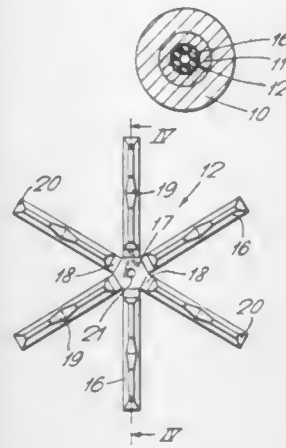
1. A retainer member for securing strength members extending longitudinally through the center of a plurality of optical fibers in a fiber optic cable against rearward movement in a bore within a fiber optic connector comprising: a supporting member disposed within said bore, said supporting member having a plurality of spaced slots supporting said optical fibers in said bore within said fiber optic connector, said supporting member having an opening extending therethrough for receiving forward ends of said strength members; and a confining member adapted for insertion into said opening in said supporting member to tightly confine said forward ends of said strength members against rearward movement in said bore within said fiber optic connector.

**4,339,172**  
**CONNECTOR HAVING A SINGLE SEGMENTED DEFORMABLE GRIP MEMBER FOR OPTICAL CABLES**  
Russell A. Leather, Perth, Scotland, assignor to Ferranti Limited, Cheadle, England  
Filed Mar. 31, 1980, Ser. No. 135,632  
Claims priority, application United Kingdom, Mar. 31, 1979, 7911357  
Int. Cl.<sup>3</sup> G02B 5/172  
U.S. Cl. 350—96.21 6 Claims

1. A connector for connecting together two light-transmitting cables such that the optical axes of the adjacent ends of the cables are aligned with one another, which includes a body member having a bore of regular cross-section, a sleeve of



elastomeric material located within the bore, a single segmented deformable grip member located within the sleeve and into which the ends of both of the cables may be inserted, and means for applying axial compression forces to the sleeve so as



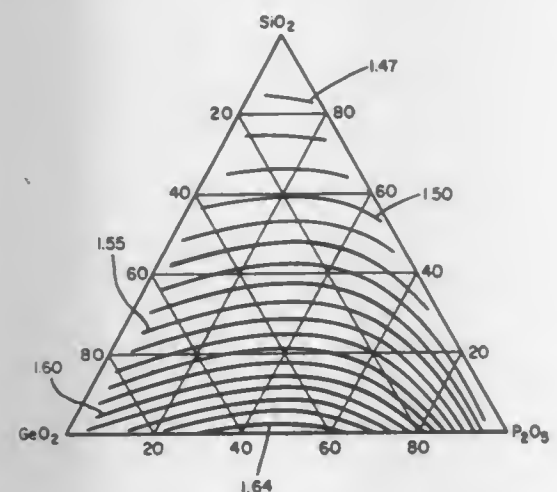
to cause the grip member to contract in a radial direction and grip each of the cables at a number of equally-spaced points around its periphery so as to maintain the ends of the cables in axial alignment.

**4,339,173**  
**OPTICAL WAVEGUIDE CONTAINING P<sub>2</sub>O<sub>5</sub> AND GeO<sub>2</sub>**  
Ishwar D. Aggarwal, Northboro, Mass., and Eric N. Randall, Cheshire, Conn., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 8, 1975, Ser. No. 611,226  
Int. Cl.<sup>3</sup> G02B 5/172

U.S. Cl. 350—96.30

18 Claims



10. An optical waveguide comprising a core of glass formed of phosphorous pentoxide, germania and silica and a cladding of a glass of a lower refractive index than the core.

**4,339,174**  
**HIGH BANDWIDTH OPTICAL WAVEGUIDE**  
Philip S. Levin, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

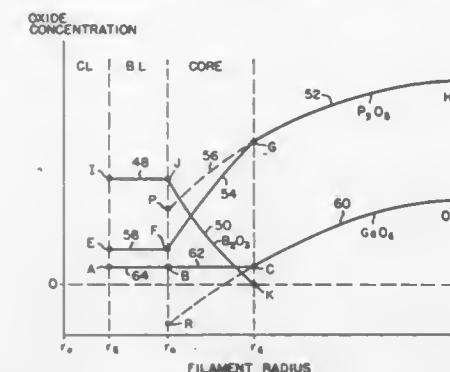
Filed Feb. 1, 1980, Ser. No. 117,391  
Int. Cl.<sup>3</sup> G02B 5/172

U.S. Cl. 350—96.31

23 Claims

1. A gradient index optical waveguide filament having a bandwidth of at least 700 MHz, said filament comprising an outer cladding layer, a barrier layer disposed on the inside wall surface of said cladding layer, said barrier layer comprising SiO<sub>2</sub>, GeO<sub>2</sub>, B<sub>2</sub>O<sub>3</sub> and P<sub>2</sub>O<sub>5</sub>, the concentration of each of said SiO<sub>2</sub>, GeO<sub>2</sub>, B<sub>2</sub>O<sub>3</sub>, and P<sub>2</sub>O<sub>5</sub> being substantially uniform throughout the thickness of said barrier layer, and a core of high purity glass having a gradient index of refrac-

tion disposed within said barrier layer and adhered thereto to form an interface therebetween, said core consisting essentially of SiO<sub>2</sub>, B<sub>2</sub>O<sub>3</sub>, P<sub>2</sub>O<sub>5</sub> and GeO<sub>2</sub>, the quantity of B<sub>2</sub>O<sub>3</sub> decreasing within said core from the barrier layer level to zero at a radius  $r_d$  which is located between 0.75 and 0.9 times the core radius  $r_a$ , the concentration gradient of P<sub>2</sub>O<sub>5</sub> and GeO<sub>2</sub> substantially following a power law curve between said radius  $r_d$  and the filament axis, the

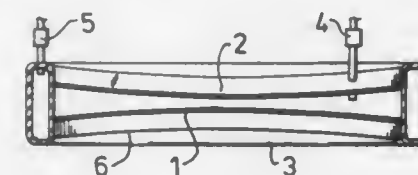


concentration of P<sub>2</sub>O<sub>5</sub> in said core at radii between  $r_a$  and  $r_d$  increasing from the concentration thereof in said barrier layer to the concentration thereof at said radius  $r_d$  at a rate greater than the concentration of P<sub>2</sub>O<sub>5</sub> would increase if said power law P<sub>2</sub>O<sub>5</sub> gradient extended into said region between radii  $r_a$  and  $r_d$ , and the concentration of said GeO<sub>2</sub> between radii  $r_d$  and  $r_a$  being constant and equal to or less than the barrier layer level of GeO<sub>2</sub>.

**4,339,175**  
**PROJECTION SCREEN**  
Ulf J. E. Asterö, Tumba, Sweden, assignor to Asthausbolagen HB Asterö & Stockhaus, Tumba, Sweden  
Filed Jul. 18, 1980, Ser. No. 170,971  
Int. Cl.<sup>3</sup> C03B 21/56

U.S. Cl. 350—125

7 Claims



1. A projection screen comprising a flexible projection sheet which forms a boundary surface of a closed container comprising a frame arranged to hold the projection sheet distended, central portions of the projection sheet being arranged at a distance from the other boundary surfaces of the container in the distended condition of the sheet, means for establishing a subatmospheric pressure in the container such that the central portions of the projection sheet freely may be sucked in towards the interior of the container so that an image surface of the projection sheet takes a concave, substantially spherical shape, the container further comprises a flexible foil which is arranged substantially in parallel with the projection sheet, said foil constitutes a projection surface, the frame being arranged to hold the sheet at a distance from the foil, and the frame includes a closed annular tube of flexible material and means for permitting inflation of the frame such that the frame can be pressurized to be stiffened and hold both the sheet and the foil distended.

**4,339,176**  
**HOLOGRAPHIC SPACE-VARIANT SYSTEM FOR EVALUATING THE AMBIGUITY INTEGRAL**  
Tzu-Chang Lee, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

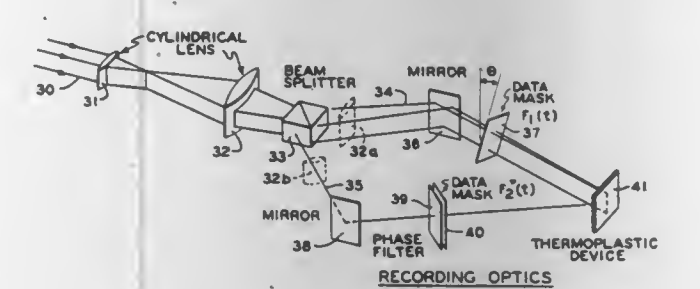
Filed May 19, 1980, Ser. No. 150,777  
Int. Cl.<sup>3</sup> G02B 27/46; G01S 13/58; G06G 9/00  
U.S. Cl. 350—162 SF

11 Claims

**4,339,178**  
**LOG-LOG SCALE REFRACTOR**  
James L. Smith, Grand Prairie, Tex., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 9, 1980, Ser. No. 158,008  
Int. Cl.<sup>3</sup> G02B 13/18

2 Claims



1. A holographic system utilizing a beam of substantially coherent light to create a hologram useful in evaluating an ambiguity function arising from a first signal and a second signal, said light beam following a light beam path, and said system including a recording means comprising:

a cylindrical Fourier Transform lens means in said light beam path and having a Fourier Transform plane associated with said Fourier Transform lens means;  
a substantially planar, first data mask coded with said first signal and a substantially planar, second data mask coded with said second signal, said data masks positioned in said light beam path between said Fourier Transform lens means and said Fourier Transform plane, the normal to said first data mask forming a first angle with said light beam path and the normal to said second data mask forming a second angle with said light beam path, said first and second angles being nonequal angles; and  
a holographic recording medium positioned in said Fourier Transform plane associated with said cylindrical Fourier Transform lens means for recording a joint Fourier Transform.

**4,339,177**  
**OPTICAL APPARATUS FOR CONTROLLING THE DISTRIBUTION OF ILLUMINATION**  
Adrian A. C. March, Swainshill, England, assignor to Solartron Electronic Group Limited, Farnborough, England  
Filed Apr. 4, 1979, Ser. No. 27,140  
Claims priority, application United Kingdom, Apr. 11, 1978, 14062/78

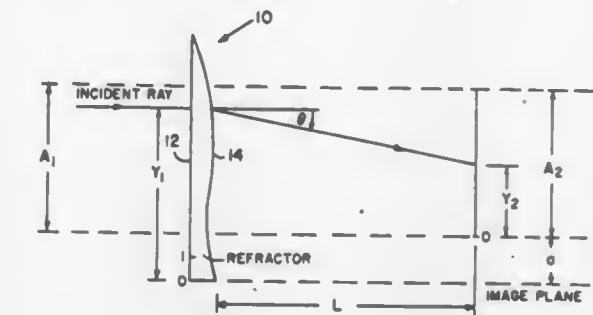
Int. Cl.<sup>3</sup> G02B 13/20

U.S. Cl. 350—431

2 Claims



1. Optical apparatus comprising a source of visible or near-visible radiation, means arranged to determine the effective size and shape of the source and to provide a predetermined distribution of illumination, means to control the spatial distribution of ray transmission through at least one transverse plane in the apparatus, and a functional lens-element group in which a first element has moderate negative power and non-minimum negative spherical aberration and a second element has positive power of larger absolute magnitude than said negative power and positive spherical aberration of smaller absolute magnitude than said negative spherical aberration.



1. A logarithmic scale refractor comprising:  
(a) a body transparent to a predetermined wavelength of electromagnetic radiation;  
(b) a first surface of said body being planar;  
(c) a second surface of said body having a predetermined curved configuration to define a body of varying thickness whereby the body refracts collimated light, incident parallel to its axis, in such a manner that the coordinates of a ray intersecting an image plane a distance L from the lens are logarithmically related to the coordinates in the plane of the refractor, said second surface being defined by

$$\tan \phi = \tan \theta / (n \sqrt{1 + \tan^2 \theta} - 1),$$

where

$$\tan \phi = -(y_1 - a - (A_1/A_2) \log y_1)/L$$

and where  $y_1$  is in the refractor plane,  $y_2$  is in the image plane,  $A_1$  and  $A_2$  are arbitrary equal distances measured in terms of  $y_1$  and  $y_2$  units,  $a$  = displacement between origins in the lens and image planes while L is the separation between the refractor and image planes, both A and L being measured in the same units as  $y_1$ ,  $\phi$  = the angle through which the lens bends the incident ray,  $\phi_i$  and  $\phi_o$  are the angles of ray incidence and exit with respect to the curved surface normal N, and n is the refractive index of the lens material.

**4,339,179**  
**EYEGLASS FRAME HAVING OPEN RIMS CLOSED BY SELF-LOCKING SCREW ASSEMBLIES WITH DOG CLUTCH MEANS**  
Jean Dany, Bar-le-Duc, France, assignor to Essilor International "Cie Generale d'Optique", Creteil, France  
Filed May 20, 1980, Ser. No. 151,578  
Claims priority, application France, May 22, 1979, 79 12942  
Int. Cl.<sup>3</sup> G02C 5/22, 1/08

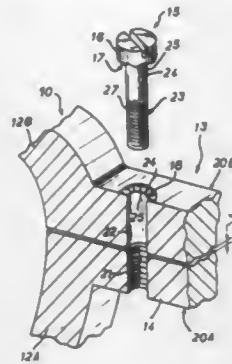
U.S. Cl. 351—153

14 Claims

1. An eyeglass frame part comprising at least one open rim for receiving a lens, superposed lugs being formed at the open ends of said rim, said rim being of resilient construction and biasing said lugs away from each other so as to define a gap constantly therebetween and a screw assembly for bringing said lugs toward each other and clamping a lens in said rim, said screw assembly including a machine screw having a head and a threaded shank, a nut member threadably engageable with said threaded shank, and an insert member interposed between said head of said machine screw and said nut member, the underside of said head and said insert member defining



cooperable transverse bearing surfaces, cooperable dog clutch means formed on said bearing surfaces, said nut member being formed on one of said lugs and said insert member being formed on the other of said lugs whereby the biasing of said



lugs away from each other tends to urge said cooperable dog clutch means into mutual engagement and the constant gap between said lugs insures resiliency of such mutual engagement.

#### 4,339,180 MOTION PICTURE CAMERA WITH FILM MARKING MEANS

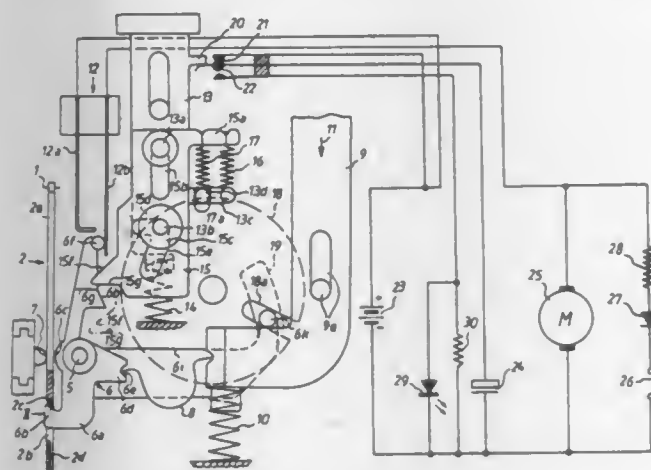
Friedrich Stumpf, and Thomas Scheller, both of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Filed Apr. 9, 1981, Ser. No. 252,426

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1980, 3014099

Int. Cl.<sup>3</sup> G03B 21/50

U.S. Cl. 352—92

10 Claims



1. In a photographic apparatus of the type having a shutter, an arrangement for driving the shutter including a motor, and a source of energy for the motor, the combination of signal generating means operative to produce identification markings on portions of a film in the camera, including a light-emitting diode having a predetermined threshold excitation value, a storage capacitor, and a resistor connected in parallel with said diode and having a resistance which is high relative to the resistance of said diode when an electrical discharge from said capacitor has a value above said threshold value but is low relative to the resistance of said diode when said electrical discharge has a value below said threshold value; and actuating means for connecting said storage capacitor with the source while the motor is deenergized and operative to disconnect said storage capacitor from the source and to connect the storage capacitor directly in serie with said light-emitting diode preliminary to completion of the circuit of the motor.

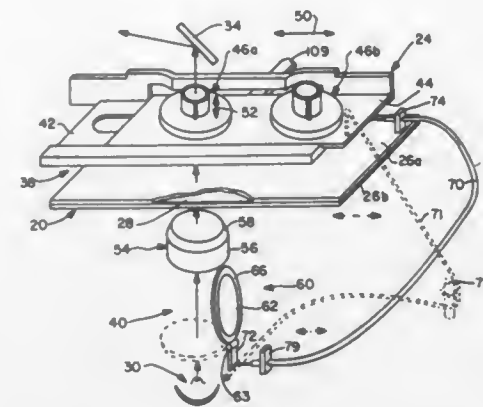
#### 4,339,181 LENS ARRANGEMENTS FOR MICROFICHE READER ASSEMBLY AND METHOD

William T. Link, Berkeley, and Stephen Hobson, Santa Clara, both of Calif., assignors to Datagraphix, Inc., San Diego, Calif.

Filed Mar. 4, 1980, Ser. No. 127,230  
Int. Cl.<sup>3</sup> G03B 21/14, 3/00

U.S. Cl. 353—27 R

11 Claims



1. In a microfiche reader including means for supporting a microfiche in a given area and a projection screen, said microfiche supporting means including upper and lower confronting horizontal support plates for containing a microfiche therebetween, an optical arrangement for providing an image of a segment of said microfiche on said screen, said arrangement comprising:

- means including a light source for directing a beam of light along a predetermined path through said given area and towards said screen;
- a condenser lens assembly including first and second condenser lens means and means movable between a first and second position for alternatively optically coupling said first and second lens means with said beam at a location optically between said light source and said given area;
- a projection lens assembly including first and second projection lens means and means movable between a first and second position for alternatively optically coupling said first and second projection lens means with said beam at a location optically between said given area and said screen, said movable optical coupling means of said projection lens assembly including means for supporting said first and second projection lens means such that each of the latter when optically coupled with said beam rests on the top surface of said upper plate and is free to move vertically to a limited extent such that the upper plate if moved within said given area slides under the optically coupled projection lens means with the latter in continuous contact therewith; and
- means interconnecting the movable optical coupling means of said projection lens assembly with the movable optical coupling means of said condenser lens assembly for automatically moving the latter optical coupling means between its first and second position in response to the movement of the former optical coupling means between its first and second position, whereby said first projection and condenser lens means are optically coupled together with said beam and, alternatively, said second projection and condenser lens means are optically coupled together with said beam, said interconnecting means including a rigid wire having opposite transversely extending end sections one of which is fixedly attached at its end to the movable optical coupling means of the projection lens assembly and the opposite one of which is fixedly attached at its end to the movable optical coupling means of the condenser lens assembly, said wire including an intermediate section, said interconnecting means includ-

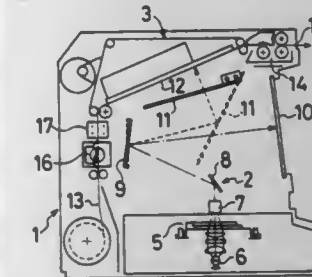
ing means for supporting said intermediate section for pivotal movement.

#### 4,339,182 CONTROL SYSTEMS FOR MICROFILM READERS

Nobuo Ueda, Kanagawa, and Seichi Yamagishi, Tokyo, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan  
Filed Oct. 29, 1980, Ser. No. 201,925  
Claims priority, application Japan, Nov. 2, 1979, 54-142476  
Int. Cl.<sup>3</sup> G03B 27/48, 23/08

U.S. Cl. 353—27 R

13 Claims



1. In a microfilm reader including non-lockable input key means and drive means for moving a microfilm in response to a signal from selected one of the input key means and adapted to automatically transport the microfilm to bring the desired frame of the microfilm to a projecting position by specifying the frame with the input key means, a system for controlling the operation of the drive means comprising:

- a memory circuit for storing the signal from the selected input key means while being energized,
- means for converting the output signal from the memory circuit to an electric signal suited for operating the drive means, and
- signal output means for producing an output signal equivalent to the signal emitted by depressing a specific input key means, upon application of power to the control system in operative relation thereto, whereby the microfilm is automatically transported to a predetermined position upon the application of power while no signal is given by the input key means and the memory circuit for specifying the position of the microfilm.

#### 4,339,183 FILM READER

Yu Yamada, Kokubunji; Mutsuhiro Inoue, Sagami-hara; Toshio Arai; Kokichi Omi, both of Kawasaki; Hiroaki Suzuki, Hachioji, and Tetsuro Kuwayama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan  
Continuation of Ser. No. 884,536, Mar. 8, 1978, Pat. No. 4,229,085. This application Mar. 24, 1980, Ser. No. 132,879  
Claims priority, application Japan, Mar. 10, 1977, 52-28856[U]; Apr. 11, 1977, 52-41092[U]

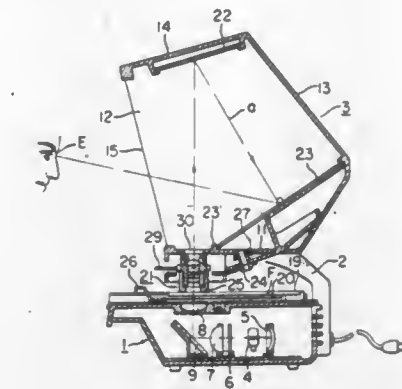
Int. Cl.<sup>3</sup> G02B 3/08; G03B 21/22, 21/60

U.S. Cl. 353—78

4 Claims

- A film reader comprising:
  - a housing having an observation aperture;
  - means for illuminating a film having an image recorded thereon;
  - means for projecting an image of film illuminated by said illuminating means;
  - a reflection type screen obliquely disposed in said housing in opposition to said observation aperture for allowing an observer to observe an image of film projected by said projecting means, said screen having a number of concentrically arranged reflecting annular surfaces having inclination angles which increase in a direction away from a common center of the annular surfaces, and said screen

having a saw-like cross-section, said adjacent reflecting surfaces being joined by risers;



wherein said common center is located outside said screen, and adjacent an edge of said screen which is in the neighborhood of said observation aperture; whereby said risers are not visible to the observer.

#### 4,339,184 DIGITAL SAMPLE AND HOLD WITH ROLLOVER INHIBIT

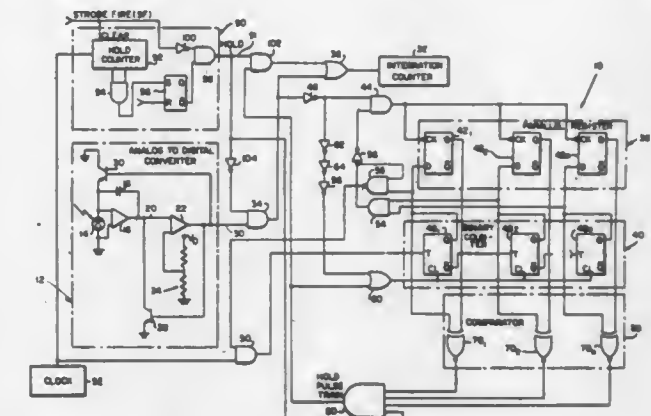
Judy Bagdis, Bradford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 5, 1980, Ser. No. 213,415

Int. Cl.<sup>3</sup> G03B 7/091; H03K 5/00

U.S. Cl. 354—23 D

12 Claims



1. An electrical circuit for sampling a digital pulse train signal and providing a replication thereof during a select holding period comprising:

- means for counting a clock pulse of substantially higher frequency than the digital pulse train signal and for providing a binary count output signal representative of the pulses of said clock pulse so counted, said counting means also resetting to a zero count in response to each pulse in the digital pulse train signal;
- means responsive to the digital pulse train signal for receiving said binary count output signal from said counting means immediately prior to each succeeding reset of said counting means to zero and for storing each of said received binary count signals until the next succeeding binary count output signal is received from said counting means;
- means responsive to a hold signal for comparing the binary count signal stored in said receiving and storing means with the binary count output signal from said counting means and for providing an output pulse each time the binary count signal stored in said storing means matches the binary count output signal from said counting means thereby replicating the pulse train signal existent immediately prior to the hold signal, said comparing means further including means for providing a signal to reset said counting means to zero each time said binary count signal



stored in said receiving and storing means matches the binary count output signal from said counting means; and means responsive to said counting means counting up to its maximum binary count before being reset to a zero count in response to a pulse from the digital pulse train signal for inhibiting further counting by said counting means which would result in said counting means otherwise rolling over back to a zero count, said rollover inhibiting means further including means for signalling said receiving and storing means to receive and store said binary count output signal from said counting means as said binary count output signal approaches its maximum count.

4,339,185

## IMAGE INFORMATION INPUT SYSTEM

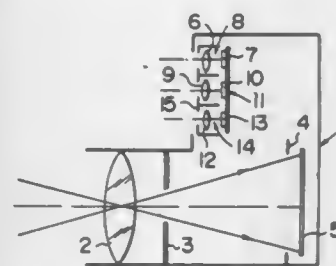
Kenji Nakauchi, and Takaaki Terasita, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 22, 1980, Ser. No. 218,562

Claims priority, application Japan, Dec. 21, 1979, 54-166688  
Int. Cl.<sup>3</sup> G03B 7/08

U.S. Cl. 354—31

21 Claims



1. An image information input system for use in a photographic camera or the like for inputting image brightness information of a subject matter into an exposure control system, said image information input system comprising:  
a plurality of image information read-out and operating means each including a photodetector, with weighting mask means thereon at least partially covering a photosensitive surface thereof for measuring the brightness of various parts of the subject matter and outputting a brightness signal indicative of the total brightness measured by the photodetector,  
said plurality of image information read-out and operating means having different respective modes of light measuring for providing differently weighted brightness measurements of the subject matter, and  
selecting means for selecting automatically the brightness measurement of one of said plurality of image information read-out and operating means according to the visual nature of the subject matter.

4,339,186

## AUTOMATIC DIAPHRAGM CONTROL AND MIRROR RELEASE DEVICES FOR CAMERAS

Keiji Yamazaki, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 1, 1981, Ser. No. 259,764

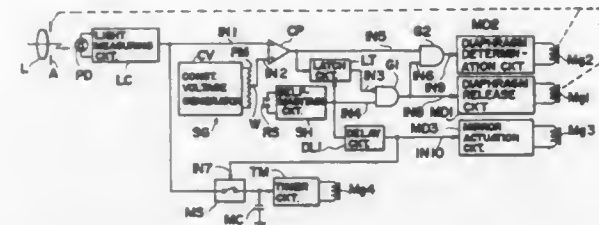
Claims priority, application Japan, May 2, 1980, 55-57798  
Int. Cl.<sup>3</sup> G03B 7/095

U.S. Cl. 354—38

10 Claims

1. A camera, comprising diaphragm aperture means normally fully open and adapted to be stopped-down in response to a camera actuating operation;  
means for initiating a stopping-down operation of said diaphragm aperture means;  
light measuring means for receiving scene light through the diaphragm aperture and generating a light measurement signal as a function of the received light;

means for generating a reference signal as a function of at least one manually set exposure parameter;  
means for comparing said light measurement signal with said reference signal to generate a comparison signal;  
control means coupled with said comparing means for generating a control signal when the light measurement signal generated before the initiation of said diaphragm stopping-



down operation is of a value, with respect to said reference signal, requiring a fully open diaphragm aperture;  
means for determining said diaphragm aperture in accordance with the comparison signal generated with said diaphragm means being stopped-down; and  
means for preventing the operation of said initiation means in response to said control signal.

4,339,187

## PHOTOGRAPHING APPARATUS

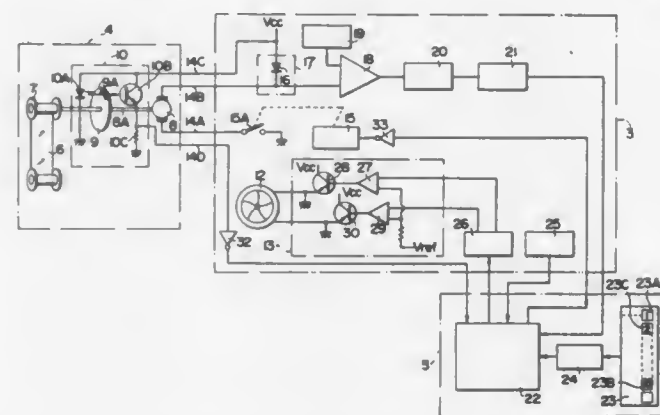
Tsuyoshi Matsuura, Ina; Mamoru Aihara, Hachioji; Yutaka Takahashi, Hachioji, and Yoshio Nakajima, Hachioji, all of Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

Filed Oct. 3, 1980, Ser. No. 193,623

Claims priority, application Japan, Oct. 26, 1979, 54/137741  
Int. Cl.<sup>3</sup> G03B 1/18

U.S. Cl. 354—173

5 Claims



1. A photographing apparatus comprising  
a receiver for receiving a film winding assembly which may be provided with either an automatic film winding mechanism which includes a motor to perform an automatic film winding operation or a manual film winding mechanism which permits a manual film winding operation;  
means for detecting the operative condition of the motor in the automatic film winding mechanism whenever a film winding assembly which is provided with the automatic film winding mechanism is mounted in the receiver; and  
means responsive to an output signal from the detecting means for producing an output signal to said motor for discriminating whether there is mounted a film winding assembly provided with the automatic film winding mechanism or a film winding assembly provided with the manual film winding mechanism.

4,339,188

## BRIGHT SCREEN OPTICAL VIEWER APPARATUS AND METHOD

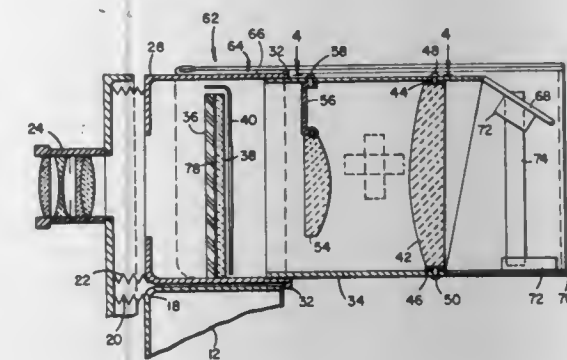
Harry L. O. Smith, Cleveland, Tenn., assignor to Beattie Systems, Inc., Cleveland, Tenn.

Filed Mar. 23, 1981, Ser. No. 246,668

Int. Cl.<sup>3</sup> G03B 13/02, 3/00

U.S. Cl. 354—219

14 Claims



1. A bright screen optical viewer for an optical device having a viewing lens projecting a received image rearwardly to a viewing station, said viewer comprising, a Fresnel lens disposed intermediate said viewing lens and said viewing station, and a ground glass viewing screen, said screen being coated on one surface with a thin layer of optically clear material having an index of refraction of about 1.55 to 1.65 and at least a 95% transmission of visible spectrum light, and means for mounting said coated surface in abutting contact with said Fresnel lens without integrally uniting said surface and said Fresnel lens intermediate said Fresnel lens and said viewing station.

4,339,189

## FILM ADVANCE RESTRAINING DEVICE OF A CAMERA

Yoshiyuki Nakano, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

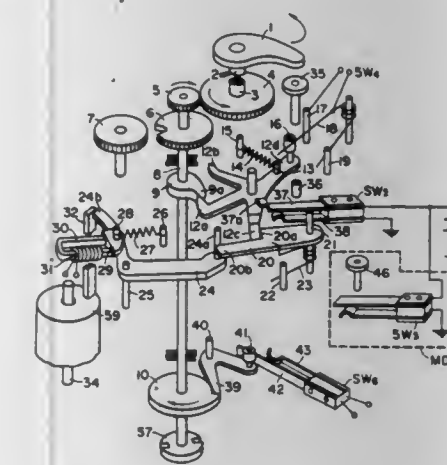
Filed Jan. 19, 1981, Ser. No. 226,510

Claims priority, application Japan, Jan. 29, 1980, 55-8343;  
Jan. 29, 1980, 55-8344; Jan. 31, 1980, 55-11048[U]

Int. Cl.<sup>3</sup> G03B 1/00, 9/32

U.S. Cl. 354—173

7 Claims



1. A film advance device of a camera having an exposure time control device and a focal plane shutter device including a forward curtain member for starting exposure and a rearward curtain member for terminating the exposure and charged with said film advance, said film advance device, comprising:

- (a) a film advance shaft;
- (b) a cam member operatively associated with said shaft;
- (c) latch means displaceable between a position in which it is engaged with said cam member upon completion of the film advance of one frame and a position in which the engagement is released and adapted, when in the engaged

position to restrain the operation of said cam member in the film advance direction;  
(d) means for biasing said latch means in the direction toward said released position;  
(e) means for restraining said latch means in the engaged position upon completion of the film advance; and  
(f) means actuated in response to said exposure time control device to release the restraint of said latch means by said restraining means, said releasing means including a displaceable releasing member adapted to engage said restraining means after a predetermined amount of displacement from the time of said actuation and provided so as to hold said charged rearward curtain member and permit the operation of said rearward curtain member during said displacement.

4,339,190

## ELECTROMAGNETICALLY DRIVEN FOCAL PLANE SHUTTER

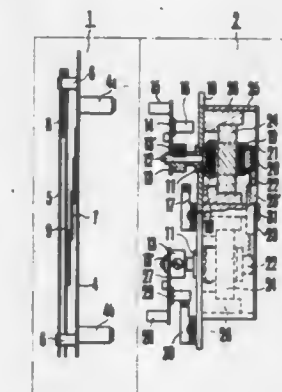
Yoji Sugiura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1981, Ser. No. 223,420

Claims priority, application Japan, Jan. 8, 1980, 55-659  
Int. Cl.<sup>3</sup> G03B 9/36

U.S. Cl. 354—234

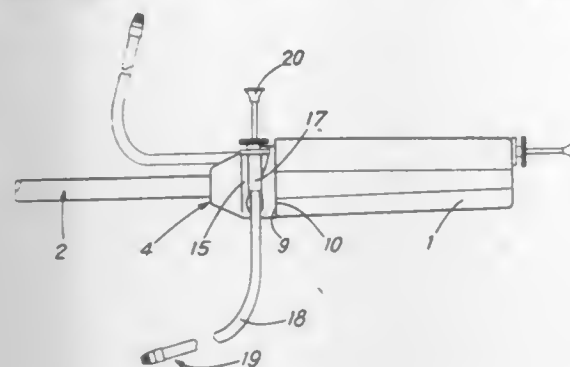
4 Claims



1. A focal plane shutter assembly of the electromagnetically driven type, comprising:  
a shutter blade unit consisting essentially of a shutter base plate with an exposure aperture opening, a cover plate provided near said base plate, with a leading shutter blade group and a trailing shutter blade group respectively positioned between said base plate and said cover plate and respectively comprising a plurality of thin plates and a shutter operating member link connected to said thin plates to hold said thin plates in a swingable manner and being adjusted to effect a prescribed operation; and  
a shutter driving unit consisting essentially of a pair of electromagnetic driving sources which are so adjusted to produce a prescribed driving power and which respectively drive said leading shutter blade group and said trailing shutter blade group, a base plate supporting said electromagnetic driving sources and output shafts thereof, and a linking member which is attached to said output shafts and is so adjusted to effect a prescribed positional relationship with said shafts;  
wherein said shutter assembly is arranged such that said shutter blade unit has support columns mounting said base plate of said shutter driving unit in a prescribed positional relationship and wherein both said units are combined so that the linking member of said driving unit engages with the shutter operating member of said shutter blade unit for operating said shutter assembly by operation of said electromagnetic driving sources.



**4,339,191**  
**MANEUVERING AND RELEASE DEVICE FOR CAMERA**  
 Patrick P. Posso, Lausanne, Switzerland, assignor to GEFITEC S.A., Lausanne, Switzerland  
 Filed Sep. 8, 1980, Ser. No. 185,211  
 Claims priority, application France, Sep. 17, 1979, 79 23144  
 Int. Cl.<sup>3</sup> G03B 17/38  
 U.S. Cl. 354-269 4 Claims



1. A maneuvering and release device for camera, comprising on the one hand a manoeuvring rod of which one end is provided with a means for fixation to the camera and the other end is rendered fast with a handle, a connecting piece being mounted to rotate about the rod near said handle, and on the other hand, a release accompanying the rod in its movements, wherein:

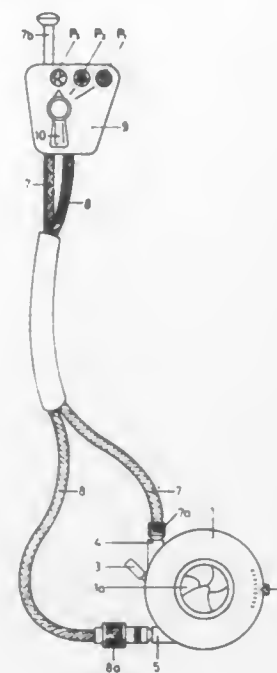
the connecting piece is provided, opposite the front face contiguous with this handle, with an inner circular toothing whose notches are adapted to cooperate with at least one finger projecting from said front face in order selectively to define angular positions of said piece relatively to said handle,

and this connecting piece is also integral with a sheath for the assembly of a fixed sleeve of a push button controlling a release, this sheath extending at right angles to the rod to offer the push button in this direction.

**4,339,192**  
**CABLE RELEASE ATTACHABLE TO A CAMERA SHUTTER**  
 Franz Starp, Mittlere Steige 36, and Dieter Rittmann, Calwerstrasse 53, both of 7547 Wildbad 5, Fed. Rep. of Germany  
 Filed Jul. 23, 1981, Ser. No. 286,190  
 Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028431; Jul. 26, 1980, 3028465; Apr. 4, 1981, 3113643  
 Int. Cl.<sup>3</sup> G03B 9/02, 17/26, 17/38  
 U.S. Cl. 354-269 16 Claims

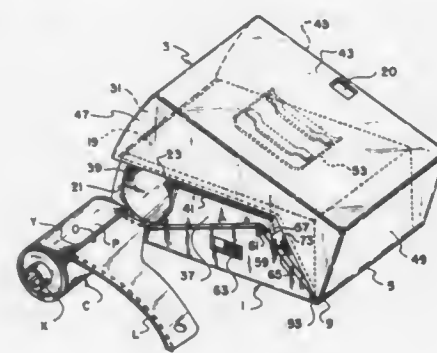
1. Cable release arrangement, which is connectable to the shutter of a camera having an objective aperture provided with shutter segments releasable to take a photograph and actuable between a closed and an open shutter position and with diaphragm blades actuable between a preselected size aperture position and a fully open aperture position, comprising a housing forming a common actuating handle, a switching device operatively arranged on the housing, first and second flexible power transmitting members, each member having an adjacent end provided with an end piece disposed on the housing and a remote end provided with a shutter connection for operatively connecting the corresponding member to the shutter of such a camera, the first member being adapted for effecting release of the shutter segments to take a photograph, and being provided with a first axially displaceably mounted push rod which is guided in the end piece of the first member and arranged on the housing for finger pressure direct actuation to displace the first push rod for effecting in turn such release of the shutter segments, and the second member being adapted for correspondingly actuating the shutter segments and the diaphragm blades to view the field of the camera through the objective aperture of the shutter, and being provided with a second

axially displaceably mounted push rod which is guided in the end piece of the second member and operatively connected with the switching device for indirect actuation by



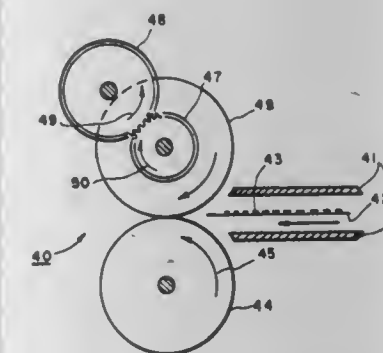
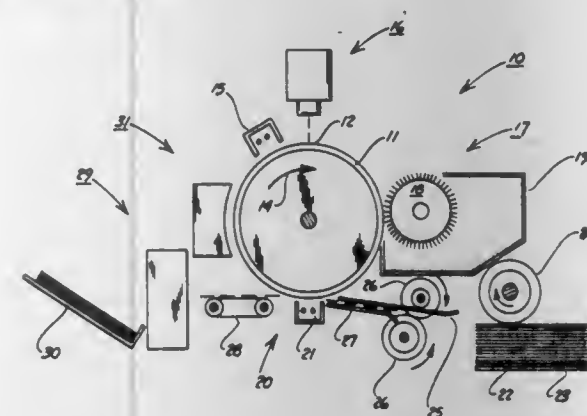
the switching device to displace progressively the second push rod for correspondingly actuating in turn the shutter segments and the diaphragm blades.

**4,339,193**  
**CAMERA DOOR AND BODY CONSTRUCTION**  
 Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
 Filed May 6, 1981, Ser. No. 260,866  
 Int. Cl.<sup>3</sup> G03B 17/02  
 U.S. Cl. 354-288 9 Claims



1. In a bottom-loaded photographic camera for receiving a film container supporting a filmstrip having a leader extending from the container, apparatus for providing various degrees of access to the camera interior for film loading and other purposes, said apparatus comprising: door means, openable to a partially opened position for substantially shielding the camera interior but allowing limited access to the camera interior at the camera bottom for loading a film container into said camera, and openable to a fully opened position for allowing greater access to the camera interior for other purposes; and means for blocking said door means to prevent its opening farther than the partially opened position, said blocking means being adapted to be disabled to permit opening of said door means to its fully opened position.

**4,339,194**  
**COLD PRESSURE FUSING APPARATUS**  
 Albert W. Scribner, Darien, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.  
 Filed Jul. 10, 1980, Ser. No. 168,214  
 Int. Cl.<sup>3</sup> G03G 15/00  
 U.S. Cl. 355-3 FU 1 Claim

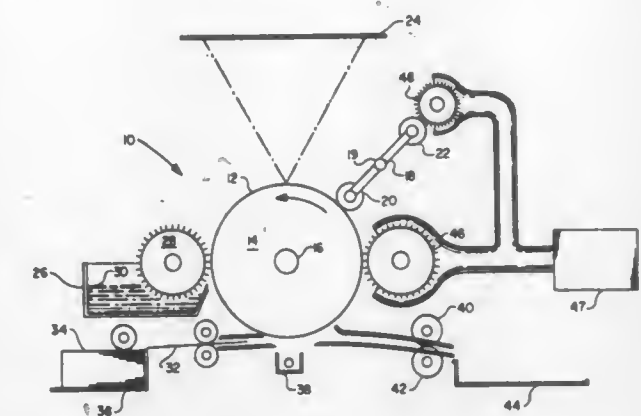


1. In a cold pressure fusing apparatus for use in a xerographic copying machine for fixing a developed toner image to a copy sheet, the combination comprising: a first roller rotatably mounted in said machine; driving means operatively connected to said first roller; a second roller, rotatably mounted in said machine and in pressure contact with said first roller whereby a nip is formed through which copy sheets being fused pass; and braking means operatively connected to said second roller for applying a controlled braking torque to said second roller, said torque being of such magnitude sufficient to facilitate the fusing of toner particles into said copy sheet without producing substantially any smudging of the toner particles, but of a magnitude insufficient to cause skidding of said second roller relative to said first roller.

**4,339,195**  
**ELECTROPHOTOCOPIER ROLLER ASSEMBLY**  
 George N. Gabelman, Ridgefield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.  
 Filed Nov. 17, 1980, Ser. No. 207,180  
 Int. Cl.<sup>3</sup> G03G 15/02, 15/16  
 U.S. Cl. 355-3 CH 7 Claims

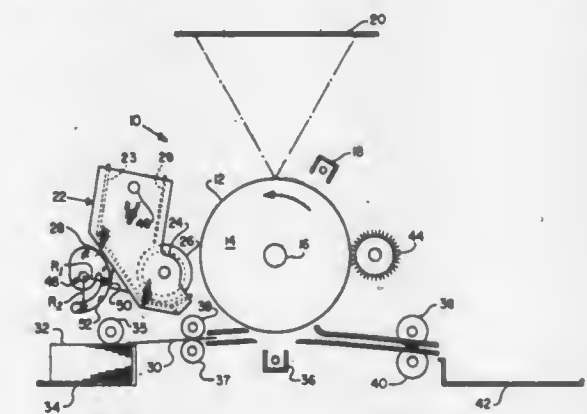
1. In an electrophotocopying machine having a photosensitive member, the improvement comprising at least two rollers operatively associated with said photosensitive member, said rollers being mounted on a turret adjacent the photosensitive member, means for rotating one of said rollers into its operat-

ing position adjacent said photosensitive member and the other of said rollers into a cleaning position removed from said



photosensitive member, and means for cleaning said other roller in its cleaning position.

**4,339,196**  
**ECCENTRIC CAM FOR ELECTROPHOTOCOPIER DEVELOPER UNIT**  
 Christian A. Beck, Ridgefield, and Paul J. Macaluso, Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.  
 Filed Nov. 28, 1980, Ser. No. 210,977  
 Int. Cl.<sup>3</sup> G03G 15/00, 15/02  
 U.S. Cl. 355-3 DD 6 Claims



1. In an electrophotocopying machine having a photoconductive surface and a retractable, pivotably mounted developer unit for developing an electrostatic image on the photoconductive surface, the improvement comprising at least one eccentric cam for moving said developer unit into and out of developing engagement with said photoconductive surface, said cam having a curved, cantilevered arm extending therefrom, said arm increasing the effective radius of said cam starting from the junction of the arm with the cam to the end of the arm remote from said junction, and means for reciprocally rotating said cam whereby said cam moves said developer unit into and out of developing engagement with said photoconductive surface.

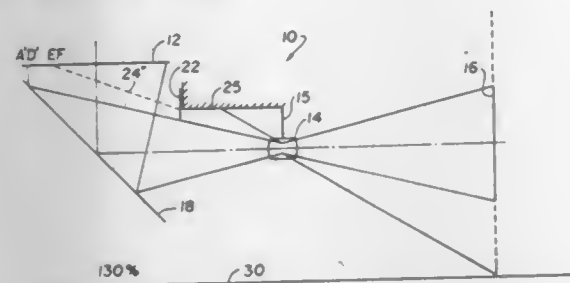
**4,339,197**  
**LARGE FORMAT CAMERA LIGHT BAFFLE APPARATUS**  
 Arthur L. Kaufman, Westport, Conn.; Quentin D. Vaughan, Hollywood, Fla.; Roy G. von Dohlen, Lauderdale Lakes, Fla., and Richard Kopala, Coral Springs, Fla., assignors to Visual Graphics Corporation, Tamarac, Fla.  
 Filed Mar. 23, 1981, Ser. No. 246,168  
 Int. Cl.<sup>3</sup> G03B 27/36  
 U.S. Cl. 355-58 8 Claims

1. Apparatus for blocking non-imaging light entering a large format camera, said camera having an elongated base, an object plane adjustably carried at one end of the base, a fixed



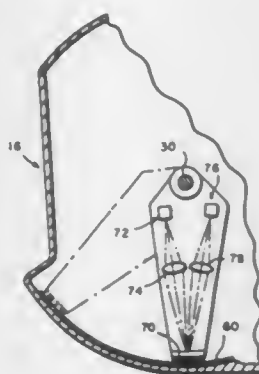
image plane supported by the base and spaced from the object plane, and a lens supported by the base between the object and image planes and adjustable along its optical axis and a mirror between the lens and the image plane comprising:

- at least one elongated track member carried by the base and parallel to the optical axis of the lens;
- a first carriage slidably received upon the track member;
- means to couple the camera lens to the first carriage;
- a second carriage slidably received upon the track member;
- means to secure the object plane to said second carriage;
- a cam having a cam face rotatably carried by the base;
- a cam follower carried by the second carriage in operative contact with the cam face;
- means to urge the cam follower into contact with the said cam face at all times;



- an opaque substantially planar baffle member within the camera positioned adjacent the lens and slidable into the path of a selected portion of the light rays traversing the lens;
- an elongated cam swingably carried by the base at one end and coupled to the baffle member at its free end;
- a cam face on said elongated cam;
- a cam follower secured to the first carriage in operative contact with the elongated cam face;
- a power source on the camera base;
- and driven means operatively coupled to the power source to simultaneously move the first and second carriages; whereby the baffle will be placed in the path of non-imaging light as it leaves the lens in the path of the object plane and lens upon the base.

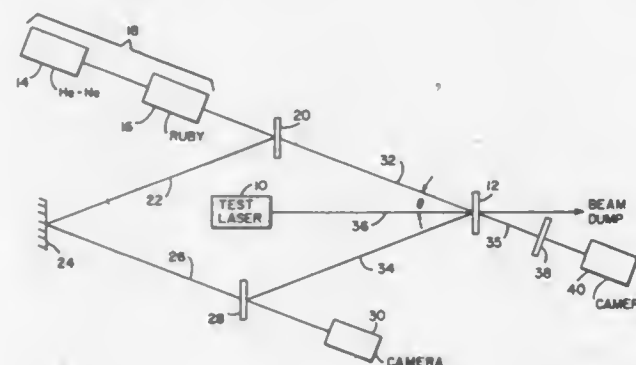
**4,339,198**  
**GEODETIC INSTRUMENT**  
 Fred A. Leuchter, Jr., Malden, Mass., assignor to Celenav Industries, Inc., Malden, Mass.  
 Continuation of Ser. No. 805,750, Jun. 13, 1977. This application Jun. 7, 1979, Ser. No. 46,264  
 Int. Cl.<sup>3</sup> G01C 1/00  
 U.S. Cl. 356—144 5 Claims



- A geodetic instrument comprising a support, a horizontal mirror and optical system mounted to the support with line of sight of the optical system intersecting the horizontal mirror at its center, an index mirror rotatable about a predetermined axis to bring a sighted object into juxtaposition with the line of sight of the optical system at the center of the horizontal mirror, means defining an arcuate surface concentric with the axis

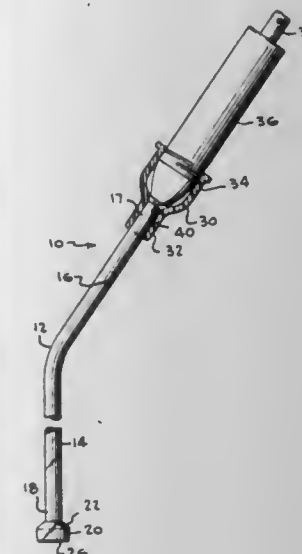
of rotation of the index mirror, an informational grating comprising a strip of flexible sheet material bearing graduations applied thereto while flat, said strip being adhesively attached to said arcuate surface, an index arm movable in consonance with the index mirror about said axis such that the distal end of the index arm travels along said arcuate member in an arc concentric with the axis of the arcuate member, an arcuate reference grating at the distal end of the index arm having the same radius of curvature as the informational grating, a light source mounted at the proximal end of the index arm arranged to direct a beam of light through the slots of the reference grating substantially at the center thereof onto the informational grating at an angle of incidence such as to cause the beam modified by the slots to be reflected at an angle of reflection corresponding to the angle of incidence, and a diode receiver at the proximal end of the arm arranged in the path of the reflected light to receive the beam, said diode being designed to produce a signal indicative of the angular movement necessary to move the image into juxtaposition with the line of sight.

**4,339,199**  
**PULSED LASER BEAM INTENSITY MONITOR**  
 Robert W. Jones, and Charles M. Cason, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.  
 Filed Jul. 7, 1980, Ser. No. 166,872  
 Int. Cl.<sup>3</sup> G01J 1/00  
 U.S. Cl. 356—213 3 Claims



- A laser beam intensity monitor for measuring the intensity of a laser pulse at arbitrary points within said pulse, comprising: a crystal flat for receiving said laser pulse normal to the surface thereof, a first laser adapted for directing optical energy towards said flat at an angle of incidence different from the normal thereto, a second laser arranged coaxially with said first laser for providing output optical energy toward said flat, a first camera, a first beam splitter disposed for directing a portion of said first and second laser outputs along a reference path, and a second portion along a second path to said crystal flat, a second beam splitter disposed for combining optical energy from said first and second lasers reflected from said crystal flat with optical energy from said reference path and directing said combined optical energy to said first camera, a polarized and a second camera coaxially aligned with the outputs of said first and second lasers for receiving optical energy coupled through the crystal flat, said crystal flat being a doped isotropic crystalline structure exhibiting stress birefringence in response to laser pulses passing through the material, and wherein said first laser is a continuous wave laser and said second laser is a pulsed laser.

**4,339,200**  
**BORE ILLUMINATING DEVICE**  
 Wellington S. Corbin, 439 Eastover Dr., Harrisonburg, Va. 22801  
 Filed Aug. 4, 1980, Ser. No. 175,242  
 Int. Cl.<sup>3</sup> G02B 27/00  
 U.S. Cl. 356—241 5 Claims

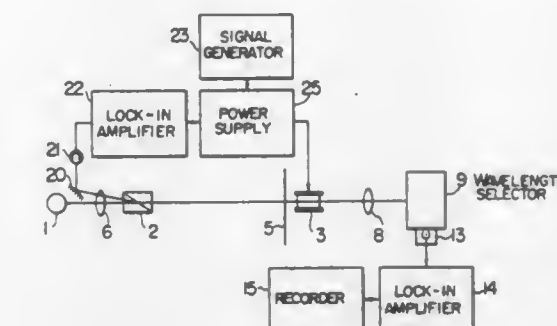


- An illuminating device for permitting the illumination and inspection of a gun bore or the like having a bore diameter, said illuminating device comprising:  
 a light source;  
 a transparent light conductor rod of less diameter than said bore diameter and having first and second ends and dimensioned and shaped to permit insertion of said second end into said bore;  
 connector means holding said first end of said transparent light conductor rod in facing relation to said light source for receiving light from said light source to be transmitted along the length of said transparent light conductor rod to said second end thereof;  
 a light reflecting mirror dimensioned to be insertable into said bore and positioned in facing relation to said second end of said transparent light conductor rod to receive and deflect light therefrom; and  
 dispersing lens means for receiving light reflected from said light reflecting mirror and directing such light outwardly to illuminate the adjacent bore surface surrounding said dispersing lens, said dispersing lens being of greater diameter than the diameter of said light conductor rod and having a first face fixed to the second end of said light conductor rod and a second face spaced away from said second end of said light conductor rod with said mirror being positioned on said second face.

**4,339,201**  
**TEMPERATURE CONTROL SYSTEM FOR AN ELEMENT ANALYZER**  
 Makoto Yasuda; Seiichi Murayama, both of Kokubunji, and Masaru Ito, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
 Filed Apr. 1, 1980, Ser. No. 136,285  
 Claims priority, application Japan, Apr. 2, 1979, 54-38378  
 Int. Cl.<sup>3</sup> G01J 3/30  
 U.S. Cl. 356—312 8 Claims

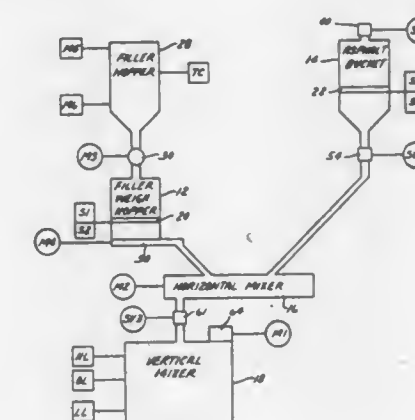
- A temperature control system for an element analyzer, comprising:  
 a light source for producing light along an optical axis;  
 an atomizer positioned along said optical axis for heating a sample placed therein into its vaporized state;  
 power supply means connected to said atomizer for supplying power thereto necessary to heat a sample placed therein;

a beam splitter positioned on said optical axis between said light source and said atomizer;  
 detector means positioned at a point on said optical axis which is on the opposite side of said atomizer from said light source to receive light which has passed through said atomizer and convert said light into an output electrical signal;



light sensor means positioned to receive radiant light which passes from said atomizer through said beam splitter for converting said radiant light into a temperature indicating signal; and  
 control means responsive to said temperature indicating signal for controlling said power supply means to regulate the temperature of said atomizer.

**4,339,202**  
**ASPHALT WEIGH AND MIX APPARATUS AND PROCESS**  
 Wallace L. Hart, Evanston, Ill., and John W. Ricketts, Joplin, Mo., assignors to UIP Engineered Products Corporation, Addison, Ill.  
 Filed Apr. 21, 1980, Ser. No. 142,432  
 Int. Cl.<sup>3</sup> B28C 7/04  
 U.S. Cl. 366—8 6 Claims



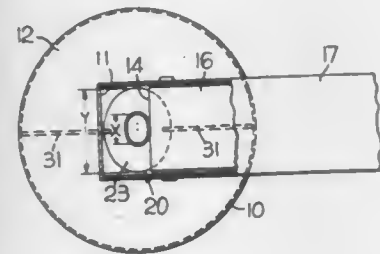
- A process for the continuous production of an asphalt-stabilizer roofing composition comprising the steps of feeding asphalt into a container, weighing the container as the asphalt is fed therein, stopping the flow of asphalt when the container is filled with a predetermined amount by weight of asphalt, simultaneously, feeding stabilizer into a second container, weighing the second container as stabilizer is being fed therein, stopping the flow of the stabilizer when the container is filled with a predetermined amount by weight of stabilizer, discharging the weighed asphalt and stabilizer into an intermediate mixer, refilling the asphalt container and stabilizer container, discharging the mixed asphalt and stabilizer composition after a predetermined period of time from the intermediate mixer into a surge mixer for delivery to process and repeating the process when the level in the surge mixer reaches a predetermined minimum and continually repeating the process until the level in the surge mixer reaches a predetermined maximum.

4. An apparatus for the continuous production of an asphalt-



stabilizer composition containing a predetermined weight ratio of asphalt to stabilizer, said apparatus comprising a weigh bucket, means for feeding asphalt into said weigh bucket, zero weigh means for stopping the flow of asphalt when the weigh bucket contains a predetermined amount by weight of asphalt, a weigh hopper, means for feeding stabilizer into said weigh hopper, zero weigh means for stopping the flow of stabilizer when the weigh hopper contains a predetermined amount by weight of stabilizer, an intermediate mixer, means for simultaneously discharging the weighed asphalt and stabilizer into said intermediate mixer, a surge mixer, means for dumping the mixed asphalt and stabilizer composition into said surge mixer for delivery to process and means for controlling the flow of asphalt and stabilizer to the intermediate mixer according to the level of asphalt-stabilizer composition in the surge mixer.

**4,339,203**  
**AGGREGATE STORAGE ANTI-SEGREGATION**  
**ARRANGEMENT FOR A STORAGE BIN**  
Donald L. Murray, Appleton, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.  
Filed Jun. 30, 1980, Ser. No. 164,335  
Int. Cl.<sup>3</sup> B28C 5/04  
U.S. Cl. 366—9

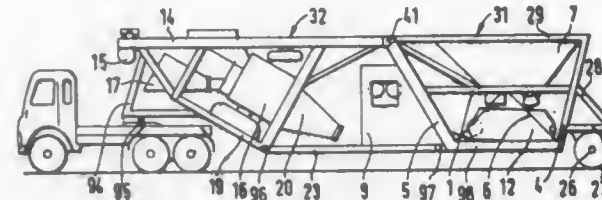


1. In a storage bin for asphaltic concrete materials having a top opening through which such materials are fed into the bin from the discharge end of a conveyor, an anti-segregation device of an essentially downwardly diverging frustoconic configuration suspended within the bin near the top opening including an upper end portion forming a generally elliptically-shaped upper opening extending through the device wherein the major axis of said opening is aligned to extend transversely of the flow of the materials as they are fed into the bin from the conveyor, whereby, a predetermined portion of the materials fed into the bin flow through the upper opening and fall toward the base of the bin to form a relatively small pile of the materials in the center of the bin while the remainder of the materials spill onto the device and flow outwardly from its periphery to form a ring of the materials around the pile in the center of the bin to promote peripheral intermixing of the materials in the ring as well as between the ring and the pile.

**4,339,204**  
**APPARATUS FOR USE IN THE PRODUCTION OF**  
**CONCRETE**  
Johann Placzek, 9, Feystasse, D 894 Memmingen, Fed. Rep. of Germany  
Filed Jul. 22, 1980, Ser. No. 171,128  
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1979, 2930154  
Int. Cl.<sup>3</sup> B28C 7/04  
U.S. Cl. 366—18

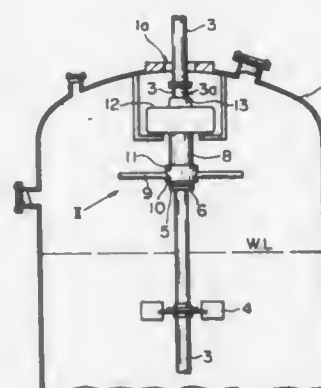
1. Apparatus, transportable as a unit, for metering and feeding aggregate materials for the production of concrete, said apparatus comprising a frame, which serves at least partly as a support arrangement for storage containers for the aggregate materials and which accommodates a metering apparatus and a feed apparatus together with a storage and mixing apparatus in both a transporting and elevated operating position, wherein the frame comprises two parts, one of which supports the metering apparatus and the other of which supports the stor-

age and mixing apparatus in both said transporting and elevated positions, pivot means for pivotally connecting said two frame parts with one another whereby said other part can be moved about said pivot means relative to said one part, thereby enabling the apparatus to be converted from said elevated



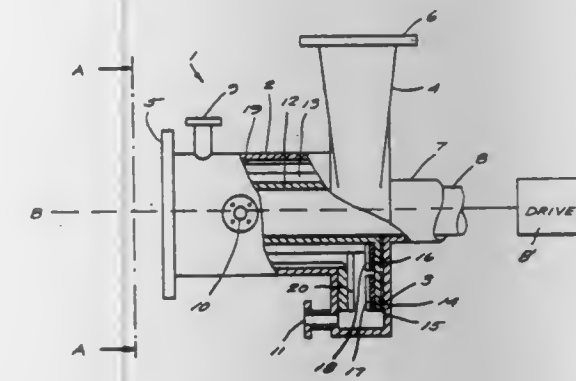
operating position into a transporting position and a transporting position to an operating position, and a tie-bar connecting said two parts together in said transporting position to mutually brace said parts thereby, and wherein the feed apparatus comprises a charge box which is movable along an inclined path, which path is provided by said two frame parts.

**4,339,205**  
**DEFOAMING APPARATUS**  
Kochi Kato, Hoya, and Namio Uemura, Oga, both of Japan, assignors to Nippon Mining Company, Limited, Tokyo, Japan  
Filed Jun. 10, 1980, Ser. No. 158,084  
Claims priority, application Japan, Jun. 19, 1979, 54-82911[U]  
Int. Cl.<sup>3</sup> B01F 7/18  
U.S. Cl. 366—296



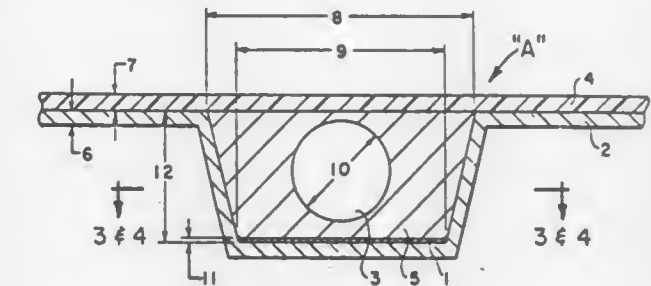
1. A defoaming apparatus for breaking foams floating on a liquid in a fermentation tank comprising:  
a drive shaft;  
rotary agitation blades rigidly coupled to said drive shaft adapted to forcibly agitate said liquid;  
rotary defoaming blades adapted to break foams floating on said liquid, both said agitation and defoaming blades being housed in said tank;  
a sleeve rigidly coupled to said defoaming blades rotatably mounted on said drive shaft;  
transmission gear means for rotatably driving said sleeve in a direction opposite to the direction of rotation of said drive shaft at a speed higher than that of said drive shaft; said transmission gear means comprising a cup-shaped gear wheel rigidly coupled to said shaft, said cup-shaped gear wheel having an internal gear formed integrally therewith, said sleeve being integrally provided with an external gear;  
and at least one idler gear in meshing engagement with said internal gear and said external gear.

**4,339,206**  
**MIXING APPARATUS FOR MIXING A FLUID FIBER**  
**SUSPENSION WITH A TREATMENT FLUID**  
**SUSPENSION**  
Bjorn Ahs, Karlstad, Sweden, assignor to Kamyr AB, Karlstad, Sweden  
Filed Nov. 17, 1980, Ser. No. 207,290  
Claims priority, application Sweden, Nov. 27, 1979, 7909781  
Int. Cl.<sup>3</sup> B01F 7/02  
U.S. Cl. 366—307



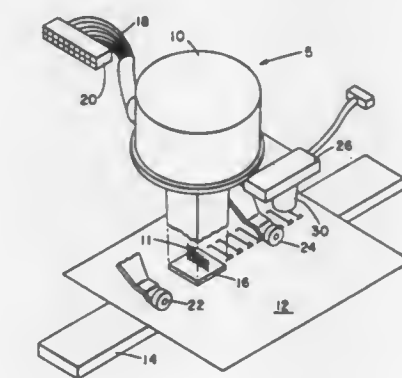
1. Mixing apparatus for mixing a fluid fiber suspension with a treatment fluid, comprising:  
a housing comprising a first cylindrical housing part, and a second cylindrical housing part having a larger diameter than said first cylindrical housing part, said first and second housing parts being connected together so that the cylindrical axes thereof are substantially coextensive and so that the interiors thereof are in communication;  
a fluid suspension inlet means to said first housing part for introducing fluid suspension axially into said first housing part;  
a fluid suspension outlet means from said second housing part for expelling treated fluid suspension tangentially from said second housing part;  
treatment fluid inlet means for introducing treatment fluid to said first or second housing parts; and  
means for effecting stirring of the fluid suspension and mixing of the treatment fluid therein so as to thoroughly mix the suspension and treatment fluid with minimal mechanical degradation of the suspension fibers, said means comprising: a shaft; means for mounting said shaft for rotation with respect to said housing about an axis substantially coaxial with the axes of said housing first and second parts; a first stirring member operatively mounted to said shaft and extending in said first housing part, said first stirring member having a plurality of substantially axially extending, radially upstanding ribs formed on the axial periphery thereof; a plurality of substantially axially extending, radially upstanding ribs formed on the interior of said first housing part and radially spaced from said first stirring member ribs a substantial distance; a second stirring member operatively mounted to said shaft and extending in said second housing part, said second stirring member having a plurality of substantially radially extending, axially upstanding ribs formed on a peripheral surface thereof; and a plurality of substantially radially extending, axially upstanding ribs formed on the interior of said second housing part and axially spaced a substantial distance from said second stirring member ribs,  
and further comprising means for effecting rotation of said shaft, and said first and second stirring members operatively attached thereto, so that fluidization of suspension introduced into said inlet takes place.

**4,339,207**  
**TEMPERATURE INDICATING COMPOSITIONS OF**  
**MATTER**  
Craig R. Hof, Hopatcong, and Roy A. Ullin, Wycoff, both of N.J., assignors to Akzona Incorporated, Asheville, N.C.  
Division of Ser. No. 946,935, Sep. 28, 1978, Pat. No. 4,232,552, which is a continuation-in-part of Ser. No. 895,422, Apr. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 844,334, Oct. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 796,492, May 12, 1977, abandoned. This application Jun. 27, 1980, Ser. No. 163,560  
Int. Cl.<sup>3</sup> G01K 11/08  
U.S. Cl. 374—160



1. A temperature indicator device comprising:  
(a) a flat or gradually-curved heat-conducting carrier means having one or more spaced cavities defined therein to determine a like number of predetermined temperatures in a predetermined temperature range with a like number of different thermally-responsive compositions of matter, each thermally-responsive composition of matter associated with one of the predetermined temperatures and each substantially without impurities;  
(b) an indicator means located at the bottom of each of said cavities;  
(c) a transparent cover sheet means in sealing engagement with the carrier means overlying each of said cavities to form an enclosure between the cavity and the transparent means; and  
(d) each of said compositions of matter associated with a particular cavity substantially filling the cavity except for a void and completely enclosing said void within said cavity.

**4,339,208**  
**OPTICAL SENSING OF WIRE MATRIX PRINTERS**  
Horst H. Biedermann, Augsburg, Fed. Rep. of Germany, assignor to NCR Corporation, Dayton, Ohio  
Filed Sep. 25, 1980, Ser. No. 190,772  
Int. Cl.<sup>3</sup> B41J 3/10  
U.S. Cl. 400—124

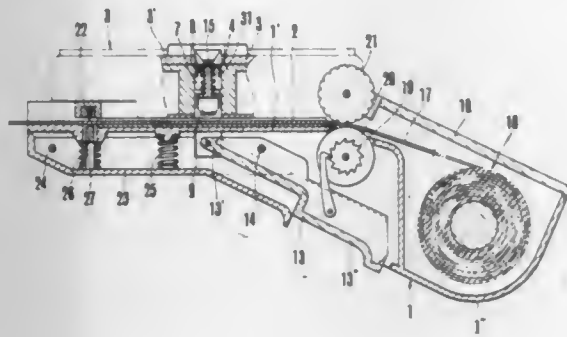


1. Apparatus for supervising the printing of dot matrix characters on record media in a printer having a print head including at least one dot producing element movable along a line of printing, said apparatus comprising: a read head carried by said print head for sequentially reading the printing of each dot of said characters, said read head including light emitting means and light receiving means, and fiber optic guide means carried by said read head and associ-



ated with each dot producing element for guiding light from said light emitting means to said record media and for guiding reflected light to said light receiving means for sensing each of the dots immediately upon being produced by said element.

**4,339,209**  
**MANUALLY OPERATED TYPING DEVICE**  
 Satoshi Tanigami, Ichikawa, Japan, assignor to Kabushiki Kaisha Uchida Yoko, Japan  
 Filed Mar. 28, 1980, Ser. No. 134,960  
 Claims priority, application Japan, Aug. 31, 1978, 53-106908  
 Int. Cl.<sup>3</sup> B41J 1/28  
 U.S. Cl. 400-142 8 Claims

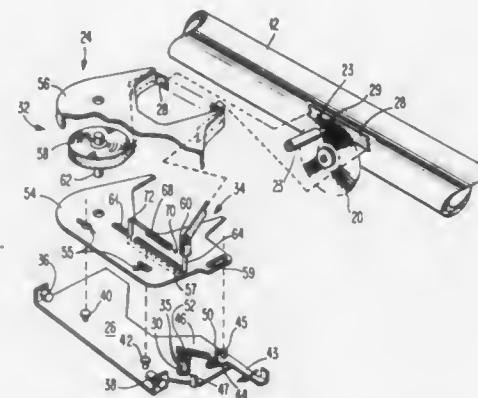


1. An improved manually operated typing device for typing on a length of tape a display combination of selected letters, numerals or symbols, of the type having elongated housing means having a rear hollow space for housing a tape magazine, a plurality of typing heads, and typing handle means for actuating a selected one of the typing heads, wherein the intended typing operation is performed by way of the operational steps of unreeling, by one pitch of typing head, the tape from the tape magazine disposed in the rear hollow space of the housing means, depressing a selected typing head by actuating the typing handle means so as to type a certain letter, numeral, symbol or the like and repeating the aforesaid operational steps, said device comprising:

- a pistol-shaped housing having a hollow space at the rear part thereof for receiving the tape magazine therein, another hollow space in the middle part thereof for receiving the typing handle means therein, an extension extended from one side of said housing, a tape guiding groove on a longitudinally extending upper portion thereof through which the tape is displaced;
- a rotary disc rotatably supported on said extension, said rotary disc having a series of substantially square holes along the periphery thereof;
- a plurality of typing head assemblies inserted in the respective substantially square holes of said rotary disc, and movable from an upper original position to a lower typing position, each of said typing head assemblies comprising a typing head with an ink source contained therein, and a typing face of a letter, numeral, symbol or the like formed on a bottom end of said typing head;
- a hammer member, operable to depress a selected typing head assembly, said hammer member being vertically displaceable along the side of said housing;
- the typing handle means comprising a typing handle disposed in said middle hollow space of said housing, a pivotal pin extending through said middle hollow space secured to said housing, said typing handle being secured to said hammer member at the front end of said typing handle, said typing handle being arranged rotatably about said pivotal pin to cause vertical displacement of said hammer member, and a pivotal lever mounted to the rear part of said handle, said pivotal lever including a ratchet member, each typing head assembly including spring means biasing said typing head upwardly to said original position and into contact with said hammer member for returning said typing head after completion of the typing operation, and said typing handle being pivotable about said pivotal pin

in a first direction to cause said hammer member to move said type head to said lower position against the bias of said spring means, said spring means upon release of said typing handle moving said typing handle in a second direction opposite to said first direction responsive to movement of said typing head into its upper original position by said spring means.

**4,339,210**  
**RIBBON CARTRIDGE LOADING MECHANISM**  
 James A. Craft, and Selahattin A. Okcuoglu, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.  
 Filed Nov. 26, 1980, Ser. No. 210,636  
 Int. Cl.<sup>3</sup> B41J 32/00  
 U.S. Cl. 400-208 11 Claims

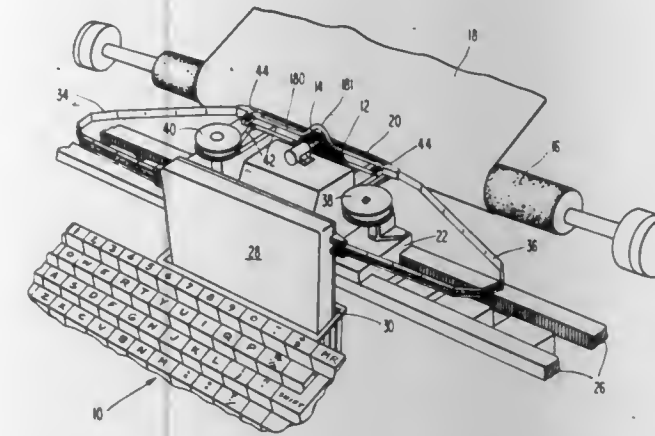


1. A ribbon cartridge loading mechanism wherein said cartridge is to be inserted on a support plate and secured to said support plate into a final position, said mechanism including:
- a first guide means within said support plate cooperating with a second guide means within said cartridge, for guiding said cartridge during its drop-in insertion into said support plate to an unlocked position and vertically defining the position of said cartridge while permitting lateral shifting thereof;
  - cam-follower means on said cartridge and cam means on said support plate for laterally shifting said cartridge on said support plate to a position at which said cartridge is in a final locked position; and,
  - a lever linked to said cam means manually positionable to a first position to position said cam means for said drop-in insertion and to a second position to move said cam means against said cam follower means to effect lateral shifting to said locked position.

**4,339,211**  
**FLEXIBLE LEADER**  
 P. Todd Alexander, King of Prussia, Pa., and Kurt H. Roth, Mississauga, Canada, assignors to Exxon Research & Engineering Co., Florham Park, N.J.  
 Filed Jul. 30, 1979, Ser. No. 61,880  
 Int. Cl.<sup>3</sup> B41J 35/04  
 U.S. Cl. 400-248 11 Claims

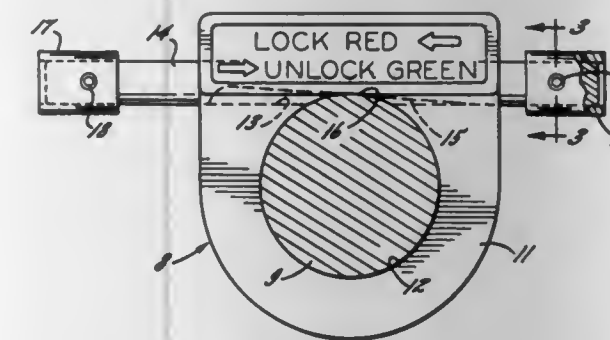
1. A printing apparatus of the type comprising means for support of a print receiving medium, laterally movable character printing means juxtaposed to said support means for establishing a laterally movable print location, a ribbon comprising a printing medium adapted to advance past the movable print location in printing relationship with the print receiving medium and the character printing means, stationary ribbon storage means, and leader means coupled between said storage means and said print location for guiding movement of said ribbon between said storage means and said print location, the improvement residing in said leader means comprising an integral member forming a channel having a base and sidewalls extending at least partially outwardly from said base and gen-

erally away from a center of curvature about which said leader bends during movement of said printing means past said print location, said sidewalls of said member having discontinuities therein the portions of said sidewalls adjacent said discontinuities



ies abutting against each other when said integral member assumes a substantially rectilinear shape so as to control bending of said leader means in a manner to limit bending to only one direction as said printing means moves.

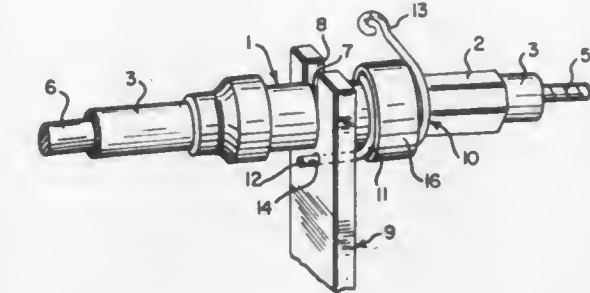
**4,339,212**  
**POSITIONING COLLAR**  
 Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182  
 Filed Aug. 25, 1980, Ser. No. 181,134  
 Int. Cl.<sup>3</sup> F16B 2/14, 3/00  
 U.S. Cl. 403-27 4 Claims



1. A positioning collar clamping device comprising, a generally D-shaped body member and projecting tapered portion adapted to receive a shaft through the central longitudinal opening of said member, means defining a transverse opening through said member and overlappingly intersecting with the shaft receiving longitudinal opening of said member, said transverse opening being disposed so as to receive a shiftable lock pin adapted to affect an interference fit with said shaft disposed within said longitudinal opening, said lock pin having a tapered surface thereon so that when said pin is moved in a first direction the interference fit between the pin and shaft occurs while shifting said pin in a second direction reduces and eliminates the interference fit between said pin and said shaft, resilient means fixedly mounted on each of the ends of said lock pin and said resilient means comprises annular rubber hose members secured to said lock pin ends by transverse fastener pin means.

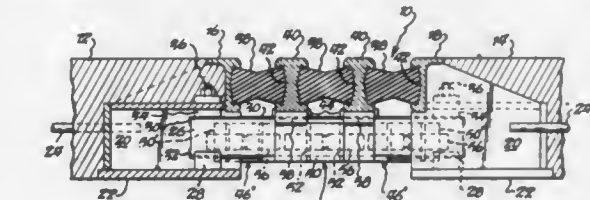
**4,339,213**  
**TERMINATION ANCHORAGE**  
 William J. Gilmore, Manitou Beach, Mich., assignor to Acco Industries Inc., Trumbull, Conn.  
 Filed Jun. 4, 1980, Ser. No. 156,468  
 Int. Cl.<sup>3</sup> F16G 11/10  
 U.S. Cl. 403-316 3 Claims

1. A termination anchorage for a circular termination member where said anchorage includes a bracket having a U-shaped slot contained therein adapted to engage with an annu-



lar groove in said termination member; the improvement comprising in having a coil spring lock adapted to surround a termination member where the inner diameters of the coils of the coil spring lock are less than the outer diameter of the termination member when the coil spring lock is in an unstressed state, in having a spring tip on said coil spring lock

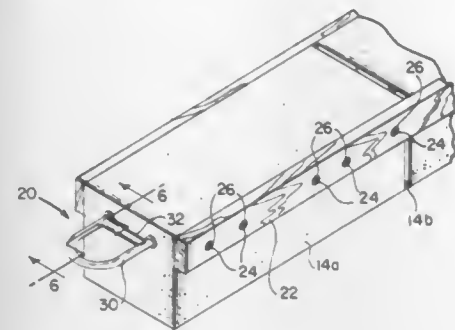
**4,339,214**  
**COMPOSITE EXPANSION JOINT**  
 Guy S. Puccio, Snyder, and Robert J. Kogut, both of N.Y., assignors to Acme Highway Products Corporation, Amherst, N.Y.  
 Filed May 2, 1980, Ser. No. 145,993  
 Int. Cl.<sup>3</sup> E01C 11/04  
 U.S. Cl. 404-69 10 Claims



8. In a composite expansion joint assembly for a bridge roadway and the like, said joint being of the type having a pair of edge members adapted to define the opposite sides of the joint, a pair of elongated, resiliently yieldable sealing elements extending longitudinally of said groove in side-by-side relation, an elongated, rigid structural member interposed between said sealing elements and extending lengthwise of said groove, and laterally spaced support bars extending transversely of said groove, said sealing elements being adapted to resiliently expand and compress upon expansion and contraction, respectively, of the joint, the improvement which comprises equalizing spring means carried by the structural members for closing and opening upon expansion and contraction of the joint, said equalizing spring means exerting centering forces upon each structural member independently of said support bars and in opposition to expansion and compression of said sealing members, said equalizing spring means comprising a common spring bracket carried by said member and having angularly related arms at opposite ends thereof, generally L-shaped brackets secured to the joint at opposite ends thereof and having arms in spaced opposition to said common bracket arms, and a pair of spring members between said opposed arms.



**4,339,215**  
**EMBEDDED MARINE PILE HOOP**  
 Wesley W. Sluys, Bellingham, Wash., assignor to Builders Concrete, Inc., Bellingham, Wash.  
 Filed Jun. 9, 1980, Ser. No. 157,677  
 Int. Cl.<sup>3</sup> B63C 1/02; E02B 3/20  
 U.S. Cl. 405—219 2 Claims



1. In a marine float formed by a concrete casing surrounding a buoyant foam core and having a plurality of spaced-apart tie rods extending transversely therethrough with their respective ends projecting from opposite side walls of said float along the upper edge thereof, a pile hoop for slidably securing said float to an upstanding pile, comprising:

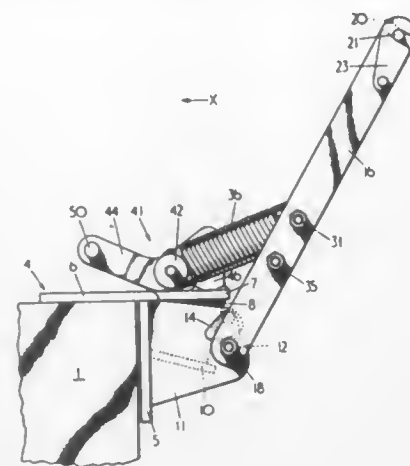
a hoop having an encircling portion terminating in a pair of parallel mounting legs having a rub block extending therebetween, said encircling portion having an inside transverse dimension slightly larger than the diameter of said pile to allow said encircling portion and rub block to loosely surround said pile; and

a pair of parallel mounting tubes embedded in said float with their respective ends exposed at the end wall of said float, said tubes being spaced apart by the spacing between said mounting legs and having a shape and size to conform to the shape and size of said mounting legs to allow the mounting legs of said hoop to be inserted into respective mounting tubes and secured thereto, said mounting tubes and mounting legs extending inwardly to intersect at least one of said tie rods such that said tie rod passes through said mounting tubes and mounting legs to prevent axial movement of said mounting legs.

**4,339,216**  
**EQUIPMENT FOR LAYING A LAYER OF ELONGATE MATERIAL ADJACENT TO AN EXPOSED ROCK OR MINERAL SURFACE IN AN UNDERGROUND MINE**  
 Roy L. Bell, Burton-on-Trent, England, assignor to Coal Industry (Patents) Limited, London, England  
 Filed Mar. 24, 1980, Ser. No. 133,044  
 Claims priority, application United Kingdom, May 23, 1979, 7917967  
 Int. Cl.<sup>3</sup> E21D 19/02 18 Claims

1. Equipment for laying a layer of elongate material adjacent to a newly exposed rock or mineral surface formed by a mining machine cutter as the machine traverses along a working face, comprising a support bracket for fixed attachment to the mining machine, the support bracket having a first pivot, support arm means for supporting a store of elongate material, the support arm means extending from the first pivot on the support bracket and being pivotally supported by the first pivot on the support bracket, resilient means for moving the support arm means about its pivotal mounting, and an over center device which has a second fixed pivot parallel to the first pivot and having a lever connected to the second pivot, the resilient means being connected to the lever and to the support arm, whereby the lever in one operational mode is adapted to cooperate with the resilient means to urge the support arm means about its pivotal mounting to urge support means for the store of elongate material towards the newly exposed rock or mineral surface and which in a further operational mode is adapted

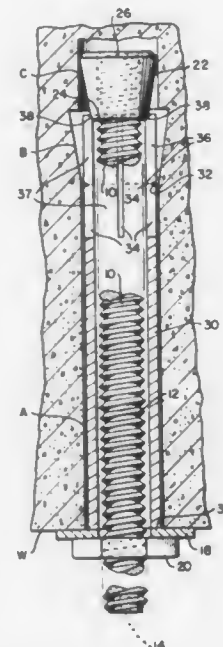
to cooperate with the resilient means to permit the support arm means to move about its pivotal mounting to allow the support



means for the store of elongate material to move to a position clear of the newly exposed rock or mineral surface.

**4,339,217**  
**EXPANDING ANCHOR BOLT ASSEMBLY**  
 Patrick J. Lacey, Crestwood, N.Y., assignor to Drillco Devices Limited, Long Island City, N.Y.  
 Filed Jul. 7, 1980, Ser. No. 166,640  
 Int. Cl.<sup>3</sup> F16B 13/06 4 Claims

U.S. Cl. 411—55



1. An expanding anchor and structural wall assembly, said assembly comprising:

(a) a structural wall having a preformed hole having a cylindrical portion extending inwardly from the mouth of the hole at a surface of the wall, and the hole having a conical flared portion beginning at a predetermined distance from said mouth and flaring at a predetermined angle to the longitudinal axis of the hole so that the conical portion enlarges toward the inner end portion of the hole; and

(b) an expanding anchor comprising, a threaded bolt extending through said cylindrical portion and into said conical portion of the hole;

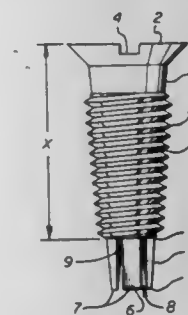
a cone carried by the bolt and being of such diameter as to be snugly insertable through said cylindrical portion of the hole into the conical portion, the flare of the cone being at a greater angle with respect to said axis than the predetermined angle of the flared portion of the hole; headed means carried by the bolt outside the hole and tightenable against the wall surface to displace the cone in said conical portion toward the mouth of the hole;

a sleeve surrounding the bolt between the cone and the headed means and being of length commensurate with the combined lengths of the cylindrical and conical portions of the hole and having an outer diameter sized to slide in the cylindrical portion of the hole, the sleeve having multiple longitudinal slots through its side walls which are spaced apart annularly about the sleeve and which pass through the inner end of the sleeve which is adjacent to the cone and the slots extending parallel to the bolt away from the cone toward the outer end of the sleeve;

the sleeve having an annular groove extending circumferentially around its outer surface and spaced from said outer end of the sleeve toward the cone by a distance equal to the length of the cylindrical portion of the hole, the groove extending partway into the thickness of the side wall of the sleeve and intersecting the slots; and the slots extending from the inner end of the sleeve nearest the cone through the groove and beyond it toward the headed means.

**4,339,218**  
**SELF-LOCKING FASTENER**  
 Rene' A. Navarre, 408 E. Wright St., Pensacola, Fla. 32501  
 Filed May 5, 1980, Ser. No. 146,478  
 Int. Cl.<sup>3</sup> F16B 25/00 5 Claims

U.S. Cl. 411—419



1. A locking fastener, comprising:

a head; and,

a threaded shank connected to the head and having a leading end longitudinally opposite the head, said leading end including an outwardly facing conical void having an open outer end and a plurality of slots defining a plurality of fingers spaced about said void, such that material entering said void through said open outer end when said fastener is advanced forces said fingers to flair radially outwardly, wherein the fingers have a truncated trailing edge whereby reversing the fastener causes the truncated trailing edge to dig into the material and resist withdrawal of the fastener.

**4,339,219**  
**PANEL RAISING AND POSITIONING APPARATUS**  
 Harry V. Lay, General Delivery, Kernville, Calif. 93228  
 Filed Jul. 31, 1980, Ser. No. 174,120  
 Int. Cl.<sup>3</sup> E04G 21/14 1 Claim

U.S. Cl. 414—11

1. An apparatus for raising and positioning a panel for attachment to a horizontal or vertical interior surface of a building comprising:

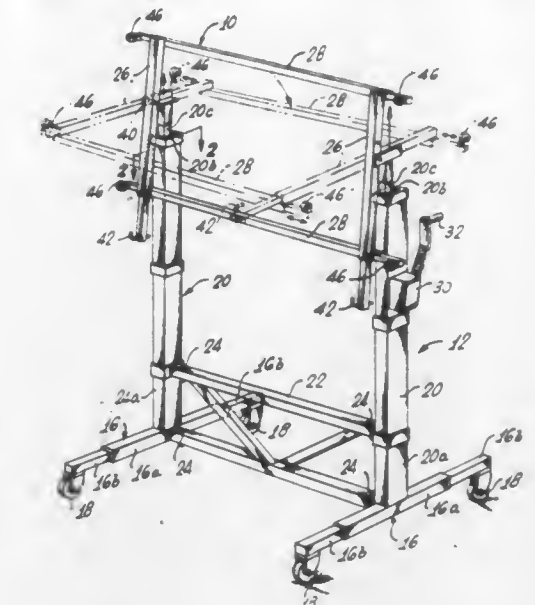
a movable frame including a pair of parallel horizontal foot members each of which is horizontally extensible, a pair of stanchions each of which is vertically extensible and each of which projects upwardly from one of said foot members, and a detachable center section extending between said stanchions;

crank means for extending or contracting said stanchions;

a panel holder mounted atop said stanchions and pivotable about a horizontal axis extending perpendicular to said foot members between a generally vertical loading position and a generally horizontal working position;

locking means for securing said holder in said working position;

a plurality of rollers mounted on said holder to movably support said panel when said holder is in said working position; support means mounted on said holder for supporting said panel along a lower edge thereof when said holder is in said

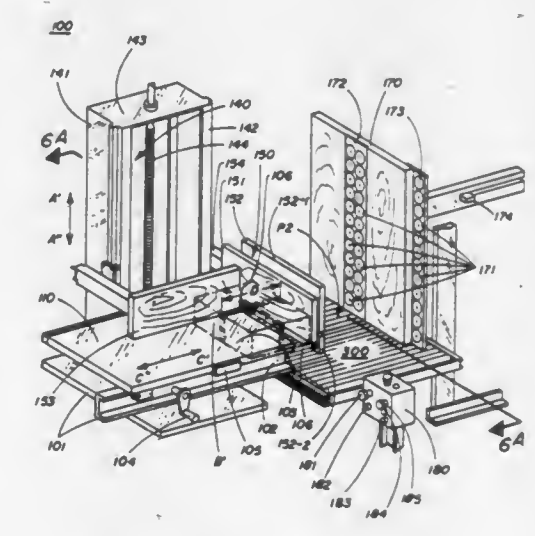


loading position, said support means being movable between a panel-engaging position and a non-panel-engaging position; and

hanger means mountable on said holder and engagable with one of said stanchions in a generally vertical position parallel to said foot members for supporting said panel in a generally vertical working position.

**4,339,220**  
**STACKING OF MATERIALS**  
 William F. Pulda, Piscataway, N.J., assignor to Vanguard Machinery Corp., Edison, N.J.  
 Continuation of Ser. No. 957,758, Nov. 6, 1978, abandoned, which is a continuation-in-part of Ser. No. 867,496, Jan. 6, 1978, abandoned, which is a continuation of Ser. No. 681,683, Apr. 29, 1976, Pat. No. 4,068,765. This application Aug. 11, 1980, Ser. No. 177,003  
 Int. Cl.<sup>3</sup> B65G 57/09 27 Claims

U.S. Cl. 414—84



1. A stacking assemblage comprising means for supporting materials received at a first position and arranged in a tier in accordance with a prescribed pattern, and containing a possible misalignment; means including photoelectric sensors for automatically positioning the supporting means at a desired stacking level regardless of any misalignment in said tier; said sensors comprising upper and lower photo cells pairs

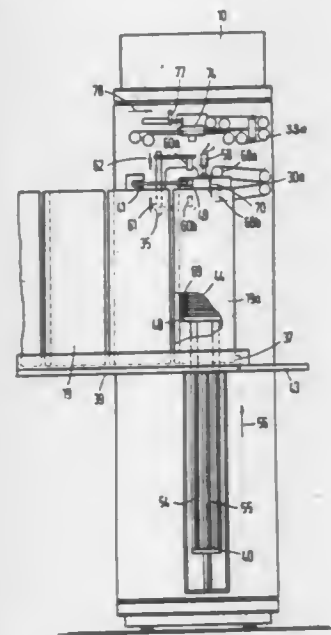


which respond to light and cause said supporting means to move until both of the eyes of either the upper pair or lower pair receive the light; and means responsive to the positioning means for automatically shifting the supporting means to overlie a second position and depositing said tier thereat as a constituent for a multi-tier stack.

**4,339,221**  
**PORTABLE INPUT MAGAZINE**  
Wilhelm Mitzel, Neu-Keferlof; Herbert Bernardi, Haag, and Rudolf Duschek, Munich, all of Fed. Rep. of Germany, assignors to G.A.O. Gesellschaft fuer Automation und Organisation mbH, Fed. Rep. of Germany  
Division of Ser. No. 867,011, Jan. 5, 1978, Pat. No. 4,236,639.  
This application Jan. 24, 1980, Ser. No. 115,032  
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1977, 2729830

Int. Cl.<sup>3</sup> B65H 1/04  
U.S. Cl. 414—114

25 Claims



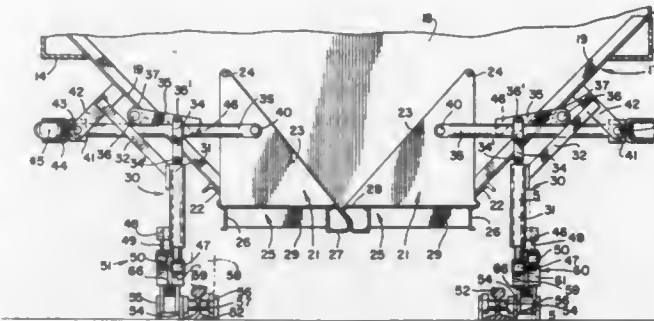
1. An apparatus for separating a strap from a packet having a stack of thin sheets, such as bank notes, bound by the strap comprising: a housing, a magazine disposed within said housing having a receptacle and a drawer member movably received in said receptacle adapted to contain a plurality of the packets, said drawer member having a rear wall, a side wall, at least one end wall and a front with an opening dimensioned to pass at least one packet, said rear wall having a slot proximate said end wall and opposite said opening, means mounted in said housing for moving said end wall and at least part of said drawer member containing one of the packets out of said receptacle, ejector means pivotally mounted in said housing being extendable through said slot when at least part of said drawer member is moved out of said receptacle to eject at least part of one of said packets from said drawer member, first gripping means in said housing engageable with the strap of an ejected packet and second gripping means in said housing engageable with the stack of an ejected packet, and said second gripping means being operative to move said stack relative to said strap and thereby separate said strap from said stack.

15. An apparatus for separating a packet having a stack of thin sheets, such as bank notes, each bound by a strap from a magazine containing a pile of such packets comprising: a housing, a magazine disposed within said housing having a receptacle and a drawer member movably received in said receptacle adapted to contain a plurality of the packets, said drawer member having a rear wall, side walls, end walls and an open front side, means mounted in said housing for moving said pile of packets and said drawer member out of said receptacle to such extent that the open front side of the drawer member and the upper edge of the receptacle form a packet separating slot

and ejector means mounted in said housing for ejecting the uppermost packet through the packet separating slot.

**4,339,222**  
**DOOR LOCKING MECHANISM FOR HOPPER CAR DOORS**  
Willis H. Knippel, Palos Park, Ill., assignor to Pullman Incorporated, Chicago, Ill.  
Continuation of Ser. No. 36,891, May 7, 1979, abandoned. This application Oct. 31, 1980, Ser. No. 202,533  
Int. Cl.<sup>3</sup> B61D 7/30  
U.S. Cl. 414—387

10 Claims



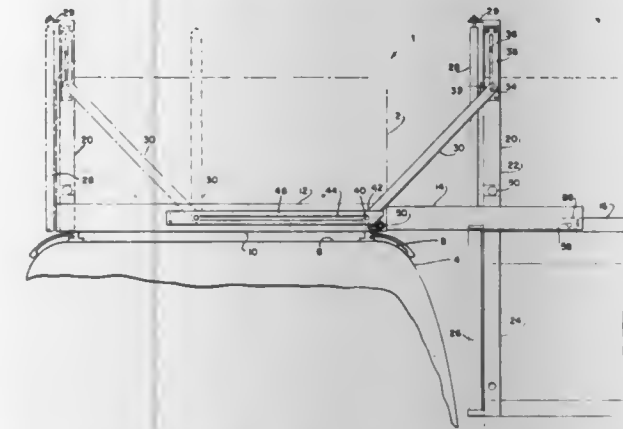
1. In a railway hopper car having a hopper structure including downwardly and outwardly diverging slope sheets and outer side walls defining with said slope sheets a discharge opening, a door hingedly connected to said hopper structure and movable outwardly from closed to open position, the improvement of a door locking mechanism comprising, a vertical guide member, a bracket means connecting said vertical guide member to said hopper structure, an actuating member slideably supported on said vertical guide member, a latch member pivotally supported on said hopper structure and connected to said actuating member, a horizontal arm connected to said door, second bracket means on said hopper movably supporting said arm for horizontal movement, keeper means on said horizontal arm adapted to be engaged by said latch member for locking said doors in a closed position, and ground mounted actuating means adapted to engage said actuating member to move the same vertically disengaging said latch member from said horizontal arm whereby said horizontal arm is adapted to move horizontally moving said door to an open position.

**4,339,223**  
**ROOF TOP CARRIER**  
Richard R. Golze, 637 Kingsley Trail, Bloomfield Hills, Mich. 48013  
Continuation-in-part of Ser. No. 926,940, Jul. 21, 1978, Pat. No. 4,260,314. This application Jul. 17, 1980, Ser. No. 169,613  
Int. Cl.<sup>3</sup> B60R 9/04

6 Claims

1. A roof top carrier apparatus having a horizontal telescoping track with means to mount the track on a roof of a vehicle, said horizontal track having plural relatively slidable segments, travel lock means mounted on the segments for relatively locking the segments in a telescopically closed position, extension locking means connected to the segments for locking the segments in extended position, and a cargo container mounted on one of the segments for moving from a centered position on a roof of a vehicle in which the travel locking means is locked to an extended position at a side of the vehicle at which extended position extension locking means are locked, said locking means comprising a pin extending through plural openings in first and second of the segments, a spring device, connected

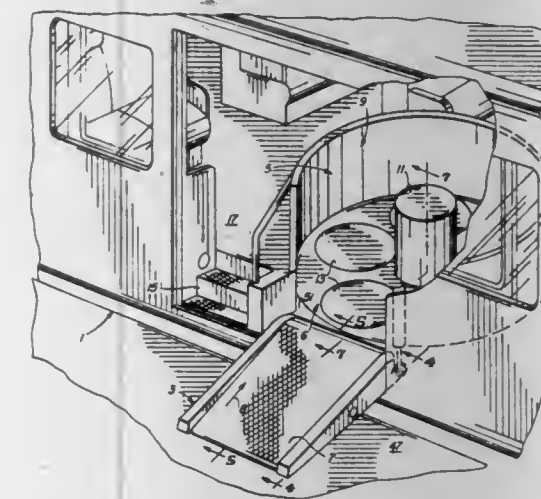
to the second of the segments and mounting the pin, whereby the third segment cams the spring device against spring pressure and withdraws the pin from the segment, whereby separa-



tion of the third segment from the spring device permits the spring device to move the pin into an opening in the first segment.

**4,339,224**  
**APPARATUS FOR ACCOMMODATING WHEELCHAIRS IN PUBLIC TRANSPORTATION VEHICLES**  
Charles A. Lamb, 462 W. Thurber, Tucson, Ariz. 85705  
Filed Sep. 8, 1980, Ser. No. 185,308  
Int. Cl.<sup>3</sup> B60P 3/06  
U.S. Cl. 414—501

15 Claims

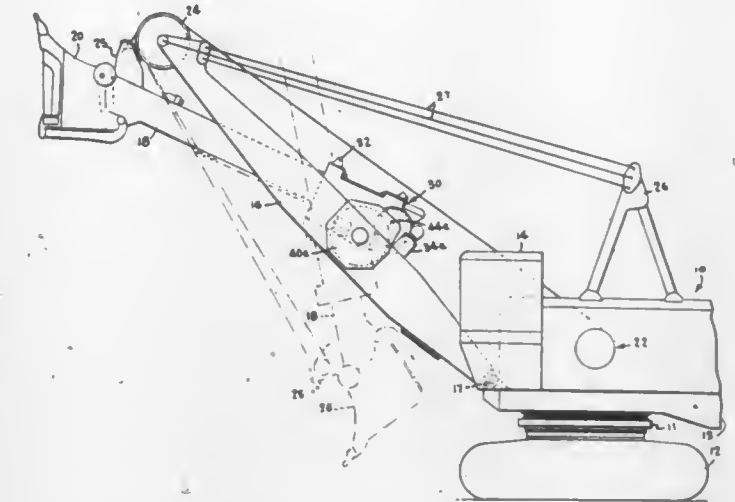


1. A system for accommodating wheelchairs and occupants confined thereto in a transit vehicle, said system comprising in combination:

- loading means for conveying the wheelchair and its occupant between a curb area and an edge of a floor area of the transit vehicle;
- first turntable means rotatably disposed in the transit vehicle for receiving a plurality of wheelchairs with their respective occupants therein from said loading means, said first turntable means including a plurality of wheelchair-accommodating stations sequentially disposed around said first turntable; and
- first motive means for rotating said first turntable to align a selected one of said stations with said loading means to allow a wheelchair supporting its occupant to roll from said first loading means onto said selected station.

**4,339,225**  
**POWER SHOVEL CROWD DRIVE ASSEMBLY**  
Robert B. Donnelly, and Mark W. Trevithick, both of Marion, Ohio, assignors to Dresser Industries, Inc., Dallas, Tex.  
Continuation of Ser. No. 894,610, Apr. 7, 1978, abandoned. This application Jul. 27, 1980, Ser. No. 165,925  
Int. Cl.<sup>3</sup> E02F 3/75  
U.S. Cl. 414—690

8 Claims

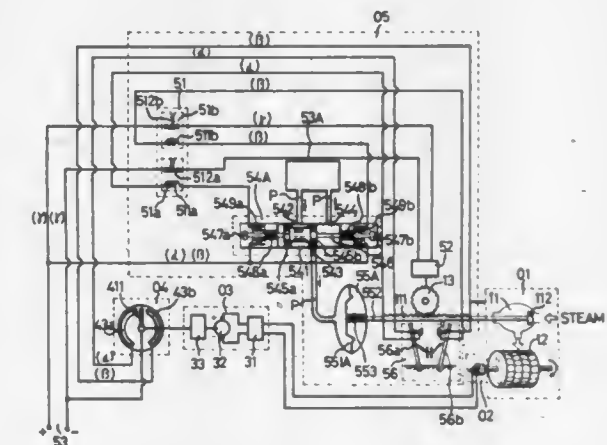


1. In a power shovel including a main frame, a boom connected at the lower end thereof to the main frame, dipper handle means reciprocally and pivotally mounted on the boom, a dipper connected to an end of said dipper handle and a hoist mechanism operatively connected to said handle via the point of said boom, an improved crowd drive assembly including drive means for extending and retracting said dipper handle means, the improvement comprising:

yoke means for guiding and supporting said dipper handle means in relation to said boom, said yoke means being pivotally mounted directly on said boom in such manner that loads exerted by said dipper handle, including loads creating a torsional motion or side-to-side motion of said dipper handle, on said yoke means are transmitted directly to said boom.

**4,339,226**  
**MULTIPLE-PURPOSE CLOSED LOOP AUTOMATIC CONTROL SYSTEM**  
Yu-Kuang Lee, No. 596, Chung Cheng Rd., Chu Pei, Hsin Chu Hsien, Taiwan  
Division of Ser. No. 823,462, Aug. 10, 1977, Pat. No. 4,250,440.  
This application Sep. 18, 1980, Ser. No. 188,468  
Int. Cl.<sup>3</sup> F01D 17/06  
U.S. Cl. 415—15

9 Claims

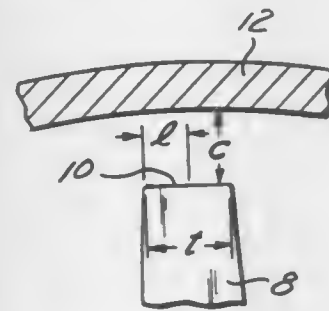


1. A multiple-purpose, closed-loop, automatic control system comprising:  
a system controlled, said system producing as an output a



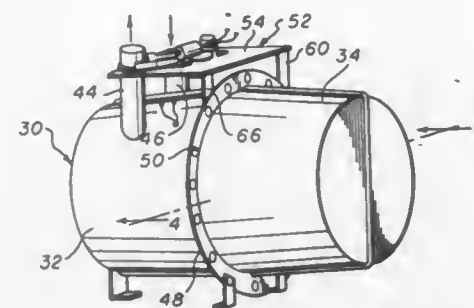
controlled variable, and said system including a regulating means for selectively adjusting said controlled variable; detecting means for detecting the controlled variable output from the system controlled and for converting the controlled variable into an electrical feedback signal representative of said controlled variable; signal converting means for receiving the electrical feedback signal produced by said detecting means and for converting said signal into an angular displacement representative of the controlled variable, said signal converting means including a balancing motor for producing a rotary movement corresponding to said electrical feedback signal and means for converting said rotary movement into said angular displacement representative of the controlled variable; comparing means for receiving the angular displacement representative of the controlled variable produced by said signal converting means and for comparing the angular displacement representative of the controlled variable with an angular displacement representative of a preset desired value and selectively opening or closing a forward or a reverse controlling circuit; and controlling means for automatically controlling the system controlled so as to keep the controlled variable within the preset desired value, said controlling means including the forward and the reverse controlling circuit selectively opened or closed by said comparing means, a braking control circuit and a driving mechanism responsive to said forward and reverse controlling circuits and said braking control circuit, wherein said driving mechanism selectively operates the regulating means of the system controlled whenever the angular displacement representative of the controlled variable is not within the angular displacement representative of the preset desired value in order to selectively adjust said controlled variable, and further wherein said driving mechanism includes a fluid-type electromagnetic pilot valve mechanism having a piston rod, and includes a solenoid disposed at each end of said piston rod, said solenoids being selectively energized by said forward and reverse controlling circuits such that said piston rod is selectively moved in order to change the direction of flow of the fluid through the pilot valve.

**4,339,227**  
**INDUCER TIP CLEARANCE AND TIP CONTOUR**  
Raymond B. Furst, Northridge, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.  
Filed May 9, 1980, Ser. No. 148,106  
Int. Cl.<sup>3</sup> F04D 29/38  
U.S. Cl. 415—213 C 3 Claims



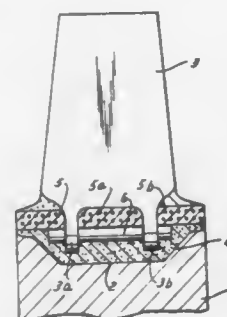
1. A pump comprising:  
a housing;  
an inducer rotatable within said housing and formed with a plurality of blades each having a tip thickness less than about twice the clearance between said tip and said housing.

**4,339,228**  
**POWER UNIT FOR SINGLE LINE PNEUMATIC TUBE SYSTEM**  
Charles K. Kelley, and William W. Jones, both of Houston, Tex., assignors to C. K. Kelley and Sons, Inc., Houston, Tex.  
Division of Ser. No. 876,112, Feb. 8, 1978, Pat. No. 4,189,261.  
This application May 11, 1979, Ser. No. 38,167  
Int. Cl.<sup>3</sup> F04D 29/40  
U.S. Cl. 415—219 R 10 Claims



1. A power unit for a pneumatic tube system comprising a housing having a shape substantially resembling two truncated conical sections with a common base, a longitudinally extending axial partition plate dividing the housing into two chambers, two side-by-side ports in the housing, at least one flow-through blower mounted in the partition plate, each chamber being provided with one of the ports, one being a pressure port, the other a vacuum port, wherein the housing is formed of two vacuum formed plastic truncated conical members having conical walls with open large ends and closed small ends and annular rims about the open ends, both of said ports being provided in one of the members, an inward facing groove extending longitudinally along the conical walls and diametrically along the closed ends, the partition plate being sealingly located in the groove, and means for attaching the rims of the two members together.

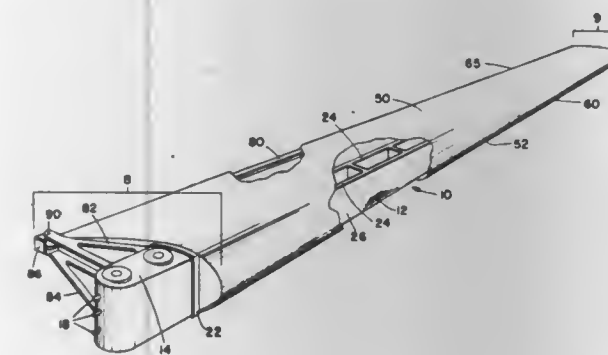
**4,339,229**  
**ROTOR WHEEL FOR AXIAL-FLOW TURBOMACHINERY**  
Axel Rossman, Karlsfeld, Fed. Rep. of Germany, assignor to Motoren-und Turbinen-Union München GmbH, Munich, Fed. Rep. of Germany  
Filed Apr. 7, 1980, Ser. No. 137,873  
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915201  
Int. Cl.<sup>3</sup> F01D 5/30  
U.S. Cl. 416—218 6 Claims



1. A rotor wheel for axial-flow turbomachinery comprising:  
(a) a rotor disc,  
(b) a plurality of radially-projecting metal blades arranged along the periphery of the rotor disc, each blade having a root,  
(c) a plurality of locating rings coaxial with the rotor disc and formed predominantly of directionalized fibers, each locating ring being adjacent to all the blade roots and serving to resist centrifugal loads on the blades, and  
(d) a material within which all the blade roots and locating rings are embedded, the material forming a ring coaxial

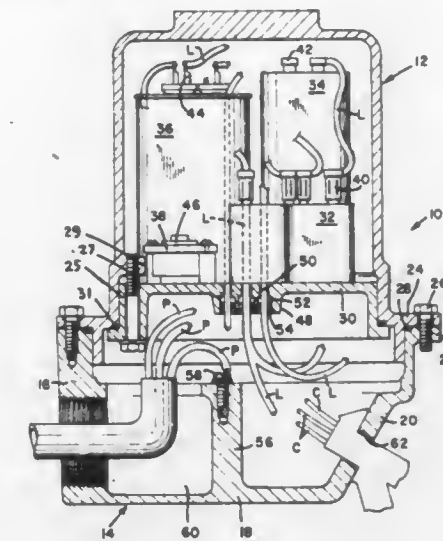
with the locating rings and serving to attach the blades to the rotor disc, and the material being between all the blade roots and the disc.

**4,339,230**  
**BIFOIL BLADE**  
Paul W. Hill, Cumberland, Md., assignor to Hercules Incorporated, Wilmington, Del.  
Filed Apr. 22, 1980, Ser. No. 142,598  
Int. Cl.<sup>3</sup> B64C 11/26  
U.S. Cl. 416—226 10 Claims



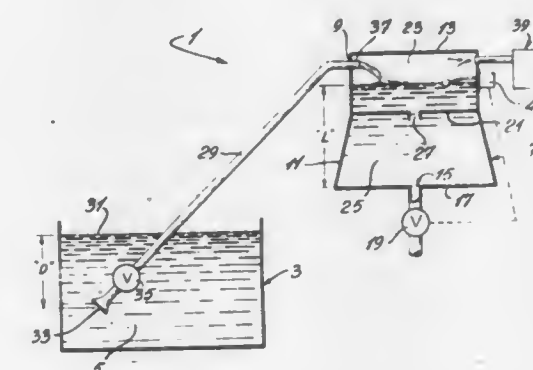
1. A bifoil blade having a longitudinal direction extending between its root and tip ends, a lateral direction extending between its leading and trailing edges, and an upstanding direction extending between its first and second airfoil-shaped surfaces, said blade comprising:  
an upper airfoil-shaped skin having an outer surface that substantially defines said first airfoil-shaped surface;  
a lower airfoil shaped skin having an outer surface that substantially defines said second airfoil-shaped surface, said upper and lower airfoil-shaped skins (i) joining together at said leading edge of said blade and at said trailing edge of said blade and (ii) defining a cavity between said upper and lower airfoil-shaped skins;  
a filament wound central support structure carried in said cavity, said central support structure being affixed in said cavity to the respective inner surfaces of said upper and lower airfoil shaped skins;  
said central support structure being defined by (i) laterally spaced, leading and trailing composite channels that longitudinally span said cavity in respective leading and trailing relation and (ii) a plurality of longitudinally spaced, cross-channel composite webs connecting said leading and trailing composite channels with one another;  
said leading composite channel being defined by (i) upstandingly spaced, first and second leading composite bars longitudinally spanning said leading composite channel and (ii) a leading composite channel web connecting said first and second leading composite bars, said leading composite channel web being laterally thinner than those portions of said first and second leading composite bars that are respectively upstandingly adjacent said leading composite channel web;  
said trailing composite channel being defined by (i) upstandingly spaced, first and second trailing composite bars longitudinally spanning said trailing composite channel and (ii) a trailing composite channel web connecting said first and second trailing composite bars, said trailing composite channel web being laterally thinner than those portions of said first and second trailing composite bars that are respectively upstandingly adjacent said trailing composite channel web.

**4,339,231**  
**MOTOR CONTROL HOUSING AND JUNCTION BOX FOR A SUBMERSIBLE PUMP**  
William J. Conery, and Terry L. Kiplinger, both of Ashland, Ohio, assignors to McNeil Corporation, Akron, Ohio  
Filed Mar. 6, 1980, Ser. No. 127,793  
Int. Cl.<sup>3</sup> F04B 49/04  
U.S. Cl. 417—40 9 Claims



1. In combination with a pump driven by a motor which receives power from a power source and which is controlled by a plurality of motor control components, a housing for said plurality of motor control components, electrical lead lines extending from said motor control components, a junction box attached to said housing, means defining a trough in said junction box, a conduit carrying the electrical power from said power source, means in said junction box to receive said conduit, a sealing compound in said trough to seal the point of entry of said conduit into said junction box, electrical conductors extending from said pump, means in said junction box to receive said electrical conductors, a common wall between said housing and said junction box, means to seal said housing and said junction box, and means in said common wall to sealingly transfer the lead lines from the motor control components in said housing to said junction box for connection with the power source through said conduit and said electrical conductors from said pump.

**4,339,232**  
**PRESSURE DIFFERENTIAL LIQUID TRANSFER SYSTEM**  
George T. R. Campbell, P.O. Box N 3033, Nassau, The Bahamas  
Filed Oct. 6, 1980, Ser. No. 194,437  
Int. Cl.<sup>3</sup> F04F 1/00  
U.S. Cl. 417—54 1 Claim



1. A method of raising liquid from a reservoir of liquid to a tank positioned above the reservoir, the tank having a liquid inlet in its top portion and a liquid outlet in its bottom portion, and a conduit sloping down and away from the liquid inlet with closure means at the free end thereof; the method comprising the steps of: with the closure means closed, placing the

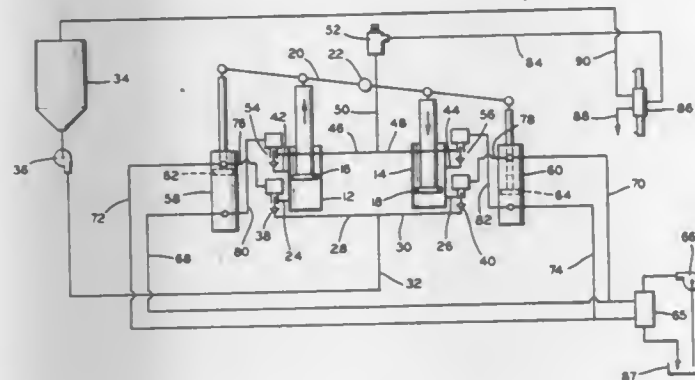


free end of the conduit within the reservoir at a desired depth and if necessary emptying the conduit above the closed valve; filling the tank with liquid to a desired level beneath the inlet; creating a desired sub-atmospheric pressure within the tank above the liquid, and within the conduit above the closure means; opening the closure means to permit liquid in the reservoir to enter the conduit and to move into the tank as a result of the head of liquid at the free end of the conduit, the momentum of the liquid rushing into the sloping conduit when the closure means is opened, and the sub-atmospheric pressure in the conduit and tank; and controlling the flow of liquid out of the tank through the outlet to substantially maintain the level of liquid within the tank at the desired level.

**4,339,233**  
**POWER-ASSISTED VALVE**  
Wallace F. Krueger, 4401 Merriweather Rd., Toledo, Ohio 43623

Filed Dec. 13, 1979, Ser. No. 103,382  
Int. Cl.<sup>3</sup> F04B 21/02  
U.S. Cl. 417—317

12 Claims



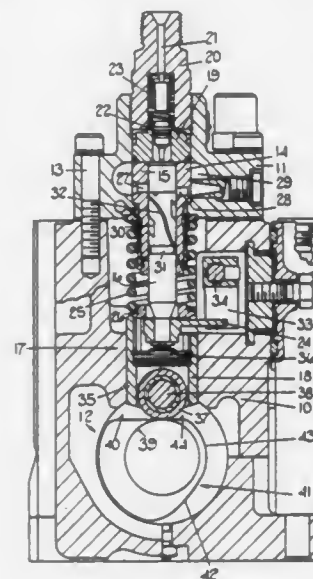
1. Apparatus for metering viscous material comprising means for establishing a source of the material, an outlet where the material is at a higher pressure than the pressure of the material at the source, a first metering cylinder having a first ram reciprocable therein, first inlet means connecting said source of material with said first cylinder, said first inlet means having first check valve means enabling flow of the material only toward said first cylinder, first outlet means connecting said first cylinder with said outlet, said first outlet means having second check valve means enabling flow of material only away from said first cylinder, first fluid-operated drive means having a first drive cylinder, a first drive piston, a first drive piston rod, and means connecting said drive piston rod and said ram to cause said ram to reciprocate when said drive piston reciprocates, said first check valve means including means forming a first valve seat, a first valve body, a first fluid-operated valve cylinder having a first valve piston, first valve piston rod means affixed to said first valve piston and extending from said first valve cylinder and engagable with said first valve body, said second check valve means including means forming a second valve seat, a second valve body, and a second fluid-operated valve cylinder having a second valve piston, second valve piston rod means affixed to said second valve piston and extending from said second valve cylinder and engagable with said second valve body, first line means connected to the blind end of said drive cylinder, control valve means for supplying fluid under pressure to either of said line means and for exhausting fluid from the other of said line means, third line means communicating with said first valve cylinder and with one end of said drive cylinder to cause said first valve piston to move said first valve piston rod means into

engagement with said first valve body to urge said first body against said first valve seat when said drive piston is operated in a manner to cause said first ram to move in a direction into said first metering cylinder, and fourth line means communicating with said second valve cylinder and with the other end of said drive cylinder to cause said second valve piston to move said second valve piston rod means into engagement with said second valve body to urge said second body against said second valve seat when said drive piston is operated in a manner to cause said first ram to move in a direction out of said first metering cylinder.

**4,339,234**  
**DRIVE CAM AND FOLLOWER FOR A LIQUID FUEL INJECTION PUMPING APPARATUS**  
Derek Williams, Hertford, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jul. 3, 1980, Ser. No. 165,673  
Claims priority, application United Kingdom, Aug. 3, 1979, 7927122  
Int. Cl.<sup>3</sup> F04B 39/00; F16H 25/14  
U.S. Cl. 417—490

2 Claims



1. A liquid fuel injection pumping apparatus comprising a body part, a pump barrel located within the body part, a bore formed in the barrel, a reciprocable pump plunger located in the bore and extending from one end thereof, an outlet from the other end of the bore, a port formed in the wall of the bore and which is uncovered by the inner end of the plunger as the latter moves outwardly to allow fuel to flow into the bore, resilient means biasing the plunger outwardly, a tappet operatively connected to the plunger and supported within a bore defined in the body part, said tappet comprising a hollow body, a roller supported in the hollow body by a cross pin, and a rotary cam positioned for engagement with the roller, said cam being shaped to impart inward movement to the tappet and plunger, said cam being provided with a leading flank extending from the base circle of the cam, the tappet when moved by the leading flank imparting inward movement to the plunger, and a trailing flank which is formed in three parts, a first part extending from the level of the leading flank and during which said port is at least partly open, a second part of substantially constant radius spaced from the base circle by an amount which is sufficient to ensure that the cross pin cannot move axially within the bore in the body part, and a third part extending from said second part to the base circle.

## CHEMICAL

**4,339,235**  
**METHODS AND COMPOSITIONS FOR BLEACHING OF MYCOLOGICAL STAIN**  
Richard C. Anderson, Burnsville, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.

Filed Dec. 6, 1979, Ser. No. 100,736  
Int. Cl.<sup>3</sup> D06L 3/06; C11D 3/395, 7/54  
U.S. Cl. 8—108 A

5 Claims

1. A method of bleaching mycological stain comprising the step of:  
contacting the stain with an aqueous composition comprising:  
(a) from about 70% to 99% by weight water;  
(b) from about 0.5% to 10% by weight salt selected from the group consisting of alkali metal and alkaline earth metal hypochlorites, hypobromites, and mixtures thereof;  
(c) about 0.5% to 5% by weight fumed silica;  
(d) about 0% to 2.0% by weight base;  
the composition contacting the stain a sufficient length of time to bleach essentially all color therefrom;

**4,339,237**  
**FREE AMINE-CONTAINING POLYMERIC DYES**  
Patricia C. Wang, Palo Alto, and Robert E. Wingard, Jr., Mountain View, both of Calif., assignors to Dynapol, Palo Alto, Calif.

Division of Ser. No. 832,254, Sep. 12, 1977, abandoned, which is a continuation-in-part of Ser. No. 638,730, Dec. 8, 1975, Pat. No. 4,051,138. This application Aug. 11, 1980, Ser. No. 177,027  
Int. Cl.<sup>3</sup> C09B 69/10

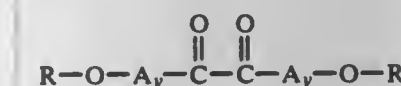
U.S. Cl. 8—405  
9 Claims  
1. The process for water fast coloring a proteinaceous fiber substrate which comprises applying to said substrate a solution comprising a solvent selected from the group consisting of water of pH 2.0 to 4 inclusive and a water-organic solvent containing up to 80% by weight of a member of the class of 1 to 4 carbon alkanols, ethylene glycol, propylene glycol and 3 to 5 carbon alkanones, and dissolved therein from 100 ppm to 0.5% by weight of a polymeric colorant comprising a hydrocarbon polymer backbone to which is covalently bonded through amine linkages a plurality (m) of essentially anionic group-free optically chromophoric groups and to which is also covalently bonded a plurality (n) of free primary or lower alkyl secondary amine groups, wherein n is not less than 1/2 m, and n and m are such that their sum is from 20 to 3000 and the polymeric colorant has a molecular weight of not less than 2000 daltons and thereafter rinsing the substrate with water and drying the substrate.

**4,339,238**  
**STABLE AQUEOUS FORMULATIONS OF STILBENE FLUORESCENT WHITENING AGENTS**  
Werner Fringeli, Laufen, Switzerland, and Alain Lauton, Saint-Louis, France, assignors to Ciba-Gelby Corporation, Ardsley, N.Y.

Filed Jan. 7, 1981, Ser. No. 223,173  
Claims priority, application Switzerland, Jan. 14, 1980, 265/80

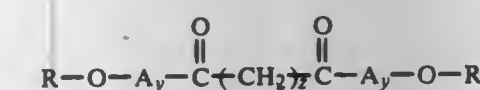
Int. Cl.<sup>3</sup> C09K 11/06; D06P 3/852; D21D 3/00; D21H 3/80  
U.S. Cl. 8—527

14 Claims  
1. A storable aqueous formulation which is stable to metal ions, said formulation containing a fluorescent whitening agent which is substituted by sulfo groups, and an acid phosphoric acid ester of an oxyalkylated fatty amine of the formula



wherein R is a monovalent alkyl radical having about 11 to about 18 carbon atoms, A is a divalent radical selected from the group consisting of oxyethylene units and random mixtures of oxyethylene units with up to 1 part of oxypropylene units per unit of oxyethylene and y is an integer having values of 5 to about 11.

7. Method of cleaning cotton or polyester-cotton articles under conditions of low temperature and low foam which comprises contacting said cotton or polyester/cotton articles with an aqueous solution of a nonionic detergent having the formula:



wherein R is a monovalent radical selected from the group consisting of alkyl having 11 to about 18 carbon atoms and alkyl-substituted phenyl wherein the alkyl contains about 7 to 12 carbon atoms, A is a divalent radical selected from the group consisting of oxyethylene units and mixture of oxyethylene units containing up to 1 part of oxypropylene units per unit of oxyethylene, y is an integer having values of about 5 to about 12, and z is an integer having values of 0 to 1.

**4,339,239**  
**USE OF HETEROPOLYSACCHARIDE S-119 AS AN ANTIMIGRANT**  
Joseph S. Racciato, San Diego, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

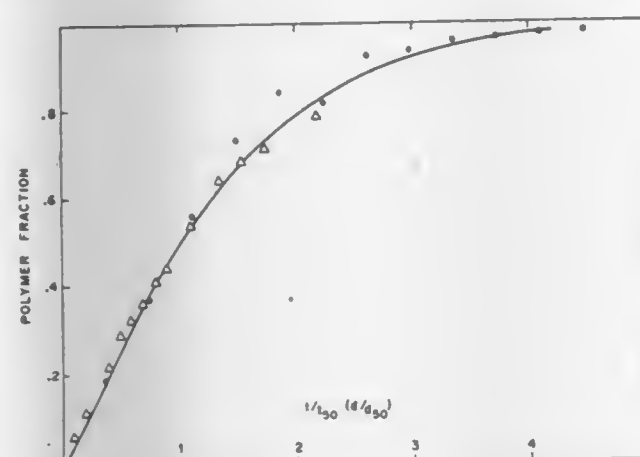
Filed Jun. 20, 1980, Ser. No. 161,618  
Int. Cl.<sup>3</sup> D06P 1/48

U.S. Cl. 8—561  
6 Claims  
1. In an aqueous dye-bath liquor suitable for impregnating substrates, the improvement that comprises the incorporation in said dye-bath liquor, as an antimigrant, of Heteropolysacch-



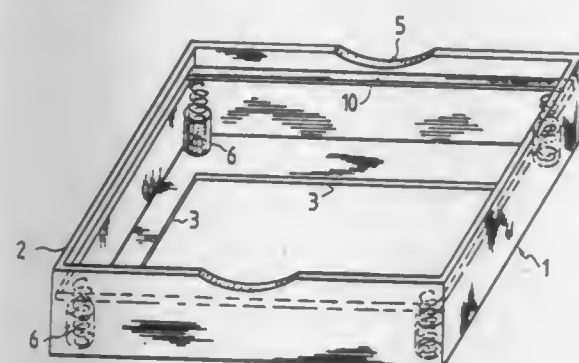
aride S-119 at a concentration ranging from about 0.001% to about 1.00% by weight based on the total weight of said dye-bath liquor.

**4,339,240**  
**COLOR CHANGING POLYACETYLENIC COMPOUNDS**  
Gordhanbhai N. Patel, Morris Plains, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.  
Filed May 7, 1980, Ser. No. 147,437  
Int. Cl.<sup>3</sup> G01N 21/06  
U.S. Cl. 23—230 R 24 Claims



9. In a process which comprises applying to a perishable product an integral indicator of history of exposure to time-temperature or to radiation comprising at least one acetylenic compound having at least two conjugated acetylene groups per molecule, the improvement wherein the at least one acetylenic compound comprises at least one acetylenic compound having color in the visible spectrum and being active to polymerization on exposure to temperature or actinic radiation comprising an acetylenic portion having at least two conjugated acetylenic unsaturations and being capable of polymerization in the solid state, and at least one chromophore portion absorbing light in the visible spectrum.

**4,339,241**  
**APPARATUS AND METHOD FOR SIMULTANEOUSLY MIXING SPECIMENS FOR PERFORMING MICROANALYSES**  
Winfried A. Stöcker, Krummeweg 3, 2419 Rendsbagen, Fed. Rep. of Germany  
Filed Oct. 15, 1980, Ser. No. 197,177  
Claims priority, application European Pat. Off., Oct. 16, 1979, 79103987.8  
Int. Cl.<sup>3</sup> G01N 33/50, 33/54, 33/80; B01F 11/00  
U.S. Cl. 23—230 B 17 Claims



1. An apparatus for performing microanalyses for immunological examinations, particularly blood group determinations, radioimmunoassays, enzyme immunoassays and immunofluorescent assays, as well as for non-immunological general chemical, biochemical and clinical-chemical examinations, said apparatus making it possible to examine a plurality of dissolved or

dissolvable specimens at the same time, the apparatus comprising:

- means for holding a plurality of superimposed plates including a lower plate and an upper plate;
- said lower plate having a plurality of reaction fields in which the reaction mixture solvent is more strongly attracted than in the area surrounding the reaction field;
- said upper plate having a solvent-repelling coating on its underside;
- means for limiting the movement of the upper plate toward the lower plate;
- means for limiting the movement of the upper plate away from the lower plate; and
- means for periodically moving the upper plate toward and away from the lower plate.

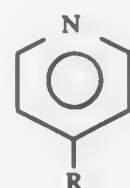
13. A method of separately and simultaneously mixing a plurality of separate specimens for microanalysis comprising the steps of providing a pair of plates of similar size, establishing a plurality of discrete specimen attracting areas on at least one of said plates, placing a plurality of small drop-sized specimens on said discrete plate areas, placing said plates in closely spaced parallel relation to establish contact of said specimen drops with each of said plates, and periodically moving said plates toward and away from each other to effect a deformation of said drops and a mixing of the drop components, the movement of said plates being limited to prevent the detachment of said drops from either plate or the displacement of the drops from the discrete areas.

15. The method as claimed in claim 13 wherein the plurality of discrete specimen attracting areas is established by the steps of:

- cleaning and degreasing the plate;
- temporarily masking discrete areas of said plate;
- covering the plate with a specimen solvent-repelling coating; and
- unmasking said discrete areas to establish specimen solvent attractive areas on said plate.

**4,339,242**  
**STABILIZATION OF BENZIDINE-TYPE INDICATORS WITH VARIOUS ENHANCERS**  
Thomas A. Magers, South Bend, and David L. Tabb, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.  
Division of Ser. No. 93,431, Nov. 13, 1979, Pat. No. 4,290,773.  
This application Jul. 23, 1981, Ser. No. 285,929  
Int. Cl.<sup>3</sup> G01N 33/52 5 Claims

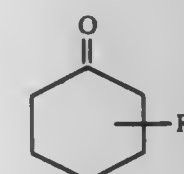
1. In a composition for detecting the presence of a constituent in a test sample, said composition comprising a benzidine-type indicator, the improvement wherein said composition additionally comprises an enhancer compound having the structure



wherein R is lower alkyl.

**4,339,243**  
**STABILIZATION OF BENZIDINE-TYPE INDICATORS WITH VARIOUS ENHANCERS**  
Thomas A. Magers, South Bend, and David L. Tabb, Elkhart, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.  
Division of Ser. No. 93,431, Nov. 13, 1979, Pat. No. 4,290,773.  
This application Jul. 23, 1981, Ser. No. 286,083  
Int. Cl.<sup>3</sup> G01N 33/52 5 Claims

U.S. Cl. 23—230 B 5 Claims  
1. In a composition for detecting the presence of a constituent in a test sample, said composition comprising a benzidine-type indicator, the improvement wherein said composition additionally comprises an enhancer compound having the structure



wherein R' is H or lower alkyl.

**4,339,244**  
**PROCESS FOR THE REDUCTION OF THE PARTICLE SIZE OF COARSE GRAIN ZEOLITIC SODIUM ALUMINOSILICATES**  
Günther Just, Hilden, and Franz-Josef Carduck, Haan, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Düsseldorf-Holthausen, Fed. Rep. of Germany  
Filed May 18, 1981, Ser. No. 264,291  
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021370  
Int. Cl.<sup>3</sup> B02C 19/12 7 Claims

1. A process for the reduction of the particle size of coarse grain, crystalline zeolitic sodium aluminosilicate of the NaA type obtained in an aqueous alkaline suspension by crystallization of a reaction mixture suspension formed from sodium aluminate solution and sodium silicate solution, said sodium aluminosilicate having a large cation exchange capacity consisting essentially of subjecting said aqueous alkaline suspension of the crystallized sodium aluminosilicate to treatment on a vibrating screen having a substantially uniform mesh size between 25 to 100  $\mu$ m, the number of vibrations per minute and the amplitude of oscillation of said screen being so selected that at least 99.95 percent by weight, based on the anhydrous weight, of sodium aluminosilicate particles recovered have a particle size of less than 100  $\mu$ m, the said aqueous alkaline suspension of the crystallized sodium aluminosilicate having a molar ratio of 2.5-5 Na<sub>2</sub>O:1Al<sub>2</sub>O<sub>3</sub>:1.8 to 2SiO<sub>2</sub>:50-100H<sub>2</sub>O.

**4,339,245**  
**MOTOR FUEL**  
Lyle D. Burns, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.  
Filed Oct. 24, 1980, Ser. No. 200,294  
Int. Cl.<sup>3</sup> C10L 1/22 6 Claims

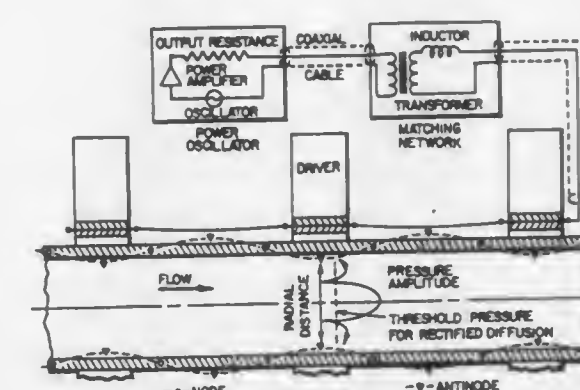
U.S. Cl. 44—63 6 Claims  
1. A gasoline composition containing an antiknock quantity of at least one antiknock compound selected from the group consisting of furfuryl acetate, ethyl furfurylacrylate, methyl furoate, and ethyl furoate.

**4,339,246**  
**MIXED FUEL COMPOSITION**  
Masaki Yamamura, Wakayama; Taizo Igarashi, Amagasaki, and Toshiyuki Ukigai, Chiba, all of Japan, assignors to Kao Soap Co., Ltd.; Lion Corporation; Nippon Oil Company, Limited and Fats Co., Ltd., all of Tokyo, Japan  
Filed Jun. 26, 1981, Ser. No. 278,295  
Claims priority, application Japan, Jul. 10, 1980, 55-94413  
Int. Cl.<sup>3</sup> C10L 1/32 4 Claims

U.S. Cl. 44—51 4 Claims  
1. A mixed fuel composition which comprises (a) a fuel oil, (b) a coal powder having an [H]/[C] ratio according to the coalification band method in the range of 0.4-0.75 and an [O]/[C] ratio in the range of 0.09-0.18 and (c) a partially amidated copolymer obtained by reacting a copolymer of a polymerizable, unsaturated hydrocarbon and maleic anhydride with an aliphatic amine of 2-36 carbon atoms or a salt thereof as a stabilizer.

**4,339,247**  
**ACOUSTIC DEGASIFICATION OF PRESSURIZED LIQUIDS**  
Lynn Faulkner, Gahanna, and Foster B. Stulen, Columbus, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio  
Filed Apr. 27, 1981, Ser. No. 257,800  
Int. Cl.<sup>3</sup> B01D 19/00 7 Claims

U.S. Cl. 55—15 7 Claims



1. A method of separating a dissolved gas from a liquid, which comprises:

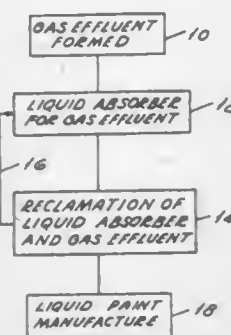
- providing a hollow chamber with at least one acoustic transducer attached thereto on the outer surface at a first antinodal point;
- introducing a liquid containing a dissolved gas into the hollow chamber;
- tuning said at least one acoustic transducer to be in resonance with the hollow chamber containing the liquid, and with a transducer power supply;
- focusing acoustic energy from said at least one acoustic transducer so that peak intensity occurs near the center of the hollow chamber, thereby avoiding cavitation damage on the inside surface of the hollow chamber;
- vibrating the hollow chamber by means of the acoustic energy thereby causing bubbles of the dissolved gas to form and grow in the liquid; and
- separating the bubbles from the liquid.

**4,339,248**  
**PROCESS FOR THE PURIFICATION OF GASEOUS EFFLUENT FROM INDUSTRIAL PROCESSES**  
James W. Garner, Farmington Hills, Mich., assignor to Grow Group, Inc., New York, N.Y.  
Continuation of Ser. No. 739,203, Nov. 8, 1976, abandoned. This application Nov. 19, 1979, Ser. No. 95,337  
Int. Cl.<sup>3</sup> B01D 47/00 16 Claims

U.S. Cl. 55—89 16 Claims  
9. In a process for the purification of gaseous effluent result-



ing from the application of liquid paint, wherein liquid paint is applied to a substrate, thereby forming a gaseous effluent containing at least a hydrocarbon solvent or an oxygenated solvent and prior to passing effluent to the atmosphere, removing the pollutants from the gaseous effluent, the improvement comprising:



in a zone spaced from that in which the spraying of the substrate takes place, absorbing the pollutants in the gaseous effluent by passing the gaseous effluent into a non-reactive liquid solvent for said gaseous pollutants, wherein said liquid solvent is substantially water immiscible and contains only the elements carbon, hydrogen and oxygen, wherein the liquid solvent is comprised of a polyoxyalkylene glycol.

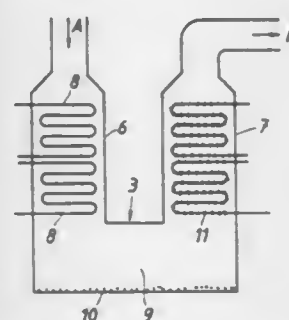
4,339,249

**HEAT EXCHANGER FOR RECOVERY OF HEAT ENERGY FROM DUST-CONTAINING WASTE GASES**  
Karl-Erik Berkestad; Lennart Danielsson; Erik Henriksson; Torsten Svensson, and Artur Östlund, all of Linköping, Sweden, assignors to Stal-Laval Apparat AB, Linköping, Sweden  
Filed Nov. 27, 1978, Ser. No. 963,734

Claims priority, application Sweden, Nov. 30, 1977, 7713541  
Int. Cl.<sup>3</sup> B01D 51/00

U.S. Cl. 55—269

7 Claims



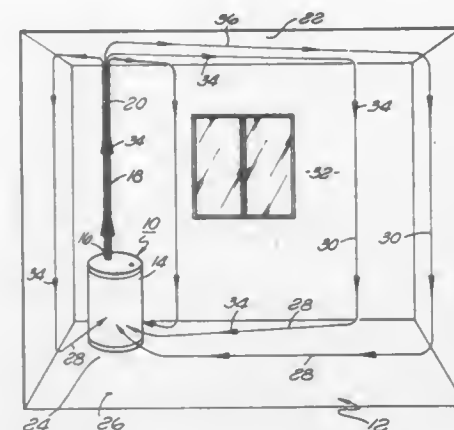
1. A heat exchanger for the recovery of heat energy in dust-containing hot waste gases, said heat exchanger comprising means forming a hollow duct through which the hot dust-containing waste gases flow, at least one first pipe positioned within said hollow duct, each said first pipe having a smooth outer surface and being capable of carrying a heat-absorbing fluid there-through, each said first pipe having a serpentine configuration, at least one second pipe positioned within said hollow duct, each said second pipe having fins on the outer surface and being capable of carrying a heat-absorbing fluid there-through, each said second pipe having a serpentine configuration, and means forming a dust collection surface located between said first and second pipes.

4,339,250  
**FRESH AIR FOUNTAIN AIR FILTER ARRANGEMENT**  
Timothy T. Thut, 2940 Neilson Way, #102, Santa Monica, Calif. 90405

Filed Jul. 17, 1980, Ser. No. 169,714  
Int. Cl.<sup>3</sup> B01D 46/02, 50/00

U.S. Cl. 55—316

6 Claims

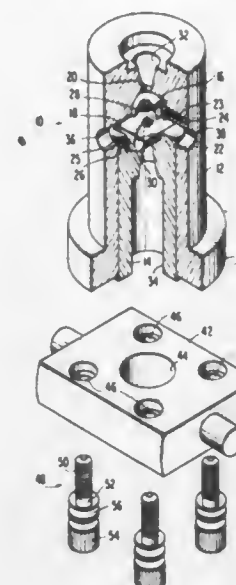


1. A portable fresh air fountain air filter arrangement for cleaning the ambient air in an enclosed space comprising, in combination:

- a top member having:
  - a first outer surface;
  - a first inner surface spaced transversely from said first outer surface; and
  - first walls between said first outer and first inner surfaces defining first apertures through said top member;
- an air blower adjacent said top member and exhausting through said first apertures;
- a bottom member transversely spaced from said top member;
- an air filtration media extending from said top member to said bottom member and with said top and bottom members forming a cavity containing said air blower;
- attaching means retaining said top member to said bottom member through said cavity without contacting said air filtration media whereby said fresh air fountain air filter arrangement is held together as a unit only by the action of said attaching means in pulling said top and bottom members toward each other thereby retaining said air filtration media in position;
- said top member having a first outer lip at 90° to the plane of said first outer surface;
- said first outer lip having:
  - a second outer surface; and
  - a second inner surface spaced laterally from said second outer surface;
- an outer air filter media retainer;
- an inner air filter media retainer spaced laterally from said outer air filter media retainer;
- a top positioning member;
- a bottom positioning member spaced transversely from said top positioning member;
- said top and bottom positioning members having:
  - a third outer surface;
  - a third inner surface spaced transversely from said third outer surface;
  - a second outer lip at 90° to the plane of said third outer surface having:
    - a fourth outer surface; and
    - a fourth inner surface spaced laterally from said fourth outer surface;
  - an inner lip at 90° to the plane of said third outer surface having:
    - a fifth outer surface; and
    - a fifth inner surface spaced laterally from said fifth outer surface;
- said bottom member having:

a sixth outer surface;  
a sixth inner surface spaced transversely from said sixth outer surface; and  
a third outer lip at 90° to the plane of said sixth outer surface;  
said top member adjacent said top positioning member;  
said bottom member adjacent said bottom positioning member;  
said outer air filter media retainer adjacent said fourth inner surface; and  
said inner air filter media retainer adjacent said fifth inner surface;

hydrogen and remotely controlled means for moving said diamond anvils into engagement with said gasket about the



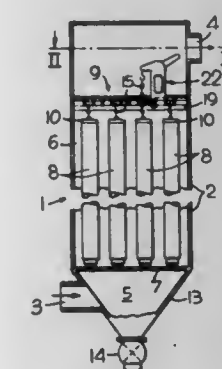
4,339,251

**FILTER BAG TENSIONING ARRANGEMENT**  
Eldridge J. Shumate, Louisville, Ky., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 5, 1981, Ser. No. 318,635  
Int. Cl.<sup>3</sup> B01D 46/02

U.S. Cl. 55—378

10 Claims



1. A filter bag tensioning arrangement for a baghouse having a gas cleaning chamber, a flow-through filter supporting platform extending across the top of the gas cleaning chamber, a plurality of filter bags arranged in rows extending widthwise of the gas cleaning chamber, each of said bags being suspended from a supporting strap connected with the upper end of the bag, and attachment means anchoring the lower end of each of the filter bags within the baghouse, comprising:

- a guide track in the platform aligned above each row of filter bags;
- winch means including a follower adapted to be engaged with the track above one of said rows to enable a workman to selectively align said winch means above one of the filter bags in said row while restraining its lateral movement with respect to the track, downwardly projecting coupling means releasably engageable with the platform upon selective widthwise movement of said winch means with respect to the platform, and a supporting cable adapted to be secured to the strap of said one of the bags to pull it toward the platform upon actuating said winch means to establish a predetermined tension in said bag; and
- fastening means for releasably securing said strap to the platform to support and maintain the tension in said bag.

4,339,252

**APPARATUS FOR PRODUCING SOLID HYDROGEN**  
Peter M. Bell, Potomac, Md., and Ho-Kwang Mao, Fairfax, Va., assignors to Carnegie Institution of Washington, Washington, D.C.

Filed Feb. 29, 1980, Ser. No. 126,082  
Int. Cl.<sup>3</sup> F25J 1/02

U.S. Cl. 62—35

1 Claim

1. An apparatus for filling a cell means defined by an apertured gasket and two opposed diamond anvils with hydrogen comprising cold chamber means, vessel means, means for supporting said vessel in said chamber means, means for supporting said cell means in said vessel with said diamond anvils spaced from said gasket, means for supplying liquid hydrogen to said vessel whereby said cell would be filled with liquid

aperture therein to trap an amount of liquid hydrogen in said cell means.

4,339,253

**METHOD OF AND SYSTEM FOR LIQUEFYING A GAS WITH LOW BOILING TEMPERATURE**

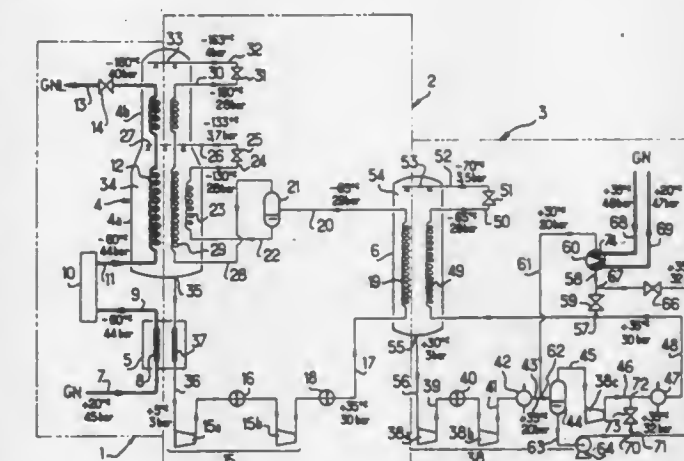
Enzo Caetani, Nanterre, and Henri Paradowski, Cergy Pontoise, both of France, assignors to Compagnie Francaise d'Etudes et de Construction "Technip", Paris, France

Filed Dec. 9, 1980, Ser. No. 214,698

Claims priority, application France, Dec. 12, 1979, 7930489  
Int. Cl.<sup>3</sup> F25J 1/02

U.S. Cl. 62—40

13 Claims



10. An apparatus for cooling and liquefying at least one relatively dry gas having a low boiling point, including at least the following circuits: on the one hand, an in particular open circuit of gas to be liquefied; on the other hand, a closed circuit of main refrigerating fluid in heat exchanging relationship with said gas circuit by means of cryogenic heat exchangers for liquefying, sub-cooling and pre-cooling purposes respectively, and being part of one cold-generating incorporated cascade of at least two refrigerating main and auxiliary fluids, respectively; and at last a closed circuit of auxiliary refrigerating fluid in heat exchanging relationship with said circuit of main refrigerating fluid by means of at least one cryogenic heat exchanger for pre-cooling and at least partially liquefying said main refrigerating fluid and comprising at least the following elements: at least one gaseous fluid compressor, a condensing cooler operating with a coolant in particular of outer origin, a total liquefaction and sub-cooling flow passage-way extending through said pre-cooling heat exchanger and extending generally in the same direction as the flow passage-way for the main



refrigerating fluid therein, a first expansion member at the downstream end of said total liquefaction and sub-cooling flow passage-way and connected to a vaporization passage-way extending through said pre-cooling heat exchanger to lead to the low pressure suction side of said compressor, wherein the improvement consists in that the outlet of said condensing cooler is connected to the inlet of a phase separator the vapor collecting space of which is connected to the suction side of another compressor the delivery side of which is connected to the inlet of another condensing cooler operating with a cooling medium in particular of outer origin, whereas the liquid collecting space is connected to the suction side of an accelerating pump the delivery side of which is connected in part to the inlet of said other condensing cooler and in part to a second expansion member; the outlet of said other condensing cooler being connected on the one hand to the inlet of said total liquefaction and sub-cooling flow passage-way and on the other hand to a third expansion member; the outlets of said second and third expansion members being connected to the inlet of said phase separator through a cooler for said gas to be liquefied which is initially in a relatively moist state.

4,339,254

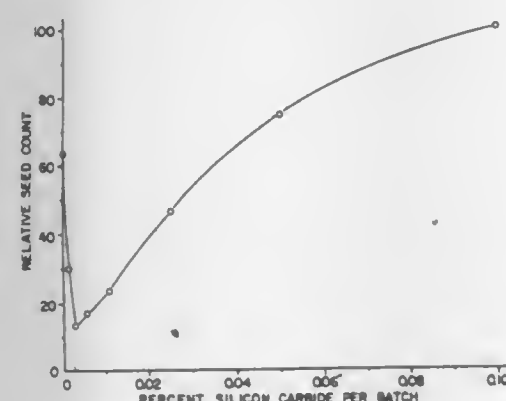
#### GLASS MANUFACTURE EMPLOYING A SILICON CARBIDE REFINING AGENT

Marvin C. Gridley, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Continuation-in-part of Ser. No. 193,045, Jun. 6, 1980, abandoned. This application Sep. 14, 1981, Ser. No. 301,559  
Int. Cl.<sup>3</sup> C03C 3/04; C03B 1/00

U.S. Cl. 65—27

14 Claims



1. A method of substantially reducing gaseous inclusions in a glass article, comprising combining glass batch ingredients, adding to the ingredients about 0.001 to about 0.025 weight percent of silicon carbide, and heating the ingredients to a molten state to effect the complete melting of the batch material, and thereafter withdrawing molten glass to form a glass article.

4,339,255

#### METHOD AND APPARATUS FOR MAKING A MODIFIED AMORPHOUS GLASS MATERIAL

Stanford R. Ovshinsky, Bloomfield Hills, and Richard A. Flascck, Rochester, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

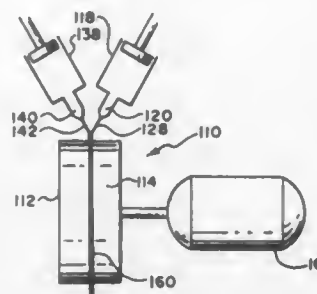
Filed Sep. 9, 1980, Ser. No. 185,528  
Int. Cl.<sup>3</sup> C03B 7/00, 19/00; C03C 3/30

U.S. Cl. 65—32

75 Claims

1. A method for making an amorphous modified glass material, comprising the steps of: providing a cooling substrate; forming a host matrix material on said substrate; directing at least one fluid material including at least one modifier material in a stream toward said substrate in a direction such that said stream of said at least one modifier material converges with said host matrix material; independently controlling the flow and quench rates of said stream; providing for relative movement between said substrate and said stream of modifier material; and maintaining said substrate at a cooling temperature

which, in conjunction with said relative movement, flow and quench rate of said modifier material cools the combined host matrix and modifier materials as they make contact with one another at a quenching rate of from  $10^4$  to at least  $10^8$  C. per second or more thereby to form a ribbon of modified amorphous glass material in which the optical and electrical transport properties and the number and type of electronic configurations can be controlled, thereby controlling the orbital relationships between said host matrix material and said modifier material.



phous glass material in which the optical and electrical transport properties and the number and type of electronic configurations can be controlled, thereby controlling the orbital relationships between said host matrix material and said modifier material.

4,339,256

#### METHOD OF MAKING POLARIZED OPHTHALMIC GLASS

Robert A. Simms, 6132 N. 77th Pl., Scottsdale, Ariz. 85253

Filed Dec. 19, 1980, Ser. No. 218,048

Int. Cl.<sup>3</sup> C03B 23/025, 23/037

U.S. Cl. 65—32

17 Claims

1. A method of making polarized ophthalmic glass, comprising the steps of:  
heating a sheet of ophthalmic glass, including a reducible metal oxide as a part of its composition, to its softening point in a reducing atmosphere for a predetermined period of time sufficient to reduce said metal oxide to metal particles to a predetermined depth less than the thickness of said sheet on at least one surface of said sheet;  
stretching said sheet in one direction to elongate said metal particles in parallel lines; and  
cooling the glass to set the elongated metal particles in the glass.

4,339,257

#### METHOD OF PRODUCING CURVED AND PARTLY COLORED GLASS SHEET

Kazuo Ueda, Matsusaka, Japan, assignor to Central Glass Company, Limited, Uve, Japan

Filed Mar. 16, 1981, Ser. No. 243,809

Claims priority, application Japan, Mar. 17, 1980, 55-33628

Int. Cl.<sup>3</sup> C03C 17/04

U.S. Cl. 65—60.5

12 Claims

1. A method of producing a partly colored and at least partly curved glass sheet, the method including the steps of covering a selected region of a surface of a flat glass sheet with a layer of a coloring agent which comprises an inorganic pigment and a glass frit which is lower in melting temperature than the glass sheet, heating the glass sheet so as to soften the glass sheet and fuse the glass frit contained in said layer, and press-shaping the heated glass sheet into a desirably curved shaped so as to allow the fused glass frit containing therein said pigment to adhere to the glass sheet surface,  
characterized in that said coloring agent further comprises an alumina powder which adheres to the surfaces of the particles of said glass frit until fusion of said glass frit on the sheet glass surface.

4,339,258

#### METHOD FOR BLOW MOLDING AND COOLING HOLLOW GLASSWARE

John K. Martin, Monterrey, Mexico, assignor to Vitro Tec Fideicomiso, Monterrey, Mexico

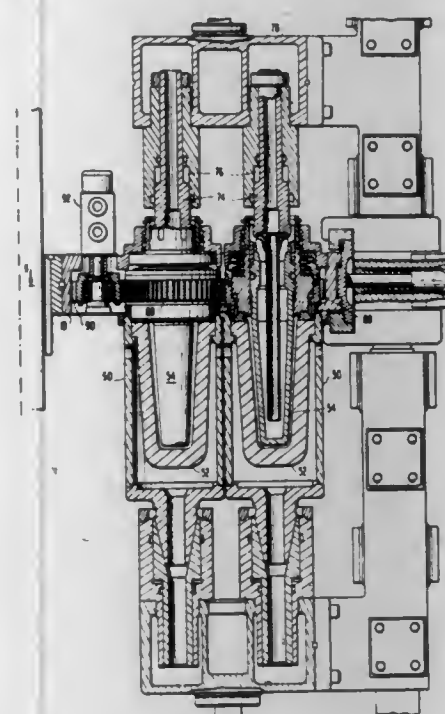
Division of Ser. No. 898,080, Apr. 20, 1978, Pat. No. 4,200,449.

This application Dec. 28, 1979, Ser. No. 107,850

Int. Cl.<sup>3</sup> C03B 9/193

U.S. Cl. 65—79

1 Claim



1. A method of blow molding hollow glassware comprising: pressing a preform in a parison mold with a controlled pressure plunger and thereafter supporting said preform by a rotatable neck ring within a closed blow mold; positioning a nozzle in aligned but non-sealed spaced relation to said neck ring; and forming said preform into ware having the shape of said blow mold by forcing air through said nozzle into the interior of the ware while permitting air to exit from the ware through the space between said nozzle and said neck ring to simultaneously shape and internally cool the ware.

4,339,259

#### PROCESS AND APPARATUS FOR BENDING AND TEMPERING GLASS SHEETS, ESPECIALLY THIN SHEETS

Ciro Paudice; Vitantonio Sassanelli; Dino Di Nocco; Francesco Pracilio, and Nicolò Casa, all of Vasto, Italy, assignors to Società Italiana Vetro-Siv-S.p.A., San Salvo, Italy

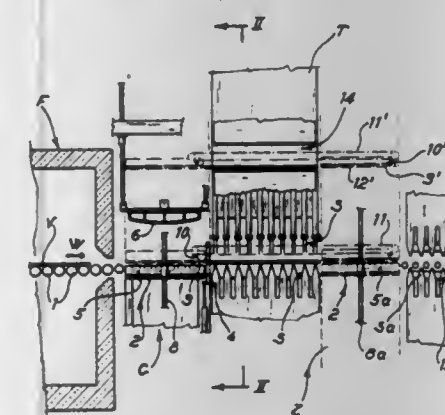
Filed Dec. 1, 1980, Ser. No. 211,721

Claims priority, application Italy, Dec. 7, 1979, 27967 A/79

Int. Cl.<sup>3</sup> C03B 23/023, 27/00

U.S. Cl. 65—104

10 Claims



1. A process for bending and tempering glass sheets, particularly thin glass sheets, in a glass treatment system of the type

including a furnace for heating a glass sheet to the softening point thereof, a forming zone for bending the softened glass sheet into a desired shape, a tempering zone for tempering the shaped glass sheet, and a discharge zone for discharging the shaped and tempered glass sheet, said process comprising:

conveying said glass sheet through said furnace and from said furnace to said forming zone by means of roller conveyors;

at said forming zone, supporting said softened glass sheet on a ring carried by a frame, raising said frame, said ring and said softened glass sheet to a level above said roller conveyors, and bending said softened glass sheet to form said shaped glass sheet;

moving said frame, said ring and said shaped glass sheet horizontally at said level from said forming zone through said tempering zone, and therein tempering said shaped glass sheet to form said shaped and tempered glass sheet, to said discharge zone, said operation of moving being conducted in a single longitudinal direction without vertical or transverse displacement of said frame, said ring and said glass sheet;

at said discharge zone, lowering said frame, said ring and said shaped and tempered glass sheet from said level, and transferring said shaped and tempered glass sheet to discharge roller conveyors; and operating said discharge roller conveyors and thereby discharging said shaped and tempered glass sheet.

6. In an apparatus for bending and tempering glass sheets, particularly thin glass sheets, said apparatus being of the type including a furnace for heating a glass sheet to the softening point thereof, a forming zone for bending the softened glass sheet into a desired shape, a tempering zone for tempering the shaped glass sheet, and a discharge zone for discharging the shaped and tempered glass sheet, the improvement comprising: roller conveyor means for conveying said glass sheet through said furnace to said forming zone;

a ring, carried by a frame, at said forming zone for supporting said softened glass sheet;

vertical raising means at said forming zone for raising said frame, said ring and said softened glass sheet supported thereby to a level above said roller conveyor means, whereat said softened glass sheet is formed into said shaped glass sheet;

means for moving said frame, said ring and said shaped glass sheet horizontally at said level in a single longitudinal direction without vertical or transverse displacement from said forming zone through said tempering zone, wherein said shaped glass sheet is tempered to form said shaped and tempered glass sheet, to said discharge zone; discharge roller conveyors at said discharge zone; and vertical lowering means at said discharge zone for lowering said said frame, said ring and said shaped and tempered glass sheet from said level and for transferring said shaped and tempered glass sheet to said discharge roller conveyors.

4,339,260

#### ENVIRONMENTALLY PROTECTED ELECTRONIC CONTROL FOR A GLASSWARE FORMING MACHINE

William E. Johnson, and William H. Ryan, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 12, 1981, Ser. No. 224,350

Int. Cl.<sup>3</sup> C03B 9/40

U.S. Cl. 65—160

18 Claims

1. In a glassware forming machine having an electronic control system including an electronic component and means for mounting the electronic component, a cooling system comprising:

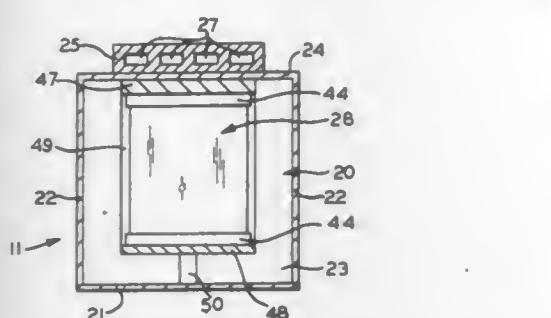
heat sink means in heat transfer relationship between the electronic component and the mounting means;

a cooling manifold means; and

thermoconductive means in heat transfer relationship between



said heat sink means and said manifold means whereby heat generated in the electronic component is transferred to said

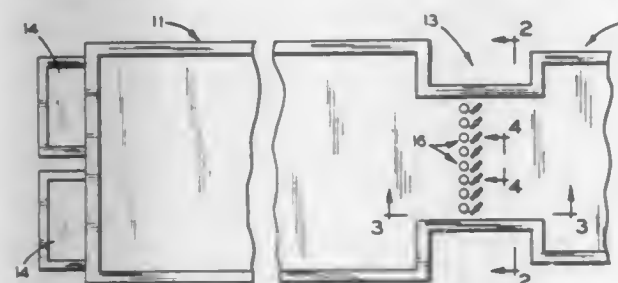


manifold means by said heat sink means and said thermoconductive means to cool the electronic component.

**4,339,261**  
**DRIVE SYSTEM FOR GLASS FURNACE STIRRERS**  
Ronald O. Walton, and Orville L. Tary, both of Toledo, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio  
Filed Sep. 8, 1980, Ser. No. 185,207  
Int. Cl.<sup>3</sup> C03B 5/187

U.S. Cl. 65-178

9 Claims



1. In a continuous tank-type glass melting furnace having a plurality of stirrers arranged in at least one row extending transversely across a section of said furnace for homogenizing molten glass as it flows through said furnace, each said stirrer including a stirring member for immersion in the molten glass, a rotary shaft extending upwardly from the stirring member through a cover over the molten glass, means mounting said shaft for rotation about its longitudinal axis, and drive means connected to said shaft for rotating said stirring member, the improvement wherein said drive means includes an individual power unit connected to said shaft of each said stirrer for driving each stirrer independently of the others, said individual power unit comprising a synchronous electric motor and control means for each said stirrer whereby rotation of individual stirrers relative to one another in said at least one row of stirrers may be synchronized.

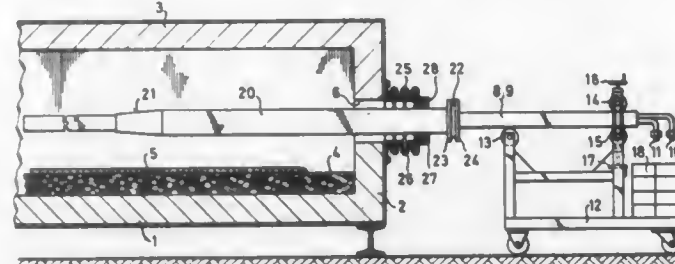
**4,339,262**  
**COOLING APPARATUS FOR FLOAT-GLASS INSTALLATION**  
Eberhard Liepelt, Stolberg-Breinig, Fed. Rep. of Germany, assignor to Saint-Gobain Vitrage, Aubervilliers, France  
Filed Mar. 4, 1981, Ser. No. 240,408  
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3008960  
Int. Cl.<sup>3</sup> C03B 18/22

U.S. Cl. 65-182.1

12 Claims

1. A cooling apparatus for use with an installation in the formation of a continuous ribbon of glass that floats on a molten bath in a substantially enclosed space between an inlet for molten glass and an outlet through which said ribbon is removed, said cooling apparatus comprising at least one conduit means adapted to extend through one wall of said installation into said space, above at least a portion of the width of said ribbon and in an orientation substantially perpendicular to the path of movement of said ribbon toward said outlet, said conduit means providing a path of circulation for a cooling medium

for cooling said ribbon as it moves, and insulation means on said conduit means likewise adapted to extend through said one wall and along said conduit means to a location spaced from its distal end, said insulation means being disposed as a sleeve around said conduit means thereby to thermally insulate said conduit means and substantially localize the cooling effect

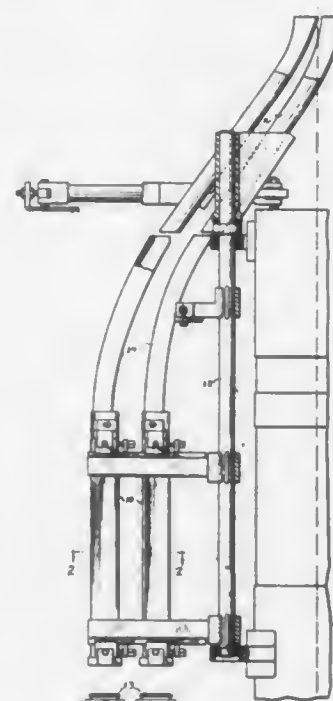


of said cooling medium to the region of said ribbon below the non-insulated length, said insulation means being movable lengthwise relative to said conduit means to increase or decrease the non-insulated length, and means for sealing said insulation means both to said wall outside said installation to seal the entry to said space and to said conduit means.

**4,339,263**  
**GOB FEEDER CHUTES FOR GLASS MOLDING MACHINES**  
John K. Martin, Monterrey, Mexico, assignor to Vitro Tec Fideicomiso, Monterrey, Mexico  
Continuation-in-part of Ser. No. 96,045, Nov. 20, 1979, abandoned. This application Mar. 20, 1981, Ser. No. 246,023  
Int. Cl.<sup>3</sup> C03B 7/16

U.S. Cl. 65-225

5 Claims



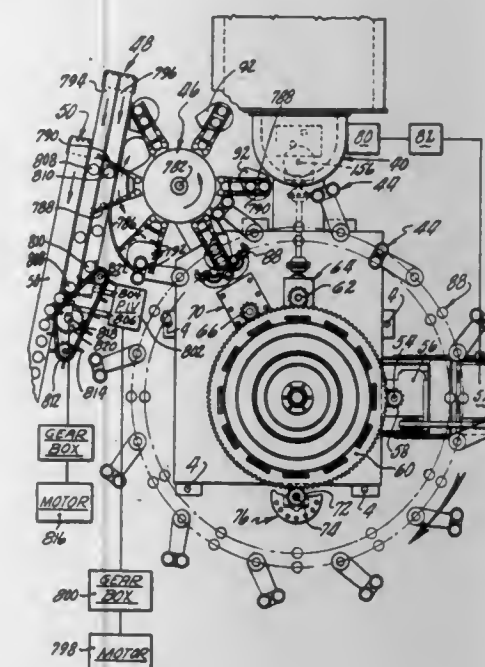
1. In combination with an automatic glass molding machine, a vertically arranged closed wall chute for guiding molten glass gobs from an automatic gob feeder to the glass molds while preventing contact between the gobs and the inner walls of the chute, said chute comprising:  
an elongated closed wall tube having a non-circular cross section which is a substantially regular polygon having an even number of sides at least equal to four, the smallest cross section dimension of said tube being greater than the cross section dimension of the gob, and the included interior angle of each corner of the polygon being sufficiently small to define substantial air passageways between the gob and the corners of the chutes, the movement of air through said passageways incident to falling of the gob

through the chute being effective to center the gob and space it equidistantly from the chute walls.

**4,339,264**  
**GLASSWARE FORMING APPARATUS**  
Francis A. Dahms, Tariffville, Conn., assignor to Embart Industries, Inc., Hartford, Conn.  
Filed Aug. 18, 1980, Ser. No. 179,381  
Int. Cl.<sup>3</sup> C03B 9/44

U.S. Cl. 65-239

9 Claims



1. Glassware forming apparatus of the type which includes a plurality of individual forming units rotatable about a central axis, each unit including a plurality of neck ring assemblies stationary in a vertical direction and having their vertical axis in a plane containing the central axis, a plurality of split blow molds equal in number to the number of neck ring assemblies, said blow molds being stationary in a vertical direction and having a parting line when closed which is in a plane containing the central axis, and a plurality of blank molds equal in number to the number of neck ring assemblies and movable between said first position wherein the blank molds are positioned in cooperation with the neck ring assemblies and a second position wherein said blank molds are positioned downwardly and outwardly from said neck ring assemblies, the radius from the central axis through the vertical axis of one blank mold being angularly offset with the radius from the central axis through the vertical axis of the other blank mold when the blank molds are in the second position.

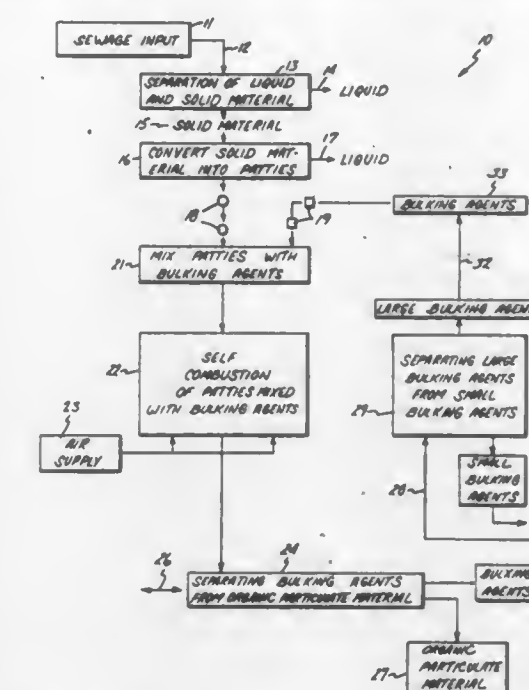
**4,339,265**  
**SEWAGE TREATMENT METHOD AND APPARATUS**  
John A. Engelmann, Wayzata, Minn., assignor to Veda, Inc., Long Lake, Minn.  
Filed Feb. 27, 1980, Ser. No. 125,115  
Int. Cl.<sup>3</sup> C05F 3/04

U.S. Cl. 71-9

27 Claims

1. A method of treating sewage and converting the same into organic fertilizer comprising: collecting liquid and solid sewage material in liquid and solid material holding means having a lower section, separating part of the liquid from the solid material by allowing the solid material to settle in the lower section of the holding means, removing the liquid from the holding means, converting the solid material into patties, removing liquid from the solid material during the conversion of the solid material into patties, mixing the patties with bulking agents, locating the mixture of patties and bulking agents in a pile of mixed patties and bulking agents, moving air into the lower part of the pile of mixed patties and bulking agents to enhance self-combustion of the patties wherein the patties are oxidized to organic particulate material, mixing the bulking

agents and oxidized organic particulate material, separating the mixed bulking agents and organic particulate material by reciprocating movement thereof in an elongated longitudinal path provided with a shaker means having an elongated longitudinal perforated means for carrying the bulking agents and al-



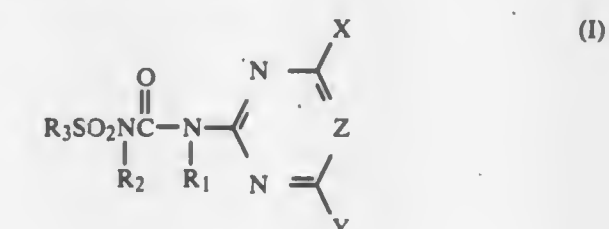
lowing the particulate material to flow through the perforated means into an elongated trough having an open end, and separately collecting the bulking agents moving from the perforated means and particulate material moving from the open end of the trough.

**4,339,266**  
**HERBICIDAL SULFONAMIDES**  
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
Division of Ser. No. 840,167, Oct. 6, 1977, Pat. No. 4,257,802.  
This application May 19, 1980, Ser. No. 151,245  
Int. Cl.<sup>3</sup> A01N 43/46; C07D 239/42

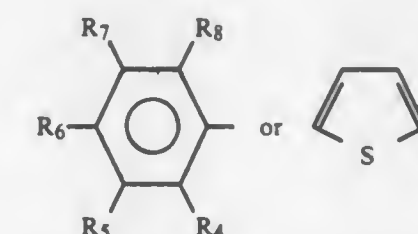
U.S. Cl. 71-92

18 Claims

1. A compound of the formula:



wherein  
R<sub>1</sub> is H, alkyl of one to three carbon atoms or —OCH<sub>3</sub>;  
R<sub>2</sub> is H or alkyl of one to three carbon atoms;  
R<sub>3</sub> is



R<sub>4</sub> and R<sub>7</sub> are independently hydrogen, fluorine, chlorine, bromine, alkyl of 1-4 carbon atoms, alkoxy of 1-4 carbon atoms, nitro, CF<sub>3</sub>, CH<sub>3</sub>S— or CH<sub>3</sub>CH<sub>2</sub>S—;  
R<sub>5</sub>, R<sub>6</sub> and R<sub>8</sub> are independently hydrogen, fluorine, chlorine, bromine or methyl;



X is Cl, CH<sub>3</sub>, —CH<sub>2</sub>CH<sub>3</sub>, alkoxy of one to three carbons, CF<sub>3</sub>, CH<sub>3</sub>S—, CH<sub>3</sub>OCH<sub>2</sub>— or CH<sub>3</sub>OCH<sub>2</sub>CH<sub>2</sub>O—;  
Y is CH<sub>3</sub> or OCH<sub>3</sub>;  
Z is CH<sub>3</sub>;

and their agriculturally suitable salts; provided that:

- R<sub>1</sub> and R<sub>2</sub> may not simultaneously be hydrogen; and
- when R<sub>4</sub> and R<sub>8</sub> are both hydrogen, at least one of R<sub>5</sub>, R<sub>6</sub>, or R<sub>7</sub> must be hydrogen;
- when R<sub>6</sub> is other than H, at least one of R<sub>4</sub>, R<sub>5</sub>, R<sub>7</sub>, and R<sub>8</sub> is other than H and at least two of R<sub>4</sub>, R<sub>5</sub>, R<sub>7</sub>, and R<sub>8</sub> must be hydrogen; and
- when R<sub>6</sub> is H and all or R<sub>4</sub>, R<sub>5</sub>, R<sub>7</sub> and R<sub>8</sub> are other than H, then all of R<sub>4</sub>, R<sub>5</sub>, R<sub>7</sub>, and R<sub>8</sub> must be either Cl or CH<sub>3</sub>.

11. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid diluent.

4,339,267

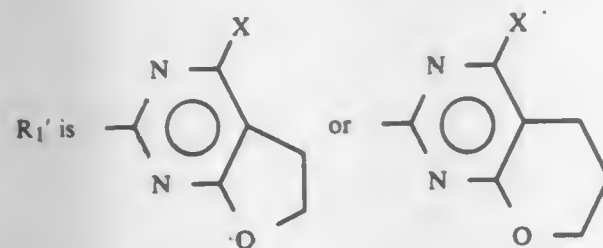
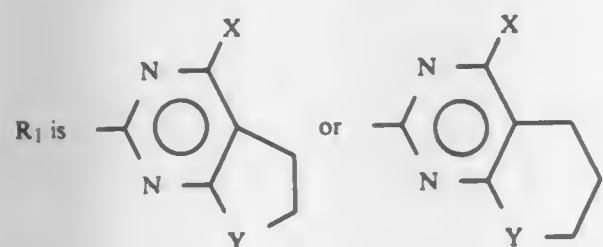
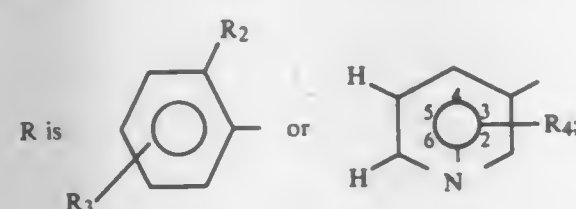
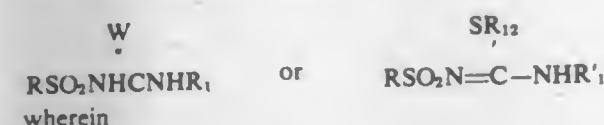
## HERBICIDAL SULFONAMIDES

George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 109,262, Jan. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 68,658, Aug. 28, 1979, abandoned, which is a continuation-in-part of Ser. No. 14,201, Feb. 22, 1979, abandoned. This application Oct. 16, 1980, Ser. No. 197,749

Int. Cl.<sup>3</sup> A01N 47/36; C07D 239/70, 491/48, 491/52  
U.S. Cl. 71—92 28 Claims

1. A compound selected from



R<sub>2</sub> is H, CH<sub>3</sub>, OCH<sub>3</sub>, F, Cl, Br, NO<sub>2</sub>, CF<sub>3</sub>, COR<sub>5</sub>, S(O)<sub>m</sub>R<sub>10</sub>, SO<sub>2</sub>NR<sub>10</sub>R<sub>11</sub>, SO<sub>2</sub>OCH<sub>2</sub>CF<sub>3</sub>, SO<sub>2</sub>OCH<sub>2</sub>CCl<sub>3</sub> or SO<sub>2</sub>N-(OCH<sub>3</sub>)CH<sub>3</sub>;

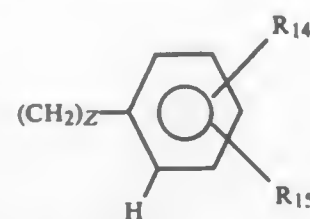
R<sub>3</sub> is H, F, Cl, Br, alkyl C<sub>1</sub>–C<sub>4</sub> or CH<sub>3</sub>O;  
R<sub>4</sub> is H, Cl, Br, F, alkyl C<sub>1</sub>–C<sub>4</sub>, alkoxy C<sub>1</sub>–C<sub>4</sub>, NO<sub>2</sub>, CO<sub>2</sub>R<sub>6</sub> or R<sub>13</sub>—S—;

R<sub>5</sub> is alkoxy C<sub>1</sub>–C<sub>6</sub>; alkenyloxy C<sub>3</sub>–C<sub>6</sub>; haloalkoxy C<sub>2</sub>–C<sub>6</sub> substituted with 1 to 3 halogens selected from Cl, F and Br; cycloalkoxy C<sub>5</sub>–C<sub>6</sub>; O—CH<sub>2</sub>CH<sub>2</sub>O—R<sub>7</sub>; OCH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>OR<sub>7</sub>; NR<sub>8</sub>R<sub>9</sub>; N(OCH<sub>3</sub>)CH<sub>3</sub> or C<sub>1</sub>–C<sub>4</sub> alkylthio;

R<sub>6</sub> is alkyl C<sub>1</sub>–C<sub>6</sub>;

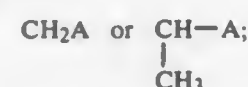
R<sub>7</sub> is alkyl C<sub>1</sub>–C<sub>2</sub>;

R<sub>8</sub> and R<sub>9</sub> are independently H or alkyl C<sub>1</sub>–C<sub>4</sub> or R<sub>8</sub> and R<sub>9</sub> may be taken together to be (CH<sub>2</sub>)<sub>4</sub>, (CH<sub>2</sub>)<sub>5</sub> or O(CH<sub>2</sub>C—H<sub>2</sub>—)<sub>2</sub>; and  
R<sub>8</sub> can also be



R<sub>10</sub> and R<sub>11</sub> are independently C<sub>1</sub>–C<sub>6</sub> alkyl or C<sub>3</sub>–C<sub>4</sub> alkenyl or R<sub>10</sub> and R<sub>11</sub> can be taken together to be (CH<sub>2</sub>)<sub>4</sub>, (CH<sub>2</sub>)<sub>5</sub> or O(CH<sub>2</sub>CH<sub>2</sub>)<sub>2</sub>;

R<sub>12</sub> is C<sub>1</sub>–C<sub>12</sub> alkyl; CH<sub>2</sub>CH<sub>2</sub>OCH<sub>3</sub>; CH<sub>2</sub>CH<sub>2</sub>OCH<sub>2</sub>CH<sub>3</sub>; CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>OCH<sub>3</sub>;



R<sub>13</sub> is C<sub>1</sub>–C<sub>3</sub> alkyl;

R<sub>14</sub> is H, F, Cl, Br, NO<sub>2</sub>, CN, CF<sub>3</sub>, C<sub>1</sub>–C<sub>3</sub> alkyl, OCH<sub>3</sub> or CH<sub>3</sub>S;

R<sub>15</sub> is H, F, Cl, Br, CH<sub>3</sub> or OCH<sub>3</sub>;

X is H, CH<sub>3</sub>, CH<sub>3</sub>O, Cl or OCH<sub>2</sub>CH<sub>3</sub>;

Y is CH<sub>2</sub> or O;

A is CO<sub>2</sub>H, CO<sub>2</sub>B, CONH<sub>2</sub>, phenyl, CN, C<sub>2</sub>–C<sub>4</sub> alkenyl, C<sub>2</sub>–C<sub>4</sub> alkynyl, phenyl substituted with one or two methyl groups or with one or two chlorines;

B is C<sub>1</sub>–C<sub>4</sub> alkyl;

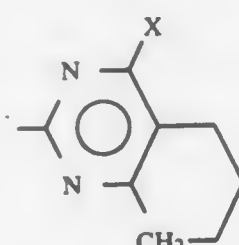
m is 0, 1 or 2;

n is 1 or 2;

Z is 0 or 1;

W is oxygen or sulfur; provided that

(i) when R<sub>1</sub> is



then

R<sub>2</sub> is NO<sub>2</sub>, COR<sub>5</sub>, SO<sub>2</sub>NR<sub>10</sub>R<sub>11</sub>, SO<sub>2</sub>N(CH<sub>3</sub>)(OCH<sub>3</sub>) or SO<sub>2</sub>R<sub>10</sub>;

R<sub>4</sub> is other than H; and

X is CH<sub>3</sub> or OCH<sub>3</sub>;

(ii) when W is sulfur; when Y is oxygen and their agriculturally suitable salts.

25. A composition for the control of undesirable vegetation consisting essentially of an herbicidally effective amount of a compound of any of claims 1–24 and at least one of (a) a surface active agent, and (b) a solid or liquid diluent.

26. A method for the control of undesirable vegetation comprising applying to the locus of such undesirable vegetation an herbicidally effective amount of a compound of any of claims 1–24.

4,339,268

## HERBICIDAL NITROALKYL

5-[2-CHLORO-4-(TRIFLUOROMETHYL)PHENOXY]-2-NITROBENZOATES

Robert J. Theissen, Bridgewater, N.J., assignor to Rhone-Poulenc Agrochimie, Lyons, France

Continuation-in-part of Ser. No. 117,732, Feb. 1, 1980, abandoned. This application Jun. 8, 1981, Ser. No. 271,143

Claims priority, application Argentina, Jan. 30, 1981, 284163  
Int. Cl.<sup>3</sup> A01N 37/36; C07C 79/46

U.S. Cl. 71—108

8 Claims

1. A herbicidal compound of the formula

4,339,270

## CORROSION RESISTANT AMORPHOUS NOBLE METAL-BASE ALLOYS

Koji Hashimoto, 25-5, Syogen 2-chome, Izumi-shi, Miyagi-ken; Tsuyoshi Masumoto, Sendai; Motoi Hara, Sendai; Katsuhiko Asami, Sendai, and Kazutaka Sakiyama, Hohfu, all of Japan, assignors to Toyo Soda Manufacturing Co. Ltd., Shln-nanyo and Koji Hashimoto, Iiumi, both of Japan

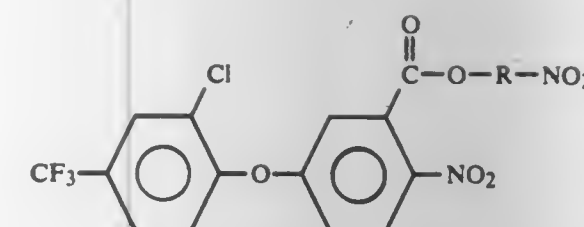
Filed Apr. 14, 1980, Ser. No. 139,650

Claims priority, application Japan, May 16, 1979, 54-59171

Int. Cl.<sup>3</sup> C22C 30/00

U.S. Cl. 148—403

8 Claims



where R is an alkylene group having 1–4 carbon atoms.

6. A method for combating unwanted plants which comprises contacting them with a herbicidally effective amount of a compound according to any one of claims 1 to 5.

4,339,269

## PROCESS FOR SINTERING LEAD CONCENTRATES

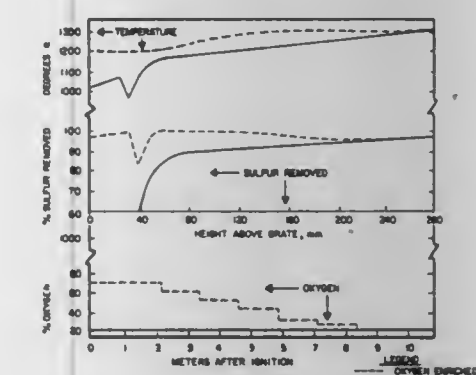
George W. Healy, Sandy, Utah, assignor to University of Utah, Salt Lake City, Utah

Filed Sep. 2, 1980, Ser. No. 183,660

Int. Cl.<sup>3</sup> C22B 1/20

U.S. Cl. 75—5

13 Claims

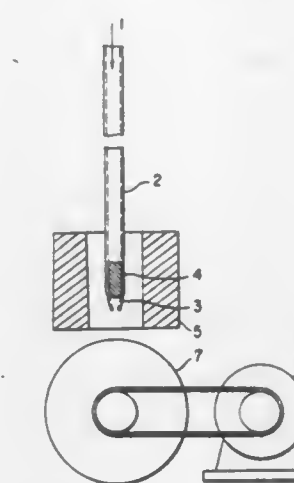


1. A process for improving the efficiency of a lead concentrate sintering machine comprising:

- laying an initial ignition layer on a moving grate in said sintering machine;
- igniting said ignition layer;
- laying a mix bed on top of the ignition layer;
- enriching combustion air by adding oxygen during the initial stages after the mix bed is laid;
- terminating the enriching step at a predetermined distance downstream from ignition; and
- introducing fog into the combustion air after the enriching step has terminated, the fog maintaining the temperature of the bed below about 1300° K.

9. An improved process for producing lead sinter from a mixture of predetermined proportions of lead concentrate and recycled slag and sinter using a conventional lead concentrate sintering machine comprising:

- increasing the proportion of lead concentrate in the mixture fed to the sintering machine;
- enriching combustion air by adding oxygen during the initial stages after sinter contact;
- decreasing the amount of oxygen enrichment to the combustion air as the mixture passes through the bed;
- terminating oxygen enrichment of the combustion air at a first predetermined distance downstream of initial sinter contact; and
- adding water to the combustion air at a second predetermined distance downstream of the initial sinter contact, the water being added in the form of finely divided liquid water.



1. An amorphous alloy which is prepared by rapid quenching at a cooling rate of higher than 10,000° C./sec. from the liquid state and consists of

- 10 to 40 atomic percent of P and/or Si
- 90 to 60 atomic percent of two or more of Pd, Rh and Pt.

4,339,271

## METHOD OF MANUFACTURING A SINTERED POWDER BODY

Sven-Erik Isaksson, and Hans Larker, both of Robertsfors, Sweden, assignors to Asea AB, Västerås, Sweden

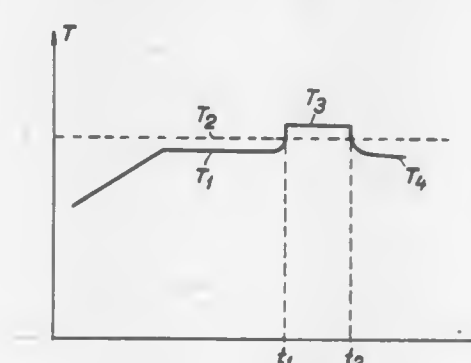
Continuation of Ser. No. 378,998, Jul. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 373,132, Jun. 25, 1973, which is a continuation of Ser. No. 230,877, Mar. 1, 1972.

This application Jun. 28, 1978, Ser. No. 919,916

Int. Cl.<sup>3</sup> B22F 3/00

U.S. Cl. 75—223

11 Claims



1. A method of manufacturing a sintered body from sinterable powdered material comprising the steps of:

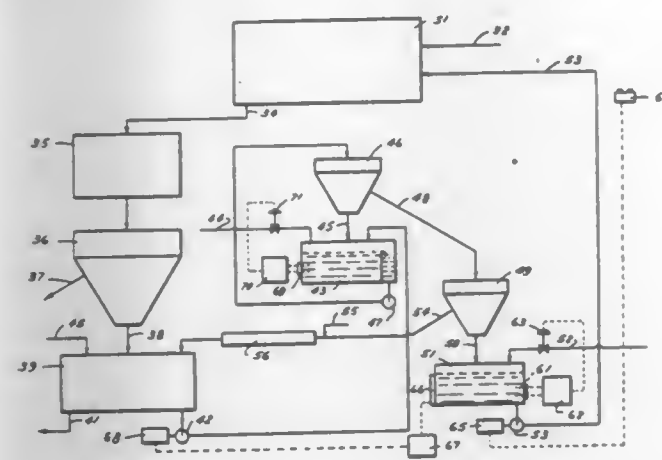
- cold-pressing the sinterable powdered material to form a shaped body;
- providing the shaped body with an initially porous surface layer having a thickness of up to about 1 mm., said surface layer being comprised of a coating material having a melting point that is lower than the melting point of the sinterable material of the body, said layer being capable of fusing and thereby becoming non-porous and gas-tight upon being heated to a temperature above the melting point of the coating material;







crystals are crushed on impact with the surface, recycling the crushed crystals into the suspension delivered into the rotating



conical basket, and removing the liquid phase with the crystals passed through the screen for preparing the seeding magma.

**4,339,281**  
**SHANK DIAMOND CLEANING**  
Shiu-Shin Chio, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 20, 1981, Ser. No. 294,736

Int. Cl.<sup>3</sup> B08B 3/08, 3/12

U.S. Cl. 134—1 13 Claims

1. A method for cleaning the surface of a diamond which is bonded to a shank comprising the steps of:

- subjecting the shanked diamond to an ultrasonically agitated aqueous bath,
- contacting the shanked diamond with a concentrated aqueous alkaline solution,
- contacting the shanked diamond with an aqueous hydrogen peroxide solution,
- contacting the shanked diamond with dilute aqueous citric acid solution,
- contacting the shanked diamond with an aqueous hydrofluoric acid-nitric acid solution, and
- rinsing the shanked diamond with water.

**4,339,282**  
**METHOD AND COMPOSITION FOR REMOVING ALUMINIDE COATINGS FROM NICKEL SUPERALLOYS**

Henry Lada, Lake Park, and Robert E. Fishter, Boca Raton, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 3, 1981, Ser. No. 270,179

Int. Cl.<sup>3</sup> C23G 1/04, 1/10

U.S. Cl. 134—3 5 Claims

1. The process of removing an aluminide coating from a nickel superalloy article characterized by contacting the coating with a stripping solution having a composition consisting essentially by volume percent of 43-48 concentrated nitric acid, 7-12 concentrated hydrochloric acid, 40-50 water, at least 0.016 mole/liter  $\text{CuSO}_4$  and 0.008-0.025 mole/liter ferric chloride.

**4,339,283**  
**VAPOR GENERATING AND RECOVERING APPARATUS**  
James W. McCord, 9101 Nottingham Pkwy., Louisville, Ky. 40222

Filed Feb. 19, 1980, Ser. No. 122,007

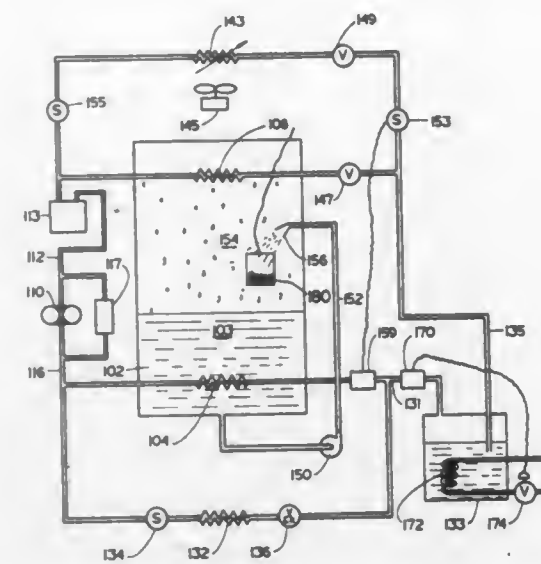
Int. Cl.<sup>3</sup> B08B 7/04

U.S. Cl. 134—12 5 Claims

1. In a vapor generating and recovering apparatus for vaporizing a liquid and condensing vapor, including a housing having at least one cleaning compartment therein, said compart-

ment having a liquid and a vapor therein, the improvement comprising:

first heating means in heat transfer relation with said liquid in a liquid zone in said compartment; first cooling means in heat absorbing relation with the vapor in a vapor zone in



the compartment; means to transfer liquid from said liquid zone to said vapor zone; and, means to spray liquid from the means to transfer liquid at a temperature at least equal to the boiling point of the liquid whereby upon spraying of an object to be cleaned the vapor zone is prevented from collapsing.

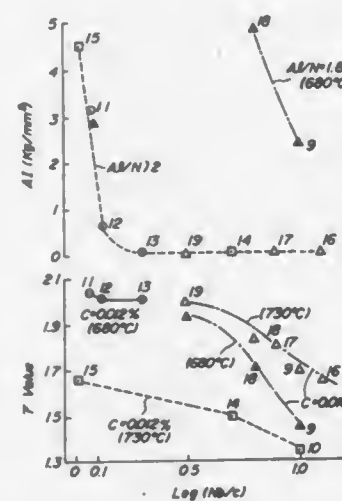
**4,339,284**  
**METHOD OF PRODUCING NON-AGEING COLD ROLLED STEEL SHEETS**  
Osamu Hashimoto, Chiba; Susumu Sato, Ichihara, and Tomoo Tanaka, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

PCT No. PCT/JP80/00032, § 371 Date Oct. 27, 1980, § 102(e) Date Oct. 27, 1980, PCT Pub. No. WO80/01811, PCT Pub. Date Sep. 4, 1980

PCT Filed Feb. 27, 1980, Ser. No. 212,724

Claims priority, application Japan, Feb. 27, 1979, 54-22830 Int. Cl.<sup>3</sup> C21D 8/04, 9/48

U.S. Cl. 148—12 C 6 Claims



1. A method of producing non-ageing cold rolled steel sheets having a remarkably excellent deep drawing property or  $r$  value of not lower than 1.86, an elongation that is not lower than 50%, and an ageing index that is not more than 1.0 KG/mm<sup>2</sup>, the method comprising preparing a steel consisting of, in % by weight, not more than 0.01% of carbon, not more than 0.2% of silicon, 0.05-0.40% of manganese, not more than 0.02% of phosphorus, not more than 0.02% of sulfur, not more than 0.01% of nitrogen, acid-soluble aluminum in an amount

not less than 0.005%, and of at least 1.8 times amount of nitrogen, niobium in an amount less than the necessary amount for completely fixing carbon and not less than 0.001%, and in an amount of log (Nb/C) of within the range of 0.10-1.00, and the remainder being iron and incidental impurities, and subjecting the steel to a hot rolling, a cold rolling and box annealing.

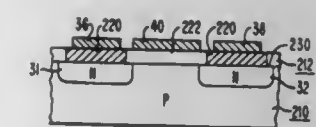
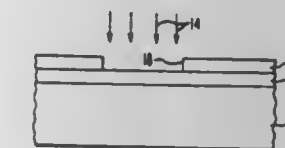
**4,339,285**  
**METHOD FOR FABRICATING ADJACENT CONDUCTING AND INSULATING REGIONS IN A FILM BY LASER IRRADIATION**

Jacques I. Pankove, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,757

Int. Cl.<sup>3</sup> H01L 21/263, 21/26

U.S. Cl. 148—1.5 11 Claims



1. A method for fabricating adjacent electrically conducting and insulating regions in a silicon film, comprising: forming a layer of oxygenated, doped, non-single crystalline silicon film, said film being substantially insulating; and selectively laser irradiating said film so as to form an irradiated portion which is substantially conducting.

**4,339,286**  
**CORE FLUX COMPOSITION FOR FLUX-CORED WIRES**  
Boris S. Kasatkin, ulitsa Anri Barbjusa, 22/24, kv. 111; Igor K. Pokhodnya, ulitsa Chkalova, 41-a, kv. 25; Valentin F. Muslachenko, ulitsa Saxaganskogo, 63, kv. 11; Vladimir N. Golovko, ulitsa Vladimirskaia, 9, kv. 29; Ljudmila N. Kolomiets, ulitsa Borschagovskaya, 189, kv. 45; Jury A. Simonenko, ulitsa Demiyana Korotchenko, 35, kv. 33, all of Kiev, and Anatoly V. Gulyar, ulitsa Bakinskikh Komissarov, 17, kv. 10, Sverdlovsk, all of U.S.S.R.

Filed May 27, 1980, Ser. No. 153,321

Int. Cl.<sup>3</sup> B23K 35/34

U.S. Cl. 148—24 3 Claims

1. Core flux composition of a flux-cored wire for welding and surfacing high-strength steels with a gas-shielded process, containing the core flux ingredients in the following amounts, by weight %:

rutile concentrate	14.0-23.0
fluorite concentrate	7.0-12.0
sodium fluosilicate	2.0-6.0
ferromanganese	6.0-10.0
ferrosilicon	1.5-4.0
ferromolybdenum	1.0-2.5
chromium (elemental)	1.0-2.5
nickel (elemental)	4.0-9.0
iron powder	31.0-63.5

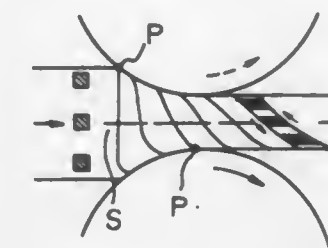
**4,339,287**  
**PROCESS FOR PRODUCING GRAIN-ORIENTED SILICON STEEL STRIP**

Fumio Matsumoto, Kitakyushu; Satoshi Hayami, Yokohama; Tsutomu Haratani, Kitakyushu; Kunihide Takashima, and Toshio Kikuma, both of Fukuoka, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 15, 1980, Ser. No. 149,957

Claims priority, application Japan, May 16, 1979, 54/60057 Int. Cl.<sup>3</sup> H01F 1/04

U.S. Cl. 148—111 6 Claims



1. A process for producing a grain-oriented silicon steel strip having [110] <001> orientation, consisting essentially of the steps of:

- continuously casting a silicon steel slab;
- heating said continuously cast silicon steel slab at a temperature of 1300° C. or higher, which slab contains from 2.0 to 4.0% by weight of silicon and not more than 0.085% by weight of carbon as basic components;
- hot rolling said heated continuously cast silicon steel slab at a finishing temperature of from 950° to 1200° C., thereby obtaining a hot rolled strip;
- subjecting the hot rolled strip to at least one cold rolling step;
- subjecting the thus cold rolled strip to a decarburization annealing step; and,
- subjecting the thus annealed sheet to a final high temperature annealing, wherein, during said hot rolling, the steel slab is subjected to at least one hot rolling pass at a temperature range of from 950° C. to 1250° C., said hot rolling being carried out with upper and lower rolls having circumferential speeds different from each other and which pass is sufficient to generate a plastic flow which is asymmetric in the upper and lower regions of the steel slab, as seen in the cross section of the steel slab in the rolling direction, and due to said asymmetric plastic flow, the grain-oriented silicon steel strip being free from streaks.

**4,339,288**  
**GAS GENERATING COMPOSITION**  
Albert T. Camp, Welcome, Md., assignor to Peter Stang, Port Tobacco, Md.

Continuation of Ser. No. 906,596, May 16, 1978, abandoned.

This application Mar. 31, 1980, Ser. No. 135,634

Int. Cl.<sup>3</sup> C06B 45/34

U.S. Cl. 149—8 15 Claims

1. A gas generating composition for use in inflating automobile crash bags comprising a mixture, in pellet form, of an alkali metal azide and an oxidant, each pellet coated with a lacquer comprising stabilized cellulose nitrate and at least one nitrate ester plasticizer.

**4,339,289**  
**CONCRETE OVERLAY CONSTRUCTION**  
David R. Lankard, Columbus, Ohio, assignor to Battelle Development Corporation, Columbus, Ohio

Filed Aug. 25, 1980, Ser. No. 180,688

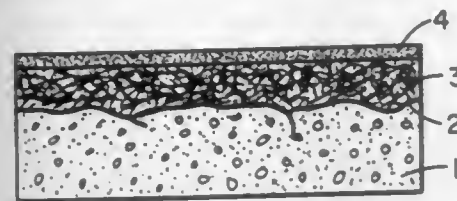
Int. Cl.<sup>3</sup> B32B 7/04, 31/00

U.S. Cl. 156—91 10 Claims

1. A method for overlaying a highly reinforced concrete layer on a supporting substratum comprising



- A. coating the supporting substratum with an adherent bonding agent,  
B. placing a bed of fibers having an average fiber spacing of less than about 0.3 inch on the bonding agent coating and



- causing at least a portion of such fibers to adhere thereto, and  
C. infiltrating the bed of fibers with a concrete mixture and causing the concrete mixture to adhere to the bonding agent coating and the fibers.

#### 4,339,290 PROCESS FOR MANUFACTURING A BRANCH ELEMENT

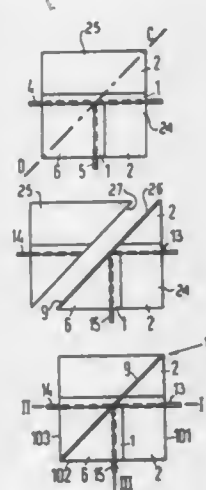
Gerhard Winzer, Achim Reichelt, and Herbert Michel, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany  
Filed May 8, 1980, Ser. No. 148,169

Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2920957

Int. Cl.<sup>3</sup> B65H 69/02

U.S. Cl. 156—159

8 Claims



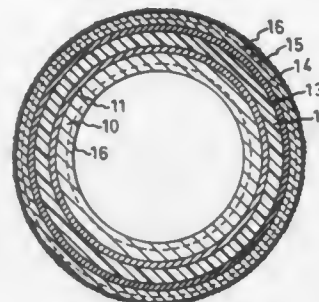
1. A process for producing a branch element having at least three separate groups of channels containing waveguides with the channels of each group being parallel to each other and two groups of channels being arranged to extend in the common plane separated by a common reflective layer with the channels of each of the two groups being axially aligned and at least one additional group extending from one of the two aligned groups at the common reflective layer, said process comprising the steps of providing a body having a flat surface, forming a plurality of parallel guide channels in the flat surface, dividing the body along a plane extending at right angles to the guide channels to form a first part and a second part, inserting a waveguide into each of the channels of each of said parts, securing the waveguides in the first part with an optical adhesive and a cover member, polishing an end surface of the first part to be optically flat and form a joining surface, positioning the first part with the joining surface on the flat surface of the second part with the axes of the waveguides of each part being in the same planes and extending at right angles to each other, securing the two parts together in the selected position to form an assembly, splitting the assembly along a plane bisecting the angle formed by the planes of the waveguides of the two parts to form a pair of halves with split surfaces extending at forty-five degrees to the plane of each group of waveguides, polishing each of the split surfaces of the halves to be optically flat, applying a partially reflective layer on one of the two

polished surfaces, assembling the two halves with the axes of the corresponding light waveguides being in axial alignment, and securing the assembled halves together to form the element.

4,339,291  
**MANUFACTURE OF BITUMEN PIPES**  
Stig O. M. Ekström, Kungsgatan 28, S-211 49 Malmö, Sweden  
Division of Ser. No. 34,884, May 1, 1979, Pat. No. 4,289,172.  
This application Feb. 6, 1981, Ser. No. 232,324  
Claims priority, application Sweden, May 31, 1978, 7806324  
Int. Cl.<sup>3</sup> B65H 81/00; F16L 9/14

U.S. Cl. 156—195

28 Claims

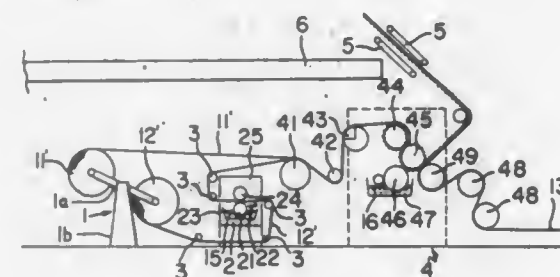


1. A process of manufacturing a reinforced bitumen pipe comprising the steps of:  
a. covering a mandrel with an insulating glass fiber layer,  
b. successively building up on the outer side of the glass fiber layer a reinforced thermosetting resin layer and causing said resin layer to partially penetrate into the glass fiber layer without finding its way all through said layer,  
c. curing the thermosetting resin layer, and  
d. coating it after curing with outer and inner bitumen layers, which are caused to partially penetrate into the adjoining insulating glass fiber layer.

4,339,292  
**METHOD FOR PRODUCING A REINFORCED, DOUBLE-FACED CORRUGATED BOARD**  
Shuji Itoh, Takaoka, and Yoji Yoshida, Nagoya, both of Japan, assignors to Kyokuto Fatty-Acid Corporation, Tokyo, Japan  
Division of Ser. No. 52,581, Jun. 27, 1979, Pat. No. 4,274,905, which is a division of Ser. No. 853,568, Nov. 21, 1977, abandoned. This application Feb. 10, 1981, Ser. No. 233,281  
Int. Cl.<sup>3</sup> B32B 3/28; B31F 1/20

U.S. Cl. 156—206

2 Claims



1. A method for producing a reinforced, double-faced corrugated board having a reinforced area of lesser width than the width of the entire board, said method comprising:  
coating a second corrugating layer on one side with an adhesive coating;  
contacting the adhesive-coated side of said second corrugating layer with one side of a first corrugating layer of greater width than said second layer;  
heating the resultant assembly;  
subjecting the heated assembly to moist heat;  
corrugating the moistened assembly between heated corrugating rollers and applying a second adhesive coating to one side of said first and second layers following the

corrugating process, said adhesive being applied over said second corrugated layer and said first corrugated layer surrounding said second layer;  
affixing a bottom facing liner of substantially the same width as said first corrugated layer against the adhesive-coated side of said first and second corrugated layers; and  
affixing, by means of an adhesive coating, a top facing liner of substantially the same size as said first corrugated layer to the second side of said first corrugated layer opposite the side to which said second corrugated layer is affixed, said top liner being affixed after said bottom liner is affixed.

#### 4,339,293 PROCESS AND MACHINE FOR DISPOSING OF STICKY SHEET

Yasuhiro Takahashi, Tokyo; Yoshiharu Ohinata, Toride, and Matsuo Nakamura, Tokyo, all of Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

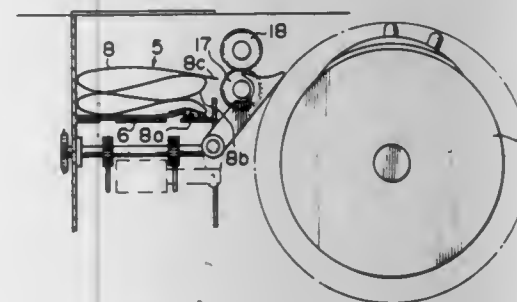
Filed Jan. 22, 1981, Ser. No. 227,257

Claims priority, application Japan, Feb. 15, 1980, 55/17391

Int. Cl.<sup>3</sup> B31F 1/34

U.S. Cl. 156—227

9 Claims



1. A process for disposing of a sticky sheet, comprising the steps of:  
(a) feeding said sticky sheet in a first direction substantially parallel to its surface so that the leading edge of said sticky sheet in said first direction is abutted against a stopper construction; subsequently  
(b) further feeding said sticky sheet in said first direction so that said sticky sheet is folded up into a plurality of layers superposed in a second direction substantially perpendicular to the surface of said sticky sheet during the abovementioned feeding step, said layers then resting upon a support construction which extends from the lower part of said stopper construction in the direction opposite to said first direction; and subsequently  
(c) moving said sticky sheet in a third direction substantially perpendicular to said first and second direction so as to dispose of said sticky sheet, while compressing together said superposed layers in said second direction so as to stick together said superposed layers.

#### 4,339,294 METHOD AND APPARATUS FOR MAKING REELED STRIP MATERIAL

Thomas S. Jones, Billericay, England, assignor to Ciba-Gelby AG, Basel, Switzerland

Filed Dec. 10, 1980, Ser. No. 214,943

Claims priority, application United Kingdom, Dec. 19, 1979, 7943707

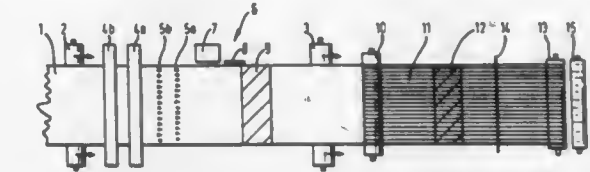
Int. Cl.<sup>3</sup> B32B 31/18

U.S. Cl. 156—252

6 Claims

1. A method of preparing reeled slit web material which comprises transporting a web of material past a punching station and punching a series of holes or slots across the width of the web; then applying across the web material a strip of material covered with pressure sensitive adhesive which adheres to the web material so that all the punched holes or slots are covered by the applied material, passing the web material

to a slitting machine which slits the web into strips so that each strip contains a covered punched hole or slot with the covering on the outer side of the strip as it is reeled up, cutting each strip so that a covered punched hole or slot is at or close to either the leading end or the trailing end of each strip, then when the punched hole or slot is close to the leading end of the strip leading each strip to a reeling core and pressing down the leading end on the core so that the pressure sensitive adhesive



adheres thereto through the punched hole or slot and secures the strip to the core and reeling up the strip on the core and/or when the punched hole or slot is at or close to the trailing end of each strip reeling the strip on to the core until all the strip is wound on the core and then pressing down the trailing end of the strip on the underlying turn of material so that pressure sensitive adhesive adheres thereto through the punched hole or slot and secures the trailing end of the strip to the reeled strip.

4,339,295  
**HYDROGEL ADHESIVES AND SANDWICHES OR LAMINATES USING MICROWAVE ENERGY**  
John W. Boretos, Rockville, Md., and Norio Iriguchi, Fujii, Japan, assignors to The United States of America as represented by the Secretary of the Department of Health & Human Services, Washington, D.C.  
Continuation of Ser. No. 971,550, Dec. 20, 1978, abandoned.  
This application Jun. 23, 1980, Ser. No. 161,823  
Int. Cl.<sup>3</sup> B29C 19/02

U.S. Cl. 156—275.7

2 Claims

1. A method of bonding substrates using a hydrogel adhesive selected from one member of the group consisting of an interpolymer of poly(N-vinyl-2-pyrrolidone)/polyurethane and a polyurethane derived from an isocyanate and a polyglycol wherein the hydrogel adhesive is applied to each of the substrates to be joined, the hydrogel surfaces contacted and the assembly so formed thereafter exposed to microwave energy to effect bonding of the substrates, said bonding being carried out at atmospheric pressure and the resulting bond being temporary and frangible by water.  
2. A method of bonding substrates using a hydrogel adhesive selected from one member of the group consisting of an interpolymer of poly(N-vinyl-2-pyrrolidone)/polyurethane and a polyurethane derived from an isocyanate and a polyglycol wherein the hydrogel adhesive is applied to each of the substrates to be joined, the hydrogel surfaces contacted and the assembly so formed thereafter exposed to microwave energy to effect bonding of the substrates, said bonding being carried out at elevated pressure in a pressure vessel and the resulting bond is permanent.

#### 4,339,296 APPARATUS FOR ADJUSTABLY FORMING PATTERN IN A STRIP

Michael T. Gursky, and William W. Pehoda, both of Lehigh County, Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Division of Ser. No. 141,434, Apr. 7, 1980, Pat. No. 4,320,192, which is a division of Ser. No. 8,621, Feb. 1, 1979, Pat. No. 4,227,983. This application Apr. 13, 1981, Ser. No. 253,455

Int. Cl.<sup>3</sup> C23F 1/02

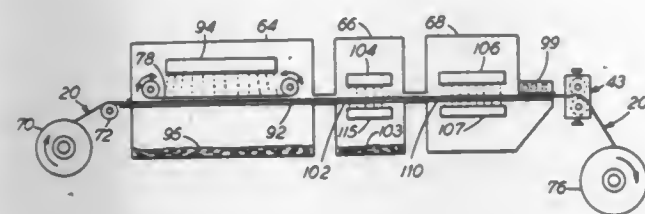
U.S. Cl. 156—345

14 Claims

1. Apparatus for forming a pattern in a strip of metal foil having no substantial resistance to bending, such strip being disposed in a substantially horizontal plane, comprising:



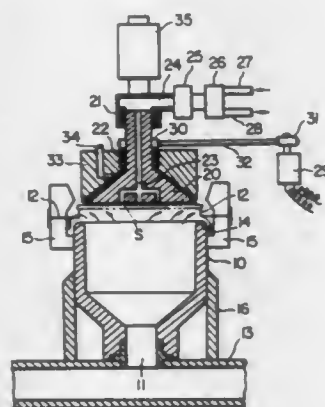
means for driving the strip in a lengthwise direction;  
means for guiding the driven strip over support means through a succession of substantially simultaneously operating, forming means for forming the pattern in the strip, each means requiring a separate exposure time interval suitable for such forming; and



means, unattached to the strip, for shielding said strip at one or more of the forming means such that, along a portion of each respective forming means, the pattern is generally shielded and, along another portion of the respective forming means, the pattern on the strip is generally exposed for a respective time interval suitable for said forming.

**4,339,297**  
**APPARATUS FOR ETCHING OF OXIDE FILM ON SEMICONDUCTOR WAFER**  
Seiichiro Aigo, 3-15-13, Negishi, Daito-ku, Tokyo, Japan  
Filed Apr. 14, 1981, Ser. No. 254,043  
Int. Cl.<sup>3</sup> B44C 1/22; C03C 15/00, 25/06  
U.S. Cl. 156—345

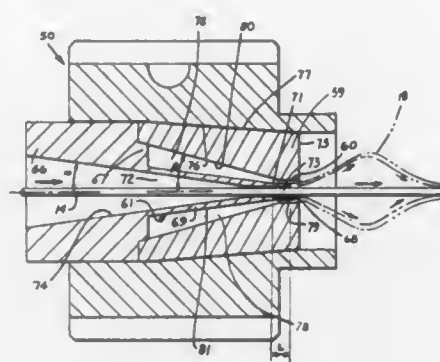
6 Claims



1. An apparatus for applying photo-etching on one surface of a semiconductor wafer formed with oxide film, which comprises;  
a cup-shaped basin having at the bottom thereof a vertical passage for introducing etching liquid,  
a chuck rotatably supported above said basin for vacuum-absorbing a semiconductor wafer at the bottom surface thereof,  
support means for supporting a wafer temporarily and horizontally before the wafer is vacuum-absorbed by the chuck,  
said one surface of a wafer which is downward facing being contacted with etching liquid that is blown vertically upward through said vertical passage of the basin, to thereby prevent the upper surface of a wafer from being contacted with etching liquid, and  
means for rotating said chuck to remove any gas resulted on the one surface of a wafer.

**4,339,298**  
**APPARATUS FOR INSULATING RELATIVELY FLEXIBLE CONDUCTORS**  
William M. Kanotz, Baldwin, Md.; John J. Mottine, Jr., Red Bank; Robert F. Staats-Westover, Princeton, both of N.J., and Max K. Wilson, Cockeysville, Md., assignors to Western Electric Company, Inc., New York, N.Y.  
Filed Jan. 29, 1981, Ser. No. 229,434  
Int. Cl.<sup>3</sup> B29D 23/05  
U.S. Cl. 156—498

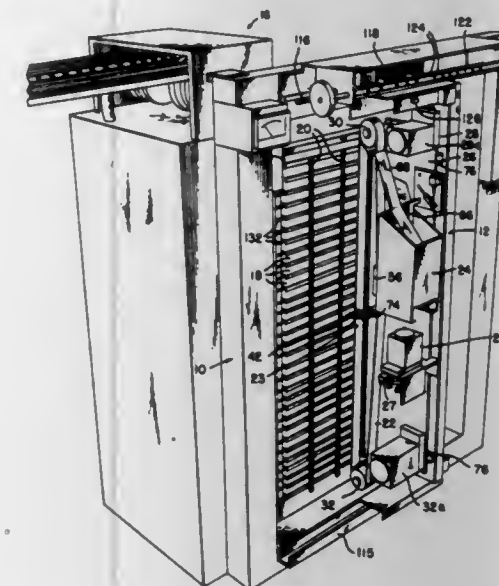
5 Claims



1. An apparatus for tube extruding a crystalline thermoplastic elastomer about a relatively flexible conductor, said apparatus including:  
an extrusion head having a passage therethrough;  
an extrusion die mounted at one end of said extrusion head, said die having an exit port which communicates through a cylindrical land, having a length L, with a cavity of said extrusion die, said die cavity including a generally frusto-conical shaped portion which converges toward said land; means for advancing successive increments of a length of a relatively flexible conductor along a path which is aligned with an axis of said cavity of said die;  
a core tube having a passageway through which the conductor is advanced, said core tube being mounted in said cavity of said die with said passageway in axial alignment with said exit port of said die for guiding the conductor toward said exit port and with a free end of said core tube being positioned within said land of said die and spaced from said exit port a distance which is in the range of 0.3 to 0.5 L, said die cavity having an inner surface which cooperates with an outer surface of said core tube to define a flow passage that communicates with said exit port;  
means for moving while working the thermoplastic elastomer along said flow passage and through said exit port of said die as an extrudate which is spaced from the conductor adjacent to said free end of said core tube;  
means for expanding the extrudate outwardly from the conductor and for cooling the extrudate to orient molecularly the thermoplastic elastomer and enhance its crystalline growth; and  
means for controlling said advancing means and said means for expanding the extrudate outwardly to cause the extrudate to be drawn down concentrically about the conductor after a predetermined time to form an insulation cover which can move relative to the conductor with the molecularly oriented crystalline elastomer being effective to provide an insulated conductor having a substantially uniform diameter.

**4,339,299**  
**SHEET BINDING SYSTEM**  
Donald L. Snellman, 2807 W. Galer, Seattle, Wash. 98199; Barry J. Lewis, 31511 41st Ave. SW., Federal Way, Wash. 98003; Arthur G. Saunders, 19827 Maple Valley Hwy., Maple Valley, Wash. 98038, and Wesley W. Hester, 1007 144th Pl. SE., Bellevue, Wash. 98007  
Division of Ser. No. 961,565, Nov. 17, 1978, Pat. No. 4,242,174.  
This application Mar. 3, 1980, Ser. No. 126,450  
Int. Cl.<sup>3</sup> B32B 31/00; B65H 37/00; B05C 1/00  
U.S. Cl. 156—563

3 Claims



1. An adhesive binding apparatus for edge binding multiple sets of sheet material held in a stack of multiple trays, comprising:  
adhesive application means including an endless adhesive transfer belt;  
an adhesive dispenser for metering adhesive onto the transfer belt; and  
means metering a continuous strip of adhesive from the adhesive dispenser onto the transfer belt of narrower width than the width of the belt so that the adhesive does not migrate to the back side of the belt, the metering means including a metering block provided with raised lands on opposite sides thereof parallel to the direction of travel of the adhesive transfer belt and spaced apart to form a well therebetween having a width less than the width of the adhesive transfer belt for holding the adhesive, a passage in the metering block for receiving the adhesive from the adhesive dispenser to the well, an insert at the lower end of the well having a thickness less than the depth of the well for controlling the thickness of adhesive metered onto the adhesive transfer belt, and cushion means engaging the side of the adhesive transfer belt opposite the metering block for biasing the adhesive transfer belt into contact with the raised lands of the metering block with sufficient force to substantially prevent the adhesive metered onto the adhesive transfer belt from migrating beyond the edges of the adhesive transfer belt.

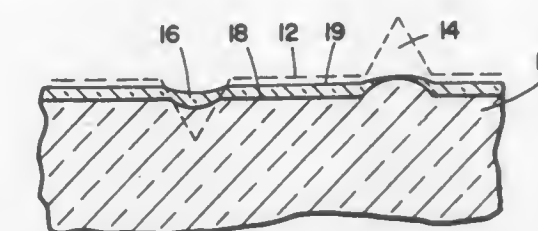
**4,339,300**  
**PROCESS FOR SMOOTHING SURFACES OF CRYSTALLINE MATERIALS**  
Lowell A. Noble, 18138 Bancroft Ave., Monte Sereno, Calif. 95030  
Filed Jul. 25, 1977, Ser. No. 818,817  
Int. Cl.<sup>3</sup> C30B 23/08

U.S. Cl. 156—601

3 Claims

1. The process of surface-polishing a crystalline body comprising the steps of:  
(a) heating said body to a temperature less than the melting

temperature thereof and greater than two-thirds of said melting temperature thereof;  
(b) removing material from the surface of said body to be polished at a given rate and substantially atomically by sputtering;  
(c) simultaneously depositing material by sputtering of material from another body of the same composition as the



material of said body substantially atomically on said surface of said body to be polished at a rate closely approaching and not substantially greater than said given rate of removal and  
(d) controlling at least one of said removal rate and said deposition rate independently of the other to establish and maintain a chemical non-equilibrium condition.

**4,339,301**  
**METHOD FOR PRODUCING A SINGLE CRYSTAL OF FERRITE**  
Seiichi Matsuzawa, Kuwana, and Syunzo Mase, Tobishima, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan  
Filed Apr. 20, 1981, Ser. No. 255,506  
Claims priority, application Japan, May 2, 1980, 55/59167  
Int. Cl.<sup>3</sup> C30B 1/10

3 Claims

1. In a method for producing single crystal of ferrite in which a polycrystal of ferrite and a single crystal of ferrite are heated in contact with each other to grow the single crystal of ferrite toward the polycrystal of ferrite, the improvement comprising using as the polycrystal of ferrite a polycrystal of ferrite produced by using iron oxide containing iron oxide having spinel structure, iron oxide having hysteresis of spinel structure of mixture of these iron oxides in an amount of not less than 60% by weight calculated as Fe<sub>2</sub>O<sub>3</sub> and effecting the heating at a temperature lower than the temperature at which the discontinuous grain growth of the polycrystal of ferrite is caused.

**4,339,302**  
**SEMICONDUCTOR MATERIALS**  
Marc M. Faktor, Bushey Heath, and John Haigh, Ipswich, both of England, assignors to The Post Office, London, England  
Filed Sep. 5, 1980, Ser. No. 184,620  
Claims priority, application United Kingdom, Sep. 10, 1979, 7931278; Dec. 28, 1979, 7944418  
Int. Cl.<sup>3</sup> C30B 29/40

19 Claims

1. A process for purifying a molten Group III element Q selected from the group consisting of gallium, indium, thallium and mixtures thereof in admixture with a Group VI element X selected from the group consisting of oxygen, sulfur, selenium and tellurium, the purification being sufficient to allow the epitaxial growth of a substantially dopant-free crystal Q from molten QX, said process comprising adding an element M, which is an alkaline earth metal excluding magnesium and which is capable of forming with the element X a stable solid compound substantially insoluble in liquid Q, to the melt provided that, if the M atoms are not too large to enter the lattice of the crystal, the stable solid compound MX and any excess M are separated from the melt.



- 4,339,303**  
**RADIATION STRESS RELIEVING OF SULFONE POLYMER ARTICLES**  
 David C. Frisch, Baldwin, and Wilhelm Weber, Hicksville, both of N.Y., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.  
 Filed Jan. 12, 1981, Ser. No. 223,944  
 Int. Cl.<sup>3</sup> B44C 1/22; C03C 15/00, 25/06; C23F 1/02  
 U.S. Cl. 156—629 9 Claims

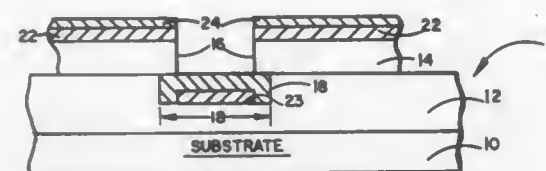


2. A method of preparing a blank for use in the preparation of a printed circuit board which method comprises:  
 exposing a sulfone polymer film, sheet or substrate to electromagnetic radiation at one or more ranges of frequencies which are capable of being absorbed by said film, sheet or substrate and which are effective for stress relieving essentially without heat induced softening or flowing of the sulfone polymer, for a time period sufficient to absorb enough energy to stress relieve and/or stabilize the sulfone polymer against stress cracking, the radiation selected from the group consisting of microwave, infrared and ultraviolet radiation;  
 mechanically treating said film, sheet or substrate to produce holes therethrough;  
 repeating the radiation treatment step;  
 chemically treating said film, sheet or substrate with a polar solvent capable of swelling the outer surface of said film, sheet or substrate to promote adhesion of metal to the surface thereof after an etching step; and  
 treating the surface of said film, sheet or substrate with a highly oxidizing solution or with a plasma at a temperature and for a time period sufficient to provide sites for chemical and/or mechanical linking of the surface to a metal layer attached thereto.

- 4,339,304**  
**METHOD OF TREATING DIAMOND**  
 Anatoly P. Grigoriev, ulitsa Ordzhonikidze, 5, kv. 29; Sara K. Lifshits, ulitsa Dzerzhinskogo, 3, kv. 38, and Pavel P. Shamaev, ulitsa Pionerskaya, 50/1, kv. 13, all of Yakutsk, U.S.S.R.  
 Filed Dec. 30, 1980, Ser. No. 221,209  
 Int. Cl.<sup>3</sup> B44C 1/22; C03C 15/00, 25/06  
 U.S. Cl. 156—635 3 Claims

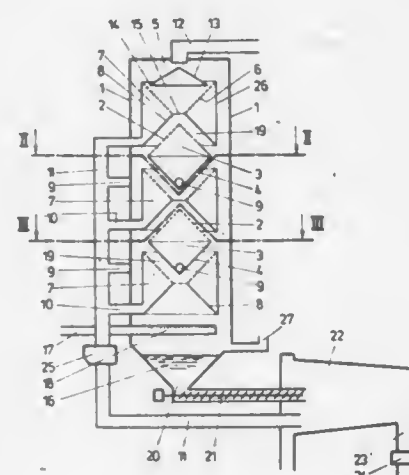
1. The method of treating diamond, which comprises contacting a diamond with a template made of a metal or an alloy which at a temperature of about 600° C. to 1800° C. dissolves the diamond carbon, heating said diamond and template in contact therewith at a temperature of about 600° C. to about 1800° C. under vacuum, or in an inert gas atmosphere or in an atmosphere of a gas which at said temperature does not react with diamond but does react with the diamond carbon which becomes dissolved in said metal or alloy, whereby said template in contact with said diamond at said temperature in said atmosphere dissolves diamond carbon in contact therewith, thus changing the appearance of said diamond.

- 4,339,305**  
**PLANAR CIRCUIT FABRICATION BY PLATING AND LIFTOFF**  
 Addison B. Jones, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.  
 Filed Feb. 5, 1981, Ser. No. 231,712  
 Int. Cl.<sup>3</sup> B44C 1/22; C03C 15/00, 25/06; B29C 17/08  
 U.S. Cl. 156—650 24 Claims



1. The method of manufacturing predetermined microcircuit conductor patterns, which includes:  
 (a) forming on the surface of a plane substrate a layer of insulator material,  
 (b) forming a layer of resist on said layer of insulator material,  
 (c) patterning said layer of resist to define a channel pattern,  
 (d) etching said channel pattern into said insulator material layer  
 (dd) with relatively overwide channel to provide channel bases spaced from and free of communication with said substrate,  
 (e) conditioning the channel bases to receive plating material, and thereafter  
 (f) filling said overwide channels with said plating material on said conditioned bases spaced from the substrate and extending to a height at least substantially co-planar with said insulator material to define said predetermined conductor patterns,  
 (g) removing said mask and plated material thereon to uncover completely said conductor.

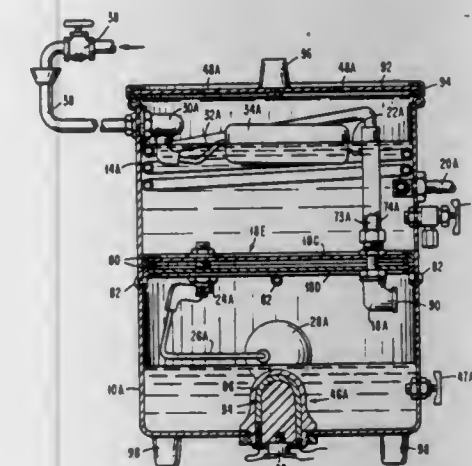
- 4,339,306**  
**APPARATUS FOR DRYING ORGANIC MATERIAL, PARTICULARLY BROWN COAL**  
 Alois Janusch, Leoben-Seegraben, Austria, assignor to Voest-Alpine Aktiengesellschaft, Vienna, Austria  
 Filed Oct. 14, 1980, Ser. No. 196,768  
 Claims priority, application Austria, Oct. 15, 1979, 6712/79  
 Int. Cl.<sup>3</sup> B01D 1/14  
 U.S. Cl. 159—15 18 Claims



1. Apparatus for drying organic materials, particularly brown coal, by means of steam and of hot water, comprising a space maintained under a pressure exceeding atmospheric pressure, through which space the organic materials are fed in form of a sludge or suspension and in which space the organic materials are at least partially separated from the water, characterized in that at the upper end of the space maintained under a pressure exceeding atmospheric pressure at least one supply

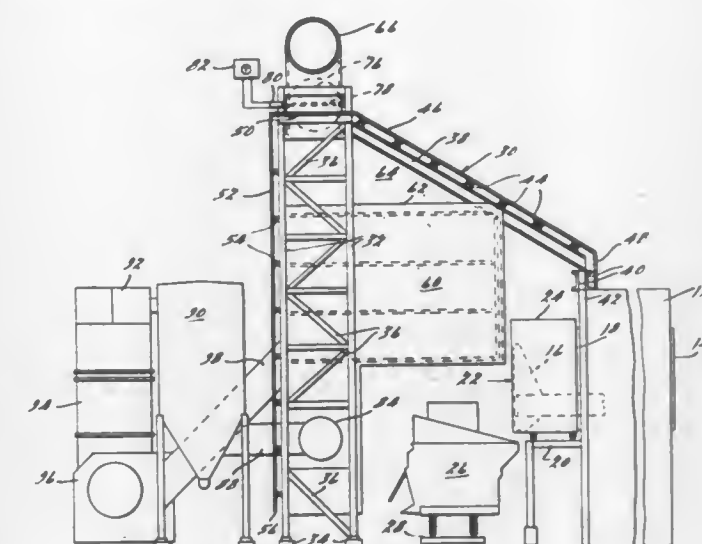
opening is provided, that at the lower end of said space at least one discharge opening for solid materials is provided, that a steam supply line opens into the lower end of said space and in that between said supply opening and said discharge opening sieves are obliquely arranged which are roofing chambers limited by water-impermeable walls and having drain channels connected thereto and in that further a plurality of sieves is arranged in the manner of cascades one above the other, the bottom edges of the sieves being located above the most elevated area of the sieve arranged immediately below each sieve considered.

- 4,339,307**  
**DISTILLATION APPARATUS**  
 John C. Ellis, Jr., 493 Ellendale Ave., Port Chester, N.Y. 10573  
 Continuation-in-part of Ser. No. 761,332, Jan. 21, 1977, abandoned. This application Mar. 20, 1979, Ser. No. 22,321  
 Int. Cl.<sup>3</sup> B01D 3/02; C02F 1/04  
 U.S. Cl. 202—176 9 Claims



1. Water distillation apparatus comprising a housing having a bottom, a peripheral side wall and an open top, a partition within and disposed transversely of said housing to form upper and lower chambers, a condenser within said upper chamber having an inlet and outlet, said inlet extending into said lower chamber and said outlet extending from said housing, tubular means coupling said chambers, means for supplying water to be distilled to said upper chamber to at least partially immerse said condenser and feed water to said lower chamber, means for controlling the flow of water to said lower chamber to maintain a predetermined water level therein, means for the circulation of air over the surface of the water in said upper chamber whereby the water in said lower chamber upon being heated will vaporize, flow through said condenser which is cooled by the surrounding water to condense the vapor and discharge the condensate, the heat imparted to the water in the upper chamber liberating volatile impurities in the water prior to distillation which impurities are constantly removed by said circulation means and an electric heating element in said lower chamber, said condenser comprising resilient tubing in the form of a coil with vertically spaced turns, an inlet on the uppermost turn and an outlet on the lowermost turn with the outlet extending through and secured to said housing wall, said partition including a peripheral gasket of resilient material engaging said partition and frictionally engaging the wall of said housing, and said inlet including means extending through and secured to said partition whereby said coil functions to impede displacement of said partition caused by pressure of steam in said lower chamber.

- 4,339,308**  
**MULTI-CELL EMISSION CONTROL SYSTEM**  
 Morton E. Harris, Bloomfield Hills, Mich., assignor to The Mercier Corporation, Birmingham, Mich.  
 Filed Dec. 29, 1980, Ser. No. 220,851  
 Int. Cl.<sup>3</sup> C10B 33/00, 33/12, 41/00  
 U.S. Cl. 202—263 6 Claims



1. In an apparatus for controlling emissions to the atmosphere of gaseous and particulate effluents from an aligned row of plural transverse reactors disposed on a base each having a port in the discharge end thereof for intermittently discharging a reaction mass therefrom and a carriage movable along the aligned discharge ends for receiving the reaction mass, the improvement comprising a three-dimensional enclosure extending along the discharge end of the reactors including a generally upright first wall having a lower portion disposed in substantially gas sealing relationship on the discharge end portion of the reactors, a generally upright second wall spaced outwardly from the first wall having a lower edge thereof spaced upwardly from the base, a roof panel connecting said first and second walls at a position above the reactors, a pair of end walls connecting said first, second and roof walls; and at least one intermediate wall extending transversely between said first and second and roof walls dividing said enclosure into a plurality of cells, said intermediate wall formed with an opening adjacent to said roof wall for providing communication between the upper portions of adjacent cells, said enclosure including a framework for supporting said roof wall and first wall in a substantially cantilevered fashion above the discharge ends of the reactors, central duct means including a plurality of inlet ports each disposed in communication with a cell at a position adjacent to the underside of said roof wall, at least a portion of said roof wall angularly inclined upwardly defining an upper collection zone for the effluent and disposed in communication with said inlet port, valve means in each inlet port positionable to and from a substantially closed standby position and an open exhaust position, exhaust means connected to said duct means operable at a low standby capacity and a high exhaust capacity for withdrawing effluent from said cells, said duct means including extraction means for extracting particulate matter from the exhausted effluent, and means for moving said valve means in an inlet port of a selected cell in which a discharge operation is being performed from said standby to said exhaust position and for activating said exhaust means from said standby to said exhaust capacity for at least the duration of said discharge operation and back to said standby position and standby capacity at the conclusion thereof, said valve means when in said standby position disposed in a partially open position to continuously exhaust any effluent accumulation within each cell between successive discharge operations.



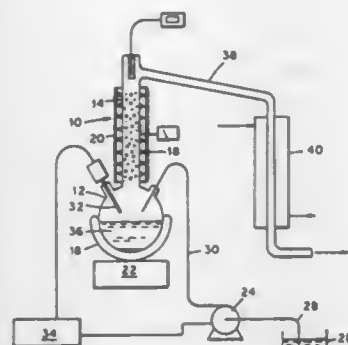
**4,339,309**  
**METHOD FOR REMOVING FLUORIDE**  
**CONTAMINATION FROM NITRIC ACID**

David J. Pruett, Knoxville, and William B. Howerton, Kingston, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 5, 1981, Ser. No. 260,622  
 Int. Cl.<sup>3</sup> B01D 3/16, 53/20

U.S. Cl. 203—29

3 Claims



1. A method for purifying a solution containing a fluoride, nitric acid, and water, comprising the steps of: converting said solution to a vapor; contacting said vapor with particles formed of a material selected from the group consisting of calcined alumina, calcined zirconia, or mixtures thereof, to combine the fluoride in said vapor with the particles; and condensing the vapor from which the fluoride has been removed.

**4,339,310**  
**METHOD OF SURFACE TREATMENT OF TIN PLATED**  
**CANS AND TIN PLATED STEEL SHEETS**

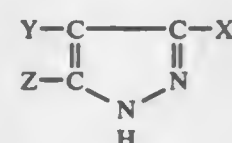
Nobuyuki Oda, Yokohama, and Haruyoshi Terada, Tanashi, both of Japan, assignors to Hooker Chemicals & Plastics Corp., Warren, Mich.

Filed Nov. 26, 1980, Ser. No. 210,706  
 Int. Cl.<sup>3</sup> C23F 7/14

U.S. Cl. 204—38 R

8 Claims

1. A chromium-free aqueous composition, comprising: (a) at least one soluble compound selected from the group consisting of titanium and zirconium compounds; (b) at least one pyrazole compound of the formula:



- wherein X, Y and Z are independently selected from the group consisting of hydrogen atom, hydroxyl group, alkyl group of up to 5 carbon atoms, amino group and nitro group;
- (c) at least one myoinositol phosphate ester having 2-6 phosphate groups per molecule; and
  - (d) at least one silicon compound;
- said composition exhibiting a pH value in the range of from 1.0 to 10.0.

**4,339,311**  
**BATHS AND PROCESSES FOR ELECTRODEPOSITING**  
**PALLADIUM**

Michael Branik, Muehlheim, Fed. Rep. of Germany, assignor to Heraeus Quarzschmelze GmbH, Hanau am Main, Fed. Rep. of Germany

Filed Oct. 1, 1980, Ser. No. 192,753

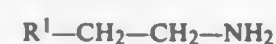
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1979, 2939920

Int. Cl.<sup>3</sup> C25D 3/52

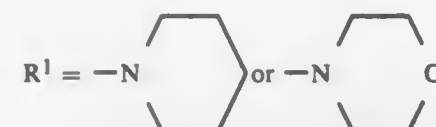
U.S. Cl. 204—47

6 Claims

5. An ammonia-free aqueous bath for electrodepositing palladium containing a palladium (II) compound and an amine of the formula:



wherein



6. An ammonia-free aqueous bath for electrodepositing palladium containing a palladium (II) compound and an amine selected from the group consisting of: N,N,2,2-tetramethyl-1,3-diaminopropane, 2,2-dimethyl-1,3-diaminopropane, N,N-dimethyl-1,3-diaminopropane, N-(2-aminoethyl)-1,3-diaminopropane, N-methyl-bis-(3-aminopropyl)-amine, N,N'-bis-(3-aminopropyl) 1,2-diaminoethane, N,N,2,2-tetramethyl-3-aminopropanol, 2,2-dimethyl-3-aminopropanol, 3-methoxypropylamine and 3-butoxypropylamine.

**4,339,312**  
**CONTINUOUS PROCESS FOR THE DIRECT**  
**CONVERSION OF POTASSIUM CHLORIDE TO**  
**POTASSIUM CHLORATE BY ELECTROLYSIS**

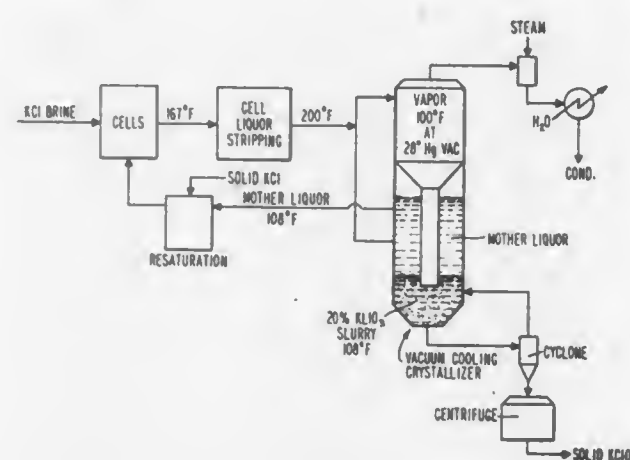
Wayne E. Brooks, Bryan, Tex.; Jimmie R. Hodges, Downingtown, Pa., and Morris P. Walker, Benton, Ky., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 10, 1980, Ser. No. 185,972

Int. Cl.<sup>3</sup> C25B 1/14, 1/26

U.S. Cl. 204—95

10 Claims



1. A continuous closed-loop process for the direct production by electrolysis of potassium chlorate from potassium chloride, comprising the steps of: (a) electrolyzing an aqueous solution of potassium chloride in an electrolytic cell having a metal cathode and a coated metal anode, said coating comprising a precious metal, a precious metal alloy, a precious metal oxide or a platinum; (b) passing said aqueous solution through a heat exchanger using a heated cooling medium which is at a temperature which is below the equilibrium temperature of said aqueous solution.

- (c) removing from said cell an effluent solution containing potassium chlorate formed by said electrolysis of potassium chloride;
- (d) cooling said effluent until crystals of the chlorate form;
- (e) removing said chlorate crystals from said effluent;
- (f) enriching said effluent by adding a controlled amount of potassium chloride thereto; and
- (g) returning and adding the enriched effluent to said electrolytic cell for further electrolysis, at a volume rate equal to the rate at which the unenriched effluent is removed from the cell in step (c).

**4,339,313**  
**METHOD OF OPERATING AN ELECTROLYTIC CELL**  
 Thomas A. Rechlicz, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 127,291, Mar. 5, 1980. This application May 30, 1980, Ser. No. 154,707

Int. Cl.<sup>3</sup> C25B 1/34, 13/02, 13/03

U.S. Cl. 204—98

22 Claims

1. In a method of operating an electrolytic cell having an anolyte compartment with an anode therein, a catholyte compartment with a cathode therein, the anolyte compartment being separated from the catholyte compartment by an asbestos diaphragm, which method comprises feeding alkali metal chloride brine to the anolyte compartment, imposing an electrical potential across the cell, and evolving chlorine at the anode and hydrogen at the cathode, the improvement wherein the diaphragm is slurry deposited, comprised of a self-adherent, entangled mass of nonwoven unoriented fibers, and substantially spaced from the cathode, said diaphragm and cathode having irregular contact with channels therebetween, whereby the diaphragm facing surfaces of the cathode are substantially contacted by electrolyte, and wherein the hydrogen is collected between the diaphragm and the cathode.

**4,339,314**  
**SOLID POLYMER ELECTROLYTE AND METHOD OF**  
**ELECTROLYZING BRINE**

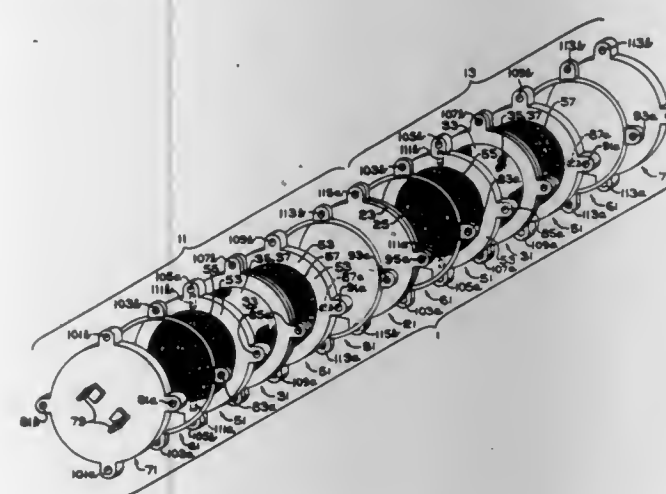
Howard H. Hoekje, Portland, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 14,465, Feb. 23, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 235,174

Int. Cl.<sup>3</sup> C25B 1/34, 13/08, 1/06, 11/10

U.S. Cl. 204—98

16 Claims



1. In a method of electrolyzing brine in an electrolytic cell having a permionic membrane with cathodic electrocatalyst bearing upon one surface of the permionic membrane, which method comprises feeding alkali metal chloride to the cell, imposing an electrical potential across the cell, and evolving hydrogen at the cathode electrocatalyst, the improvement wherein the cathodic electrocatalyst comprises particles consisting essentially of borides of transition metals chosen from the group consisting of borides of titanium, vanadium, niobium, tantalum, and tungsten.

**4,339,315**  
**PROCESS FOR PREPARING LITHOGRAPHIC**  
**PRINTING PLATE BASES**

Nobuji Kikuchi, Machida; Yoshlyuki Kisaka; Kazuo Torige, both of Tokyo, and Masayuki Onose, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Mar. 6, 1981, Ser. No. 241,216

Claims priority, application Japan, Mar. 26, 1980, 55-38469  
 Int. Cl.<sup>3</sup> C25F 3/02

U.S. Cl. 204—129.85

11 Claims



1. A process for preparing lithographic printing plate bases, which comprises electrolytically etching a sheet made of aluminum or an aluminum alloy in an aqueous electrolytic solution containing 0.1 to 1 mole/l of hydrochloric acid and 0.01 to 1 mole/l of citric or malic acid at a bath temperature of 10° to 40° C.

**4,339,316**  
**INTERMEDIATE LAYER FOR SEATING RHM TUBES IN**  
**CATHODE BLOCKS**

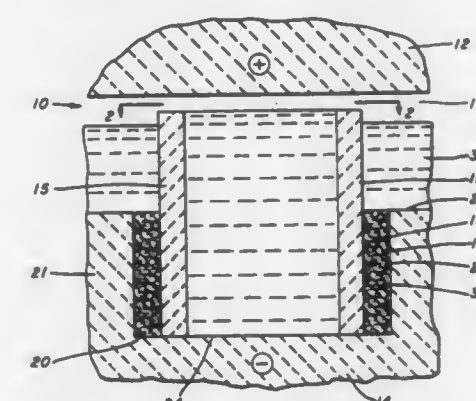
Richard W. Peterson, Lower Burrell, and Perry A. Foster, Jr., New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 22, 1980, Ser. No. 188,985

Int. Cl.<sup>3</sup> C25C 7/00, 3/06, 7/02

U.S. Cl. 204—243 R

11 Claims



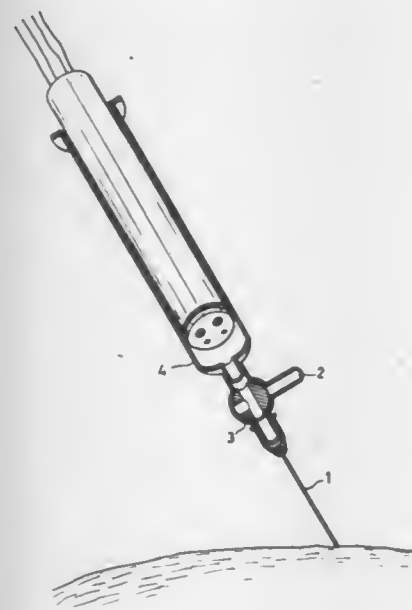
1. A cathode suitable for use in an electrolytic cell wherein metal is produced in a molten state by electrolyzing a compound of the metal in a chamber between an anode and a cathode, said cathode being spaced from the anode and comprising: (a) a base having a principal surface facing the anode, said base defining a seat recessed from the principal surface, said seat including a side wall intersecting the principal surface; (b) a body of a refractory hard metal including (1) a proximal portion carried by the base and embedded in the seat, said proximal portion including a wall segment opposed to the side wall of the seat, and



- (2) a distal portion extending outwardly of the principal surface in the direction of the anode; and  
 (c) an intermediate layer of fibrous carbonaceous material for cushioning differential thermal expansion and contraction of the base and the body, said layer extending between and engaging the side wall of the seat and the wall segment of the proximal portion, said layer being recessed from said principal surface.

4,339,317

**DEVICE FOR PERFORMING MEASUREMENTS ON FLUIDS, DIRECTLY IN THE SAMPLE CONTAINER**  
 Franco Meattini, Siena; Giorgio Papeschi, Florence; Paolo Tarli, Monteriggioni, and Paolo Neri, Siena, all of Italy, assignors to Istituto Sieroterapico e Vaccinogeno Toscano "Sclavo" S.p.A., Siena, Italy  
 Continuation of Ser. No. 52,506, Jun. 27, 1979, abandoned. This application Nov. 5, 1980, Ser. No. 204,220  
 Claims priority, application Italy, Jul. 5, 1978, 25351 A/78  
 Int. Cl.<sup>3</sup> G01N 27/28, 27/30  
 U.S. Cl. 204—195 B 10 Claims



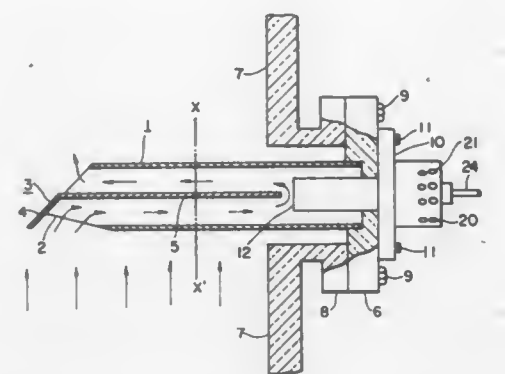
1. A device for performing analytical measurements on body fluids, such as blood, comprising:  
 a disposable syringe having opposing ends with a disposable needle at one end for drawing the body fluids within the syringe, and  
 a reusable cylindrical body slidably insertable into and movable in said syringe from and through said other syringe end, wherein said body is shaped relative to the walls of the syringe between the ends thereof so as to act like a piston therein for withdrawing said body fluids, and wherein said body includes a plurality of sensors at the end thereof adjacent said needle for contacting body fluids drawn within said syringe, and means connected to said sensors and at the other end of said body for connection to instruments for detection and displaying data.

4,339,318

**OXYGEN GAS ANALYZING DEVICE**  
 Takeo Tanaka, and Osamu Yamamoto, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan  
 Filed Dec. 19, 1980, Ser. No. 218,237  
 Claims priority, application Japan, Dec. 27, 1979, 54/180331[U]; Nov. 4, 1980, 55/157769[U]  
 Int. Cl.<sup>3</sup> G01N 27/58  
 U.S. Cl. 204—195 S 11 Claims

1. An oxygen gas analyzing device comprising: a solid electrolytic element having an oxygen ion dependent conductivity; first and second porous electrodes provided on respective first and second sides of said element; a gas sampling tube adapted to protrude into a flue through a wall of said flue, said sampling tube bringing gas from said flue into contact with said first

electrode while an oxygen reference medium is brought into contact with said second electrode to generate an electromotive force between said two electrodes corresponding to the oxygen density of said gas; a hollow cylindrical ceramic tube; said solid electrolytic element being disposed in said cylindrical ceramic tube, dividing the hollow interior of said ceramic tube into first and second interior portions; a heater element for heating said solid electrolytic element disposed in the wall of said ceramic tube, said oxygen reference medium being introduced through one end of said ceramic tube to contact said second electrode while said gas from said flue is introduced

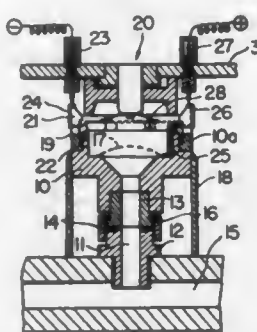


through said gas sampling tube and through the other end of said ceramic tube to contact said first electrode; and a partition board provided in said gas sampling tube extending toward said ceramic tube from a protruding end of said gas sampling tube in said flue to divide the interior of said gas sampling tube into a gas flow-in path and a gas flow-out path, wherein the dynamic pressure of said gas flowing in said flue causes said gas to enter said gas sampling tube through said gas flow-in path to contact said first electrode, turn at the end of said partition board and flow through said gas flow-out path to return to said flue.

4,339,319

#### APPARATUS FOR PLATING SEMICONDUCTOR WAFERS

Seiichi Aigo, 3-15-13, Negishi, Daito-ku, Tokyo, Japan  
 Filed Dec. 10, 1980, Ser. No. 214,638  
 Claims priority, application Japan, Aug. 16, 1980, 55-116251[U]  
 Int. Cl.<sup>3</sup> C25D 17/06, 17/04  
 U.S. Cl. 204—224 R 5 Claims

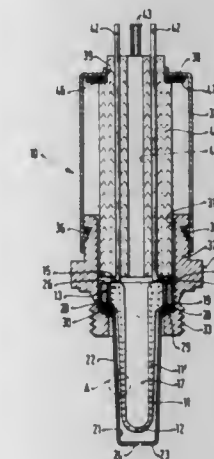


1. An apparatus for plating semiconductor wafers to bump-plate one surface of the wafers, which comprises a plurality of cup-shaped plating basins secured horizontally within a container, a plurality of holders secured in a cover which is movable relative to and above said container, each said holder being aligned and engageable with a relevant one of said plating basins to set a semiconductor wafer therebetween, the respective plating basins including cathode and anode and being provided with a plurality of protrusions at its uppermost region, at least three of said protrusions having a pin of which tip is vertically or slantly upwards oriented and sharply pointed, said pins being used as said cathode as well as the tips of pins being adapted to support a semiconductor wafer

thereon, a circulating system for blowing up the plating liquid through the respective plating basins, said apparatus being characterized in that the top peripheral portion of each said basin is of a curved convex cross-sectional form to thereby permit the plating liquid to flow over said top peripheral portion of the basin in essentially laminar stream condition by surface tension of the plating liquid.

4,339,320

**HEATED GAS COMPOSITION SENSOR STRUCTURE**  
 Karl-Hermann Friese, and Friedrich Esper, both of Leonberg, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany  
 Filed Oct. 6, 1980, Ser. No. 193,944  
 Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942494  
 Int. Cl.<sup>3</sup> G01N 27/46  
 U.S. Cl. 204—195 S 11 Claims



1. Heated gas composition sensor structure, particularly to determine the composition of combustion exhaust gases, especially for association with an internal combustion engine having  
 a sensing element (11) made of temperature-dependent ceramic including a solid electrolyte body (11') of tubular form, and electrodes (14, 18) applied to different surface regions of said tubular body;  
 and a heating element (25) to heat the sensor element (11) including a tubular carrier (22) surrounding the sensor element,  
 wherein  
 the wall thickness of the tubular carrier (22) is between 0.3 and 0.8 mm;  
 the heating element (25) is secured to the inner wall of the tubular carrier (22);  
 and the distance between the inner wall of the heating element and the outer surface of the sensing element (11) is, as a maximum, 1 mm.

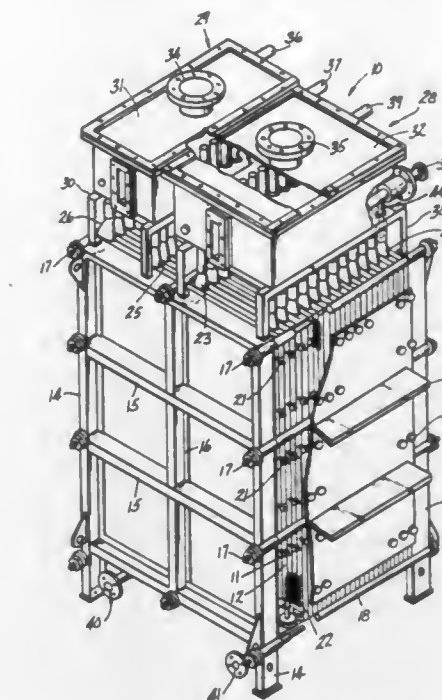
4,339,321

#### METHOD AND APPARATUS OF INJECTING REPLENISHED ELECTROLYTE FLUID INTO AN ELECTROLYTIC CELL

Morton S. Kircher, Clearwater, Fla., assignor to Olin Corporation, New Haven, Conn.  
 Filed Dec. 8, 1980, Ser. No. 213,801  
 Int. Cl.<sup>3</sup> C25B 9/00  
 U.S. Cl. 204—237 22 Claims

1. A method of recirculating electrolyte within a filter press membrane chloralkali electrolytic cell having anolyte and catholyte disengagers in fluid flow communication with electrodes which comprises:  
 (a) recirculating electrolyte from the disengagers into each electrode in a flow stream along a first direction of flow; and  
 (b) injecting fresh electrolyte from an electrolyte replenisher

into the flow stream of recirculating electrolyte parallel to the first direction of flow before the stream enters the

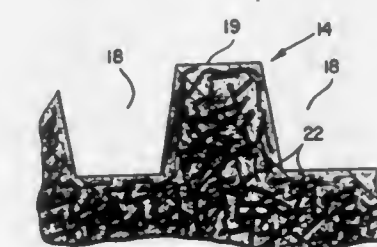


electrode to thereby effect thorough mixing of the fluids prior to the fluids entering each electrode.

4,339,322

#### CARBON FIBER REINFORCED FLUOROCARBON-GRAPHITE BIPOLAR CURRENT COLLECTOR-SEPARATOR

Edward N. Balko, Wilmington, Mass., and Richard J. Lawrance, Hampstead, N.H., assignors to General Electric Company, Wilmington, Mass.  
 Filed Apr. 21, 1980, Ser. No. 142,583  
 Int. Cl.<sup>3</sup> C25B 11/00, 11/12  
 U.S. Cl. 204—255 8 Claims



1. A bipolar current collecting, fluid distributing, separator element for electrochemical cells for conducting current from the anode electrode of one cell unit to the cathode electrode of the adjacent cell unit of the sort including:  
 (a) A pressure molded aggregate of electrically conductive carbon graphite particles and thermoplastic fluorocarbon polymer resin particles in a weight ratio of 2.5:1 to 16:1;  
 (b) The molded aggregate having a fluid impervious main body at least one recessed chamber on one side of said main body and a plurality of spaced, conductive projections extending from the base of said chamber for contacting and permitting current flow to the electrode of cell units,  
 (c) Means communicating with said recessed chamber to permit introduction and removal of fluids,  
 the improvement which comprises randomly distributed, reinforcing graphite fibers within the pressure molded aggregate, the flexural strength, as determined by the maximum stress  $\sigma$ , of said fiber reinforced structure being substantially from 2300 to 6200 psi over a temperature range of 300° to 72° F., with the bulk resistivity being less than  $4 \times 10^{-3}$  ohms/inc.



4,339,323

**BIPOLAR ELECTROLYZER ELEMENT**

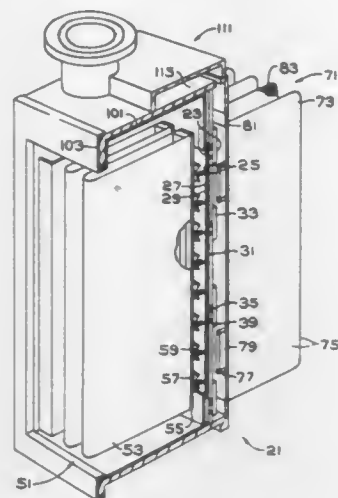
Colonel R. Dilmore, Portland; Carl W. Raetzsch, Jr., Corpus Christi, both of Tex.; Thomas C. Jeffery, Lake Charles, La., and Dallas D. Dupre, III, Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 18, 1980, Ser. No. 188,401

Int. Cl.<sup>3</sup> C25B 9/04, 11/10, 13/08

U.S. Cl. 204—256

8 Claims



1. In a bipolar electrolyzer having a plurality of individual electrolytic cells electrically and mechanically in series with a bipolar element between a pair of adjacent individual cells, the bipolar element having an anodic side with the anodes of the first electrolytic cell of said pair of electrolytic cells depending therefrom, and a cathodic side with the cathodes of the second electrolytic cell of said pair of electrolytic cells depending therefrom, said anodic side of the bipolar element comprising an acidified alkali metal chloride resistant valve metal surface, and said cathodic side of the bipolar element comprising an alkaline alkali metal hydroxide resistant transition metal surface, the improvement wherein said bipolar element comprises: a clad laminate of a valve metal sheet and a transition metal plate joined at interior surfaces thereof; a first transition metal plate intermittently bonded to the exterior surface of the transition metal plate of the clad laminate at first joints; and a second transition metal plate above the first joints and bonded to the first transition metal plate on the side thereof remote from the clad laminate at second joints whereby to protect the first joints from contact with catholyte liquor.

4,339,324

**POLYCELL GAS GENERATOR**

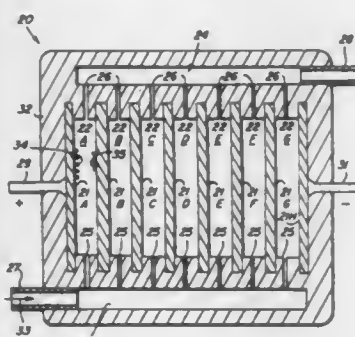
Richard M. Haas, Phoenix, Ariz., assignor to Henes Products Corp., Phoenix, Ariz.

Filed Dec. 3, 1980, Ser. No. 212,274

Int. Cl.<sup>3</sup> C25B 9/00

U.S. Cl. 204—270

10 Claims



2. A polycell gas generator comprising:

a housing defining a cavity, a plurality of parallel chambers within said housing each chamber defining a gas generating cell, a plurality of electrode plates one electrode plate positioned between adjacent chambers, each chamber having inlet and outlet ports extending through said housing, the lengths of the path through said housing of each port being greater than their cross-sectional width dimension, an inlet manifold connected to each of said inlet ports of said chambers for containing electrolyte for circulation through said chambers, an outlet manifold connected to each of said outlet ports of said chambers, said outlet manifold being larger than said inlet manifold to eliminate any pressure buildup of electrolyte within said chamber, and means for conducting electric current through said chambers in a series arrangement laterally to the flow of electrolyte through said chambers.

4,339,325

**ONE PASS PROCESS FOR FORMING ELECTRODE BACKING SHEET**

Frank Solomon, Great Neck, N.Y., and Charles Grun, Matawan, N.J., assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 31, 1980, Ser. No. 202,583

Int. Cl.<sup>3</sup> C25B 13/02, 13/08

U.S. Cl. 204—296

9 Claims

1. A porous, coherent, unsintered, uniaxially oriented backing (wetproofing) layer of fibrillated polytetrafluoroethylene having pore openings ranging from about 0.1 to 40 microns and having an air permeability of about 0.2 ml. per minute per centimeter squared per centimeter of water pressure, said layer being from about 5 to 15 mils thick.

4,339,326

**SURFACE PROCESSING APPARATUS UTILIZING MICROWAVE PLASMA**

Masahiko Hirose, Tsuyoshi Yasui, and Masahiko Yotuyanagi, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

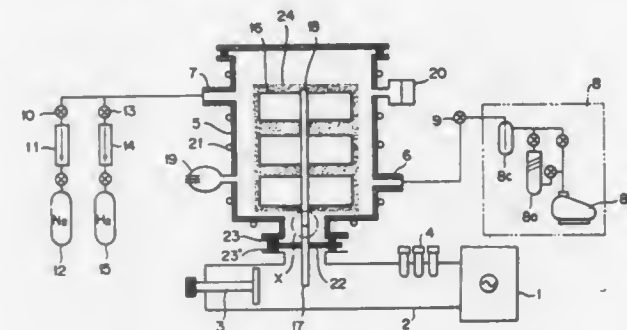
Filed Nov. 19, 1980, Ser. No. 208,404

Claims priority, application Japan, Nov. 22, 1979, 54-150638

Int. Cl.<sup>3</sup> C23C 15/00; C23F 1/00

U.S. Cl. 204—298

9 Claims



1. An apparatus for processing a surface of an object to be processed by utilizing microwave plasma within a plasma producing chamber, which comprises: a microwave power-generating means; a wave guide for transmitting microwaves generated by said microwave power-generating means; a closed vessel constituting the plasma producing chamber provided with an evacuating means and a gas introducing means, and separated from said wave guide by a separating means; an antenna for receiving and transmitting said microwaves,

passing through said separating means so that one end thereof extends into the wave guide and the other end thereof extends into the closed vessel; and a supporting means provided within said closed vessel and attached to said antenna, capable of supporting an electroconductive object to be processed in such a manner that the antenna and the electroconductive object are electrically connected to each other.

4,339,327

**MINIATURE SLAB GEL ELECTROPHORESIS SYSTEM**

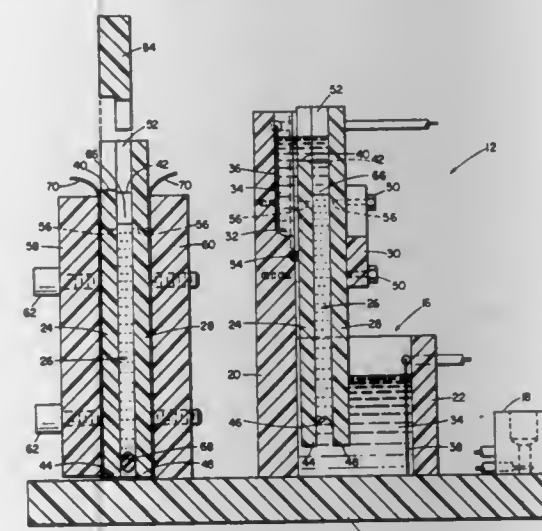
Jonathan M. Tyler, 9126 116th St., Edmonton, Alberta, T6G-1P9, Canada

Filed Apr. 23, 1981, Ser. No. 256,898

Int. Cl.<sup>3</sup> B01D 13/02

U.S. Cl. 204—299 R

18 Claims



1. An electrophoresis system for separating organic molecules, comprising a base an electrophoresis tank mounted on said base, and a pair of electrodes adapted for connection to an external electrical power source said electrophoresis tank including a back plate mounted on said base perpendicular thereto, said back plate having an upper reservoir adapted to receive fluid, one of said electrodes being disposed in said upper reservoir, a lower reservoir mounted on said base adjacent said back plate adapted to receive said fluid, the other of said electrodes being disposed in said lower reservoir, a pair of sample plates adapted to have a layer of gel therebetween releasably mounted to said back plate and parallel thereto, said sample plates having heights less than that of said back plate, a first of said sample plates having a height less than a second of said plates is mounted adjacent to said back plate, the upper end of said first sample plate cooperating therewith for receiving said fluid in said upper reservoir and allowing said fluid to contact a said layer of gel, the lower ends of said sample plates are immersed in said fluid of said lower reservoir for allowing said fluid to contact a said layer of gel, a plate clamping bar adjustably mounted on and parallel to said back plate, said clamping bar being adapted to retain and maintain said sample plates adjacent and parallel to said back plate, said layer of gel being adapted to permit migration of said organic molecules contained therein upon application of an electric field from said power source, and whereby fluids in both said upper and lower reservoirs will be in contact with a said layer of gel to permit migration of said organic molecules contained in said gel layer.

4,339,328

**PROCESS FOR THE PRODUCTION OF HIGH GRADE CARBONACEOUS BINDERS**

Jürgen Stadelhofer, Dortmund; Heinz-Gerhard Franck, Bad Soden-Neuenhain; Helmut Köhler, Mulheim an der Ruhr, and Heinrich Louis, Duisburg, all of Fed. Rep. of Germany, assignors to Rütgerswerke Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 11, 1981, Ser. No. 291,889

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1980, 3033075

Int. Cl.<sup>3</sup> C10G 1/00; H01B 1/04; C10C 0/00

U.S. Cl. 208—8 LE

6 Claims

1. A process for the production of high grade carbonaceous binders, comprising producing an aromatic high grade carbonaceous material by treating from 5-40% by weight of low ash coal or similar carbon-containing raw materials with 20-80% by weight of high-boiling aromatic solvents, derived from coal, and 15-50% by weight of high-boiling aromatic solvents, derived from mineral oil, at temperatures of 300°-420° C. and for a reaction period of 1-4 hours, at a reaction pressure of up to 50 bar.

4,339,329

**LIQUEFACTION OF COAL**

Yoichi Kageyama, Isehara; Masato Aiura, and Kikuo Moriya, both of Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Mar. 7, 1980, Ser. No. 128,151

Claims priority, application Japan, Mar. 16, 1979, 54-30737

Int. Cl.<sup>3</sup> C10G 1/06

U.S. Cl. 208—10

4 Claims

1. In a liquefaction of coal to a heavy, liquefied product by heating coal with a hydrocarbon solvent under a hydrogen pressure atmosphere in the presence of a catalyst, an improvement characterized in that said catalyst is a pulverized hematite or limonite iron ore, wherein said pulverized iron ore has a particle diameter of substantially all less than 10μ with an average particle size of about 3-4μ, with or without added sulfur or sulfur compound, wherein said pulverized iron ore is used at a ratio of 0.1 to 10 wt.% based on the anhydrous ashless coal, wherein said temperature for liquefaction is at 350° to 500° C., and wherein said hydrogen is at a partial pressure in a range of 20 to 250 kg/cm<sup>2</sup>G.

4,339,330

**DESALTING METHOD OF FUEL OIL**

Kiyoshi Fujiwara; Katsuaki Nagatomo; Fumio Shibata; Shoji Nomura, and Shoji Yoshinaga, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP79/00317, § 371 Date Aug. 26, 1980, § 102(e) Date Aug. 26, 1980, PCT Pub. No. WO80/01388, PCT Pub. Date Jul. 10, 1980

PCT Filed Dec. 14, 1979, Ser. No. 205,960

Claims priority, application Japan, Dec. 27, 1978, 53/159846

Int. Cl.<sup>3</sup> C10G 17/00, 17/04, 33/00, 31/08

U.S. Cl. 208—251 R

8 Claims

1. A desalting method of a fuel oil comprising mixing the fuel oil and clean water and separating and removing a heavy portion including salt-containing water from said fuel oil which is a light portion, putting the heavy portion including the salt-containing water which has been separated from the fuel oil into an evaporator to separate water and a residue from each other, evaporating and recovering water, and then reusing the water recovered by the evaporation as the clean water.



**4,339,331**  
**CROSSLINKED STARCHES AS DEPRESSANTS IN MINERAL ORE FLOTATION**

Sim K. Lim, Stamford, and Richard M. Goodman, Norwalk, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 5, 1980, Ser. No. 213,532  
Int. Cl.<sup>3</sup> B03D 11/06

U.S. Cl. 209—167

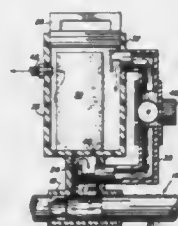
9 Claims

1. A process for depressing non-sulfide minerals in a flotation system which comprises adding to the flotation system, as a selective depressant, an effective amount of a crosslinked starch or starch-containing substance having from about 500 to 10,000 anhydroglucose units per crosslink.

**4,339,332**  
**PRESSURIZED CHEMICAL DISPENSER**  
Harold C. Jasperson, 7028 Ironwood, Orlando, Fla. 32808  
Continuation of Ser. No. 131,084, Mar. 17, 1980, abandoned.  
This application May 13, 1981, Ser. No. 263,129  
Int. Cl.<sup>3</sup> B01D 11/02

U.S. Cl. 210—198.1

10 Claims



1. A chlorinator system for use with a source of fluid such as a pool comprising:  
a fluid pump means for pumping fluid from the source to an output side;  
a first fluid supply conduit having a first and second end, said first end coupled to the output side of said fluid pump means;  
a filter unit having a filter input side and a filter output side said filter input side coupled to the second end of said first fluid supply conduit;  
a second fluid supply conduit coupled to the output side of said filter unit whereby a pressure differential is created across the filter unit between said first conduit and said second conduit;  
an offset chamber disposed above and coupled to said first fluid supply conduit;  
a first coupler having an orifice on an upper most surface thereof, said first coupler disposed in said offset chamber whereby any fluid flow from said first fluid supply conduit and into said first coupler has a substantial vertical component thereby substantially preventing any non-soluble particles from flowing into the orifice of the first coupler;  
a fluid type reservoir for storing a supply of a fluid soluble chemical, including an intake orifice and an output orifice; and  
means disposed through said input orifice and in communication with said first coupler for creating a circulating flow of fluid inside said fluid type reservoir whereby the circulating flow assists in dissolving the supply of fluid soluble chemical in the fluid type reservoir.

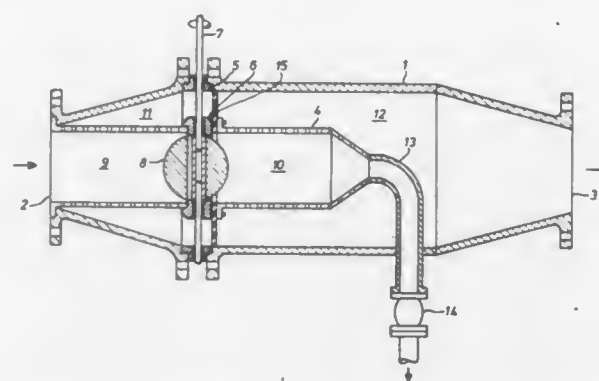
**4,339,333**  
**FILTRATION DEVICE**  
Peter Sjöberg, Löddeköpinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden  
Filed Mar. 12, 1979, Ser. No. 19,630  
Claims priority, application Sweden, Mar. 15, 1978, 7802969  
Int. Cl.<sup>3</sup> B01D 29/20, 29/38, 37/00

U.S. Cl. 210—411

8 Claims

1. A filter device which comprises a tubular housing with an

inlet for the fluid to be filtered in one end of the housing; an outlet for filtrate in the opposite end of the housing; a filter tube mounted inside the housing and extending essentially in the axial direction of the tubular housing, at least part of the filter tube wall forming a filter surface, and one end of the filter tube being openly connected to said inlet, whereas the other end being closed so that an annular filtrate conduit is formed between the housing and the filter tube; a first valve means arranged inside the filter tube to shut off the filter tube during cleaning periods, dividing the filter tube and the filter surface into an upstream part and a downstream part, and forcing the entire filtrate stream to pass through said upstream part of the filter surface into the filtrate conduit; the downstream part of the filter tube being provided with a discharge conduit comprising a second valve means to cause, by opening said second



valve means during said cleaning periods, part of the filtrate stream from the filtrate conduit to stream back through the downstream part of the filter surface, thereby removing through said discharge conduit the rejected material settled on the filter surface, the cross-sectional area of said annular filtrate conduit being constant along substantially all of said downstream part of the filter tube to ensure, during said cleaning periods, a uniform backstreaming of the filter surface of said downstream part, and said first valve means being so located in the filter tube that sufficient filter surface is provided in said upstream part to maintain, during said cleaning periods, a filtrate flow through said outlet which is equal to the major part of the filtrate flow through said outlet during normal filtering.

**4,339,334**  
**TUBULAR MEMBRANE SEPARATION APPARATUS END JOINT SEAL**

Tamiyuki Eguchi, and Michinobu Izumi, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kaishiki Kaisha, Osaka, Japan

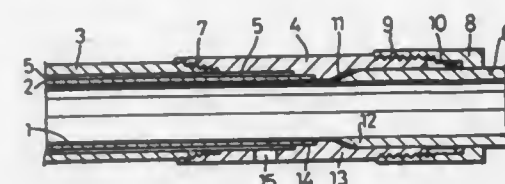
PCT No. PCT/JP79/00197, § 371 Date Mar. 28, 1980, § 102(e)  
Date Feb. 15, 1980, PCT Pub. No. WO80/00309, PCT Pub. Date Mar. 6, 1980

PCT Filed Jul. 26, 1979, Ser. No. 195,006  
Claims priority, application Japan, Jul. 28, 1978, 53-92699

Int. Cl.<sup>3</sup> B01D 31/00

U.S. Cl. 210—433.2

5 Claims



1. A tubular membrane separation apparatus including a separation element (1) having a tubular porous backing member with an inner surface and a semipermeable membrane formed over the inner surface of the backing member having an inside diameter, and a porous pressure-resistant tube (2) having the separation element (1) inserted therein, the apparatus being characterized by a liquid collector tube (3) having an inside diameter slightly larger than the outside diameter of the

pressure-resistant tube (2) and fitting around the pressure-resistant tube (2) to provide a narrow liquid passage (5) between the collector tube (3) and the pressure-resistant tube (2), a pair of joint members (4) detachably attached at one end of each member to each end of the collector tube (3) and supporting the end of the pressure-resistant tube (2), each joint member having an inner surface and being formed in a side portion thereof with an outlet bore (15) communicating with the liquid passage (5), the separation element (1) being detachably inserted into the pressure-resistant tube (2) projecting outwardly at its end from the end opening of the pressure-resistant tube (2) and being provided at its ends with diametrically enlarged end portions (11) respectively disposed within one of the joint members (4), a pair of connector tubes (6) inserted in the joint members (4) at the other ends thereof and detachably joined to the joint members (4), each connector tube (6) having an inside diameter approximately equal to that of the semipermeable membrane and each enlarged portion (11) of the separation element (1) being solely frustoconically tapered and spread outward toward its outer extremity, and the inner surface of each joint member (4) and the inserted end of each respective connector tube (6) being provided with frustoconically tapered faces (12) and (13) having the same taper as each enlarged portion (11) of the separation element (1), the enlarged portions (11) of the separation element (1) being sealingly held against the tapered faces (12) and (13) of the joint member (4) and the connector tube (6) at each end thereof.

**4,339,335**  
**FREE FLOWING HIGH BULK DENSITY PARTICULATE DETERGENT-SOFTENER**

Harold E. Wixon, New Brunswick, N.J., assignor to Colgate Palmolive Co., New York, N.Y.

Continuation of Ser. No. 746,994, Dec. 2, 1976, abandoned. This application Mar. 27, 1980, Ser. No. 134,558

Int. Cl.<sup>3</sup> C11D 1/835, 3/12, 17/06; D06M 13/46

U.S. Cl. 252—8.8

9 Claims

1. A free flowing particulate detergent-softener composition of bulk density of at least 0.6 g./cc. and particle sizes in the range of 4 to 40 mesh which comprises about 20 to 40% by weight of nucleus particles of an alkali metal builder salt selected from the group consisting of sodium carbonate mixed with sodium bicarbonate, sodium carbonate, sodium bicarbonate, pentasodium tripolyphosphate, tetrasodium pyrophosphate, sodium silicate, borax, corresponding potassium salts, and mixtures thereof, and said nucleus particles having internal passageways capable of absorbing 10 to 30% by weight of liquids; about 12 to 30% by weight of a normally liquid or pasty nonionic detergent selected from the group consisting of fatty alcohol polyethylene oxide condensates wherein the fatty alcohol is of about 10 to about 18 carbon atoms and the polyethylene oxide is of about 3 to about 15 moles of ethylene oxide per mole of higher fatty alcohol; about 30 to 60% by weight of exchanging zeolite aluminosilicate particles selected from a crystalline zeolite, amorphous zeolite, or a mixture of crystalline and amorphous zeolite, wherein the exchange rate and capacity of said zeolite are such that when about 375 ppm of said zeolite on an anhydrous basis is placed in water at 45° C. containing about 40 ppm dissolved calcium ion while vigorously stirring, the dissolved calcium ion content of the water is reduced to below about 8 ppm in about 5 minutes, and said zeolite particles having ultimate particle diameters in the range of from about 0.01 to about 20 microns; and about 4 to 12% by weight of a waxy quaternary ammonium compound softening agent, selected from the group consisting of soluble salts of quaternary ammonium compounds containing one or two long chain hydrophobic groups and two or three short chain groups; wherein,

a portion of said nonionic detergent is present in the interior of said nucleus particles, said agent is present within and/or external to said nucleus particles, and said zeolite particles and the remaining portion of said nonionic detergent are present as at least two coats on said

nucleus particles, a coat being zeolite particles adhered to nonionic detergent, and the amounts of said nonionic detergent and zeolite particles which have been applied as recoatings being from about 5 to about 50% by weight of the total amounts of said nonionic detergent and zeolite particles present in the composition.

7. A method of making a free flowing, particulate detergent softener composition according to claim 1, which comprises: mixing together said nucleus particles and liquid forms of said agent and a first amount of said nonionic detergent so that said agent and detergent are absorbed in and externally cover said nucleus particles producing covered nucleus particles, admixing with said covered nucleus particles a first amount of zeolite particles which adhere to said agent and detergent covering said covered particles and produce zeolite and detergent coated particles, and admixing with said zeolite and detergent coated particles, in sequence, at least another amount of said nonionic detergent and at least another amount of said zeolite to produce recoated particles, wherein

the additional amounts of said nonionic detergent and zeolite being applied as recoatings subsequent to application of said first amount of detergent and said first amount of zeolite particles are from about 5 to about 50% by weight of the total amounts of said nonionic detergent and zeolite particles used.

**4,339,336**  
**QUATERNARY AMMONIUM SUCCINIMIDE SALT COMPOSITION AND LUBRICATING OIL CONTAINING SAME**

Kenneth G. Hammond, and Harry Chafetz, both of Poughkeepsie, N.Y., assignors to Texaco Inc., White Plains, N.Y.

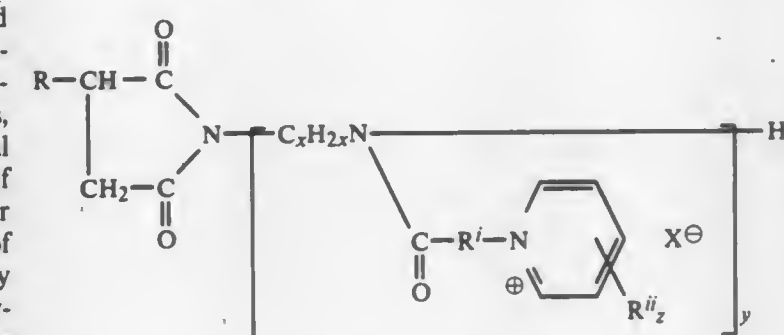
Filed Mar. 23, 1981, Ser. No. 246,513

Int. Cl.<sup>3</sup> C10M 1/32

U.S. Cl. 252—34

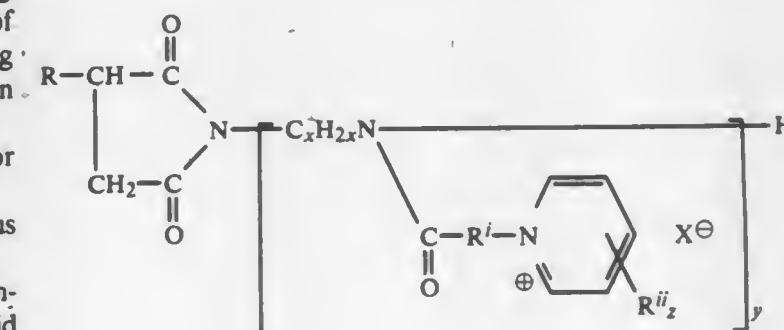
6 Claims

1. A quaternary ammonium succinimide salt composition represented by the formula:



in which R is a hydrocarbyl radical having from 25 to 200 carbon atoms, R' is a divalent hydrocarbon radical having from 1 to 10 carbon atoms, R'' is a hydrocarbyl radical having from 1 to 10 carbon atoms, x has a value of 2 or 3, y has a value from 1 to 5, z has a value of 0 to 5, and X is a halide radical.

4. A lubricating oil composition comprising a major portion of a mineral lubricating oil and a minor dispersant amount of a quaternary ammonium succinimide salt composition represented by the formula:





in which R is a hydrocarbyl radical having from 25 to 200 carbon atoms, R' is a divalent hydrocarbon radical having from 1 to 10 carbon atoms, R'' is a hydrocarbyl radical having from 1 to 10 carbon atoms, x has a value of 2 or 3, y has a value from 1 to 5, z has a value of 0 to 5, and X is a halide radical.

**4,339,337**  
**PROCESS FOR THE PREPARATION OF MAGNETIC BEADS OF VINYLAROMATIC POLYMERS**  
 Marc Tricot, Andilly, and Jean-Claude Daniel, Fontenay sous Bois, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Aug. 15, 1980, Ser. No. 178,465  
 Claims priority, application France, Aug. 24, 1979, 79 21342; Jun. 27, 1980, 80 14309

Int. Cl.<sup>3</sup> H01F 1/00, 1/28; C08J 3/00  
 U.S. Cl. 252—62.54 14 Claims  
 1. A process for the preparation of magnetic beads of vinylaromatic polymers in which vinylaromatic monomers alone or in admixture with a copolymerizable monomer is polymerized in the presence of an initiator, a suspension agent and a magnetic filler comprising dispersing the magnetic filler in an organic phase in the form of a solution of at least one water insoluble homo- or co-polymer in the monomer(s), suspending the dispersion in aqueous medium, and then polymerizing the monomer(s) while still containing the homo- or co-polymer dissolved therein.

**4,339,338**  
**METHOD OF REDUCING THE STRENGTH OF ADHESION OF SOLID PARTICULATE MATERIALS TO METAL SURFACES**  
 Robert J. Blake, Yorktown Heights; Joseph E. Sokolik, Jr., Carmel, and Samuel Sterman, Chappaqua, all of N.Y., assignors to Union Carbide Corporation

Filed Sep. 22, 1980, Ser. No. 189,630  
 Int. Cl.<sup>3</sup> C09K 3/18

U.S. Cl. 252—70 14 Claims  
 1. A method for reducing the strength of adhesion of solid particulate materials to metal surfaces as occurs under water freezing conditions by coating the metal surfaces to be in contact with the particulate material with a mixture comprising a hydrocarbon liquid, which has a solidification or pour point not greater than 0° F., and a saturated or unsaturated fatty acid having from about 10 to about 18 carbon atoms.

**4,339,339**  
**HYDROSTATICALLY DAMPING AND SHOCK ABSORBING NON-VULCANIZABLE POLYSILOXANE AND BORON COMPOUND FOR MECHANICAL ENERGY ABSORPTION**  
 Jeremi Maciejewski, A1. Niepodleglosci Str. 1424/6, Warszawa, Poland

Continuation-in-part of Ser. No. 69,274, Aug. 24, 1979, which is a continuation-in-part of Ser. No. 904,499, May 10, 1978, abandoned. This application Feb. 24, 1981, Ser. No. 237,683  
 Claims priority, application Poland, May 10, 1977, 198004  
 Int. Cl.<sup>3</sup> C08G 77/38, 77/44, 77/56; F16F 9/30

U.S. Cl. 252—75 6 Claims  
 1. A hydrostatically damping and shock absorbing, non-vulcanizable polysiloxane and boron-containing composition for mechanical energy absorption which is capable of flowing in a cylinder in which the plunger thereof is to be displaced, consisting of:

- (a) 100 parts by weight of polysiloxane polymer which is made by heating a mixture of 3 mols of alkyl-aryl-polysiloxane diol, where alkyl contains 1 to 10 carbon atoms and aryl from 6 to 10 carbon atoms and which has a freezing temperature of less than -50° C., with from 1

to 50 moles of boron compounds selected from the group consisting of boric acid and ethyl borate added in the form of a solution in glycerine, which is partially evaporated during the reaction;

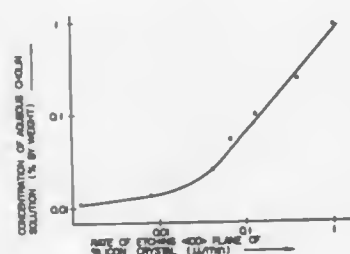
- (b) from 01 to 200 parts by weight of fillers with a specific surface area of 10 to 400 m<sup>2</sup>/g by BET method;  
 (c) from 0.01 to 300 parts by weight of pigment with a specific surface area not exceeding 200 m<sup>2</sup>/g/BET; and  
 (d) from 01 to 100 parts by weight of alkyl-aryl-siloxane oils, where the alkyl contains 1 to 10 carbon atoms and the aryl 6 to 10 carbon atoms and having a viscosity of 1 × 10<sup>4</sup> to 2 × 10<sup>6</sup> cP at 25° C.

**4,339,340**  
**SURFACE-TREATING AGENT ADAPTED FOR INTERMEDIATE PRODUCTS OF A SEMICONDUCTOR DEVICE**  
 Hisashi Muraoka, Yokohama; Masafumi Asano, Yokosuka; Taizo Ohashi, Kanagawa, and Yuzo Shimazaki, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

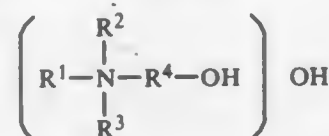
Division of Ser. No. 927,139, Jul. 21, 1978, Pat. No. 4,239,661, which is a division of Ser. No. 718,911, Aug. 30, 1976. This application Dec. 5, 1980, Ser. No. 213,317

Claims priority, application Japan, Nov. 26, 1975, 50/140721; Nov. 26, 1975, 50/140722; Nov. 26, 1975, 50/140723; Nov. 26, 1975, 50/140724; Nov. 26, 1975, 50/140725; Nov. 26, 1975, 50/140726

Int. Cl.<sup>3</sup> H01L 21/306; B44C 1/22; C03C 15/00; C23F 1/00  
 U.S. Cl. 252—79.5 34 Claims



1. A surface-treating agent adapted for intermediate products obtained in the manufacture of a semiconductor device, which comprises an aqueous solution containing 0.01 to 20% by weight of at least one trialkyl(hydroxyalkyl)ammonium hydroxide expressed by the formula:



where R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> are alkyl groups each having one to four carbons atoms, and R<sup>4</sup> is an alkylene group having two to four carbon atoms, and at least one additional ingredient selected from the group consisting of hydrogen peroxide, at least one complexing agent capable of forming a water-soluble complex with metals, at least one nonionic surfactant, and mixtures thereof.

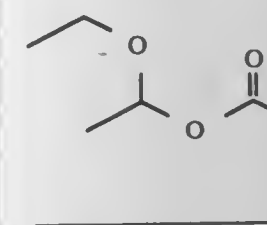
**4,339,341**  
**PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OF A DETERGENT USING 1-ETHOXY-1-ETHANOL ACETATE**  
 Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 176,111, Aug. 7, 1980, Pat. No. 4,296,137. This application Jul. 6, 1981, Ser. No. 280,271

Int. Cl.<sup>3</sup> C11D 3/50; A23L 1/226  
 U.S. Cl. 252—174.11 1 Claim

1. The process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic,

cationic, nonionic or zwitterionic detergent base, an aroma augmenting, modifying or enhancing quantity of 1-ethoxy-1-ethanol acetate having the structure:



**4,339,342**  
**ANTI-FOAMING AGENTS, THE PREPARATION THEREOF, AND THEIR USE IN AQUEOUS SYSTEMS**  
 Hans-Ulrich Hempel, Overath, and Edmund Schmadel, Leichlingen both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Apr. 3, 1981, Ser. No. 250,683  
 Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013391

Int. Cl.<sup>3</sup> B01D 19/04; C11D 3/12, 3/20  
 U.S. Cl. 252—174.25 11 Claims

1. A method for preparing foam inhibitors for aqueous systems, which comprises the steps of:

- (a) mixing a higher-molecular branched-chain primary alcohol of from about 18 to 30 carbon atoms with hydrophobic colloidal silica in an alcohol to silica ratio of from about 100:2 to 100:20;  
 (b) heating the mixture from step (a) under stirring to temperatures of from about 100° to 240° C.; and  
 (c) allowing the heated mixture from step (b) to cool to room temperature.

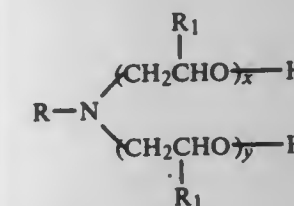
8. A foam inhibitor prepared according to claim 1.  
 9. A method of regulating suds in aqueous detergent systems which comprises incorporating into the detergent an effective amount of a foam inhibitor of claim 8 before dilution to produce said aqueous detergent system.

**4,339,343**  
**NOVEL PROCESS AND PRODUCT**  
 Charles E. Koehler, Baytown; Thomas R. McClellan, Seabrook, and Pat L. Murray, Houston, all of Tex., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 127,478, Mar. 5, 1980, Pat. No. 4,256,802, which is a continuation-in-part of Ser. No. 47,019, Jun. 11, 1979, abandoned. This application Nov. 3, 1980, Ser. No. 204,243

Int. Cl.<sup>3</sup> C09K 3/00 12 Claims  
 U.S. Cl. 252—182

1. A polyol blend comprising (i) from about 20 percent to about 85 percent by weight of said blend of an amine diol, or mixture of amine diols selected from the formula



wherein R is an aliphatic radical having from 8 to 18 carbon atoms, inclusive, each R<sub>1</sub> is independently selected from the group consisting of hydrogen and methyl, x and y each independently have an average value between about 4 and about 15 inclusive; and (ii) from about 15 percent to about 80 percent by weight of a primary hydroxyl polyol characterized by a molecular weight of from about 60 to about 1000.

**4,339,344**  
**USE OF MIXTURE OF ALIPHATIC C<sub>10</sub>-BRANCHED OLEFINS IN AUGMENTING OR ENHANCING THE AROMA OF PERFUMES AND/OR PERFUMED ARTICLES**

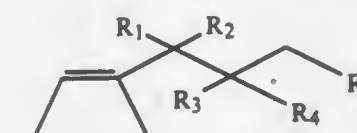
Richard M. Boden, Monmouth Beach; Lambert Dekker, Wyckoff; Frederick L. Schmitt, Holmdel, all of N.J., and Augustinus G. Van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 188,576, Sep. 18, 1980, Pat. No. 4,303,555, which is a continuation-in-part of Ser. No. 160,788, Jun. 19, 1980, Pat. No. 4,287,084. This application May 28, 1981, Ser. No. 267,047

The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> C11D 7/54, 3/395, 3/50  
 U.S. Cl. 252—187.24 1 Claim

1. A process for augmenting or enhancing the aroma of a liquid bleach containing a hypochlorite ion comprising the step of adding to a hypochlorite ion containing bleach an aroma augmenting or enhancing quantity of one or more diisoamylene compositions produced by the step of reacting two moles of isoamylene in the presence of an acid catalyst, the resulting diisoamylene containing composition being defined according to the generic structure:



wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub> each represent hydrogen or methyl with the provisos that

- (i) at least one of R<sub>1</sub> or R<sub>4</sub> represents methyl;  
 (ii) the sum of the carbon atoms in R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub> is 3; and  
 (iii) R<sub>1</sub> and R<sub>2</sub> are each hydrogen when R<sub>5</sub> is methyl.

**4,339,345**  
**METHOD FOR MANUFACTURE OF NICKEL BORIDE COLLOID**  
 Yukimichi Nakao, Tokyo, and Shoji Fujishige, Yokohama, both of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Jun. 19, 1980, Ser. No. 160,921  
 Claims priority, application Japan, Jul. 3, 1979, 54-84726  
 Int. Cl.<sup>3</sup> B01J 13/00; C07C 29/136

U.S. Cl. 252—309 6 Claims  
 1. A method for the manufacture of nickel boride colloid, which method comprises causing a nickel salt to react upon one member selected from the group consisting of sodium borohydride and potassium borohydride in an alcohol substantially free from dissolved oxygen under a non-oxidative atmosphere in the presence of one member selected from the group consisting of poly(vinylpyrrolidone), poly(methyl vinyl ether), poly(2-hydroxyethyl acrylate), poly(tertbutyl methacrylate) and soluble nylon, and subsequently adding one member selected from the group consisting of sodium alcoholate, potassium alcoholate, sodium hydroxide, potassium hydroxide, tetrabutylammonium hydroxide and potassium carbonate to the resultant reaction mixture.

**4,339,346**  
**BITUMINOUS EMULSIONS**  
 Johann G. D. Schulz, Pittsburgh, and John A. Cobler, Harwick, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 9, 1980, Ser. No. 110,797  
 Int. Cl.<sup>3</sup> B01J 13/00; C08L 95/00

U.S. Cl. 252—311.5 16 Claims  
 1. A bituminous emulsion consisting essentially of bitumi-



nous material, water and the product resulting from the reaction of (1) polycyclic, polycarboxylic acids obtained as a result of the oxidation of coal with (2) a base, wherein the weight ratio of bituminous material to water is in the range of about 19:1 to about 1:6 and the weight ratio of said product to water is in the range of about 1:199 to about 1:3.

#### 4,339,347 USE OF QUATERNIZED DERIVATIVES OF POLYMERIZED PYRIDINES AND QUINOLINES AS DEMULSIFIERS

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 32,044, Apr. 23, 1979, Pat. No. 4,297,484. This application Mar. 12, 1981, Ser. No. 242,857

Int. Cl.<sup>3</sup> B01D 17/04

U.S. Cl. 252—344 12 Claims

1. A process of demulsification which comprises treating an emulsion system with a quaternized derivative of polymerized pyridine or quinoline compounds, which compounds prior to polymerization are selected from the group consisting of pyridine, 2-methyl pyridine, 4-methyl pyridine, 4-phenyl pyridine, 4-ethyl pyridine, 2-hydroxypyridine, 2,4-lutidine, quinoline, 2-methyl quinoline and 4-methyl quinoline, the nitrogen atoms of which are quaternized by treating said polymerized compounds with a quaternizing agent selected from the group consisting of methyl iodide, ethyl iodide, propyl iodide, ethyl bromide, benzyl bromide, butyl bromide, dodecyl bromide, benzyl chloride, dodecyl benzyl chloride, ethyl bromoacetate, dimethyl sulfate, tetradecyl bromide, and octyl bromide.

#### 4,339,348 DIOXIME ION EXCHANGERS

Ralph W. M. Lai, Lexington, and John K. Litchfield, Bedford, both of Mass., assignors to Kennecott Corporation, Stamford, Conn.

Division of Ser. No. 11,034, Feb. 9, 1979, Pat. No. 4,248,837. This application Apr. 17, 1980, Ser. No. 141,126

Int. Cl.<sup>3</sup> B01F 1/00

U.S. Cl. 252—364 4 Claims

1. An organic extractant solution comprising a dioxime selected from the group consisting of methyl hexyl dioxime and methyl octyl dioxime, said dioxime being dissolved in an essentially water-immiscible organic solvent, said organic solvent including over twenty percent by weight of a long chain alcohol, said dioxime comprising between one to fifteen percent by weight of the resulting solution.

#### 4,339,349 CORROSION INHIBITORS FOR LIMITED OXYGEN SYSTEMS

Richard L. Martin, and Evelyn W. Purdy, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Feb. 11, 1980, Ser. No. 120,169

Int. Cl.<sup>3</sup> C23F 11/16, 11/18, 11/14, 11/12

U.S. Cl. 252—389 A 18 Claims

1. Compositions useful as a corrosion inhibitor in limited oxygen aqueous system characterized by containing at least two of the following:

- (1) sulfur-oxygen phosphates
- (2) fatty quaternaries
- (3) polyphosphate esters
- (4) cyclic amidines
- (5) trithiones.

#### 4,339,350 CATALYST PREPARED FROM TUNGSTEN HEXAFLUORIDE AND WATER

John P. Pellegrini, Jr., O'Hara Township, Allegheny County; David L. Beach, and Thaddeus P. Kobylinski, both of Gibsonia, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jun. 19, 1980, Ser. No. 160,959

Int. Cl.<sup>3</sup> B01J 31/34, 27/12; C07C 21/22; C10G 69/12  
U.S. Cl. 252—429 R 8 Claims

5. The catalyst comprising the reaction product of tungsten hexafluoride and water in a molar ratio of tungsten hexafluoride to water of between about 2:1 and about 20:1 in an inert liquid organic solvent selected from alkanes and cycloalkanes having between about 5 and about 60 carbon atoms and halogenated alkanes having from one to about 20 carbon atoms.

7. The catalyst in accordance with claim 5 in which the boiling point of said solvent at 760 mm Hg is between about 30° C. and about 500° C.

8. The catalyst in accordance with claim 5 in which said catalyst comprises between about 10 and about 50 weight percent of said solution.

#### 4,339,351 PROCESS FOR PRODUCING OLEFIN POLYMERS

Kentaro Mashita, and Katsumi Hanji, both of Ibaraki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 4, 1980, Ser. No. 213,029

Claims priority, application Japan, Dec. 18, 1979, 54-165341  
Int. Cl.<sup>3</sup> C08F 4/64, 4/68

U.S. Cl. 252—429 B 13 Claims

1. A catalyst component for polymerization of an olefin comprising a titanium compound and/or a vanadium compound supported on a solid product obtained by the reaction between a Grignard compound and a boron compound represented by the general formula  $B(OR^1)_aR^2R^3$ , wherein a, b and c are numbers defined by the formulas  $0 < a \leq 3$ ,  $0 \leq b < 3$ ,  $0 \leq c < 3$  and  $a+b+c=3$ ,  $R^1$  represents a hydrocarbon radical having up to 20 carbon atoms, and  $R^2$  and  $R^3$ , which may be the same or different, represent each a hydrogen atom, a hydrocarbon radical having up to 20 carbon atoms, or a halogen atom.

#### 4,339,352 SORPTIVE CLAY COMPOSITION AND METHOD OF MANUFACTURE

Frank Pitts, Magalas, France; Jack A. Tiethof, South Plainfield, and Robert A. Burns, Long Valley, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Menlo Park, N.J.

Filed Feb. 25, 1981, Ser. No. 238,272

Int. Cl.<sup>3</sup> B01J 21/20

U.S. Cl. 252—449 12 Claims

1. In a process for treating raw clay to produce a granular sorbent useful in absorbing oil and water and also having resistance to disintegration when contacted with water, by thermally activating the raw clay by calcination, the improvement whereby the granular sorbent possesses the aforementioned properties but the need to carry out the calcination of the raw clay at very elevated temperatures such as to reduce the volatile matter of the clay to very low values is avoided, said improvement comprising:

mixing the raw clay with an aqueous solution of alkali metal silicate before calcining the raw clay and carrying out the calcination at a temperature below a temperature normally required to thermally activate the raw clay and producing a thermally activated clay composition having a higher volatile matter content than that of clay calcined at the very elevated temperature.

#### 4,339,353 CONVERSION PROCESS

Paul B. Weisz, Yardley, and Vincent J. Frilette, Morrisville, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 266,186, Mar. 19, 1963, Pat. No. 3,594,311, which is a continuation-in-part of Ser. No. 161,242, Dec. 21, 1961, Pat. No. 3,508,867, which is a continuation-in-part of Ser. No. 343,489, Feb. 10, 1964, Pat. No. 3,140,252, which is a continuation-in-part of Ser. No. 754,915, Aug. 14, 1958, Pat. No. 3,140,322. This application Jul. 16, 1971, Ser. No. 163,458

The portion of the term of this patent subsequent to Jul. 20, 1988, has been disclaimed.

Int. Cl.<sup>3</sup> C10G 47/18

U.S. Cl. 252—455 Z 2 Claims

1. A catalyst composition comprising a metallic hydrogenation component combined with a crystalline aluminosilicate zeolite having a pore size of about 5 Angstrom units and a silicon to aluminum ratio of at least 1.8, said aluminosilicate being dispersed, combined or otherwise intimately admixed with a porous matrix.

#### 4,339,354 HYDROCARBON CONVERSION CATALYSTS

Elroy M. Gladrow, Sun City, Ariz.; William E. Winter, and William L. Schuette, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 10, 1980, Ser. No. 196,191

Int. Cl.<sup>3</sup> B01J 29/08

U.S. Cl. 252—455 Z 11 Claims

1. A catalyst comprising:  
(a) a crystalline aluminosilicate zeolite having uniform pore diameters ranging from about 6 to about 15 Angstroms, and a silica to alumina mole ratio of at least about 3;  
(b) an inorganic oxide matrix, and  
(c) discrete particles of alumina, said zeolite prior to being composited with (b) having a unit cell size greater than about 24.5 Angstroms, and said catalyst having an alkali metal content such that the ratio of weight percent alkali metal, calculated as the alkali metal oxide, based on the total catalyst, divided by the weight percent zeolite based on the total catalyst is not greater than 0.024 and a rare earth metal content such that the ratio of weight percent rare earth metal, calculated as the rare earth metal oxide, based on the total catalyst, divided by the weight percent zeolite based on the total catalyst ranges from about 0.01 to about 0.08.

#### 4,339,355 CATALYTIC OXIDE OF MOLYBDENUM, VANADIUM, NIOBIUM AND OPTIONAL 4TH METAL

Harry J. Decker, and Erlind M. Thorsteinson, both of Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 621,088, Oct. 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 505,780, Sep. 13, 1974, abandoned, which is a continuation-in-part of Ser. No. 408,419, Oct. 23, 1973, abandoned. This application Oct. 11, 1977, Ser. No. 841,056

Int. Cl.<sup>3</sup> B01J 23/22, 23/26, 23/28, 23/34

U.S. Cl. 252—464 5 Claims

1. An oxidation catalyst containing the elements Mo, V, Nb and X, in the form of oxides, in the ratio



wherein X is at least one element selected from the group consisting of Cr, Cu, Mn and Y,

a is 12,

b is 0.1 to 20,

c is 0.1 to 12, and

d is 0 to 3.0  
said catalyst being devoid of catalytically active forms of tellurium, phosphorus and oxides of silicon.

#### 4,339,356 HEAVILY PERFUMED PARTICLES

David D. Whyte, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 31, 1980, Ser. No. 221,873

Int. Cl.<sup>3</sup> C11B 9/00; A61K 7/46

U.S. Cl. 252—522 A 12 Claims

1. Heavily perfumed particles having both immediate and long lasting perfume emitting properties, consisting essentially of from about 0.5% to about 40% water-insoluble perfume, from about 1.5% to about 20% of a water-soluble polymer which will dissolve in water at a temperature of less than 100° C., from about 0.01% to about 5% of an emulsifier, from about 10% to about 90% water, and from about 1.5% to about 75% by weight of a hydratable material, the amount of the hydratable material being sufficient to hold at least about 85% of the water is said particles when fully hydrated.

#### 4,339,357 INTUMESCENT COMPOSITION

Richard R. Nicholson, Ann Arbor, Mich.; Ray E. Smith, Lake Buena Vista, Fla., and Jayendra G. Shukla, Ann Arbor, Mich., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

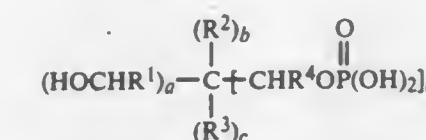
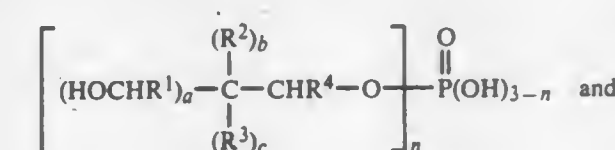
Division of Ser. No. 939,629, Sep. 5, 1978, Pat. No. 4,205,022. This application Sep. 17, 1979, Ser. No. 76,049

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> C09D 5/18

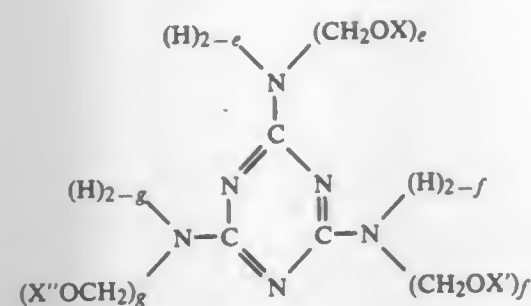
U.S. Cl. 252—606 3 Claims

1. An intumescent composition consisting essentially of from about 8 to about 55 percent (by weight) of a compound selected from the group consisting of



wherein a, b, c, d, and n are integers; a is from 1 to 3; b and c are independently selected from the group consisting of 0 and 1; d and n are independently selected from the group consisting of 1 and 2;  $R^1$  and  $R^4$  are independently selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and haloalkyl of 1 to 4 carbon atoms and 1 to 2 halogen atoms; and  $R^2$  and  $R^3$  are independently selected from the group consisting of haloalkyl containing 1 to about 4 carbon atoms and 1 to about 2 halogen atoms selected from the group consisting of chlorine, bromine, and mixtures thereof, from about 20 to about 40 percent (by weight) of water and from about 10 to about 70 percent (by weight) of a cyclic nitrogen compound of the formula





wherein e, f, and g are integers selected from the group consisting of 1 and 2, e plus f plus g equal about 3 to 6, and X, X', and X'' are independently selected from the group consisting of hydrogen and  $\text{—CH}_3$ .

#### 4,339,358 PROCESS AND APPARATUS FOR RECLAIMING POLYURETHANES

Wilhelm Schütz, Josef-Ponten-Strasse 60, D-5100 Aachen, Fed. Rep. of Germany

Filed Dec. 19, 1980, Ser. No. 218,260

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951617

Int. Cl.<sup>3</sup> C08J 3/00, 11/04

U.S. Cl. 521—49.5

9 Claims

1. In a process for the treatment of waste polyurethane particles by alcoholysis or acidolysis wherein said particles are treated with a solvent at a temperature in excess of 120° C., the improvement which comprises subjecting said particles to comminution at least at the beginning of said treatment at a reaction temperature below about 200° C. and continuing comminution during said treatment, said treatment being conducted in an inert atmosphere of a counter-current flow of a protective gas, whereby gas flushes through the reaction zone preventing oxidation and drawing off vapors and gasses formed during said treatment.

#### 4,339,359 COMPOSITION FOR THE ADHESION OF RUBBER TO REINFORCING MATERIALS

Rao S. Bezada, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

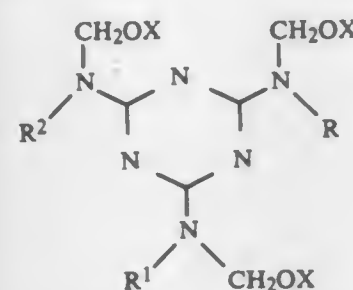
Filed Feb. 17, 1981, Ser. No. 235,340

Int. Cl.<sup>3</sup> C08L 7/00, 15/02; C08K 3/30, 3/36

U.S. Cl. 524—512

5 Claims

1. A composition for the adhesion of a textile fiber or a steel cord to rubber in the absence of a methylene acceptor which consists essentially of (1) a vulcanizable natural or synthetic rubber, (2) a sulfur vulcanizing agent, (3) from about 2 to 14 parts, by weight, per 100 parts, by weight, of rubber, of a high surface area silica and (4) from about 1 to 10 parts, by weight, per 100 parts, by weight, of rubber, of an N-(substituted oxymethyl)-melamine compound represented by the formula:



wherein each X represents, individually, hydrogen or a lower ( $\text{C}_1\text{—C}_8$ ) alkyl radical; R, R<sup>1</sup>, R<sup>2</sup> are, individually, hydrogen, a lower ( $\text{C}_1\text{—C}_8$ ) alkyl radical, or the group  $\text{—CH}_2\text{OX}$ .

#### 4,339,360 PARTICLES OF ACTIVATED OXIDIZED POLYSACCHARIDE SUBSTANCE COATED WITH INACTIVE PROTECTIVE LAYER AND METHOD FOR MANUFACTURE THEREOF

Toshimi Shimizu; Shoel Fujishige, and Akira Okada, all of Yokohama, Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Mar. 11, 1980, Ser. No. 129,335

Claims priority, application Japan, Mar. 31, 1979, 54/39226

Int. Cl.<sup>3</sup> C08L 1/08, 3/04; A61K 9/36, 9/40

U.S. Cl. 524—28

11 Claims

1. Particles of an active substance, each comprising: a core formed of a high molecular weight substance containing at least one aldehyde group obtained by oxidizing a polysaccharide and an inactive protective coat formed of the reaction product of said high molecular weight substance with a high molecular weight substance containing active hydrogen containing hydroxyl or amino groups applied to the surface of the core.

11. Particles of an active substance, each comprising: a core formed of a dialdehyde derivative of a polysaccharide prepared by oxidizing said polysaccharide consisting of molecular units which contain at least two adjacent hydroxyl groups and an inactive protective coat formed of the reaction product of said dialdehyde derivative with a high molecular weight substance containing active hydrogen atoms as hydroxyl or amino groups applied to the surface of the core.

#### 4,339,361 PHENOL-FORMALDEHYDE RESINS EXTENDED WITH CARBOHYDRATES FOR USE IN BINDER COMPOSITIONS

Edwin J. MacPherson, Sarnia, and Daniel A. Frenette, Brights Grove, both of Canada, assignors to Fiberglas Canada, Inc., Toronto, Canada

Filed Jul. 28, 1980, Ser. No. 173,891

Int. Cl.<sup>3</sup> C08L 5/00; C08F 4/44

U.S. Cl. 527—303

22 Claims

1. In a method of preparing a water-dilutable, thermosetting, low free phenol-containing resole, said method comprising reacting phenol and formaldehyde to yield a phenol-formaldehyde product and reacting said product with an amide as an extender to form a phenol-formaldehyde-amide resin, which contains the maximum amount of amide permissible under given process conditions,

the improvement consisting of adding a sugar to a mixture of phenol and formaldehyde, or to phenol-formaldehyde resin, or to phenol-formaldehyde-amide resin in an aqueous basic medium to yield a resole having:

a phenol to formaldehyde molar ratio between 1:2.8 and 1:4.5, a phenol-formaldehyde to amide ratio of between 70:30 and 40:60 parts by weight; and a phenol-formaldehyde to amide plus sugar ratio of up to 35:65 parts by weight;

the amide compound being selected from the group consisting of urea, dicyandiamide, melamine and mixtures thereof and the sugar being selected from the group consisting of mono- and oligosaccharides and water-soluble polysaccharides.

#### 4,339,362 HARDENING COMPOSITION CONTAINING CELLULOSE POWDER, LATEX, MAGNESITE AND MAGNESIUM CHLORIDE

Jean-Maurice Pascau, Bordeaux, France, assignor to Newco Synthetics International Inc., Toronto, Canada

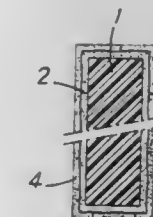
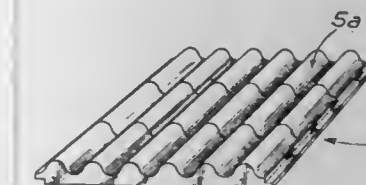
Filed Jun. 29, 1979, Ser. No. 53,196

Claims priority, application France, Jul. 4, 1978, 78 19913

Int. Cl.<sup>3</sup> C04B 9/14, 31/36; C08L 1/00

U.S. Cl. 524—5

11 Claims



1. A hardenable composition containing magnesite, finely moldable cellulose powder, magnesium chloride, water and at least 0.5% by dry extract weight latex of the acrylic type or of the natural or synthetic rubber type.

#### 4,339,363 COMPOSITE MATERIAL COMPOSITIONS USING WASTEPAPER AND METHOD OF PRODUCING SAME

Yoshikazu Nakagima, Musashino, Japan, assignor to Kabushiki Kaisha Mikuni Seisakusho, Tokyo, Japan

Division of Ser. No. 54,685, Jul. 5, 1979, Pat. No. 4,279,790.

This application Apr. 28, 1980, Ser. No. 144,302

Int. Cl.<sup>3</sup> C08L 1/02

U.S. Cl. 524—34

6 Claims

1. A method of producing a granular molding composition that provides substantially reduced linear shrinkage and excellent mechanical strength, comprising the steps of cutting wastepaper into pieces of a size less than 30 mm., stirring 100 parts by weight of the wastepaper at high speed in a mixer with about 70 to 150 parts by weight of the thermoplastic resin to drive off moisture from the wastepaper, and to melt the thermoplastic resin, continuing high speed stirring to beat and knead the cut wastepaper with the molten resin and thereby impregnate the cut wastepaper with the molten resin, and then granulating the composition.

#### 4,339,364 WATER RESISTANT STARCH-BASED CORRUGATING ADHESIVE COMPOSITION

Paul L. Krankkala, Woodbury, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Jul. 30, 1980, Ser. No. 173,635

Int. Cl.<sup>3</sup> C09J 3/06; C08L 3/06, 3/08; C09D 3/20

U.S. Cl. 524—44

13 Claims

1. A water resistant, starch-based adhesive composition

having a pH in the range from about 4.5 to about 7.0 consisting essentially of:

- water;
- corn or wheat starch;
- a carboxylated styrene-butadiene copolymer latex, said starch and latex being present in amounts sufficient to provide a starch to latex ratio, based on starch weight and latex solids weight, of between about 1:1 and about 4:1;
- a thickener; and
- a cross-linking agent.

#### 4,339,365 COATING COMPOSITIONS CONTAINING PIGMENT DISPERSANTS

David Z. Becher, Allison Park; Roger M. Christenson; Richard L. Coalson, both of Gibsonia; Percy E. Pierce, Monroeville, and Karl F. Schimmel, Verona, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 59,715, Jul. 23, 1979, abandoned, which is a division of Ser. No. 938,746, Aug. 31, 1978, abandoned. This application Dec. 12, 1980, Ser. No. 215,765

Int. Cl.<sup>3</sup> C08K 5/01, 5/02, 5/03; C08L 1/00

U.S. Cl. 523—400

38 Claims

1. A coating composition consisting essentially of:
- from about 25 percent to about 98 percent of a film-forming resin;
  - from about 1 percent to about 70 percent of a pigment;
  - from about 1 percent to about 50 percent of a dispersant capable of dispersing the pigment in liquid carrier (d) and film-forming resin (a), said dispersant being the polymerization product of a mixture of monomers consisting essentially of:
  - from about 20 percent to about 85 percent of an alkyl methacrylate having from 3 to 8 carbon atoms in the alkyl group;
  - from about 5 percent to about 60 percent of a hardening monomer selected from the group consisting of a styrene, methyl methacrylate, ethyl methacrylate and mixtures thereof;
  - from about 1 percent to about 25 percent of an ethylenically unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, crotonic acid, maleic acid, fumaric acid, and mixtures thereof;
  - from about 1 percent to about 25 percent of a monomer having a double bond alpha-beta to a carbonyl group and at least one hydroxyl group selected from the group consisting of a monohydroxy alkyl acrylate, monohydroxy alkyl methacrylate, monohydroxy alkyl crotonate, monohydroxy alkyl fumarate, dihydroxy alkyl fumarate, monohydroxy alkyl itaconate, dihydroxy alkyl itaconate, monohydroxy alkyl maleate, dihydroxy alkyl maleate and mixtures thereof; and
  - from about 0.1 percent to about 15 percent of a compound providing an amine functional moiety, said compound being an acrylic or methacrylic compound containing amino groups; and wherein said dispersant has a weight average molecular weight, determined by gel permeation chromatography, using a polystyrene standard, of from about 1,000 to about 10,000; and
  - the balance a liquid carrier.



4,339,366

## PROCESS FOR THE PRODUCTION OF POLYESTER RESINS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105  
Continuation-in-part of Ser. No. 207,391, Nov. 17, 1980, which is a continuation-in-part of Ser. No. 134,975, Mar. 30, 1980, which is a continuation-in-part of Ser. No. 13,139, Feb. 21, 1979, Pat. No. 4,226,982. This application Nov. 9, 1981, Ser. No. 319,144  
Int. Cl.<sup>3</sup> C08L 1/00

U.S. Cl. 527—100

17 Claims

1. The process for the production of polyester resinous products by mixing, heating and reacting the following components:

- a broken-down alkali metal lignin-cellulose polymer and/or a broken-down cellulose polymer produced by mixing 3 parts by weight of a cellulose-containing plant or plant derivative with 2 to 5 parts by weight of melted alkali metal hydroxide, then heating the mixture at 150° C. to 220° C. while agitating for 5 to 60 minutes; in an amount of 10 to 50 parts by weight;
- a substituted organic hydroxy compound, which contains at least one substituent which will split off in the reaction, in an amount of 10 to 50 parts by weight;
- polycarboxylic acid or polycarboxylic acid anhydride, or mixtures thereof, in an amount of 10 to 50 parts by weight.

4,339,367

## MODIFIED CYCLOPENTADIENE RESINS, PROCESS FOR PREPARING THE SAME, AND A COMPOSITION FOR PRINTING INK CONTAINING SAID MODIFIED RESINS AS VEHICLE COMPONENT

Yasuyoshi Chino, and Akinori Miyaguchi, both of Yokohama, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan  
Filed Dec. 18, 1980, Ser. No. 217,578  
Claims priority, application Japan, Dec. 21, 1979, 54-166699; Feb. 6, 1980, 55-13405; Feb. 13, 1980, 55-16290  
Int. Cl.<sup>3</sup> C09D 3/72, 3/733, 11/10

U.S. Cl. 525—131

15 Claims

1. A process for producing a modified resin, which comprises reacting (I) a hydroxyl-containing resin with (II) a polyisocyanate compound, said resin (I) being prepared by reacting (a) the reaction product of a cyclopentadiene resin, a higher fatty acid ester having a conjugated double bond and an  $\alpha,\beta$ -unsaturated dicarboxylic acid anhydride with (b) a hydroxyl group-imparting agent.

4,339,368

## CATIONIC COATING COMPOSITIONS CONTAINING NITROGEN HETEROCYCLIC MATERIALS

Ivan H. Tsou, Bloomfield Hills, and Marc L. Smith, Warren, both of Mich., assignors to Wyandotte Paint Products Company, Troy, Mich.  
Division of Ser. No. 963,032, Nov. 22, 1978, Pat. No. 4,246,087, which is a continuation-in-part of Ser. No. 859,295, Dec. 12, 1977, Pat. No. 4,155,824. This application Feb. 14, 1980, Ser. No. 121,310  
Int. Cl.<sup>3</sup> C08L 63/10, 63/02

U.S. Cl. 523—414

25 Claims

1. An aqueous corrosion resistant coating composition comprising a dispersion, solution or suspension of a coating composition, derived from an epoxy resin or an acrylic resin containing an oxirane group, either of which contains a tertiary nitrogen heterocyclic containing organic material solubilized by means of an acid, thereby forming a quaternary ammonium material, wherein the heterocyclic ring has from 8 to 8 members and from 1 to 3 nitrogen atoms, which resin contains no NCO groups, which when heat cured contains at least 75% less amine value than present in the material prior to curing.

4,339,369

CATIONIC EPOXIDE-AMINE REACTION PRODUCTS  
Darrell D. Hicks, Jeffersonstown, and David A. Shimp, Prospect, both of Ky., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 23, 1981, Ser. No. 256,747

Int. Cl.<sup>3</sup> C08L 63/02

U.S. Cl. 523—414

27 Claims

1. A process for preparing a resinous composition which comprises:

(A) reacting

- a polyepoxide compound derived from a dihydric phenol and an epihalohydrin, said polyepoxide compound having a 1,2-epoxide equivalent weight of about 110 to about 250;
- a dihydric phenol; and
- a monoamine which contains one tertiary amine group and one primary hydroxyl group at a temperature of about 25° C. to about 150° C. for a time sufficient to react all of the epoxide groups of the polyepoxide, wherein (a), (b) and (c) are reacted in the mole ratios of X moles of (b) to X+1 moles of (a) to Y moles of (c) wherein X has a value of 1 to 5 and Y is at least 8; and

(B) removing the excess monoamine by distillation.

4,339,370

## HIGHLY FILLED CROSSLINKABLE EMULSION POLYMER COMPOSITION

Robert G. Parker, Irchester, England, assignor to Scott Bader Company Limited, Northamptonshire, England  
Filed Feb. 25, 1981, Ser. No. 237,924  
Claims priority, application United Kingdom, Mar. 3, 1980, 8007091

Int. Cl.<sup>3</sup> C08L 3/26

U.S. Cl. 524—424

9 Claims

1. An aqueous emulsion copolymer coating composition which contains (a) above about 70% by weight of the total weight of the composition of at least one inorganic filler component and (b) an aqueous emulsion of a copolymer containing at least one vinyl aromatic monomer, at least one acrylate monomer selected from acrylates and methacrylates and from one to 10% of an unsaturated organic acid, the composition being modified by the presence of (c) a zinc ammonium carbonate compound to give the composition improved retention of adhesive power in the face of attack by water and increased shelf-life.

4,339,371

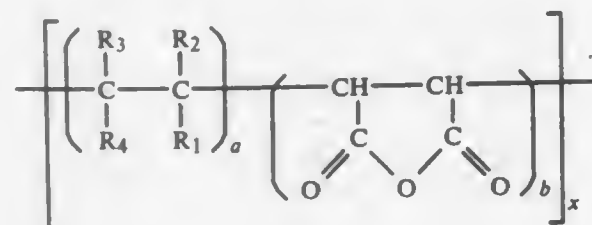
## HIGH CONCENTRATION WATER-SOLUBLE POLYMERS IN WATER-IN-OIL EMULSIONS

Peter M. Robinson, Milford; David H. Rakowitz, Cos Cob, and Lesley J. Nowakowski, Shelton, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.  
Continuation-in-part of Ser. No. 193,517, Oct. 2, 1980, abandoned. This application Mar. 20, 1981, Ser. No. 245,793  
Int. Cl.<sup>3</sup> C08L 33/00

U.S. Cl. 524—310

26 Claims

1. A stable water-in-oil emulsion comprised of from about 40 to 60% by weight, based on the total weight of the emulsion, of a water-soluble polymer, and an oil-soluble, water-insoluble, polymeric surfactant, in an amount sufficient to stabilize the emulsion, said polymeric surfactant having the formula:



wherein x is a whole number greater than about 5, the mole ratio of a:b is from 3:1 to 1:3, provided the HLB number is maintained at less than about 14, R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> are independently selected from the group consisting of hydrogen, alkyl (C<sub>1</sub>-C<sub>48</sub>), alkoxy (C<sub>1</sub>-C<sub>48</sub>), alkenyl (C<sub>2</sub>-C<sub>48</sub>), aryl (C<sub>6</sub>-C<sub>12</sub>), alkaryl (C<sub>7</sub>-C<sub>12</sub>), and R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, and R<sub>4</sub> are such that the surfactant is oil-soluble and water-insoluble.

4,339,372

## PROCESS OF PREPARING STABILIZED POLYCHLOROPRENE LATEX

Paul Branlard, Grenoble, and Jean-Pierre Merle, Echirolles, both of France, assignors to Distugil, Neuilly sur Seine, France

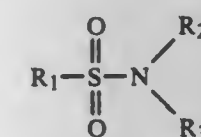
Continuation of Ser. No. 24,387, Mar. 27, 1979, abandoned. This application Aug. 11, 1980, Ser. No. 177,120

Claims priority, application France, Mar. 31, 1978, 78 09449  
Int. Cl.<sup>3</sup> C08K 5/44

U.S. Cl. 524—169

11 Claims

1. A process of preparing a polychloroprene latex, which process comprises polymerizing chloroprene in an alkaline aqueous emulsion in the presence of an emulsifying system comprising from about 1.8 to 3 percent of rosin derivatives and from about 0.1 to 1 percent of a member selected from the class consisting of a fatty acid and an alkali salt of said acid, and a free radical catalyst, said emulsion also containing from about 0.2 to 4 parts by weight, per 100 parts of initial chloroprene monomer, of a sulfonamide which is water-insoluble, soluble in chloroprene, non-hydrolyzable in caustic soda, said sulfonamide being of the general formula:



in which:

R<sub>1</sub> represents a member selected from the group consisting of a C<sub>3</sub>-C<sub>18</sub> alkyl or alkenyl radical, an aryl radical, an arylalkyl radical, and an aryl or alkyl group bound by a heteroatom selected from the class consisting of oxygen, nitrogen, and sulfur, R<sub>2</sub> and R<sub>3</sub> represent a member selected from the class consisting of hydrogen, a C<sub>1</sub>-C<sub>12</sub> alkyl or alkenyl radical, an aryl radical, an arylalkyl radical, and an aryl or alkyl group bound by a heteroatom selected from the class consisting of oxygen, nitrogen, and sulfur, with the conditions that (1) if R<sub>2</sub>=R<sub>3</sub>=H the carbon in  $\alpha$ -position of the —SO<sub>2</sub>— group must be substituted by at least one group having a positive inductive effect, and (2) if R<sub>2</sub>=H, R<sub>3</sub>, being an alkyl group, must have at least two carbon atoms in the event that R<sub>1</sub> does not have groups with positive inductive effect on the carbon in  $\alpha$ -position of the —SO<sub>2</sub>— group of the amide.

4,339,373

## GRANULATION AND DRYING AIDS FOR POLYMERIC GELS

Peter M. Robinson, Milford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 6, 1980, Ser. No. 119,232

Claims priority, application United Kingdom, Mar. 2, 1979, 7910668

Int. Cl.<sup>3</sup> C08K 5/01; C08J 1/12

U.S. Cl. 524—521

24 Claims

1. A method of granulating solid polymeric gels containing solids in the amount of about 5 to 75 percent of said gel to form a free flowing powder comprising adding to said solid gel during the granulation an effective amount of an oil solution of a polymeric soap in the range of about 50 to 5000 ppm of polymeric soap based in the polymeric gel, which soap is a copolymer prepared from at least one hydrophobic monomer and at least one hydrophilic monomer.

4,339,374

## NOVEL MOLDING COMPOSITION PROVIDING SHAPED ARTICLES OF IMPROVED STRENGTH AND HEAT AND AGE RESISTANCE

Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eusenheim, and Heinrich Kunkel, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Fed. Rep. of Germany

Filed Nov. 28, 1980, Ser. No. 211,398

Int. Cl.<sup>3</sup> C08L 77/00

U.S. Cl. 524—606

5 Claims

1. A novel composition of matter capable of being molded to form a structural shape, and which comprises:

- from about 40 to about 60% thermoplastic resin as a matrix, said matrix having uniformly distributed therein;
  - from about 5 to about 15% carbon fiber; and
  - from about 15 to about 25% glass fiber;
- all based on the total weight of said composition; said composition, after molding and setting, having: improved impact strength, elastic deformability, and aging resistance.

4,339,375

## POLY(ESTER-AMIDE) CAPABLE OF FORMING AN ANISOTROPIC MELT PHASE DERIVED FROM P-HYDROXYBENZOIC ACID, 2,6-DIHYDROXYNAPHTHALENE, CARBOCYCLIC DICARBOXYLIC ACID, AROMATIC MONOMER CAPABLE OF FORMING AN AMIDE LINKAGE, AND, OPTIONALLY, ADDITIONAL AROMATIC DIOL

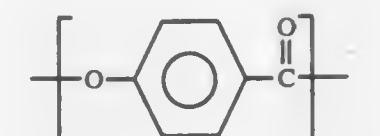
Gordon W. Calundann, N. Plainfield; Larry F. Charbonneau, Chatham, and Anthony J. East, Madison, all of N.J., assignors to Celanese Corporation, New York, N.Y.  
Filed Jun. 4, 1981, Ser. No. 270,439  
Int. Cl.<sup>3</sup> C08G 69/44

U.S. Cl. 524—602

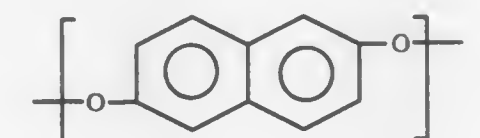
44 Claims

1. A melt processable poly(ester-amide) capable of forming an anisotropic melt phase at a temperature below approximately 400° C. consisting essentially of recurring moieties I, II, III, IV, and, optionally, V, wherein:

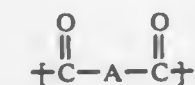
I is



II is



III is



where A is a divalent carbocyclic radical;

IV is  $-\text{Y}-\text{Ar}-\text{Z}-$ , where Ar is a divalent radical comprising at least one aromatic ring, Y is O, NH, or NR, and Z is NH or NR, where R is an alkyl group of 1 to 6 carbon atoms or an aryl group; and

V is  $-\text{O}-\text{Ar}'-\text{O}-$ , where Ar' is a divalent radical comprising at least one aromatic ring, other than naphthylene, wherein at least some of the hydrogen atoms present upon the



rings optionally may be replaced by substitution selected from the group consisting of alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, phenyl, and mixtures thereof, and wherein moiety I is present in a concentration within the range of approximately 20 to 80 mole percent, moiety II is present in a concentration within the range of approximately 5 to 30 mole percent, moiety III is present in a concentration within the range of approximately 10 to 40 mole percent, moiety IV is present in a concentration within the range of approximately 5 to 30 mole percent, and moiety V is present in a concentration within the range of approximately 0 to 20 mole percent, with the total molar concentration of moieties II, IV, and V being substantially equal to the molar concentration of moiety III.

4,339,376

# HIGHLY HEAT-RESISTANT THERMOPLASTIC RESIN COMPOSITION HAVING HIGH OIL-RESISTANCE

Hideo Kasahara, Yokohama; Kunio Fukuda, Chigasaki, and Hiroshi Suzuki, Tokyo, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Jul. 28, 1981, Ser. No. 287,685

Claims priority, application Japan, Aug. 13, 1980, 55/110360; Oct. 8, 1980, 55/139947

Int. Cl.<sup>3</sup> C08L 71/04, 77/00

U.S. Cl. 524—116

24 Claims

1. A thermoplastic resin composition having high oil-resistance which comprises
  - (a) polyphenylene ether resin,
  - (b) a copolymer comprising a vinyl aromatic compound and an  $\alpha,\beta$ -unsaturated dicarboxylic acid anhydride as components, or a copolymer comprising a vinyl aromatic compound and an imide compound of an  $\alpha,\beta$ -unsaturated dicarboxylic acid as components, and
  - (c) polyamide.

4,339,377

# METHOD OF POLYMERIZING ROSIN

Samuel D. Hollis, Savannah, Ga., assignor to Union Carbide Corporation, Wayne, N.J.

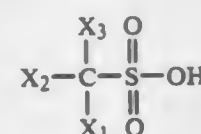
Filed Sep. 8, 1981, Ser. No. 300,164

Int. Cl.<sup>3</sup> C09F 1/04; B01J 31/02

U.S. Cl. 260—99.5

13 Claims

1. The method of polymerizing a rosin which comprises heating said resin in the presence of a catalytic proportion of a compound selected from those of the formula:



wherein  $X_1$ ,  $X_2$  and  $X_3$  are each selected from the group consisting of hydrogen and halogen, and at a temperature of from about 60° C. to about 180° C.

4,339,378

# N-ACYLCARNOSINE ALUMINUM SALTS

Mitsuo Masaki, Chiba; Toru Yamanaka, Noda, and Taketoshi Kinoshita, Misato, all of Japan, assignors to Nippon Chemphar Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1980, Ser. No. 194,841

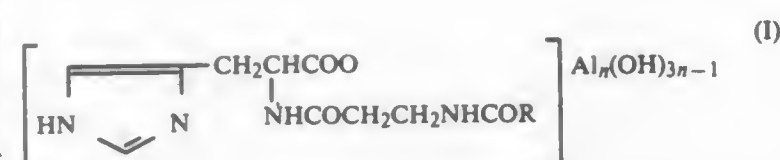
Claims priority, application Japan, Oct. 31, 1979, 54-139966

Int. Cl.<sup>3</sup> C07C 103/52; C07D 233/64; A61K 37/02, 31/415

U.S. Cl. 260—112.5 R

5 Claims

1. An N-acylcarnosine aluminum salt of the formula (I),



wherein R represents a lower alkyl group or a phenyl group,

4,339,379

# N-ACYLCARNOSINE ALUMINUM SALTS

Mitsuo Masaki, Chiba; Toru Yamanaka, Noda; Mitsuo Yoshioka, Kurihashi, and Kazuki Okai, Misato, all of Japan, assignors to Nippon Chemphar Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1980, Ser. No. 194,844

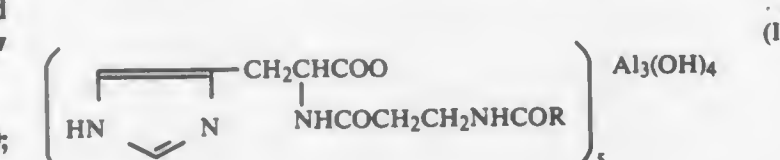
Claims priority, application Japan, Dec. 26, 1979, 54-168274

Int. Cl.<sup>3</sup> C07C 103/52; C07D 233/64; A61K 37/02, 31/415

U.S. Cl. 260—112.5 R

3 Claims

1. An N-acylcarnosine aluminum salt of the formula (I),



wherein R represents a lower alkyl group having 1 to 6 carbon atoms.

4,339,380

# AZO DYESTUFFS

Herbert Hugl; Gerhard Wolfrum; Winfried Mennicke; Karl H. Schünderhütte, all of Leverkusen, and Jochen Westphal, Dueseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 14, 1979, Ser. No. 93,946

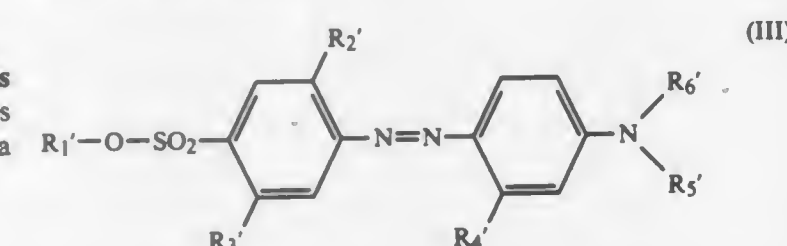
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1978, 2851575

Int. Cl.<sup>3</sup> C09B 29/08, 29/26

U.S. Cl. 260—207.1

3 Claims

1. A dyestuff, free from sulphonic acid and ammonium groups, of the formula



wherein

$R_1'$  represents phenyl, which is optionally monosubstituted, disubstituted or trisubstituted by  $C_1$ - $C_4$ -alkyl or halogen,  $R_2'$  represents halogen, CN,  $CF_3$ ,  $NO_2$ ,  $C_1$ - $C_4$ -alkyl or  $C_1$ - $C_4$ -alkoxy,  $R_3'$  represents halogen, CN,  $CF_3$ ,  $C_1$ - $C_4$ -alkyl or  $C_1$ - $C_4$ -alkoxy,  $R_4'$  represents  $-NHCOQ_1'$ ,  $-NHSO_2Q_1'$ ,  $-NHCONH_2$ ,  $-NHCONQ_1'Q_2'$ ,  $-NHCOCF_3$ ,  $-NHCOOQ_1'$  or  $-O-SO_2-Q_1'$ , and

$R_5'$  and  $R_6'$ , which may be identical or different, represent  $C_1$ - $C_4$ -alkylene- $O-CO-Q_1'$ ,  $C_1$ - $C_4$ -alkylene- $COOQ_1'$ ,  $C_1$ - $C_4$ -alkylene- $O-CO-NHQ_1'$ ,  $C_1$ - $C_4$ -alkylene- $O-SO_2-Q_1'$  or  $-CH_2CH_2-CN$ , and wherein

$Q_1'$  denotes  $C_1$ - $C_4$ -alkyl, phenyl, chlorophenyl or tolyl and  $Q_2'$  denotes hydrogen or  $C_1$ - $C_4$ -alkyl.

4,339,381

# 1,3-ALKYLENE-DIAZETIDINE-2,4-DIONES

Reinhard H. Richter, North Haven; Benjamin W. Tucker, Bethany, and Henri Ulrich, Guilford, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

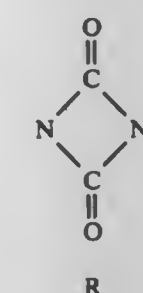
Filed Feb. 5, 1981, Ser. No. 231,876

Int. Cl.<sup>3</sup> C07D 487/06, 487/08

U.S. Cl. 260—239.3 B

7 Claims

1. A compound having the formula:



wherein R is alkylene having from 8 to 18 carbon atoms in the chain.

4,339,382

# PROCESS FOR MANUFACTURING N-ARYLTHIOCARBAMOYL-2-AMINO-1H-ISOINDOLE-1,3-(2H)DIONES

Joel L. Kirkpatrick, Washington Crossing, Pa., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

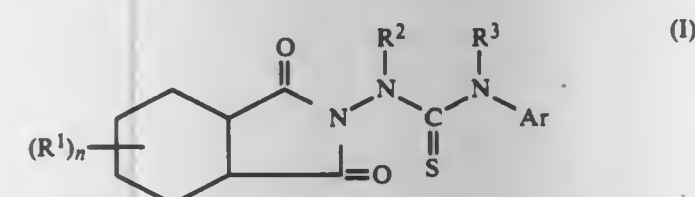
Filed Feb. 11, 1980, Ser. No. 115,528

Int. Cl.<sup>3</sup> C07D 209/48

U.S. Cl. 548—474

4 Claims

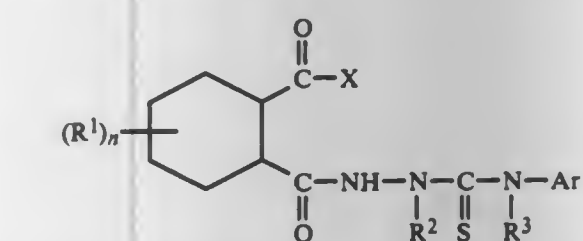
1. In the method of manufacturing compounds having the general structural formula:



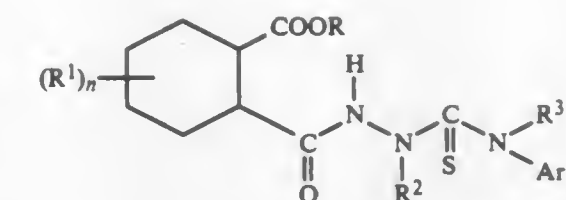
in which

$R^1$  is  $C_1$  to  $C_4$  alkyl or alkoxy, nitro, cyano or halo and n is zero or an integer from 1 to 4;  $R^2$  and  $R^3$  are H or  $C_1$  to  $C_4$  alkyl or benzyl and Ar is naphthyl, adamantyl, benzyl, alkyl, phenyl or phenyl bearing one or more substituents of the group  $C_1$  to  $C_4$  alkyl,  $C_1$  to  $C_4$  alkoxy, bromo, chloro and trifluoromethyl

by ring closure of a compound having the corresponding structural formula



in which X represents a good leaving group, in which an electronegative atom is attached to the carbon atom of the carbonyl structure; the improvement comprising cyclization of a compound of the corresponding structural formula



in which R is  $C_1$  to  $C_4$  alkyl by reaction under mildly basic conditions at a temperature below 50° C. in the presence of a non-reactive polar organic solvent and a hindered aliphatic amine.

4,339,383

# IMIDE CONTAINING STABILIZERS FOR CHLORINATED THERMOPLASTICS

Wolfgang Wehner, Zwingenberg; Klaus-Peter Michaelis, Lindenfels/Odenwald, and Rainer Schneider, Bensheim-Auerbach, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 2, 1980, Ser. No. 165,304

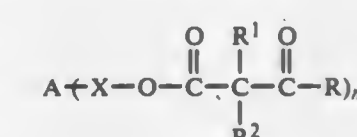
Claims priority, application Switzerland, Nov. 7, 1979, 6477/79

Int. Cl.<sup>3</sup> C07D 487/04, 403/12, 403/06, 209/48

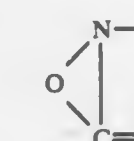
U.S. Cl. 548—419

3 Claims

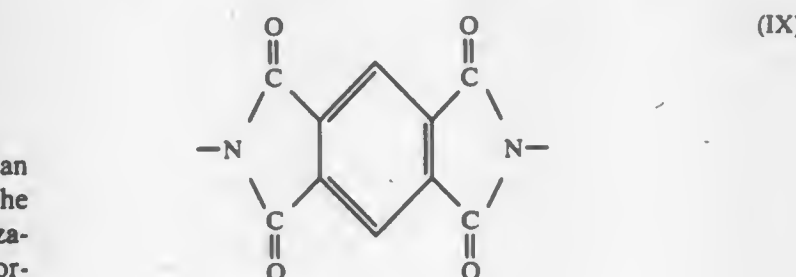
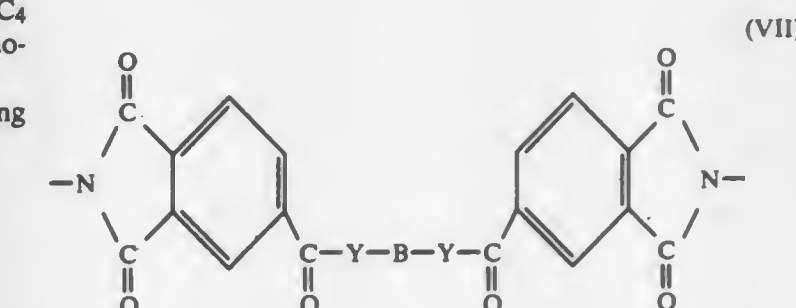
1. A compound of the formula



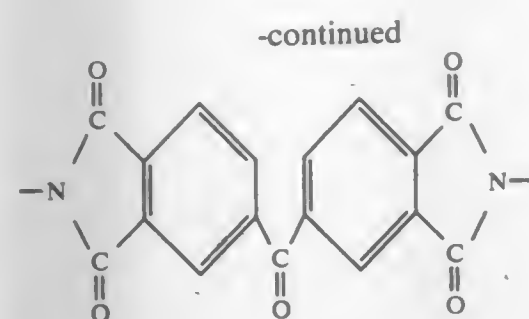
wherein n is an integer from 1 to 2, R is  $C_1$ - $C_{24}$  alkyl or phenyl, each of  $R^1$  and  $R^2$  independently is hydrogen or R, and X is  $C_1$ - $C_6$  alkylene or  $C_2$ - $C_6$  alkylene having oxygen between any two adjacent carbon atoms and, if n is 1, A is



wherein Q is a group of  $-Z-CO-$ , wherein the carbonyl group is attached to the nitrogen of the formula II, and Z is o-phenylene which can be substituted by a group  $-CON(R^6)R^7$ ,  $-COOR^8$  or  $-COSR^8$ , or by 4 halogen atoms,  $R^6$  and  $R^7$  are the same or different and are hydrogen or  $C_1$ - $C_{12}$ -alkyl and  $R^8$  is  $C_1$ - $C_{12}$  alkyl, and, if n is 2, A is one of the groups of the formulae







wherein Y can be —O— or —NH—, B is C<sub>1</sub>–C<sub>6</sub> alkylene, p-phenylene or one of the groups [—CH<sub>2</sub>—q] (CH<sub>2</sub>—q or [(CH<sub>2</sub>—q)S] (CH<sub>2</sub>—q, wherein q is an integer from 1 to 4 and r is an integer from 1 to 3.

4,339,384

### BENZOFURAN DERIVATIVES AND THEIR THERAPEUTIC APPLICATIONS

Jacques G. Maillard, Versailles, and Jacky Legeai, Palaiseau, both of France, assignors to Laboratoires Jacques Logeais, Issy-les-Moulineaux, France

Filed Jul. 3, 1979, Ser. No. 54,626

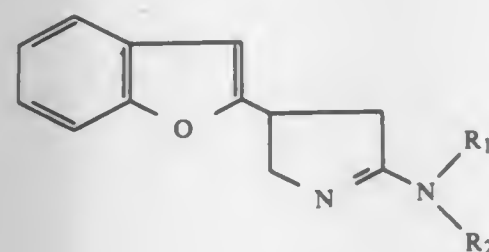
Claims priority, application France, Jul. 17, 1978, 78 21188

Int. Cl.<sup>3</sup> C07D 405/04; A61K 31/40

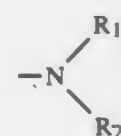
U.S. Cl. 548—525

3 Claims

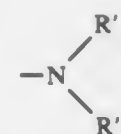
1. A compound selected from the group consisting of compounds having the formula:



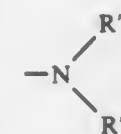
in which



is selected from:  
a radical



in which R'<sub>1</sub> is hydrogen and R'<sub>2</sub> is selected from hydrogen; C<sub>1-6</sub> alkyl; C<sub>2-6</sub> alkenyl; C<sub>2-6</sub> alkynyl; phenyl; phenyl C<sub>1-6</sub> alkyl; mono-, di- and trimethoxyphenyl C<sub>1-6</sub> alkyl; C<sub>1-6</sub> alkoxy; benzyloxy; di-C<sub>1-6</sub> alkylamino-C<sub>1-6</sub> alkyl; C<sub>1-6</sub> hydroxyalkyl; C<sub>1-6</sub> alkyloxycarbonyl C<sub>1-6</sub> alkyl; and a radical



in which R'<sub>1</sub> and R'<sub>2</sub> are C<sub>1-6</sub> alkyl; and a pharmacologically acceptable acid addition salt thereof.

4,339,385

### INDOLINOSPIROPYRANE COMPOUNDS

Peter Burri, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 761,042, Jan. 21, 1977, Pat. No. 4,210,591.

This application Jan. 4, 1980, Ser. No. 109,741

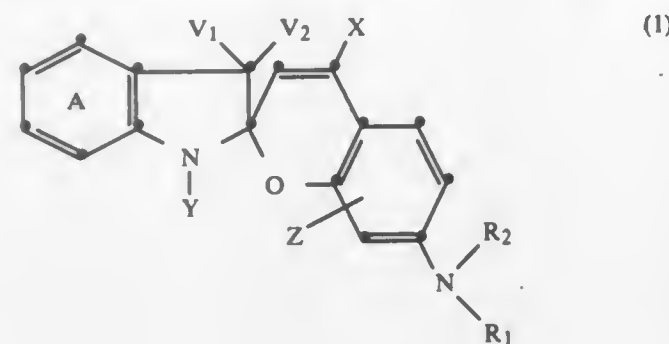
Claims priority, application Switzerland, Jan. 30, 1976, 1175/76; Sep. 7, 1976, 11326/76

Int. Cl.<sup>3</sup> C07D 491/107

U.S. Cl. 548—409

13 Claims

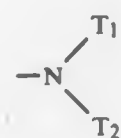
1. An indolinospiropyran compound of the formula



wherein

R<sub>1</sub> and R<sub>2</sub>, together with the nitrogen atom which links them, represent a pyrrolidino group,

X represents alkyl which has at most 12 carbon atoms and is unsubstituted or monosubstituted by halogen, or benzyl or phenyl which is unsubstituted or mono- or disubstituted by halogen, nitro, lower alkyl, lower alkoxy or the amino group



wherein T<sub>1</sub> and T<sub>2</sub> independently of one another represent hydrogen, lower alkyl or lower alkyl-carbonyl, or T<sub>1</sub> and T<sub>2</sub>, together with the nitrogen atom which links them, represent a pyrrolidino group, or X represents a heterocyclic group selected from the group consisting of pyrrolyl, thienyl, furyl, benzothienyl and coumarinyl, which heterocyclic group is unsubstituted or monosubstituted by halogen, hydroxyl, cyano, nitro, lower alkyl, lower alkoxy or lower alkyl-carbonyl,

Y represents alkyl which has at most 12 carbon atoms, and is unsubstituted or monosubstituted by halogen, cyano or lower alkoxy, or benzyl which is unsubstituted or mono- or disubstituted by halogen, nitro, lower alkyl or lower alkoxy,

Z represents hydrogen, halogen or lower alkyl,

V<sub>1</sub> and V<sub>2</sub> each represent lower alkyl, cycloalkyl or benzyl, or conjointly represent alkylene of 4 to 5 carbon atoms, and the ring A is unsubstituted or monosubstituted by halogen, nitro, cyano, trifluoromethyl, lower alkyl, lower alkoxy, lower alkoxy-carbonyl, phenoxy, amino, lower alkylamino or N-lower alkyl-carbonylamino.

4,339,386

### 5-[(3,4-DIMETHOXYPHENYL)OR(4-CHLOROPHENYL)]-2-FURANCARBOXALDEHYDE-O-[(METHYLAMINO)CARBONYL]OXIME

Robert J. Alaimo, and Joseph E. Gray, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Aug. 5, 1981, Ser. No. 290,409

Int. Cl.<sup>3</sup> C07D 307/54

U.S. Cl. 549—496

2 Claims

1. The compound 5-(3,4-dimethoxyphenyl)-2-furancarboxaldehyde-O-[(methylamino)carbonyl]oxime.

2. The compound 5-(4-chlorophenyl)-2-furancarboxaldehyde-O-[(methylamino)carbonyl]oxime.

4,339,387

### PROCESS FOR MANUFACTURING 5-HYDROXYMETHYLFURFURAL

Guy Fleche, Merville; Antoine Gaset, Toulouse; Jean-Pierre Gorrichon, Toulouse; Eric Truchot, Toulouse, and Philippe Sicard, Lille, all of France, assignors to Roquette Freres, Lestrem, France

Filed Aug. 27, 1980, Ser. No. 181,744

Claims priority, application France, Sep. 5, 1979, 79 22251

Int. Cl.<sup>3</sup> C07D 307/46

U.S. Cl. 549—488

10 Claims

1. Process of manufacturing 5-hydroxymethylfurfural by decomposition of a hexose in a reaction medium comprising water and an organic solvent whose solubility in water is as low as possible, this solvent being selected from among those which are good solvents of HMF, at a temperature situated in the range of 70° to 95° C. in the presence of a solid catalytic support.

4,339,388

### SYNTHESIS OF PERIPLANONE-B

W. Clark Still, 560 Riverside Dr., New York, N.Y. 10027

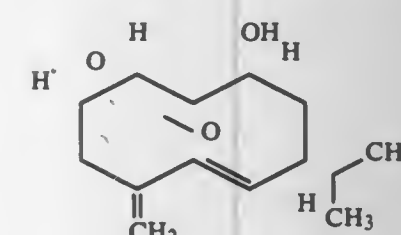
Filed Apr. 22, 1980, Ser. No. 142,643

Int. Cl.<sup>3</sup> C07D 493/10

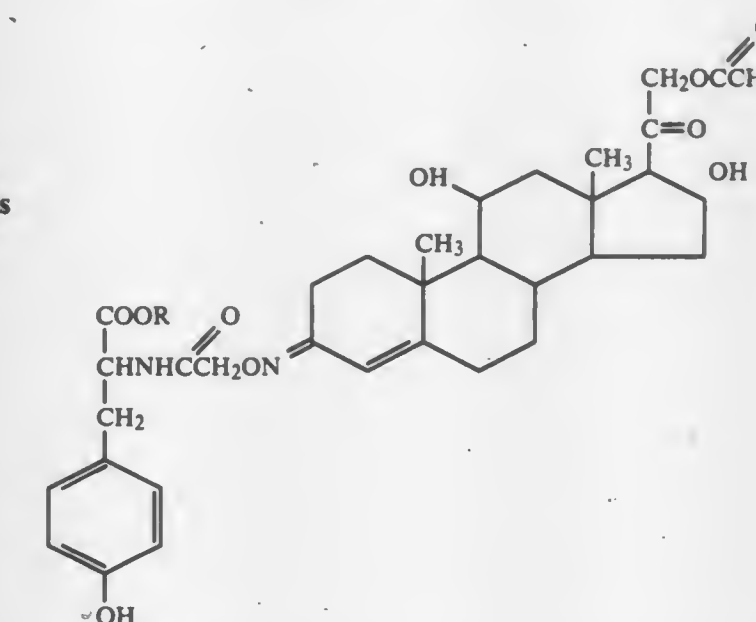
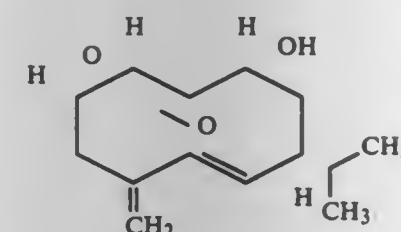
U.S. Cl. 549—332

3 Claims

1. An alcohol selected from the group consisting of



AND



wherein R is selected from the group consisting of hydrogen, methyl and ethyl.

4,339,391

### QUATERNARY AMMONIUM COMPOUNDS

Erich Hoffmann, Krefeld; Wolfgang Wagemann, Tremsbüttel; Günther Täuber, Koblenz; Adolf May, Hofheim am Taunus, and Hans-Walter Bücking, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,202

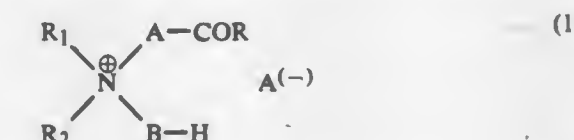
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928603

Int. Cl.<sup>3</sup> C09F 5/00

U.S. Cl. 260—401

3 Claims

1. Quaternary ammonium compounds of the formula I



in which R is C<sub>8</sub>–C<sub>30</sub>-alkyl or alkenyl; R<sub>1</sub> is alkyl, 2-hydroxyal-

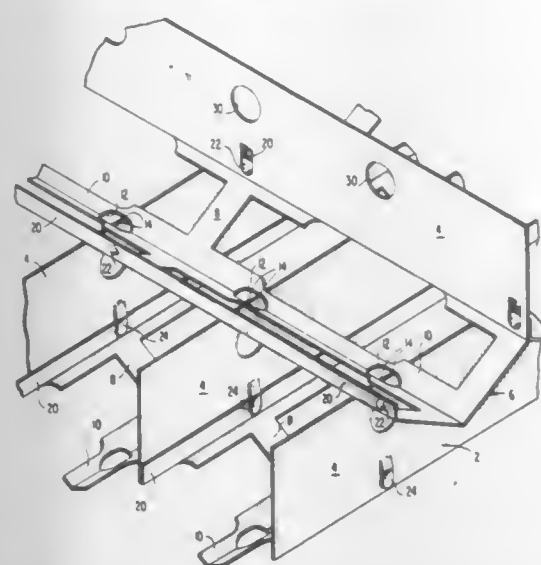
and mixtures thereof, wherein k is 3 or greater; and, h plus k are non-zero integers the sum of which is from 12 to 20.







trough portions having liquid drain openings located where they contact the flanges of a grid therebelow so



that liquid in the trough portions will drain gravitationally onto the flanges of the grid therebelow.

4,339,400

# PROCESS FOR PRODUCING THREE-DIMENSIONAL, MIRROR-FINISHED ARTICLES

Paul A. Sorko-Ram, 1111 N. Centerville, Sturgis, Mich. 49091  
Filed May 11, 1981, Ser. No. 262,234  
Int. Cl.<sup>3</sup> B29D 11/00

U.S. Cl. 264—1.9

11 Claims

1. A process for producing a three-dimensional thermoplastic object having a mirror-like reflective finish, comprising the steps of:

- (A) heating a sheet of thermoplastic material to a temperature sufficient to form said sheet but less than the melting temperature of said sheet;
- (B) then, cooling said sheet substantially to room temperature;
- (C) then, depositing a layer of reflective metal on the surface of said sheet;
- (D) then, heating said sheet to a temperature sufficient to form said sheet; and,
- (E) then, forming said sheet into the shape of said three-dimensional object.

4,339,401

# PROCESS FOR PRODUCING METAL POWDERS HAVING LOW OXYGEN CONTENT

Ian S. R. Clark, Greenwood Lake, N.Y., and Benjamin J. Baltrukovic, Oak Ridge, N.J., assignors to The International Nickel Company, Inc., New York, N.Y.  
Division of Ser. No. 749,113, Dec. 9, 1976, Pat. No. 4,080,126.  
This application Dec. 5, 1977, Ser. No. 857,315  
Int. Cl.<sup>3</sup> B01J 2/06

U.S. Cl. 264—11

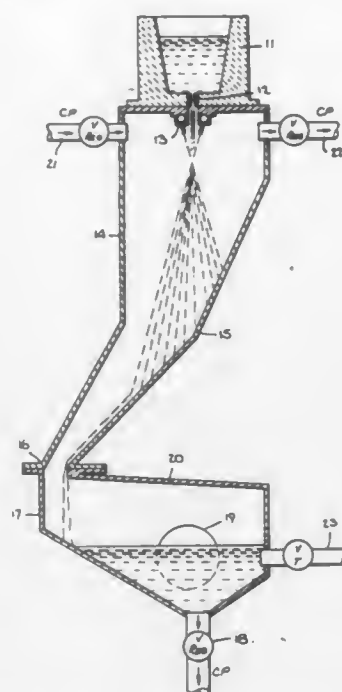
1 Claim

1. A gravity assisted, low turbulent process for producing metal powders having low oxygen content, the process comprising:

- (A) introducing a downwardly flowing molten metallic stream through the upper portion of a vertically oriented atomization vessel,
- (B) impacting the stream with downwardly flowing pressurized water to atomize the stream in the upper portion of the vessel to form metal droplets, which are quenched to form a powder with the and water forming a downwardly flowing slurry,
- (C) conducting the atomization in an inert gaseous atmosphere,
- (D) impacting the slurry against a canted deflector surface disposed beneath the upper portion of the vessel to free at

least a portion of the entrained inert gas from the slurry and return the gas to the atmosphere,

- (E) routing the slurry to flow down the deflector surface in a gently curving path to an exit aperture disposed in the lower portion of the vessel, the exit aperture offset from the vertical centerline of the molten stream to reduce slurry turbulence and splashback, the exit aperture opening into a closed degassing vessel disposed below the atomization vessel,



- (F) introducing the flowing slurry into a substantially quiescent pool of slurry located within the degassing vessel to return substantially all of the remaining entrained gas from the slurry to the atmosphere,
- (G) maintaining the slurry in the degassing vessel in a substantially quiescent state to foster inert gas bubble formation in the slurry disposed in the degassing vessel so as to provide a positive pressure of inert gas within the atomization vessel and the degassing vessel,
- (H) drawing off the resulting degassed slurry, and
- (I) separating the metal powder from the slurry.

4,339,402

# BATCH PELLETIZING: A MEANS FOR MEASURING PELLET SIZE DURING THE FORMING PROCESS

Richard K. Henry, Heath, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio  
Continuation-in-part of Ser. No. 974,470, Dec. 29, 1978, abandoned. This application Nov. 29, 1979, Ser. No. 95,268  
Int. Cl.<sup>3</sup> B01J 2/14

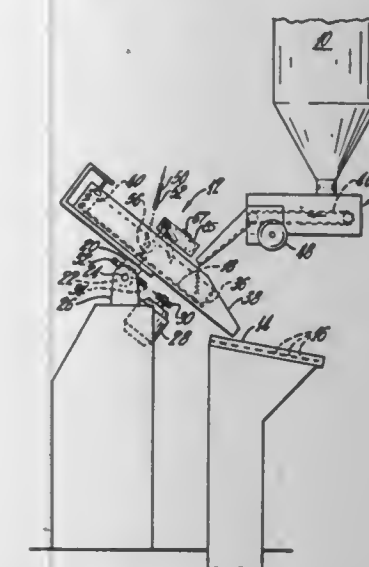
U.S. Cl. 264—40.1

9 Claims

1. A method of pelletizing particulate batch material for use in a glass melting furnace, the method comprising the steps of:

- a. supplying particulate batch material having an average particle diameter of 110–120 microns and which contains on a theoretical oxide basis between 10–20 percent by weight of Na<sub>2</sub>O, to a slanted rotatable surface;
- b. supplying liquid to the slanted rotatable surface to render the batch particles with the ability to adhere to one another upon impaction;
- c. rotating the slanted rotatable surface in a given direction to cause the material on the surface to move up along the surface and then downwardly at least partially under the influence of gravity so as to move in generally elliptical paths, whereby individual particles are caused to impact against one another and adhere thereto to form pellets, the size of the substantially finished pellets being in the range of 1/8 inch to 1/2 inch in diameter;
- d. sensing the diameter of substantially finished pellets at a downward portion of an elliptical path by placing a sensor in a position above the slanted rotatable disc determined by

measuring the shortest distance from the edge of the pelletizer to the center of the elliptical path progressed by substantially finished pellets and then measuring this distance toward the center of the pelletizer and placing the sensor in this position such that it intercepts the downward elliptical



- e. changing the ratio of liquid to batch supplied to the slanted rotatable surface in response to a change in the diameter of the substantially finished pellets which are sensed.

4,339,403

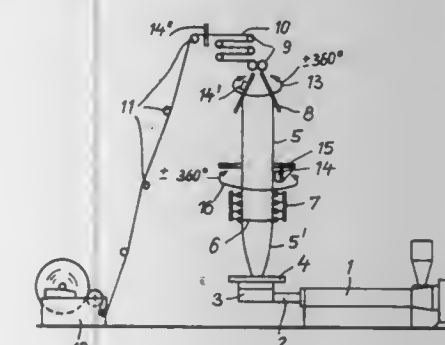
# METHOD OF CONTROLLING THE FILM THICKNESS AT A BLOWN FILM EXTRUDER INSTALLATION

Hartmut Upmeyer, Gerd Klinge, and Gerhard Winkler, all of Lengerich, Fed. Rep. of Germany, assignors to Windmüller & Hölscher, Lengerich, Fed. Rep. of Germany  
Filed Nov. 21, 1980, Ser. No. 209,060  
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947293

Int. Cl.<sup>3</sup> B29D 23/04

U.S. Cl. 264—40.1

12 Claims



1. A method of controlling the film thickness at a blown film extruder installation, the installation comprising a nozzle ring divided into correcting sectors provided with setting elements for extruding tubular film, a film calibrating device, and a take-off and coiling apparatus for the film, said method comprising measuring film thicknesses over the film circumference at a location spaced from the nozzle ring; establishing a number of film sectors of equal cross-sectional area corresponding to the number of correcting sectors from the film thicknesses measured over the film circumference; determining a film sector of maximum or minimum thickness and assuming such film sector has been extruded in a predetermined position with respect to the nozzle ring for determining the associated correcting sector at the nozzle ring; successively allocating adjacent film thicknesses of equal cross-sectional area to subsequent correcting sectors; influencing the respective correcting

sectors at the nozzle ring until the circumferential lengths of the film sectors of equal cross-sectional area are equal.

11. A blown film extruder installation comprising: a nozzle ring for extruding tubular film divided into correcting sectors; means for influencing each of the correcting sectors to thereby vary the thickness of extruded tubular film; calibrating means spaced from said nozzle ring for calibrating the width of the extruded tubular film; measuring means for measuring film thicknesses over the circumference of the extruded tubular film; means for removing extruded tubular film from said nozzle ring and for coiling the removed extruded tubular film; and control means for controlling said means for influencing comprising: means for dividing the measured film thicknesses into a predetermined number of film sectors of equal cross-sectional area corresponding to the number of correcting sectors; means for determining a mean film thickness and for determining a film sector having the greatest deviation from the mean film thickness; means for assigning the film sector having the greatest deviation to a selected one of the correcting sectors of the nozzle ring; means for successively allocating film sectors adjacent to the assigned film sector to corresponding correcting sectors adjacent the selected correcting sector; and means for actuating said means for influencing to thereby vary the thickness of extruded tubular film until the circumferential lengths of the sectors of equal cross-sectional area are equal.

4,339,404

# METHOD OF CONTROLLING THE FILM THICKNESS AT A BLOWN FILM INSTALLATION

Hartmut Upmeyer, Gerd Klinge, and Gerhard Winkler, all of Lengerich of Westphalia, Fed. Rep. of Germany, assignors to Windmüller & Hölscher, Lengerich of Westphalia, Fed. Rep. of Germany

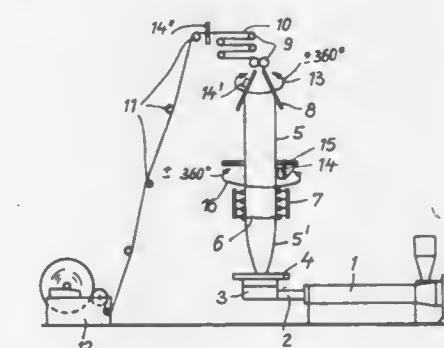
Filed Dec. 9, 1980, Ser. No. 214,733

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1980, 3002903

Int. Cl.<sup>3</sup> B29D 23/04

U.S. Cl. 264—40.1

10 Claims

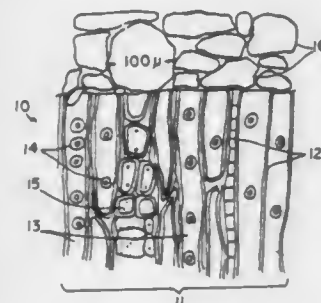


1. A method of controlling the film thickness at a blown film extruder installation, the installation comprising a nozzle ring for extruding film divided into cooling sectors provided with setting elements, a film calibrating device, and a take-off and coiling apparatus for the film, said method comprising: measuring thicknesses over the circumference of the extruded film; forming film sectors of equal circumferential length corresponding to the number of cooling sectors and assigning the film sectors to respective ones of the cooling sectors; assigning the individual measured thicknesses to the film sectors and determining mean thickness distributions (s'<sub>x</sub>) for the individual film sectors, the values of the mean



thickness distributions ( $s'_x$ ) defining a measure for correcting commands for the setting elements of the cooling sectors that are associated with the respective film sectors; selecting one of the mean thickness distributions of one of the film sectors as a reference value ( $s'_{x\max}$ ); and simultaneously generating correcting commands that influence the cooling sectors associated with remaining ones of the film sectors so that the values of the mean thickness distributions of the remaining film sectors approach the reference value to thereby obtain uniform thickness of the extruded film, the size of the correcting commands being so related to the film sector having the selected reference value that the cooling sector associated therewith receives no correcting command and the correcting commands of the other cooling sectors are formed by the respective departure ( $\Delta s_x$ ) of the mean thickness distribution of the associated film sectors from the extreme reference value of the mean thickness distribution ( $\Delta s_x = s'_{x\max} - s'_x$ ), and that by reason of the correcting commands and according to the departure ( $\Delta s_x$ ), the cooling sectors are cooled when the reference value is a maximum thickness and the cooling sectors are heated when the reference value is a minimum thickness.

**4,339,405**  
**METHOD OF ADHERING MINERAL DEPOSIT IN WOOD FRAGMENT SURFACES**  
 Laszlo Paszner, 3906 W. 33rd Ave., Vancouver, B.C., Canada V6N 2H8  
 Filed Mar. 20, 1979, Ser. No. 21,775  
 Claims priority, application Canada, Mar. 20, 1978, 299288  
 Int. Cl.<sup>3</sup> B29D 3/02  
 U.S. Cl. 264—108  
 44 Claims

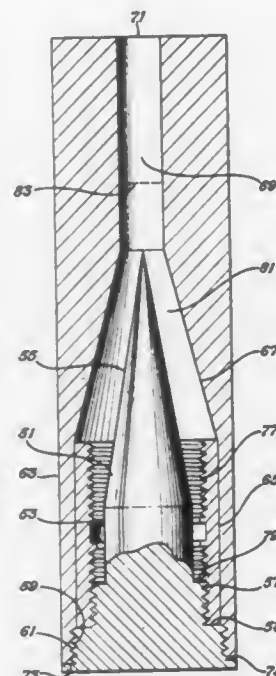


- The method of making a molded composite product including a ligneous plant material with surfaces having internal pore spaces which is bonded with a mineral binder which comprises:
  - providing an aqueous solution of an ammonium phosphate or ammonium polyphosphate on the plant material so as to be absorbed within the pore spaces and to wet the surfaces along with a particulate alkaline earth metal oxide, hydroxide or carbonate on the wetted surfaces which reacts with the ammonium phosphate or ammonium polyphosphate to form an alkaline earth metal oxyphosphate as the binder within the pores and as a wet paste coating on the surfaces; and
  - molding the wet paste coated material until the oxyphosphate is solidified within the pores and on the surfaces to form the composite product.

**4,339,406**  
**PROCESS OF FORMING A NOZZLE**  
 Gene E. Underwood, Casper, Wyo., assignor to 3U Partners, Casper, Wyo.  
 Division of Ser. No. 15,292, Feb. 26, 1979, Pat. No. 4,241,878.  
 This application Sep. 22, 1980, Ser. No. 189,216  
 Int. Cl.<sup>3</sup> B29D 1/00, 3/00; B29C 1/14  
 U.S. Cl. 264—154  
 4 Claims

- A process of forming a nozzle for discharging a fluid; comprising the steps of:
  - locating in an upright position a tubular conduit having an

opening formed therethrough and having internal threads formed on the inside thereof at opposite ends, said internal threads formed on the inside of said conduit at said opposite ends being threaded in opposite directions respectively, locating within said conduit a core having a conical shaped end extending upward and out of said conduit, said core being spaced inward from the inside wall of said conduit down to a lower level between the upper and lower ends of said internal threads at the lower end of said conduit, surrounding said conical shaped end of said core with a mold having its inside wall spaced from said conical shaped end,

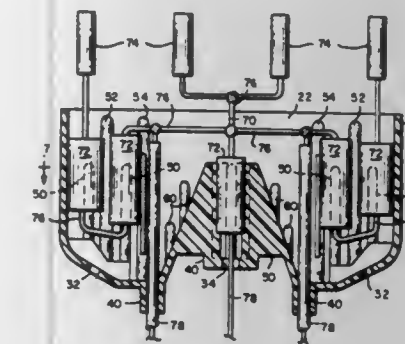


filling the space between the inside wall of said conduit and the core with a liquid material starting with said lower level and extending upward to the top of said conduit, filling the space between said conical shaped end of said core and the inside wall of said mold with said liquid material up to a level above the top of said core, said liquid material being characterized such that when it hardens it becomes elastic, allowing said liquid material to harden to form an elastic member molded within said conduit, removing said mold and said core, and severing a portion of said elastic member extending beyond said conduit to form a discharge opening for the aperture extending into said elastic member formed upon removal of said core.

**4,339,407**  
**ELECTRONIC CIRCUIT ENCAPSULATION**  
 Robert D. Leighton, Brockton, Mass., assignor to Alden Research Foundation, Brockton, Mass.  
 Filed Oct. 2, 1980, Ser. No. 192,950  
 Int. Cl.<sup>3</sup> B29C 6/02  
 U.S. Cl. 264—229  
 7 Claims

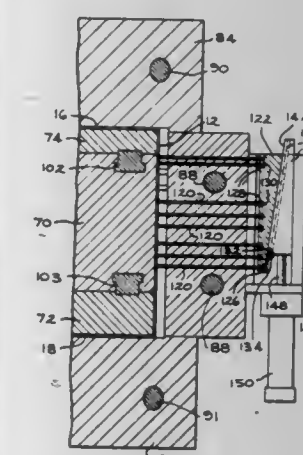
- A support for holding an electrical component during encapsulation in a mold, the support comprising:
  - a mold;
  - a carrier having opposed walls at least one of which is flexible toward the other; and
  - means on the opposed walls for engaging opposite sides of a component therebetween and locating the component relative to the opposed walls, the engaging means on respective opposed walls cooperatively gripping the component with force applied by wall flexure, and means for interengagement between the carrier and mold for deflecting the carrier wall to apply said gripping force on the component.

- The method of encapsulating an electrical component comprising:
  - inserting the component in a carrier between opposed carrier walls;
  - enclosing the carrier in a mold and engaging the exterior of the carrier with the mold thereby deflecting the walls of



the carrier with force applied by the closing of the mold on the carrier thereby to deflect the inside of the walls of the carrier into gripping engagement of the component; and injecting encapsulant into the mold while the component is so gripped against movement by flow of the encapsulant.

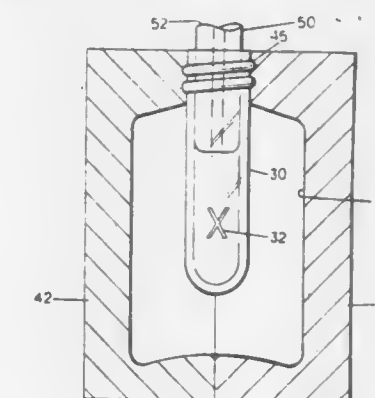
**4,339,408**  
**METHOD FOR MOLDING STRAIGHT RIBBED ARTICLES**  
 Thomas E. Jenkins, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.  
 Filed Nov. 3, 1980, Ser. No. 203,014  
 Int. Cl.<sup>3</sup> B29F 1/14  
 U.S. Cl. 264—328.7  
 3 Claims



- A method of manufacturing a plastic article having at least one substantially planar wall portion with at least one integrally molded rib portion extending from the wall portion, said method comprising the steps of:
  - positioning mold means, comprising a plurality of mold cavity forming members, in a closed position to define a mold cavity corresponding to the configuration of the plastic article, said cavity including a rib forming portion, the rib forming portion including a main rib forming portion and a plurality of embossment forming portions extending from and distributed at spaced intervals along the length of the main rib forming portion, and having a plurality of pins spaced along its length in alignment with the embossment forming portions for axial movement substantially in the plane of the rib;
  - injecting molten thermoplastic material under pressure into the mold defining cavity;
  - cooling said thermoplastic material for a predetermined period of time;
  - simultaneously injecting a predetermined volume of thermoplastic material from the embossment forming portions

into the main rib forming portion of the mold cavity by moving the pins in an injecting direction toward the rib portion a first predetermined distance corresponding to the volume of plastic to be injected; and ejecting the article by displacing the plurality of mold cavity defining members from their closed position and exerting a pressure on the rib portion of the article at the plurality of embossment portions formed along the rib portion by moving the pins a second predetermined distance in the injection direction thereby forcing the rib portion from the rib forming portion of the mold cavity as the mold cavity defining members move from the closed position.

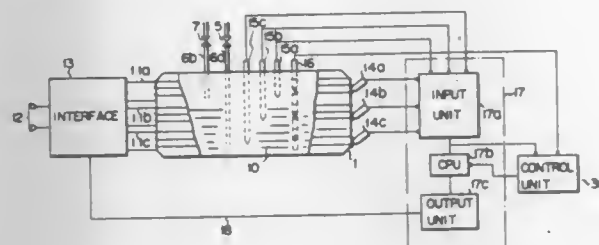
**4,339,409**  
**METHOD OF FORMING BLOWN POLYETHYLENE TEREPHTHALATE CONTAINERS**  
 Nicholas J. Curto, Monroe, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio  
 Filed Jan. 26, 1981, Ser. No. 228,652  
 The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.  
 Int. Cl.<sup>3</sup> B29C 17/07  
 U.S. Cl. 264—509  
 5 Claims



- In a method of forming a blown hollow shape of poly(ethylene terephthalate) having an exterior opaque embossed surface design, the steps of:
  - forming a blowable preform of poly(ethylene terephthalate) having an exterior embossed surface design defined by adjacent thick and thin wall portions destined to form the embossed design in the blown container;
  - thermally conditioning the preform to a temperature in a range where the material is susceptible to strain hardening, and at the same time heating only the raised design portions to a higher temperature at which said raised portions of the preform crystallize and thus become opaque;
  - enclosing the blowable preform within a blow mold cavity having a smooth wall portion;
  - introducing blow fluid under pressure into the interior of the preform and thereby (1) expanding the preform outwardly to conform to said cavity, including contacting both the thick and thin wall portions with said blow mold cavity smooth wall portion, (2) strain hardening the preform, and (3), proportionately expanding said thick and thin wall portions; and thereafter venting fluid under pressure from the interior of said blown shape to allow removal from the mold of a transparent, hollow blown shape having said exterior opaque embossed surface design.



**4,339,410**  
**CONTROL FOR LIQUID PLANT**  
 Takahisa Satou, Tokorozawa, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan  
 Continuation of Ser. No. 862,275, Dec. 19, 1977, abandoned.  
 This application May 12, 1980, Ser. No. 148,993  
 Claims priority, application Japan, Dec. 17, 1976, 51/151807  
 Int. Cl.<sup>3</sup> G21C 7/00  
 U.S. Cl. 376—216 11 Claims



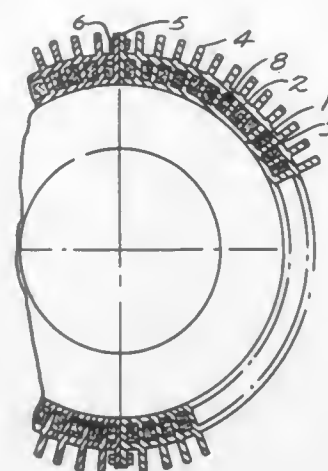
1. A temperature control system for liquid plants in coolant systems of nuclear plants utilizing a heat exchange liquid that is capable of solidifying absent the application of a heat source of a predetermined temperature, comprising:

- plant members including a vessel for containing liquid, a pipe line into which the liquid is introduced from the vessel, at least one pump which is connected to the pipe line and forces said liquid to circulate through the pipe line, a heat exchanger coupled with the pipe line, a plurality of heaters which are provided corresponding to the respective control points of said plant members and which heat said plant members at the respective control points, temperature sensors for detecting the temperature of said liquid and said plant members at the respective control points and detecting means for detecting a process value representing the plant;
- a temperature control means which receives the output signals of said temperature sensors, calculates at each control point the difference between a reference temperature and the temperature detected by said temperature sensors, and determines a control valve from the result of the calculation to produce control signals for controlling electric power being supplied to said respective heaters;
- a control unit which receives the output signals from said detecting means and the temperature sensors, selects control information from a temperature control schedule of the plant in accordance with the temperature detected by the temperature sensors and the process value detected by said detecting means, and supplies said temperature control means with the control information determining the reference temperature.

**4,339,411**  
**SHIELDING CONTAINER FOR THE TRANSPORTATION AND/OR FOR STORAGE OF SPENT FUEL ELEMENTS**  
 Hans-Günther Knackstedt, Langenselbold; Reiner Lang, Hanau, and Erhard Müller, Gründau, all of Fed. Rep. of Germany, assignors to Degussa Transnuklear GmbH, Hanau, Fed. Rep. of Germany  
 Filed Apr. 14, 1980, Ser. No. 139,677  
 Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 7911030[U]  
 Int. Cl.<sup>3</sup> G21F 5/00  
 U.S. Cl. 376—272 24 Claims

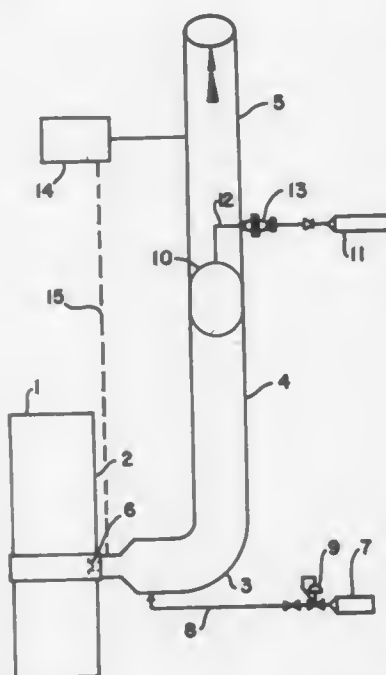
1. A shielding container suitable for the transportation or storage of spent fuel elements from nuclear reactors, said shielding container having a cooling fin jacket, said jacket

being formed of a plurality of joinable, individually removable parts comprising two concentric, metallic cylindrical wall



sections joined together by heat conducting bars, said cooling fin jacket being fitted to the container wall.

**4,339,412**  
**APPARATUS FOR REDUCING THE CHANCES OF IGNITION AND EXPLOSION DUE TO THE DECOMPOSITION OF HIGH-PRESSURE INDUSTRIAL PROCESS GASES**  
 Pierre Durand, Neuilly sur Seine, and Guy Jouffroy, Saint Arnould Par Caudedec en Caux, both of France, assignors to Societe Chimique des Charbonnages - CdF Chimie, Paris, France  
 Filed Apr. 25, 1980, Ser. No. 143,635  
 Claims priority, application France, Apr. 25, 1979, 79 10443  
 Int. Cl.<sup>3</sup> G05B 9/00; C08F 2/34; C08G 85/00  
 U.S. Cl. 422—117 4 Claims

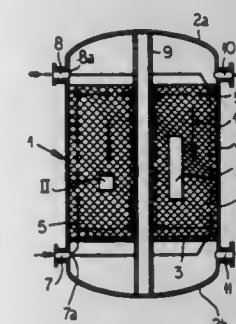


1. Apparatus for evacuating to the atmosphere reactive and/or decomposable gases contained in a high-pressure enclosure, comprising
- (a) a high pressure enclosure,
- (b) an evacuation conduit adjacent to said enclosure;
- (c) pressure-responsive safety means separating said evacuation conduit from said enclosure for automatically providing an evacuation flowpath from said enclosure to said evacuation conduit when the pressure in the enclosure exceeds a predetermined value;
- (d) sealing means located downstream of said safety means in the evacuation path of the gases and occupying all of the cross-section of the evacuation conduit, said sealing means automatically providing an evacuation flowpath from said

evacuation conduit when the pressure in the evacuation conduit exceeds a predetermined value; and

(e) a first inert gas supply circuit connected by a conduit to that part of the evacuation conduit located between the safety means and the sealing means, and means for said first supply conduit to control the volume of inert gas fed by said first supply circuit.

**4,339,413**  
**METHANOL-SYNTHESIS REACTOR**  
 Ulrich Lahne; Peter Hesse, both of Munich; Erhard Kliem, Wolfratshausen; Bernhard Kruis, Pullach, and Reiner Lohmüller, Munich, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany  
 Filed Feb. 24, 1981, Ser. No. 237,671  
 Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 3007202  
 Int. Cl.<sup>3</sup> F28D 7/02  
 U.S. Cl. 422—200 7 Claims



1. A methanol-synthesis reactor comprising:
- an elongated housing formed with an inlet at one end and an outlet at the opposite end thereof for effecting synthesis gas flow in a predetermined axial direction through said housing;
- means for supporting a gas-permeable body of methanol-synthesis catalyst particles within said housing between said inlet and said outlet;
- an array of coolant tubes spaced apart within said housing, said tubes of said array being spaced from one another in said direction and transversely to said direction; and
- means for feeding a coolant to and removing said coolant from said array of tubes,
- said tubes being of circular cross section with internal diameters between 4 and 50 mm and having a spacing a between neighboring tubes transverse to said direction between 2 and 20 times the minimum linear dimension of the particles of said catalyst, and a spacing c in said direction which is less than 10-a.

**4,339,414**  
**METHOD FOR LOADING OF URANYL ION COMPLEXES ON ION EXCHANGE RESIN**  
 Thomas F. Moore, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.  
 Filed Aug. 30, 1978, Ser. No. 938,289  
 Int. Cl.<sup>3</sup> B01D 15/04  
 U.S. Cl. 423—7 5 Claims

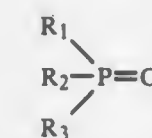
1. An improved method for removing uranyl ion complexes from a pregnant leach solution containing same with an ion exchange resin, wherein the improvement comprises adding carbon dioxide to said solution prior to said removal.

**4,339,415**  
**RECOVERY OF SOLUBLE ALUMINA VALUES FROM ALUMINA BEARING ORES**  
 John I. Choi, Camillus; Bruce E. Kurtz, Marcellus, and Anatoli Omelian, Camillus, all of N.Y., assignors to Allied Corporation, Morris County, Morris Township, N.J.  
 Filed Dec. 5, 1980, Ser. No. 213,273  
 Int. Cl.<sup>3</sup> C01F 7/56  
 U.S. Cl. 423—126 13 Claims

1. A process for recovery of soluble alumina values from alumina-bearing ores which comprises the steps of
- (a) preparing an aqueous slurry of alumina-bearing ore;
- (b) simultaneously contacting, at ambient temperatures, said aqueous slurry with a stream containing an effective amount of an oxidizing agent and a stream containing an effective amount of a reducing agent, the oxidizing agent and the reducing agent being selected such that the simultaneous contacting of the oxidizing agent and the reducing agent with said aqueous slurry spontaneously provides appropriate chemical ions and sufficient energy to raise the temperature of the contacting to about 100° C., to remove soluble alumina values from said alumina-bearing ores, wherein the oxidizing agent is F<sub>2</sub>, Cl<sub>2</sub> or Br<sub>2</sub> and wherein the reducing agent is SO<sub>2</sub>, NO, NO<sub>2</sub>, M<sub>2</sub>S<sub>2</sub>O<sub>4</sub> or MHSO<sub>3</sub> and wherein M is an alkali metal cation;
- (c) maintaining said simultaneous contact at a temperature of about 100° C. for a time sufficient to remove at least about 50 weight percent of the soluble alumina values from said alumina-bearing ores and to form a soluble alumina solution and insoluble materials;
- (d) separating said soluble alumina solution from said insoluble materials; and
- (e) recovering the soluble alumina values from said solution.

**4,339,416**  
**URANIUM RECOVERY PROCESS**  
 Richard Fitoussi, Versailles, and Claude Musikas, Villebon, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France  
 Filed Nov. 16, 1979, Ser. No. 94,889  
 Claims priority, application France, Nov. 28, 1978, 78 33544  
 Int. Cl.<sup>3</sup> C01G 43/00  
 U.S. Cl. 423—10 10 Claims

1. A process for the recovery of the uranium present in a phosphoric acid solution by bringing the said solution into contact with an organic solvent suitable for extracting the uranium, wherein the said organic solvent comprises a system of extractants constituted by a dialkyl-dithiophosphoric acid and by a neutral phosphine oxide of formula:



in which R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are identical or different alkyl, alkoxy-alkyl or aryl radicals.

**4,339,417**  
**PROCESS FOR THE PRODUCTION OF CRYSTALLINE ZEOLITE A**  
 Hans Strack, Alzenau, Fed. Rep. of Germany, assignor to Degussa AG, Frankfurt, Fed. Rep. of Germany  
 Filed Feb. 24, 1981, Ser. No. 237,726  
 Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 3007044  
 Int. Cl.<sup>3</sup> C01B 33/28  
 U.S. Cl. 423—329 8 Claims

1. A process for the production of a crystalline zeolite powder of Type A having an average particle diameter of 8.5 to 9.0 μ, comprising (1) having present in a container 8 to 12 parts by volume of a sodium aluminate liquor having a concentration



of 50 to 200 g/l Na<sub>2</sub>O and 30 to 150 g/l Al<sub>2</sub>O<sub>3</sub>, (2) simultaneously adding with stirring during a time span of 8 to 15 minutes at a temperature of 30° to 70° C. either (a) 0.5 to 2.5 parts by volume of a sodium aluminate liquor having a concentration of 20 to 120 g/l Na<sub>2</sub>O and 5 to 50 g/l Al<sub>2</sub>O<sub>3</sub> or (b) such sodium aluminate liquor diluted with up to the same volume of water and (c) 0.1 to 0.6 parts by volume of a waterglass solution having a concentration of 90 to 120 g/l Na<sub>2</sub>O and 330 to 380 g/l SiO<sub>2</sub> or (d) such waterglass solution diluted up to 3 parts by volume with water, (3) subsequently stirring over a time span of 25 to 45 minutes, (4) adding during a time span of 8 to 15 minutes a further 15 to 20 parts by volume of the same sodium aluminate liquor as in step (2) as well as subsequently adding 3.0 to 3.5 parts by volume of the same waterglass solution as in step (2), cooling, filtering off the crystalline reaction product and drying.

4,339,418

## PROCESS FOR THE PRODUCTION OF ZEOLITE A

Hans Strack, Alzenau, Fed. Rep. of Germany, assignor to Degussa AG, Frankfurt and Henkel Kommanditgesellschaft, Dueseldorf, both of, Fed. Rep. of Germany

Filed Feb. 24, 1981, Ser. No. 237,727

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 3007123

The portion of the term of this patent subsequent to Jul. 13, 1999, has been disclaimed.

Int. Cl.<sup>3</sup> C01B 33/28

U.S. Cl. 423—329

8 Claims

1. A process for the production of a crystalline zeolite powder of Type A having an average particle diameter of 7 to 8.5  $\mu$  comprising (1) having present in a container 8 to 12 parts by volume of water, (2) simultaneously adding with stirring during a time span of 5 to 15 minutes at a temperature of 30° to 70° C. either (a) 1.5 to 2.5 parts by volume of sodium aluminate liquor having a concentration of 50 to 200 g/l of Na<sub>2</sub>O and 30 to 150 g/l of Al<sub>2</sub>O<sub>3</sub> and 0.6 to 2.5 parts by volume of a waterglass solution having a concentration of 90 to 120 g/l of Na<sub>2</sub>O and 330 to 380 g/l of SiO<sub>2</sub> or (b) a sodium aluminate liquor and waterglass solution as set forth in (a) wherein the waterglass solution is diluted with water in an amount up to 2.4 times its volume, (3) stirring the reaction mixture for 15 to 45 minutes at a temperature of 30° to 70° C., subsequently adding with stirring during a time span of 100 to 140 minutes at a temperature of 30° to 70° C., a further 15 to 20 parts by volume of a sodium aluminate liquor of the same concentration as in step (2), (5) subsequently with stirring at a temperature of 30° to 70° C. during a time span of 15 to 30 minutes adding a further 1.0 to 3.5 parts by volume of waterglass solution of the same concentration as in step (2), (6) subsequently stirring the reaction mixture over a time span of 20 to 180 minutes at 70° to 100° C., cooling the reaction mixture, filtering off the crystalline reaction product, washing with water to a pH below 10.5 and subsequently drying.

4,339,419

## PROCESS FOR THE PRODUCTION OF CRYSTALLINE ZEOLITE POWDER OF TYPE A

Hans Strack, Alzenau, Fed. Rep. of Germany, assignor to Degussa AG, Frankfurt and Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dueseldorf, both of, Fed. Rep. of Germany

Filed Feb. 24, 1981, Ser. No. 237,730

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1980, 3007080

The portion of the term of this patent subsequent to Jul. 13, 1999, has been disclaimed.

Int. Cl.<sup>3</sup> C01B 33/28

U.S. Cl. 423—329

5 Claims

1. A process for the production of a crystalline zeolite powder of Type A having an average particle diameter of 6.7 to 8.0  $\mu$  comprising (1) having present in a container 8 to 12 parts by volume of water, (2) simultaneously adding with stirring

during a time span of 5 to 15 minutes at a temperature of 30° to 70° C. either (a) 2 to 8 parts by volume of sodium aluminate liquor having a concentration of 50 to 200 g/l of Na<sub>2</sub>O and 30 to 100 g/l of Al<sub>2</sub>O<sub>3</sub> and 0.6 to 1.2 parts by volume of a waterglass solution having a concentration of 90 to 120 g/l of Na<sub>2</sub>O and 330 to 380 g/l or (b) a sodium aluminate liquor and waterglass solution as set forth in (a) wherein the waterglass solution is diluted with water in an amount up to 1.5 times its volume (3) stirring for a time span of 10 to 40 at 30° to 70° C. minutes, (4) subsequently adding during a time span of 5 to 15 minutes a further 2 to 3 parts by volume of waterglass solution of the same concentration as in step (2), (5) stirring for a time span of 10 to 40 minutes at a temperature of 30° to 70° C., (6) subsequently with stirring at a temperature of 30° to 70° C. during a time span of 5 to 15 minutes adding a further 16 to 20 parts by volume of a sodium aluminate liquor of the same concentration as in step (2), (7) subsequently stirring the reaction mixture over a time span of 20 to 180 minutes at a temperature of 75° to 100° C. and filtering off the crystalline product and drying.

4,339,420

## PROCESS FOR THE PRODUCTION OF ZEOLITE A

Hans Strack, Alzenau, Fed. Rep. of Germany, assignor to Degussa AG, Frankfurt and Henkel Kommanditgesellschaft Aktien (Henkel KGaA), Dueseldorf, both of, Fed. Rep. of Germany

Filed Feb. 24, 1981, Ser. No. 237,731

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 3007087

The portion of the term of this patent subsequent to Jul. 13, 1999, has been disclaimed.

Int. Cl.<sup>3</sup> C01B 33/28

U.S. Cl. 423—329

3 Claims

1. A process for the production of a crystalline zeolite powder of Type A having an average particle diameter of 4.3 to 8.5  $\mu$  comprising (1) having present in a container 8 to 10 parts by volume of water, (2) simultaneously adding with stirring during a time span of 5 to 15 minutes at a temperature of 30° to 70° C. 2 to 8 parts by volume of sodium aluminate liquor having a concentration of 50 to 200 g/l of Na<sub>2</sub>O and 30 to 150 g/l of Al<sub>2</sub>O<sub>3</sub> and 0.6 to 3.5 parts by volume of waterglass solution having a concentration of 90 to 120 g/l of Na<sub>2</sub>O and 330 to 380 g/l of SiO<sub>2</sub>, (3) stirring subsequently for a further 15 to 35 minutes, (4) subsequently adding with stirring during a time span of 3 to 150 minutes at a temperature of 30° to 70° C. a further 8 to 26 parts by volume of the sodium aluminate liquor of the same concentration as in step (2), (5) simultaneously with or subsequent to step (4) adding with stirring during a time span of 3 to 60 minutes at a temperature of 30° to 70° C. 1.1 to 2.6 parts by volume of waterglass solution of the same concentration as in step (2), (6) subsequently stirring the entire reaction mixture at a temperature of 75° to 110° C. for 20 to 180 minutes, cooling, filtering off the crystalline reaction product and drying.

4,339,421

## SYNTHETIC MAGNESIUM ALUMINOSILICATE, PROCESS FOR THE MANUFACTURE THEREOF, AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Adrian Schultess, and Jean-Claude Farine, both of Suisse, Switzerland, assignors to Laboratoires OM Societe Anonyme, Meyrin, Switzerland

Filed Aug. 24, 1979, Ser. No. 69,542

Claims priority, application Switzerland, Sep. 7, 1978, 9384/78; Jun. 22, 1979, 5890/79

Int. Cl.<sup>3</sup> A61K 33/06, 33/12; C01B 33/28

U.S. Cl. 423—330

2 Claims

1. A process for manufacturing an amorphous synthetic magnesium aluminosilicate of high adsorbency containing combined CaO and consisting essentially of 47–57% SiO<sub>2</sub>, 9–11% Al<sub>2</sub>O<sub>3</sub>, 3–5% MgO, 1–3% CaO, and less than 5%

Na<sub>2</sub>O, balance water to total 100%, said percentages being by weight and calculated analytically, comprising the steps of stirring into a first aqueous solution, containing magnesium sulfate and aluminum sulfate, a second aqueous solution containing sodium silicate and sodium hydroxide, thereafter adding a third aqueous solution containing calcium chloride, thereby forming a precipitate, while continuing the stirring, filtering off and washing the precipitate, and drying the precipitate at a temperature below 100° C., the proportions of the reagents and the temperatures in the process being such that precipitate contains combined SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, MgO, CaO and Na<sub>2</sub>O within the ratios specified by the above weight percentages and forms at a pH of about 9, and the drying being continued until said water content is obtained.

4,339,422

## CARBON BLACK MANUFACTURE

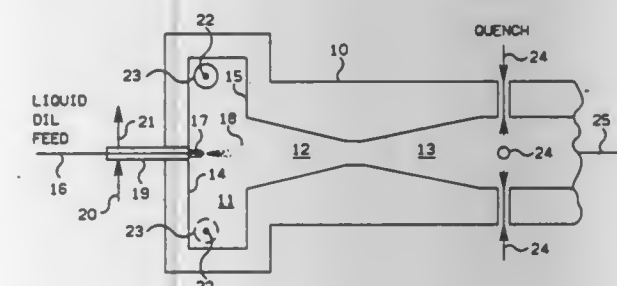
Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 16, 1980, Ser. No. 197,455

Int. Cl.<sup>3</sup> C01B 31/02; C09C 1/48

U.S. Cl. 423—456

10 Claims



1. A process for producing high tint residual carbon black which comprises:

- introducing a hydrocarbon feed into a generally cylindrical vortex zone having a diameter at least about equal to its length, said feed being introduced as a solid jet stream at essentially zero degree exit spray angle along the axis of said vortex zone;
- establishing a mass of hot combustion gases surrounding the jet stream of said hydrocarbon feed in said vortex zone by continuously injecting tangentially thereto combustion supporting oxygen-containing gas and a combustible fuel;
- passing the jet stream of hydrocarbon feed surrounded by hot combustion gases under carbon black forming conditions axially through a venturi-shaped furnace reaction chamber having an inlet diameter which is equal to or less than that of said vortex zone; and
- forming carbon black having a high tint residual from said hydrocarbon feed by pyrochemical action due to the heat of the surrounding hot combustion gases in said reaction chamber.

4,339,423

## PEROXONIUM SALTS

Karl O. Christe, Calabasas, and William W. Wilson, Canoga Park, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 25, 1980, Ser. No. 115,306

Int. Cl.<sup>3</sup> C01B 15/00

U.S. Cl. 423—462

3 Claims

1. A peroxonium salt having the formula H<sub>3</sub>O<sub>2</sub><sup>+</sup>X<sup>-</sup> wherein X<sup>-</sup> is selected from the group of anions having the formulas SbF<sub>6</sub><sup>-</sup> and AsF<sub>6</sub><sup>-</sup>.

- A method for preparing a salt containing H<sub>3</sub>O<sub>2</sub><sup>+</sup> cations and Sb<sub>2</sub>F<sub>11</sub><sup>-</sup> anions, said method comprising the steps of:
  - dissolving SbF<sub>5</sub> in anhydrous HF to form a solution;
  - adding H<sub>2</sub>O<sub>2</sub> to said solution to form a reaction mixture, said H<sub>2</sub>O<sub>2</sub> being added in an amount calculated to provide an excess of SbF<sub>5</sub> in said reaction mixture; and
  - allowing the mixture to react.

4,339,424

## METHOD OF PREPARING W OR MO METAL OXIDES

Allan J. Jacobson, Princeton; Kent H. Cheng, Thorofare, and M. Stanley Whittingham, Fanwood, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 20, 1981, Ser. No. 245,965

Int. Cl.<sup>3</sup> C01G 39/02, 41/02

U.S. Cl. 423—606

10 Claims

1. A process for preparing a metal oxide having a hexagonal tungsten bronze structure, said oxide having the formula MO<sub>p</sub> where M is W or Mo and p is a number from 2 to 3 which comprises contacting a reduced metal oxide of the formula (NH<sub>4</sub>R<sub>4-m</sub>)<sub>q</sub>+MO<sub>p</sub> where each R is independently C<sub>1</sub>–C<sub>20</sub> aliphatic, C<sub>7</sub>–C<sub>14</sub> araliphatic or C<sub>3</sub>–C<sub>8</sub> cycloaliphatic with the proviso that adjacent R's, together with the nitrogen atom to which they are attached, may form a 5, 6 or 7 membered heterocyclic ring, m is an integer from 0 to 4, p is a number from 2 to 3 and q is a number from about 0.001 to 1 with aqueous hydrogen peroxide, separating the so-treated reduced metal oxide and heating the separated metal oxide in an oxygen containing atmosphere at temperatures of from about 200° to about 400° C.

4,339,425

## PROCESS FOR PRODUCING ACICULAR HYDRATED FERRIC OXIDE PARTICLES

Yasumichi Tokuoka, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1980, Ser. No. 210,351

Claims priority, application Japan, Jan. 22, 1980, 55/5269

Int. Cl.<sup>3</sup> C01G 49/06

U.S. Cl. 423—633

1 Claim

1. A process for producing acicular hydrated ferric oxide particles comprising mainly goethite without branch shapes which comprises premixing aged ferric hydroxide which has been aged by treating an aqueous ferric hydroxide slurry at a temperature between room temperature and 70° C. for 3 to 30 hours, with a newly formed ferric hydroxide or a mixture of ferrous hydroxide and an oxidizing agent, said aged ferric hydroxide being at a molar ratio of from 1:4 to 1:2 to the newly formed ferric hydroxide or ferrous hydroxide, and hydrothermally treating the premixture as a slurry in an autoclave at 100°–250° C. for 1 to 20 hours.

4,339,426

## BLEOMYCIN ANALOG

Claude F. Meares, and Leslie D. Anderson, both of Davis, Calif., assignors to Regents of the University of California, Berkeley, Calif.

Filed Mar. 18, 1980, Ser. No. 131,685

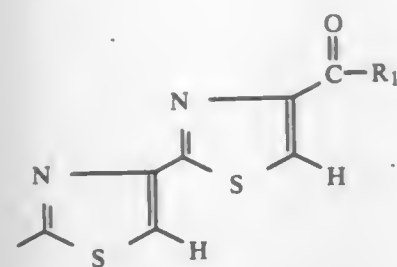
Int. Cl.<sup>3</sup> A61K 49/00, 43/00

U.S. Cl. 424—1

20 Claims

1. A bleomycin analog comprising: a modified bleomycin, said bleomycin being modified in one region thereof, said one region being of the structure





wherein  $R_1$  includes a chelating substituent with a plurality of functional groups capable of chelating metal ions.

## 4,339,427

RADIOIMMUNOASSAY OF THYMOSIN $\alpha_1$ 

Allan L. Goldstein, Washington, D.C.; John E. McClure, Fairfax, Va., and Su-Sun Wang, Belmont, Calif., assignors to Hoffmann-la Roche Inc. and George Washington University, both of Nutley, N.J.

Filed Apr. 14, 1980, Ser. No. 139,944

Int. Cl.<sup>3</sup> G01N 33/56; A61K 43/00; C07G 7/00

U.S. Cl. 424—1

10 Claims

5. In a method for the assay of thymosin  $\alpha_1$  in a sample, which method comprises mixing said sample with a known amount of labelled thymosin  $\alpha_1$  and an antibody which will selectively complex with said thymosin  $\alpha_1$ , separating the resulting antibody-antigen complex from uncomplexed labelled thymosin  $\alpha_1$ , measuring the degree of binding of the said labelled thymosin  $\alpha_1$  in said complex and determining the amount of thymosin  $\alpha_1$  present in said sample by comparing said degree of binding to a standard curve, the improvement which comprises utilizing as the labelled thymosin  $\alpha_1$  a compound selected from  $^{125}\text{I}$ -[Tyr<sup>1</sup>]-thymosin  $\alpha_1$  and  $^{125}\text{I}$ -[Tyr<sup>1</sup>]-desacetylthymosin  $\alpha_1$ .

## 4,339,428

## CAPSULE PRODUCT CONTAINING HIGH DOSAGE OF ASPIRIN IN POWDER OR GRANULATED FORM AND ALKALINE TABLET OR PELLET COMPRISING MAGNESIUM CARBONATE, CALCIUM CARBONATE AND A MAGNESIUM DRY COMPONENT

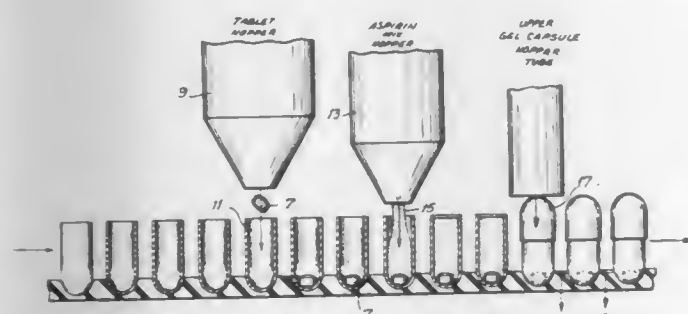
Thomas M. Tencza, Wallington, N.J., assignor to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 179,191, Aug. 18, 1980, Pat. No. 4,294,819. This application Jun. 18, 1981, Ser. No. 273,015. The portion of the term of this patent subsequent to Oct. 13, 1988, has been disclaimed.

Int. Cl.<sup>3</sup> A61K 9/48, 9/20, 31/60, 33/06

U.S. Cl. 424—21

16 Claims



1. As a unit dosage form a capsule having incorporated therein at least one alkaline tablet and an aspirin mixture; said aspirin mixture being present in said capsule as a powder or granulated material; said alkaline tablet comprising a combination of calcium carbonate, magnesium carbonate and a magnesium oxy component selected from the group consisting of magnesium oxide, magnesium hydroxide and a mixture of magnesium oxide and magnesium hydroxide; the aspirin being present in said capsule at a level of from 325 mg. to about 650 mg.; said capsule being dimensioned so that it may be conve-

niently swallowed and at the same time is not too small to accommodate effective amounts of capsule ingredients; said alkaline tablet being dimensioned so as to conveniently fit into said capsule; said powder or granulated material being essentially free of antacid and said alkaline tablet being essentially free of aspirin.

## 4,339,429

## TOOTHPASTE ACTIVE AGAINST PLAQUE COMPRISING A COPPER COMPOUND AND A PLASTIC POLISHING AGENT

Helmüt Raaf, Bad Schwalbach; Dieter Becker, Darmstadt-Wixhausen; Franz Frosch, Taunusstein; Helmüt Harth, Mainz, and Helmar R. Wagner, Darmstadt, all of Fed. Rep. of Germany, assignors to Blendax-Werke R. Schneider GmbH & Co., Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,406

Claims priority, application European Pat. Off., Apr. 29, 1980, 80102305.2

Int. Cl.<sup>3</sup> A61K 7/16, 7/18, 7/24, 33/34

U.S. Cl. 424—49

11 Claims

1. An aqueous toothpaste composition for reducing or preventing the formation of dental plaque comprising at least one water-soluble copper compound and at least one polishing agent, the major part of said polishing agent being finely divided synthetic plastic material.

## 4,339,430

## ANTIBACTERIAL ORAL COMPOSITION

Abdul Gaffar, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,664

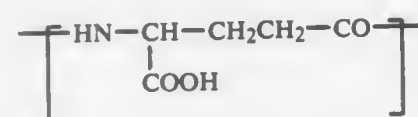
Int. Cl.<sup>3</sup> A61K 7/16, 7/22

U.S. Cl. 424—54

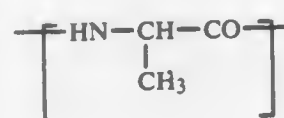
17 Claims

1. An oral dentifrice toothpaste or mouthwash composition comprising an orally acceptable vehicle, at least one cationic nitrogen-containing antibacterial antiplaque agent whose use has been observed to lead to staining of dental surfaces, and as anti-staining additive, an effective stain-inhibiting amount of a copolymer consisting essentially of:

(A) n units having the molecular configuration

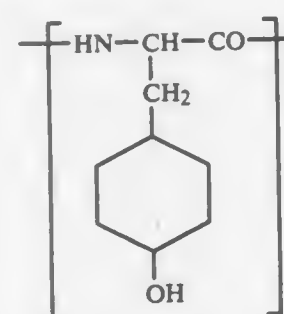


(B) m units having the molecular configuration



and

(C) p units having the molecular configuration



the ratio of (n+m):p ranging from about 5:1 to about 9.5:1 and the ratio of m:n ranging from 0:1 to about 0.6:1,

the molecular weight of the copolymer ranging from about 5,000 to about 150,000.

## 4,339,431

## ANTICALCULUS ORAL COMPOSITION

Abdul Gaffar, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,665

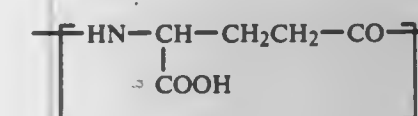
Int. Cl.<sup>3</sup> A61K 7/16, 7/22

U.S. Cl. 424—54

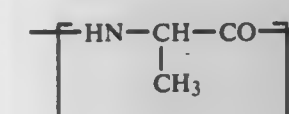
8 Claims

1. An oral dentifrice toothpaste or mouthwash composition comprising an orally acceptable vehicle containing in an effective amount as an anticalculus agent a copolymer consisting essentially of

(A) n units having the molecular configuration

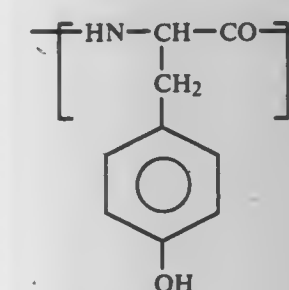


(B) m units having the molecular configuration



and

(C) p units having the molecular configuration



the ratio of (n+m):p ranging from about 5:1 to about 9.5:1 and the ratio of m:n ranging from 0:1 to about 0.6:1, the molecular weight of the copolymer ranging from about 5,000 to about 150,000.

## 4,339,432

## ORAL MOUTHWASH CONTAINING ZINC AND GLYCINE

Thomas W. Ritchey, Norwood; John M. Weaver, Glen Rock, and Martin Sapone, Tenafly, all of N.J., assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 50,392, Jun. 20, 1979, abandoned, and Ser. No. 50,393, Jun. 20, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 235,247

Claims priority, application Canada, Jun. 19, 1980, 354364; Jun. 19, 1980, 354375; United Kingdom, Jun. 19, 1980, 8020065

Int. Cl.<sup>3</sup> A61K 7/16, 7/22

U.S. Cl. 424—54

9 Claims

1. An oral mouthwash composition having a pH of about 4.5 to about 8.0 comprising a physiologically acceptable zinc salt or zinc glycinate in an amount sufficient to provide about 0.04% to about 0.7% by weight of the composition of soluble zinc ions wherein said zinc salts may have a tendency to produce the organoleptically displeasing effect of astringency; and glycine at a level of about 0.01% to about 4% by weight of the composition as the essential effective agent reducing astringency or said glycine serving to effectively solubilize said zinc salts at a pH of about 8 or above.

## 4,339,433

## ADDITIVES FOR PERITONEAL DIALYSIS SOLUTIONS

Nicholas J. Kartinos, Park Ridge, Ill.; Terry J. McGary, 5651 E. Rocky Mountain Ave., and Karl D. Nolph, 801 Westport, both of Columbia, Mo. 65201, assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill., a part interest

Filed Jan. 9, 1981, Ser. No. 223,638

Int. Cl.<sup>3</sup> A61K 31/74, 37/00, 31/70

U.S. Cl. 424—78

17 Claims

1. In a peritoneal dialysis solution containing ion concentration to permit diffusion across the peritoneum after infusion of the solution into the peritoneal cavity of a patient, the improvement comprising:

said solution containing a polyionic osmolarity-increasing agent which is of a molecular weight sufficient to essentially prevent diffusion of said agent across the peritoneum, said agent being selected from the group consisting of the predominantly sodium salts of:

- ethylene-maleic acid copolymer resins;
- carboxymethylpolysaccharides;
- carboxymethylpolyvinyl alcohol;
- polypeptides and proteins containing at least 10 mole percent of peptide units selected from the group consisting of aspartic acid, glutamic acid, and combinations thereof, having pendant carboxyl groups;
- esters of polyvinyl alcohol with acids selected from the group consisting of sulfuric acid, phosphoric acid, polycarboxylic acids, and haloalkyl carboxylic acids; having pendant carboxyl groups;
- the reaction product between (1) polypeptides and proteins having pendant amine groups and (2) acids selected from the group consisting of dicarboxylic acids and anhydrides thereof, haloaliphatic carboxylic acids, and haloalkenic carboxylic acids;
- polyesters having pendant carboxyl groups, comprising hydroxylpolycarboxylic acids;
- poly(methylvinyl ether—maleic acid) having pendant carboxyl groups;
- the reaction product of (1) an amino acid and (2) acid halides of dicarboxylic acids, to yield a polyamide polymer chain having pendant carboxyl groups; and
- predominantly sodium salts of dextran sulfate having a molecular weight of 2,000 to 120,000.

## 4,339,434

## METHOD OF INCREASING THE INCIDENCE OF FEMALE OFFSPRING

Ronald J. Ericsson, Sausalito, Calif., assignor to Gametrics Limited, Sausalito, Calif.

Filed Aug. 17, 1981, Ser. No. 293,079

Int. Cl.<sup>3</sup> A61K 35/48

U.S. Cl. 424—105

11 Claims

1. A method for promoting the conception of a female fetus in a fertile female mammal for whom a female offspring is desired, which comprises the steps of inducing ovulation in the female mammal with an ovulation inducing agent and thereafter artificially inseminating the female mammal proximate the time of ovulation with a motile sperm enriched fraction of sperm of that mammal from which immotile sperm and non-sperm components of the semen have been separated and which is suspended in a liquid vehicle which is physiologically acceptable to the sperm.



4,339,435

## ANTI-TUMOR SUBSTANCE

Norihiko Adachi; Yoshikazu Fukai, both of Yokohama, and Hisanori Kanayama, Machida, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1980, Ser. No. 123,482

Claims priority, application Japan, Feb. 22, 1979, 54/19081  
Int. Cl.<sup>3</sup> A61K 35/00, 31/70; C07G 3/00; C12P 19/04

U.S. Cl. 424—115 14 Claims

1. A substance having an anti-tumor activity obtained by transplanting a part of the internal tissue of a sclerotium of *Poria cocos* (Fr.) Wolf into a culture medium, subjecting it to pure culturing of hyphae of said microorganism to obtain mycelia thereof, separating said mycelia and extracting said mycelia with at least one medium selected from the group consisting of water and water-soluble organic solvent.

10. A method for preparing a substance having an anti-tumor activity, comprising transplanting a part of the internal tissue of a sclerotium of *Poria cocos* (Fr.) Wolf into a culture medium, subjecting it to pure culturing of hyphae of said microorganism to obtain mycelia thereof, separating said mycelia, and extracting said mycelia with at least one solvent selected from the group consisting of water and water-soluble organic solvents.

4,339,436

$\alpha$ -AMYLASE INHIBITOR FROM A STREPTOMYCETE AND PROCESS FOR ITS PREPARATION

Volker Oeding, Kelheim; Werner Pfaff, Hofheim am Taunus; Laszlo Vertesy, Eppstein, and Hans-Ludwig Weldenmüller, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 109,170, Jan. 2, 1980, Pat. No. 4,282,318, which is a division of Ser. No. 870,247, Jan. 17, 1978, Pat. No. 4,226,764. This application Feb. 23, 1981, Ser. No. 237,097

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1977, 2701890

Int. Cl.<sup>3</sup> A61K 35/00, 37/00

U.S. Cl. 424—115 2 Claims

1. A composition for the regulation of the blood sugar level in the treatment of diabetes, pre-diabetes or adiposity, containing a pharmaceutically acceptable carrier, and, as an active ingredient thereof, an effective amount of a peptidic glycoside hydrolase inhibitor obtained by cultivating *Streptomyces tendae* 4158 (ATCC No. 31210) and isolating the inhibitor from the culture, said inhibitor having a molecular weight in the range of from 5,000 to 10,000, an absorption maximum in ultraviolet light at 276 nm, an isoelectric point of 4.4 and the following amino acid composition:

aspartic acid	5-6	isoleucine	1-2
threonine	5-6	leucine	3-4
serine	3-5	tyrosine	4-5
glutamic acid	5-6	phenylalanine	0-2
proline	2-3	histidine	1-2
glycine	5-6	lysine	0-1
alanine	5-6	arginine	2-3
cysteine	3-4	tryptophan	1-2
valine	5-6		

4,339,437

## ANTI-TUMOR METHOD

Barnett Rosenberg, Holt; Loretta VanCamp, East Lansing, and Thomas Krigas, Okemos, all of Mich., assignors to Research Corporation, New York, N.Y.

Continuation of Ser. No. 754,512, Dec. 27, 1976, Pat. No. 4,177,263, which is a continuation of Ser. No. 405,184, Oct. 10, 1973, abandoned, which is a continuation of Ser. No. 230,533, Feb. 28, 1972, abandoned, which is a continuation of Ser. No. 30,239, Apr. 20, 1970, abandoned. This application Jul. 26, 1979, Ser. No. 60,961

The portion of the term of this patent subsequent to Feb. 4, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> A61K 33/24, 31/555, 31/28

U.S. Cl. 424—131 8 Claims

1. a method of treating animal malignant tumor cells sensitive to a planar dsp<sup>2</sup> platinum(II) coordination compound or an octahedral d<sup>2</sup>sp<sup>3</sup> platinum(IV) coordination compound wherein the donor ligands are Cl, Br, CN, NO<sub>3</sub>, ethylene diamine, propylene diamine, pyridine, H<sub>2</sub>O, OH, OS, in animals which comprises parenterally administering to an animal afflicted with said tumor cells a solution containing one of said compounds in an amount sufficient to cause regression of the animal tumor cells.

4,339,438

INJECTABLE MALE ANIMAL STERILANT FOR SELECTIVELY CONTROLLING THE FUNCTION OF TESTES

Mostafa S. Fahim, Columbia, Mo., assignor to The Curators of the University of Missouri, Columbia, Mo.

Division of Ser. No. 651,712, Jan. 23, 1976, abandoned, and Ser. No. 757,099, Jan. 5, 1977, Pat. No. 4,156,427. This application May 25, 1979, Ser. No. 42,550

The portion of the term of this patent subsequent to May 29, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> A61K 31/70, 33/30

U.S. Cl. 424—145 11 Claims

1. A sterile solution in unit dosage form for injection into the testes or scrotum of male animals having scrotal testes, said solution comprising a mixture of a water soluble physiologically acceptable zinc salt and a water soluble physiologically acceptable tannin, said zinc salt being present in an amount equivalent to the amount of zinc ion present in from about 5 mg to 125 mg of zinc sulfate heptahydrate and said tannin being present in an amount equivalent to from about 2 mg to 125 mg of tannic acid, said solution being buffered to a pH from about 4.0 to about 6.5.

4,339,439

PHARMACEUTICAL METHODS AND COMPOSITIONS  
Joseph P. Buyniski, Syracuse; Robert L. Cavanagh, Manlius, and Maxwell Gordon, Syracuse, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Jan. 19, 1981, Ser. No. 225,945

Int. Cl.<sup>3</sup> A61K 37/00

U.S. Cl. 424—177 17 Claims

1. A method for the treatment of peptic ulcers in a warm-blooded animal in need of such treatment which comprises concomitantly administering to said animal a peptic activity-inhibiting amount of pepstatin and an effective antiulcerogenic amount of etintidine, or a pharmaceutically acceptable acid addition salt thereof.

4,339,440

ENKEPHALIN ANALOGS AND A PROCESS FOR THE PREPARATION THEREOF

Sandor Bajusz; Andras Ronai, and Jozsef Szekeley, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

Filed Jan. 23, 1981, Ser. No. 227,766

Claims priority, application Hungary, Jan. 25, 1980, 155

Int. Cl.<sup>3</sup> A61K 37/00; C07C 103/52

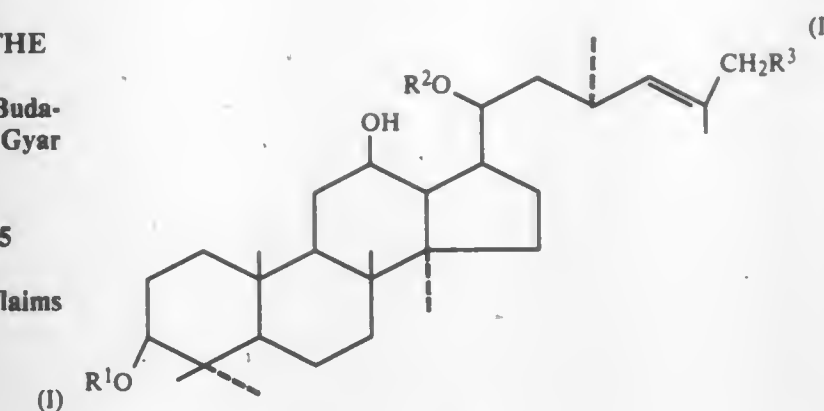
U.S. Cl. 424—177 4 Claims

1. An new enkephalin analog of the formula (I),

Tyr-X-Gly-Phe-Y

wherein

Tyr, Gly and Phe represent L-tyrosyl, glycyl and L-phenylalanyl residues, respectively,  
X is a glycyl group or a D- $\alpha$ -aminocarboxylic acid residue with a lower alkyl, lower thioalkyl or phenyl-(lower)-alkyl side chain, and  
Y is the residue of an L, D or DL- $\alpha$ -aminophosphonic acid or L, D or DL- $\alpha$ -aminosulfonic acid, each having a lower alkyl side chain, or a salt thereof.



wherein

- (a) when R<sup>1</sup> is [ $\beta$ -D-glucopyranosyl (1 $\rightarrow$ 2)- $\alpha$ -L-rhamnopyranosyl (1 $\rightarrow$ 6)]- $\beta$ -D-glucopyranosyl group, R<sup>2</sup> is hydrogen,  $\beta$ -D-glucopyranosyl (1 $\rightarrow$ 6)- $\beta$ -D-glucopyranosyl group,  $\alpha$ -L-rhamnopyranosyl (1 $\rightarrow$ 6)- $\beta$ -D-glucopyranosyl group or  $\beta$ -D-glucopyranosyl group and R<sup>3</sup> is hydrogen atom or hydroxy group;  
(b) when R<sup>1</sup> is  $\beta$ -D-glucopyranosyl (1 $\rightarrow$ 2)- $\beta$ -D-glucopyranosyl group, R<sup>2</sup> is  $\alpha$ -L-rhamnopyranosyl (1 $\rightarrow$ 6)- $\beta$ -D-glucopyranosyl group, and R<sup>3</sup> is hydrogen atom or hydroxy group;  
(c) when R<sup>1</sup> is  $\alpha$ -L-rhamnopyranosyl (1 $\rightarrow$ 6)- $\beta$ -D-glucopyranosyl group, R<sup>2</sup> is  $\beta$ -D-glucopyranosyl (1 $\rightarrow$ 6)- $\beta$ -D-glucopyranosyl group,  $\alpha$ -L-rhamnopyranosyl (1 $\rightarrow$ 6)- $\beta$ -D-glucopyranosyl or  $\beta$ -D-glucopyranosyl group and R<sup>3</sup> is hydrogen atom;  
(d) when R<sup>1</sup> is D-glucopyranosyl group, R<sup>2</sup> is  $\beta$ -D-xylopyranosyl (1 $\rightarrow$ 6)- $\beta$ -D-glucopyranosyl,  $\alpha$ -L-rhamnopyranosyl (1 $\rightarrow$ 6)- $\beta$ -D-glucopyranosyl or  $\beta$ -D-glucopyranosyl (1 $\rightarrow$ 6)- $\beta$ -D-glucopyranosyl group and R<sup>3</sup> is hydrogen atom;  
(e) when R<sup>1</sup> is hydrogen atom, R<sup>2</sup> is  $\beta$ -D-glucopyranosyl,  $\beta$ -D-xylopyranosyl (1 $\rightarrow$ 6)- $\beta$ -D-glucopyranosyl or  $\alpha$ -L-rhamnopyranosyl (1 $\rightarrow$ 6)- $\beta$ -D-glucopyranosyl group and R<sup>3</sup> is hydrogen atom or hydroxy group; except the case where R<sub>1</sub> and R<sub>3</sub> are hydrogen atom and R<sub>2</sub> is  $\beta$ -D-glucopyranosyl group;  
(f) when R<sup>1</sup> is  $\beta$ -D-xylopyranosyl (1 $\rightarrow$ 2)- $\beta$ -D-glucopyranosyl group, R<sup>2</sup> is  $\beta$ -D-xylopyranosyl (1 $\rightarrow$ 6)- $\beta$ -D-glucopyranosyl or  $\alpha$ -L-rhamnopyranosyl (1 $\rightarrow$ 6)- $\beta$ -D-glucopyranosyl group and R<sup>3</sup> is hydrogen atom, or non-toxic salt thereof.

43. A method for activating a body cell in a host so as to prevent aging of the cell which comprises administering to a host a saponin isolated from *Gynostemma pentaphyllum Makino* or a botanically similar plant thereto which belongs to Cucurbitaceae together with a pharmaceutically acceptable carrier.

4,339,442

GYNOSAPONINS, THEIR USE AND A PROCESS FOR PREPARING THE SAME

Tsunematsu Takemoto, 36-5, Shimonakasu, Nishisuga-cho, Tokushima; Shigeru Arichi, 1-1002, 6, Terauchi 2-chome, Toyonaka, Osaka; Shigenobu Arihara, 157-1, Jyoryo, Jyoro-ku-cho, Tokushima; Tadashi Nakajima, 12-9-110, Hirata 2-chome, Ibaraki; Megumi Okuhira, 3-34-403, Wakayamadai 2-chome, Shimamoto-cho, Mishima-gun, Osaka, and Yoshihiro Uchida, 22-23, Izuo 1-chome, Taisho-ku, Osaka, all of Japan

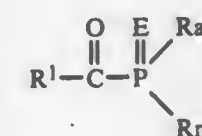
Filed Nov. 7, 1980, Ser. No. 205,377

Claims priority, application Japan, Mar. 11, 1980, 55-30635; Mar. 11, 1980, 55-30636; May 8, 1980, 55-61507; May 8, 1980, 55-61508; May 8, 1980, 55-61509; Sep. 27, 1980, 55-134684

Int. Cl.<sup>3</sup> A01N 31/00; C07G 3/00

U.S. Cl. 424—182 70 Claims

1. A compound of the formula (I):



or

4,339,443

COMPOUNDS AND COMPOSITIONS

Alister C. Baillie, Cambridge; Brian J. Wright, Bishops Stortford, and Kenneth Wright, Cambridge, all of England, assignors to FBC Limited, Cambridge, England

Filed Aug. 28, 1979, Ser. No. 70,440

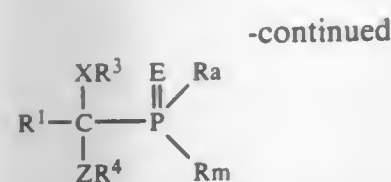
Claims priority, application United Kingdom, Sep. 22, 1978, 37723/78; Nov. 18, 1978, 45140/78

Int. Cl.<sup>3</sup> A01N 57/20, 57/24; C07F 9/30, 9/65

U.S. Cl. 424—200 9 Claims

1. A compound of the formulae:





in which Ra represents hydrogen, alkyl, alkenyl, alkynyl or aryl; the alkyl, alkenyl, alkynyl or aryl optionally being substituted by one or more of halogen, alkoxy, alkyl,  $-\text{CF}_3$  or carboxylic acid or a salt, ester or amide thereof,

E is oxygen or sulphur,

Rm is  $-\text{O}^\oplus\text{M}^\oplus$ ,

$\text{M}^\oplus$  is one equivalent of an agriculturally acceptable cation,  $\text{R}^1$  represents hydrogen, alkyl, alkenyl, alkynyl or aryl; the alkyl, alkenyl, alkynyl or aryl optionally being substituted by one or more of halogen, alkoxy, alkyl,  $-\text{CF}_3$  or carboxylic acid or a salt, ester or amide thereof, and

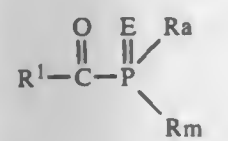
X and Z, which may be the same or different, each represent oxygen, sulphur or a group  $-\text{NR}^5$ ,

$\text{R}^5$  represents hydrogen, alkyl, or aryl,

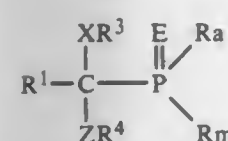
$\text{R}^3$  and  $\text{R}^4$ , which may be the same or different each represent alkyl, or aryl each of which may optionally be substituted by hydroxy, alkoxy, alkyl, halogen, carbonyl oxygen or alkoxy-carbonyl; or  $\text{R}^3$  and  $\text{R}^4$  together form alkylene, or arylene each of which may optionally be substituted by hydroxy, alkoxy, alkyl, halogen, carbonyl oxygen or alkoxy-carbonyl, or  $\text{XR}^3$  and  $\text{ZR}^4$  together form carbonyl oxygen  $=\text{C}(\text{CN})_2$  or  $=\text{NR}^{10}$  in which  $\text{R}^{10}$  represents alkoxy C 1 to 6, benzyloxy, hydroxy, phenyl,  $-\text{NH}$  phenyl,  $-\text{NH}-(2,4\text{-dinitrophenyl})$ ,  $-\text{NHCONH}_2$  or  $-\text{NHCSNH}_2$ ,

or one of  $\text{XR}^3$  and  $\text{ZR}^4$  is  $-\text{OH}$  (or esters or ethers thereof) and the other is  $-\text{CN}$  or  $-\text{SO}_3^\oplus\text{M}^\oplus$ ,  $\text{XR}^3$  and  $\text{ZR}^4$  each containing up to and including 10 carbon atoms.

9. A pesticidal composition which comprises a compound of the formulae:



or



in which Ra represents hydrogen, alkyl, alkenyl, alkynyl or aryl; the alkyl, alkenyl, alkynyl or aryl optionally being substituted by one or more of halogen, alkoxy, alkyl,  $-\text{CF}_3$  or carboxylic acid or a salt, ester or amide thereof,

E is oxygen or sulphur,

Rm is  $-\text{O}^\oplus\text{M}^\oplus$ ,

$\text{M}^\oplus$  is one equivalent of an agriculturally acceptable cation,  $\text{R}^1$  represents hydrogen, alkyl, alkenyl, alkynyl or aryl; the alkyl, alkenyl, alkynyl or aryl optionally being substituted by one or more of halogen, alkoxy, alkyl,  $-\text{CF}_3$  or carboxylic acid or a salt, ester or amide thereof, and

X and Z, which may be the same or different, each represent oxygen, sulphur or a group  $-\text{NR}^5$ ,

$\text{R}^5$  represents hydrogen, alkyl, or aryl,

$\text{R}^3$  and  $\text{R}^4$ , which may be the same or different each represent alkyl, or aryl each of which may optionally be substituted by hydroxy, alkoxy, alkyl, halogen, carbonyl oxygen or alkoxy-carbonyl; or  $\text{R}^3$  and  $\text{R}^4$  together form alkylene, or arylene each of which may optionally be substituted by hydroxy, alkoxy, alkyl, halogen, carbonyl oxygen or alkoxy-carbonyl, or  $\text{XR}^3$  and  $\text{ZR}^4$  together form carbonyl oxygen  $=\text{C}(\text{CN})_2$  or  $=\text{NR}^{10}$  in which  $\text{R}^{10}$  represents alkoxy C 1 to 6, benzyloxy,

hydroxy, phenyl,  $-\text{NH}$  phenyl,  $-\text{NH}-(2,4\text{-dinitrophenyl})$ ,  $-\text{NHCONH}_2$  or  $-\text{NHCSNH}_2$ ,

1a or one of the  $\text{XR}^3$  and  $\text{ZR}^4$  is  $-\text{OH}$  (or esters or ethers thereof) and the other is  $-\text{CN}$  or  $-\text{SO}_3^\oplus\text{M}^\oplus$ ,

$\text{XR}^3$  and  $\text{ZR}^4$  each containing up to and including 10 carbon atoms in admixture with a carrier or a surface active agent.

4,339,444

#### NOVEL OXIME-PHOSPHATE COMPOUNDS

Themistocles D. J. D'Silva, South Charleston, and Leonard E. Hodakowski, St. Albans, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

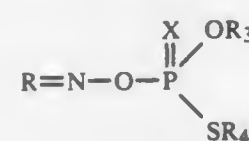
Filed Apr. 1, 1981, Ser. No. 249,819

Int. Cl.<sup>3</sup> A01N 57/12, 57/14, 57/16; C07F 9/09

U.S. Cl. 424-202

52 Claims

1. Compounds of the formula:

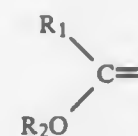


wherein:

X is oxygen or sulfur;

$\text{R}_3$  and  $\text{R}_4$  are individually alkyl; provided that the total number of aliphatic carbon atoms in each of  $\text{R}_3$  and  $\text{R}_4$  does not exceed six;

$\text{R}$  is:

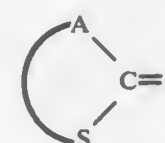


a.

wherein:

$\text{R}_1$  is alkyl, cycloalkyl or phenyl, all of which may be unsubstituted or substituted with one or more alkyl, halogen, alkoxy, or alkylthio substituents; provided that the total number of aliphatic carbon atoms in any alkyl, alkoxy or alkylthio substituent may not exceed eight; and provided further that the total number of aliphatic carbon atoms in  $\text{R}_1$  may not exceed sixteen; and provided further that when  $\text{R}_1$  is cycloalkyl, the total number of aliphatic carbon atoms in said cycloalkyl ring structure may be no less than three and may not exceed six;

$\text{R}_2$  is alkyl, provided that the total number of aliphatic carbon atoms in  $\text{R}$  does not exceed eight; or

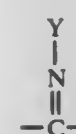


b.

wherein:

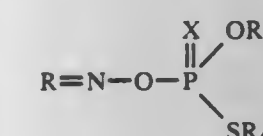
A is a three or four-membered divalent aliphatic chain, which may be optionally substituted by one or more alkyl or acyl groups each containing no more than six carbon atoms, and which may include in said chain one or more divalent:

sulfur, sulfinyl, sulfonyl, oxygen, carbonyl, thiono or dicyanomethylidene moieties; or amino moieties, which may be optionally substituted with alkyl, alkenyl, alkoxyalkyl or acyl groups having no more than six carbon atoms; or imino moieties of the formula:



wherein Y is alkyl, alkenyl, alkynyl, dialkylamino, cyano, alkylsulfonyl, aryl or arylsulfonyl groups, aryl groups being optionally substituted with halogen or alkyl substituents having no more than ten carbon atoms.

39. A method of controlling insects, mites or nematodes which comprises subjecting them to an insecticidally, miticidally or nematocidally effective amount of a compound of the formula:

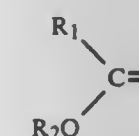


wherein:

X is oxygen or sulfur;

$\text{R}_3$  and  $\text{R}_4$  are individually alkyl; provided that the total number of aliphatic carbon atoms in each of  $\text{R}_3$  and  $\text{R}_4$  does not exceed six;

$\text{R}$  is:

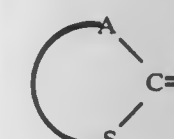


a.

wherein:

$\text{R}_1$  is alkyl, cycloalkyl or phenyl, all of which may be unsubstituted or substituted with one or more alkyl, halogen, alkoxy or alkylthio substituents; provided that the total number of aliphatic carbon atoms in any alkyl, alkoxy or alkylthio substituent may not exceed eight; and provided further that the total number of aliphatic carbon atoms in  $\text{R}$  may not exceed sixteen; and provided further that when  $\text{R}_1$  is cycloalkyl, the total number of aliphatic carbon atoms in said cycloalkyl ring structure may be no less than three and may not exceed six;

$\text{R}_2$  is alkyl, provided that the total number of aliphatic carbon atoms in  $\text{R}_2$  does not exceed eight; or



wherein:

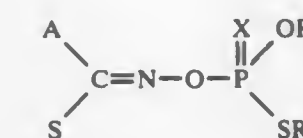
A is a three- or four-membered divalent aliphatic chain, which may be optionally substituted by one or more alkyl groups each containing no more than six carbon atoms, and which may include in said chain one or more divalent: sulfur, sulfinyl, sulfonyl, oxygen, carbonyl, thiono or dicyanomethylidene moieties; or amino moieties, which may be optionally substituted with alkyl, alkenyl, alkoxyalkyl or acyl groups having no more than six carbon atoms; or imino moieties of the formula:



wherein Y is alkyl, alkenyl, alkynyl, dialkylamino, cyano, alkylsulfonyl, aryl or arylsulfonyl groups, said aryl

groups being optionally substituted with halogen or alkyl substituents having no more than ten carbon atoms.

47. A method of controlling insects, mites and nematodes which comprises subjecting them to an insecticidally, miticidally or nematocidally effective amount of a compound of the formula:



wherein:

X is oxygen or sulfur;

$\text{R}_3$  and  $\text{R}_4$  are individually alkyl;

A is a three- or four-membered divalent aliphatic chain, which may be optionally substituted by one or more alkyl groups each containing no more than six carbon atoms, and which may include in said chain one or more divalent: sulfur, sulfinyl, sulfonyl, oxygen, carbonyl, thiono or dicyanomethylidene moieties; or amino moieties, which may be optionally substituted with alkyl, alkenyl, alkoxyalkyl or acyl groups having no more than six carbon atoms; or imino moieties of the formula:



wherein Y is alkyl, alkenyl, alkynyl, dialkylamino, cyano, alkylsulfonyl, aryl or arylsulfonyl groups, said aryl groups being optionally substituted with halogen or alkyl moieties having no more than ten carbon atoms.

4,339,445

#### METHOD FOR COMBATING VIRUS INFECTION

Bertil F. H. Eriksson, Södertälje; Åke J. E. Helgstrand, Enhörna; Alfons Misiorny, Bandhagen; Göran B. Stening, and Stig-Åke A. Stridh, both of Södertälje, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Södertälje, Sweden Continuation-in-part of Ser. No. 807,783, Jun. 20, 1977. This application Dec. 21, 1978, Ser. No. 971,931

Claims priority, application Sweden, Jul. 1, 1976, 7607496

The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> A61K 31/66

U.S. Cl. 424-212

7 Claims

2. A method for the treatment of infections caused by hepatitis virus in animals or man by administering to an animal or man in need of such treatment phosphonoformic acid or a physiologically acceptable salt thereof in an amount effective to treat said infection.

4,339,446

#### 5-SULFAMOYL-ORTHANILIC ACIDS, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS MEDICAMENTS

Karl Stürm, Heidesheim, and Roman Muschaweck, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 20, 1981, Ser. No. 236,605

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006686

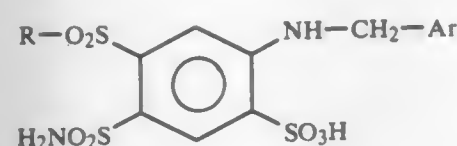
Int. Cl.<sup>3</sup> A61K 31/63; C07C 143/80; C07D 307/36

U.S. Cl. 424-228

6 Claims

1. A compound of the formula





or a physiologically acceptable salt thereof wherein R is alkyl, alkenyl, cycloalkyl, or cycloalkylalkyl, each having up to 10 carbon atoms, or R is phenyl, and Ar is phenyl, thienyl, or furyl.

5. A salidiuretic pharmaceutical preparation comprising a salidiuretically effective amount of a compound or salt as in claim 1 together with a pharmaceutically acceptable carrier for the oral or intravenous administration thereof.

#### 4,339,447 PHARMACEUTICAL PREPARATIONS

Walter Boguth, Riehen, Switzerland, and Georges Hirth, Hunningue, France, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 27, 1981, Ser. No. 228,792

Claims priority, application Switzerland, Feb. 7, 1980, 983/80  
Int. Cl.<sup>3</sup> A61K 31/33

U.S. Cl. 424-244 7 Claims

1. A pharmaceutical preparation comprising an effective amount of a benzodiazepine and a solvent containing glycerol lower-alkyl ether, said glycerol lower-alkyl ether and said solvent being present in an amount sufficient to dissolve said active ingredient.

#### 4,339,448 IMIDAZOLE-COPPER COMPLEX COMPOUNDS AND FUNGICIDES CONTAINING THEM

Toni Dockner, Meckenheim; Anton Frank, Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

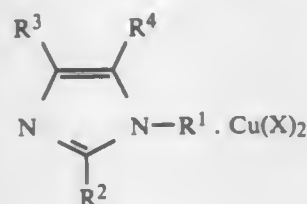
Filed Oct. 22, 1979, Ser. No. 87,556

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847441

Int. Cl.<sup>3</sup> A01N 55/02; C07F 1/08

U.S. Cl. 424-245 5 Claims

1. An imidazole-copper complex compound of the formula



wherein

R<sup>1</sup> is hexyl, heptyl, octyl, decyl, undecyl, dodecyl, tridecyl, tetradecyl, hexadecyl, octadecyl, p-aminophenyl, cyano-benzyl, phenylethyl, isobutyl-benzyl, pyrrolidylethyl, morpholinoethyl, piperidinoethyl, di-butylaminoethyl or phenylbenzylaminoethyl;

R<sup>2</sup> is hydrogen, methyl, ethyl, propyl, isopropyl, octyl, decyl, dodecyl, octadecyl, phenyl, methoxyphenyl, benzyl, indanyl, di-methylphenyl or butylphenyl;

R<sup>3</sup> is hydrogen, methyl, ethyl, propyl, isopropyl, butyl, isobutyl, phenyl or cyclohexyl;

R<sup>4</sup> is hydrogen, nitro, cyano, carboxy, hydroxymethyl or hydroxyethyl; and

X is the anion of a mineral acid or a lower fatty acid.

4. A process for combatting phytopathogenic fungi, which comprises treating the fungi or the objects to be protected against fungus attack with a fungicidally effective amount of an imidazole-copper complex compound as set forth in claim 1.

#### 4,339,449 ANALOGOUS COMPOUNDS OF CEPHALOSPORINS, AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Masashi Hashimoto, Takarazuka, and Matsuhiko Aratani, Suita, both of Japan, assignors to Fujisawa Pharmaceutical Company, Limited, Osaka, Japan

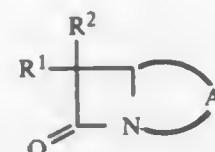
Filed Mar. 10, 1980, Ser. No. 128,507

Claims priority, application United Kingdom, Mar. 27, 1979, 7910719

Int. Cl.<sup>3</sup> C07D 513/04; A61K 31/54

U.S. Cl. 424-246 12 Claims

1. A compound of the formula:

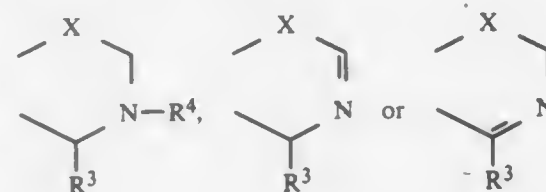


in which

R<sup>1</sup> is amino, acylamino, mono- or di- or triphenyl (lower) alkylamino,

R<sup>2</sup> is hydrogen or lower alkoxy,

A is a group of the formula:



wherein

X is -S- or



R<sup>3</sup> is carboxy or a protected carboxy group and R<sup>4</sup> is hydrogen, hydroxy or acyl,

and pharmaceutically acceptable salts thereof.

12. A method for treating an infectious diseases caused by pathogenic microorganisms, which comprises administering an antimicrobially effective amount of a compound of claim 1 to infected human being and animals.

#### 4,339,450 AMINOPROPAN-2-OL DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS

Jean P. Mafrand, Toulouse, and Jean Courregelongue, Garonne, both of France, assignors to Sanofi, Paris, France

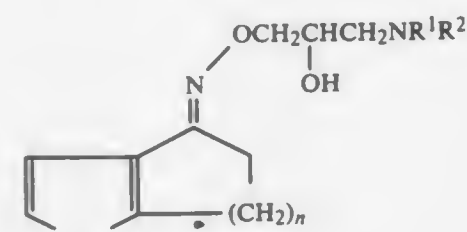
Filed Dec. 22, 1980, Ser. No. 219,213

Claims priority, application France, Dec. 21, 1979, 79 31402

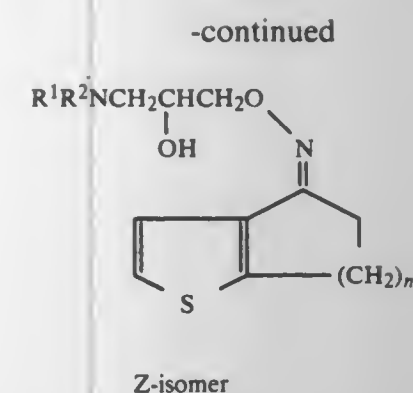
Int. Cl.<sup>3</sup> A61K 31/535, 31/38; C07D 413/12, 333/54

U.S. Cl. 424-248.51 47 Claims

1. Derivatives of 1-aminopropan-2-ol of the formulae:



E-isomer



wherein R<sup>1</sup> and R<sup>2</sup>, which can be the same or different, are hydrogen atoms, straight-chained or branched alkyl radicals containing up to 10 carbon atoms; mono- or polycyclic cycloalkyl radicals containing up to 14 carbon atoms and optionally substituted one or more times by alkyl radicals containing up to 4 carbon atoms; straight-chained or branched alkenyl radicals containing 3 to 7 carbon atoms; straight-chained or branched alkynyl radicals containing 3 to 7 carbon atoms; aryl radicals or aralkyl radicals containing up to 4 carbon atoms in the alkyl moiety, the aromatic nuclei being optionally substituted one or more times by halogen atoms or hydroxyl groups or alkyl or alkoxy radicals containing up to 4 carbon atoms; heteroaryl radicals or heteroaralkyl radicals containing up to 4 carbon atoms in the alkyl moiety; aminoalkyl radicals containing up to 4 carbon atoms and optionally mono- or di-substituted on the nitrogen atom by alkyl radicals containing up to 4 carbon atoms; alkoxyalkyl radicals; aralkoxyalkyl radicals; or aryloxyalkyl radicals; or R<sup>1</sup> and R<sup>2</sup>, together with the nitrogen atom to which they are attached, form a heterocyclic radical containing 5 to 7 ring members and optionally containing another heteroatom selected from oxygen, sulphur and nitrogen, the nitrogen being optionally substituted by an alkyl radical containing up to 6 carbon atoms or by an aryl, aralkyl or aroyl radical, the aromatic nucleus of which is optionally mono- or polysubstituted by halogen atoms or hydroxyl groups; or alkyl or alkoxy radicals containing up to 4 carbon atoms; and n is 1, 2 or 3; and the addition salts thereof with pharmaceutically-acceptable inorganic or organic acids.

24. A pharmaceutical composition for use in the treatment and control of cardiac disorders in warm-blooded animals comprising an effective amount of at least one derivative according to claim 1 in admixture with a solid or liquid pharmaceutical diluent or carrier.

#### 4,339,451 FLAVOR STABILIZED BEET COLORANT COMPOSITION

Joseph D. Albaum, Pleasantville, N.Y.; Ronald W. Ponzone, Nutley, N.J., and Eric C. Johnson, Pleasantville, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,569

Int. Cl.<sup>3</sup> A23L 1/272

U.S. Cl. 426-250 26 Claims

1. A co-dried food color composition comprising:

- beet extract; and
- a flavor-stabilizing amount of a food-acceptable polyvalent metal salt, wherein the weight percent of the polyvalent metal ion, based on the weight of the dry composition is from 1% to 30%.

#### 4,339,452 METHODS OF INHIBITING BLOOD PLATELET AGGREGATION WITH CAROVERINE FUMARATE

Hiroto Hara, Machida, and Akihiro Narimatsu, Yokohama, both of Japan, assignors to Medichemie AG, Ettingen, Switzerland

Filed Dec. 19, 1980, Ser. No. 218,284

Claims priority, application Japan, Dec. 28, 1979, 54/173249  
Int. Cl.<sup>3</sup> A61K 31/495

11 Claims  
1. A method of inhibiting blood platelet aggregation in a patient requiring such treatment, comprising administering to said patient a therapeutic dosage of a platelet aggregation inhibiting substance containing caroverine fumarate as an active ingredient.

#### 4,339,453 ANTIMICROBIAL AMINOPYRIMIDINIUM SALTS

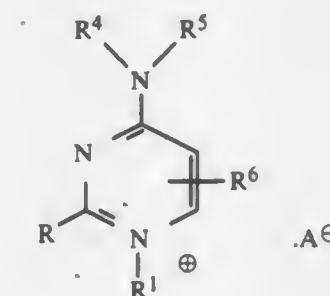
Nathaniel Grier, Englewood; Elbert E. Harris, Westfield; Henry Joshua, Elizabeth; Arthur A. Patchett, Westfield; Bruce E. Witzel, Rahway, and Richard A. Dybas, Somerville, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 23, 1979, Ser. No. 59,812

Int. Cl.<sup>3</sup> A01N 21/02; C07D 239/42

U.S. Cl. 424-251 20 Claims

12. An antimicrobial composition comprising a carrier and an effective antimicrobial amount of a compound of structural formula:



wherein

R is hydrogen, C<sub>1-5</sub> alkyl or R<sup>2</sup>R<sup>3</sup>N;

R<sup>1</sup> is

- C<sub>2-5</sub> alkenyl,
- C<sub>1-3</sub> alkoxy-carbonyl-C<sub>2-5</sub> alkenyl,
- C<sub>1-18</sub> alkyl, or
- C<sub>1-18</sub> alkyl mono-substituted with
  - hydroxy
  - C<sub>1-3</sub> alkoxy
  - carboxy
  - C<sub>1-3</sub> alkoxy-carbonyl,
  - C<sub>2-5</sub> alkanoyloxy,
  - C<sub>3-6</sub> cycloalkyl,
  - gem-di (C<sub>1-3</sub> alkoxy),
  - tetrahydrofuran,
  - hydroxy-C<sub>1-3</sub> alkoxy, or
  - C<sub>2-3</sub> alkanoyl,

R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> are independently

- hydrogen, or
- R<sup>1</sup>;

R<sup>6</sup> is

- hydrogen,
- C<sub>1-11</sub> alkyl,
- C<sub>1-5</sub> alkoxy-C<sub>1-11</sub> alkyl,
- C<sub>1-5</sub> alkoxy-carbonyl-C<sub>1-11</sub> alkyl,
- C<sub>1-3</sub> alkylsulfenyl, or
- (CH<sub>2</sub>)<sub>n</sub>— wherein n is 3 or 4 and the group -(CH<sub>2</sub>)<sub>n</sub>— is joined to the 5 and 6 carbons of the pyrimidine ring; and

A<sup>+</sup> is a non-toxic anion derived from an organic or inorganic acid; with the proviso that:

- at least one of R<sup>1-5</sup> is C<sub>6-18</sub> alkyl,
- at least one of R<sup>1-5</sup> is oxygen bearing, and



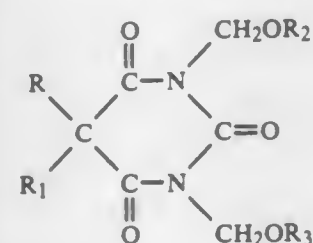
(3) at least one exocyclic nitrogen is a secondary or tertiary amine.

4,339,454  
**ALKOXYMETHYL AND BENZYLOXYMETHYL  
 PHENOBARBITAL THERAPEUTIC COMPOSITIONS**  
 Carlos M. Samour, Wellesley, Mass., and Julius A. Vida, Greenwich, Conn., assignors to Colgate-Palmolive Company, New York, N.Y.  
 Division of Ser. No. 798,532, May 19, 1977, abandoned, which is a division of Ser. No. 125,813, Mar. 18, 1971, Pat. No. 4,046,894, which is a division of Ser. No. 888,943, Dec. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 749,972, Aug. 5, 1968, abandoned. This application Aug. 3, 1978, Ser. No. 930,778  
 The portion of the term of this patent subsequent to Sep. 6, 1994, has been disclaimed.  
 Int. Cl.<sup>3</sup> A61K 31/515

U.S. Cl. 424—254

6 Claims

1. A therapeutic composition in unit dosage form adapted for oral administration for treatment of convulsions in warm-blooded animals comprising a physiologically acceptable carrier and an amount sufficient to produce an anticonvulsant effect of a compound having the structure:



wherein R and R<sub>1</sub> are phenyl and ethyl respectively, or R and R<sub>1</sub> are individually alkyl or alkenyl each having 2 to 5 carbon atoms or cycloalkenyl having 5 to 7 carbon atoms, and wherein R<sub>2</sub> and R<sub>3</sub> are individually alkyl having 1 to 12 carbon atoms or benzyl, each dosage unit containing from about 5 to 500 mg. of said compound.

4,339,455  
**1-(3-PYRIDYL)-2,2,2-TRIALOETHYL COMPOUNDS  
 AND FUNGICIDAL COMPOSITIONS CONTAINING THE  
 SAME**

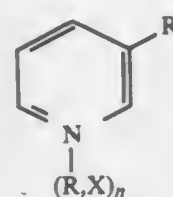
Fritz Sauter, Vienna, Austria; Otto Eberle, Ottobrunn, Fed. Rep. of Germany; Beate Süß, Munich, Fed. Rep. of Germany, and Rudolf Weissgerber, Munich, Fed. Rep. of Germany, assignors to Consortium für Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany  
 Division of Ser. No. 863,980, Dec. 23, 1977, Pat. No. 4,189,486.  
 This application Jul. 17, 1979, Ser. No. 58,350  
 Claims priority, application Fed. Rep. of Germany, Dec. 28, 1976, 2659117

Int. Cl.<sup>3</sup> A01N 43/40; C07D 211/84

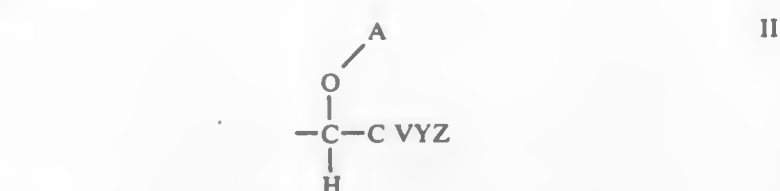
U.S. Cl. 424—263

12 Claims

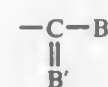
1. A 1-(3-pyridyl)-2,2,2-trihaloethyl compound of the formula I



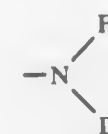
in which n is 0 or 1, R represents methyl and X is iodide, R' represents a radical of the formula II



wherein V, Y and Z each represent a chlorine or bromine atom, A represents a radical of the general formula III

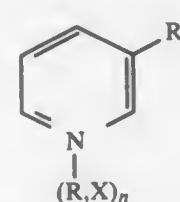


in which B' is oxygen or sulphur and B stands for a member of the group consisting of an aliphatic radical having from 1-10 C-atoms of the group consisting of alkenyl radicals and alkyl radicals of the branched and straight chain type, the phenyl radical, a substituted phenyl radical containing at least one substituent selected from the group consisting of lower alkoxy, lower alkanoyl, lower alkyl ester, COOH, halogen, lower alkyl, halo lower alkyl, nitro and hydroxyl groups, an aralkyl radical having from 7-12 C-atoms and an amino group of the general formula IV

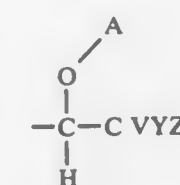


in which F and D are identical or different, and represent a member of the group consisting of hydrogen, aliphatic radicals of the branched or straight chain type and having from 1-10 C-atoms, the phenyl radical, a substituted phenyl radical containing at least one substituent selected from the group consisting of alkyl, alkenyl, nitro, alkoxy, halogen and haloalkyl, and aralkyl radicals having from 7-12 C-atoms, A also representing a sulphonyl group of the general formula —SO<sub>2</sub>—B, in which B has the same meaning as in formula III.

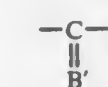
3. A fungicidal composition containing an effective amount as active agent comprising 0.01 to 95% by weight of an 1-(3-pyridyl)-2,2,2-trihaloethyl compound of the formula I



in which n is 0 or 1, R represents methyl and X is iodide, R' represents a radical of the formula II

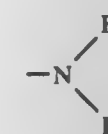


wherein V, Y and Z each represent a chlorine or bromine atom, A represents a radical of the general formula III



in which B' is oxygen or sulphur and B stands for a member of the group consisting of an aliphatic radical having from 1-10 C-atoms of the group consisting of alkenyl radicals and alkyl

radicals of the branched and straight chain type, the phenyl radical, a substituted phenyl radical containing at least one substituent selected from the group consisting of lower alkoxy, lower alkanoyl, lower alkyl ester, COOH, halogen, lower alkyl, halo lower alkyl, nitro and hydroxy groups, an aralkyl radical having from 7-12 C-atoms and an amino group of the general formula IV



in which F and D are identical or different, and represent a member of the group consisting of hydrogen, aliphatic radicals of the branched or straight chain type and having from 1-10 C-atoms, the phenyl radical, a substituted phenyl radical containing at least one substituent selected from the group consisting of lower alkyl, lower alkenyl, nitro, lower alkoxy, halogen and halo lower alkyl, and aralkyl radicals having from 7-12 C-atoms, A also representing a sulphonyl group of the general formula —SO<sub>2</sub>—B, in which B has the same meaning as in formula III and a suitable carrier.

4,339,456  
**PEANUT SEED TREATING**

Kyle W. Rushing, Plano, Tex., assignor to Gustafson, Inc., Dallas, Tex.

Filed Jan. 14, 1980, Ser. No. 111,726

Int. Cl.<sup>3</sup> A01N 43/36

U.S. Cl. 424—274

7 Claims

1. A method of treatment of peanut seeds which comprises applying to said peanut seeds a colloidal suspension including oil as a base and a micronized, seed-treating active chemical carried by the oil in the suspension, wherein said suspension is applied to the peanut seeds at a rate in the range of 6 to 16 fluid ounces per hundred weight of said peanut seeds and allowing the treated peanut seeds to dry with the result that the coating including the active chemical remains on the seeds thereby minimizing chemical dust and related environmental and physical problems.

7. A method of treating peanut seeds having a testa remaining on the cotyledon which comprises applying to substantially the entire periphery of the peanut seeds a colloidal suspension of a micronized seed-treating active fungicide in an oil carrier at a rate in the range of 12 to 16 ounces of colloidal suspension per hundred weight of peanut seeds, and allowing the treated peanut seeds to dry thereby providing a peanut seed with a dry coating covering the entire outer surface of the testa and extending into any wrinkles of the testa and at least partially penetrating the testa.

4,339,457  
**3-(PYRROL-1-YL)PHENYLMETHYL ESTERS AND  
 INTERMEDIATES**

Ernest L. Plummer, North Tonawanda, N.Y., and Raymond M. Palmere, West Orange, N.J., assignors to FMC Corporation, Philadelphia, Pa.

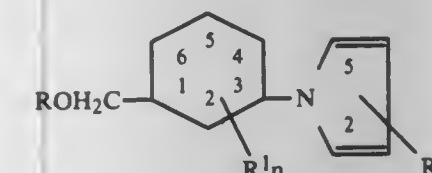
Filed Oct. 20, 1980, Ser. No. 198,409

Int. Cl.<sup>3</sup> C07D 207/327; A01N 43/36

U.S. Cl. 424—274

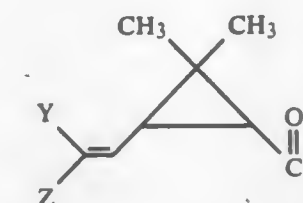
12 Claims

1. A compound of the formula



in which R<sup>1</sup> is halogen or lower alkyl, n is 0, 1 or 2, R<sup>2</sup> is hydrogen or 2,5-dimethyl and R is 2,2,3,3-tetramethylcyclo-

propylcarbonyl, 1-(4-chlorophenyl)-2-methylpropyl-1-carbonyl, 1-(4-ethoxyphenyl)-2,2-dichlorocyclopropylcarbonyl, or a cyclopropanecarboxylic acid residue of the formula



wherein Y and Z are independently halogen, lower alkyl, perhaloalkyl of 1 or 2 carbon atoms, or are joined to form a cyclopentylidene group.

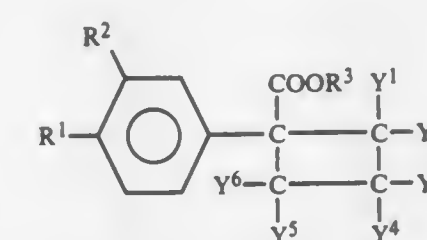


4,339,458  
**INSECTICIDAL ESTERS**  
 George Holan, Brighton, and David F. O'Keefe, Mount Waverley, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Australia  
 Division of Ser. No. 969,862, Dec. 12, 1978, Pat. No. 4,235,926.  
 This application May 8, 1980, Ser. No. 147,728  
 Claims priority, application Australia, Dec. 19, 1977, PD2818  
 Int. Cl.<sup>3</sup> A01N 43/16

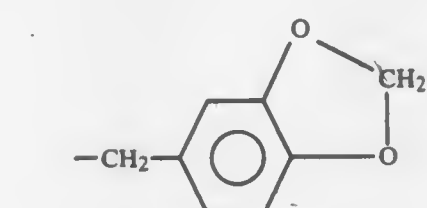
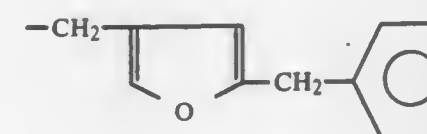
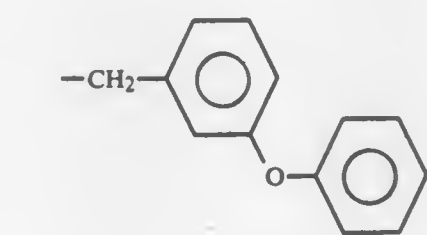
U.S. Cl. 424—282

12 Claims

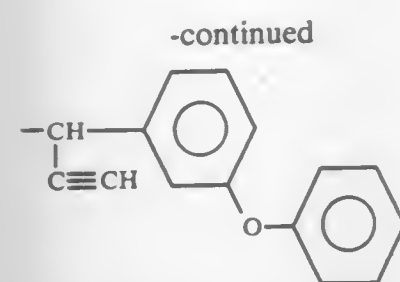
1. The (+), (−) and (±) forms of the compounds of the formula I



wherein R<sup>3</sup> is one of the following groups (a), (b), (d) or (e)







$R^1$  and  $R^2$  together represent a methylenedioxy group or if  $R^3$  is the group (d)  $R^1$  also represents hydrogen or a methoxy, ethoxy, propoxy, butoxy, tetrafluoroethoxy, methylthio, ethylthio, propylthio, fluoro, chloro, bromo, methyl, ethyl, or nitro group, and  $R^2$  represents hydrogen or a methyl group; and  $Y^1, Y^2, Y^3, Y^4, Y^5$  and  $Y^6$  are the same or different groups and each is hydrogen or a fluoro, bromo or chloro group, with the proviso that one of  $Y^1$  to  $Y^6$  is other than hydrogen.

8. Insecticidal compositions comprising an insecticidally effective amount of one or more of the compounds of formula I, as stated in claim 1, where  $R^3$  is one of the groups (a), (b), (d) and (e), incorporated in a suitable inert liquid or solid carrier.

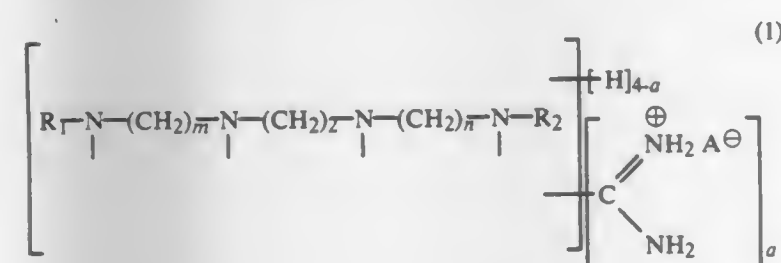
#### 4,339,459 GUANIDINIUM COMPOUNDS AND THEIR USE AS MICROBIOCIDAL AGENTS

Helmut Diery, Kelkheim; Wolfgang Wagemann, Tremsbüttel; Hans-Walter Bücking, Kelkheim; Martin Hille, Liederbach, and Karl H. Wallhäuser, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 15, 1980, Ser. No. 216,164  
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2952167

Int. Cl.<sup>3</sup> A61K 31/205; C07C 129/12  
U.S. Cl. 424—316

1. A guanidinium compound of the formula I



in which  $R_1$  and  $R_2$  are identical or different and denote alkyl, 2-hydroxyalkyl or alkenyl each having from 8 to 18 carbon atoms, or  $C_8$ - $C_{18}$ -alkoxypropyl, m and n are 2 or 3, a is a number from 1 to 4 and A denotes an anion.

2. Microbicidal agent comprising a solution containing 5 to 70% percent of a guanidinium compound as claimed in claim 1 in water, lower alkanols or mixtures thereof.

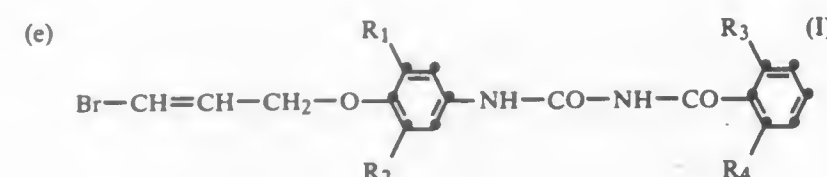
#### 4,339,460 PESTICIDAL N-[4-(3'-BROMOALLYLOXY)-PHENYL]-N'-BENZOYL UREAS

Josef Ehrenfreund, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 24, 1980, Ser. No. 114,935  
Claims priority, application Switzerland, Feb. 1, 1979, 982/79  
The portion of the term of this patent subsequent to Jul. 24, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> C07C 127/22; A01N 47/34  
U.S. Cl. 424—322

1. A compound of the formula I



wherein

$R_1$  and  $R_2$  independently of one another are each hydrogen, chlorine or bromine,

$R_3$  is fluorine or chlorine, and

$R_4$  is hydrogen, fluorine or chlorine.

8. A method for combatting insects which comprises applying to said insects or to a locus desired to be protected from said insects, an insecticidally effective amount of a compound according to claims 1, 2, 3, 4, 5 or 6.

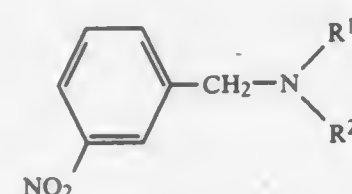
#### 4,339,461 N-SUBSTITUTED 3-NITRO-BENZYLAMINES

William F. King, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

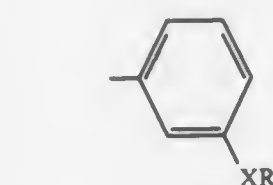
Filed Dec. 29, 1980, Ser. No. 221,169  
Int. Cl.<sup>3</sup> A61K 31/135

U.S. Cl. 424—330

1. A compound of the formula



wherein  $R^1$  and  $R^2$  are both propyl or  $R^1$  is the group



wherein X is —S— or —SO<sub>2</sub>— and R is alkyl of 1 to 4 carbon atoms; and  $R^2$  is hydrogen or —SO<sub>2</sub>R wherein R is defined as hereinabove, provided that when X is —S—,  $R^2$  is not hydro-  
gen.

5. A fungicidal composition comprising a biologically inert carrier and a fungicidally effective amount of a compound defined in claim 1.

#### 4,339,462 ANTIMICROBIAL 3-HYDROXYDIPHENYL ETHERS

Rene Muntwyler, Hofstetten, and Kurt Burdeska, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

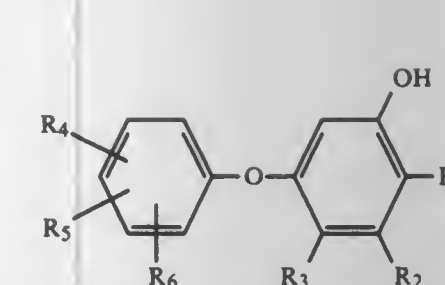
Division of Ser. No. 960,697, Nov. 14, 1978, Pat. No. 4,268,693.  
This application Dec. 8, 1980, Ser. No. 214,295

Claims priority, application Luxembourg, Nov. 21, 1977, 78554

Int. Cl.<sup>3</sup> A61K 31/09

U.S. Cl. 424—341

1. A method of combating micro-organisms on or in organic or inorganic material and of protecting said material from micro-organisms, which comprises incorporating in said material or applying to the surface thereof a microbiocidally effective amount of at least one compound of the formula



wherein  $R_1$  represents hydrogen, fluorine or chlorine, each of  $R_2$  and  $R_3$  independently represents hydrogen or chlorine, and each of  $R_4, R_5$  and  $R_6$  independently represents hydrogen, fluorine, chlorine or bromine, with the proviso that each phenyl nucleus contains at least one halogen atom, but the total number of halogen atoms in the molecule does not exceed 4.

#### 4,339,463 ENTEROSOLUBLE HARD-CAPSULATED MEDICAMENTS

Yasushi Takagishi, Nishinomiya; Yoshio Doi, Ibaraki, and Noboru Hoshi, Kigashi-Kurume, all of Japan, assignors to Shionogi & Co., Ltd., Osaka and Shin-Etsu Chemical Co., Ltd., Tokyo, both of Japan

Filed Jul. 16, 1980, Ser. No. 169,395  
Claims priority, application Japan, Aug. 24, 1979, 54-108447  
Int. Cl.<sup>3</sup> A61K 9/48, 47/00

U.S. Cl. 424—35

2 Claims

1. A weighted, enterosoluble, mixed acidic succinyl and aliphatic monoacyl ester of an alkyl and hydroxylalkyl substituted cellulose ether coated and sealed hard gelatin coated two-piece capsule shell-encapsulated medicament suspended in a material selected from the group consisting of sesame oil, olive oil, soybean oil, rapeseed oil, cottonseed oil, linseed oil, castor oil, rice-bran oil, camellia oil, coconut oil, peanut oil, corn oil, poppy oil, cacao butter, cinnamon butter, laurin, beef tallow, hog fat, wool fat, products obtained from said oils and fats by hydrogenation, carboxylic acid exchange or acetylation splitting and esters of glycerine with a carboxylic acid having from 6 to 30 carbon atoms in a molecule; said capsule having the usual semi-spherical cap ends of the capsule shells flattened so that the effective volume of the capsule is reduced and being weighted with a material selected from the group consisting of barium sulfate, calcium dihydrogenphosphate, iron oxide, titanium dioxide, calcium sulfate, and platinum, either in the capsule shell or in the capsule fill and having an overall specific gravity of at least 1.05.

#### 4,339,464 STABILIZER PRODUCING STREPTOCOCCUS THERMOPHILUS

Ebenezer R. Vedamuthu, Bradenton, Fla., assignor to Microlife Technics, Inc., Sarasota, Fla.

Filed Feb. 24, 1978, Ser. No. 880,969  
Int. Cl.<sup>3</sup> A23C 9/12, 9/123; C12N 1/20; C12R 1/46

U.S. Cl. 426—43

17 Claims

8. A bacterial concentrate which produces a stabilizer when incubated in milk to produce a naturally stabilized fermented milk product having a smooth, silky, viscous body at room temperature, which comprises:

at least about  $10^8$  cells per ml of *Streptococcus thermophilus* NRRL-B-11,238 which has been grown in a growth medium containing milk solids or derivatives thereof which cause the bacteria to form the stabilizer when incubated in milk and which concentrate is in a form which provides for storage and shipment of the cells.

#### 4,339,465 METHOD OF DE-PANNING BAKED GOODS

Oran L. Strouss, Carson, Calif.  
Continuation-in-part of Ser. No. 85,127, Oct. 15, 1979, abandoned. This application Sep. 26, 1980, Ser. No. 191,278  
Int. Cl.<sup>3</sup> A21D 8/08; A23D 5/00

U.S. Cl. 426—293

14 Claims

6. A method of de-panning a baked good from a pan in which it was baked which comprises spraying a liquid composition onto the pan before the good to be baked is placed in the pan or before said good is fully proofed, said liquid composition comprising an effective amount to effect de-panning of a liquid emulsifier containing from about 4 to about 9 percent monoglycerides and diglycerides derived from animal fats and/or vegetable oils based on the total weight of the liquid composition and from about 2 to about 7 percent of an ethoxylated fatty acid ester of sorbitol by weight of the liquid composition, said emulsifier having a melting point of about 45° F., from about 0 to about 4 percent lecithin by weight of the liquid composition and from about 80 percent to about 95 percent water based on the total weight of the liquid composition.

#### 4,339,466 ANTI-FOAMING AGENT FROM MALI

George E. A. Van Gheluwe, Longueuil; Robert L. Weaver; Miroslav Dacic, both of Montreal, all of Canada, and Finn B. Knudsen, Hellerup, Denmark, assignors to The Molson Companies, Limited, Rexdale, Canada

Continuation-in-part of Ser. No. 10,059, Feb. 7, 1979, abandoned. This application Aug. 26, 1980, Ser. No. 182,022  
Int. Cl.<sup>3</sup> A23L 1/28; C12C 11/04; C12B 1/18

U.S. Cl. 426—430

7 Claims

1. A process for producing an agent for reducing foaming during fermentation comprising the steps of grinding malt; extracting the ground malt thus produced with a hot ethanol solution having an ethanol concentration in excess of 75% to yield extracted ground malt and an ethanolic extract; separating said ethanolic extract from ground malt remaining therein; and concentrating said ethanolic extract to yield said antifoaming agent.

#### 4,339,467 FLAVORING WITH METHYL SUBSTITUTED OXOBICYCLO-4,4,0-DECANE DERIVATIVES

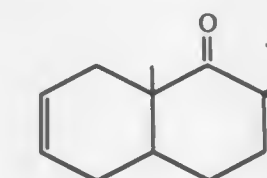
Takao Yoshida, West Long Branch, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 182,451, Aug. 28, 1980, Pat. No. 4,320,776. This application Jun. 25, 1981, Ser. No. 277,130  
Int. Cl.<sup>3</sup> A23L 1/226

U.S. Cl. 426—538

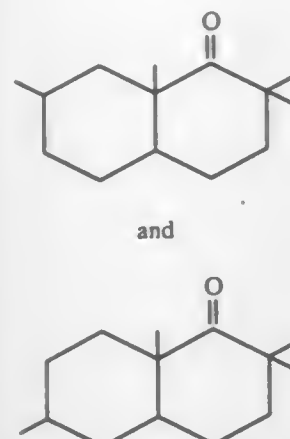
4 Claims

1. A process for augmenting or enhancing the peppery aroma or taste of a foodstuff comprising the step of adding to said foodstuff 0.01 ppm up to about 100 ppm of the compound defined according to the structure:

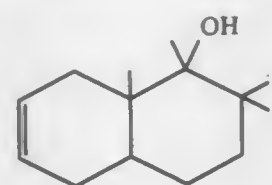


2. A process for augmenting or enhancing the peppery aroma or taste of a foodstuff comprising the step of adding to said foodstuff 0.01 ppm up to about 100 ppm of a mixture of compounds defined according to the structures:

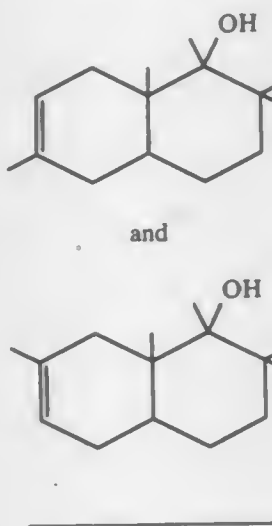




3. A process for augmenting or enhancing the walnut aroma or taste of a foodstuff comprising the steps of adding to said foodstuff 0.01 ppm up to about 100 ppm of the compound defined according to the structure:



4. A process for augmenting or enhancing the walnut aroma or taste of a foodstuff comprising the step of adding to said foodstuff 0.01 ppm up to about 100 ppm of a mixture of compounds defined according to the structures:



**4,339,468**  
**METHOD OF PREPARING PASTA FILATA CHEESE FOR BRINING AND CUTTING**

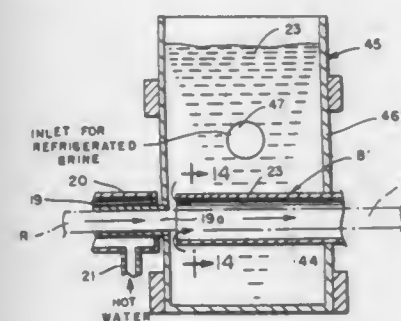
Lester O. Kielsmeyer, Lakewood, Colo., assignor to Leprino Foods Company, Denver, Colo.

Filed Dec. 29, 1980, Ser. No. 221,331

Int. Cl.<sup>3</sup> A23C 19/00

U.S. Cl. 426—582

9 Claims



1. The method of preparing pasta filata cheese for brining and cutting, comprising:

- (a) extruding mixed warm pasta filata cheese in a continuous ribbon;
- (b) projecting said extruded ribbon into the feed end of an elongated channel of restricted cross section having a cold sodium chloride brine flowing therethrough in the direction of movement of said ribbon in said channel, said brine being at a temperature sufficient to rapidly chill and set the extruded cheese ribbon and having predetermined density and velocity to assist the movement of said ribbon through said channel from said feed end to an outer discharge end; and
- (c) continuously mechanically removing the outer end of said ribbon from said discharge end of said channel for cutting and brining.

**4,339,469**

**METHOD OF MAKING POTASSIUM, CESIUM, RUBIDIUM, ANTIMONY PHOTOCATHODE**

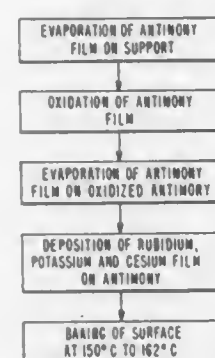
Arthur F. McDonie, Lancaster, and William K. Miller, Mannheim, both of Pa., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 98,698, Nov. 29, 1979, abandoned. This application Jul. 17, 1981, Ser. No. 284,258

Int. Cl.<sup>3</sup> B05D 1/34, 1/38, 3/02

U.S. Cl. 427—10

5 Claims



1. A method of making a photocathode including the steps of:

- (a) forming a base layer comprising antimony and oxygen on a substrate;
- (b) evaporating potassium, cesium and rubidium from at least one container onto the base layer, said base layer being maintained at room temperature during said evaporation; and
- (c) sensitizing said photocathode by baking said substrate at a temperature between 150° to 162° C. until the photocathode sensitivity reaches a maximum value.

**4,339,470**

**FABRICATING AMORPHOUS SILICON SOLAR CELLS BY VARYING THE TEMPERATURE OF THE SUBSTRATE DURING DEPOSITION OF THE AMORPHOUS SILICON LAYER**

David E. Carlson, Yardley, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 13, 1981, Ser. No. 234,567

Int. Cl.<sup>3</sup> H01L 31/18

U.S. Cl. 427—39

7 Claims

1. In an improved method for fabricating amorphous silicon solar cells of the type comprising an amorphous silicon layer deposited on a substrate, the improvement comprising varying the temperature of the substrate during the deposition of the amorphous silicon layer such that the temperature is lowest during the deposition of the portion of the amorphous silicon layer which will receive incident light.

**4,339,471**

**METHOD OF COATING SUBSTRATES WITH AN ABRASIVE LAYER**

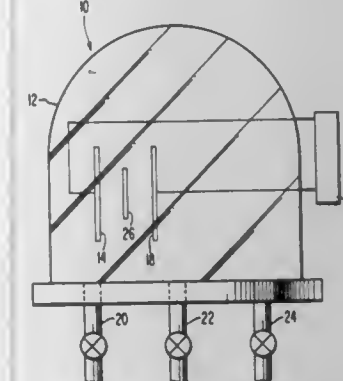
Grzegorz Kaganowicz, Princeton, N.J., and John W. Robinson, Levittown, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,505

Int. Cl.<sup>3</sup> B05D 3/06

U.S. Cl. 427—40

6 Claims



1. A method for preparing an abrasive silicon oxide coating on a substrate comprising:

- (a) placing said substrate in a vacuum chamber between two electrodes;
- (b) forming a glow discharge in said chamber in the presence of silane and N<sub>2</sub> O, thereby depositing a SiO<sub>x</sub> coating, wherein x is a number from 1-2, on said substrate;
- (c) removing silane from said chamber;
- (d) exposing said coating to oxygen; and
- (e) repeating step (b) to deposit an additional layer of silicon oxide on said substrate.

**4,339,472**

**METHOD FOR FABRICATING GRAVURE PRINTING CYLINDERS WITH SYNTHETIC RESIN SURFACE**

Eiichi Tachibana, Funabashi, and Shinichi Hikosaka, Musashino, both of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

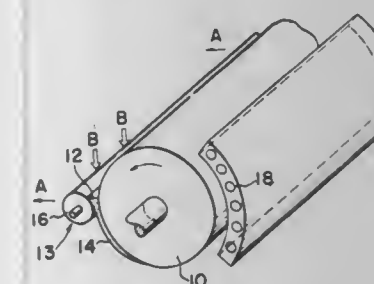
Filed Jul. 18, 1980, Ser. No. 170,156

Claims priority, application Japan, Jul. 27, 1979, 54-95734

Int. Cl.<sup>3</sup> B05D 1/40, 3/06

U.S. Cl. 427—44

6 Claims



1. A method of fabricating gravure printing cylinders with a printing surface made of synthetic resin, said cylinders having superior engraving properties including obviating use of a burr-cutter after engraving, smooth surface, solvent resistance and wear resistance, the method comprising the steps of:

- (a) applying spirally a photosetting polyamide resin solution prepared by dissolving a polyamide, a photopolymerizable monomer and a photopolymerization initiator in an alcohol, said solution being capable of being applied on said cylinder by the blade coating method, having a viscosity of 10-100 cps at 25° C., and said solution being applied as successively overlaid layers on the surface of a cylindrical base, as said base is rotated, for forming an endless photosetting polyamide resin layer;
- (b) drying the applied photosetting polyamide resin solution

substantially fully during the application of each layer while the base makes one turn;  
(c) irradiating said resin layers with ultraviolet rays, electron rays, or the like for setting the layer; and  
(d) engraving the resin layer surface thus set for forming gravure cells.

**4,339,473**

**GAMMA RADIATION GRAFTING PROCESS FOR PREPARING SEPARATOR MEMBRANES FOR ELECTROCHEMICAL CELLS**

Vincent F. D'Agostino, Huntington, and Joseph Y. Lee, Lake Grove, both of N.Y., assignors to Rai Research Corporation, Hauppauge, N.Y.

Filed Aug. 28, 1980, Ser. No. 182,135

Int. Cl.<sup>3</sup> B05D 3/06

U.S. Cl. 427—44

16 Claims

1. A process for the preparation of a separator membrane suitable for use in electrochemical cells comprising the steps of:

- (a) forming a graft polymerization medium consisting substantially of water, from about 0.5 to about 25 weight percent of one or more ethylenically unsaturated hydrophilic monomers and one or more polymerization retardants selected from the group consisting of water soluble cupric salts, ferrous salts or mixtures thereof, in an amount sufficient to retard the polymerization of said monomers;
- (b) placing said medium in contact with an inert polymeric base film; and
- (c) irradiating said film while in contact with said medium with sufficient radiation to graft polymerize said monomers onto said film, wherein all weight percents are based on the total weight of the medium.

**4,339,474**

**COATING COMPOSITION AND PROCESS FOR PREPARING SYNTHETIC RESIN SHAPED ARTICLES BY USING SAME**

Kazuo Kishida, Isao Sasaki, Kenji Kushi, and Misao Tamura, all of Otake, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed Mar. 3, 1981, Ser. No. 239,202

Claims priority, application Japan, Mar. 4, 1980, 55-27088;

Mar. 12, 1980, 55-31017

Int. Cl.<sup>3</sup> B05D 3/06; C08F 8/00

U.S. Cl. 427—54.1

19 Claims

10. A process for the preparation of synthetic resin shaped articles excellent in the abrasion resistance and weatherability, which comprises coating the surface of a synthetic resin shaped article with a coating composition, and irradiating the coated shaped article with ultraviolet rays to form on the surface of the synthetic resin shaped article a crosslinked and cured film having a thickness of 1 to 30 microns, wherein said coating composition comprises:

- (a) a polyfunctional monomer composition comprising (i) 40% to 100% by weight of a polyfunctional monomer containing at least three methacryloyloxy or acryloyloxy groups in the molecule and having a molecular weight of not higher than approximately 900 and (ii) 0% to 60% by weight of a monofunctional or bifunctional monomer having one or two methacryloyloxy or acryloyloxy groups in the molecule and having a molecular weight of not higher than approximately 300 per methacryloyloxy or acryloyloxy groups;
- (b) 5 to 35 parts by weight, based on 100 parts by weight of the polyfunctional monomer composition (a) mentioned above, of at least one ultraviolet absorber;
- (c) 0.5 to 8 parts by weight, based on 100 parts by weight of the polyfunctional monomer composition (a) mentioned above, of at least one polymeric material selected from polymers of alkyl methacrylates and alkyl acrylates; and
- (d) 0.01 to 6 parts by weight, based on 100 parts by weight of the polyfunctional monomer composition (a) mentioned above, of a photosensitizer.



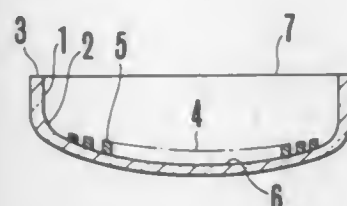
# 4,339,475 METHOD OF FORMING A FLUORESCENT SCREEN FOR CATHODE-RAY TUBE

Misturu Hinosugi, and Kouichi Nakasato, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
Filed Mar. 20, 1980, Ser. No. 132,398  
Claims priority, application Japan, Mar. 23, 1979, 54-33302; Mar. 23, 1979, 54-33303

Int. Cl.<sup>3</sup> B05D 3/02, 1/38

U.S. Cl. 427—64

14 Claims



1. A method of forming a fluorescent screen for a cathode ray tube comprising the steps of forming a phosphor layer on the inner surface of a panel, coating the panel inner surface and said phosphor layer with an aqueous emulsion of water insoluble film forming resin in order to form a base layer, forming a metal film upon said base layer, and eliminating organic substances of the base layer coated on the panel inner face by pyrolysis, wherein the pyrolysis temperature of said film-forming resin is not greater than 420° C. and said emulsion is coated while the phosphor layer is still wet to form said base layer.

# 4,339,476 DISPERSIONS FOR ACTIVATING NON-CONDUCTORS FOR ELECTROLESS PLATING

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540  
Division of Ser. No. 934,344, Aug. 17, 1978, Pat. No. 4,220,678, which is a division of Ser. No. 830,456, Sep. 6, 1977, abandoned, which is a continuation-in-part of Ser. No. 731,212, Oct. 12, 1976, Pat. No. 4,136,216, which is a division of Ser. No. 607,506, Aug. 26, 1975, Pat. No. 3,993,799, which is a continuation-in-part of Ser. No. 512,224, Oct. 4, 1974, abandoned. This application Aug. 28, 1980, Ser. No. 182,124. The portion of the term of this patent subsequent to Dec. 26, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> C23C 3/02

U.S. Cl. 427—98

27 Claims

1. A process for the electroless or chemical deposition of a non-conductor substrate which comprises

- contacting said substrate with a colloidal dispersion of at least one non-precious catalytic metal capable of electroless metal initiation and wherein said colloidal dispersion is derived through the nucleation of a colloidal product with added thermal energy thereby improving the stability and effectiveness for said colloidal product, and
- immersing the treated substrate into an electroless plating bath to deposit a metallic layer thereof.

# 4,339,477 PROCESS FOR PREPARING A PIGMENTED LACQUER

Dietrich J. Bahr, Herrenberg, and Marian Briska, Böblingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.  
Filed Mar. 16, 1981, Ser. No. 244,363  
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023700

Int. Cl.<sup>3</sup> B41M 3/00; C09C 1/00

U.S. Cl. 427—146

5 Claims

1. A process for coating a record carrier, said process comprising the steps of:

- coating said record carrier with an aluminum-containing layer;
- making a mixture of lacquer and a white pigment which

changes to a dark color under the influence of heat, and which has a grain size greater than any other pigment in the mixture; and

- applying a layer of said mixture to said record carrier, with the thickness of the mixture layer such that white pigment particles protrude from the surface.

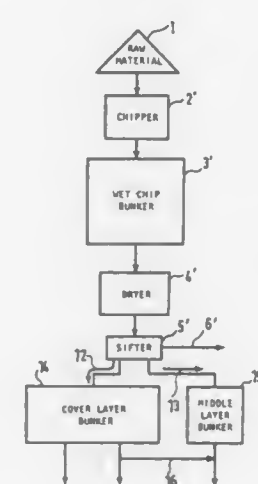
# 4,339,478 INSTALLATION AND PROCESS FOR PROCESSING OF LIGNO-CELLULOSE FOR THE MANUFACTURE OF WOOD-PRODUCT PLATES

Berndt Greten; Harry Neubauer; Günter Seeger; Günter Bücking; Hans J. Komp, and Wilhelm Oldemeyer, all of Springe, Fed. Rep. of Germany, assignors to Bison-werke Bähre & Greten GmbH & Co. KG, Springe, Fed. Rep. of Germany  
Filed Apr. 23, 1980, Ser. No. 143,166  
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1979, 2916541

Int. Cl.<sup>3</sup> B05D 7/00

U.S. Cl. 427—212

3 Claims



1. A method for processing of ligno-cellulose containing particles for the manufacture of wood-product plate type articles having layers of oriented chips, comprising the steps of: comminuting raw material by chipper means; separating fine material and dust by sifting means; providing sifted chips with at least one binder material by gluing means; producing with said chipper means more chips of as great a length as possible than are required for forming of at least one cover layer of a mat; locating wet chip bunker means behind said chipper means and locating dryer means following thereof; separating chips obtained after removal of the fine material and the dust into two fractions by said sifting means, one of said fractions during processing time constantly containing chips which are as long as possible and which are more than that required for forming said mat cover layer, the other one of said fractions having shorter chips obtained during chipping, both fractions being present each in at least one bunker; supplying by feeding means a part of the chips that are as long as possible from said one fraction to the chips of said other fraction, so that resistance against longitudinal bending is uniform in said wood-product plate type articles.

# 4,339,479 TREATMENT OF CELLULOSE

Edward Robbart, 321 Fairmount Ave., Milton, Mass. 02186  
Continuation-in-part of Ser. No. 308,057, Nov. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 39,538, May 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 522,366, Jan. 24, 1966, abandoned, which is a continuation-in-part of Ser. No. 386,622, Aug. 8, 1973, Pat. No. 3,856,558. This application Dec. 20, 1974, Ser. No. 534,807. The portion of the term of this patent subsequent to Dec. 24, 1991, has been disclaimed.  
Int. Cl.<sup>3</sup> C23C 11/00

U.S. Cl. 427—255.1

24 Claims

1. A process for rendering a cellulosic material water repellent by treatment with vapors of lower alkyl silicon halide without the need of a neutralization step while retaining the strength characteristics of the material which consists essentially of contacting in a contact chamber at a contact chamber pressure of about 1 Torr to 16.7 psi a cellulosic material having a water content of up to about 10 weight percent with vapors of a lower alkyl silicon halide which reacts with hydroxyl groups to form a siloxane, said vapors being at a temperature of ambient room temperature to 180° F. and a concentration of about 0.5 volume percent up to the saturation of the contacting atmosphere, and a contact time of from 0.1 second up to 30 minutes, maintaining the concentration of lower alkyl silicon halide in the contacting atmosphere, the temperature of said lower alkyl silicon halide vapor, the pressure within said treating chamber, the temperature of the cellulosic material, and the contact time so that the cellulosic material contacted with the lower alkyl silicon halide is rendered water repellent and has a pH greater than 3.5.

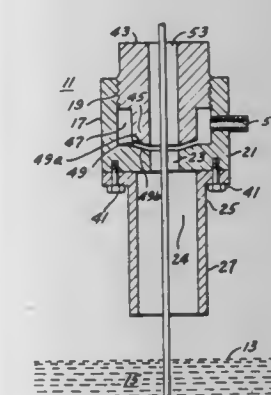
# 4,339,480 GAS WIPING APPARATUS AND METHOD OF USING

Anthony J. Stavros, and Roger L. Crandall, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.  
Continuation-in-part of Ser. No. 139,606, Apr. 11, 1980. This application Mar. 31, 1981, Ser. No. 249,513

Int. Cl.<sup>3</sup> C23C 1/00; B05C 11/06

U.S. Cl. 427—349

25 Claims



1. A gas wiping die for wiping linear material after initial passage of such material through a molten metal coating bath, comprising:

- a die body having a gas wiping orifice circumferentially surrounding a central throat through which the linear material passes, the gas wiping orifice being positioned from 1 to 15 inches above the surface of the molten metal bath, the throat diameter being from 0.50 to 1.50 inches, and
- the gas wiping orifice having
  - an angle of about 10 to 45 degrees with respect to perpendicular to the surface of linear material passing through the die,
  - an orifice width of about 0.010 to 0.080 inch, and
  - substantially parallel side walls at least about 0.25 inch in length.

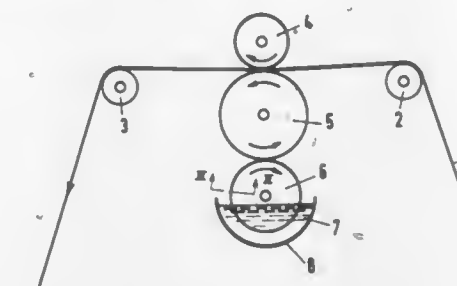
# 4,339,481 PROCESS AND APPARATUS FOR APPLYING LIQUID TO WEB MATERIAL

Lambert J. Beekhuis, Mierlo, Netherlands, assignor to Vlisco B.V., Helmond, Netherlands  
Continuation-in-part of Ser. No. 659,143, Feb. 18, 1976, abandoned. This application Apr. 23, 1980, Ser. No. 142,991  
Claims priority, application Netherlands, Feb. 18, 1975, 7501900

Int. Cl.<sup>3</sup> B05D 1/28

U.S. Cl. 427—428

4 Claims



1. Apparatus for applying liquid having low viscosity to web material such as textile without the aid of a doctor blade, comprising: a freely rotatable top roller supported from below by engagement with a freely rotatable intermediate roller which forms a nip for receiving an advancing length of the web, said top roller and intermediate roller developing a pressure in said nip which is less than approximately 0.2 kg/cm so that the advancing web rotates said rollers and a freely rotatable applicator roll engaging said intermediate roller from below and supporting said intermediate roller and said top roller whereby said applicator roll is rotated by said intermediate roller, said applicator roll being partially immersed in a bath of the liquid to be applied and having a metal surface provided with cup-shaped recesses.

2. A process for applying liquid having low viscosity to an advancing textile web without the use of a doctor blade, comprising: passing the advancing web through a nip formed between a top freely rotatable roller and an intermediate freely rotatable roller which supports the top roller whereby the advancing web rotates the rollers, the top and intermediate rollers developing a pressure in the nip which is less than approximately 0.2 kg/cm; and transferring liquid from a bath thereof to the intermediate roller in the form of a film thereof by a freely rotatable applicator roller which is partially immersed in the bath, which applicator roller supports the intermediate roller from below so as to be rotated by the intermediate roller and which has a metal surface provided with cup-shaped recesses.

# 4,339,482 FLAT-PANEL DISPLAY AND METHOD OF MANUFACTURE

David Glaser, Waukegan, and Charles J. Whelchel, Prospect Heights, both of Ill., assignors to Lucitron, Inc., Northbrook, Ill.

Filed Aug. 29, 1980, Ser. No. 182,782

Int. Cl.<sup>3</sup> H01J 61/06, 61/30

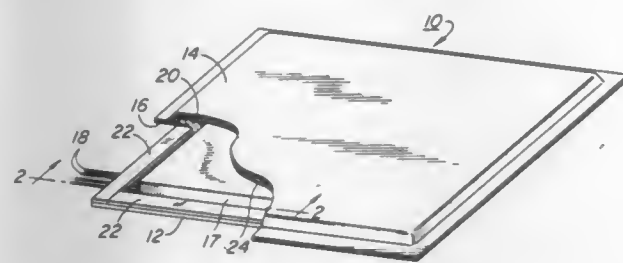
U.S. Cl. 428—13

10 Claims

1. A flat-panel display, comprising in combination a flat glass pane having a continuous portion surrounding a viewing area, a display-producing structure positioned adjacent one face of said pane over said viewing area, an impervious metal flange hermetically sealed to said pane throughout a continuous area surrounding said viewing area, and an impervious rear sheet having a continuous metallic peripheral portion, said sheet overlying said display-producing structure with said metallic peripheral portion being hermetically sealed to said metal flange to provide be-



tween said glass pane and said rear sheet an enclosed cavity in which said display-producing structure is located, said cavity being hermetically sealed from the ambient.



cated, said cavity being hermetically sealed from the ambient.

4,339,483

### WELDED CAN WITH AN ORGANIC, METALLIC, ORGANIC LAYER ADJACENT THE WELD

Hiroshi Ueno, Yokosuka; Shunji Kojima, Yokohama; Kazuo Taira, Tokyo; Tadahiko Katsura, Yokohama; Makoto Horiguchi, Fujisawa, and Susumu Takahashi, Yamato, all of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan  
Filed Jul. 1, 1980, Ser. No. 165,006

Claims priority, application Japan, Jul. 4, 1979, 54/83916

Int. Cl.<sup>3</sup> B65D 7/12, 25/14

U.S. Cl. 428—35

3 Claims

1. In a welded metallic can having a can body and a joint portion, wherein the interior of the can body is covered at its joint portion with a film of an organic polymeric resin, the improvement wherein said film is a multilayered film having at least two layers of a film of an organic polymeric resin and one layer selected from the group consisting of a metallic foil, an evaporation coated metallic layer and an electroplated metallic layer, the layer adjacent the welded can being one of said layers of a film of an organic polymeric resin, and the layer most spaced away from the welded can being another layer of a film of an organic polymeric resin.

4,339,484

### SOLAR COLLECTOR

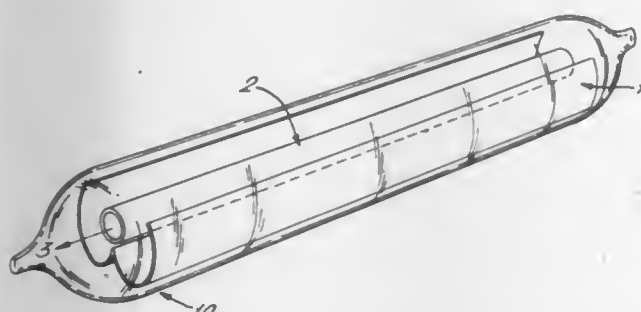
Geoffrey L. Harding, Sydney, Australia, assignor to University of Sydney, Sydney, Australia

Continuation-in-part of Ser. No. 797,661, May 17, 1977, abandoned. This application Mar. 3, 1980, Ser. No. 126,918

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 428—36

11 Claims



1. A solar energy collector element comprising a first glass tube into which a fluid to be heated can be directed, a second glass tube which has an internal diameter which is greater than the external diameter of the first tube and which is located about the first tube, an end-sealed evacuated space defined by the external and internal surfaces respectively of the first and second tubes, and a solar selective surface coating on the external surface of the first tube; the solar selective surface coating comprising a substrate and a composite metal film, the substrate having a thickness of at least  $0.05 \times 10^{-6}$  m. and being composed of a metal which has a relatively low infra-red emittance, and the composite metal film comprising a metal-

carbide which has a thickness between  $0.04 \times 10^{-6}$  m. and  $0.20 \times 10^{-6}$  m. and which is deposited on the substrate by a reactive sputtering process.

4,339,485

### PRESSURE SENSITIVE ADHESIVE PRODUCTS

Tomishi Shibano, Tama; Sachio Maruchi, Tokyo; Koji Yakan, Tanashi; Tadashi Kobayashi, Tokyo, and Saburo Akimoto, Yokohama, all of Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd., Tokyo, Japan

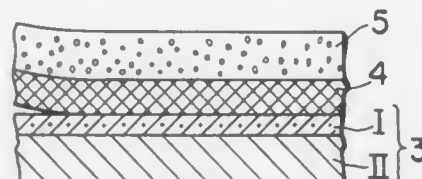
Filed Nov. 2, 1979, Ser. No. 90,605

Claims priority, application Japan, Nov. 9, 1978, 53-137350; Dec. 12, 1978, 53-152628; May 18, 1979, 54-60336; May 21, 1979, 54-61513

Int. Cl.<sup>3</sup> A61F 13/02

U.S. Cl. 428—40

11 Claims



1. Pressure sensitive adhesive products having one or more release layers and a pressure sensitive adhesive layer, in which a release layer comprises a polyolefinic elastomer having a shearing modulus of less than  $2.0 \times 10^8$  dyne/cm<sup>2</sup> according to JIS K 7213 test, surface wettability expressed in terms of an equilibrium contact angle for more than 55° with respect to a standard liquid having a surface tension of 50 dyne/cm and used in JIS K 6768 test under the conditions of  $20 \pm 1^\circ$  C. and  $65 \pm 5\%$  RH and a thickness of at least 1 micron, and a pressure sensitive adhesive layer contains as a main component a polyacrylate, said release layer being kept in contact with said adhesive layer over a given area to form a composite layer or integral thereof.

4,339,486

### METHOD FOR TEMPORARILY PROTECTING STICKY SURFACE AND A THUS PROTECTED ADHESIVE SHEET MATERIAL

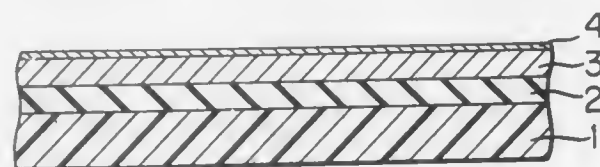
Noboru Shimamoto, and Satoshi Yumoto, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan  
Filed Dec. 22, 1980, Ser. No. 218,944

Claims priority, application Japan, Dec. 28, 1979, 54-173841

Int. Cl.<sup>3</sup> B32B 33/00

U.S. Cl. 428—40

4 Claims



1. An adhesive sheet material protected from inadvertent sticking which comprises  
(a) a substrate sheet,  
(b) a sticky layer formed on at least one surface of the substrate sheet with a silicone-based sticking agent, and  
(c) a protecting covering sheet made of a hydrophilic material applied and bonded to the surface of the sticky layer, at least the interfacial layer of the said protecting covering sheet containing 10% by weight or more of water based on the dry weight.

4,339,487

### DOOR PANEL AND MANNER OF MAKING SAME

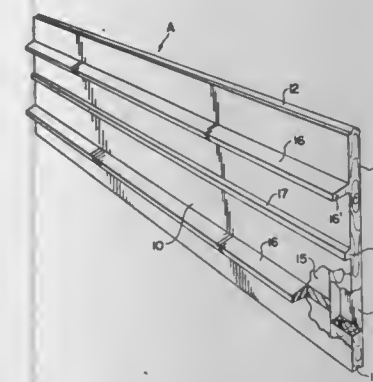
Willis J. Mullet, 1574 Cleveland Rd., Wooster, Ohio 44691  
Division of Ser. No. 39,574, May 16, 1979, Pat. No. 4,238,544.

This application Dec. 4, 1980, Ser. No. 212,900

Int. Cl.<sup>3</sup> B32B 1/04, 5/20

U.S. Cl. 428—71

22 Claims



1. An overhead door panel having an inner skin having longitudinal ribs extending in a direction away from the panel and an outer skin forming a cavity between said skins, a rigid core of expanded foam thermal insulating material in said cavity and bonded to the surfaces of the skins, at least the inner skin formed of metal and having contoured side edges for conforming to like edges on like panels, stiles in the cavity extending along the ends of the panel, and means bonding the marginal edges of said outer skin to said contoured edges.

4,339,489

### SIMULATED CERAMIC TILE

John C. Barker, Cowansville, and Ivan P. McLaughlin, Dunham, both of Canada, assignors to J. J. Barker Company Limited, Canada

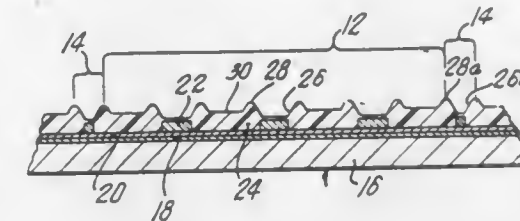
Division of Ser. No. 52,008, Jun. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 808,662, Jun. 21, 1977, Pat. No. 4,169,907, which is a continuation-in-part of Ser. No. 550,875, Feb. 19, 1975, abandoned. This application Dec. 4, 1980, Ser. No. 213,019

Claims priority, application Canada, Nov. 15, 1974, 213914  
The portion of the term of this patent subsequent to Oct. 2, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> B32B 3/30; B41M 3/00

U.S. Cl. 428—167

17 Claims



1. A method of forming a panel defining a plurality of decorative simulated ceramic tiles comprising:

- (a) scoring a flat surface of a substrate to form a plurality of grooves defining a plurality of rectangular areas,
- (b) applying to the grooved surface a coating of a urethane-forming composition,
- (c) rapidly curing the wet coating in the presence of a vapour phase catalyst such that a continuous urethane coating is formed on the grooved surface without exposure of the surface at the upper wall of the grooves and with retention of unfilled grooves to provide a coloured, printable base,
- (d) printing on said printable base a layer of ink lines of a coloured ink containing an amount of an organic silicone oil which is sufficient to repel a liquid top coat composition of a resinous, film-forming material in a volatile organic vehicle which contains from 0.75 to 2% of a colouring pigment based on the weight of the top coat composition, without deleteriously affecting the adherence of a top coat formed from said top coat composition; said ink lines defining a plurality of individually complete designs on said base, each of said designs being associated with one of said rectangular area,
- (e) applying to said printable base, over said layer of ink lines, a liquid top coat composition of a resinous, film-forming material in a volatile organic vehicle, said top coat composition containing from 0.75% to 2% of a colouring pigment based on the weight of the top coat composition,
- (f) allowing said silicone-containing ink to repel said liquid to form ridges of the liquid adjacent the ink lines, and leaving said ink lines clearly visible,
- (g) drying and baking the substrate to fix said top coat as a hard, pigment-containing, resinous top coat defining a contour of valleys, hills, and plains, wherein the intensity of colour in the top coat varies with the variation in the contour, said valleys occurring over the ink lines such that the colour of the ink is not obscured; said colour in the top coat providing a contrast with the colour in the undercoat and with the colour in the printed pattern to simulate a ceramic appearance.

17. A simulated ceramic tile produced in a method comprising:

- (a) applying to a flat surface of a substrate, an undercoat effective to provide a coloured, printable base,
- (b) printing on said printable base a pattern comprised of ink lines of a coloured ink containing an organic silicone oil in an amount which is sufficient to repel a liquid top coat composition of a resinous, film-forming material in a volatile organic vehicle.

4,339,488

### SUPPORT WEB

Manfred Brokmann, Slicherstrasse 5, 4500 Osnabrück, Fed. Rep. of Germany

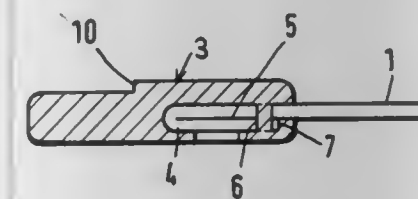
Filed Dec. 22, 1980, Ser. No. 218,818

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951329

Int. Cl.<sup>3</sup> B32B 3/06, 3/10

U.S. Cl. 428—100

12 Claims



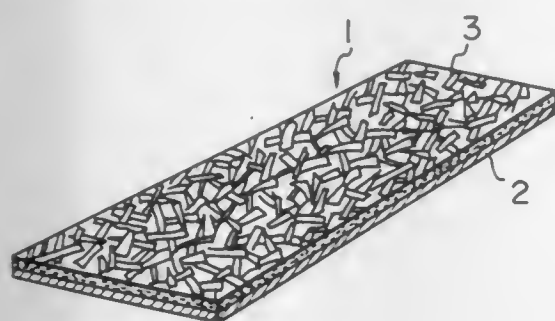
1. A support web comprising a flat band of plastic material having parallel, spaced apart, longitudinally extending reinforcing threads embedded in the band, and, at each end, a connecting member of plastic material formed in one piece about the band end to surround on all sides, a folded end of the band having its layers welded together, there being at least one hole passing through the folded end of the band filled with material of the connecting member, the holes being disposed each between an adjacent pair of the threads.



- tile organic vehicle which contains from 0.75% to 2.0% of a colouring pigment based on the weight of the top coat composition, without deleteriously affecting the adherence of a top coat formed from said top coat composition,
- (c) applying to said printable base, over said printed pattern, a colouring pigment-containing liquid top coat composition of a resinous, film-forming material in a volatile organic vehicle, said top coat composition containing from 0.75% to 2.0% of colouring pigment based on the weight of top coat composition,
- (d) allowing said silicone-containing ink to repel said liquid to form ridges of the liquid adjacent the printed pattern, said printed pattern being clearly visible, and subsequently,
- (e) drying and baking the substrate to fix said liquid material as a hard, colouring pigment-containing, resinous top coat defining a contour of valleys, hills and plains, wherein the intensity of colour in the top coat varies with the variation in the contour, said valleys occurring over the ink lines such that the colour of the ink is not obscured; said colour in the top coat providing a contrast with the colour in the under-coat and with the colour in the printed pattern to simulate a ceramic appearance.

**4,339,490**  
**FIBER REINFORCED PLASTIC SHEET MOLDING COMPOUND**

Naonori Yoshioka, Hiroshima; Hisashi Tada, and Setsuo Kashiyama, both of Otake, all of Japan, assignors to Mitsubishi Rayon Company, Limited, Tokyo, Japan  
Filed Sep. 2, 1980, Ser. No. 183,278  
Claims priority, application Japan, Sep. 12, 1979, 54/117089  
Int. Cl.<sup>3</sup> B32B 7/00, 9/04, 27/14  
U.S. Cl. 428—213 9 Claims

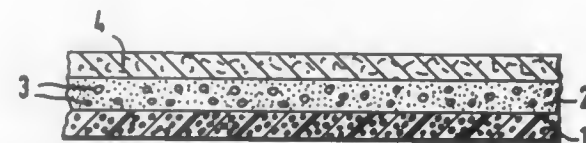


1. A fiber-reinforced plastic sheet molding compound, comprising:  
a first sheet composed of from 30 to 90% by weight of reinforcing fibers and from 70–10% by weight of a matrix resin, said first sheet being formed of remolded rectangular or triangular ribbon shaped chips of a width of at least 1 mm and a length of at least 3 mm, at least one surface of said first sheet being joined with a second sheet composed of the said matrix resin and from 0–30% by weight of reinforcing fibers, said second sheet having a thickness less than that of said first sheet.

**4,339,491**  
**PROCESS FOR BONDING WALLPAPERS TO WALL INSULATIONS AND COMPOSITE SHEETING PREPARED IN ACCORDANCE THEREWITH**  
Uwe Lauterbach, and Wolfgang Michel, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany  
Filed Mar. 12, 1981, Ser. No. 242,822  
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010047  
Int. Cl.<sup>3</sup> B32B 3/26, 5/18, 7/12, 9/04  
U.S. Cl. 428—317.7 5 Claims

5. A composite sheeting for covering walls, consisting essentially of a base layer of a foamed polystyrene, a layer of adhesive

contiguous to said base layer, and a layer of wallpaper contiguous to said adhesive layer, wherein the adhesive layer applied between the base layer and the wallpaper layer consists



essentially of a polysaccharide derivative as the bonding agent and an amount of a flame-retardant sufficient to impart a flame-retardant effect to said composite sheeting.

**4,339,492**  
**HEAT-SENSITIVE RECORDING MATERIAL**  
Hisashi Mino; Masao Matsukawa, and Minematsu Nagashima, all of Higashimatsuyama, Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd., Tokyo, Japan  
Filed Jun. 5, 1980, Ser. No. 156,782  
Claims priority, application Japan, Jun. 15, 1979, 54-74567  
Int. Cl.<sup>3</sup> B41M 5/18 1 Claim

1. A heat-sensitive recording material having a heat-sensitive layer comprising a leuco dye, a phenolic compound and a water-soluble binding agent, wherein said phenolic compound comprises bisphenol A and p-phenylphenol in a ratio by weight between 8:1 and 4:3.

**4,339,493**  
**HEAT SEALABLE PACKAGING FILM COMPRISING PROPYLENE POLYMER SUBSTRATE AND OLEFIN SURFACE LAYER BLEND OF POLYBUTENE-1 AND AN ETHYLENE OR A PROPYLENE COPOLYMER**  
Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.  
Division of Ser. No. 82,358, Oct. 5, 1979, Pat. No. 4,275,120.  
This application Nov. 3, 1980, Ser. No. 202,903  
Int. Cl.<sup>3</sup> C09J 7/02 4 Claims

1. A multiple-layer, heat-sealable film comprising:  
(a) a substrate layer consisting essentially of a homopolymer of polypropylene or a copolymer of polypropylene which is blended with up to 40 weight % of a different compatible polyolefin; and  
(b) on one of the surfaces of the substrate layer, a surface layer comprising a blend of 10–90 weight percent of poly(1-butene), and 90–10 weight percent of a copolymer of ethylene (2–49 mole percent) and a higher olefin having 4 or more carbon atoms (98–5 mole percent);  
in which said different compatible polyolefin in the substrate corresponds to said surface layer blend.

**4,339,494**  
**HEAT SEALABLE PACKAGING FILM COMPRISING PROPYLENE POLYMER SUBSTRATE AND OLEFIN SURFACE LAYER BLEND OF POLYBUTENE-1 AND AN ETHYLENE OR A PROPYLENE COPOLYMER**  
Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.  
Division of Ser. No. 82,358, Oct. 5, 1979, Pat. No. 4,275,120.  
This application Nov. 3, 1980, Ser. No. 202,904  
Int. Cl.<sup>3</sup> C09J 7/02 4 Claims

1. A multiple-layer, heat-sealable film comprising:  
(a) a substrate layer consisting essentially of a homopolymer of polypropylene or a copolymer of polypropylene which is blended with up to 40 weight % of a different compatible polyolefin; and

- (b) on one of the surfaces of the substrate layer, a surface layer comprising a blend of 10–90 wt. % poly(1-butene), and 90–10 wt. % of a copolymer of ethylene (15–96 wt. %) and propylene (4–85 wt. %);  
in which said different compatible polyolefin in the substrate corresponds to the surface layer blend.

**4,339,495**  
**HEAT SEALABLE PACKAGING FILM COMPRISING PROPYLENE POLYMER SUBSTRATE AND OLEFIN SURFACE LAYER BLEND OF POLYBUTENE-1 AND ETHYLENE OR A PROPYLENE COPOLYMER**  
Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.  
Division of Ser. No. 82,358, Oct. 5, 1979, Pat. No. 4,275,120.  
This application Nov. 3, 1980, Ser. No. 202,905  
Int. Cl.<sup>3</sup> B32B 27/00 4 Claims

1. A multiple-layer, heat-sealable film comprising:  
(a) a substrate layer consisting essentially of a homopolymer of polypropylene, a copolymer of polypropylene, in which said homopolymer or copolymer is blended with 1 to 40 percent by weight of a different compatible polyolefin; and  
(b) on one of the surfaces of the substrate layer, a surface layer comprising a blend of 10–90 weight percent of poly(1-butene), and 90–10 weight percent of a copolymer of propylene (2–79 mole percent) and 1-butene (98–21 mole percent), in which said different compatible polyolefin in the substrate corresponds to the blend in the surface layer.

**4,339,496**  
**HEAT SEALABLE PACKAGING FILM COMPRISING PROPYLENE POLYMER SUBSTRATE AND A SURFACE LAYER BLEND OF ETHYLENE COPOLYMER AND PROPYLENE COPOLYMER**  
Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.  
Division of Ser. No. 82,344, Oct. 5, 1979, Pat. No. 4,291,092.  
This application Nov. 3, 1980, Ser. No. 203,029  
The portion of the term of this patent subsequent to Oct. 27, 1998, has been disclaimed.  
Int. Cl.<sup>3</sup> B32B 27/00 4 Claims

1. A multiple-layer, heat-sealable film comprising:  
(a) a substrate layer consisting essentially of a homopolymer of polypropylene or a copolymer of polypropylene which is blended with up to 40 weight % of a different compatible polyolefin; and  
(b) on one of the surfaces of the substrate layer, a surface layer comprising a blend of 86–95 wt. % or 5–14 wt. % of a copolymer of ethylene (75–90 mole percent) and a higher olefin having 3 or more carbon atoms (10–25 mole %), and 14–5 wt. % or 95–86 wt. % of a copolymer of propylene (88–98 mole percent) and a higher olefin having 4 or more carbon atoms (2–12 mole %);  
in which said different compatible polyolefin in the substrate corresponds to said surface layer blend.

**4,339,497**  
**HEAT SEALABLE PACKAGING FILM COMPRISING PROPYLENE POLYMER SUBSTRATE AND A SURFACE LAYER BLEND OF OLEFIN COPOLYMER OR INTERPOLYMER**  
Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.  
Division of Ser. No. 82,343, Oct. 5, 1980, Pat. No. 4,275,119.  
This application Nov. 3, 1980, Ser. No. 203,030  
Int. Cl.<sup>3</sup> C09J 7/02 4 Claims

1. A multiple-layer, heat-sealable film comprising:  
(a) a substrate layer consisting essentially of a homopolymer

- of propylene or a copolymer of propylene, wherein said homopolymer or copolymer is blended with 1–40% weight of a different compatible polyolefin; and  
(b) On one of the surfaces of the substrate layer, a surface layer comprising a copolymer of 50 to 90 mole percent of butene-1 and 10 to 50 mole percent of an alpha-olefin having more than 4 carbon atoms;  
in which said different compatible polyolefin in the substrate corresponds to said surface layer copolymer.

**4,339,498**  
**HEAT SEALABLE PACKAGING FILM COMPRISING PROPYLENE POLYMER SUBSTRATE AND A SURFACE LAYER BLEND OF OLEFIN COPOLYMER OR INTERPOLYMER**  
Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.  
Division of Ser. No. 82,343, Oct. 5, 1979, Pat. No. 4,275,119.  
This application Nov. 3, 1980, Ser. No. 203,031  
Int. Cl.<sup>3</sup> C09J 7/02 4 Claims

1. A multiple-layer heat sealable film comprising:  
(a) a substrate layer consisting essentially of a homopolymer of polypropylene or a copolymer of polypropylene, wherein said homopolymer or copolymer is blended with 1–40% by weight of a different compatible polyolefin; and  
(b) on 1 of the surfaces of the substrate layer, a surface layer comprising an interpolmer of 2–94 mole % of ethylene, 1–93 mole % of propylene and 5–97 mole % of an alpha-olefin having 4 or more carbon atoms;  
in which said different compatible polyolefin in the substrate corresponds to the surface layer interpolmer.

**4,339,499**  
**STRING OF A SYNTHETIC RESIN**  
Günther Tappe, Troisdorf-Sieglar; Bertram Gasper, Troisdorf-Spich; Herbert Laubenberger, and Richard Weiss, both of Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany  
Filed Apr. 2, 1980, Ser. No. 136,701  
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914606  
Int. Cl.<sup>3</sup> D02G 3/00 12 Claims

1. A string for the stringing of rackets, bows, musical instruments and the like comprising a thread-like structure comprising at least one polyvinylidene fluoride monofil of a thickness of 1.2 to 1.5 mm, which is stretch oriented to impart improved elasticity thereto and which is provided with a coating consisting essentially of polytetrafluoroethylene or a silicone oil.

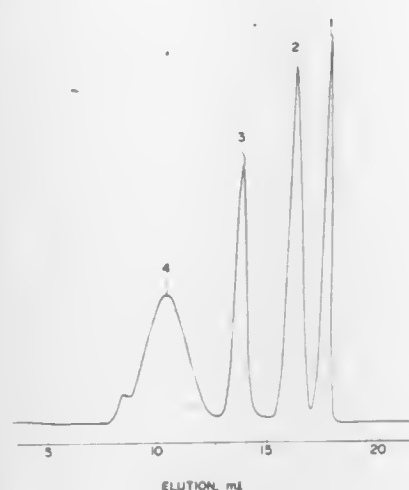




# 4,339,500 HYDROPHILIC PACKING MATERIAL FOR CHROMATOGRAPHY

Yuzo Yanagihara; Kohji Noguchi, both of Yokohama; Hiroshi Suzuki, Yamato, and Makoto Honda, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 14, 1980, Ser. No. 196,238  
Claims priority, application Japan, Nov. 1, 1979, 54-140421  
Int. Cl.<sup>3</sup> B32B 3/00; C08F 226/00  
U.S. Cl. 428—402 14 Claims



1. A totally porous, hydrophilic packing material for chromatography which comprises grains of a hydroxyl group-containing nonionic and hydrophilic synthetic cross-linked polymer having as a main skeleton a chemical structure including carbon atoms, hydrogen atoms and oxygen atoms bonded through single bonds, which atoms are present in the form of hydroxyl groups, ether groups, carbon-hydrogen bonds and carbon-carbon single bonds exclusive of oxygen-oxygen bonds and 3- or 4- membered rings consisting of carbon and oxygen atoms, said synthetic polymer in dry state having a hydroxyl group density of 1 to 15 milliequivalents/g, a specific surface area of 5 to 1000 m<sup>2</sup>/g and a water regain of 0.3 to 3.0 g/g.
2. A packing material according to claim 1, wherein said grains have an average grain diameter of 1 to 2,000 μm.

# 4,339,501 FILTER-COATED PHOSPHOR

Kiyoshi Inoue, and Minoru Watanabe, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 28, 1980, Ser. No. 116,593  
Claims priority, application Japan, Feb. 2, 1979, 54-10353  
Int. Cl.<sup>3</sup> H01J 29/26  
U.S. Cl. 428—404 8 Claims



1. A filter-coated phosphor having phosphor particles coated with filter particles of the same color as that of light emitted from said phosphor and secured to said phosphor particle with a bonding agent, the whole surface of each said filter particle being coated with a continuous silica film wherein said film is formed by treating the filter particles with

a solution which is obtained by dissolving silica in an organic alkali solution.

# 4,339,502 TIE-LAYER FOR COEXTRUDED ACRYLONITRILE COPOLYMERS

Frank S. Gerry, Hudson, and Wayne T. Wiggins, Aurora, both of Ohio, assignors to SOHIO, Cleveland, Ohio  
Continuation-in-part of Ser. No. 99,113, Nov. 29, 1979, Pat. No. 4,243,725. This application Dec. 24, 1980, Ser. No. 220,217  
Int. Cl.<sup>3</sup> B32B 27/28, 27/32  
U.S. Cl. 428—411 13 Claims

1. A laminated structure comprising
  - (i) a first outer layer comprising a nitrile barrier resin,
  - (ii) a tie-layer comprising a mixture of (1) a nitrile barrier resin, and (2) a vinyl aromaticdiene block copolymer rubber, and
  - (iii) a second outer layer comprising a thermoplastic resin.
3. The structure of claim 1 wherein the second outer layer is selected from the group consisting of styrenics, polyolefins, polyurethanes, polyvinyl chlorides, polysulfones, polycarbonates and polyamides.

# 4,339,503 PROTECTION OF POLYCARBONATE FROM ULTRAVIOLET RADIATION

Thomas G. Rukavina, Lower Burrell, and Harold F. Lewis, Arnold, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 2, 1981, Ser. No. 239,853  
Int. Cl.<sup>3</sup> B32B 27/36  
U.S. Cl. 428—412 10 Claims

1. A method for reducing the ultraviolet radiation degradation of polycarbonate which comprises the steps of:
  - a. applying a solution consisting essentially of an organic ultraviolet radiation screening compound and tetrabutyltitanate onto a polycarbonate surface; and
  - b. curing the tetrabutyltitanate to form a hard crosslinked film.

# 4,339,504 LOW ODOR ELECTROSENSITIVE PAPER

Ray H. Luebbe, Jr., Maitland; Frank Miro, Longwood, and Frank M. Palermi, Maitland, all of Fla., assignors to Exxon Research & Engineering Co., Florham Park, N.J.  
Filed Oct. 15, 1980, Ser. No. 197,169  
Int. Cl.<sup>3</sup> B32B 23/08  
U.S. Cl. 428—513 28 Claims

1. An electrosensitive, spark discharge recording medium for use with a spark discharge recording apparatus to form optical images thereon in response to pre-selected spark discharge patterns, comprising:
  - a. paper;
  - b. at least one inner layer disposed over said paper to substantially cover said paper; and
  - c. a surface layer substantially covering said inner layer, said surface layer comprising a material which optically contrasts with said inner layer, said material comprising low density polyethylene and at least one pigment; said surface layer being disposed over said inner layer such that portions of said surface layer are selectively removed in response to said spark discharge patterns to expose portions of said at least one inner layer;
2. said spark discharge recording medium being substantially free of objectionable odors during formation of said optical images.

# 4,339,505 ELECTROGRAPHIC COATINGS CONTAINING ACRYLAMIDE COPOLYMERS

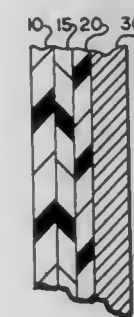
Frank J. Ragas, Willow Springs; Ralph L. Minnis, Des Plaines, and Gerson E. Beauchamp, Park Ridge, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.  
Filed Feb. 25, 1980, Ser. No. 124,111  
Int. Cl.<sup>3</sup> B32B 23/08  
U.S. Cl. 428—514 11 Claims

1. Electrically conductive paper coated with an insulating coating comprising a solvent-soluble copolymer of monoethylenically unsaturated monomers comprising from 5% to 40% of copolymerized acrylamide or a monoethylenic derivative thereof.

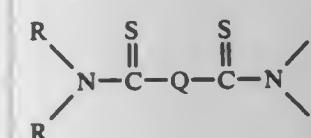
# 4,339,506 DIFFUSION RESISTANT RUBBER LINER AND LAMINATES FORMED THEREFROM

Theodore O. Martin, Jr., Wadsworth, Ohio, assignor to Chloeta F. Martin, Wadsworth, Ohio

Filed Jan. 12, 1981, Ser. No. 224,384  
Int. Cl.<sup>3</sup> B32B 25/04, 25/14, 25/16  
U.S. Cl. 428—519 19 Claims



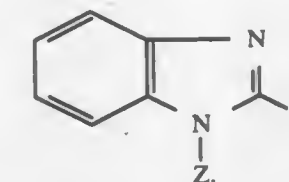
5. A rubber laminate resistant to heat and fluid diffusion, comprising:
  - a. a heat resistant rubber layer and a diffusion-resistant rubber layer;
  - b. said diffusion-resistant layer comprising a composition having, upon curing, a durometer hardness of from about 15 to about 75 on the Shore D Scale, said composition comprising
    - (a) about 100 parts by weight of a rubber elastomer selected from the group consisting of (1) natural rubber, (2) a polymer made from diene monomers having from 4 to 12 carbon atoms, (3) a copolymer made from diene monomers having from 4 to 12 carbon atoms,
    - (4) a copolymer made from vinyl substituted aromatic monomers having from 8 to 12 carbon atoms and diene monomers having from 4 to 12 carbon atoms and (5) combinations thereof (b) from about 1 part to about 4 parts by weight of a thiuram compound having the following formula:



- where R is hydrogen or an alkyl group having 1 to 6 carbon atoms and where Q is selected from the group of thioradicals consisting of —S—, —S—S—, and combinations thereof;
- whereby said composition resists structural cracking under continuous exposure to temperatures above about 180° F.; said heat resistant layer comprising a blend having less than ten percent (10%) change in percentage elongation after exposure to temperatures of about 212° F. for periods greater than about 70 hours, said blend comprising
- (1) about 100 parts by weight of a rubber elastomer selected from the group consisting of (a) natural rubber, (b) a

polymer made from diene monomers having from 4 to 12 carbon atoms, (c) a copolymer made from diene monomers having from 4 to 12 carbon atoms, and (d) a copolymer made from vinyl substituted aromatic monomers having from 8 to 12 carbon atoms and diene monomers having from 4 to 12 carbon atoms, (e) homopolymers made from chloro-substituted diene monomers having from 4 to 12 carbon atoms, (f) copolymers made from cyano-substituted olefin monomers having from 2 to 8 carbon atoms and diene monomers having from 4 to 12 carbon atoms; and

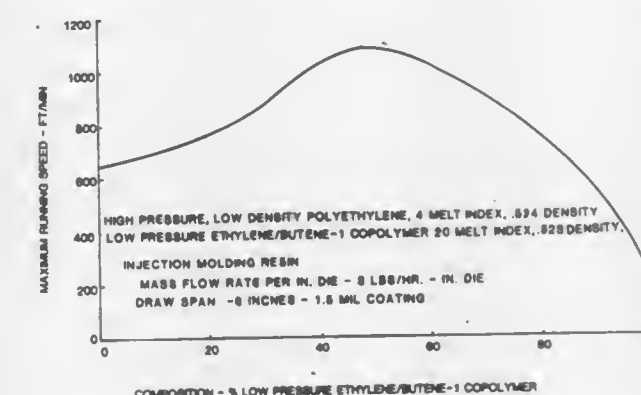
(2) about 1 part by weight of a salt of a benzimidazole having the following formula:



where Y is selected from the group of radicals consisting of hydrogen and mercapto and where Z is selected from the group of radicals consisting of hydrogen and alkyl groups having from 1 to 6 carbon atoms; whereby said heat resistant layer resists oxidation at elevated temperatures over extended time periods to retain or increase its tensile strength.

# 4,339,507 LINEAR LOW DENSITY ETHYLENE HYDROCARBON COPOLYMER CONTAINING COMPOSITION FOR EXTRUSION COATING

Stuart J. Kurtz, Martinsville, and Howard G. Apgar, Jr., Bedminster, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.  
Filed Nov. 26, 1980, Ser. No. 210,593  
Int. Cl.<sup>3</sup> B32B 27/32, 27/30; B29C 19/00; B29F 3/10  
U.S. Cl. 428—522 23 Claims



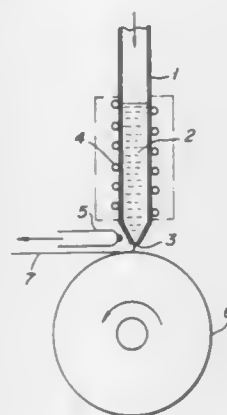
1. In a process for the extrusion coating of a substrate with a high pressure, low density polyethylene homopolymer or copolymer extrusion coating composition, the improvement which comprises:
  - a. using as said composition one comprising more than 20 and less than 98 weight percent of said high pressure, low density polyethylene homopolymer and/or copolymer said homopolymer and copolymer having a density up to about 0.93 and more than 2 and less than 80 weight percent of at least one linear low density ethylene hydrocarbon copolymer said copolymer having a density of about 0.912 to about 0.940.
23. A coated article wherein the coating comprises a blend of more than 20 and less than 98 weight percent of high pressure, low density polyethylene homopolymer and/or copolymer said homopolymer and copolymer having a density up to about 0.93 and more than 2 and less than 80 weight percent of



at least one linear, low density ethylene hydrocarbon copolymer said copolymer having a density of about 0.912 to about 0.940; produced as defined in claim 1.

**4,339,508**  
**METHOD FOR MANUFACTURING A THIN AND FLEXIBLE RIBBON OF SUPERCONDUCTOR MATERIAL**

Noboru Tsuya, and Kenichi Arai, both of Sendai, Japan, assignors to Shiro Maeda, Sendai, Japan  
Continuation of Ser. No. 962,602, Nov. 21, 1978, abandoned.  
This application Jul. 21, 1980, Ser. No. 170,684  
Claims priority, application Japan, Nov. 28, 1977, 52/142522  
Int. Cl.<sup>3</sup> B21C 37/00; B22D 11/06, 11/10; H01L 39/24  
U.S. Cl. 428—606 16 Claims



1. A thin and flexible ribbon of superconductor material having a fine and compact microscopic structure, processed by:

- (a) heating a material consisting essentially of a raw superconductor material selected from the group of intermetallic compounds consisting of Nb-Si, Nb-Sn, Nb-Ge, V-Si, V-Sn, V-Ge, La-Au, and  $La_{1-x}(Au_yCu_{1-y})_x$ , wherein  $x > 0.9$ ,  $0 \leq y \leq 1$  to form a uniform melt at a temperature within the range between the melting point of the raw material and 300° C. above the melting point;
- (b) adding a glass former selected from the group consisting of boron, bismuth, phosphorous, antimony, gallium, tin, in an amount not greater than 50 atomic percent of the raw superconductor material to the melt to produce a melt having suitable wettability and viscosity;
- (c) ejecting the melt through a nozzle under a pressure of 0.01–1.5 atm. against a cooling surface of a moving substrate; and
- (d) cooling a jet flow of the melt at a cooling rate of 1,000° C. to 1,000,000° C./sec.

6. A method of manufacturing a thin and flexible ribbon of superconductor material having a fine and compact microscopic structure comprising:

- (a) heating a material consisting essentially of a raw superconductor material selected from the group of intermetallic compounds consisting of Nb-Si, Nb-Sn, Nb-Ge, V-Si, V-Sn, V-Ge, La-Au, and  $La_{1-x}(Au_yCu_{1-y})_x$ , wherein  $x > 0.9$ ,  $0 \leq y \leq 1$  to form a uniform melt at a temperature of within the range between the melting point of raw material and 300° C. above said melting point to produce a melt having a suitable wettability and viscosity;
- (b) adding a glass former selected from the group consisting of boron, bismuth, phosphorous, antimony, gallium, and tin in an amount of not greater than 50 atomic percent of the raw superconductor to the melt;
- (c) ejecting the melt through a nozzle under a pressure of 0.01–1.5 atm. against an outer cooling surface of a moving substrate having good wettability for said melt; and
- (d) cooling a jet flow of the melt at a cooling rate of 1,000° C. to 1,000,000° C./sec, whereby a flexible ribbon of superconductor material having a microscopic crystalline structure mixed with an amorphous state in a ratio of from about 10 to 90% is produced.

**4,339,509**  
**SUPERALLOY COATING COMPOSITION WITH OXIDATION AND/OR SULFIDATION RESISTANCE**  
Louis E. Dardi, and Srinivasan Shankar, both of Muskegon, Mich., assignors to Howmet Turbine Components Corporation, Greenwich, Conn.

Continuation-in-part of Ser. No. 67,097, Aug. 16, 1979, Pat. No. 4,313,760, which is a continuation-in-part of Ser. No. 43,146, May 29, 1979, abandoned. This application May 1, 1980, Ser. No. 145,460  
Int. Cl.<sup>3</sup> B32B 15/04 16 Claims

U.S. Cl. 428—632



1. In a superalloy component, the improvement comprising a coating composition on said component consisting essentially by weight of from 5 to 35% cobalt, 10 to 35% chromium, 5 to 15% aluminum, 0.1 to 10% manganese, up to 8% tantalum, up to 5% tungsten, up to 12% silicon, up to 10% hafnium, and the balance nickel.

2. In a superalloy component, the improvement comprising a coating composition on said component consisting essentially by weight of from 15 to 40% chromium, 3 to 13% aluminum, 0.1 to 10% manganese, up to 5% tantalum, up to 2% tungsten, up to 12% silicon, up to 10% hafnium, and the balance cobalt.

**4,339,510**  
**ALUMINUM-BASE BRAZING ALLOY COMPOSITE**  
Masaharu Kaifu; Kazuo Tanaka; Hideo Fujimoto; Jun Takigawa; Tomohiro Nishimura; Yagoro Hirose, and Junji Hirai, all of Shimonoseki, Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Apr. 29, 1980, Ser. No. 144,892  
Claims priority, application Japan, Mar. 28, 1980, 55-40781  
Int. Cl.<sup>3</sup> B32B 15/20 2 Claims

U.S. Cl. 428—654



1. A brazing material of low susceptibility to intergranular corrosion comprising an aluminum alloy core consisting essentially of 0.003 to 2 wt.% of Cu, 0.01 to 0.08 wt.% of Ti, and the balance of Al, and clad thereupon an aluminum-base brazing alloy.

**4,339,511**  
**PREPARATION OF POWDERS SUITABLE FOR CONVERSION TO USEFUL  $\beta$ -ALUMINAS**  
Peter E. D. Morgan, Thousand Oaks, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 99,237, Nov. 30, 1979, abandoned. This application Apr. 16, 1981, Ser. No. 254,710  
Int. Cl.<sup>3</sup> C04B 35/44 76 Claims

U.S. Cl. 429—189

1. A precursor powder which, when suitably pressed and sintered, forms a highly pure monophase, densified  $\beta$ -alumina, which is formed by the steps comprising:

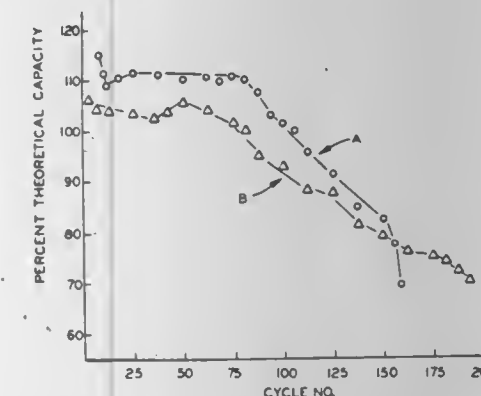
- (1) forming a suspension or slurry of Bayer-derived  $Al(OH)_3$  in a water-miscible suspending agent;
- (2) adding an aqueous solution of a Na compound and either a Li compound or a Mg compound to the Bayer-derived  $Al(OH)_3$  suspension while agitating the mixture formed thereby, to produce a gel-like material;
- (3) drying said gel-like material at a temperature above the normal boiling point of  $H_2O$  to produce a powder material;
- (4) lightly ball milling and sieving said powder material;
- (5) heating said ball-milled and sieved powder material at a temperature of between 350°–900° C. to form the  $\beta''$ -alumina precursor powder.

**4,339,512**  
**BATTERY HAVING ELECTRODE WITH HYDROPHILIC POLYMER BINDER**

Romeo R. Witherspoon, Utica, and Stuart G. Meibuhr, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 131,798, Mar. 19, 1980, abandoned. This application Jan. 12, 1981, Ser. No. 224,379  
Int. Cl.<sup>3</sup> H01M 6/04 5 Claims

U.S. Cl. 429—206



1. An alkaline zinc-nickel hydroxide cell comprising in combination a nickel hydroxide electrode, a zinc electrode spaced from said nickel hydroxide electrode and comprising a conductive grid embedded in zinc rich particles and sufficient hydrophilic polyethylene fibers to bind said particles in place on said grid, and an aqueous alkaline electrolyte bridging the space between the electrodes.

4. A zinc electrode adapted for use in an alkaline zinc-nickel hydroxide cell to provide improved cell discharge voltage during prolonged charge/discharge cycling, said electrode comprising an electrically conductive grid embedded in zinc rich particles bound to said grid with hydrophilic polyethylene fibers.

**4,339,513**  
**PROCESS AND RECORDING MEDIA FOR CONTINUOUS WAVE FOUR-LEVEL, TWO-PHOTON HOLOGRAPHY**

David C. Alvarez, Gilroy; Gary C. Bjorklund, Los Altos, and Donald M. Burland, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.  
Continuation-in-part of Ser. No. 170,497, Jul. 21, 1980, abandoned. This application Nov. 20, 1980, Ser. No. 208,740  
Int. Cl.<sup>3</sup> G03C 5/04, 1/76 10 Claims

U.S. Cl. 430—1

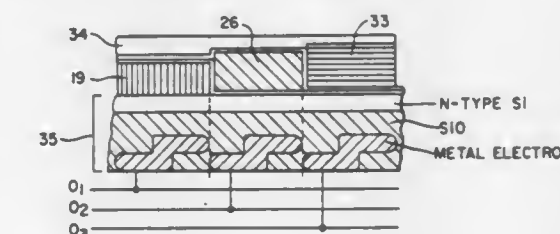
1. A recording medium for holography, said medium comprising a transparent resin containing from  $10^{-5}$  to 0.1 gram/cc of a tetrazine compound.

**4,339,514**  
**PROCESS FOR MAKING SOLID-STATE COLOR IMAGING DEVICE**

Conrad H. Biber, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 3, 1980, Ser. No. 202,945  
Int. Cl.<sup>3</sup> G03F 7/02 10 Claims

U.S. Cl. 430—7



1. In a process for making a color imaging device, said color imaging device comprising an array of charge-handling semiconductor photosensors with an array of color filter elements superimposed in micro-registration with the sensing area of said photosensors, the process comprising the steps of:

- (1) successively coating on an array of semiconductor photosensors a plurality of photoresponsive layers;
- (2) subjecting each photoresponsive layer in succession to active radiation whereby to provide an exposed area of that particular layer;
- (3) removing unexposed photoresponsive coating of each layer in succession; and
- (4) dyeing exposed areas of each layer of said coating in succession to obtain a series of chromatic filter elements.

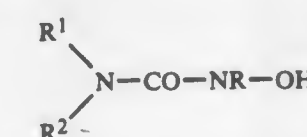
**4,339,515**  
**METHOD OF STABILIZING COLOR PHOTOGRAPHIC MATERIALS AND A COLOR PHOTOGRAPHIC MATERIAL**

Karl-Wilhelm Schranz, Odenthal, and Johannes Sobel, Leverkusen, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Filed Sep. 4, 1980, Ser. No. 184,034

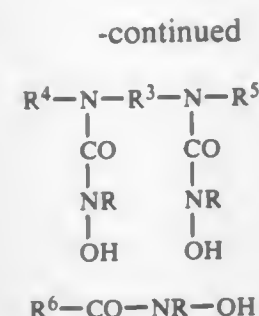
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1979, 2936410  
Int. Cl.<sup>3</sup> G03C 7/00 3 Claims

U.S. Cl. 430—17

1. A process of stabilizing a photographic material containing a support layer, at least one hydrophilic layer of binder and at least one dye image by development of an exposed light-sensitive colour photographic material and treatment in an after-treatment bath, wherein the after-treatment bath contains a water-soluble compound corresponding to at least one of the following compounds I, II or III:







in which

R represents hydrogen or alkyl  
 R<sup>1</sup> represents hydrogen or alkyl  
 R<sup>2</sup> represents alkyl, cycloalkyl, aralkyl or aryl;  
 R<sup>3</sup> represents a divalent hydrocarbon group;  
 R<sup>4</sup> and R<sup>5</sup>, which may be the same or different, represent hydrogen or alkyl  
 R<sup>6</sup> represents alkyl, cycloalkyl, aralkyl or aryl and/or  
 R<sup>1</sup> and R<sup>2</sup> together represent the atoms required to complete a heterocyclic ring and/or  
 R<sup>3</sup> together with R<sup>4</sup> and optionally also with R<sup>5</sup> represent the atoms required to complete a heterocyclic ring.

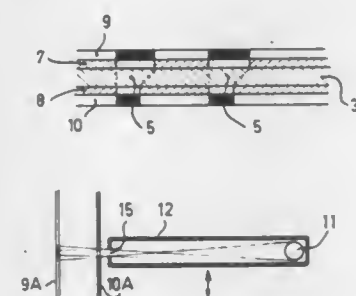
**4,339,516**  
**METHOD OF MANUFACTURING REPRODUCTION MASKS FOR PRODUCING A PATTERN OF ELONGATE APERTURES IN A SHADOW MASK OF A COLOR CATHODE RAY TUBE**

Jan van der Waal, and Gerard Vermeulen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 691,468, Jun. 1, 1976, abandoned, which is a continuation of Ser. No. 557,273, Mar. 11, 1975, abandoned. This application Jan. 25, 1978, Ser. No. 872,170  
 Claims priority, application Netherlands, Mar. 28, 1974, 7404209

Int. Cl.<sup>3</sup> G03C 5/00  
 U.S. Cl. 430—24

6 Claims



1. A method of manufacturing a reproduction mask used in the manufacture of a pattern of elongated apertures in a shadow mask of a color cathode ray tube, said apertures being wider on one side of said shadow mask than on the other side thereof, said method comprising the steps of: arranging a first reproduction mask having a pattern of transparent and opaque areas corresponding to the pattern of said apertures on said other side of said shadow mask and a photographic plate generally parallel to each other and spaced a predetermined distance apart; exposing said photographic plate through said first reproduction mask to light rays having substantially greater divergence in a first plane perpendicular to the long dimension of areas on said first reproduction mask corresponding to said apertures than in a second plane parallel to said long dimension to project on said photographic plate images of said areas which are magnified more in a direction perpendicular to said long dimension than in a direction parallel thereto; and developing the exposed photographic plate to form a second reproduction mask.

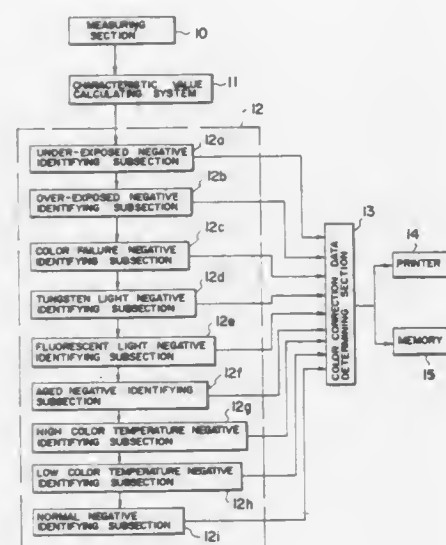
**4,339,517**  
**COLOR CORRECTION METHOD FOR COLOR NEGATIVE**

II Taizo Akimoto, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan  
 PCT No. PCT/JP79/00214, § 371 Date Apr. 15, 1980, § 102(e)  
 Date Apr. 15, 1980, PCT Pub. No. WO80/00500, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 15, 1979, Ser. No. 196,082  
 III Claims priority, application Japan, Aug. 16, 1978, 53/99912  
 Int. Cl.<sup>3</sup> G03C 5/04

U.S. Cl. 430—30

10 Claims



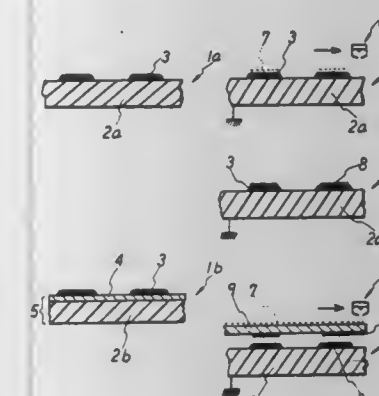
1. A color correction method for a color printing system, comprising the steps of:  
 measuring various characteristics of color negatives to be printed;  
 calculating, based on said measured various characteristics, further characteristics of said color negatives to be provided;  
 classifying said color negatives into groups of negatives including at least a group of negatives susceptible to color failure, a group of negatives photographed in fluorescent light, a group of negatives photographed under tungsten light, a group of over-exposed negatives and a group of under-exposed negatives on the basis of said measured various characteristics and said calculated further characteristics; and  
 conducting color correction in accordance with the group to which each said negative to be printed belongs;  
 wherein said various measured characteristics include the large area transmission density, the red, green and blue large area transmission densities, and the red, green and blue densities of the maximum density point, and wherein said calculated further characteristics include the area ratios of particular colors, the average hue of the points determined to have flesh color under daylight, the average hue of the points determined to have flesh color under fluorescent light, and the average hue of the points determined to have flesh color under tungsten light; and  
 wherein the manner of said color correction is predetermined with respect to the groups of negatives.

**4,339,518**  
**PROCESS OF ELECTROSTATIC PRINTING WITH FLUORINATED POLYMER TONER ADDITIVE**  
 Kazuo Okamura, Itami; Shigeo Daimon, Osaka, and Nobuyuki Tomihashi, Takatsuki, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Oct. 8, 1980, Ser. No. 195,076  
 Claims priority, application Japan, Oct. 18, 1979, 54-135657; Oct. 23, 1979, 54-137422

Int. Cl.<sup>3</sup> G03G 13/16, 13/22  
 U.S. Cl. 430—126

1 Claim



1. A process of electrostatic printing which comprises the steps of:

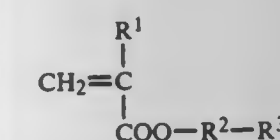
(1) forming a reverse image of a dielectric toner on an electroconductive support or a photoconductive support and fixing the reverse image to give an electrostatic printing master sheet, and

(2) repeating electrostatic printing procedures of:

(a) electrifying the dielectric toner image of the master sheet,  
 (b) developing the image with a toner,  
 (c) transferring the resultant toner image to a material to be printed and  
 (d) fixing the transferred toner image thereon,

said dielectric toner having a volume intrinsic resistivity of not less than 10<sup>12</sup> Ωcm. and showing a critical surface tension of not more than 30 dynes/cm. after fixing, and containing at least 0.5% by weight of a fluorine-containing resin calculated as fluorine,

wherein said fluorine-containing resin has a melting point or softening point of not less than 60° C. and a melt viscosity of not less than about 5 × 10<sup>4</sup> poises at a temperature of not more than 180° C., and is a homopolymer of a fluorinated monomer or a copolymer of the fluorinated monomer with a non-fluorinated monomer, the molecular weight of said homopolymer or copolymer being from 10,000 to 500,000, and the fluorinated monomer having the following general formula:



wherein R<sup>1</sup> is hydrogen, methyl, ethyl or propyl; R<sup>2</sup> is the group

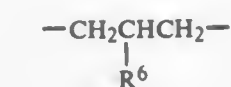


wherein l is an integer of 1 to 3, the group

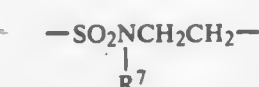


wherein R<sup>4</sup> and R<sup>5</sup> are independently hydrogen, methyl, ethyl

or propyl, provided that R<sup>4</sup> and R<sup>5</sup> are not simultaneously hydrogen, the group



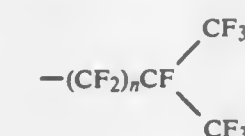
wherein R<sup>6</sup> is hydroxyl group or acetoxy group, or the group



where R<sup>7</sup> is methyl, ethyl or propyl; and R<sup>3</sup> is the group



where m is 0 or an integer of 1 to 18, the group



where n is 0 or an integer of 1 to 18, the group



where q is an integer of 2 to 6, or the group —CF<sub>2</sub>CFHCF<sub>3</sub>.

**4,339,519**  
**HUMIDITY RESISTANT PHOTOCONDUCTIVE PLATE CONTAINING TREATED CDSSE**  
 Mike S. H. Chang, Danbury, Conn., assignor to Pitney Bowes, Inc., Stamford, Conn.

Filed Dec. 8, 1980, Ser. No. 214,054  
 Int. Cl.<sup>3</sup> G03G 7/00

U.S. Cl. 430—135

1. A method for increasing the humidity resistance of photoconductive cadmium sulfoselenide comprising the steps of:

(a) soaking cadmium sulfoselenide particles in a solution of vinylidene chloride-acrylonitrile copolymer in an organic solvent;  
 (b) removing any excessive solution; and  
 (c) heating said soaked cadmium sulfoselenide particles.

**4,339,520**  
**LIGHT-SENSITIVE VESICULAR MATERIAL**  
 Markus Seibel, Mainz; Bernd Huber; Irmgard Bindrum, both of Wiesbaden, and Dieter Bodenheimer, Aarbergen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft

Filed Mar. 31, 1981, Ser. No. 249,436  
 Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014538

Int. Cl.<sup>3</sup> G03C 1/60, 1/72, 1/76

U.S. Cl. 430—155

1. A light-sensitive vesicular recording material comprising a support and a layer on said support comprising a binder having a light-sensitive compound dispersed therein, said light-sensitive compound decomposing to generate nitrogen gas when exposed to light, and said binder consisting of a material selected from the group consisting of:

(a) a copolymer of methacrylonitrile and vinylidene chloride soluble in butanone, and  
 (b) a blend of a copolymer of methacrylonitrile and vinylidene chloride soluble in butanone and a copolymer of vinylidene chloride and acrylonitrile, said copolymers being miscible with each other in butanone.



4,339,521

## HEAT RESISTANT POSITIVE RESISTS CONTAINING POLYOXAZOLES

Hellmut Ahne, Röttenbach; Eberhard Kühn, Hemhofen, and Roland Rubner, Röttenbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 18, 1980, Ser. No. 170,935

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931297

Int. Cl.<sup>3</sup> G03C 1/68

U.S. Cl. 430—192

7 Claims

1. In a heat-resistant positive resist prepared from precursor stages of highly heat-resistant polymers and light-sensitive diazoquinones, the improvement wherein said resist comprises oligomer and/or polymer precursor stages of polyoxazoles in the form of polycondensation products of aromatic and/or heterocyclic dihydroxydiamino compounds and dicarboxylic acid chlorides or dicarboxylic acid esters as said precursor stages.

4,339,522

## ULTRA-VIOLET LITHOGRAPHIC RESIST COMPOSITION AND PROCESS

Richard D. Balanson, Morgan Hill; Nicholas J. Clecak; Barbara D. Grant, both of San Jose, and Augustus C. Ouano, Santa Cruz, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

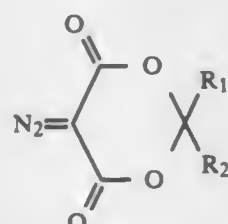
Continuation-in-part of Ser. No. 48,940, Jun. 18, 1979, abandoned. This application Oct. 24, 1980, Ser. No. 200,296

Int. Cl.<sup>3</sup> G03C 1/54, 5/00, 1/72

U.S. Cl. 430—192

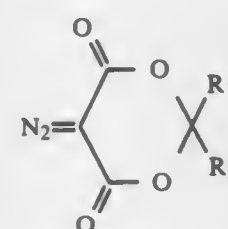
6 Claims

1. A lithographic resist composition for use with ultraviolet light of less than 3,000 Å wavelength, said composition comprising a phenolic-aldehyde resin and in admixture therewith as a deep ultra-violet sensitizer, a sufficient quantity of compound having the formula



wherein R<sub>1</sub> is alkyl or aryl having up to 20 carbon atoms, R<sub>2</sub> is H, alkyl or aryl having up to 20 carbon atoms, or together R<sub>1</sub> and R<sub>2</sub> are cycloalkyl whereby upon exposure to deep ultra-violet radiation, the composition becomes more soluble in alkaline developer.

4. A process for forming a lithographic resist image comprising image-wise exposing to ultra-violet light of less than 3,000 Å wavelength a film cast on a substrate and comprising a phenolic-aldehyde resin and in admixture therewith a sensitizer having the formula



wherein R<sub>1</sub> is alkyl or aryl having up to 20 carbon atoms, R<sub>2</sub> is H, alkyl or aryl having up to 20 carbon atoms, or together R<sub>1</sub> and R<sub>2</sub> are cycloalkyl, and dissolving the exposed portion of said film with aqueous alkali.

4,339,523

## PROCESS FOR PRODUCING PHOTOGRAPHIC IMAGES

Alexander Psaila, Chelmsford, and Katerina Kessler, Brentwood, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

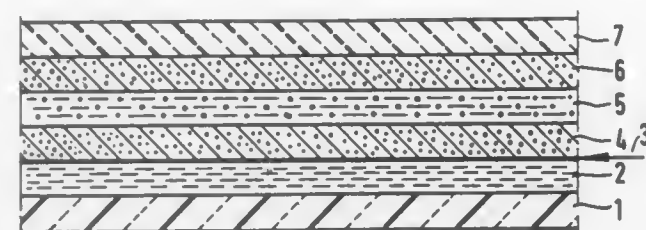
Filed Mar. 21, 1980, Ser. No. 132,701

Claims priority, application United Kingdom, Mar. 26, 1979, 7910538

Int. Cl.<sup>3</sup> G03C 7/00, 5/54

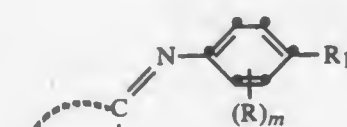
U.S. Cl. 430—239

53 Claims



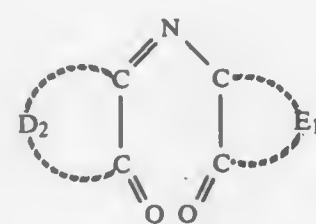
1. A process for the production of a photographic image which comprises the steps of:

(a) image-wise exposing a photographic assembly which comprises at least during a silver halide developing step, in order optionally a supercoat layer, at least one silver halide emulsion layer, a layer containing a layer substantive azamethine compound of the general formula



(2)

or



(14)

where

R<sub>1</sub> represents unsubstituted or substituted amino or hydroxy, R represents substituent groups which may be the same or different, m is 0 to 3 and D<sub>1</sub> represents the atoms necessary to complete a hydroxypyridone, pyrazolone, barbituric acid or thiobarbituric acid, ninhydrine, oxindole, dimedone or Meldrum's acid ring system and both D<sub>2</sub> and E<sub>1</sub> represent the atoms necessary to complete a bis-hydroxypyridone ring system or to yield murexide, and a support, there being optionally one or more interlayers between each of said components,

(b) treating the exposed photographic assembly with an aqueous acid processing bath so as to provide in the silver halide emulsion layer or layers a solution or dispersion of an azine compound in its reduced form or a metallic ion which is able to act as a silver halide developer in an acid solution thereby to develop the latent silver image in the silver halide emulsion(s) and

(c) in the non-latent image areas allowing the reduced azine compound or metallic ions to diffuse in a counter-image-wise manner from the silver halide emulsion layer or layers to the layer containing the compound of formula (2) or (14) and there to bleach the compound to form a dye image.

4,339,524

## PHOTOSENSITIVE RESINOUS MATERIALS CONTAINING STILBAZOLIUM GROUPS

Kunihiro Ichimura, Yatabe; Osamu Takeuchi, Hino; Hideo Kusama, Yokohama; Kazuo Yamazaki, Kashiwa; Akira Saka, Ichinomiya; Hiroshi Ito, Ohmorinishi, and Kunitaka Toyofuku, Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology Ministry of International Trade and Industry; Sony Corporation and Oji Paper Co., Ltd., all of Japan

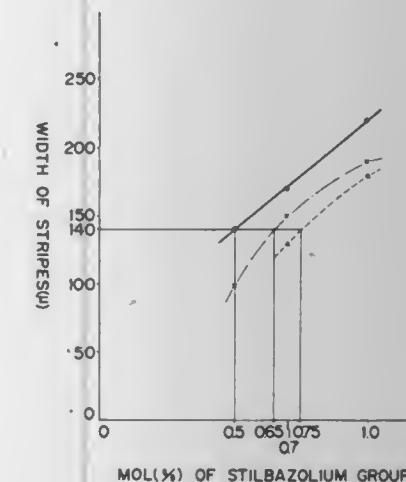
Filed Apr. 14, 1981, Ser. No. 254,062

Claims priority, application Japan, Apr. 17, 1980, 55-51056

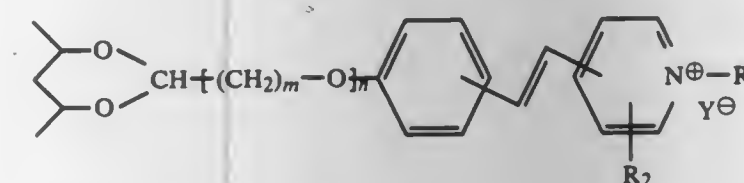
Int. Cl.<sup>3</sup> G03C 1/68

U.S. Cl. 430—270

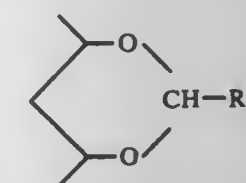
21 Claims



1. A partially saponified polyvinyl acetate having at least one stilbazolium group-containing photosensitive unit represented by the following general formula:



(wherein R<sub>1</sub> is hydrogen atom, an unsubstituted or substituted alkyl group, an alkenyl group or an aralkyl group, R<sub>2</sub> is hydrogen atom or an unsubstituted or substituted group, Y is a conjugated base of an inorganic or organic acid, m is an integer of 1 to 6, and n is 0 or 1) and an acetal unit represented by the following general formula:



(wherein R<sub>3</sub> is hydrogen atom or an alkyl group); the acetal units being contained therein in an amount of approximately 0.5 to 10.0 mol% with respect to mole of the polyvinylalcohol units thereof; the stilbazolium group-containing units being contained therein in an amount of approximately 0.5 to 5.0 mol% with respect to mole of the polyvinylalcohol units thereof and having a degree of polymerization of approximately 500 to 3,000 and a degree of saponification of approximately 60% or higher.

4,339,525

## COLOR PROOFING SYSTEM USING DOT-ETCHABLE PHOTOPOLYMERIZABLE ELEMENTS

Martin D. Bratt, Old Bridge, and Abraham B. Cohen, Springfield, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 49,314, Jun. 18, 1979, Pat. No. 4,229,520, which is a continuation of Ser. No. 741,039, Nov. 11, 1976, abandoned, which is a continuation-in-part of Ser. No. 632,726, Nov. 17, 1975, abandoned. This application Dec. 31, 1979, Ser. No. 108,840

Int. Cl.<sup>3</sup> G03C 7/16

U.S. Cl. 430—271

3 Claims



1. A color proofing system which comprises, in combination, at least two dot-etchable masks, in registration with each other, each mask prepared from a different color separation negative and comprising a transparent support bearing a tone correctable image no more than 0.015 mm thick comprised of addition polymerized polymeric dots having a hardened upper skin which rests on a softer undervolume having a lesser degree of polymerization or hardening, said dots having an optical density greater than 3.0 in the 350–400 nm region and being reducible in size by undercutting the polymeric dots with a solvent for the softer undervolume and removal of hardened polymer from the edges of the hardened upper skin by mechanical action on the image bearing surface of the mask, characterized in that each mask has been colored in a spectral region corresponding to the color separation negative from which it was prepared.

4,339,526

## ACETYLENE TERMINATED, BRANCHED POLYPHENYLENE RESIST AND PROTECTIVE COATING FOR INTEGRATED CIRCUIT DEVICES

Arnold I. Baise, Poughkeepsie; George Czornyj, Wappingers Falls, both of N.Y., and Anthony W. Wu, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 24, 1981, Ser. No. 276,850

Int. Cl.<sup>3</sup> H01L 21/94, 21/312

U.S. Cl. 430—296

3 Claims

1. A process for forming a selectively patterned protective layer on an integrated circuit device by the steps of:

- (1) coating an acetylene terminated branched polyphenylene prepolymer material on the device,
- (2) patternwise selectively exposing the coating to radiation so as to crosslink the exposed portions,
- (3) removing the unexposed portions of the coating with a solvent, and
- (4) then heating the coating to form a thermoset cross-linked pattern protective layer.

4,339,527

## PROCESS FOR USING PHOTOPOLYMERIZABLE COMPOSITIONS

Martin J. Hill, Sayre, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 8,048, Jan. 31, 1979, Pat. No. 4,230,790, which is a continuation of Ser. No. 802,485, Jun. 1, 1977, abandoned, which is a continuation-in-part of Ser. No. 593,106, Jul. 4, 1975, abandoned. This application Jul. 31, 1980, Ser. No. 174,256

Int. Cl.<sup>3</sup> G03C 5/00

U.S. Cl. 430—322

5 Claims

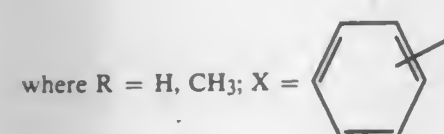
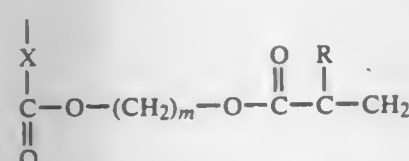
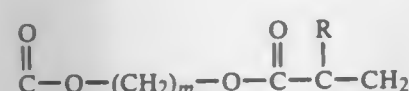
1. A method comprising:  
(1) applying to a surface the surface of a solid, unexposed



photopolymerizable layer of a composition consisting essentially of:

- (a) a photoinitiator;
- (b) a macromolecular linear organic film-forming polymeric binder; and
- (c) a photopolymerizable monomer, with the following present:

- (i) 0.001 to 20 parts by weight, based on the weight of monomer, of nonperoxide photoinitiator, which is activatable by actinic radiation and thermally inactive at and below 85° C.;
- (ii) 10 to 95 parts by weight, based on the total weight of the photopolymerizable composition, of binder; and
- (iii) 5 to 90 parts by weight, based on the total weight of the photopolymerizable composition of an ethylenically unsaturated addition-polymerizable compound having a molecular weight of at least 150 and a boiling point of above 100° C. and having the formula:



or (CH<sub>2</sub>)<sub>n-2</sub>; and m and n are independently from 2 to 10; while the other surface of the layer has adhered thereto with low to moderate adherence a thin, flexible sheet support, then in either order;

- (2) exposing the layer, imagewise, to actinic radiation to form a polymeric image in the layer;
- (3) removing the sheet support from the resulting image-bearing layer; and
- (4) removing the unexposed areas of the layer to form a resist image of polymeric materials; and
- (5) permanently modifying the adjacent areas on said surface which are unprotected by the resist image by using a reagent capable of etching said areas or depositing a material on said areas.

4,339,528

#### ETCHING METHOD USING A HARDENED PVA STENCIL

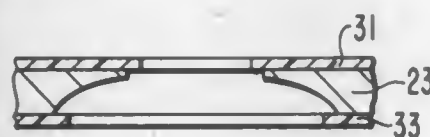
Abraham Goldman, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 19, 1981, Ser. No. 265,108

Int. Cl.<sup>3</sup> C23F 1/02; G03C 5/00

U.S. Cl. 430—323

10 Claims



1. In a method of etching a metal body including producing a stencil of a light-hardened poly(vinyl alcohol-acetate) on a surface of said body, baking said stencil to improve the resistance thereof to liquid etchant, etching said surface through said stencil with said etchant, baking said stencil after said etching and then removing said stencil from said surface, the improvement comprising constituting said stencil by light-hardening selected portions of a film consisting es-

entially of a dichromate-sensitized poly(vinyl alcohol-acetate) that is about 85% to 97% hydrolyzed and has a molecular weight of about 75,000 to 100,000, and then selectively removing the substantially nonhardened portions of said film.

4,339,529

#### ETCHING METHOD USING A PVA STENCIL CONTAINING N-METHYLOL ACRYLAMIDE

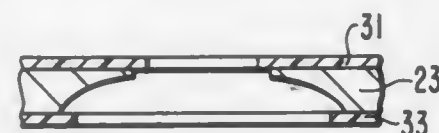
Abraham Goldman, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 2, 1981, Ser. No. 269,528

Int. Cl.<sup>3</sup> C23F 1/02; G03C 5/00

U.S. Cl. 430—323

10 Claims



1. In a method of etching a metal body including producing a stencil of a light-hardened poly(vinyl alcohol-acetate) on a surface of said body, baking said stencil to improve the resistance thereof to liquid etchant, etching said surface through said stencil with said etchant, baking said stencil after said etching and then removing said stencil from said surface, the improvement comprising producing said stencil by light-hardening selected portions of a film consisting essentially of a dichromate-sensitized poly(vinyl alcohol-acetate) that is about 85% to 100% hydrolyzed and about 5 to 30 weight percent with respect to the weight of polyvinyl alcohol-acetate of N-methylol acrylamide, and then selectively removing the substantially nonhardened portions of said film.

4,339,530

#### DEVELOPER MIXTURE FOR DEVELOPING EXPOSED LIGHT-SENSITIVE COPYING LAYERS

Gerhard Sprintschnik, Hofheim-Wallau; Rudolf Neubauer, Erbach, and Gerhard Buhr, Königstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 14, 1980, Ser. No. 196,279

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1979, 2941960

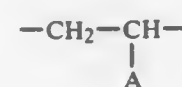
Int. Cl.<sup>3</sup> G03C 5/24, 7/02

U.S. Cl. 430—331

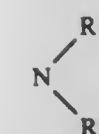
5 Claims

1. A developer mixture for washing out light-sensitive copying layers previously exposed in imagewise manner and containing a polymer of an N-vinyl amine, of vinyl alcohol or of a vinyl alcohol derivative, an alcohol being water-soluble in an amount less than 10 percent by weight, and water as the main constituent, the mixture containing 1 to 15 percent by weight of said alcohol and 0.5 to 10 percent by weight of said polymer, said polymer is a copolymer which is water-soluble or which can be dispersed in water to form a stable dispersion, composed of

- (a) hydrophilic units of the formula I



wherein  
A is O-R or



R is a hydrogen atom or a methyl group,

R<sub>1</sub> is a hydrogen atom or an alkyl group having 1 to 5 carbon atoms,

R<sub>2</sub> is an acyl group having 1 to 4 carbon atoms, a homopolymer of the hydrophilic units being water-soluble, and of

- (b) hydrophobic units of vinyl monomers whose homopolymer is water-insoluble and which have an aromatic or a long-chain aliphatic group as the substituent and which are derived from alkyl esters of unsaturated carboxylic acids having alkyl groups with 4 to 30 carbon atoms, from vinyl aromatic compounds or from vinyl esters of aliphatic carboxylic acids having 4 to 30 carbon atoms, the proportion of the hydrophobic units being sufficient to ensure that an 0.1 percent aqueous solution of said copolymer has a surface tension of not more than 50 mN/m, the quantity of said copolymer being at least sufficient to emulsify any quantity of alcohol exceeding the solubility limit and the upper limit being reached when the viscosity of said developer mixture has a viscosity value of 0.2 cm<sup>2</sup>/s at 25° C., measured by the Ubbelohde method.

4,339,531

#### PHOTOGRAPHIC FILM BASES

Terence D. J. Elmes, Hatfield, and Patrick T. McGrail, Hitchin, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 24, 1981, Ser. No. 237,775

Claims priority, application United Kingdom, Mar. 12, 1980, 8008392

Int. Cl.<sup>3</sup> B32B 27/06; G03C 1/78

U.S. Cl. 430—535

5 Claims

1. A coated film base suitable for coating with a light-sensitive photographic emulsion layer, said base comprising a self-supporting film of a synthetic linear polyester and a continuous subbing layer applied to at least one surface of said self-supporting film, wherein the subbing layer consists essentially of:

- (1) a water-insoluble copolymer of:
  - (a) 33.3 to 90 mole % of styrene, its molar proportion in the copolymer exceeding the molar proportion of each other comonomer;
  - (b) 5 to 40 mole % of a butyl ester of acrylic or methacrylic acid;
  - (c) 5 to 35 mole % of an alkali metal salt of vinyl sulphonic acid, allyl sulphonic acid or methallyl sulphonic acid;
  - (d) 0 to 10 mole % of acrylic, methacrylic or itaconic acid, a half-ester of itaconic acid, or itaconic anhydride; and
  - (e) 0 to 25 mole % of glycidyl acrylate or glycidyl methacrylate; and
- (2) 0 to 25% by weight, based on the weight of the copolymer, of a cross-linking agent which comprises a condensation product of an amine with formaldehyde.

4,339,532

#### NOVEL PHOTSENSITIVE SILVER HALIDE EMULSION AND METHOD OF PREPARING SAME

Leo D. Corben, Swampscott, and Martin L. Falxa, Cambridge, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 8, 1981, Ser. No. 223,478

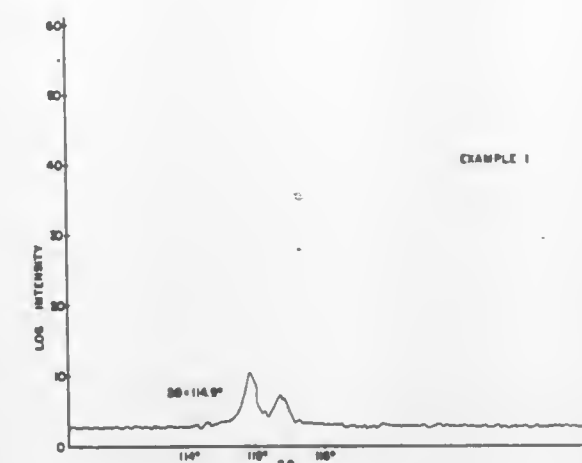
Int. Cl.<sup>3</sup> G03C 1/02

U.S. Cl. 430—567

17 Claims

1. A method for forming a monodisperse, negative-working silver halide emulsion comprising silver chlorobromide or silver iodochlorobromide wherein said grains have a relatively high level of internal disorder in the crystal structure and a

uniform habit which comprises precipitating silver halide in the presence of a monodisperse, predominantly silver chloride



seed emulsion having a cubic habit under conditions wherein substantially none of the silver chloride is redissolved and substantially no additional grains are formed.

4,339,533

#### STABILIZATION OF CREATINE KINASE (CK) AND ITS APPLICATION AS A REFERENCE STANDARD

Douglas K. Chu, Yorktown Heights, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jul. 30, 1980, Ser. No. 173,650

Int. Cl.<sup>3</sup> C12Q 1/50

U.S. Cl. 435—17

27 Claims

1. A stable intermediate composition for incorporation into a diagnostic reference standard for the assay of creatine kinase (CK) in an aqueous solution sample which consists essentially of human or animal serum or a protein solution selected from bovine or human serum albumin and an effective amount of a stable component consisting essentially of a mixed disulfide or dithiosulfonate derived from creatine kinase.

4,339,534

#### PROCESS FOR ENZYMATIC PRODUCTION OF PEPTIDES

Jack T. Johansen, Rungsted Kyst, and Fred Widmer, Valby, both of Denmark, assignors to De Forenede Bryggerier A/S, Copenhagen, Denmark

Filed Apr. 2, 1980, Ser. No. 136,661

Claims priority, application Denmark, Apr. 6, 1979, 1443/79

Int. Cl.<sup>3</sup> C12P 21/02

U.S. Cl. 435—70

13 Claims

1. A process for producing a peptide of the general formula

A—B

wherein A represents an N-terminal protected amino acid residue or an optionally N-terminal protected peptide residue and B represents an optionally C-terminal protected L-amino acid residue, which comprises:

reacting a substrate component selected from the group consisting of

- (a) amino acid esters, peptide esters and depsipeptides of the formula

A—OR<sup>1</sup> or A—SR<sup>1</sup>

wherein A is as defined above and R<sup>1</sup> represents alkyl, aryl, aralkyl or an α-des-amino fragment of an amino acid residue,

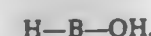


- (b) optionally N-substituted amino acid amides and peptide amides of the formula

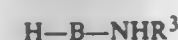


wherein A is as defined above and  $R^2$  represents hydrogen, alkyl, aryl or aralkyl, with an amine component selected from the group consisting of

- (a) L-amino acids of the formula

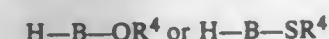


- (b) optionally N-substituted amino acid amides of the formula



wherein B is an L-amino acid residue and  $R^3$  represents hydrogen, hydroxy, amino or alkyl, aryl or aralkyl, and

- (c) amino acid esters of the formula



wherein B is an L-amino acid residue and  $R^4$  represents alkyl, aryl and aralkyl, in the presence of an L-specific serine or thiol carboxypeptidase enzyme from yeast or of animal, vegetable, or microbial origin in an aqueous solution or dispersion having a pH from 5 to 10.5.

#### 4,339,535

##### PROCESS FOR PREPARING ANTIBIOTIC EM 4940

Richard B. Sykes, Rocky Hill; Jerry S. Wells, Ringoes, and Wen-Chih Liu, Princeton Junction, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.  
Division of Ser. No. 70,287, Aug. 27, 1979, Pat. No. 4,249,008.  
This application Jun. 30, 1980, Ser. No. 164,220  
Int. Cl.<sup>3</sup> C12P 17/18

U.S. Cl. 435—119

2 Claims

1. A process for the preparation of the compound 3,4-dihydro-4-hydroxy-5-(3-hydroxy-2-pyridinyl)-4-methyl-2H-pyrrole-2-carboxamide which comprises cultivating *Nocardia* sp. 11,340 A.T.C.C. No. 31531 in an aqueous nutrient medium comprising an assimilable carbohydrate and an assimilable nitrogen source under submerged aerobic conditions until substantial antibiotic activity is imparted to the medium.

#### 4,339,536

##### PROCESS FOR THE PREPARATION OF LONG-CHAIN DICARBOXYLIC ACIDS BY FERMENTATION

Kolchi Kato, Hohya, and Namio Uemura, Oga, both of Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan  
Filed Jun. 3, 1980, Ser. No. 156,117  
Claims priority, application Japan, Jun. 8, 1979, 54-72089; Jul. 5, 1979, 54-85330

Int. Cl.<sup>3</sup> C12P 7/44

U.S. Cl. 435—142

3 Claims

1. A process for producing a long-chain dicarboxylic acid which comprises culturing a fungus belonging to *Candida tropicalis* capable of assimilating straight-chain hydrocarbons in a liquid medium containing a straight-chain hydrocarbon as a substrate to obtain a fermentation broth containing a long-chain dicarboxylic acid corresponding to said hydrocarbon, dissolving said dicarboxylic acid in the fermentation broth by adding an alkaline material to said broth, further adding diatomaceous earth to said fermentation broth, filtering it under pressure, precipitating the long-chain dicarboxylic acid in the thus obtained filtrate by heating said filtrate to a temperature above 50° C. while adjusting the pH value of the filtrate to 4 or

below by adding a mineral acid to the filtrate, and then separating and collecting the precipitated long-chain dicarboxylic acid.

#### 4,339,537

METHOD OF CULTURING BIOLOGICAL SUBSTANCES  
Shinroku Sogi; Masao Izawa, both of Hachioji; Shinichiro Hatori, Tokyo; Ikuo Tawara, Hachioji; Daizo Shinohara, Hachioji, and Sachiko Tachikawa, Hachioji, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan  
Filed Nov. 6, 1979, Ser. No. 91,767

Claims priority, application Japan, Nov. 10, 1978, 53/137786  
Int. Cl.<sup>3</sup> C12N 5/00; C12M 3/04

U.S. Cl. 435—240

5 Claims

1. A method of culturing biological substances capable of propagation in a culture solution, said method comprising culturing the biological substances in a substantially closed culture space formed by a culture vessel containing a plurality of implantation plates which are arranged substantially horizontally and spaced from each other in a vertical direction by the steps of:

- introducing a given small amount of biological substances together with a given amount of culture solution into the culture vessel to such a level that a predetermined number of the implantation plates is immersed in the culture solution having the biological substances suspended therein;
- propagating the biological substances on the surface of the immersed implantation plates, while an atmosphere inside the culture vessel is controlled in a desired manner;
- introducing into the culture vessel an agent which makes it easy to peel the propagated biological substances from the surface of the immersed implantation plates, peeling the biological substances from the plates and then discharging the agent;
- introducing a culture solution into the culture vessel to suspend uniformly the peeled biological substances therein;
- repeating said steps (b), (c) and (d) in succession, while the propagated biological substances are kept in the culture vessel and the number of implantation plates to be immersed in the culture solution having the biological substances suspended therein is progressively increased by increasing the amount of culture solution introduced into the culture vessel in step (d).

#### 4,339,538

Patent Not Issued For This Number

#### 4,339,539

##### BIOLOGICALLY PURE CULTURE OF MUTANT MYCOBACTERIUM

Merle G. Wovcha; Candice B. Blagg, both of Kalamazoo, and Thomas R. Pyke, Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.  
Division of Ser. No. 849,526, Nov. 9, 1977, Pat. No. 4,293,645, and a continuation-in-part of Ser. No. 662,563, Mar. 1, 1976, abandoned. This application Sep. 8, 1980, Ser. No. 184,696  
Int. Cl.<sup>3</sup> C12N 1/20

U.S. Cl. 435—253

1 Claim

1. A biologically pure culture of mutant *Mycobacterium phlei* NRRL B-8154.

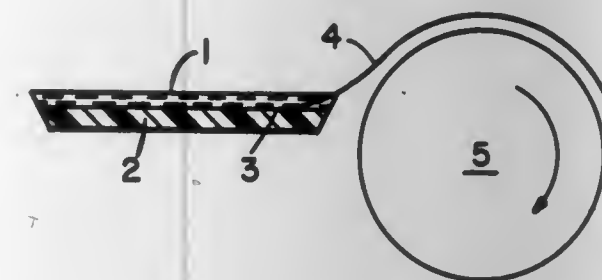
#### 4,339,540

INORGANIC GELS AND CERAMIC PAPERS, FILMS, FIBERS, BOARDS, AND COATING MADE THEREFROM  
George H. Beall, Big Flats; David G. Grossman, Corning; Syed N. Hoda, Horseheads, and Karen R. Kubinski, Elmira Heights, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 162,764, Jun. 25, 1980, Pat. No. 4,297,139, which is a division of Ser. No. 23,907, Mar. 26, 1979, Pat. No. 4,239,519. This application Jun. 5, 1981, Ser. No. 270,961  
Int. Cl.<sup>3</sup> C03C 3/22

U.S. Cl. 501—3

15 Claims



1. Inorganic papers, fibers, films, and boards containing crystals consisting essentially of a lithium and/or sodium water-swelling mica selected from the group of fluorhectorite, hydroxyl hectorite, boron fluorphlogopite, hydroxyl boron phlogopite, and solid solutions among those and between those and other structurally-compatible species selected from the group of talc, fluortalc, polyolithionite, fluorpolyolithionite, phlogopite, and fluorphlogopite, at least a substantial proportion of said crystals exhibiting a morphology of a continuum of flakes, rectangular-like strips, and interwoven ribbons in parallel or sub-parallel zones or sheaths with said strips and ribbons being about 0.5–10 microns long, about 500 Å–5000 Å wide, and less than about 100 Å thick, and said flakes being irregularly shaped with diameters between about 0.5–10 microns and cross sections of less than about 100 Å.

#### 4,339,541

##### MANUFACTURE OF TINTED GLASS

Jacques Dela Ruy, Montignies le Tilleul, Belgium, assignor to BFG Glassgroup, Paris, France  
Filed Feb. 26, 1981, Ser. No. 238,504

Claims priority, application United Kingdom, Mar. 4, 1980, 8007370  
Int. Cl.<sup>3</sup> C03C 3/04, 3/10

U.S. Cl. 501—71

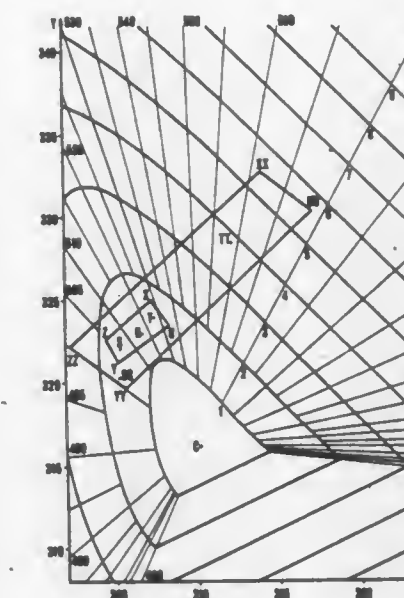
10 Claims

1. Tinted soda-lime glass containing by weight the following glass forming oxides:

SiO <sub>2</sub>	60 to 75%
Na <sub>2</sub> O	10 to 20%
CaO	0 to 16%
K <sub>2</sub> O	0 to 10%
MgO	0 to 10%
Al <sub>2</sub> O <sub>3</sub>	0 to 5%
BaO	0 to 2%
BaO + CaO + MgO	10 to 20%
K <sub>2</sub> O + Na <sub>2</sub> O	10 to 20%

wherein such glass also contains the following colouring agents (proportions by weight):

Fe <sub>2</sub> O <sub>3</sub>	0.3	to	0.5%
Cr <sub>2</sub> O <sub>3</sub>	0.0075	to	0.0230%
Se	0.0005	to	0.0019%
Co	0.0040	to	0.0070%
Ni	0.0050	to	0.0120%



#### 4,339,542

##### PLASTIC RAMMING MIX BASED ON MGO

Frederick V. Reven, Homewood, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Aug. 24, 1981, Ser. No. 295,424

Int. Cl.<sup>3</sup> C04B 35/04

U.S. Cl. 501—109

4 Claims

1. A stable storable refractory ramming mix composition comprising in percentages by weight:

- 40–98% particulate magnesium oxide
- 1–20% alumino-silicate clay
- 0.3–4% molasses
- 0.5–7.5% alkali metal aluminate
- 0.8–27% water.

#### 4,339,543

##### TEMPERATURE-STABLE DIELECTRIC MATERIAL FOR USE AT VERY HIGH FREQUENCY AND A METHOD OF MANUFACTURE OF SAID MATERIAL

Jean-Claude Mage, and Claude Deljorie, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 25, 1981, Ser. No. 237,935

Claims priority, application France, Feb. 29, 1980, 80 04601  
Int. Cl.<sup>3</sup> C04B 35/46

U.S. Cl. 501—134

8 Claims

1. Dielectric material of the type obtained in accordance with the ceramic production technology, comprising at least one step involving sintering of previously ground raw materials in an oxidizing atmosphere, wherein the relative molar proportions of the raw materials are as follows:

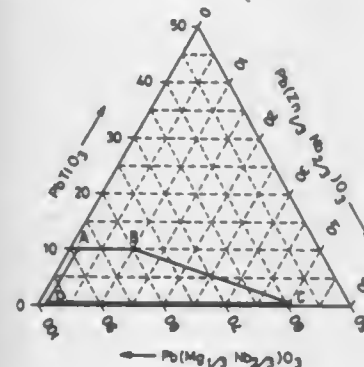
t, TiO<sub>2</sub>; x, SnO<sub>2</sub>; y, ZrO<sub>2</sub>; a, NiO; b, La<sub>2</sub>O<sub>3</sub> and c, Fe, in which the parameters t, x, y, a, b and c satisfy the following inequalities:



0.9	1A	1.1
0.1	1A	0.4
0.6	1A	0.9
0.015	1A	0.06
0.01	1A	0.1
0.001	1A	0.01

and Fe is present as  $\text{Fe}_2\text{O}_3$  in the end product.

**4,339,544**  
**CERAMIC DIELECTRIC COMPOSITION**  
 Yukio Sakabe; Yukio Hamaji, both of Kyoto, and Hiroshi Komatsu, Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan  
 Filed Jul. 17, 1981, Ser. No. 284,216  
 Claims priority, application Japan, Jul. 24, 1980, 55-102213  
 Int. Cl.<sup>3</sup> C04B 35/00, 35/46; H01B 3/12  
 U.S. Cl. 501-136 2 Claims



1. A ceramic dielectric composition of a ternary system  $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3$ - $\text{Pb}(\text{Zn}_{1/3}\text{Nb}_{2/3})\text{O}_3$ - $\text{PbTiO}_3$ , comprising: 68.05-69.60% by weight of  $\text{Pb}_3\text{O}_4$ ; 2.41-4.00% by weight of  $\text{MgO}$ ; 0.08-3.15% by weight of  $\text{ZnO}$ ; 24.01-26.66% by weight of  $\text{Nb}_2\text{O}_5$ ; and 0.13-2.59% by weight of  $\text{TiO}_2$ ; and the percentages by weight of said composition,  $[\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3, \text{Pb}(\text{Zn}_{1/3}\text{Nb}_{2/3})\text{O}_3, \text{PbTiO}_3]$ , falling within the region enclosed by the lines joining four points of A(89.0, 1.0, 10.0), B(80.0, 10.0, 10.0), C(59.5, 40.0, 0.5) and D(98.5, 1.0, 0.5) in a diagram showing the proportions of the ternary system.

**4,339,545**  
**ALKANOLS FROM SYNTHESIS GAS**  
 John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.  
 Filed Jun. 26, 1981, Ser. No. 277,540  
 Int. Cl.<sup>3</sup> C07C 27/06

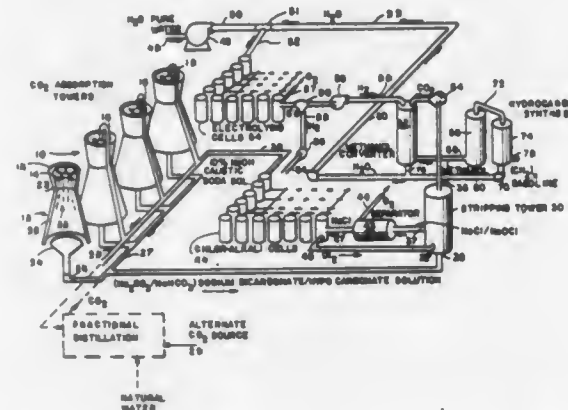
U.S. Cl. 518-700 24 Claims  
 1. A process for making alkanols which comprises contacting a mixture of CO and  $\text{H}_2$  at a pressure of 500 psig or greater and at a temperature of at least  $180^\circ\text{C}$ . with a catalyst system comprising a ruthenium-containing compound and a material selected from the group consisting of a halogen-free titanium-containing compound and a halogen-free zirconium-containing compound dispersed in a low melting quaternary phosphonium compound or ammonium base or salt.

**4,339,546**  
**PRODUCTION OF METHANOL FROM ORGANIC WASTE MATERIAL BY USE OF PLASMA JET**  
 Leon C. Randalls, New York, N.Y., assignor to Biofuel, Inc., Memphis, Tenn.  
 Continuation-in-part of Ser. No. 121,441, Feb. 13, 1980, abandoned. This application Mar. 23, 1981, Ser. No. 246,410  
 Int. Cl.<sup>3</sup> C07C 31/04, 27/06

U.S. Cl. 518-704 13 Claims  
 1. The method of producing methanol from organic waste comprising, digesting the waste to produce a digester gas comprising a mixture of  $\text{CO}_2$  and  $\text{CH}_4$ , and a sludge, supplying said digester gas into the arc of a plasma jet, also supplying  $\text{H}_2$  and CO gases into said arc, said plasma jet producing a hot output gas stream containing principally  $\text{H}_2$ , CO, and  $\text{CO}_2$ , applying heat from said output gas stream to said sludge to gasify a portion of said sludge, thereby producing a synthesis gas comprising a mixture of  $\text{H}_2$ , CO,  $\text{CO}_2$ ,  $\text{H}_2\text{O}$  and  $\text{CH}_4$  as the major components thereof, and an ash residue, and converting said synthesis gas to methanol.

**4,339,547**  
**PRODUCTION OF SYNTHETIC HYDROCARBONS FROM AIR, WATER AND LOW COST ELECTRICAL POWER**  
 Marshall J. Corbett, East Northport, and Salvatore C. Salina, Bethpage, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.  
 Division of Ser. No. 77,880, Sep. 21, 1979, Pat. No. 4,282,187.  
 This application Jul. 9, 1980, Ser. No. 167,075  
 Int. Cl.<sup>3</sup> C07C 29/15, 1/20

U.S. Cl. 518-728 7 Claims



1. A process for manufacturing synthetic hydrocarbons fuels from the synthesis of  $\text{CO}_2$  and  $\text{H}_2$ , the process comprising the steps: subjecting a NaOH solution to  $\text{CO}_2$  present in air, resulting in production of  $\text{Na}_2\text{CO}_3$  and  $\text{NaHCO}_3$ ; reacting the resulting solution with  $\text{Cl}_2$  (a) causing stripping of the  $\text{CO}_2$  and (b) forming brine and  $\text{NaOCl}$ ; separating the oxygen from the  $\text{NaOCl}$  whereby additional brine results; electrolyzing the brine to form  $\text{H}_2$ ,  $\text{Cl}_2$  and NaOH; recycling the resulting  $\text{Cl}_2$  for further stripping of  $\text{CO}_2$ ; recycling the resulting NaOH for further reaction with  $\text{CO}_2$ ; reacting the stripped  $\text{CO}_2$  and the  $\text{H}_2$  from the electrolyzed brine to form methanol and water; and separating the methanol and water thus permitting collection of the methanol.

**4,339,548**  
**POROUS CEMENTED ION EXCHANGE RESINS WHEREIN THE BEADS ARE COHERED TO ONE ANOTHER IN POLYMER MATRIX**  
 Akimitsu Miyahara, Tokyo, Japan, assignor to Rohm and Haas Company, Philadelphia, Pa.  
 Filed Sep. 12, 1980, Ser. No. 186,795  
 Int. Cl.<sup>3</sup> B01J 39/08, 41/08

U.S. Cl. 521-28 17 Claims  
 1. Cementitious ion exchange resin particles having an effective diameter of from about 2 to about 50 millimeters comprising organic ion exchange resin beads having an effective diameter of about 0.1 to about 1 millimeter cohered to one another by a crosslinked cementitious matrix derived from an adhesive material containing a hydrophilic functional group and selected from the group consisting of polyacrylate emulsions, polyvinyl alcohol and polyvinyl acetate wherein the cementitious matrix is present at a level of to about 15 grams per 100 grams of on exchange particles in their wetted state.

**4,339,549**  
**PROCESS FOR FUSION BONDING OF FLUOROCARBON TYPE POLYMERS WHICH COMPRISES COUNTER-ION SUBSTITUTION PRIOR TO FUSION BONDING**  
 Sakae Tsushima, and Hiroshi Sagami, both of Yokohama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan  
 Filed Apr. 29, 1981, Ser. No. 258,637  
 Claims priority, application Japan, May 9, 1980, 55/60725  
 Int. Cl.<sup>3</sup> B32B 31/16; B01J 47/12

U.S. Cl. 521-28 16 Claims  
 1. In a process for fusion bonding of two or more of fluorocarbon type polymers to each other, each polymer having at least one pendant cation exchange group selected from sulfonic acid groups and salts thereof, carboxylic acid groups and salts thereof, and sulfonamide groups and salts thereof, the improvement which comprises substituting the counter-ions of the ion-exchange groups in each of said polymers with sulfonium ions and/or phosphonium ions prior to fusion bonding.

**4,339,550**  
**FOAM PRODUCTS**  
 Victor Palinczar, Trenton, and Thomas F. Santini, Allentown, both of N.J., assignors to Carter-Wallace, Inc., New York, N.Y.  
 Filed Jan. 26, 1981, Ser. No. 228,069  
 Int. Cl.<sup>3</sup> C08G 18/14

U.S. Cl. 521-99 9 Claims  
 1. Hydrophilic foam compositions characterized by a cross-linked, non-linear molecular network comprising the "in situ" reaction product of:  
 a. a capped polyoxyethylene polyol having a defined isocyanate functionality of from about 2 to about 8 and which is present in the composition in an amount of from about 5% to about 85% by weight of the total composition;  
 b. water which is present in an amount of from about 5% to about 75% by weight of the total composition; and  
 c. from about 0.1% to about 25% by weight of the total composition of a chemically compatible, essentially non-polar volatile organic compound.

**4,339,551**  
**THERMOPLASTIC RESIN FOAM SHEET HAVING IMPROVED HEAT SHRINK CAPABILITY AND THE METHOD FOR ITS PRODUCTION**  
 James E. Heider, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio  
 Filed Apr. 10, 1980, Ser. No. 139,086  
 Int. Cl.<sup>3</sup> B29D 27/00

U.S. Cl. 521-138 32 Claims  
 13. As an article of manufacture, a biaxially-oriented heat-shrinkable film or foam sheet having improved heat-shrink

capability comprising a first thermoplastic polyolefin film-making base material in major amount and a different second thermoplastic polymeric material having superior infrared radiation absorbing properties in minor amount, said biaxially-oriented film or foam sheet having improved heat-shrink capability, upon subjection to heating including a substantial portion of infrared radiation, said improvement including a reduction in the extent of time and the amount of heat required to heat-shrink said biaxially-oriented film or foam sheet which is less than that required to heat-shrink a biaxially-oriented film or foam sheet of said first polyolefin base material and which is free of said second polymeric material.

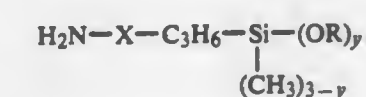
20. The article of manufacture in accordance with claim 13 wherein said polyolefin base material comprises low density polyethylene.

**4,339,552**  
**VINYL ESTER AQUEOUS ADHESIVE EMULSIONS INCLUDING ACRYLAMIDE**  
 Martin K. Lindemann, Greenville, S.C., assignor to National Starch & Chemical Corporation, Bridgewater, N.J.  
 Filed Sep. 18, 1978, Ser. No. 943,169  
 Int. Cl.<sup>3</sup> C08L 29/04

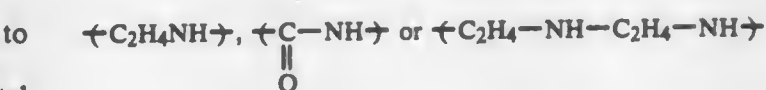
U.S. Cl. 524-459 5 Claims  
 1. An aqueous adhesive emulsion comprising water having emulsified therein an aqueous emulsion copolymer consisting essentially of at least 5% by weight of ethylene, from 0.2% to 2.0% by weight of acrylamide, and the balance vinyl acetate, the monomers of said copolymer being emulsified during copolymerization by from 0.5% to 10% of polyvinyl alcohol, and said copolymer having a  $T_g$  above  $10^\circ\text{C}$ . and containing in excess of 80% by weight of vinyl acetate.

**4,339,553**  
**WATER-BASED FLUOROELASTOMER COATING COMPOSITION**  
 Tatsuhiro Yoshimura, and Tsutomu Terada, both of Takatsuki, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan  
 Filed Aug. 14, 1980, Ser. No. 177,941  
 Claims priority, application Japan, Aug. 14, 1979, 54-103813; Sep. 25, 1979, 54-123621  
 Int. Cl.<sup>3</sup> C08L 27/16

U.S. Cl. 524-544 5 Claims  
 1. A water-based fluoroelastomer coating composition comprising (A) an aqueous fluoroelastomer dispersion blended with (B) an aminosilane compound of the formula:



wherein R is methyl or ethyl, X is a single bond,



and y is an integer of 2 or 3 optionally with (C) an amine compound having at least one terminal amino group directly bonded to an aliphatic hydrocarbon residue.

**4,339,554**  
**POLYVINYL CHLORIDE RESIN BLENDS**  
 Kenneth W. Doak, Murrysville, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.  
 Filed Dec. 18, 1980, Ser. No. 217,732  
 Int. Cl.<sup>3</sup> C08L 51/04, 27/06

U.S. Cl. 525-63 2 Claims  
 1. A polyvinyl chloride resin blend consisting essentially of a blend of:



- (a) from 60-80 percent by weight of a polyvinyl chloride resin, and  
 (b) from 20-40 percent by weight of a rubber-modified copolymer of (1) a vinyl aromatic monomer, (2) 14-27 percent by weight of maleic anhydride and (3) 5-30 percent of a rubber selected from the group consisting of block copolymer rubbers of styrene and butadiene and epichlorohydrin rubbers, said rubber modified copolymer being obtained by polymerizing components (1) and (2) presence of (3).

4,339,555

## PROCESS FOR THE PRODUCTION OF A POLYAMIDE BASE RESIN COMPOSITION

Yasuhiro Ohmura; Seichiro Maruyama, and Hiroyuki Kawasaki, all of Kitakyushu, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Oct. 24, 1980, Ser. No. 200,579

Claims priority, application Japan, Nov. 21, 1979, 54-151077  
 Int. Cl.<sup>3</sup> C08L 77/00

U.S. Cl. 525-66 10 Claims  
 1. A process for the production of a polyamide based resin composition, comprising:

- (a) preparing a modified ethylene copolymer by graft polymerizing from 0.05 to 1.5% by weight of an  $\alpha$ ,  $\beta$ -unsaturated carboxylic acid or derivative thereof onto an ethylene copolymer prepared by copolymerizing ethylene with an  $\alpha$ -olefin of at least three carbon atoms;  
 (b) melt mixing from 1 to 60 parts by weight of said modified ethylene copolymer with 99 to 40 parts by weight of a polyamide resin; and  
 (c) subsequently mixing from 0.005 to 5 parts by weight of a urea compound of the formula:  $R^2-NHCONH-R^1-NHCONH-R^3$ , wherein  $R^1$  is an aromatic hydrocarbon group and  $R^2$  and  $R^3$  are both aliphatic groups of 8 to 32 carbon atoms, based on 100 parts by weight of said resin composition.

4,339,556

## FLAME RETARDANT RESIN COMPOSITIONS

Massimo Baer, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 847,959, Nov. 2, 1977, Pat. No. 4,205,142.  
 This application Dec. 10, 1979, Ser. No. 102,177

Int. Cl.<sup>3</sup> C08L 69/00

U.S. Cl. 523-220 18 Claims

1. A resin composition comprising:  
 A. a thermoplastic polycarbonate;  
 B. an effective amount of a halogenated flame retardant additive; and  
 C. an effective amount of a flame retardant synergist of average particle size less than about 2 microns, wherein the particles of the synergist are substantially occluded with a non-blocking rubber.

4,339,557

## PROCESS FOR PRODUCING PROPYLENE-ETHYLENE BLOCK COPOLYMER

Masayoshi Hasuo, Yokohama; Yoshinori Suga, Machida; Kazuhisa Kojima, Yokohama, and Masatoshi Suzuki, Fujisawa, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,454

Claims priority, application Japan, Oct. 24, 1979, 54-137469  
 Int. Cl.<sup>3</sup> C08F 297/08

U.S. Cl. 525-247 9 Claims

1. A process for producing a propylene-ethylene block copolymer in two stages of polymerization in the presence of a catalyst system comprising an organo aluminum compound and a solid titanium trichloride catalyst complex having an atomic ratio of Al to Ti of less than 0.15 and containing a complexing agent, comprising:

- (a) a first stage of polymerizing propylene in the presence of

liquid propylene and hydrogen, thereby producing a propylene homopolymer having a melt flow index of 1-150 in an amount of 70% to 95% by wt. based on the total amount of block copolymer; and

- (b) a second stage of copolymerizing propylene and ethylene at a temperature of 25° C. to 70° C. in the presence of hydrogen and liquid propylene at a concentration of propylene in the vapor phase based on the total amount of propylene and ethylene in the vapor phase of 50-85 mole % and at a concentration of hydrogen in the vapor phase based on the total amount of propylene and ethylene in the vapor phase of 0.5-30 mole %, thereby producing an ethylene-propylene random copolymer having a melt flow index of 10<sup>-7</sup>-0.1 in an amount of 5-30% by wt. based on the total amount of block copolymer material.

4,339,558

## HARDENING RESIN COMPOSITIONS

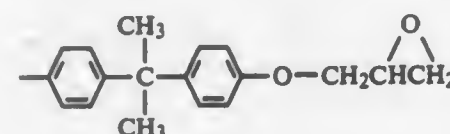
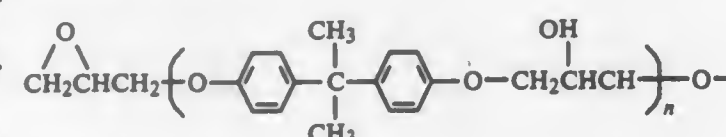
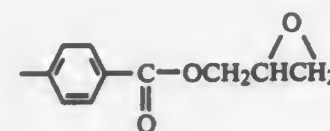
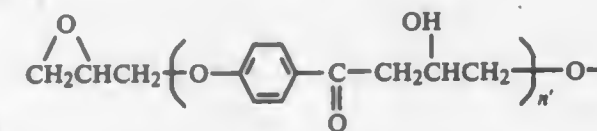
Tamotsu Komura, Nara; Takuji Miyamoto, Suita, and Hiroshi Nakanaga, Kawanishi, all of Japan, assignors to Sankin Industry Co., Ltd., Osaka, Japan

Filed Jun. 3, 1981, Ser. No. 270,027

Int. Cl.<sup>3</sup> C08L 63/00

U.S. Cl. 525-524 4 Claims

1. Hardening resin compositions, characterized in that they contain a hardening resin base constituted by a mixture of bisphenol A epoxy resin and paraoxybenzoic glycidylester-ether epoxy resin, respectively corresponding to the following formulae (I) and (II):

(in which  $n = 0 \sim 1$ )(in which  $n' = 0 \sim 1$ )

in the ratio in weight of 60-40 of the former to 40-60 of the latter and a hardening agent composed of a complex formed by a polybasic carboxylic ester derived from an alcohol having a cyclic ether linkage in its molecule and boron trifluoride in the ratio of 100 parts in weight of the former to 3-7 parts in weight of the latter, the said hardening resin base being mixed with the hardening agent in the ratio in weight of 60-40 of the former to 40-60 of the latter.

4,339,559

## POLYMERIZATION USING SILICA FROM SINGLE PHASE CONTROLLED HYDROLYSIS OF SILICATE ESTER

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 151,847, May 21, 1980, Pat. No. 4,301,034.

This application Jul. 31, 1981, Ser. No. 288,839

Int. Cl.<sup>3</sup> C08F 4/02, 4/24

U.S. Cl. 526-106 10 Claims

1. A polymerization process comprising contacting at least one mono-olefin under polymerization conditions with a catalyst produced by: combining a silicate ester and water under hydrolysis conditions in the presence of a sufficient amount of solvent such that the reaction mixture remains a single phase, after hydrolysis is essentially complete adding more water and maintaining the resulting composition at an elevated temperature to induce particle growth, thereafter adding sufficient acid neutralizing agent to form a gel, and separating water and solvent from the resulting silica, said silica further being characterized by having incorporated therein a chromium compound and by being activated.

8. A polymerization process comprising contacting at least one mono-olefin under polymerization conditions with a catalyst produced by: slowly adding a silicate ester and water to a small amount of solvent under hydrolysis conditions such that the water and ester are used up in said hydrolysis about as fast as they are added and alcohol is progressively formed from the hydrolysis, thus serving as additional solvent as progressively more ester and water are added and progressively more hydrolyzed ester is formed, thereafter adding sufficient acid neutralizing agent to form a gel, and separating water and solvent from the resulting gel, said catalyst further being characterized by having incorporated therein a chromium compound and by being activated.

organomagnesium halide being in the range of 0.01/1 to 100/1.

4,339,561

## N-(2,5-DIHYDROXY-3,4,6-TRIMETHYL-BENZYL)-ACRYLAMIDE AND -METHACRYLAMIDE POLYMERS

Bernard Jacquet, Antony; Claude Mahieu, Paris, and Christos Papantoniou, Montmorency, all of France, assignors to L'Oreal, Paris, France

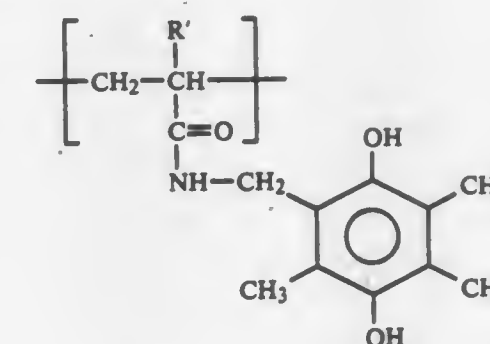
Division of Ser. No. 85,399, Oct. 16, 1979, Pat. No. 4,281,192.

This application Mar. 11, 1981, Ser. No. 242,525

Claims priority, application France, Oct. 26, 1978, 78 30461  
 Int. Cl.<sup>3</sup> C08F 20/58

U.S. Cl. 526-304 7 Claims

1. An antioxidant polymer which contains units of the following general formula:



in which:  $\text{R}'$  represent a hydrogen atom or a methyl radical.

4,339,562

## HIGH-MOLECULAR CRYSTALLINE POLYMER WITH ALTERNATING DIMETHYLENE AND METHYL-SUBSTITUTED DISILENE UNITS IN THE MAIN CHAIN AND METHOD FOR PREPARING SAME

Leonid E. Guselnikov, Yasenevo, 4 mikroraiou, 6°V°, kv. 394; Jury P. Polyakov, Dmitrovskoe shosse, 96, korpus 1, kv. 55, both of Moscow; Elvira A. Volina, ulitsa Oktyabrskaya, 1, Scherbinka Moskovskoi oblasti, and Nikolai S. Nametkin, Leninsky prospekt, 13, kv. 11, Moscow, all of U.S.S.R.

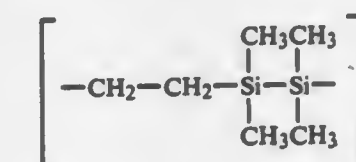
PCT No. PCT/SU79/00038, § 371 Date Apr. 30, 1980, § 102(e) Date Apr. 30, 1980, PCT Pub. No. WO80/00446, PCT Pub. Date Mar. 20, 1980

PCT Filed Jun. 15, 1979, Ser. No. 195,064

Claims priority, application U.S.S.R., Aug. 30, 1978, 2650452  
 Int. Cl.<sup>3</sup> C08G 77/06

U.S. Cl. 528-14 9 Claims

1. A high-molecular crystalline polymer with alternating dimethylene and methyl-substituted disilene units in the main chain having the general formula:



wherein  $n$  is an integer of from 800 to 1,000.

2. A method for preparing a high-molecular crystalline polymer according to claim 1, characterized in that vapours of 1,2-bis-(dimethylchlorosilyl)ethane are reacted with vapours of metallic sodium and/or potassium at a temperature within the range of from 250° to 380° C. under a pressure of vapours of 1,2-bis-(dimethylchlorosilyl)ethane of from 0.1 to 10 mm Hg, followed by condensation of vapours of the resulting 1,1,2,2-tetramethyl-1,2-disilacyclobutane and polymerization thereof at a temperature within the range of from 20° to 100° C.

4,339,560

## PROCESS FOR POLYMERIZING OLEFINS

Kazuo Baba; Kizuku Wakatsuki, both of Ichihara, and Tadashi Hikasa, Chiba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 7,844, Jan. 30, 1979,

abandoned. This application Jul. 3, 1980, Ser. No. 165,664

Claims priority, application Japan, Feb. 2, 1978, 53/11157

Int. Cl.<sup>3</sup> C08F 4/64, 10/00

U.S. Cl. 526-142 12 Claims

1. A catalyst system for the polymerization of olefins consisting essentially of

- (A) an organoaluminum compound represented by the formula:  $\text{AlR}_m\text{X}_3-m$  wherein  $\text{R}^1$  is a hydrocarbon group having 1 to 8 carbon atoms,  $\text{X}^1$  is a halogen atom or an alkoxy group having 1 to 8 carbon atoms and  $m$  is a number in the range of 1 to 3, and

- (B) a product prepared by reacting a solid organomagnesium halide which is obtained by the reaction of magnesium and a halogenated hydrocarbon compound represented by the formula:  $\text{R}^3\text{X}^3$  wherein  $\text{R}^3$  is a hydrocarbon group having 1 to 20 carbon atoms and  $\text{X}^3$  is a halogen atom in an hydrocarbon solvent and has a general formula:  $\text{MgR}^3\text{X}_2-\beta$  wherein  $\text{R}^3$  and  $\text{X}^3$  are as defined above and  $\beta$  is a number in the range of  $1.25 \geq \beta \geq 0.01$  with an ether selected from the group consisting of diethyl ether, di-n-propyl ether, di-n-butyl ether, di-isomyl ether, anisole, ethyl phenyl ether, diphenyl ether, tetrahydrofuran and dioxane in a hydrocarbon solvent at 0° C. to 50° C., the molar ratio of ether to solid organomagnesium halide being in the range of 0.01/1 to 10/1, and reacting the thus obtained activated solid organomagnesium halide with a titanium compound selected from the group represented by the formula:  $\text{Ti}(\text{OR}^2)_p\text{X}_q^2$  wherein  $\text{R}^2$  is a hydrocarbon group having 1 to 8 carbon atoms,  $\text{X}^2$  is a halogen atom and  $p$  and  $q$  are each a number satisfying the following ranges:  $0 \leq p \leq 4$ ,  $0 \leq q \leq 4$  and  $p+q=3$  or 4, at a temperature of -60° C. to 200° C., the molar ratio of titanium compound to activated



4,339,563

## NOVEL ORGANOPOLYSILOXANES AND ROOM TEMPERATURE CURABLE ORGANOPOLYSILOXANE COMPOSITIONS CONTAINING THE SAME

Toshio Takago; Masatoshi Arai, and Koji Futatsumori, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1980, Ser. No. 209,492

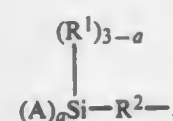
Claims priority, application Japan, Nov. 30, 1979, 54-155455 Int. Cl.<sup>3</sup> C08G 77/06

U.S. Cl. 528—14

10 Claims

1. A room temperature curable organopolysiloxane composition which comprises

(a) 100 parts by weight of an alkenyloxy-containing organopolysiloxane having, in a molecule, at least one alkenyloxy-substituted silylhydrocarbyl group directly bonded to the silicon atom in the siloxane linkage of the organopolysiloxane as represented by the general formula:



in which A is an alkenyloxy group, R<sup>1</sup> is a substituted or unsubstituted monovalent hydrocarbon group, R<sup>2</sup> is a divalent hydrocarbon group and a is a number of 2 or 3, and

(b) from 0.01 to 15 parts by weight of a curing accelerator.

4,339,564

## HEAT CURABLE ORGANOPOLYSILOXANE COMPOSITIONS

Yoshio Okamura, Annaka, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1980, Ser. No. 190,039

Claims priority, application Japan, Sep. 29, 1979, 54-126049 Int. Cl.<sup>3</sup> C08G 77/06

U.S. Cl. 528—15

4 Claims

1. A heat curable organopolysiloxane composition which comprises (a) an organopolysiloxane having, in a molecule, each at least one vinyl group, phenyl group and hydrogen atom directly bonded to silicon atoms or a mixture thereof with a second organopolysiloxane having, in a molecule, each at least one vinyl group and phenyl group but having no hydrogen atoms directly bonded to the silicon atoms where each of the organopolysiloxanes may have at least one alkyl group in a molecule and the molar ratios of the vinyl groups, phenyl groups, hydrogen atoms directly bonded to the silicon atoms and, if any, alkyl groups to the silicon atoms satisfy the following relations:

vinyl groups/silicon atoms=0.15 to 0.4;  
phenyl groups/silicon atoms=0.4 to 1.1;  
silicon-bonded hydrogen atoms/silicon atoms=0.1 to 0.4;  
alkyl groups/silicon atoms=0 to 1.65; and  
(vinyl groups/silicon atoms)+(phenyl groups/silicon atoms)+(silicon-bonded hydrogen atoms/silicon atoms)+(alkyl groups/silicon atoms)=1.5 to 2.3, (b) a catalyst for the addition reaction between the vinyl groups and the silicon-bonded hydrogen atoms in the component (a), and (c) an organic peroxide.

4,339,565

## ADHESIVE COMPOSITION FOR FLUORINATED RUBBERS

Masayasu Tomoda, Otsu, Japan, assignor to Dalkin Kogyo Co., Ltd., Osaka, Japan

Filed Nov. 28, 1980, Ser. No. 211,388

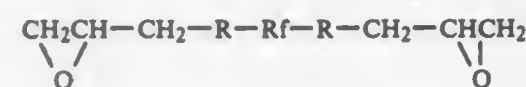
Claims priority, application Japan, Nov. 30, 1979, 54-156041 Int. Cl.<sup>3</sup> C08G 77/04

U.S. Cl. 528—27

3 Claims

1. An adhesive composition for fluorinated rubbers which comprises;

a fluorine-containing epoxy compound of the formula:



wherein Rf is a fluoroalkylene group having 1 to 18 carbon atoms or a fluorophenylene group, R is a single bond, an alkylene group having 1 or 2 carbon atoms and optionally bearing at least one fluorine atom, an oxyalkylene group having 1 or 2 carbon atoms and optionally bearing at least one fluorine atom or an oxyphenylene group optionally bearing at least one fluorine atom or at least one trifluoromethyl group on the benzene ring; and a silane compound of the formula:



wherein R<sup>1</sup> is an alkyl or alkenyl group having 1 to 10 carbon atoms, which is optionally substituted with at least one member of the group consisting of chlorine, amino, aminoalkyl, ureido, epoxyoxy, glycidoxo, epoxy-cyclohexyl, acryloyloxy, methacryloyloxy, mercapto and vinyl, R<sup>2</sup> and R<sup>3</sup> are each chlorine, hydroxyl, C<sub>1</sub>-C<sub>10</sub> alkoxy, C<sub>1</sub>-C<sub>5</sub> alkoxy (C<sub>1</sub>-C<sub>3</sub>) alkoxy, hydroxy (C<sub>2</sub>-C<sub>4</sub>) alkoxy or C<sub>1</sub>-C<sub>5</sub> acyloxy and y is an integer of 0, 1 or 2.

4,339,566

## WATER-DISPERSIBLE, RADIATION-CROSSLINKABLE BINDING AGENTS FROM URETHANE ACRYLATES, A PROCESS FOR THEIR PRODUCTION, AND THE USE THEREOF IN AQUEOUS DISPERSIONS IN COLOR PAINTING, COLOR PRINTING, AND TEXTILE APPLICATIONS

Hans J. Rosenkranz, Krefeld; Hellmut Striegler, Leverkusen, and Otto Bendszus, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 2, 1980, Ser. No. 183,076

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2936039

Int. Cl.<sup>3</sup> C08G 18/38

U.S. Cl. 528—68

5 Claims

1. A water-dispersible radiation crosslinkable urethane acrylate binding agent which comprises a reaction product of:

(A) 1 gram equivalent (based on-NCO of a di- or tri-isocyanate;  
(B) from 0 to 0.7 gram equivalent OH of a polyol, free of organically bound sulphur;  
(C) from 0.1 to 0.7 gram equivalent OH of a hydroxy-(C<sub>2</sub>-C<sub>6</sub> alkyl)acrylate; and  
(D) from 0.01 to 0.5 gram equivalent NH of an amino sulphonic acid or an alkali metal or an alkaline earth metal salt thereof having from 1 to 4 Amino groups per sulphonic acid group;

the ratio of NCO group: NCO-reactive groups being from 1:1 to 1:1.2.

4,339,567

## PHOTOPOLYMERIZATION BY MEANS OF SULPHOXONIUM SALTS

George E. Green, Stapleford, and Edward Irving, Burwell, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,184

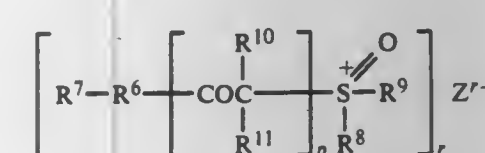
Claims priority, application United Kingdom, Mar. 7, 1980, 8007893; Jul. 19, 1980, 8023690; Dec. 13, 1980, 8040003

Int. Cl.<sup>3</sup> C08F 2/50; B32B 27/16; C08G 65/10

U.S. Cl. 528—102

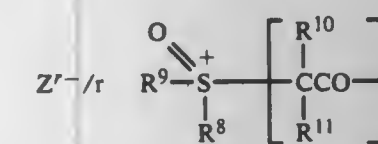
10 Claims

1. Compositions comprising  
(a) a compound, or mixture of compounds, capable of being transformed into a higher-molecular weight material under the influence of a cationic catalyst,  
(b) an effective amount of a sulfoxonium salt of the formula



where

p denotes zero or 1,  
R<sup>6</sup> denotes an arylene or aralkylene group of 4 to 25 carbon atoms linked directly through a carbon atom thereof to, if p denotes zero, the indicated sulfur atom or, if p denotes 1, to the indicated carbonyl carbon atom,  
R<sup>7</sup> denotes a hydrogen atom, or a group of formula



R<sup>8</sup> denotes an alkyl group of 1 to 18 carbon atoms, an alkenyl group of 2 to 6 carbon atoms, a cycloalkyl group of 3 to 6 carbon atoms, a cycloalkylalkyl group of 4 to 8 carbon atoms, an aryl group of 4 to 24 carbon atoms, or an aralkyl group of 5 to 16 carbon atoms,  
R<sup>9</sup> has the same meaning as R<sup>8</sup> but may alternatively represent a dialkylamino group of 2 to 6 carbon atoms or, if R<sup>8</sup> denotes a said alkyl group, an arylamino group of 4 to 8 carbon atoms,  
R<sup>10</sup> and R<sup>11</sup> each independently have the same meaning as R<sup>8</sup> but may also each represent a hydrogen atom,  
r represents 1, 2, or 3,  
Z<sup>r-</sup> denotes an r-valent anion of a protic acid, and  
q denotes zero when p denotes zero, or zero or 1 when p denotes 1.

4,339,568

## AROMATIC POLYMERS CONTAINING KETONE GROUPS

Louis M. Maresca, Belle Mead, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

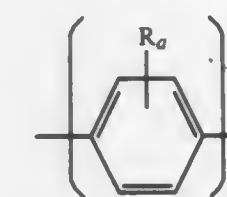
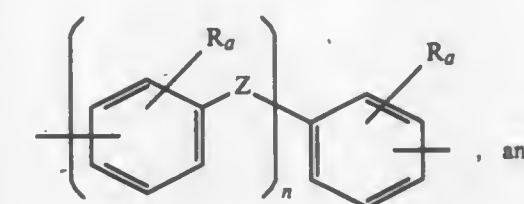
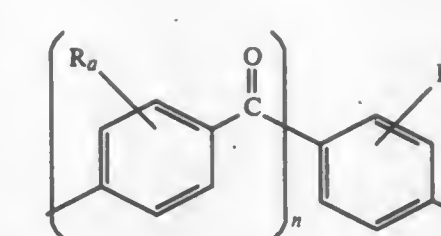
Filed Dec. 3, 1979, Ser. No. 99,582

Int. Cl.<sup>3</sup> C08G 8/02, 14/14

U.S. Cl. 528—126

8 Claims

1. A thermoplastic linear terpolymer consisting essentially of recurring units of the formulae:



wherein R is independently hydrogen, C<sub>1</sub> to C<sub>6</sub> alkyl, or C<sub>4</sub> to C<sub>8</sub> cycloalkyl, a is an integer of 0 to 4, Z is independently



—SO—, —S—, —SO<sub>2</sub>—, —O—, alkylene, cycloalkylene, arylene, alkylidene, or cycloalkylidene containing 2 to 20 carbon atoms, with the proviso that Z cannot be



when the connecting ether bonds are in the para position to Z, n is independently an integer of from 1 to 5; said units (I), (II), and (III) being attached to each other by an —O— bond.

4,339,569

## PROCESS FOR CONTINUOUS PRODUCTION OF OXYMETHYLENE POLYMER OR COPOLYMER

Akitoshi Sugio, Ohmiya; Akira Amemiya, Tokyo; Tadashi Kunii, Yokkaichi; Tomotaka Furusawa, Matsudo; Mutsuhiko Takeda, Matsudo; Katsumasa Tanaka, Yokkaichi, and Toshikazu Umemura, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Filed May 19, 1980, Ser. No. 150,986

Claims priority, application Japan, May 18, 1979, 54/61106 Int. Cl.<sup>3</sup> C08G 2/10

U.S. Cl. 528—240

9 Claims

1. In a process for producing an oxymethylene homopolymer or copolymer having improved stability which comprises polymerizing trioxane or a mixture of trioxane and a cyclic ether and/or a cyclic acetal in bulk in the presence of a catalyst which is at least one compound selected from the group consisting of boron trifluoride, boron trifluoride hydrate and coordination compounds of boron trifluoride with organic compounds containing an oxygen or sulfur atom, the improvement which comprises using as a reactor of the polymerization, a mixer system of the continuously stirred type which includes a material feed opening, a polymer discharge opening and a waste gas discharge opening near the polymer discharge opening with no portion opened into the atmosphere between the material feed opening and the polymer discharge opening except the waste gas discharge opening so that exposure of the bulk polymerization system to the atmosphere is prevented by maintaining the system closed throughout the entire polymeri-



zation process from the feeding of the starting reaction materials into the system to the discharging of the polymer after completion of the polymerization.

4,339,570

# PROCESS FOR THE PRODUCTION OF POLYESTERS

Edgar Muschelknaute; Roland Vogelsang, both of Leverkusen; Helmut Ohse, Dormagen; Hans Westermann, Mari; Eckhard Möller, Mari; Klaus Hachmann, Mari; Wilhelm Schiemann, Mari, and Bernt Kesper, Dorsten, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 15, 1981, Ser. No. 273,545

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1980, 3025574

Int. Cl.<sup>3</sup> C08G 63/02

U.S. Cl. 528—272

1. A process for the production of polyesters by the introduction on to a first plate of a column reactor of precondensates obtained from a transesterification of dicarboxylic acid dialkyl esters with diols or from an esterification of dicarboxylic acids with diols, optionally with the addition of catalysts, and subsequent condensation in the column reactor, characterized in that spontaneous flash evaporation of the precondensate due to the pressure gradient between the precondensation reactor and the column reactor takes place in a closed chamber, a so-called entry box, before the introduction on to the first plate of the column reactor, and in that separation of the liquid component from the gaseous component is subsequently carried out by centrifugal force in a functionally separated region, a so-called annular chamber.

4,339,571

# ONE-COMPONENT SYSTEMS BASED ON CRYSTALLINE EPOXIDE RESINS

Ferdinand Gutekunst, Riehen; Hans Lehmann, Aesch, and Rolf Schmid, Gelterkinden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 1, 1980, Ser. No. 145,407

Claims priority, application Switzerland, May 8, 1979, 4308/79

Int. Cl.<sup>3</sup> C08G 59/24

U.S. Cl. 528—361

1. A curable, solid, one-component epoxy resin system, which is stable on storage at room temperature, consisting essentially of

(a) a crystalline epoxide resin selected from the group consisting of diglycidyl isophthalate, diglycidyl terephthalate and mixtures thereof, and

(b) 1 to 12% by weight, based on the resin, of a curing catalyst.

4,339,572

# FORTIMICIN B DERIVATIVES AND PROCESS FOR PRODUCTION THEREOF

Moriyuki Sato, Machida, and Yasuki Mori, Kawasaki, both of Japan, assignors to Abbott Laboratories, North Chicago, Ill. Division of Ser. No. 836,229, Sep. 23, 1977, Pat. No. 4,220,755.

This application Jan. 24, 1980, Ser. No. 114,959

Claims priority, application Japan, Sep. 23, 1976, 51-11430

Int. Cl.<sup>3</sup> C07H 15/22

U.S. Cl. 536—16.1

1. A process for producing 1,2',6'-Tri-N-t-butoxycarbonyl-fortimicin B which consists essentially of reacting fortimicin B with t-butyl-5'-4,6-dimethylpyrimidin-2-ylthiocarbonate in methanolic solution at ambient temperature.

4,339,573

# PREPARATION OF CELLULOSE DERIVATIVES USING HIGHLY REACTIVE ALKALI CELLULOSE

Willi Wüst, Ratingen-Hösel; Hasso Leischner; Wilfried Rühse, both of Düsseldorf; Franz-Josef Carduck, and Norbert Kühne, both of Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 165,868

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2929002

Int. Cl.<sup>3</sup> C08B 1/06, 1/08, 11/02, 11/193

U.S. Cl. 536—84

16 Claims

1. In the process for the preparation of cellulose derivatives by alkalinizing finely divided cellulose to form alkali cellulose, alkylating the alkali cellulose to form alkylated alkali cellulose, and recovering the alkylated alkali cellulose, the improvement which comprises reacting said cellulose with an aqueous-alcoholic alkali metal hydroxide solution at a temperature of from about 20° to 120° C., to form alkali cellulose, removing all of the oxygen therefrom, and reducing the water content to from about 2.5 to 6.0 moles per anhydroglucose unit, prior to alkylation of said alkali cellulose.

4,339,574

# PREPARATION OF ALKYL CELLULOSE

Willi Wüst, Ratingen-Hösel; Hasso Leischner; Wilfried Rühse, both of Düsseldorf; Franz-Josef Carduck, and Norbert Kühne, both of Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

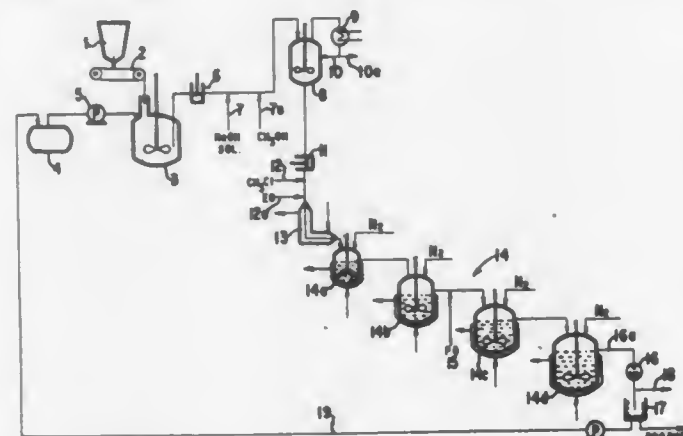
Filed Jul. 7, 1980, Ser. No. 165,869

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2929011

Int. Cl.<sup>3</sup> C08B 11/02, 11/08

U.S. Cl. 536—84

11 Claims



1. A method for the continuous production of alkyl cellulose by reacting alkali cellulose with alkylating agents in the presence of inert liquids, wherein:

(a) powdered cellulose in an inert organic liquid is continuously reacted with aqueous-alcoholic alkali metal hydroxide solution at temperatures of from about 20° to 80° C. to form alkali cellulose;

(b) oxygen is continuously completely removed from the alkali cellulose reaction mixture of step (a) and the water content is continuously reduced to from about 2.5 to 6.0 moles per anhydroglucose unit; and

(c) the reaction mixture from step (b) is reacted with at least a stoichiometric amount, but not more than with a molar excess of up to about 50%, based on the alkali metal hydroxide, of an alkylating agent in an inert liquid boiling at a temperature of from about 80° to 160° C., the reaction being carried out continuously in a cascade of stirred tanks-in-series with 2 to 10 units.

4,339,575

# SUBSTITUTED-IMIDAZOLIDINYL-3-CHLORO-3-CEPH-EM-4-CARBOXYLIC ACID

Yoshinobu Ko'oka, Miki; Mariko Munekage, Amagasaki, and Hitoshi Minato, Toyonaka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Continuation of Ser. No. 12,551, Feb. 15, 1979, abandoned. This application May 14, 1980, Ser. No. 149,836

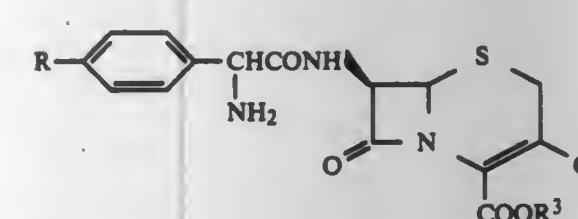
Claims priority, application Japan, Jul. 23, 1978, 53-20675

Int. Cl.<sup>3</sup> C07D 501/12

U.S. Cl. 544—20

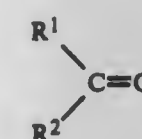
2 Claims

1. A method for purifying a compound of the formula:

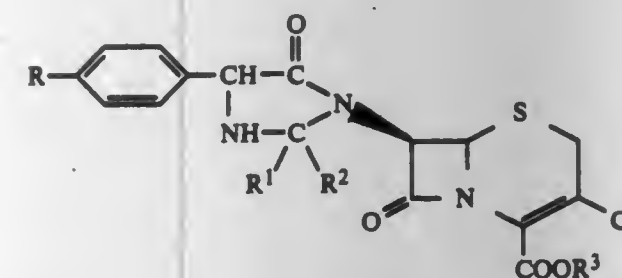


wherein

R is hydrogen or hydroxy, and R³ is hydrogen or an organic or inorganic base group forming a pharmaceutically acceptable carboxylate salt group, which comprises treating compound (II) with a ketone or aldehyde of the formula:



wherein R¹ and R², independently of each other, are hydrogen; alkyl of 1-4 carbon atoms; phenethyl; or benzyl, phenyl or thienyl optionally substituted by alkyl of 1-3 carbon atoms, alkoxy of 1-3 carbon atoms or halogen; or when taken together, R¹ and R² represent alkylene optionally having oxygen, sulfur or imino in its skeleton, to produce a compound of the formula:



wherein

R, R¹, R², and R³ each has the same meaning as defined above, crystallizing compound (I) to obtain substantially pure compound (I), hydrolyzing the substantially pure compound (I) with aqueous acid, and isolating substantially pure compound (II) from the hydrolysis reaction mixture.

4,339,576

# ANTI-ASTHMATIC, ANTI-ALLERGIC, ANTI-CHOLINERGIC, BRONCHODILATOR AND ANTI-INFLAMMATORY 1-[(BENZOYLPHENYL)-LOWER-ALKYL]PIPERIDINES AND ANALOGS THEREOF

Bernard L. Zenitz, Rensselaer, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

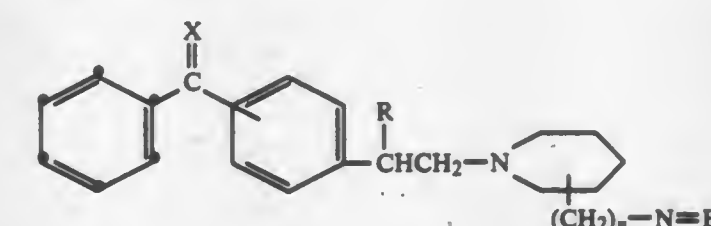
Continuation-in-part of Ser. No. 261,881, May 8, 1981, abandoned, which is a division of Ser. No. 208,259, Nov. 19, 1980, Pat. No. 4,304,911. This application Aug. 24, 1981, Ser. No. 295,759

Int. Cl.<sup>3</sup> C07D 211/26, 211/34, 413/04, 413/06

U.S. Cl. 544—130

49 Claims

1. A member of the group consisting of (A) a compound having the formula



where R is hydrogen or lower-alkyl; n is 0 or the integer 1; N=B is 1-piperidinyl, 4-morpholinyl, amino, di-lower-alkylamino, lower-alkanoylamino, N-lower-alkyl-N-lower-alkanoylamino, cycloalkanecarbonylamino or benzoylamino, or benzoylamino substituted in the phenyl ring by lower-alkyl, halogen or lower-alkoxy; the group C=X represents C=O or CHOH and where the Phenyl-C=X moiety of the [Phenyl-(C=X)-Phenyl]-CH(R)CH₂ group is attached either to the 3- or 4-position of the phenyl ring; and the (CH₂)ₙ-N=B group is attached either to the 2-, 3- or 4-position of the piperidine ring; and (B) acid-addition salts thereof.

4,339,577

# 2-(THIOAMINO)-4,6-DIAMINO-1,3,5-TRIAZINES

Gene R. Wilder, Medina, Ohio, assignor to Monsanto Company, St. Louis, Mo.

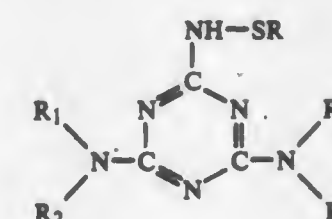
Continuation of Ser. No. 148,061, May 12, 1980. This application Jun. 1, 1981, Ser. No. 268,937

Int. Cl.<sup>3</sup> C07D 251/66

U.S. Cl. 544—197

7 Claims

1. A compound of the formula



in which R, R¹ and R² independently are C₁-C₁₂ alkyl, C₅-C₁₂ cycloalkyl, C₇-C₁₀ aralkyl, phenyl, or mono- or disubstituted phenyl wherein the substituents are C₁-C₆ alkyl, C₁-C₆ alkoxy, or C₁-C₆ alkylthio, or R¹ is hydrogen.



4,339,578

## BISGUANAMINES

Peter Werle, Gelnhausen; Wolfgang Merk; Gerhard Pohl, both of Hanau, and Friedhelm Hoevels, Freigericht, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

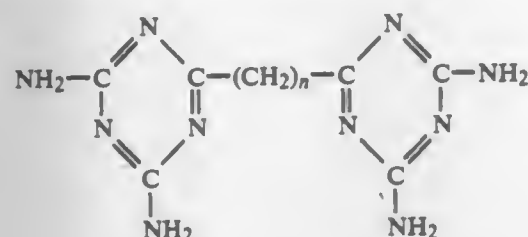
Filed May 5, 1980, Ser. No. 146,247

Claims priority, application Fed. Rep. of Germany, May 15, 1979, 2919496

Int. Cl.<sup>3</sup> C07D 251/18

U.S. Cl. 544—207

1. An alkylene bisguanamine of the formula



where n is an integer of 10 to 20.

4,339,579

## 2,6-BIS-(PYRROLOPYRAZINYL)PYRAZINES

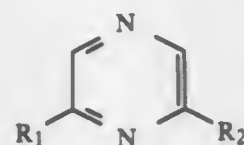
Meier E. Freed, Paoli, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Dec. 29, 1980, Ser. No. 221,124

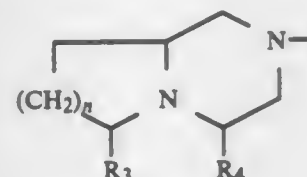
Int. Cl.<sup>3</sup> C07D 487/04

U.S. Cl. 544—349

1. A compound of the formula:



wherein R<sub>1</sub> and R<sub>2</sub> are



wherein

R<sub>3</sub> is hydrogen, lower alkyl of 1-4 carbon atoms, phenyl or phenyl mono substituted with halo, lower alkyl of 1-4 carbon atoms or lower alkoxy of 1-4 carbon atoms;

R<sub>4</sub> is hydrogen, lower alkyl of 1-4 carbon atoms or phenyl; and

n is 1-3; or

a pharmaceutically acceptable salt thereof.

4,339,580

## PIPERAZINYLALKOXYINDANES AND ACID ADDITION SALTS THEREOF

Ryoji Kikumoto, Machida; Akihiro Tobe, Kawasaki; Harukazu Fukami, and Mitsuo Egawa, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

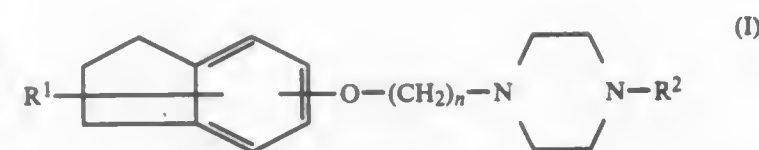
Filed Jun. 9, 1980, Ser. No. 157,341

Claims priority, application Japan, Jun. 26, 1979, 54-80505; Mar. 10, 1980, 55-30062

Int. Cl.<sup>3</sup> C07D 401/04, 241/04; A61K 31/495

U.S. Cl. 544—360

1. A piperazinylalkoxyindane represented by the formula:



wherein n is an integer of 3 or 4; R<sup>1</sup> is hydrogen, halogen, alkyl having 1 to 5 carbon atoms, alkoxy having 1 to 5 carbon atoms, hydroxy, phenyl or nitro; and R<sup>2</sup> is phenyl or pyridyl optionally substituted by halogen, trifluoromethyl, alkoxy having 1 to 5 carbon atoms or alkylcarbonyl having 2 to 6 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

4,339,581

## MILDEWCIDAL SILANE COMPOUNDS

George E. Totten, West Haverstraw; John P. Wesson, Croton-on-Hudson, both of N.Y.; Thomas C. Williams, Ridgefield, Conn., and Robert G. Eagar, Jr., Yorktown Heights, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1980, Ser. No. 192,604

Int. Cl.<sup>3</sup> A01N 55/00; C07F 7/18

U.S. Cl. 546—14

1. A compound of the formula



wherein R is alkyl of up to eight carbon atoms, X is —NH—C(O)— or —S(CH<sub>2</sub>)<sub>2</sub>C(O)—, and Ar is selected from the group consisting of p-nitrophenyl, pentachlorophenyl, 4-chloro-3,5-dimethylphenyl, 8-quinolyl, and 5,7-dibromo-8-quinolyl.

4,339,582

## QUINOLIZIDINE-PROPIONANILIDE COMPOUNDS

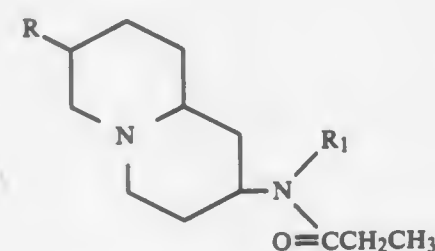
John W. Van Dyke, Jr., Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Aug. 18, 1981, Ser. No. 293,965

Int. Cl.<sup>3</sup> C07D 455/02

U.S. Cl. 546—112

1. Quinolizidine-propionanilides characterized by the structural formula:



wherein R and R<sub>1</sub> are independently phenyl, substituted phenyl wherein the substituents are lower alkoxy of 1 to 4 carbon atoms, halogen, lower alkyl of 1 to 4 carbon atoms or hydroxyl or pyridyl.

4,339,583

## (IMIDAZOLYLMETHYL)PYRIDINE COMPOUNDS AS THROMBOXANE SYNTHETASE INHIBITORS

Peter E. Cross, Canterbury, and Roger P. Dickinson, Dover, both of England, assignors to Pfizer Inc., New York, N.Y.

Filed Nov. 20, 1980, Ser. No. 208,675

Claims priority, application United Kingdom, Nov. 27, 1979, 7940848

The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> C07D 401/06, 401/00, 413/00

U.S. Cl. 546—256

1. A compound of the formula

21 Claims

4,339,585

## METHOD FOR THE PRODUCTION OF 2-HYDROXYMETHYL-3,4,5-TRIHIDROXY PIPERIDINE AND THE CORRESPONDING N-METHYL DERIVATIVE

Shingo Matsumura; Hiroshi Enomoto; Yoshiaki Aoyagi; Yoji Ezure; Yoshiaki Yoshikuni, and Masahiro Yagi, all of Kyoto, Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

Filed Nov. 9, 1978, Ser. No. 959,163

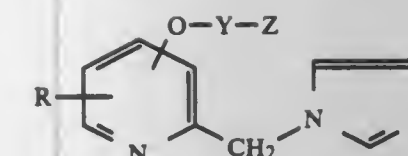
Claims priority, application Japan, Nov. 10, 1977, 52/135505; Nov. 10, 1977, 52/135506

Int. Cl.<sup>3</sup> C07D 211/46

U.S. Cl. 546—242

6 Claims

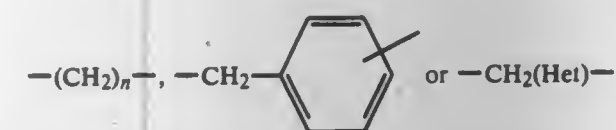
1. Process for the preparation of 2-hydroxymethyl-3,4,5-trihydroxy piperidine which comprises subjecting a nojirimycin-producing actinomycetes culture containing nojirimycin to catalytic reduction with a metal catalyst until substantially all of said nojirimycin is converted to 2-hydroxymethyl-3,4,5-trihydroxy piperidine and isolating said 2-hydroxymethyl-3,4,5-trihydroxy piperidine by ion exchange chromatography.



and the pharmaceutically-acceptable acid-addition salts thereof;

wherein R is hydrogen, alkyl having 1 to 4 carbon atoms or halo;

Y is



and Z is COOR<sup>1</sup>, CONHR<sup>2</sup>, CONR<sup>3</sup>R<sup>4</sup>, COCOOR<sup>1</sup>, COCONHR<sup>2</sup>, COCONR<sup>3</sup>R<sup>4</sup>, CN or 5-tetrazolyl;

wherein n is an integer from 1 to 4;

Het represents a 2 or 3-pyridyl or 2-thienyl group linked to Z by a ring carbon atom;

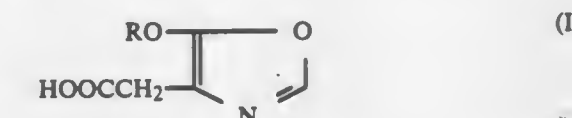
R<sup>1</sup> is hydrogen or alkyl having 1 to 4 carbon atoms;

R<sup>2</sup> is hydrogen, alkyl having 1 to 4 carbon atoms, alkanoyl having 2 to 4 carbon atoms, alkylsulfonyl having 1 to 4 carbon atoms, cyano, benzoyl or benzenesulfonyl, the phenyl ring in said benzoyl and benzenesulfonyl groups being optionally substituted with one or more radicals selected from alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, trifluoromethyl and halo;

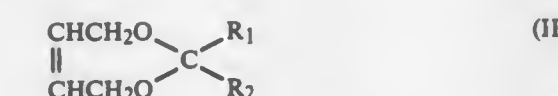
and R<sup>3</sup> and R<sup>4</sup> are each alkyl having 1 to 4 carbon atoms, or R<sup>3</sup> and R<sup>4</sup> taken together with the nitrogen atom to which they are attached form a pyrrolidino, piperidino or morpholino group;

and when Y is —CH<sub>2</sub>(Het), Z can further comprise an alkyl group having 1 to 4 carbon atoms;

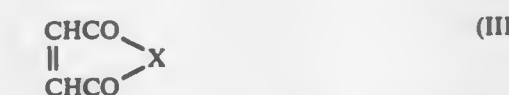
provided that the O—Y—Z group is at the 3- or 5-position of the pyridine ring.



wherein R is alkyl of 1 to 3 carbon atoms, with a compound of the formula



wherein R<sub>1</sub> and R<sub>2</sub>, independently of each other, are hydrogen or alkyl of 1 to 5 carbon atoms, or R<sub>1</sub> and R<sub>2</sub>, together with the adjacent carbon atom, may form a 5- or 6-membered cycloalkyl ring, at about 50° to 250° C., in the presence of about 1/100 to 1/2 mole, per mole of said (I), of a compound of the formula



wherein X is oxygen, —NH— or —NH—NH—, and subjecting the resultant compound to hydrolysis in the presence of an acid catalyst.

4,339,584

## PROCESS FOR PREPARING 3-AMINO-5-(PYRIDINYL)-2(1H)-PYRIDINONES VIA N-HYDROXY-1,2-DIHYDRO-2-OXO-5-(PYRIDINYL)-NICOTINIMIDAMIDE BY REACTION WITH POLYPHOSPHORIC ACID

Monte D. Gruett, and George Y. Leshner, both of Schodack, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 218,616, Dec. 22, 1980, Pat. No. 4,305,948.

This application May 11, 1981, Ser. No. 262,187

Int. Cl.<sup>3</sup> C07D 401/04

U.S. Cl. 546—257

2 Claims

1. The process which comprises reacting 1-R<sub>1</sub>-1,2-dihydro-2-oxo-5-PY-6-R-nicotinonitrile with hydroxylamine to produce N-hydroxy-1-R<sub>1</sub>-1,2-dihydro-2-oxo-5-PY-6-R-nicotinimide and reacting said N-hydroxy nicotinimide with polyphosphoric acid to produce 1-R<sub>1</sub>-3-amino-5-PY-6-R-2(1H)-pyridinone, where R is hydrogen or lower-alkyl, R<sub>1</sub> is hydrogen, lower-alkyl or lower-hydroxyalkyl, and PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents.

4,339,587

## 5-BENZYLOXY OR 5-HYDROXY-2-(2,2,2-TRIFLUOROETHOXY)-N-(2-PYRIDYLMETHYL)BENZAMIDE

Elden H. Banitt, Woodbury, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Filed Jun. 8, 1981, Ser. No. 271,253

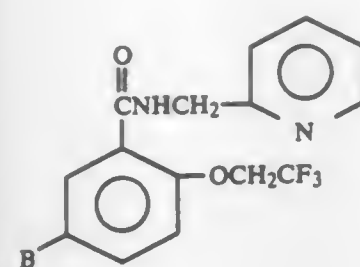
Int. Cl.<sup>3</sup> C07D 213/74

U.S. Cl. 546—337

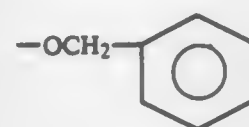
3 Claims

1. A compound of the formula





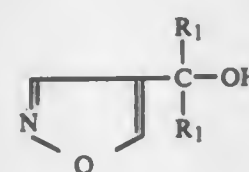
in which B is selected from



and —OH.

**4,339,588**  
**PLANT GROWTH REGULATORS COMPRISING 4-HYDROXYISOXAZOLE AND RELATED COMPOUNDS**  
 Takenori Kusumi, and Koji Nakanishi, both of New York, N.Y., assignors to Suntory Limited, Osaka, Japan  
 Division of Ser. No. 195,748, Oct. 10, 1980, abandoned. This application Jun. 26, 1981, Ser. No. 277,593  
 Int. Cl.<sup>3</sup> C07D 261/08

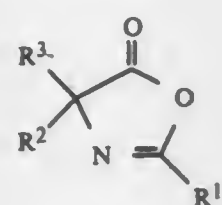
U.S. Cl. 548—247 **3 Claims**  
 1. A compound of the group represented by the formula:



wherein R<sub>1</sub> is methyl or ethyl.

**4,339,589**  
**PREPARATION OF 4-SUBSTITUTED OXAZOLIDIN-5-ONES**  
 Wolfgang Steglich, Berlin; Rudolf Hurnaus; Peter Gruber, both of Biberach, and Boerries Kuebel, Berlin, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany  
 Continuation of Ser. No. 891,456, Mar. 29, 1978, Pat. No. 4,264,771, which is a continuation of Ser. No. 484,068, Jul. 16, 1974, abandoned. This application Aug. 5, 1980, Ser. No. 175,593  
 Claims priority, application Fed. Rep. of Germany, Jul. 19, 1973, 2336718

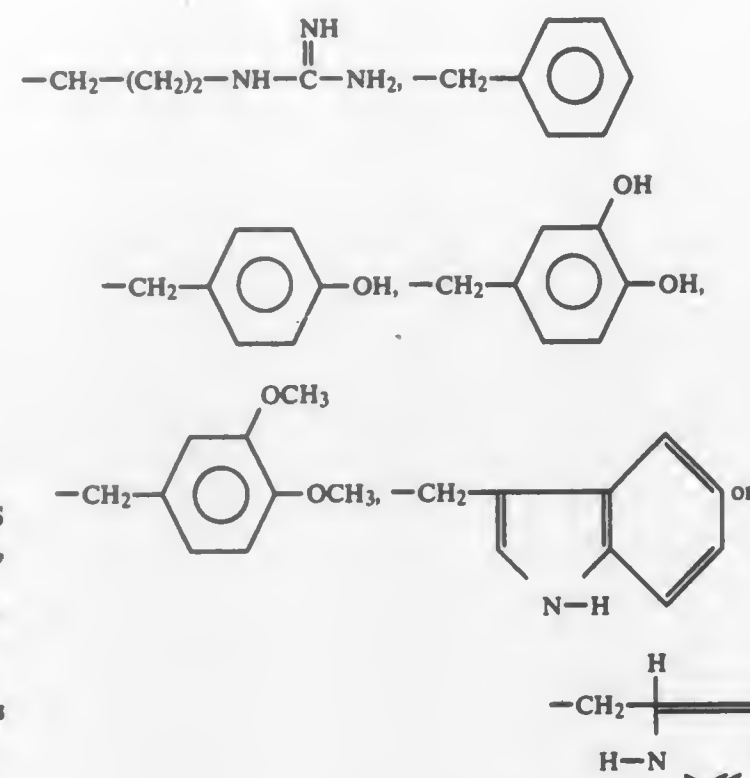
Int. Cl.<sup>3</sup> C07D 265/10 **7 Claims**  
 1. A process for the manufacture of a 4-substituted oxazolinone-(5) compound of the formula



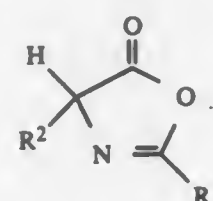
wherein

R<sup>1</sup> is phenyl which may be unsubstituted or substituted by chlorine, bromine, nitro, methoxy, dimethoxy, methyl or ethyl, and  
 R<sup>2</sup> is hydrogen, methyl or benzyl which is substituted by one

or more hydroxy, alkoxy, acetoxy, trifluoromethyl, halogen or methyl, and  
 R<sup>3</sup> is an alkyl of 1 to 4 carbons, —CH<sub>2</sub>OH, —CH(OH)CH<sub>3</sub>, —CH<sub>2</sub>SH, —CH<sub>2</sub>CH<sub>2</sub>SCH<sub>3</sub>, —CH<sub>2</sub>CO<sub>2</sub>H, —CH<sub>2</sub>CH<sub>2</sub>CO<sub>2</sub>H, —CH<sub>2</sub>—(CH<sub>2</sub>)<sub>2</sub>—NH<sub>2</sub>, —CH<sub>2</sub>—(CH<sub>2</sub>)<sub>3</sub>—NH<sub>2</sub>, —CH<sub>2</sub>CH<sub>2</sub>CH(OH)CH<sub>2</sub>NH<sub>2</sub>,

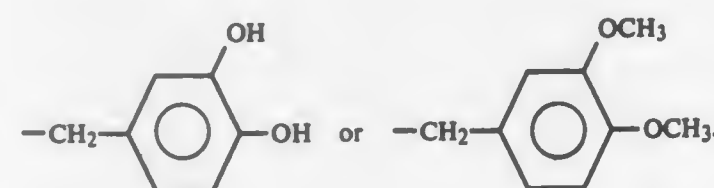


which consists essentially of reacting an oxazolinone-(5) compound of the formula



wherein

R<sup>1</sup> and R<sup>2</sup> are defined above, with a compound of the formula R<sup>3</sup>X where R<sup>3</sup> is defined above and X is bromine, chlorine or iodine in an anhydrous aprotic solvent in the presence of a tertiary amine selected from the group consisting of triethylamine, ethyldiisopropylamine, a Hunig's base, N,N-dimethyl-cyclohexylamine, pyridine and a picoline at temperatures of from about —10° C. to 100° C., whereby the oxazolinone-(5) compound is substituted in the 4-position, with the proviso that when R<sup>2</sup> is substituted benzyl, then R<sup>3</sup> can only be an alkyl of 1 to 4 carbons; when R<sup>2</sup> is hydrogen and R<sup>3</sup> is an alkyl of 1 to 4 carbons, then of said alkyl R<sup>3</sup> can only be —CH<sub>3</sub>, —CH(CH<sub>3</sub>)<sub>2</sub>, —CH(CH<sub>3</sub>)CH<sub>2</sub>CH<sub>3</sub> or —CH<sub>2</sub>CH(CH<sub>3</sub>)<sub>2</sub>, otherwise R<sup>3</sup> can be any of the above shown substituents; and, when R<sup>2</sup> is methyl, then R<sup>3</sup> can only be



**4,339,590**  
**CYCLIC SULFUR COMPOUNDS**  
 Noboru Yamazaki, Tokyo; Seichi Nakahama, Toyohama, and Kazuo Yamaguchi, Mitaka, all of Japan, assignors to Japan Synthetic Rubber Company, Limited, Tokyo, Japan  
 Filed Jan. 21, 1981, Ser. No. 226,834  
 Claims priority, application Japan, May 21, 1980, 55-66346  
 Int. Cl.<sup>3</sup> C07D 341/00

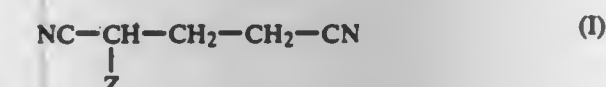
U.S. Cl. 549—11 **6 Claims**  
 1. A cyclic sulfur compound represented by the formula,



wherein R is —CH<sub>2</sub>CH<sub>2</sub>O—, CH<sub>2</sub>CH<sub>2</sub>—, m is an integer of 3 or 4 and n is an integer of 1 to 3.

**4,339,591**  
**PROCESS FOR THE PRODUCTION OF CARBOXYLIC ACID CYANIDES**  
 Axel Kleemann, Hanau; Bernd Lehmann, Freigericht, and Herbert Klenk, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany  
 Filed Mar. 23, 1981, Ser. No. 246,313  
 Claims priority, application Fed. Rep. of Germany, Mar. 24, 1980, 3011305; European Pat. Off., Oct. 14, 1980, 80106231  
 Int. Cl.<sup>3</sup> C07D 333/24, 307/54; C07C 120/04

U.S. Cl. 549—72 **26 Claims**  
 1. In a process for the production of a carboxylic acid cyanide by reaction of a carboxylic acid halide with an alkali cyanide or hydrogen cyanide in the presence of copper (I) salt and a carboxylic acid nitrile, the improvement comprising employing as the carboxylic acid nitrile a dinitrile of the formula



where Z is a hydrogen atom or the methyl group.

**4,339,592**  
**PROCESS FOR THE PRODUCTION OF URETHANES**  
 Robert Becker, Leverkusen; Christian Rasp; Günter Stammann, both of Cologne, and Johann Grolig, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
 Filed Feb. 26, 1981, Ser. No. 238,518  
 Claims priority, application Fed. Rep. of Germany, Mar. 12, 1980, 3009489  
 Int. Cl.<sup>3</sup> C07C 125/073

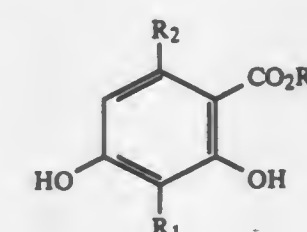
U.S. Cl. 560—25 **7 Claims**  
 1. A process for the production of a urethane in which an organic nitro compound is reacted with carbon monoxide and an organic compound containing at least one hydroxyl group in the liquid phase at elevated temperature and pressure in the presence of (a) a catalyst taken from the group consisting of the elements and compounds of elements from the group of noble metals of the 8th Secondary Group of the Periodic Table and (b) a co-catalyst, characterized in that the co-catalyst used comprises:

- a component taken from the group consisting of
  - iron oxychloride
  - a mixture of iron compounds containing iron oxychloride, and
  - combinations of
    - oxides and/or oxide hydrates of tetravalent tin, trivalent chromium, hexavalent molybdenum, hexavalent tungsten, pentavalent vanadium, divalent iron and/or trivalent iron with
    - a chloride of one of the elements of the 3rd to 5th Main Groups or 1st to 8th Secondary Groups of the

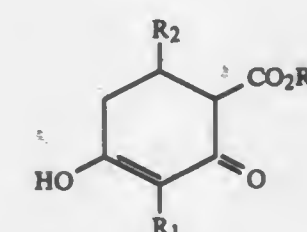
Periodic Table of Elements and/or hydrochlorides of tertiary amines; and  
 (2) metallic iron or an iron alloy in finely divided or high surface form.

**4,339,593**  
**PROCESS FOR THE MANUFACTURE OF 3,6-DIALKYL RESORCYLIC ACID ESTERS**  
 Brian J. Willis, Ramsey; David I. Lerner, Teaneck, both of N.J., and Derek H. R. Barton, Gif-sur-Yvette, France, assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.  
 Filed Dec. 16, 1980, Ser. No. 216,901  
 Int. Cl.<sup>3</sup> C07C 69/76

U.S. Cl. 560—70 **11 Claims**  
 1. A process for preparing a 3,6-dialkyl resorcylic acid ester having the structure:



wherein each of R<sub>1</sub>, R<sub>2</sub>, and R<sub>3</sub> is C<sub>1</sub> to C<sub>3</sub> alkyl, which comprises treating a dihydroresorcylic acid ester having the general structure:



wherein each of R<sub>1</sub>, R<sub>2</sub>, and R<sub>3</sub> is C<sub>1</sub> to C<sub>3</sub> alkyl, with sulfonyl chloride in the presence of a suitable solvent, said treatment being carried out at a temperature in the range from about —5° to about 100° C., and recovering the resulting 3,6-dialkyl resorcylic acid ester.

**4,339,594**  
**PROCESS FOR THE MANUFACTURE OF PHENYLACETIC ACID AND SIMPLE DERIVATIVES THEREOF**  
 Werner Spielmann, Kelkheim, and Georg Schaeffer, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany  
 Filed Oct. 31, 1980, Ser. No. 202,605  
 Claims priority, application Fed. Rep. of Germany, Nov. 3, 1979, 2944480  
 Int. Cl.<sup>3</sup> C07C 69/76

U.S. Cl. 562—465 **6 Claims**  
 1. A process for the manufacture of phenylacetic acid or a derivative thereof consisting essentially of catalytically hydrogenating mandelic acid or a corresponding derivative thereof in the presence of a noble metal catalyst in an aqueous solution free of any mineral acid, said catalytic hydrogenation being conducted at a temperature ranging from room temperature to about 200° C. and at a pressure ranging from atmospheric to about 20 bar hydrogen pressure.



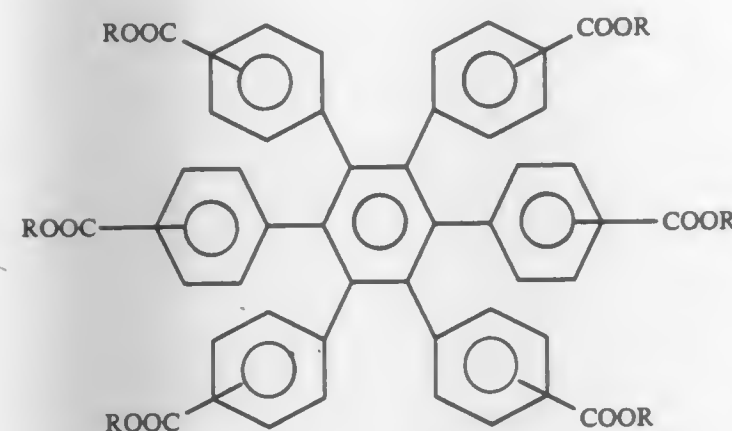
4,339,595

## HEXA(META-PARA-CARBOXYPHENYL)BENZENE COMPOUNDS

Carl A. Udovich, Joliet, and Ellis K. Fields, River Forest, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 27, 1980, Ser. No. 163,529  
Int. Cl.<sup>3</sup> C07C 69/76, 63/48, 69/773, 51/353, 67/343, 103/82  
U.S. Cl. 560—76 10 Claims

1. Hexa-carboxyphenylbenzene compound of the structural formula:



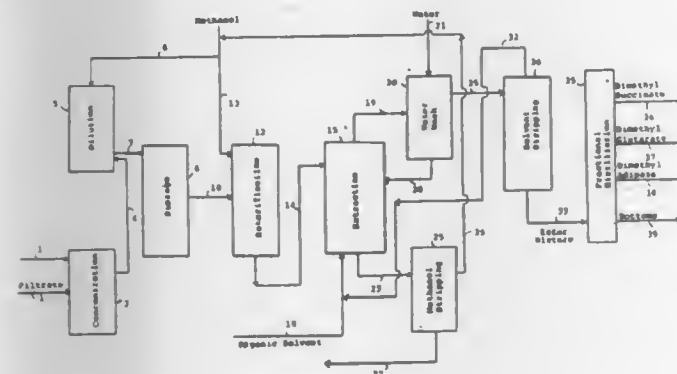
wherein R is selected from the group consisting of hydrogen, alkyl moieties and aryl moieties.

4,339,596

## TREATMENT OF BYPRODUCT STREAM FROM ADIPIC ACID MANUFACTURE

Freylon B. Coffey, and Norbert F. Cywinski, both of Odessa, Tex., assignors to El Paso Products Company, Odessa, Tex.

Filed Nov. 15, 1979, Ser. No. 94,425  
Int. Cl.<sup>3</sup> B01D 3/34; C07C 67/08  
U.S. Cl. 560—204 3 Claims



1. A method of facilitating the storage and transport of an aqueous filtrate waste byproduct stream derived from a process for producing adipic acid by nitric acid oxidation of cyclohexanone/cyclohexanol, which method comprises the steps of (1) reducing the volume of the aqueous filtrate medium by the removal of water and volatile components which co-distill with water to provide a concentrate solution which has a water content between about 5-30 weight percent and a nitric acid content between 1-6 weight percent, based on total solution weight; and (2) admixing the concentrate solution with between about 5-20 weight percent methanol, based on total solution weight, to form a single phase homogeneous solution; wherein the said homogeneous solution has a freezing point below about 5° C.

4,339,597

## PROCESS FOR PRODUCING 2-PENTENOIC ESTERS

Nobuo Isogai; Motoyuki Hosokawa; Takashi Okawa; Natsuko Wakui, and Toshiyasu Watanabe, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,966  
Claims priority, application Japan, Mar. 24, 1980, 55/37128  
Int. Cl.<sup>3</sup> C07C 67/333 8 Claims

1. A process for producing a 2-pentenoic ester which comprises contacting the corresponding 3-pentenoic ester with a composite catalyst composed of magnesia and alumina to isomerize the 3-pentenoic ester.

4,339,598

## PREPARATION OF UNSATURATED ACIDS AND ESTERS FROM SATURATED CARBOXYLIC ACID DERIVATIVES AND CARBONYL COMPOUNDS OVER CATALYSTS CONTAINING V AND SB

Andrew T. Guttman, Maple Heights, and Robert K. Grasselli, Chagrin Falls, both of Ohio, assignors to SOHIO, Cleveland, Ohio

Filed Dec. 31, 1980, Ser. No. 221,588  
Int. Cl.<sup>3</sup> C07C 67/343, 51/353  
U.S. Cl. 560—210 23 Claims

4. A process for producing unsaturated carboxylic acids and esters which comprises passing into a reaction zone, a vapor mixture of a saturated monocarboxylic acid or its ester with a compound selected from the group consisting of formaldehyde, Formaldehyde acetals, or volatile formaldehyde polymers, at a temperature of from 200° C. to about 450° C., in the presence of a catalyst having the empirical formula



wherein

$m=0.5-40$ ; and

A=alkali metal, alkaline earth metal, Ti, La, rare earth metal, Th, or mixtures thereof;

B=Cu, Ag, Fe, Co, Ni, Mn, Cr, Nb, Ta, Ti, As, Sn, B, U or mixtures thereof;

C=Mo, W, Te, Bi, or mixtures thereof;

and

$a=0-1$ ;

$b=0-1$ ;

$c=0-1$ ;

x is determined by the nature and oxidation state of the other elements.

4,339,599

## PROCESS FOR THE PREPARATION OF BENZENE-MONOCARBOXYLIC ACIDS

Cornelis Jongsma, Oirsbeek, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Mar. 9, 1981, Ser. No. 242,115  
Claims priority, application Netherlands, Mar. 15, 1980, 8001550

Int. Cl.<sup>3</sup> C07C 51/16

U.S. Cl. 562—412 7 Claims

1. Process for the preparation of a benzene-monocarboxylic acid by oxidation of a monoalkyl-benzene compound in the liquid phase with the aid of a gas containing molecular oxygen in the presence of a catalyst composed of a cobalt and a manganese compound, both of which are soluble in the reaction mixture, wherein the manganese:cobalt atomic ratio in said catalyst is between 1:500 and 1:100,000.

4,339,600

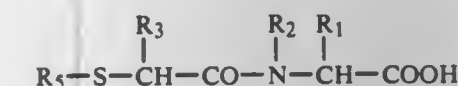
## COMPOUNDS FOR ALLEVIATING ANGIOTENSIN RELATED HYPERTENSION

Miguel A. Ondetti, Princeton, and David W. Cushman, West Windsor, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 773,864, Mar. 3, 1977, abandoned, which is a division of Ser. No. 684,606, May 10, 1976, Pat. No. 4,053,651. This application Feb. 13, 1978, Ser. No. 877,197

Int. Cl.<sup>3</sup> C07C 153/09, 149/437, 149/243, 149/247  
U.S. Cl. 562—426 21 Claims

1. A compound of the formula

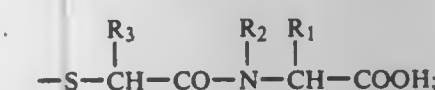


or a physiologically acceptable salt thereof, wherein

R<sub>1</sub> is hydroxy-lower alkylene, hydroxyphenyl-lower alkylene, amino-lower alkylene, guanidino-lower alkylene, mercapto-lower alkylene, lower alkylmercapto-lower alkylene, carbamoyl-lower alkylene or carboxy-lower alkylene;

R<sub>2</sub> and R<sub>3</sub> each is hydrogen, lower alkyl or phenyl-lower alkylene; and

R<sub>5</sub> is hydrogen, lower alkanoyl, benzoyl or



with the proviso that if R<sub>2</sub> and R<sub>5</sub> are both hydrogen and R<sub>3</sub> is methyl, R<sub>1</sub> is not mercapto-lower alkylene.

4,339,601

## TEREPHTHALIC ACID DERIVATIVES AND PROCESS FOR PREPARING THEM

Albert M. V. Jacques, Norristown, Pa., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 6,741, Jan. 26, 1979, Pat. No. 4,252,979, which is a continuation of Ser. No. 528,002, Nov. 29, 1974, abandoned. This application Sep. 30, 1980, Ser. No. 192,471  
Int. Cl.<sup>3</sup> C07C 79/46

U.S. Cl. 562—438 8 Claims

1. A process for the preparation of 2,5-dichloro-3-nitrobenzoic acid, which comprises heating 2,5-dichloro-3-nitroterephthalic acid in the presence of a decarboxylating agent selected from the group consisting of dimethyl sulphoxide and dimethyl formamide.

4,339,602

## PROCESS OF PREPARATION OF RACEMIC HYDROXYARYLGLYCOLIC ACIDS AND NOVEL PRODUCTS RESULTING THEREFROM

Alain Schouteeten, Ezanville, and Yanni Christidis, Paris, both of France, assignors to Societe Francaise Hoechst, France

PCT No. PCT/FR80/00126, § 371 Date Feb. 25, 1981, § 102(e) Date Feb. 25, 1981, PCT Pub. No. WO81/00254, PCT Pub. Date Feb. 5, 1981

PCT Filed Jul. 24, 1980, Ser. No. 243,965  
Claims priority, application France, Jul. 25, 1979, 79 19171  
Int. Cl.<sup>3</sup> C07C 65/11, 59/50

U.S. Cl. 562—466 1 Claim

1. A racemic ortho- or parahydroxyarylglycolic acid selected from the group consisting of:

- 4-hydroxy 3-tertobutyl mandelic acid;
- 2-hydroxy 5-tertobutyl mandelic acid;
- 2-fluoro 4-hydroxymandelic acid;
- monohydrated 3,5-dimethoxy 4-hydroxy mandelic acid;
- 2-hydroxy 5-methyl mandelic acid;
- (1-hydroxy 2-naphthyl) glycolic acid;

4-ethyl 2-hydroxy mandelic acid, and  
4-hydroxy 3-methyl mandelic acid.

4,339,603

## PROCESS FOR CONVERTING OPTICALLY ACTIVE L-N-(2-AMINO-2-PHENETHYL)-2-METHOXYETHYLAMINE TO THE CORRESPONDING DL-DERIVATIVE

Sivaraman Raghu, Norwalk, and Arnold Zweig, Westport, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 8, 1979, Ser. No. 1,807  
Int. Cl.<sup>3</sup> C07C 20/00 5 Claims

1. A process for the racemization of optically active L-N-(2-amino-2-phenethyl)-2-methoxyethylamine which comprises the steps of:

- (a) converting optically active L-N-(2-amino-2-phenethyl)-2-methoxyethylamine to optically active L-1-(2-methoxyethyl)-4-phenyl-2-imidazolidone;
- (b) subjecting the latter optically active imidazolidone to dehydrogenation and hydrogenation to obtain optically inactive, racemic (dl) 1-(2-methoxyethyl)-4-phenyl-2-imidazolidone;
- (c) converting the latter racemic imidazolidone by acid hydrolysis; and
- (d) recovering optically inactive, racemic dl N-(2-amino-2-phenethyl)-2-methoxyethylamine.

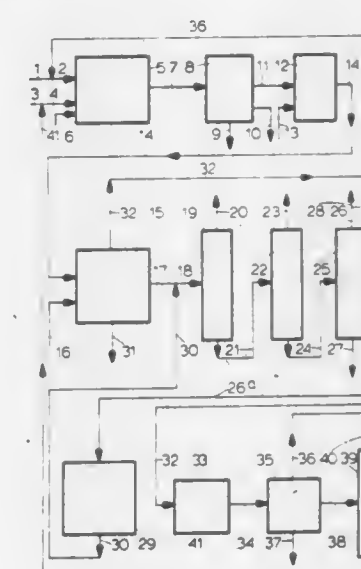
4,339,604

## METHOD FOR THE PREPARATION OF CYCLOHEXANOL AND/OR CYCLOHEXANONE

Paul C. van Geem, Spaubeek; Theodorus F. M. de Graaf; Dirk Knol, both of Beek, and Otto G. Plantema, Nederweert Eind, all of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Continuation-in-part of Ser. No. 171,034, Jul. 22, 1980, abandoned. This application Oct. 30, 1980, Ser. No. 202,145  
Claims priority, application Netherlands, Jul. 26, 1979, 7905781

Int. Cl.<sup>3</sup> C07C 45/32, 35/08  
U.S. Cl. 568—357 15 Claims



1. A method for the preparation of cyclohexanone from benzene by the steps of:

- hydrogenating benzene in the presence of hydrogen and a hydrogenation catalyst in a hydrogenation zone to form a hydrogenation reaction mixture containing cyclohexene, by-product cyclohexane, and unreacted benzene;
- oxidizing cyclohexene contained in said hydrogenation reaction mixture to cyclohexanone in an oxidation zone in the presence of an oxygen containing gas and an oxidation catalyst to form an oxidation reaction mixture containing



cyclohexanone, by-product cyclohexane and unreacted benzene;  
separating from said oxidation reaction mixture product cyclohexanone, and an organic phase containing by-product cyclohexane and unreacted benzene;  
the improvement comprising introducing said organic phase into a hydrogenation zone wherein by-product cyclohexane contained in said organic phase is dehydrogenated to benzene, and recycled to said hydrogenation zone.

4,339,605

# PROCESS FOR THE THERMAL DECOMPOSITION OF PHENOL PITCH

Ferdinando Ligorati, Usmate, and Emanuele Sartorio, Messina, both of Italy, assignors to Euteco Impianti S.p.A., Milan, Italy  
Filed Feb. 8, 1980, Ser. No. 119,720  
Int. Cl.<sup>3</sup> C07C 45/51

U.S. Cl. 568—383

5 Claims

1. A continuous process for treating the phenol pitch obtained as a bottoms fraction in the distillation of raw phenol deriving from the acid hydrolysis of cumene hydroperoxide, to recover therefrom desired products consisting of phenol, alpha-methylstyrene, cumene and acetone, which comprises introducing said phenol pitch, preheated to a temperature of from 180° C. to 280° C., and steam into a reactor in a weight ratio between steam and phenol pitch of from 0.01:1 to 1:1, withdrawing from the top of said reactor a vapor phase comprising said desired products, withdrawing from the bottom of said reactor a liquid phase consisting essentially of compounds with a higher boiling point than said desired products, and operating in the reactor at a pressure of from 4 to 12 Kg/cm<sup>2</sup>, at a temperature of from 320° to 400° C., as measured in said liquid phase, and with an average residence time of the phenol pitch in the reactor of from 0.5 to 10 hours.

4,339,606

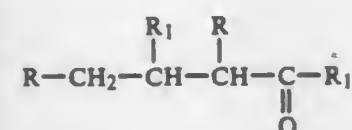
# CONVERSION OF KETONES OVER METAL-CONTAINING ZEOLITE CATALYSTS

Tracy J. Huang, and Werner O. Haag, both of Lawrenceville, N.J., assignors to Mobil Oil Corporation, New York, N.Y.  
Filed Feb. 6, 1981, Ser. No. 232,074  
Int. Cl.<sup>3</sup> C07C 45/45

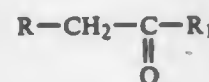
U.S. Cl. 568—396

15 Claims

1. A process for preparing a saturated dimeric ketone of the formula



wherein R is hydrogen or a C<sub>1</sub>-C<sub>5</sub> group and R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group; R and R<sub>1</sub> being the same or different, comprising contacting a hydrogen and a ketone of the formula



wherein R and R<sub>1</sub> are as hereinbefore defined, with a crystalline zeolite having a silica to alumina ratio of at least 12 and a Constraint Index of from 1 to 12 and containing a Group VIII metal incorporated by exchange, impregnation or physical admixture, the process being carried out at from about 100° C. to about 300° C., at a pressure of from 0 to about 2000 psig and a weight hourly space velocity of from about 0.2 to about 20.

4,339,607

# PROCESS FOR PREPARING ANISALDEHYDE

Shigeru Torii, Shoji Nakane, both of Okayama; Toshifumi Shirakawa, Koshigaya, and Mitsuo Akada, Tokushima, all of Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Osaka, Japan

Filed Jul. 21, 1980, Ser. No. 170,781

Claims priority, application Japan, Jul. 30, 1979, 54/97481

Int. Cl.<sup>3</sup> C07C 45/28

U.S. Cl. 568—426

12 Claims

1. A process for preparing anisaldehyde characterized by performing at least once the steps of (a) electrolyzing cerium (III) nitrate or ammonium cerium (III) nitrate with use of a cathode chamber having contained therein nitrate ion-containing water and/or a nitrate ion-containing solution comprising a lower alcohol containing the cerium salt to obtain water containing cerium (IV) nitrate or ammonium cerium (IV) nitrate and/or a solution comprising a lower alcohol containing the cerium (IV) salt, and (b) oxidizing, at a temperature of about -10° to about 60° C., p-methyl anisole to anisaldehyde with the cerium (IV) salt-containing solution comprising a lower alcohol with or without the water contained therein, or with the cerium (IV) salt-containing water having a lower alcohol admixed therewith, the amount of said lower alcohol present in the cerium (IV) salt-containing solution, or in the cerium (IV) salt-containing water having a lower alcohol admixed therewith, being at least 20% by weight of the total amount of solvent.

4,339,608

# PROCESS FOR SELECTIVE FORMATION OF C<sub>4</sub> COMPOUNDS AND TERTIARY ORGANO GROUP VA COMPOUND-CONTAINING CATALYST SYSTEM USED THEREIN

Wayne R. Pretzer; Thaddeus P. Kobylinski, and John E. Bozik, all of Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

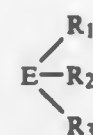
Continuation-in-part of Ser. No. 42,330, May 25, 1979, which is a continuation-in-part of Ser. No. 957,130, Nov. 2, 1978, and Ser. No. 936,717, Aug. 25, 1978. This application Dec. 11, 1980, Ser. No. 215,354

Int. Cl.<sup>3</sup> C07C 27/22, 45/50

U.S. Cl. 568—487

26 Claims

1. A process for selectively producing n-butanol and n-butanol, which comprises reacting methanol, hydrogen and carbon monoxide in the presence of a catalyst system which consists essentially of (a) a cobalt entity selected from the group consisting of a cobalt carbonyl, a hydrido cobalt carbonyl and a cobalt-containing material convertible to a cobalt carbonyl or a hydrido cobalt carbonyl, (b) an iodine promoter and (c) a tertiary organo compound defined by the formula:



wherein E is a member selected from the group consisting of trivalent arsenic and trivalent antimony and R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub>, the same or different, are selected from the group consisting of aryl radicals having from six to 20 carbon atoms and halogen substituted derivatives thereof, and aralkyl and alkaryl radicals having from six to 40 carbon atoms, wherein the molar ratio of the cobalt entity to the arsenic or antimony entity is in the range of about 10:1 to about 1:5, the molar ratio of iodine to cobalt is in the range of about 1:3 to about 1.5:1 when E is arsenic, the molar ratio of iodine to cobalt is in the range of about 1:5 to about 2:1 when E is antimony, subjecting the contents of said reaction zone to an elevated temperature of about 180° C. to about 225° C. and an elevated pressure for a time sufficient to obtain n-butanol and n-butanol.

4,339,609

# PROCESS FOR SELECTIVE FORMATION OF C<sub>4</sub> COMPOUNDS AND BIPHOSPHINE DISULFIDE-CONTAINING CATALYST SYSTEM USED THEREIN

Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

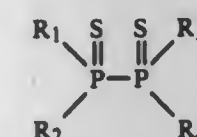
Filed Dec. 11, 1980, Ser. No. 215,554

Int. Cl.<sup>3</sup> C07C 27/22, 45/50

U.S. Cl. 568—487

16 Claims

1. A process for selectively producing n-butanol and n-butanol, which comprises reacting methanol, hydrogen and carbon monoxide in the presence of a cobalt catalyst selected from the group consisting of (a) a cobalt carbonyl, (b) a hydrido cobalt carbonyl and (c) a cobalt-containing material convertible to a cobalt carbonyl or a hydrido cobalt carbonyl, an iodine promoter and a biposphine disulfide defined by the following formula:



wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub>, the same or different, are selected from the group consisting of saturated or unsaturated, straight or branched chain alkyl radicals having from one to 24 carbon atoms, cycloalkyl radicals having from three to 40 carbon atoms, aryl radicals having from six to 20 carbon atoms, aralkyl and alkaryl radicals having from six to 40 carbon atoms and halogen substituted derivatives thereof, under elevated temperature and pressure conditions for a time sufficient to convert said methanol to n-butanol and n-butanol.

4,339,610

# PROCESS FOR SELECTIVE FORMATION OF C<sub>4</sub> COMPOUNDS AND THIOL-CONTAINING CATALYST SYSTEM USED THEREIN

Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 11, 1980, Ser. No. 215,555

Int. Cl.<sup>3</sup> C07C 27/22, 45/50

U.S. Cl. 568—487

18 Claims

1. A process for selectively producing n-butanol and n-butanol, which comprises reacting methanol, hydrogen and carbon monoxide in the presence of a cobalt catalyst selected from the group consisting of (a) a cobalt carbonyl, (b) a hydrido cobalt carbonyl and (c) a cobalt-containing material convertible to a cobalt carbonyl or a hydrido cobalt carbonyl, an iodine promoter and a thiol defined by the following formula:

RSH

wherein R is selected from the group consisting of saturated or unsaturated, straight or branched chain alkyl radicals having from one to 24 carbon atoms, cycloalkyl radicals having from three to 40 carbon atoms, aryl radicals having from six to 20 carbon atoms, aralkyl and alkaryl radicals having from six to 40 carbon atoms and halogen substituted derivatives thereof, under elevated temperature and pressure conditions for a time sufficient to convert said methanol to n-butanol and n-butanol.

4,339,611

# PROCESS FOR SELECTIVE FORMATION OF C<sub>4</sub> COMPOUNDS AND ORGANIC SULFIDE-CONTAINING CATALYST SYSTEM USED THEREIN

Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 11, 1980, Ser. No. 215,556

Int. Cl.<sup>3</sup> C07C 27/22, 45/50

U.S. Cl. 568—487

16 Claims

1. A process for selectively producing n-butanol and n-butanol, which comprises reacting methanol, hydrogen and carbon monoxide in the presence of a cobalt catalyst selected from the group consisting of (a) a cobalt carbonyl, (b) a hydrido cobalt carbonyl and (c) a cobalt-containing material convertible to a cobalt carbonyl or a hydrido cobalt carbonyl, an iodine promoter and an organic sulfide having the formula:

R<sub>1</sub>-S-R<sub>2</sub>

wherein R<sub>1</sub> and R<sub>2</sub> are either the same or different members selected from the group consisting of saturated or unsaturated, straight or branched chain alkyl radicals having from one to 24 carbon atoms, cycloalkyl radicals having from three to 40 carbon atoms, aryl radicals having from six to 20 carbon atoms, aralkyl and alkaryl radicals having from six to 40 carbon atoms and halogen substituted derivatives thereof, under elevated temperature and pressure conditions for a time sufficient to convert said methanol to n-butanol and n-butanol.

4,339,612

# PREPARATION OF 3,3-DIMETHYL-1-PHENOXY-BUTAN-2-OLS AS FUNGICIDE INTERMEDIATES

Eckart Kranz, Wuppertal, and Peter Slegle, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 13, 1981, Ser. No. 234,529

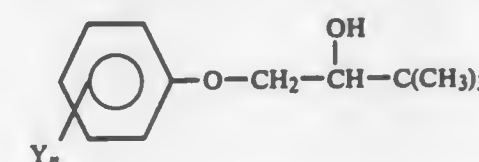
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1980, 3008477

Int. Cl.<sup>3</sup> C07C 43/205

U.S. Cl. 568—649

2 Claims

1. A 3,3-dimethyl-1-phenoxy-butan-2-ol of the formula



in which

Y is a fluorine, chlorine, bromine or iodine atom, a phenyl or phenoxy radical which is optionally substituted by halogen, a nitro or cyano radical, an alkyl, alkoxy or alkoxycarbonyl radical with in each case 1 to 4 carbon atoms in the alkyl moiety, or a cycloalkyl radical with 5 or 6 carbon atoms, and

n is 0, 1, 2 or 3.

4,339,613

# SUPERACID CATALYZED PREPARATION OF RESORCINOL FROM META-DIISOPROPYLBENZENE

George A. Olah, Beverly Hills, Calif., assignor to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Mar. 14, 1980, Ser. No. 130,401

Int. Cl.<sup>3</sup> C07C 37/08, 39/08

U.S. Cl. 568—768

3 Claims

1. The process of producing resorcinol, selectively in high yield, which comprises reacting meta-diisopropylbenzene dihydroperoxide in the presence of a fluoroalkanesulfonic acid



superacid cleavage rearrangement catalyst at a temperature sufficient to produce resorcinol selectively with high yields.

4,339,614

**SUPERACID CATALYZED PREPARATION OF RESORCINOL FROM META-ISOPROPYLPHENOL**  
George A. Olah, Beverly Hills, Calif., assignor to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France  
Filed Mar. 14, 1980, Ser. No. 130,402  
Int. Cl.<sup>3</sup> C07C 37/08, 39/08

U.S. Cl. 568—768

4 Claims

1. The process of producing resorcinol, selectively in high yield, which comprises reacting an ether or ester derivative of meta-isopropylphenol hydroperoxide in which the ether or ester group is an easily cleavable phenol protecting group with a superacid cleavage rearrangement catalyst comprising a perfluoroalkanesulfonic acid at a temperature sufficient to produce resorcinol with selectively with high yields.

4,339,615

**PROCESS FOR PRODUCING RESORCINOL**  
Ichiro Imai, Funabashi; Fujihisa Matsunaga; Hiroaki Nakagawa, both of Iwakuni; Masayasu Isibasi, Waki, and Tohru Taguchi, Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan  
Filed Nov. 10, 1980, Ser. No. 205,182

Claims priority, application Japan, Nov. 12, 1979, 54/145360  
Int. Cl.<sup>3</sup> C07C 37/08, 39/08

U.S. Cl. 568—768

9 Claims

1. In a process for producing resorcinol, which comprises cleaving m-diisopropylbenzene dihydroperoxide in the presence of a water-soluble acid catalyst in a mixed solvent consisting of toluene and acetone, treating the resulting acid cleavage product containing resorcinol with an aqueous solution of a neutral salt selected from the group consisting of sodium sulfate, potassium sulfate, sodium chloride and sodium phosphate under acidic conditions, separating the solvent layer containing resorcinol from the aqueous layer, and recovering resorcinol from the separated solvent layer; the improvement wherein

- (i) the acid cleavage is carried out while maintaining the weight ratio of toluene to acetone at less than 0.6, and at a time after formation of the acid cleavage product but before the treatment of the cleavage product with the aqueous solution of the neutral salt, the amount of toluene in the mixed solvent is adjusted so that the weight ratio of toluene to acetone in the product is from 0.6 to 1.1, and
- (ii) the acidic conditions are selected such that the pH of the solvent layer containing resorcinol is 2.5 to 4.

4,339,616

**PROCESS FOR THE MANUFACTURE OF 1,2-DIOLS HAVING AT LEAST 4 CARBON ATOMS**

Horst Rutzen, Langenfeld, and Wolfgang Rupilius, Düsseldorf-Urdenbach, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen and Deutsche Gold-und Silberscheide Anstalt Vormals Roessler, Frankfurt am Main, both of, Fed. Rep. of Germany

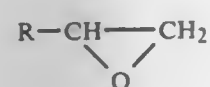
Filed Sep. 15, 1980, Ser. No. 187,530  
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938154

U.S. Cl. 568—867

Int. Cl.<sup>3</sup> C07C 29/10

12 Claims

11. In the process for the preparation of higher 1,2-diols and/or higher 1,2-polyols which comprises hydrolyzing the corresponding epoxides of the formula:



in which R is selected from the group consisting of alkyl hav-

ing 2 to 28 carbon atoms, haloalkyl having 2 to 28 carbon atoms, alkoxyalkyl having 2 to 28 carbon atoms, epoxyalkyl having 3 to 28 carbon atoms, haloepoxyalkyl having 3 to 28 carbon atoms, alkoxyepoxyalkyl having from 4 to 28 carbon atoms, and mixtures thereof, with the proviso that the total number of carbon atoms in the epoxide is from 4 to 30 carbon atoms, with a solution of a catalyst, and recovering said diols and/or polyols; the improvement consisting of employing from 0.5 to 10 mol % based on the epoxide employed of a catalyst system selected from the group consisting of:

- (1) salts of amines selected from the group consisting of monoalkyl amines having from 1 to 18 carbon atoms, dialkylamines having from 1 to 18 carbon atoms in each alkyl, trialkylamines having from 1 to 18 carbon atoms in each alkyl, alkylol-dialkylamines having from 1 to 18 carbon atoms in each alkyl and alkylol, phenylalkylamines having from 1 to 8 carbon atoms in the alkyl, cyclodiazalkanes having from 4 to 8 carbon atoms, and pyridinyl-dialkylamine having from 1 to 8 carbon atoms in the alkyl with acids selected from the group consisting of:

- (a) an organic acid selected from the group consisting of alkanolic acids having from 1 to 26 carbon atoms, alkanedioic acids having from 2 to 26 carbon atoms, alkanetrioic acids and hydroxyalkanetrioic acids having from 4 to 26 carbon atoms, hydroxyalkanoic acids having from 2 to 26 carbon atoms, chloroalkanoic acids having from 2 to 26 carbon atoms, dichloroalkanoic acids having from 2 to 26 carbon atoms, trichloroalkanoic acids having from 2 to 26 carbon atoms, benzoic acid, phenyl alkanolic acids having from 8 to 24 carbon atoms, phenylalkenoic acids having from 9 to 24 carbon atoms, benzene dicarboxylic acids, pyromucic acid, and tetrahydrofuran carboxylic acids, and
- (b) strong mineral acids,

- (2) quaternary ammonium salts selected from the group consisting of tetraalkyl ammonium salts and phenylalkyl trialkyl ammonium salts with the above acids, and

- (3) mixtures thereof, wherein the molar ratio of amine or ammonium to acid is from 1:1.1 to 1.8, as said catalyst.

4,339,617

**HYDRATION OF OLEFINS IN THE PRESENCE OF A CORROSION INHIBITOR**

Tamotsu Imai, Mount Prospect, and Robert J. Schmidt, Hoffman Estates, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 135,743, Mar. 31, 1980, abandoned. This application Mar. 9, 1981, Ser. No. 241,868  
Int. Cl.<sup>3</sup> C07C 29/04

U.S. Cl. 568—899

15 Claims

1. A process for the production of an alcohol which comprises hydrating an olefinic hydrocarbon at hydration conditions in the presence of an acidic compound selected from the group consisting of sulfuric acid, nitric acid, benzene sulfonic acid and trifluoromethane sulfonic acid and in the added presence of a corrosion inhibitor selected from the group consisting of nitrate, halide, carbonate and sulfate salts of magnesium, barium, beryllium and radium, and recovering the resultant alcohol.

4,339,618

**PROCESS FOR THE PRODUCTION OF SUBSTITUTED NITROARYL COMPOUNDS**

Manfred Rosner, Muttens, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Jun. 17, 1980, Ser. No. 160,254

Claims priority, application Switzerland, Jun. 21, 1979, 5806/79; Sep. 4, 1979, 7980/79; Apr. 9, 1980, 2716/80; Apr. 9, 1980, 2717/80

Int. Cl.<sup>3</sup> C07C 76/02; C07B 11/00; C07C 79/12, 79/10, 79/46  
U.S. Cl. 568—937

10 Claims

1. A process for the production of mono-nitro-substituted aryl compounds which are otherwise at least monosubstituted with an electronegative substituent, by mono-nitration of aryl compounds which are at least so monosubstituted, which process comprises carrying out the nitration by adding nitric acid to a two-phase system which consists of an inorganic phase consisting of sulfuric acid having a concentration of at least 80% and an organic phase consisting of an inert organic liquid in which the nitration product is almost insoluble in the presence of sulfuric acid, at a temperature in the range from -30° to 100° C., with nitric acid or a mixture of nitric acid and sulfuric acid as nitrating agent.

4,339,619

**SOLVENT DEWAXING WAXY HYDROCARBON OILS USING DEWAXING AID**

Takashi Onodera, Urawa; Kikuji Komine, Tokorozawa; Fumio Ohashi, and Tsutomu Naito, both of Ohi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan  
Continuation of Ser. No. 35,474, May 3, 1979, abandoned, which is a division of Ser. No. 926,812, Jul. 21, 1978. This application Aug. 21, 1980, Ser. No. 180,106

Claims priority, application Japan, Apr. 18, 1977, 52-44261  
Int. Cl.<sup>3</sup> C07C 25/18

U.S. Cl. 570—183

1 Claim

1. An improved chlorinated wax/naphthalene condensation product dewaxing aid wherein the improvement comprises an average molecular weight of between about 20,000 to 500,000 and a molecular weight distribution exceeding the range of from 10,000 to 1,000,000, but falling within the range of between about 2,000 to 3,000,000.

4,339,620

**COPPER-CATALYZED FLUID-BED ETHYLENE OXYHYDROCHLORINATION PROCESS**

Joseph A. Cowfer, Medina; Jamal S. Eden, Akron, and Angelo J. Magistro, Brecksville, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 91,289, Nov. 5, 1979, abandoned. This application Mar. 2, 1981, Ser. No. 239,806

Int. Cl.<sup>3</sup> C07C 17/15

U.S. Cl. 570—243

4 Claims

1. In the production of ethylene dichloride by fluid bed catalytic oxyhydrochlorination of ethylene by a process which includes the steps of:

- (1) introducing only gaseous reactants consisting of ethylene, hydrogen chloride gas and an oxygen-containing gas in a molar ratio of 1.0 to 1.2 moles of ethylene and 0.55 to 0.9 moles of oxygen for each 2 moles of hydrogen chloride into a bed of solid particles contained in a reaction zone at a flow rate such as to fluidize said solid particles and form a fluidized catalyst bed, said catalyst bed consisting of solid particles of a fluidizable alumina support having a surface area in the range of 60 to 150 square meters per gram, on which have been deposited outside said reaction zone catalytic salt consisting of cupric chloride in an amount such that the particles making up the bed contain 2 to about 10 weight percent copper,
- (2) maintaining said gaseous reactants in said reaction zone in contact with said fluidized solid particles under conditions such there is complete lack of liquid in said reaction zone and vapor phase reaction occurs to produce ethylene

chloride, said reaction conditions including a temperature in the range of 190° to 250° C. and a contact time for any given quantity of reactants, of 10 to 40 seconds, and

(3) recovering ethylene dichloride from the gaseous effluent from said reaction zone, the improvement for substantially preventing particles in said catalyst bed from sticking to one another during said process and thereby adversely affecting the ability to maintain the catalyst bed in the fluidized condition, which improvement consists in providing in the reaction zone to the fluidized bed of step (1), bare solid particles of said fluidizable alumina support on which no catalyst has been deposited and in situ in step (2) transferring to and depositing on said bare support particles a portion of the cupric chloride catalyst already deposited outside the reaction zone on other fluidizable support particles.

4,339,621

**PREPARATION OF O-BENZYL TOLUENE**

John O. Morley, Rochdale, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 24, 1981, Ser. No. 237,774

Claims priority, application United Kingdom, Mar. 27, 1980, 8010243

Int. Cl.<sup>3</sup> C07C 2/02, 6/12, 13/28, 15/16

U.S. Cl. 585—422

10 Claims

1. A process for the preparation of a diphenylmethane by reaction of a benzene with an  $\alpha$ -chloromethylbenzene in the presence of sulphuric acid and a cationic surfactant or a non-ionic surfactant which is susceptible to protonation under strong acid conditions.

4,339,622

**METHOD FOR PREPARING ETHYL BENZENE**

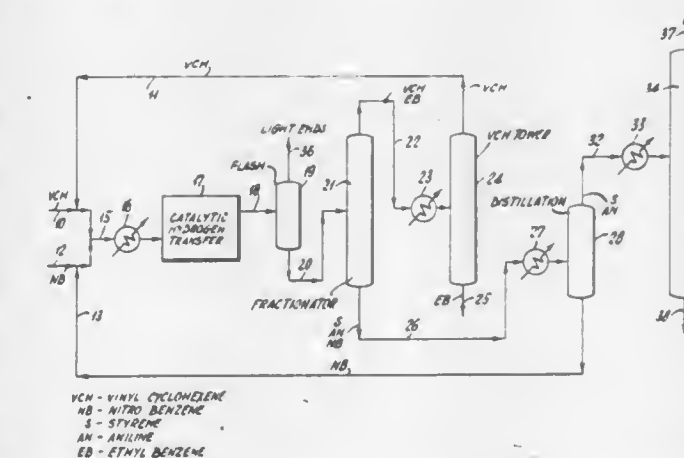
John A. Patterson, Fishkill, N.Y.; Wheeler C. Crawford, Houston, and James R. Wilson, Missouri City, both of Tex., assignors to Texaco, Inc., White Plains, N.Y.

Continuation of Ser. No. 952,763, Oct. 19, 1978, Pat. No. 4,163,761. This application Jan. 5, 1979, Ser. No. 1,244. The portion of the term of this patent subsequent to Aug. 7, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> C07C 5/52

U.S. Cl. 585—433

6 Claims





4,339,623

**MONOMER/SOLVENT PURIFICATION**

Peter J. Morgan, West Wellow, and Kenneth I. Wyllie, Milford on Sea, both of England, assignors to The International Synthetic Rubber Company, Limited, Southampton, England  
Filed Jan. 26, 1981, Ser. No. 228,611

Claims priority, application United Kingdom, Jan. 28, 1980, 8002776

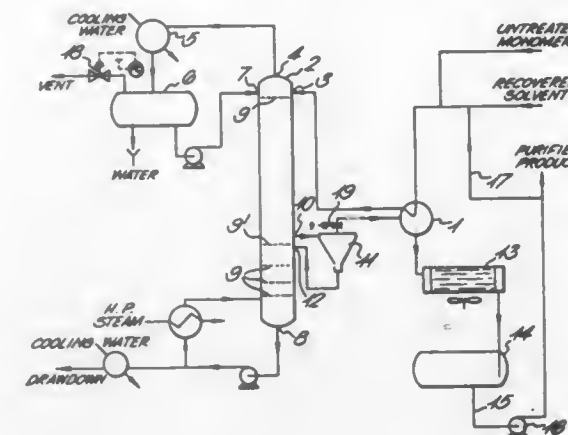
Int. Cl.<sup>3</sup> B01D 3/36

U.S. Cl. 585—867

12 Claims

1. A Purification process for monomers, inhibitors and solvents used in the production of polymers by solution polymerisation consisting essentially of employing a single distillation column, supplying impure monomer and solvent to said distillation column which rejects light and heavy impurities from

the top and bottom respectively and which dries the monomer-solvent mixture by azeotropic distillation, and withdrawing a



pure, inhibitor-free monomer solvent vapour as a side stream from a point intermediate the top and bottom of the column.

## ELECTRICAL

4,339,624

**ELECTRODE CLAMPING DEVICE FOR ELECTROREMELTING PLANTS**

Helmut Gröf, Bruchkobel; Uwe Reimpell, and Anton Wamser, both of Hanau am Main, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

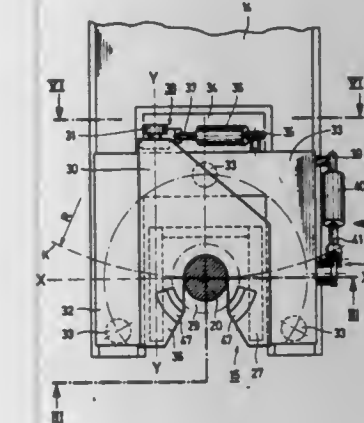
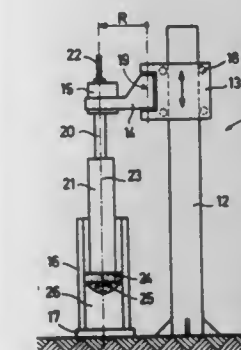
Filed Feb. 11, 1980, Ser. No. 120,236

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905752; Dec. 15, 1979, 2950531

Int. Cl.<sup>3</sup> H05B 7/10

U.S. Cl. 373—52

21 Claims



1. In an electroslag remelting plant having a mold, an electrode carrying device and an electrode clamping device having an electrode holding member for holding an electrode and at least one adjustment means for adjusting the angular position of the electrode holding member and thereby the held electrode, the improvement wherein the adjustment means comprises means defining solely two discrete pivot axes for the electrode holding member which are aligned substantially at right angles to one another and independently controllable adjustment drive means for effecting pivotal movement of the electrode holding member about the two axes.

4,339,625

**ELECTRIC INDUCTION FURNACE WITH ELECTRICALLY DISCONTINUED COOLING SCREEN**

Jean Delassus, Montmorency; Bertrand de Lamberterie, and Jacques Michelet, both of Metz, all of France, assignors to Institut de Recherches de la Siderurgie Francaise (IRSID), Saint-Germain-en Laye, France

Filed May 19, 1980, Ser. No. 150,992

Claims priority, application France, May 23, 1979, 79 13428

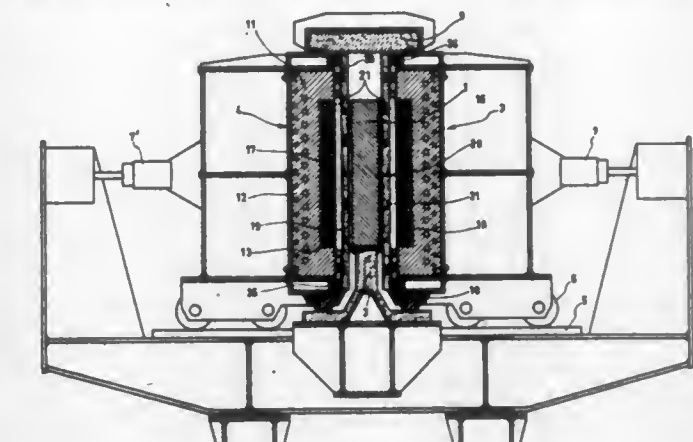
Int. Cl.<sup>3</sup> H05B 6/42

U.S. Cl. 373—158

7 Claims

1. An electric furnace for induction heating of metallic products comprising a planar inductor incorporated in a pair of transversely spaced walls and comprising in each wall a plurality of substantially parallel conductors alternately connected at opposite ends in order to produce a sliding magnetic field, said spaced walls defining between themselves a space into which the product to be heated is to be inserted; a thin layer of refractory material of about three centimeter thickness at that

side of each wall which borders said space; and an independent cooling screen between each wall and the respective layer of refractory material, said cooling screen being constituted by a



plurality of parallel adjacent non-magnetic metal tubes extending substantially normal to said conductors and being out of contact with each other to define between themselves electrically insulating spaces.

4,339,626

**SOLAR POND POWER PLANT**

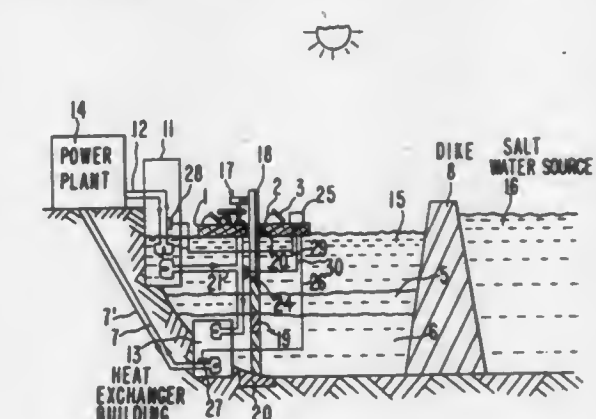
Gerald M. Fisher, Palo Alto, and Henri J. R. Maget, Los Altos, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Apr. 16, 1981, Ser. No. 254,837

Int. Cl.<sup>3</sup> H01L 31/04; F03G 7/02

U.S. Cl. 136—248

9 Claims

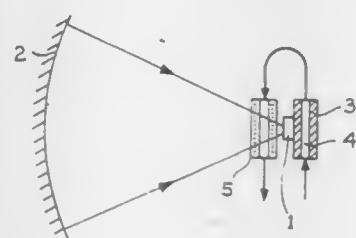


1. A power station comprising a salt gradient pond, a heat engine, and a plurality of III-V photovoltaic concentrator solar cells;  
means for utilizing the thermal energy available from the lower zone of said salt gradient pond to power said heat engine;  
means for concentrating solar insolation upon said plurality of III-V photovoltaic concentrator solar cells;



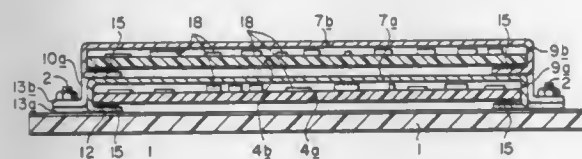
means for cooling said plurality of solar cells and for combining the heat derived from said cells by said cooling means with the heat from said lower zone of said pond for powering said heat engine, said means for cooling said solar cells being a closed loop fluid path;  
means for adjusting the flow rate of the solar cell cooling fluid in said closed loop fluid path to optimize power station operating characteristics.

**4,339,627**  
**PROCESS FOR COOLING A SOLAR CELL AND A COMBINED PHOTOVOLTAIC AND PHOTOTHERMIC SOLAR DEVICE**  
Jacques Arnould, Paris, France, assignor to Le Silicium Semi-conducteur SSC, Paris, France  
Filed Jan. 28, 1981, Ser. No. 229,263  
Claims priority, application France, Feb. 1, 1980, 80 02254  
Int. Cl.<sup>3</sup> H01L 31/04; F24J 3/02  
U.S. Cl. 136—259



3. In a combined photothermic and photovoltaic concentrated-light solar device comprising a photovoltaic cell having an integral radiator in which there flows a cooling fluid, there is further provided:  
an assembly disposed in the path of the incident beam, means for causing the fluid leaving the radiator to flow in said assembly,  
said assembly absorbing, in cooperation with the fluid, at least a part of the incident radiation situated outside the spectral response band of the photovoltaic cell and transmitting the heat collected to the cooling fluid.

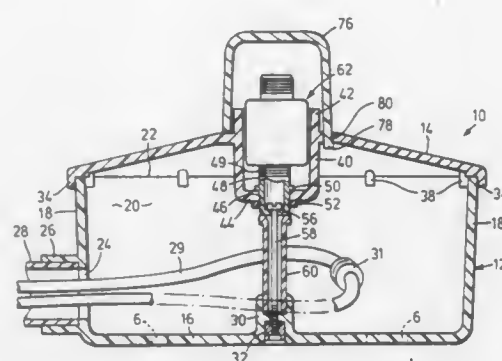
**4,339,628**  
**RF SHIELDING SUPPORT FOR STACKED ELECTRICAL CIRCUIT BOARDS**  
Gabriel Marcantonio, and David M. Macklem, both of Ottawa, Canada, assignors to Northern Telecom Limited, Montreal, Canada  
Filed Aug. 20, 1980, Ser. No. 179,799  
Int. Cl.<sup>3</sup> H05K 1/14  
U.S. Cl. 174—35 R



1. A combined supporting arrangement and electromagnetic interference shield for a plurality of circuit boards comprising:  
a baseboard, first fixture means formed on said baseboard and a plurality of circuit boards stacked on said baseboard, each circuit board shielded by a respective shield of conductive sheet material, each shield having flanges depending from opposed edge parts thereof, the flanges having turned-under parts and turned-out parts, the turned-under parts of any one of the shields embracing opposed edge parts of the circuit board shielded thereby and spacing that circuit board from an immediately underlying board, and the turned-out parts of any one of the shields formed

with second fixture means engaging said first fixture means thereby clamping the shield to the baseboard.

**4,339,629**  
**JUNCTION BOX FOR HOUSING CABLE CONNECTIONS**  
Leonard D. Stanmore, 20 Gold Finch Ct., Bramalea, Ontario, Canada  
Filed Jan. 22, 1980, Ser. No. 114,249  
Claims priority, application Canada, Jan. 25, 1979, 320293  
Int. Cl.<sup>3</sup> H05K 5/00  
U.S. Cl. 174—50

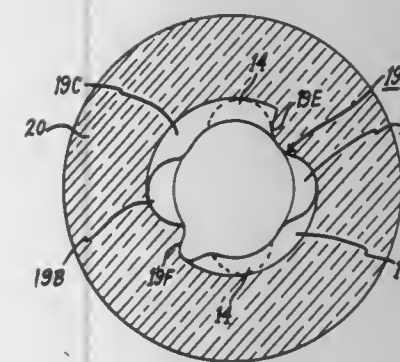
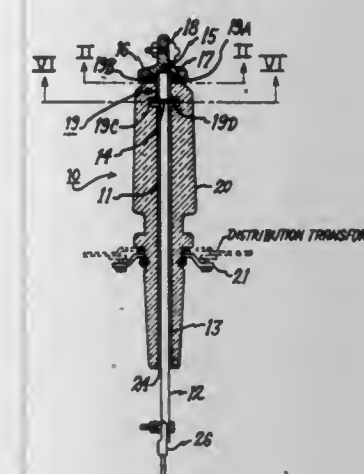


1. In a junction box including receptacle means for housing cable connections and having an opening thereinto; separable closure means for closing said opening; and means for locking said closure means to said receptacle means against separation, with said closure means closing said opening; said locking means including threaded post means for connecting said closure means to said receptacle means, and including separable locking terminator means presented exteriorly to said box selectively operable for axial threadable engagement and disengagement with said threaded post means, whereby said locking terminator means can be anchored against dislodgement to said threaded post means during said threaded engagement therewith so as to shield said threaded post means against unauthorized access and thereby render said closure means inseparable from said receptacle means.

**4,339,630**  
**BUSHING DESIGN WITH CRIMPED ADAPTER FOR RETAINING CONDUCTOR**  
Edgar E. McQuay, Conover, N.C., assignor to General Electric Company, Philadelphia, Pa.  
Filed Jun. 8, 1981, Ser. No. 271,203  
Int. Cl.<sup>3</sup> H01B 17/26  
U.S. Cl. 174—152 R

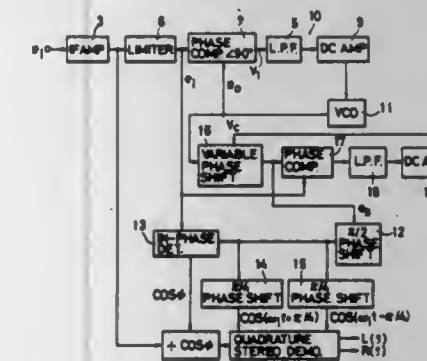
1. A high voltage bushing comprising a tubular insulator formed of an insulating material and having a central passageway extending through the length of the insulator, said insulator having an upper portion with a cavity which is formed in part by said passageway, said cavity having a lower retaining portion and an upper entrance portion, said entrance portion being constituted by the upper region of said passageway and having a first and a second entrance groove extending longitudinally along said passageway, said retaining portion comprising two locking grooves extending partially around said passageway and communicating with said first and second entrance grooves, said high voltage bushing further comprising a conductive rod within said passageway having a length greater than the length of said insulator, said conductive rod having notches at its laterally opposed sides and at a predetermined location along its length, means at one end of said conductive rod adapted to couple the rod to electrical apparatus, a cap at the other end of said conductive rod adapted to connect the rod to a high voltage power source, means at the other end of said rod for coupling said rod to said cap, the bushing further comprising:  
retaining means effective when operable to hold said rod

against axial, radial, and angular movements within said passageway, said retaining means comprising:  
a generally disc-shaped metallic adapter having a central opening receiving said rod and edge portions adjacent said central opening that are located in said notches in the rod, said adapter being crimped about said rod so that said edge portions tightly grip the rod at the notches, said opening in the adapter before crimping being sufficiently



large to allow said adapter to be slipped over one end of the rod into a position of alignment with said notches and thereafter crimped;  
said adapter having projecting ears on its outer periphery which can be slid within said entrance grooves and into said locking grooves, said ears being located within said locking grooves in positions angularly displaced from said entrance grooves when said retaining means is operable.

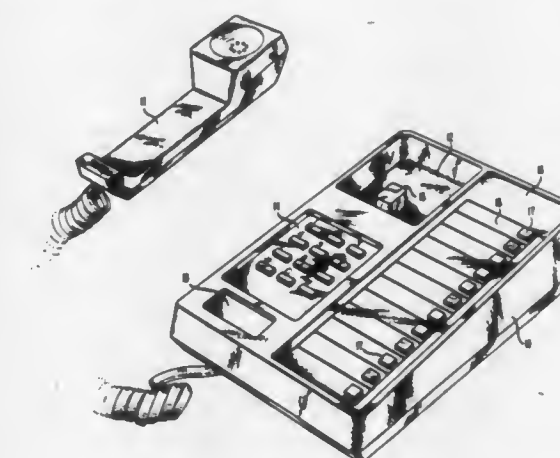
**4,339,631**  
**PHASE CONTROL DEVICE**  
Akira Nishioka, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan  
Filed Feb. 21, 1980, Ser. No. 123,312  
Claims priority, application Japan, Dec. 1, 1978, 53-149481  
Int. Cl.<sup>3</sup> H04H 5/00  
U.S. Cl. 179—1 GS



1. A received signal phase control circuit comprising: a voltage-controlled oscillator whose output frequency varies in

accordance with a control signal coupled to an input of said voltage-controlled oscillator; a first phase comparator for comparing the phase of an output of said voltage-controlled oscillator with the phase of an input signal to said phase comparator, said control signal being produced in accordance with an output of said phase comparator and having a phase determined by the phase difference between said output of said voltage controlled oscillator and said input signal; a phase control device for controlling the phase of an output of said voltage-controlled oscillator comprising: a variable phase shifter for varying the phase of an output of said voltage-controlled oscillator in accordance with a control voltage coupled to an input of said phase shifter; and a second phase comparator for comparing the phase of an output of said variable phase shifter with the phase of said input signal to said first phase comparator, said control voltage being produced in accordance with an output of said second phase comparator and having a phase determined by the phase difference between said output of said phase shifter and said input signal to said first phase comparator, a signal having a constant phase difference with respect to said input signal being provided at said output of said variable phase shifter.

**4,339,632**  
**BUTTON ILLUMINATION FOR REPERTORY DIALER WITH LOW BATTERY VOLTAGE INDICATION**  
Scott H. Early, and David M. Savidge, both of Indianapolis, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Nov. 26, 1980, Ser. No. 210,673  
Int. Cl.<sup>3</sup> H04M 1/274, 1/02  
U.S. Cl. 179—90 B



5 Claims

1. In a telephone set having a plurality of buttons, each button representing a plurality of digits precoded in a memory within the telephone set, a display circuit means comprising light-emitting elements, each element being associated with one of selected buttons within the plurality of buttons for identification of buttons representing a preferred plurality of digits recorded in memory, and each one of the selected buttons having associated therewith a light-emitting element of a distinctive color, the display circuit means further including both battery supply means for powering the display circuit means, and circuit-connecting means responsive to the operation of a switch for applying power from the battery supply means to the display circuit means, and the light-emitting elements being arranged to provide a low battery indication when the potential of the battery supply means goes below a predetermined level.

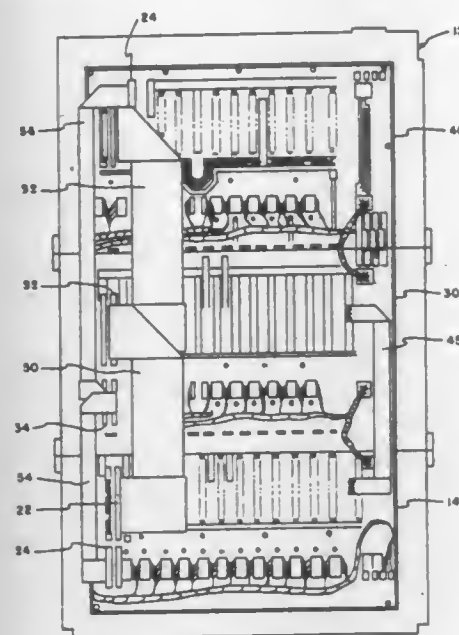


4,339,633

**MODULAR TELECOMMUNICATIONS SYSTEM**  
 Fahim Ahmed, Guelph, Canada, assignor to International Standard Electric Corporation, New York, N.Y.  
 Filed Oct. 6, 1980, Ser. No. 194,209  
 Int. Cl.<sup>3</sup> H04Q 5/18

U.S. Cl. 179—99 M

4 Claims



1. A modular time division telecommunications system comprising a plurality of terminals separated into groups, a group controller for each group and a central controller common to all groups, each controller including a data processor, memory and associated control circuits, each said controller including a physically short, time division data bus structure for intercommunicating between a controller, its memory and associated control circuits, each group controller having a group bus for transmitting control data between that group and the terminals in its group, the central controller having system bus structure for communicating in time division from between the central controller and the group controllers, with said central controller housed in a first modular housing, and a plurality of group controllers housed in another modular housing, and the interconnection from said first housing to said other housing comprises a multiple conductor cable including said system bus structure.

4,339,634

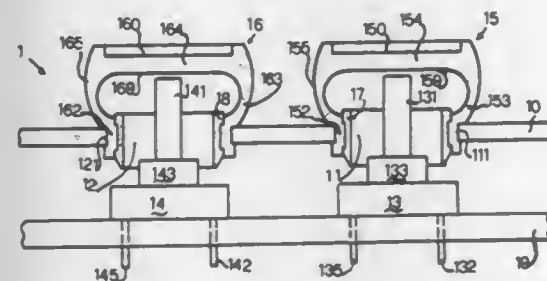
**KEYBOARD**

Eugen Weber, Hinwil, Switzerland, assignor to Obisphere Corporation Wilmington, Succursale de Collonge-Bellerive, Collonge-Bellerive, Switzerland  
 Filed Jan. 12, 1981, Ser. No. 224,167

Claims priority, application Switzerland, Feb. 7, 1980, 966/80  
 Int. Cl.<sup>3</sup> H01H 13/70

U.S. Cl. 200—5 A

9 Claims



1. A keyboard suitable for input of data or control signals into an electronic measuring or computing device; said keyboard comprising a keyboard panel, a plurality of pushbutton switch elements arranged under said keyboard panel, each of said switch elements having a means for manual actuation extending from said switch element through a substantially

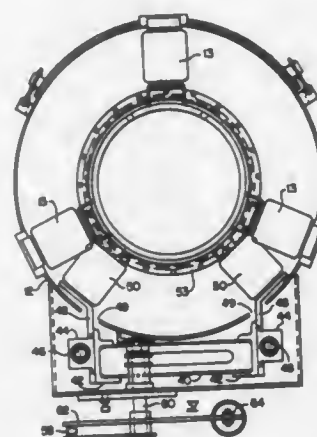
circular opening of said keyboard panel; each of said openings of said keyboard panel being provided with a sealingly effective insert member comprising a resiliently elastic hollow capsule projecting upwards from said keyboard panel, each capsule comprising a substantially cylindrical neck section at one capsule end, an adjacently arranged deforming section and a keying area section at another capsule end; said neck section of said capsule having an outer diameter fitting into said circular opening of said keyboard panel and said deforming section of said capsule comprising an elastic shape-restoring bulge portion having an outer diameter which is greater than said outer diameter of said neck section; and an essentially rigid and substantially hollow cylindrical element arranged within said neck section of each of said capsules for radially pressing said neck section against the inner surface of said circular opening of said keyboard panel.

4,339,635

**ISOLATED PHASE BUS DISCONNECT SWITCH WITH GROUNDED OPERATING MECHANISM**  
 Alexander Zwillich, Pittsburgh, Pa., and Jayant M. Patel, Symmes Township, Hamilton County, Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.  
 Filed Dec. 24, 1980, Ser. No. 219,716

Int. Cl.<sup>3</sup> H01H 31/32  
 U.S. Cl. 200—48 R

7 Claims



1. An isolated phase bus disconnect switch, comprising:  
 a hollow outer conductor at ground potential;  
 a fixed two-part inner conductor at high potential, insulatingly supported within said outer conductor and concentric therewith;  
 a movable inner conductor at high potential internal to said outer conductor, longitudinally movable between open and closed positions with respect to said fixed inner conductor, and cooperating with said fixed inner conductor to perform a switching function therewith;  
 movable support means external to said outer conductor for operating said movable conductor between open and closed positions;  
 insulating means extending through apertures in said outer conductor for connecting said movable conductor and said support means;  
 mechanical drive means external to said outer conductor for operating said movable inner conductor between open and closed positions; and  
 linkage means external to said outer conductor for connecting said drive means and said support means.

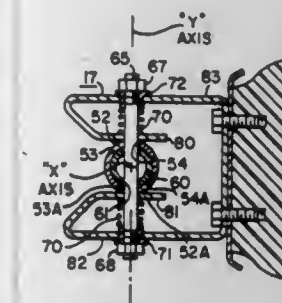
4,339,636

**DISCONNECTING SWITCH HAVING IMPROVED SWITCH-BLADE HINGING STRUCTURE**  
 Charles M. Cleaveland, N. Huntingdon, and Peter M. Kowalik, Trafford, both of Pa., assignors to Cleaveland/Price Enterprises, Inc., Trafford, Pa.  
 Filed Dec. 24, 1980, Ser. No. 219,883

Int. Cl.<sup>3</sup> H01H 31/00

U.S. Cl. 200—48 A

8 Claims



1. A disconnecting switch structure comprising a pair of spaced stationary first and second switch contact assemblies (13, 17), means defining an elongated pivotal conducting switch-blade (15) having a first end stationarily hinged adjacent the first spaced stationary switch contact assembly (17) for pivotal motion thereabout and having its other free end available for swinging pivotal motion into and out of contact engagement with the second spaced stationary switch contact assembly (13), said first end of the pivotal switch-blade (15) having a slotted hole (52) provided therein, including a switch blade-plug (60) having a hole (61) provided therein, inserted within the hinging end of the disconnecting switch-blade (15), means defining a hinge pin (65) located adjacent the first switch contact assembly (17) and passing through both the slotted hole (52) of the switch-blade and also through the hole (61) of said inserted switch blade-plug (60), operating means for causing pivotal swinging motion of the elongated switch-blade (15) about said hinge means (17), whereby during the initial opening motion of the disconnecting switch there first occurs rotative motion of the switch-blade (15) about the longitudinal "X" axis, with the switch-blade rotatively sliding upon the blade plug (60) and with the switch-blade being axially retained along the longitudinal "X" axis by the sides of the slotted holes (52) in the switch-blade bearing against the hinge pin (65), and during the final opening motion of the disconnecting switch the switch-blade (15), transverse blade-plug (60) and hinge pin (65) pivot on the transverse "Y" axis causing the outer free end of the disconnecting switch-blade (15) to separate from the second switch contact assembly (13) thereby providing an open-circuit, visible disconnecting gap therebetween.

4,339,637

**ELECTRICAL CONTAINER**

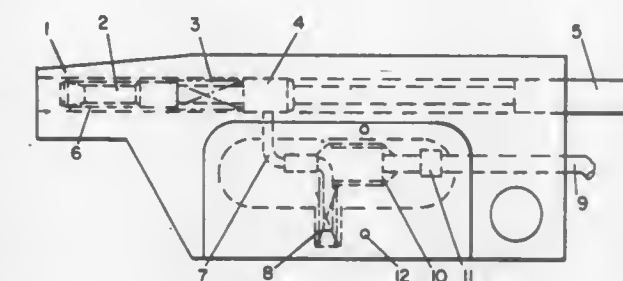
William H. Elliott, 134 Howard Rd., Rochester, N.Y. 14606  
 Continuation-in-part of Ser. No. 12,578, Feb. 15, 1979, abandoned. This application Jan. 23, 1981, Ser. No. 227,622  
 Int. Cl.<sup>3</sup> H01H 9/00; H01R 13/42

U.S. Cl. 200—51.09

7 Claims

1. An electrical container for completing an electric circuit comprising:  
 (a) an electrically insulating housing;  
 (b) an electrically conductive, collapsible gripper mechanism located inside said housing for fastening to an electrically conductive wire;  
 (c) a spring located inside said housing wherein said spring is attached to said gripper mechanism and is adapted to return said gripper mechanism inside said housing;  
 (d) an electrically conductive conductor bar located inside said housing wherein said conductor bar is attached to said

spring and is adapted to conduct an electric current from said electrically conductive wire;  
 (e) an electrically conductive contact rod in contact with said conductor bar only when said gripper mechanism is retracted within said housing;  
 (f) an electrically insulating pusher means wherein one end of said pusher means protrudes from said housing and wherein the other end of said pusher means is located inside said housing and is attached to said conductor bar, wherein upon



application of pressure to the end of said pusher means protruding from said housing said pusher means slidably moves said conductor bar out of contact with said contact rod, causes said spring to partially compress, and said gripper mechanism to protrude from said housing and to open, and upon release of pressure from said pusher means said gripper mechanism closes and retracts within said housing, said spring decompresses, and said conductor bar moves into contact with said contact rod; and  
 (g) an electric wire connected to said contact rod.

4,339,638

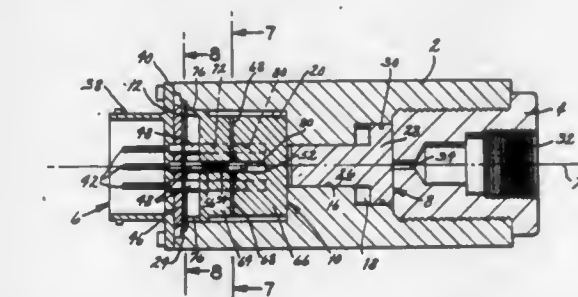
**ELECTRICAL SWITCH**

Daniel J. Lascelles, Deland, Fla., and Jack M. Walker, Meggen, Switzerland, assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Oct. 15, 1980, Ser. No. 197,199

Int. Cl.<sup>3</sup> H01H 39/00; F42C 19/06; H01H 1/00; H01R 4/10  
 U.S. Cl. 200—52 R

16 Claims



1. An electrical switch comprising: a body, a plurality of parallel pins mounted on the body, the pins being electrically conductive; a dielectric member mounted on the body and containing holes with which the pins align, the dielectric member and the pins being arranged such on the body that the relative positions of the dielectric member and the pins can be changed from a first position to a second position along the axis of the pins; and an electrically conductive contact plate mounted on the dielectric member and having apertures that align with the holes in the dielectric member, the apertures being configured to, in at least one of the positions, receive the pins while gripping the pins tightly along their edges, so as to change the condition of an electrical circuit to which the pins are connected.



4,339,639

## DRINK MIXER

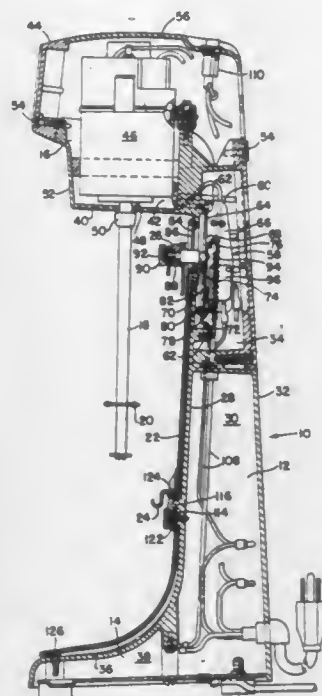
Bruno M. Valbona, Farmington, and William C. Pound, Burlington, both of Conn., assignors to Dynamics Corporation of America, Greenwich, Conn.

Filed Feb. 17, 1981, Ser. No. 234,898

Int. Cl.<sup>3</sup> H01H 3/00

U.S. Cl. 200—52 R

7 Claims



1. In combination with a drink mixer having an upright standard with a frontwall and spaced sidewalls and a motor housing containing an electric motor mounted upon said standard, a switch assembly for controlling said motor comprising a bracket mounted upon said standard, a flat slide plate mounted for sliding movement on said bracket, one terminal end surface of said slide plate operating as a switch control surface, said slide plate being movable on said bracket from a rest position to an activate position by an actuator connected thereto and extending through said standard frontwall, and switch means mounted upon said bracket and having switch operator means positioned to contact said slide plate switch control surface when the slide plate is in the rest position, said slide plate moving out of contact with said switch operator means when the slide plate moves toward the activate position, said switch means including a normally closed microswitch having a switch button which opens said microswitch when depressed, said switch operator means operating to depress said switch button when in contact with said slide plate switch control surface and to release said switch button when said slide plate moves out of contact with said switch operator means.

4,339,640

## ELECTRICAL SWITCH

John T. Grant, Guestwick, England, assignor to Pittway Corporation, Syosset, N.Y.

Filed Aug. 13, 1980, Ser. No. 177,566

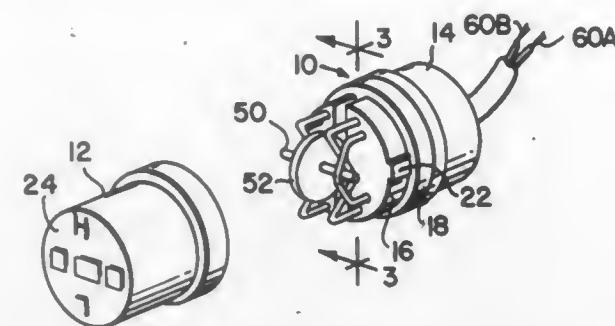
Int. Cl.<sup>3</sup> H01H 35/02

U.S. Cl. 200—61.45 R

13 Claims

1. A vibration sensor comprising a base, first and second support structures on said base, each said support structure including a pair of spaced juxtaposed electrical contact members, each said pair of contact members having electrically spaced contact surfaces disposed at an angle to one another that define a support region, an elongated crossbar element having two spaced apart electrically conductive portions, each said electrically conductive portion being supported on the contact surfaces in a corresponding one of said support regions for

completing an electric circuit between that corresponding pair of contact members and for movement away from said contact members under the influence of acceleration



forces to which said base is subjected to open said electric circuit, and terminal means connected to each said contact member for connection to remote circuitry.

4,339,641

## NOZZLE FOR A PUFFER-TYPE CIRCUIT BREAKER

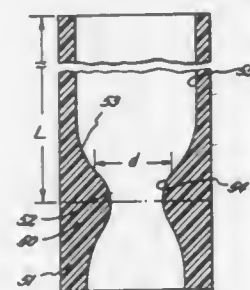
Heinz O. Noeske, Cherryhill, N.J., assignor to General Electric Company, Schenectady, N.Y.

Filed May 27, 1980, Ser. No. 153,580

Int. Cl.<sup>3</sup> H01H 33/70

U.S. Cl. 200—148 R

6 Claims



1. A puffer-type gas-blast circuit breaker comprising: a pair of separable contacts, said contacts being in abutting engagement when said circuit breaker is carrying normal load current, at least one of said pair of contacts being movable generally axially relative to the other of said pair of contacts to a position separated from the other of said pair of contacts during a high voltage circuit interrupting operation, thereby establishing an arc between said separated contacts; a nozzle of electrically insulating material disposed concentrically with said contacts, said nozzle comprising an upstream section, a throat section having an internal diameter approximately equal to the outside diameter of one of said contacts which is disposed within said throat when said contacts are in abutting engagement, and a downstream section including a bell-shaped section to provide initial rapid expansion of gases passing through said throat, said bell-shaped section being disposed adjacent said throat and said downstream section also including a substantially cylindrical, flow-confining section downstream of said bell-shaped section to limit further expansion of said gases, said flow-confining section exhibiting an outward taper, in a direction downstream of said throat, of between about 0° and about 5°; and injection means operable during a circuit interrupting operation for forcing a stream of high velocity insulating gas through said nozzle in a generally axial direction, such that said flow of gas passes through said nozzle to surround said arc drawn during said circuit breaker operation, such that said gas passes serially through said upstream section, and said throat and said bell-shaped downstream section.

4,339,642

## CURRENT SWITCHING MEMBER FOR CIRCUIT BREAKERS

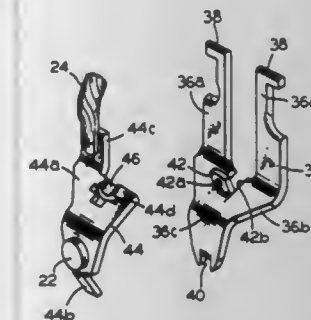
Raymond K. Seymour, Plainville; Frank H. Murphy, and Lello C. Vergnano, both of West Hartford, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Jan. 19, 1981, Ser. No. 225,951

Int. Cl.<sup>3</sup> H01H 1/22

U.S. Cl. 200—153 G

6 Claims



1. In an electric circuit breaker having a spring-power toggle-type operating mechanism, an improved current switching member comprising, in combination:

- A. an elongated steel arm including
  - (1) an upper end portion accommodating pivotal connection with a circuit breaker operating handle,
  - (2) means on said arm intermediate its ends to anchor the hooked one end of a circuit breaker operating mechanism tension spring, and
  - (3) a lower extremity portion providing a backing surface;
- B. a copper carrier including
  - (1) a body, and
  - (2) means capturing said carrier to said arm with a first surface of said body in intimate relation with said backing surface, said means including a tang extending from said body and clenched in engaging relation with said arm lower extremity portion;
- C. an electrically conductive braid having one end affixed in electrical connection with said carrier; and
- D. a circuit breaker movable contact affixed to a second surface of said body opposed from said first surface in electrical connection with said carrier.

4,339,643

## PUSH-BUTTON KEY SWITCH

Gunter Murmann, Bavaria, Fed. Rep. of Germany, assignor to Cherry Electrical Products Corporation, Waukegan, Ill.

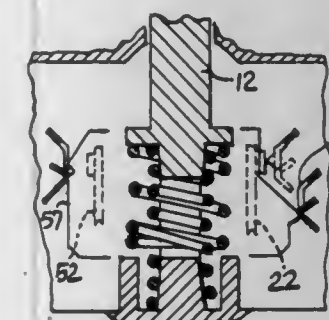
Filed Jun. 18, 1980, Ser. No. 160,640

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952107

Int. Cl.<sup>3</sup> H01H 1/26, 3/12

U.S. Cl. 200—159 A

11 Claims



1. A push button key switch, comprising: at least one electrically conducting terminal; at least one blade means for flexing in one direction to define a first switching relationship with respect to said terminal, and for flexing in another direction to define a second switching relationship with respect to said terminal; and actuator means for selectively moving longitudinally in an actuating direction to establish said first switching rela-

tionship and for selectively moving in an opposite, return direction to establish said second switching relationship; said actuator means having cam means for engaging and pivotally flexing said blade means in the actuating direction so that the blade means resists the movement of the actuator means over a particular distance in the actuating direction, the cam means thereafter disengaging from said blade means to allow the blade means to flex in said one direction and establish the first switching relationship, the cam means having means for engaging said blade means and flexing the blade means in said other direction to establish the second switching relationship, when the actuator means moves in the return direction.

4,339,644

## LOW-POWER ELECTRIC CONTACT

Fritz Aldinger; Elke Biberbach, both of Rodenbach; Albrecht Bischoff, Bruchköbel, all of Fed. Rep. of Germany, and Nils Harmsen, Garden City, N.Y., assignors to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

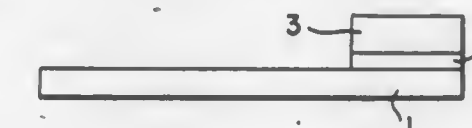
Filed Oct. 1, 1980, Ser. No. 193,178

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1979, 2940772

Int. Cl.<sup>3</sup> H01H 1/02

U.S. Cl. 200—266

15 Claims



1. A low-power electrical contact comprising an outer contact layer integrally bonded to a substrate, said substrate comprising a copper-base alloy, and said contact layer consists essentially of 39% gold, 22% silver, 37% palladium, and 2% indium.

4,339,645

## RF HEATING COIL CONSTRUCTION FOR STACK OF SUSCEPTORS

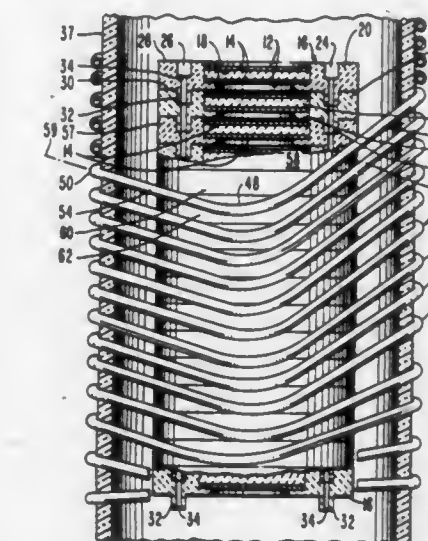
Edward A. Miller, Morrisville, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,740

Int. Cl.<sup>3</sup> H05B 6/40; C23C 13/08

U.S. Cl. 219—10.49 R

6 Claims



1. In an apparatus for inductively heating a plurality of substantially thermally isolated, stacked, spaced susceptors in which substrates to be heated are held, said susceptors comprising disc-like elements stacked one over another in parallel planes, the stack forming a cylinder, said apparatus including a stationary coil for inductively heating the stack of susceptors, the coil comprising a plurality of turns wound about the pe-



ripheral curved surface of said cylinder, the improvement in the construction of the coil to improve the uniformity of the heating of said susceptor elements as they rotate in the inductive field of the coil, in parallel planes perpendicular to the axis of the cylinder, comprising:

each turn of at least most of the turns of said coil being saddle-shaped such that each said turn substantially inductively heats a plurality of adjacent ones of said susceptor elements, and adjacent ones of said turns being spaced sufficiently close to one another that each susceptor is substantially inductively heated by a plurality of adjacent turns of said coil, whereby non-uniformities in the heating of any individual susceptor by one turn of said coil is compensated for by the heat contributions received from other adjacent turns of the coil.

#### 4,339,646 COOKING OPERATION ANNOUNCEMENT MEANS OF MICROWAVE OVEN

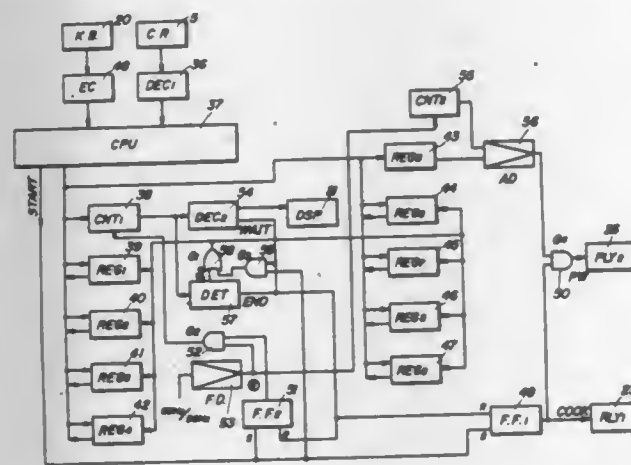
Keiichiro Doi, Izumi; Minoru Makita, Higashiosaka, and Masaaki Kowada, Kaizuka, all of Japan, assignors to Sharp Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1978, Ser. No. 974,607

Claims priority, application Japan, Jul. 4, 1978, 53-81764  
Int. Cl.<sup>3</sup> H05B 6/68

U.S. Cl. 219—10.55 B

18 Claims



1. A heating appliance having an energizing means for starting the energization of said appliance in response to actuation thereof, comprising:

input means for introducing a series of instructions into said heating appliance for controlling the operation of said heating appliance, said series of instructions including multiple sets of instructions;  
operating means responsive to energization of said appliance by said energizing means for operating said appliance in accordance with a first set of said instructions until said first set of instructions is fully executed; and  
terminating means responsive to the full execution of the first set of instructions by said operating means and the presence of a second set of said instructions at said input means for terminating the energization of said appliance in response thereto;  
said operating means being responsive to actuation of said energizing means and a further set of said instructions from said input means for operating said appliance in accordance therewith in the event that said second set of instructions has been executed by said heating appliance; and  
said operating means operating said appliance in accordance with said further set of instructions exclusive of said energizing means in the event that said second set of instructions has not been introduced into said heating appliance.

#### 4,339,647 DUAL FAN MEANS FOR HEATING CHAMBER OF MICROWAVE COOKING DEVICE

Minoru Inayama, Komaki, and Hideyuki Hamanaka, Konan, both of Japan, assignors to Rinnai Kabushiki Kaisha, Fukuzumu, Japan

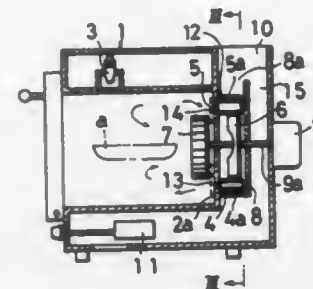
Filed Apr. 17, 1980, Ser. No. 142,371

Claims priority, application Japan, Apr. 24, 1979, 54/54117[U]

Int. Cl.<sup>3</sup> H05B 6/64

U.S. Cl. 219—10.55 R

12 Claims



1. A microwave cooking device including a cooking device main body provided therein with (a) a heating chamber for receiving foodstuffs to be cooked, (b) a magnetron for irradiating microwaves onto the interior of the heating chamber and (c) an air charging and discharging fan for forcing air to charge into and to discharge from the heating chamber through an air charging opening and an air discharging opening disposed in the heating chamber, in which the improvement comprises:

A circulation fan separate from the air charging and discharging fan, said circulation fan being disposed within said heating chamber for circulation of air therein, thereby to prevent the accumulation of water vapor within said chamber, and said circulation fan being connected to a shaft common to such air charging and discharging fan.

#### 4,339,648 PROCESS AND APPARATUS FOR SUBJECTING A MATERIAL TO ELECTROMAGNETIC WAVES

Olivier A. L. Jean, "Les Trois Chenes" 14, avenue Beranger, 78600 Maisons Laiffite, France

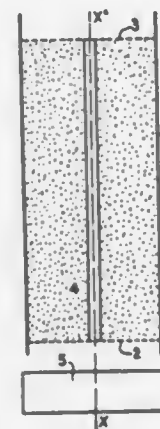
Continuation-in-part of Ser. No. 849,182, Nov. 7, 1977, Pat. No. 4,221,948. This application Apr. 24, 1980, Ser. No. 143,350

Claims priority, application France, Nov. 17, 1976, 76 34594  
The portion of the term of this patent subsequent to Sep. 9, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> H05B 6/72

U.S. Cl. 219—10.55 M

8 Claims



1. Process for treating a confined material with microwaves consisting in entirely filling a receptacle with the material to be treated, the receptacle having a longitudinal axis and provided with an entirely internal, fixed antenna which is directly connected to a microwave generator and extends along a notional

cylinder having the same axis as the receptacle, which is made with a plurality of elements able to radiate microwave energy, the antenna extending the full height of the material and is in direct contact with the material to be treated and radiating microwave energy from the antenna directly to the material to be treated.

#### 4,339,649 APPARATUS AND METHOD FOR R-C TIME CONSTANT CIRCUIT

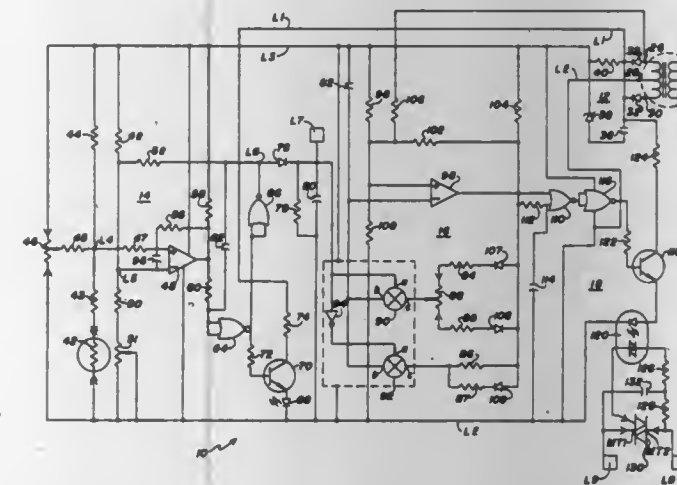
James A. Hronchek, Kokomo, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jun. 3, 1980, Ser. No. 156,122

Int. Cl.<sup>3</sup> H05B 1/02

U.S. Cl. 219—10.55 B

5 Claims



1. In a time constant circuit of the type having a resistance-capacitance circuit including a capacitor and a resistance network connected in series with said capacitor, wherein the improvement comprises:

digital gate means having an output and at least one input, said output being electrically coupled to said resistance-capacitance circuit, said digital gate means being adapted to provide a first digital output voltage level for charging said capacitor through said resistance network and a second digital output voltage level for discharging said capacitor through said resistance network; and  
circuit means connected to said input of said digital gate means for controlling said output of said gate means in response to the voltage charge of said capacitor and including voltage comparator means having an output connected to said gate means input, said comparator means having one input connected to a reference voltage source and another input connected between said capacitor and said resistance network, said reference voltage source including biasing circuit means connected to said voltage comparator means output for biasing said one input of said voltage comparator means in response to said voltage comparator means output, said biasing circuit means including a first pair of resistors connected in series and having one end of said first pair connected to a first fixed voltage potential and another end of said first pair connected to a second fixed voltage potential, said biasing circuit means further including a second pair of resistors connected in series and having one end thereof connected to said first fixed voltage potential and another end thereof connected to the connection between said first pair of resistors, said voltage comparator means output being connected to the connection between said second pair of resistors, and said voltage comparator having a positive input connected to the connection between said first pair of resistors and a negative input connected to the connection between said capacitor and said resistance network with the other end of said capacitor connected to said first fixed voltage potential.

#### 4,339,650 ELECTRIC DISCHARGE MACHINING APPARATUS

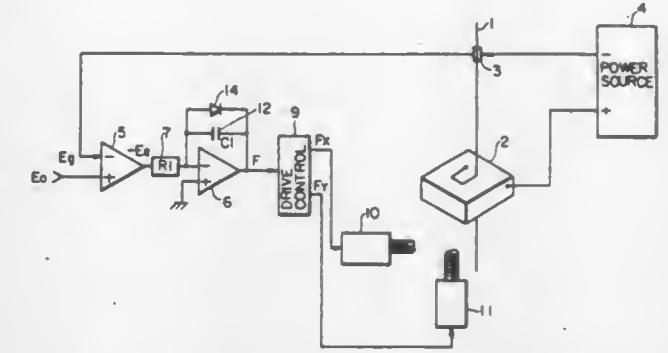
Yutaka Tanaka, Takeshi Yatomi, and Yoshio Ozaki, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1980, Ser. No. 186,806

Int. Cl.<sup>3</sup> B23P 1/12

U.S. Cl. 219—69 G

4 Claims



1. An electric discharge machining apparatus for cutting and shaping a workpiece into an article having a desired configuration comprising:

an electrode movable relative to said workpiece with a cutting gap being formed between said electrode and said workpiece;  
means for applying an electric current to said electrode, said current flowing through said cutting gap;  
means for moving said electrode and said workpiece relative to one another to cut and shape said workpiece into a desired configuration;  
comparator means for comparing the voltage across said cutting gap with a reference voltage to produce an error voltage signal;  
means for integrating said error voltage signal to produce an output control signal;  
means for controlling the speed of said electrode relative to said workpiece in accordance with said output control signal of said integrating means; and  
means for maintaining the output of said integrating means at a substantially zero level when the integrated value shifts towards a negative value.

#### 4,339,651 METHOD FOR SOLDERING LEADS TO ELECTRICAL COMPONENTS

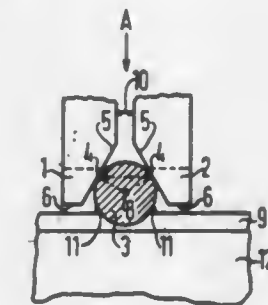
Hubert Kraus, Regensburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 185,396

Int. Cl.<sup>3</sup> B23K 1/02

U.S. Cl. 219—85 CM

11 Claims



1. A method for soldering a lead to an electrical capacitor having a synthetic film as a dielectric, a regenerable thin coating and a front contact layer of solder metal, comprising the steps of: positioning a lead over the front contact layer; pressing two electrodes onto the lead to contact the lead at contact surfaces of the electrodes; positioning the contact surfaces of the electrodes to contact the lead along spaced apart parallel



contact lines directly across from each other which extend longitudinally along the lead on a periphery thereof substantially along an entire desired region of melted solder engagement between the lead and the contact layer and which together with a longitudinal central axis of symmetry of the lead define points of a prism-like region of triangular cross-section within the lead; and applying a current to the electrodes which flows substantially perpendicular to the lead axis to heat the lead and press it into the solder which thereby melts.

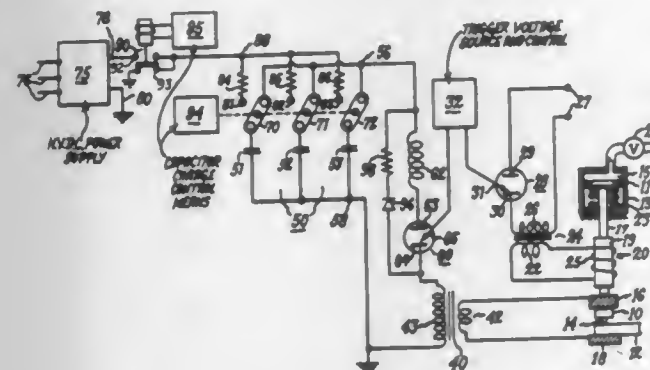
4,339,652

**POWER SUPPLY FOR PERCUSSION WELDING**  
Cecil Bailey, Woodlyn; Albert C. Young, Springfield, and Dezzo D. Thold, Wayne, all of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Dec. 29, 1980, Ser. No. 221,131  
Int. Cl.<sup>3</sup> B23K 9/22

U.S. Cl. 219—95

6 Claims



1. In percussion welding equipment in which an electric arc is initiated between a pair of spaced-apart work pieces during the early stages of a welding operation and means is provided for applying to one of said work pieces a welding force that drives said work pieces together following arc-initiation and subsequent spread-out of the arc, thereby driving into engagement regions of the work pieces that have been heated to welding temperature by said arc, a power supply for supplying welding energy through said arc comprising:

- a welding transformer having a primary winding and a secondary winding across which welding electrodes are adapted to be connected for supplying maximum welding current of 100,000 amperes or more between said secondary winding and said pair of work pieces,
- a capacitor bank having a pair of output terminals,
- means for selectively connecting said output terminals across said primary winding comprising electronic switching means connected in series with said primary winding and said terminals,
- means for charging said capacitor bank to a predetermined voltage level in preparation for a welding operation and for discontinuing charging when said voltage level is reached,
- means for rendering said switching means conductive, thereby causing said capacitor bank to forwardly discharge through said switching means and said primary winding to effect a welding operation, and
- means for controlling the duration of said discharge comprising a tuning inductance connected in series with said switching means and said primary winding.

4,339,653

**METHOD FOR DOUBLE END STUD WELDING**  
Thomas E. Doyle; Daniel Hauser; Michael D. Hayes, all of Columbus, and David C. Martin, Worthington, all of Ohio, assignors to Omark Industries, Inc., Portland, Oreg.

Filed Nov. 19, 1979, Ser. No. 95,322

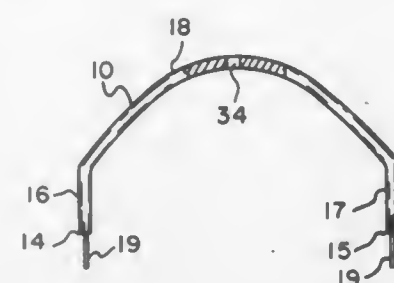
Int. Cl.<sup>3</sup> B23K 9/20

U.S. Cl. 219—99

4 Claims

1. In the art of stud welding of a metallic stud, having a plurality of ends, to another metallic base member, the method

permitting simultaneous welding of each end of the base member by the stud end welding technique comprising:  
supporting each end of the metallic member above the base member by at least one elongated relatively thin metallic projection; and  
urging the projections of each end of the stud into contact with the base member while maintaining a current density in the projections during welding at sufficient density to disintegrate only a portion of given projections as they contact the base member with consequent arc initiation between the given projections and the base member



whereby the consequent disintegration and arcing at the given projections will create metal melting and shortening of the given projections permitting the stud to sequentially descend with consequent contact of further projections with the base member resulting in shortening of the welding current and extinguishment of the arc at the given projections and resultant partial disintegration of an arc establishment at the further projections making contact with the base member on a continuing and random basis between all projections of all ends of the stud until the projections are consumed and the ends of the stud contact the base member.

4,339,654

**METHODS FOR THE MANUFACTURE OF HEAT EXCHANGER PANELS**

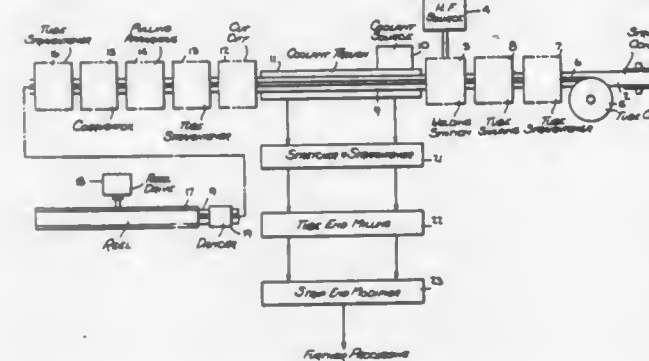
Robert R. Harriau, Old Greenwich, and Humfrey N. Udall, Darien, both of Conn., assignors to Thermatool Corp., Stamford, Conn.

Filed Feb. 19, 1980, Ser. No. 122,467

Int. Cl.<sup>3</sup> B23K 11/32

U.S. Cl. 219—107

7 Claims



1. A method for making a heat exchanger element which comprises:  
advancing metal tubing longitudinally thereof toward a weld point while simultaneously advancing a metal strip in its length direction toward said weld point for joining said tubing and said strip at said weld point, said strip being wide relative to the cross-sectional dimension of said tubing and being thin relative to its width;  
heating said tubing and said strip at their surfaces to be joined to welding temperature by the time that they reach said weld point by supplying high frequency, electric

current to said strip and said tubing in advance of the weld point;  
pressing the tubing and the strip together at the weld point to form a weld therebetween and to form a tube-strip combination;  
continuing the advance of the tube-strip combination along a path extending from said weld point to a collection point spaced from said weld point;  
collecting the tube-strip combination at said collection point, and after a predetermined length thereof has been collected, discontinuing the advance of the tubing and strip and the welding together of tubing and strip;  
thereafter, advancing the tube-strip combination in the reverse direction from said collection point toward said weld point and along said path; and  
as a predetermined length of the tube-strip combination reaches a predetermined position intermediate said collection point and said weld point, severing said length of said combination from the remainder of the tube-strip combination and removing said length of said combination from said path.

4,339,655

**LASER UNDERCUTTING SYSTEM**

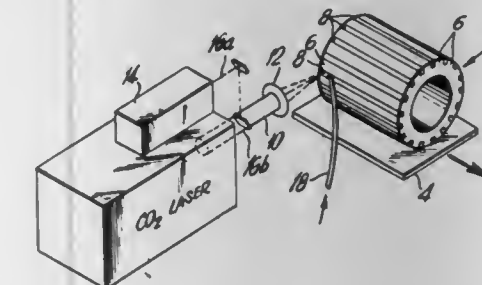
Hugo C. Lauroesch, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 4,201, Jan. 17, 1979, abandoned. This application Jan. 28, 1981, Ser. No. 229,279

Int. Cl.<sup>3</sup> B23K 27/00

U.S. Cl. 219—121 LJ

14 Claims



1. A method of undercutting a silica base material below the surface of adjacent metal faces which comprises ablating said silica base material by means of a focused beam of a laser until a predetermined depth of undercut is obtained.

4,339,656

**GLOW DISCHARGE HEATING APPARATUS**

Hirotugu Komura; Shigeo Ueguri, and Youichiro Tabata, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Division of Ser. No. 6,780, Jan. 26, 1979. This application May 22, 1980, Ser. No. 152,563

Claims priority, application Japan, Feb. 7, 1978, 53-13090

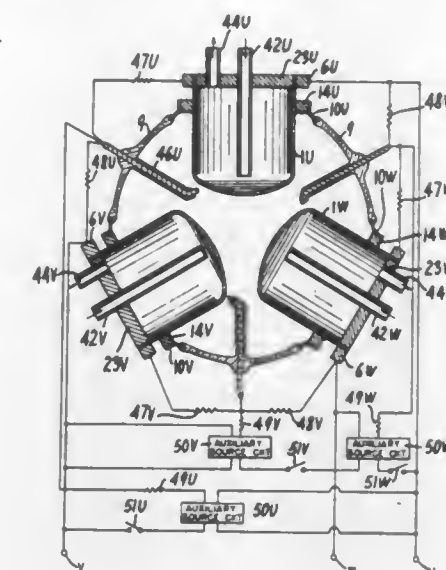
Int. Cl.<sup>3</sup> H05B 1/02

U.S. Cl. 219—494

3 Claims

1. A glow discharge heating apparatus comprising: a plurality of discharge electrodes opposite one another through predetermined gaps; main electric source means connected to said plurality of discharge electrodes to successively cause glow discharge therebetween, each of said glow discharges supplying thermal energy to the discharge electrode acting as a cathode during the associated glow discharge; an auxiliary electrode positioned relative to said discharge electrodes for controlling the glow discharges developed between said discharge electrodes according to the electrical potential of said auxiliary electrode; controllable auxiliary electric source means for biasing said auxiliary electrode to establish an auxiliary discharge from said auxiliary electrode and control said glow discharges; a liquid to be heated flowing through said discharge electrodes to be heated with said thermal energy; and a temperature sensor operatively coupled to a selected one of

said discharge electrodes to sense a temperature of said heated liquid to feed a signal representative of the measured temperature back to said auxiliary electric source means to control an



auxiliary discharge current from said auxiliary electrode for controlling said glow discharges and thereby controlling the temperature of said heated liquid.

4,339,657

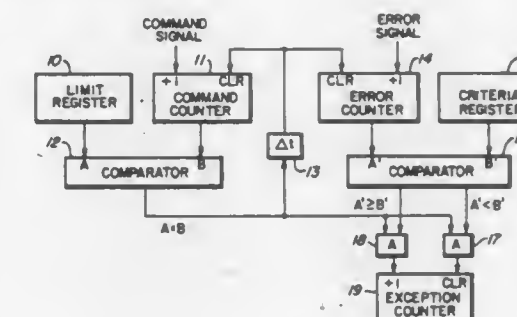
**ERROR LOGGING FOR AUTOMATIC APPARATUS**  
David D. Larson, Boulder, Colo., and Stanley T. Riddle, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 6, 1980, Ser. No. 118,953

Int. Cl.<sup>3</sup> G06F 7/62, 7/02

U.S. Cl. 235—92 QC

4 Claims



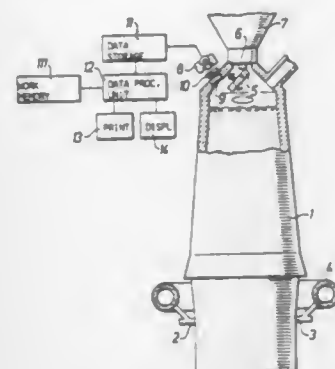
1. In a control system having means for supplying command signals to initiate system functions and means for producing error signals indicating system malfunctions, the combination comprising:  
means responsive to said command signals for producing a control signal after a certain number of command signals have been supplied;  
error counter means responsive to said error signals for storing a count value representing the number of error signals which have occurred;  
sensing means responsive to said error counter means for producing a value signal when said error counter means is storing a value not less than a predetermined value; and  
exception counter means responsive to the value signal and said control signal for incrementing said exception counter means by said control signal if said value signal is present and resetting said exception counter means by said control signal if said value signal is not present.







means for projecting indicating angular coordinates of said beam, and for receiving signal components from said means for detecting said reflections, said computer providing distance of said points from said beam origination point; and



means for displaying each of said distances with respect to reference coordinates of said blast furnace, whereby a simulation of said mass is produced.

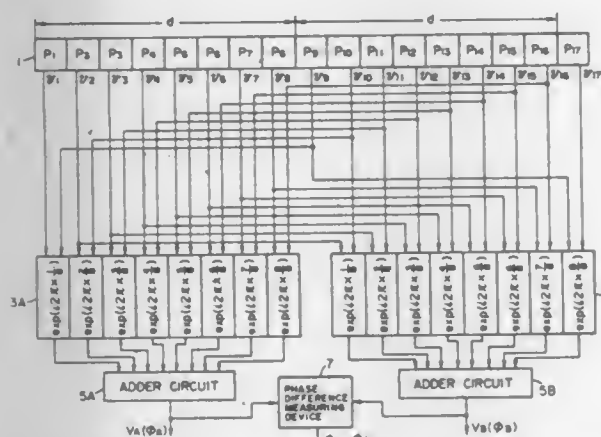
#### 4,339,665 APPARATUS FOR DETECTING DISPLACEMENT OF OPTICAL IMAGE

Ken Utagawa, Yokohama, and Hiroshi Shirasu, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan  
Filed Feb. 21, 1980, Ser. No. 123,211

Claims priority, application Japan, Mar. 9, 1979, 54-26757  
Int. Cl.<sup>3</sup> H01J 40/14

U.S. Cl. 250—578

3 Claims



1. Apparatus for detecting displacement of an optical image formed through an image forming optical system, said apparatus comprising:

- (1) a photosensitive element array comprising a number of photosensitive elements disposed to receive light passed through said image forming optical system;
- (2) a first circuit for multiplying the electric outputs from photosensitive elements in said array by vectors whose phases increase sequentially in the order of the arranged elements and adding the products together to form an output;
- (3) a second circuit for multiplying the electric outputs from photosensitive elements in the same array but shifted from those elements processed by said first circuit by the same vectors as in the first circuit sequentially in the order of the arranged elements and adding the products together to form an output; and
- (4) a phase difference measuring circuit for measuring the difference in phase between said outputs from the first and second circuits.

#### 4,339,666 BLADE PITCH ANGLE CONTROL FOR A WIND TURBINE GENERATOR

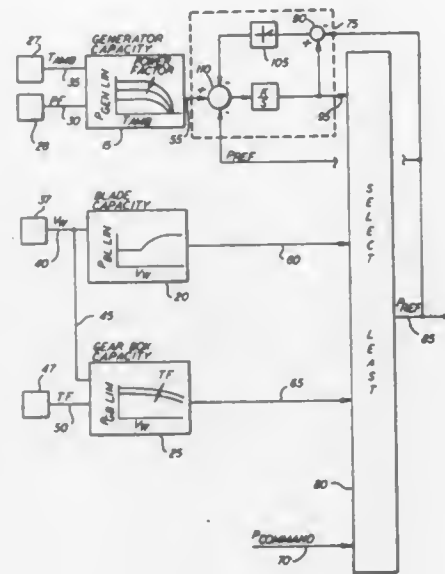
John P. Patrick, South Windsor, Conn.; Joseph M. Kos, Holyoke, Mass., and Kermit I. Harner, Windsor, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 24, 1980, Ser. No. 219,611

Int. Cl.<sup>3</sup> F03D 9/00

U.S. Cl. 290—44

7 Claims



1. A blade pitch angle control for a wind turbine-generator having power components including a variable pitch blade rotor driving an electric generator through a gear set, said control comprising means for providing a wind velocity signal indicative of average present wind velocity, and signal processing means responsive to said wind velocity signal for providing a power reference signal indicative of the desired blade pitch angle for said wind turbine generator to withstand wind at the velocity indicated by said wind velocity signal, characterized by:

means providing a turbulence factor signal indicative of the degree to which the present instantaneous wind velocity may exceed the present average wind velocity; and said signal processing means being responsive to said turbulence factor signal for providing a gear set capacity signal as a function of said wind velocity signal and said turbulence factor signal indicative of the desired blade pitch angle for said rotor to safely drive said gear set in response to maximum likely wind velocities indicated by said wind velocity signal and said turbulence factor signal, said signal processing means being further responsive to said wind velocity signal for providing a blade capacity signal as a function of said wind velocity signal indicative of the desired blade pitch angle for said rotor to safely accommodate said wind velocities indicated by said wind velocity and said turbulence factor signal, said signal processing means providing said power reference signal indicative of desired blade pitch angle as a function of a selected one of said blade capacity signal and said gear set capacity signal to provide a power reference signal indicative of the largest allowable blade pitch angle for safe operation of said rotor and gear box.

#### 4,339,667 AUTOMOTIVE VEHICLE SWITCHING ELECTRIC CIRCUIT

Eduard Bergmann, Ludenscheid, and Volker Speidel, Schalksmühle, both of Fed. Rep. of Germany, assignors to Firma Leopold Kostal, Fed. Rep. of Germany

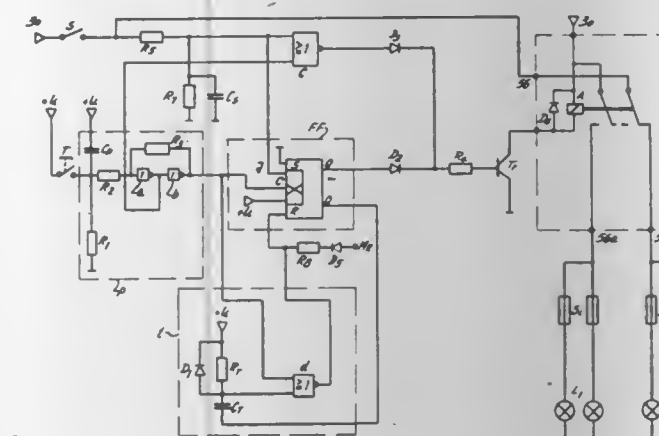
Continuation of Ser. No. 64,546, Aug. 8, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,718

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1979, 2908131

Int. Cl.<sup>3</sup> B60Q 1/14

U.S. Cl. 307—10 LS

16 Claims



1. Means for actuating and controlling a light-passing signal of an automotive vehicle and for interrelated and timed switching between high-beam and low-beam lights of the automotive vehicle road-lighting system, the said means comprising a DC-voltage-fed electric circuit interconnecting in interruptible manner the said light-passing signal and the vehicle road-lighting system, said electric circuit including a manual switch, a time responsive circuit and a closable relay contact for a. actuating the light passing signal and for b. changing the road-lighting system from high-beam to low-beam, wherein the choice of a. or b. is determined by the time responsive circuit and the length of time the manual switch is held closed.

#### 4,339,668 MONOLITHICALLY INTEGRATED CIRCUIT OF HIGH DIELECTRIC STRENGTH FOR ELECTRICALLY COUPLING ISOLATED CIRCUITS

Ruediger Mueller, Munich; Michael Pomper, Schliersee, and Ludwig Leipold, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

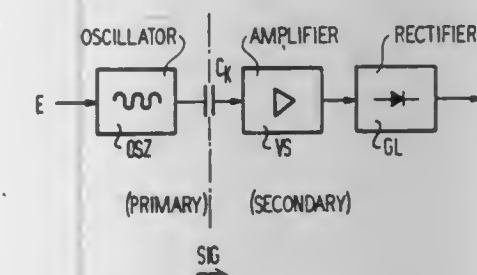
Filed Sep. 14, 1979, Ser. No. 75,679

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842319

Int. Cl.<sup>3</sup> H01L 27/12

U.S. Cl. 307—149

11 Claims



1. A monolithically integrated circuit of high dielectric strength for electrically coupling isolated circuits having a high voltage difference therebetween, comprising: a signal coupler integrated on a chip; a primary circuit on the chip creating a signal; a secondary circuit on the chip to be coupled to receive the signal of the primary circuit, a high voltage difference being present between the primary and secondary

circuits; the signal coupler having an integrated coupling capacitor formed of a coplanar arrangement of more than two spaced conductor paths embedded into a passivation layer, the passivation layer being arranged on an insulating substrate, and the signal coupler having a high dielectric strength of several kV; and

the coupling capacitor comprising a plurality of coupling sub-capacitors formed of coplanar conductor path arrangements positioned on the chip, the coupling sub-capacitors being commonly interconnected in a series arrangement to form a capacitive voltage divider, and spacings between the conductor paths being reduced in comparison to spacings between conductor paths in the case of a coupling capacitor of a single coplanar conductor path arrangement.

#### 4,339,669 CURRENT RAMPING CONTROLLER CIRCUIT

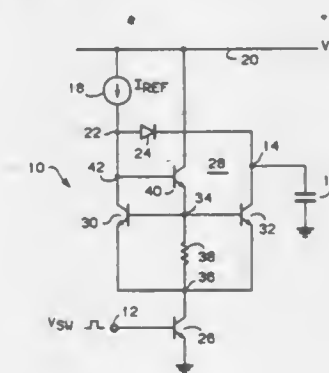
Robert B. Jarrett, Tempe, and James J. LoCascio, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 8, 1980, Ser. No. 166,866

Int. Cl.<sup>3</sup> H03K 5/08

U.S. Cl. 307—228

9 Claims



1. A current ramping controller circuit which is responsive to a control signal supplied to an input thereof for alternately sourcing and sinking current at an output thereof the values of which are substantially the same, comprising:

reference current source means for producing a reference current, said reference current being unilaterally sourced to the output when said control signal is in a first level state; and

circuit means responsive to said control signal being in a second level state for sinking current at the output terminal having a value substantially equal to said sourcing current, said circuit means including a first matched pair of transistors each having first and second electrodes and a control electrode respectively, said control electrodes being interconnected at a first node, said first electrodes being interconnected at a second node, said second electrode of a first one of said matched pair of transistors being coupled to said reference current source means, the second electrode of the second one of said matched transistors being coupled to the output of the ramping controller circuit, and current cancellation means coupled between the second and control electrodes of said first one of said matched transistors for providing current drive to said first and second matched transistors such that current error is reduced in said circuit means whereby the sourcing current and the sinking current are substantially equal to one another, said current cancellation means being a transistor having first, second and control electrodes, said first electrode being coupled to the first node of said circuit means, said second electrode being coupled to a second terminal at which is supplied a source of operating potential, said control electrode being coupled to said second electrode of said first one of said matched transistors.



4,339,670

# ZERO VOLTAGE SWITCHING AC RELAY CIRCUIT

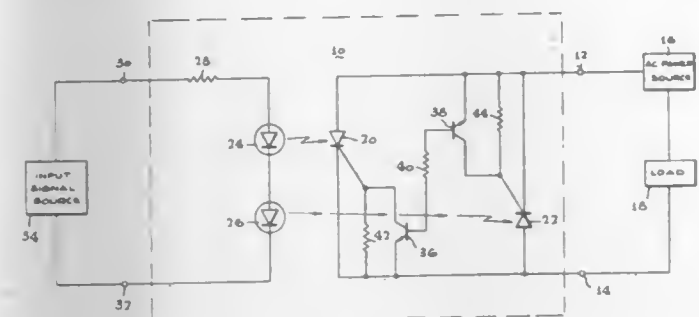
Ciro Guajardo, Harbor City, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Jun. 30, 1980, Ser. No. 164,224

Int. Cl.<sup>3</sup> H03K 17/72

U.S. Cl. 307—252 A

4 Claims



1. An alternating current relay circuit comprising, in combination:

- first and second output terminals;
- first and second photo sensitive silicon controlled rectifiers; means for connecting the anode terminal of the first photo sensitive silicon controlled rectifier and the cathode terminal of the second photo sensitive silicon controlled rectifier to the first output terminal;
- means for connecting the cathode terminal of the first photo sensitive silicon controlled rectifier and the anode terminal of the second photo sensitive silicon controlled rectifier to the second output terminal;
- first and second transistors;
- means for connecting the collector-emitter circuit of the first transistor to the gate-cathode circuit of the first photo sensitive silicon controlled rectifier;
- means for connecting the collector-emitter circuit of the second transistor to the gate-cathode circuit of the second photo sensitive silicon controlled rectifier;
- means for connecting a current limiting element between the base terminal of the first transistor and the base terminal of the second transistor, whereby the current limiting element is in series with the emitter-base junction of the first transistor to provide the sole current path for the flow of base bias current from the second output terminal to the base terminal of the second transistor, and whereby the current limiting element is in series with the emitter-base junction of the second transistor to provide the sole current path for the flow of base bias current from the first output terminal to the base terminal of the first transistor, respectively;
- a light source having a light output and positioned so that the light output impinges on the first and the second photo sensitive silicon controlled rectifiers to trigger them into conduction; and
- means for connecting the light source to the first and second input terminals.

4,339,671

# PROPORTIONAL BASE DRIVE CIRCUIT

John N. Park, Rexford, and Robert L. Steigerwald, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 21, 1980, Ser. No. 133,489

Int. Cl.<sup>3</sup> H03K 17/60

U.S. Cl. 307—253

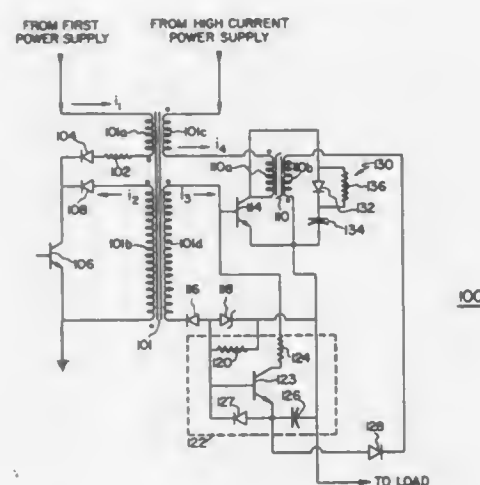
7 Claims

1. A proportional base drive circuit supplied by a signal level power supply to effect rapid and efficient switching of current through a load transistor supplied from a power source and coupled to a load comprising:

- a main transformer having four mutually coupled windings, the load transistor having its base to emitter junction

coupled across the first winding and the collector to emitter portion of the load transistor in series with the second winding, the power source and the load forming a loop, said second winding providing base current in the load transistor proportional to the load current by current transformer action between the first and second winding; the third winding connected in series with the signal level power supply;

means for alternately interrupting current flow supplied by said signal level power supply through the third winding of said transformer and shorting the fourth winding of said transformer, to cause said load transistor to be biased into conduction when said current flow supplied by said signal level power supply through said third winding is interrupted inducing a current by transformer action in said first winding and out of conduction when said fourth winding is shorted by reducing the voltage across the first winding by voltage transformer action; and



means for both driving reverse base current through the load transistor and maintaining a negative base-emitter voltage across said load transistor after turn off, when said fourth winding is shorted resulting in the voltage across the first winding being reduced including an energy storage means, a second transistor and means for biasing said second transistor into conduction when the voltage across said first winding is reduced, said second transistor connected in series with said energy device, the series combination connected across the base emitter portion of said load transistor, said energy storage means connected to said second winding to receive energy when said load transistor is conducting and said second transistor being biased into conduction when said fourth winding is shorted resulting in the voltage across said first winding being reduced, allowing stored energy in said energy storage device to force reverse base current through the load transistor to remove charge turning said load transistor off and said energy storage means providing a negative voltage.

4,339,672

# DELAY CIRCUIT CONSTITUTED BY MISFETS

Katsuyuki Sato, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 12, 1979, Ser. No. 56,854

Claims priority, application Japan, Jul. 17, 1978, 53-86098; Aug. 21, 1978, 53-100944

Int. Cl.<sup>3</sup> H03K 3/26, 19/01

U.S. Cl. 307—270

2 Claims

1. A driving circuit, for driving a push-pull inverter having first and second insulated gate type field effect transistors connected in series between first and second power supply terminals, said driving circuit comprising:

- a first delay circuit including:
- a third insulated gate type field effect transistor having a drain connected to said first power supply terminal, a

source connected to an output node and a gate connected to an input node;

- a fourth insulated gate type field effect transistor having a drain connected to said output node, a source connected to said second power supply terminal and a gate;
- a capacitance element connected between said output node and said second power supply terminal; and
- a first inverter having an input terminal connected to said input node and an output terminal connected to said gate of said first insulated gate type field effect transistor and to

or the other of the matching circuits to the output terminal in accordance with the magnitude of that reference voltage, said switching circuit being such as to produce at the output terminal a binary output signal having two levels representing the binary digits 0 and 1, the levels being determined respectively by the two reference voltage levels.

4,339,674

# TRIGGER CIRCUIT

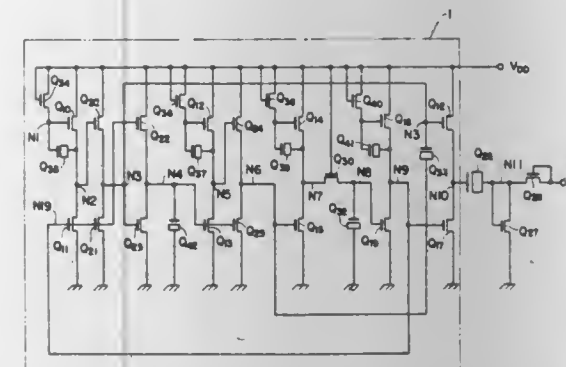
Masaru Hashimoto, Ayase, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 12, 1980, Ser. No. 186,769

Claims priority, application Japan, Sep. 19, 1979, 54-119235 Int. Cl.<sup>3</sup> H03K 5/153

U.S. Cl. 307—362

4 Claims



said gate of said fourth insulated gate type field effect transistor;

- a second inverter having an input terminal connected to said output node; and
- a bootstrap capacitor having first and second terminals, wherein said first terminal is connected to a gate of said first insulated gate type field effect transistor, and said second terminal is connected to an output terminal of said second inverter, and said gate of said second insulated gate type field effect transistor is connected to said input node.

4,339,673

# DRIVER CIRCUITS FOR AUTOMATIC DIGITAL TESTING APPARATUS

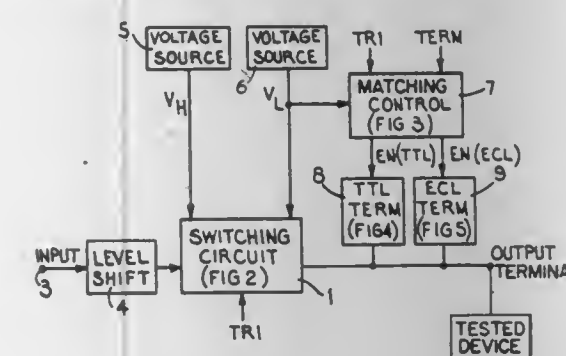
Graham A. Perry, Stockport, England, assignor to International Computers Limited, London, England

Filed Mar. 12, 1980, Ser. No. 129,637

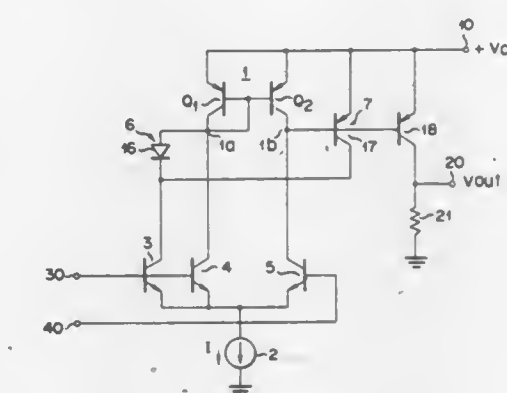
Int. Cl.<sup>3</sup> H03K 3/01; G01R 00/00

U.S. Cl. 307—270

8 Claims



1. A driver circuit for automatic digital testing apparatus, comprising a switching circuit; a first signal input terminal by which a control signal may be applied to the switching circuit to cause the latter to adopt a related switching state, the switching circuit having a line terminating at a terminal for connection to the circuit to be tested; second and third signal input terminals to the switching circuit, first voltage producing means for producing a first variable reference voltage connected with the second input; second voltage producing means for producing a second variable reference voltage connected with the third input; first and second circuit to be tested matching circuits having different operational characteristics, a matching circuit control unit connected to control operation of the first and second matching circuits, said control unit being responsive to one of the reference voltages for connecting one



1. A trigger circuit comprising:

- first, second and third transistors of the same conductivity type each having a base, emitter and collector, said bases of said first and second transistors being connected in common, said emitters of said first, second and third transistors being connected in common, and said common-connected bases of said first and second transistors and said base of said third transistor being connected respectively to first and second input terminals between which a trigger signal is applied;
- a current source connected to said common-connected emitters of said first, second and third transistors;
- a current mirror having an input terminal and an output terminal connected respectively to said collectors of said second and third transistors;
- switching means connected between said input terminal of said current mirror and said collector of said first transistor; and
- means connected to said output terminal of said current mirror and said switching means for switching on and off said switching means in response to an output current of said current mirror and a collector current of said third transistor.

4,339,675

# LOGIC CIRCUIT HAVING AN IMPROVED DISABLE CIRCUIT

Richard A. Ramsey, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 13, 1979, Ser. No. 66,208

Int. Cl.<sup>3</sup> H03K 19/003, 19/013, 19/088

U.S. Cl. 307—473

2 Claims

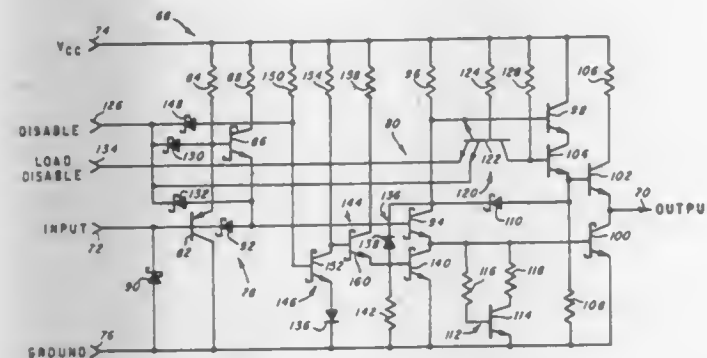
1. In a logic circuit comprising:

- input means coupled to an input terminal, said input means for providing phase splitter drive current in response to a predetermined input signal applied to the input terminal;
- active load means coupled to an output terminal, said active load means for sourcing output current to the output terminal in response to receiving active load drive current;
- active load driver means for providing active load drive current in response to receiving output drive current;



active drive means coupled to the output terminal, the active drive means sinking output current from the output terminal in response to receiving output drive current; and phase splitter means coupled to the active drive means and to the active load driver means, said phase splitter means for applying output drive current to the active drive means in response to receiving phase splitter drive current, and for applying output drive current to the active load driver means in response to receiving no phase splitter drive current;

an improved disable circuit comprising disable means coupled to the input means and to a disable terminal, said disable means for preventing the application of phase splitter drive current by the input means to the phase splitter means in response to a predetermined disable signal applied to the disable terminal, and for allowing the application of phase splitter drive current to the phase splitter means in the absence of said predetermined disable signal; and



switch means coupled to the disable terminal, to the active load driver means and to the active load means, said switch means for preventing the application of active load drive current by the active load driver means to the active load means in response to the predetermined disable signal applied to the disable terminal, and for allowing the application of active load drive current by the active load driver means to the active load means in the absence of said predetermined disable signal, wherein the switch means, comprises active load switch driver means coupled to the disable terminal, said active load switch driver means for providing active load switch drive current in the absence of the predetermined disable signal; and

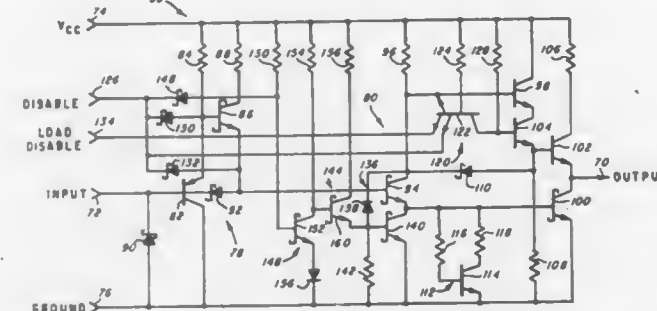
an active load switch device coupled to the active load switch driver means and interposed between the active load driver means and the active load means, said active load switch device for applying any active load drive current provided by the active load driver means to the active load means in response to receiving active load switch drive current from the active load switch driver means.

**4,339,676**  
**LOGIC CIRCUIT HAVING A SELECTABLE OUTPUT MODE**  
Richard A. Ramsey, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.  
Filed Aug. 13, 1979, Ser. No. 66,209  
Int. Cl.<sup>3</sup> H03K 19/003, 19/013, 19/088  
U.S. Cl. 307-473 2 Claims

1. In a logic circuit comprising:  
Input means coupled to an input terminal, said input means for providing phase splitter drive current in response to a predetermined input signal applied to the input terminal;  
active load means coupled to an output terminal, said active load means for sourcing output current to the output terminal in response to receiving active load drive current;  
active load driver means for providing active load drive current in response to receiving output drive current;  
active drive means coupled to the output terminal, said

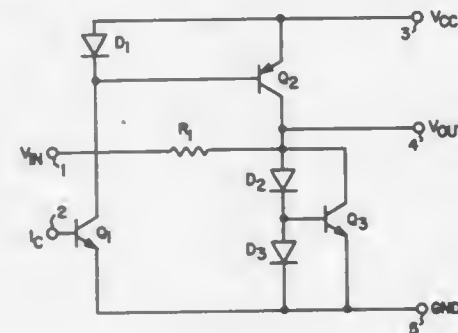
active drive means for sinking output current from the output terminal in response to receiving output drive current; and  
phase splitter means coupled to the active drive means and to the active load driver means, said phase splitter means for applying output drive current to the active drive means in response to receiving phase splitter drive current, and applying output drive current to the active load driver means in response to receiving no phase splitter drive current;

a load disable circuit comprising; switch means coupled to a load disable terminal, to the active load driver means and to the active load means, said switch means for preventing the application of active load drive current by the active load driver means to the active load means in response to



a predetermined load disable signal applied to the load disable terminal, and for allowing the application of active load drive current by the active load driver means to the active load means in the absence of said predetermined load disable signal, wherein said switch means comprises; active load switch driver means coupled to the load disable terminal, the active load switch driver means providing active load switch drive current in the absence of the predetermined load disable signal; and  
an active load switch device coupled to the active load switch driver means and interposed between the active load driver means and the active load means, the active load switch device applying any active load drive current provided by the active load driver means to the active load means in response to receiving active load switch drive current from the active load switch driver means.

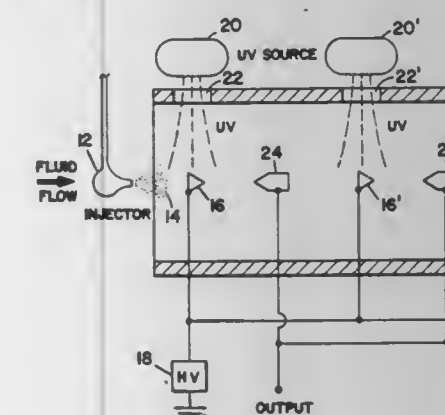
**4,339,677**  
**ELECTRICALLY VARIABLE IMPEDANCE CIRCUIT WITH FEEDBACK COMPENSATION**  
Werner H. Hoeft, Saratoga, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.  
Filed Dec. 21, 1979, Ser. No. 106,217  
Int. Cl.<sup>3</sup> H03H 7/24  
U.S. Cl. 307-564 5 Claims



1. A variable impedance voltage attenuator circuit for providing an electrically variable shunt impedance between an output terminal of a series resistive signal line and a common terminal, which comprises:  
at least first and second diodes connected in series with like

polarity between said resistive signal line output terminal and said common terminal to form a shunt impedance therebetween, said first diode being connected to said output terminal;  
current source means connected to said output terminal for passing a current through said series-connected diodes to establish a desired quiescent shunt impedance value between said output and common terminals; and  
feedback circuit means connected from the junction between said first and second series-connected diodes to said output terminal for maintaining said diode current at a substantially constant level with changes in signal level at said output terminal to maintain the shunt impedance value of said diodes substantially constant.

**4,339,678**  
**MULTISTAGED ELECTROHYDRODYNAMIC (EHD) GENERATOR WITH PARALLEL OUTPUTS**  
Theodore H. Gawain, and Oscar Biblarz, both of Carmel, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.  
Filed Aug. 18, 1980, Ser. No. 179,202  
Int. Cl.<sup>3</sup> H02K 44/00  
U.S. Cl. 310-110 1 Claim

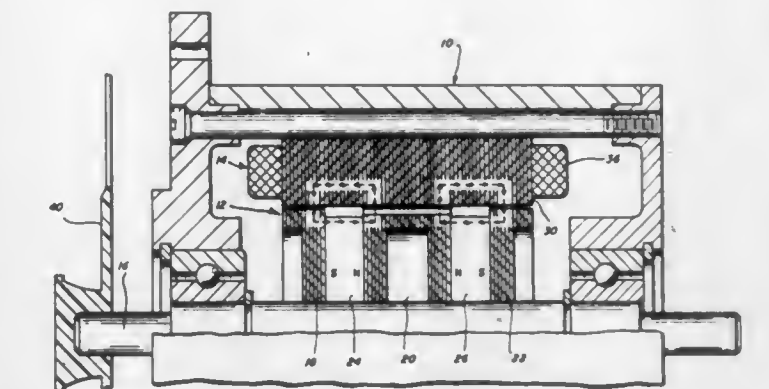


1. A multistage electrohydrodynamic (EHD) generator comprising:  
(a) a plurality of EHD generator stages connected in series, said plurality of stages being formed in a single straight channel, each of said EHD stages having a means for charging and a means for discharging particles entrained in the fluid flow in said channel;  
(b) a single particle injector at the input to the first of said plurality of EHD generator stages for injecting said particles into the fluid flow; and  
(c) means for additively collecting the current output from each of said plurality of EHD generator stages such that the total output power, P, is equal to the voltage per each stage, V, times the current per each stage, I, times the number of stages, n.

**4,339,679**  
**LOW-INERTIA HIGH-TORQUE SYNCHRONOUS INDUCTION MOTOR**  
Edward O. Urschel, Long Beach, Calif., assignor to Litton Systems, Inc., Murphy, N.C.  
Filed Jan. 16, 1981, Ser. No. 225,584  
Int. Cl.<sup>3</sup> H02K 37/00 3 Claims

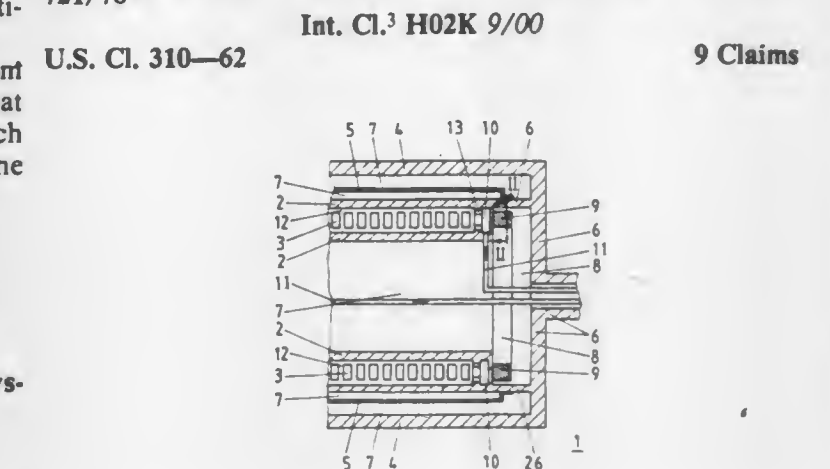
1. A low inertia synchronous induction motor for driving a daisy wheel printing element comprising:  
a rotor assembly including  
an elongated motor shaft,  
a first laminated drum-shaped pole piece mounted concentrically on said shaft,  
second and third laminated cup-shaped pole pieces concentrically mounted on said shaft at either end of said drum-shaped piece and outwardly facing therefrom,  
a common number of axially-oriented, evenly spaced teeth

formed on the respective circumferences of each of said pole pieces,  
the teeth of said second and third pole pieces axially aligned with each other and staggered with respect to the teeth of said first pole piece,  
a first washer-shaped, axially-magnetized, rare earth magnet mounted concentric with said shaft and sandwiched between said first and second pole pieces, and  
a second washer-shaped, axially-magnetized, rare earth magnet mounted concentric with said shaft and sand-



wiched between said first and third pole pieces so that its magnetic field is in opposition to the field of said first magnet,  
a stator assembly coaxial with said rotor assembly including a cylindrical stack of selectively configured laminations defining a plurality of internally projecting, toothed stator poles, and  
said stator poles having an axial length substantially equal to the sum of the combined axial lengths of said pole pieces and said magnets.

**4,339,680**  
**SORPTION PUMP FOR A TURBOGENERATOR ROTOR WITH SUPERCONDUCTIVE EXCITATION WINDING**  
Pierre Flecher, Alzenau-Mischelbach, Fed. Rep. of Germany, and Hansjörg Köfler, Graz, Austria, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland  
Continuation of Ser. No. 966,568, Dec. 5, 1978, abandoned. This application Nov. 24, 1980, Ser. No. 209,741  
Claims priority, application Switzerland, Jan. 24, 1978, 721/78  
Int. Cl.<sup>3</sup> H02K 9/00 9 Claims



1. Apparatus for maintaining a thermally insulating vacuum in a turbogenerator rotor having a superconductive excitation winding, said apparatus comprising a sorption pump in the interior of said rotor, said rotor having at least one vacuum chamber, said sorption pump having apertures communicating with said vacuum chamber, said sorption pump having a plurality of separate material chambers containing an adsorbent material and the walls of said material chambers being at least partially formed by screens, whereby said sorption pump ad-



sorbs matter from said vacuum chamber, thereby maintaining the vacuum in the vacuum chamber.

4,339,681

### SUPERCONDUCTING FIELD WINDING FOR THE ROTOR OF AN ELECTRIC MACHINE

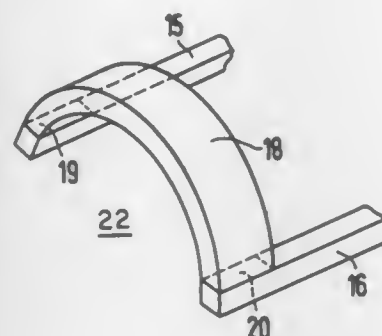
Günther Bogner, Erlangen, and Dieter Kullmann, Langenzenn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany  
Filed Aug. 20, 1976, Ser. No. 716,221

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1975, 2542169

Int. Cl.<sup>3</sup> H02K 3/04

U.S. Cl. 310—201

4 Claims



1. A superconducting field winding for the rotor of an electric machine, the electric machine rotor including a plurality of slots into which winding sections may be placed and including a cylindrical end portion having a radius at least approximately equal to the radius of the slot bottom comprising:

a plurality of winding sections made of conductors of a stabilized superconducting material, said conductors having a predetermined permissible bending radius which is greater than the radius at said end portion of said rotor, each winding section forming a pole and including: lateral parts disposed in the slots in said rotor extending parallel to the longitudinal axis of the rotor; pre-fabricated, yoke-like conductor elements made of said stabilized superconducting material pre-fabricated having a curvature equal to the radius of said rotor end portion connecting conductors of associated lateral parts of a winding section; and, contact surfaces between each yoke-like conductor element and the conductors of the lateral parts connected to it, said contact surfaces being larger than the cross sectional area of the conductors of the lateral parts.

4,339,682

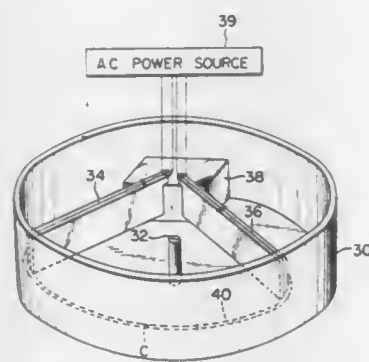
### ROTATIVE MOTOR USING A PIEZOELECTRIC ELEMENT

Minoru Toda, and Susumu Osaka, both of Machida, Japan, assignors to RCA Corporation, New York, N.Y.  
Filed Sep. 22, 1980, Ser. No. 189,354

Int. Cl.<sup>3</sup> H01L 41/08

U.S. Cl. 310—321

6 Claims



1. In combination,

a rotatable member, first and second piezoelectric elements secured at one end to a support at an optional angle to one another, the opposite ends of said elements being free to vibrate, an elastic member connected between said free ends with the central point of said elastic member in frictional contact with the surface of said rotatable member, and means for exciting said elements to cause by a phase difference of the vibration at the respective free ends of said elements the central point of said elastic member to have a circular physical displacement to rotate said rotatable member in a direction determined by said phase difference.

4,339,683

### ELECTRICAL CONNECTION

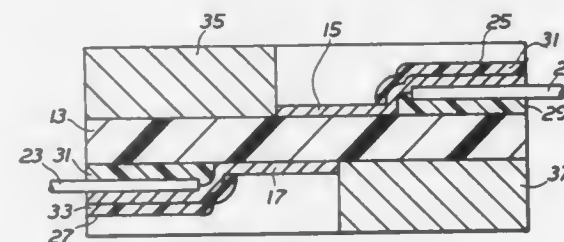
William R. Scott, Doylestown; Philip Bloomfield, Bala Cynwyd, both of Pa.; William T. Weist, Cherry Hill, N.J., and Karen M. McMahon, Southampton, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 4, 1980, Ser. No. 118,043

Int. Cl.<sup>3</sup> H01L 41/08

U.S. Cl. 310—364

12 Claims



1. A connection, comprising: a first conductive member; a second member consisting of polyvinylidene fluoride; an epoxy adhesive material disposed between and attaching said first conductive member to said second member; and a first electrically conductive coating on adjacent portions of said first conductive member and said second member for electrically connecting said first conductive member and said second member.

4,339,684

### ELECTRON MULTIPLIER TUBE WITH AXIAL MAGNETIC FIELD

Kei-ichi Kuroda; Daniel Sillou, both of Geneva, Switzerland, and Fujio Takeuchi, Pittsburgh, Pa., assignors to ANVAR, France

Filed Dec. 18, 1979, Ser. No. 104,818

Claims priority, application France, Dec. 22, 1978, 78 36148

Int. Cl.<sup>3</sup> H01J 43/18, 43/14

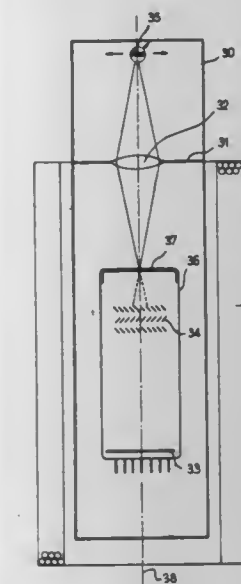
U.S. Cl. 313—105 R

14 Claims

1. In an electron multiplier apparatus, comprising  
(1) a vacuum enclosure,  
(2) a plurality of dynode stages, each capable of secondary electron emission when hit by charged particles, each dynode stage having a distributed structure,  
(3) electron-receiving means,  
(4) means for producing an electron accelerating electric field generally oriented along a principal axis passing through said plurality of dynode stages, towards said electron-receiving means,  
(5) means for producing a magnetic field generally oriented along said principal axis, the improvement comprising,  
(a) said dynode stages each comprising at least two levels of distributed dynode elements,  
(b) said dynode levels being spaced apart along said principal axis,

pal axis, the dynode elements of each dynode level being shifted between themselves within each dynode stage to thereby define a substantially impervious wall against substantially rectilinear motions of electrons moving parallel to said principal axis,

(c) the dynode elements in each level having a dimension transverse to said principal axis being selected in relationship with the magnetic field such that the average radius



of curvature of secondary electrons emitted therefrom is at least equal to said transverse dimension of the dynode elements,

(d) the dynode levels being so spaced along said principal axis that substantially no secondary electron emitted from the first dynode level in any given dynode stage will strike the second dynode level in the same dynode stage, while substantially all these said secondary electrons strike a dynode level of the next dynode stage.

4,339,685

### SEALED BEAM LAMP ASSEMBLY

Norio Saguchi; Hideki Ishii; Yoshiaki Sakakibara; Masakazu Nagasawa; Osami Saitoh; Yukio Wakimizu, and Susumu Kanematsu, all of Shimizu, Japan, assignors to Koito Manufacturing Company, Ltd., Tokyo, Japan

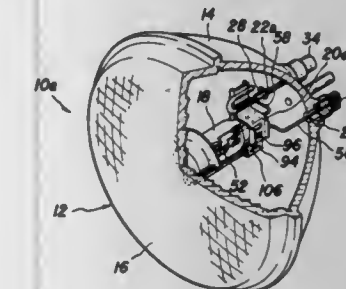
Filed May 9, 1980, Ser. No. 148,180

Claims priority, application Japan, May 14, 1979, 54-63946[U]; Dec. 29, 1979, 54-178457[U]; Dec. 29, 1979, 54-182823[U]; Mar. 19, 1980, 55-34913

Int. Cl.<sup>3</sup> H01K 1/28, 1/44

U.S. Cl. 313—113

6 Claims



1. An electric lamp assembly comprising a reflector, a support rod firmly anchored at one end to the reflector and preformed into the shape of a U to include a shank extending forwardly from the reflector and a fold directed rearwardly from the front end of the shank in parallel spaced relation thereto, and, a lamp disposed on that side of the shank which is opposite to the side where the fold lies, the lamp being secured to the fold of the support rod and thereby mounted on the reflector, whereby, the position of the lamp relative to the

reflector is preadjusted by turning the fold of the support rod about its shank.

4,339,686

### METAL VAPOR LAMP HAVING INTERNAL COATING FOR EXTENDING CONDENSATE FILM

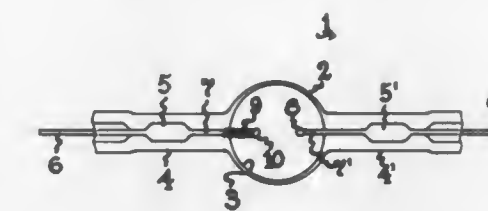
Ralph M. Potter, Pepper Pike, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,253

Int. Cl.<sup>3</sup> H01J 17/16, 61/30

U.S. Cl. 313—221

12 Claims



6. A high intensity metal vapor discharge lamp comprising: a sealed light-transmitting envelope, a discharge-supporting filling in said envelope including metal salt substantially in excess of the quantity vaporized in operation of said lamp the excess of said metal salt being liquid at the temperature of the walls of said envelope during operation, electrode means for supporting a discharge within said envelope, and a coating within said envelope comprising refractory metal oxide, oxynitride or nitride fibers attached to the envelope walls and forming a relatively open structure.

4,339,687

### SHADOW MASK HAVING A LAYER OF HIGH ATOMIC NUMBER MATERIAL ON GUN SIDE

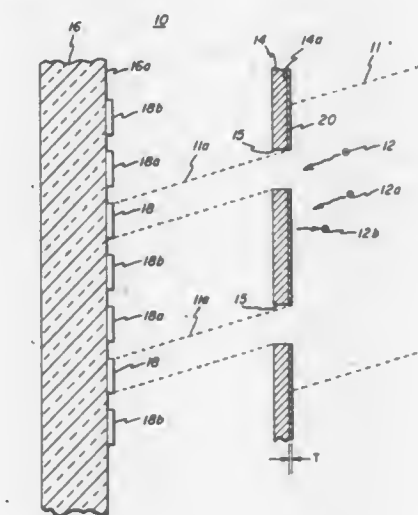
Rowland W. Redington, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 29, 1980, Ser. No. 154,221

Int. Cl.<sup>3</sup> H01J 29/07

U.S. Cl. 313—402

1 Claim

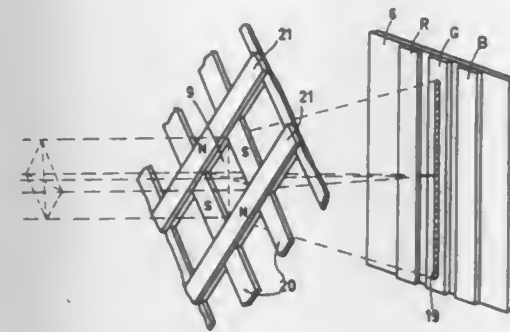


1. In a cathode ray tube of the type having at least one electron beam directed through apertures of a shadow mask for impingement upon at least one phosphor element, deposited upon the rear surface of the faceplate, and associated with each shadow mask aperture, the improvement comprising: a layer of a material, having an atomic number greater than 28 selected from a group consisting of tungsten of a thickness of about 3,000 angstroms and gold of a thickness of about 1,500 angstroms, fabricated upon substantially all of the non-apertured surface of said shadow mask upon which said at least one electron beam impinges; said material being characterized by a backscattering ratio greater



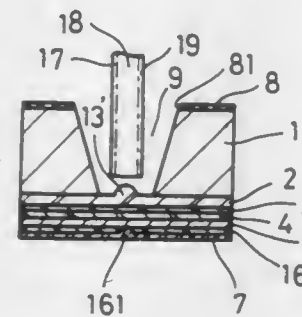
than the backscattering ratio of the material from which said mask is fabricated, and causing a greater percentage of beam electrons impinging upon said mask to backscatter, relative to the percentage of electrons backscattered from said mask without said layer.

**4,339,688**  
**CATHODE-RAY TUBE HAVING A MAGNETIC QUADRUPOLE SHADOW MASK**  
 Jan Verweel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.  
 Filed Mar. 31, 1980, Ser. No. 135,801  
 Claims priority, application Netherlands, May 3, 1979, 7903467  
 Int. Cl.<sup>3</sup> H01J 29/07, 31/20  
 U.S. Cl. 313—403 3 Claims



1. A cathode ray tube for displaying coloured pictures comprising in an evacuated envelope means to generate a number of electron beams, a display screen comprising a large number of areas luminescing in different colours, and colour selection means comprising a large number of apertures, in which apertures a magnetic quadrupole lens is formed and which apertures assign each electron beam to luminescent areas of one colour, characterized in that the colour selection means are formed by an apertured plate of soft-magnetic material, which plate is provided on one side with a first grid of parallel strips of hard magnetic material provided between the rows of apertures, and which colour selection means are magnetized in a direction perpendicular to the plane of the plate.

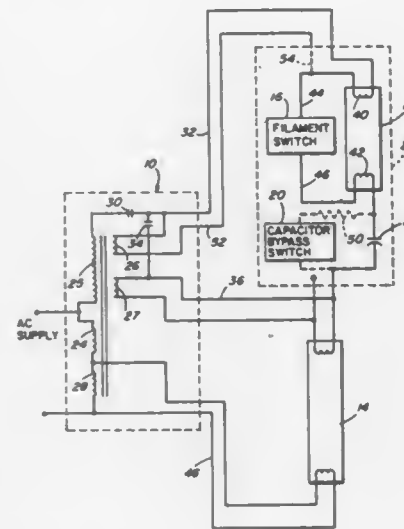
**4,339,689**  
**LIGHT EMITTING DIODE AND METHOD OF MAKING THE SAME**  
 Haruyoshi Yamanaka, Takarazuka, and Masaru Kazumura, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan  
 Filed Jan. 21, 1980, Ser. No. 115,249  
 Claims priority, application Japan, Jan. 29, 1979, 54-9519  
 Int. Cl.<sup>3</sup> H01L 33/00  
 U.S. Cl. 313—499 14 Claims



1. A light emitting diode having an improved surface for coupling with a light guide, comprising:  
 a semiconductor active layer,  
 a semiconductor first clad layer formed on a surface of said semiconductor active layer;  
 a protrusion formed unitarily on a surface of said first clad

layer for facing an input end of said light guide to effect light coupling therewith, and wherein  
 a depth X measured from the surface of said clad layer to a light emitting region of said clad layer and a radius R of said protrusion have a relationship of  $0 < X/R \leq 0.6$ .

**4,339,690**  
**ENERGY SAVING FLUORESCENT LIGHTING SYSTEM**  
 Robert J. Regan, Needham; Adrian Cogan, Waltham, and Carl F. Buhner, Framingham, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.  
 Filed Aug. 1, 1980, Ser. No. 174,472  
 Int. Cl.<sup>3</sup> H05B 41/14  
 U.S. Cl. 315—97 7 Claims



1. In a rapid-start fluorescent lamp lighting system of the type including first and second fluorescent lamps, each having first and second filaments sealed therein at opposite ends, and a sealed ballast unit including a high voltage output, a first low voltage output, and further including second and third low voltage outputs coupled to said filaments, respectively, of said second fluorescent lamp, energy-saving circuitry comprising:

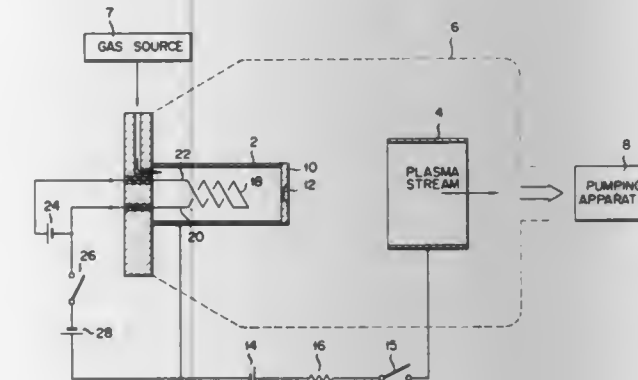
a reactance-modifying capacitor coupled in a series circuit with said first and second fluorescent lamps across said high voltage output of said ballast unit, said first fluorescent lamp having one lead of said first filament and one lead of said second filament coupled in said series circuit; filament switching means, including a first terminal coupled to the other lead of said first filament of said first lamp and a second terminal coupled to the other lead of said second filament of said first lamp, operative to provide a low impedance path therethrough during starting of said first lamp and operative to provide a high impedance path therethrough during normal operation of said first lamp; and

voltage responsive capacitor bypass switching means, including first and second terminals coupled electrically in parallel with said reactance-modifying capacitor, operative to provide a low impedance path therethrough part of ac cycles during starting of said first lamp and operative to provide a high impedance path therethrough during normal operation of said first lamp, said capacitor bypass switching means including means for providing said low impedance path therethrough after voltage across said terminals of said capacitor bypass switching means, exceeds a predetermined voltage, said predetermined voltage being greater than the voltage across said reactance-modifying capacitor during normal operation of said first fluorescent lamp and being less than the voltage across said reactance-modifying capacitor during starting of said first fluorescent lamp.

whereby said filament switching means is operative to conduct filament heating current during lamp starting, whereby said capacitor bypass switching means is opera-

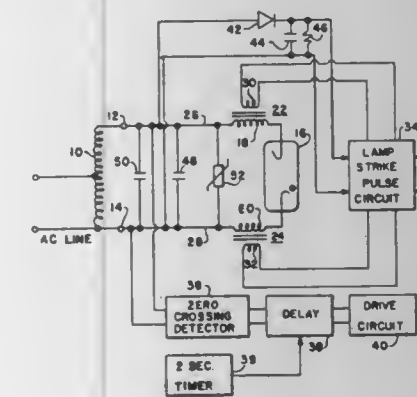
tive to bypass said reactance-modifying capacitor during part of ac cycles during lamp starting facilitating starting, and whereby said reactance-modifying capacitor increases the series capacitive reactance of said lighting system during normal operation, thereby reducing the energy consumption of said system.

**4,339,691**  
**DISCHARGE APPARATUS HAVING HOLLOW CATHODE**  
 Osami Morimiya, Tokyo; Setsuo Suzuki, and Shigeki Monma, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan  
 Filed Oct. 20, 1980, Ser. No. 199,057  
 Claims priority, application Japan, Oct. 23, 1979, 54-136626  
 Int. Cl.<sup>3</sup> H01J 7/24  
 U.S. Cl. 315—111.21 19 Claims



1. A discharge apparatus comprising:  
 a vacuum envelope;  
 an anode and a hollow cathode disposed within said vacuum envelope;  
 means for supplying an arc power to maintain an arc discharge between said anode and hollow cathode;  
 a means for evacuating said envelope;  
 a means for supplying gas under a low pressure through said hollow cathode into said envelope;  
 a means for restricting the flow of the low pressure gas supplied from said hollow cathode into said envelope such as to maintain the gas pressure within said hollow cathode to be higher than that within said envelope; and  
 a means for causing discharge within said hollow cathode.

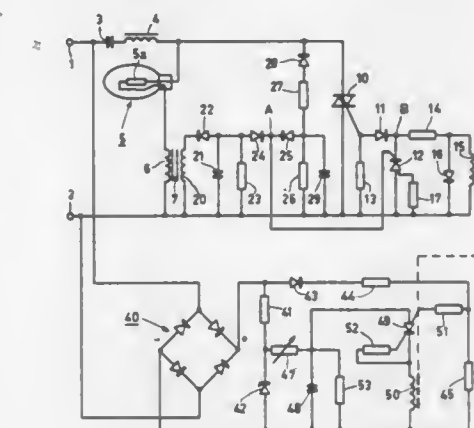
**4,339,692**  
**POWER SUPPLY FOR HID LAMP**  
 Robert R. Lasecki, Eastlake; Howard C. Reeve, III, Parma, and Nicholas O. Lindan, Cleveland, all of Ohio, assignors to The Nuarc Company, Inc., Chicago, Ill.  
 Filed Nov. 18, 1980, Ser. No. 207,953  
 Int. Cl.<sup>3</sup> H05B 41/231  
 U.S. Cl. 315—277 11 Claims



1. A circuit for supplying power to a high intensity discharge lamp from an alternating current source, comprising a

power supply transformer energized from an AC source and having an output winding, a cold cathode high intensity discharge lamp, a pair of lamp strike pulse transformers each having a primary and secondary winding, means connecting said HID lamp and said secondary windings of said pulse transformers in series directly across said transformer output winding, means for supplying lamp strike current pulses to said primary windings, the turns ratio between said primary and secondary windings of said pulse transformers being such that lamp strike pulses are produced across said secondary windings which are of sufficient magnitude to initiate a discharge in said lamp when said lamp is hot, said secondary windings remaining unsaturated when a discharge is initiated in said lamp when it is cold so that said secondary windings limit the current flowing through said lamp to a maximum permissible value during warm up of the lamp.

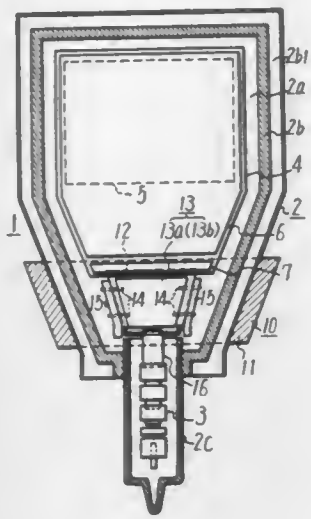
**4,339,693**  
**ARRANGEMENT INCLUDING A GAS AND/OR VAPOR DISCHARGE LAMP**  
 Adrianus M. J. De Bijl, and Johannes A. De Vogel, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.  
 Filed Nov. 17, 1980, Ser. No. 207,320  
 Claims priority, application Netherlands, Dec. 19, 1979, 7909127  
 Int. Cl.<sup>3</sup> H05B 41/16  
 U.S. Cl. 315—225 8 Claims



1. An arrangement comprising a gas and/or vapour discharge lamp having a discharge tube, and two terminals which are intended for connection to an a.c. voltage source, in which arrangement the terminals are interconnected by a series arrangement of at least the discharge tube and a stabilization ballast which includes a capacitor, a portion of the series arrangement which includes the discharge tube but not the capacitor is shunted by an electronic auxiliary device, this auxiliary device comprising a branch including a controlled semiconductor switching element provided with a control circuit, the semiconductor switching element being rendered conductive in the operating condition of the lamp in substantially each half cycle of the supply by means of its control circuit, the control of the semiconductor switching element being different during starting of the lamp from that during the operating condition of the lamp, characterized in that the discharge tube is of a type which has an average temperature of at least 200° C. in the operating condition of the lamp, and the control circuit of the semiconductor switching element includes a sensor element coupled to the said series arrangement which reduces the conduction period of the semiconductor switching element per unit of time so long as, in the switched-on condition of the arrangement, the condition of the lamp differs from its operating condition.

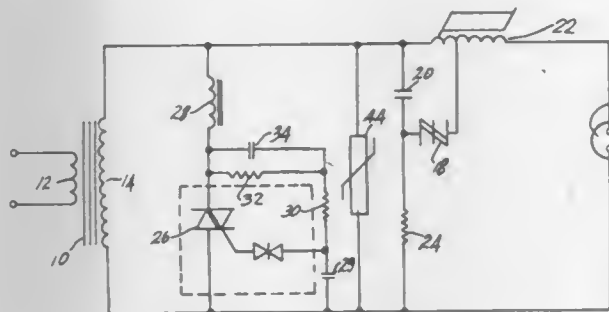


**4,339,694**  
**FLAT CATHODE RAY TUBE**  
 Akio Ohkoshi, Tokyo; Hiroki Sato, Chiba; Masato Hatanaka, Saitama; Toshio Ohboshi, and Sakae Tanaka, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan  
 Filed Feb. 11, 1981, Ser. No. 233,388  
 Claims priority, application Japan, Feb. 15, 1980, 55-18068  
 Int. Cl.<sup>3</sup> H01J 29/70, 29/72  
 U.S. Cl. 315—366



1. A cathode ray tube, comprising:  
 an evacuated envelope having at least one transparent flat portion;  
 a fluorescent target arranged on the inner surface of said flat portion;  
 an electron gun within said envelope in laterally spaced relation to said target for emitting an electron beam along a path parallel with the surface of said flat portion;  
 first deflecting means in said envelope for impinging said electron beam upon said target;  
 second deflecting means comprising a pair of plates to put said electron beam therebetween arranged in said envelope for deflecting said electron beam perpendicularly to said surface of said flat portion; and  
 third deflecting means arranged adjacent to said envelope at substantially the same position, along the beam path, as said second, deflecting means in cooperation with said pair of plates for concentrating deflecting flux generated by means of said third means on said electron beam between said pair of plates and for deflecting said electron beam in parallel with said surface of said flat portion, thereby to produce an image on said target.

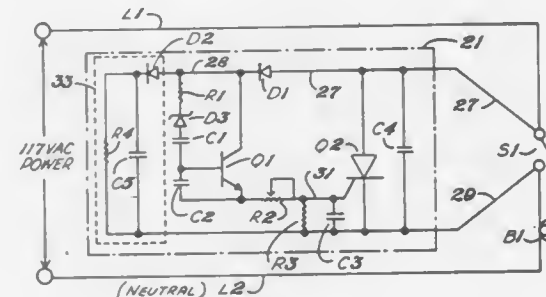
**4,339,695**  
**HIGH PRESSURE SODIUM LAMP BALLAST CIRCUIT**  
 John V. Siglock, Sierra Madre, Calif., assignor to Unicorn Electrical Products, Anaheim, Calif.  
 Filed Jun. 5, 1980, Ser. No. 156,766  
 Int. Cl.<sup>3</sup> H05B 41/16  
 U.S. Cl. 315—276



1. A ballast circuit for driving a gas discharge lamp from a constant current alternating voltage source, comprising:  
 a ballast transformer having a magnetic core and windings on

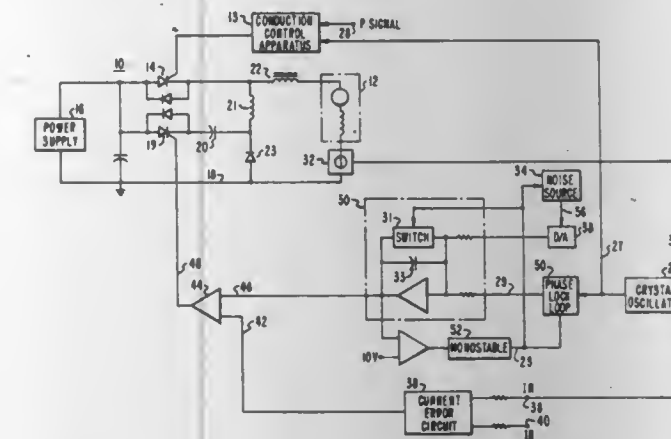
the core for coupling the lamp to the voltage source, and a voltage limiting circuit including a switching element having a control electrode, the switching element being connected in a shunt current path across one of the transformer windings, and a band-pass filter network coupling the control electrode across the transformer winding, the band-pass filter network limiting the triggering of the switching device to intermediate frequencies present within the pass-band of the network.

**4,339,696**  
**LIGHT SWITCH DELAY CIRCUIT**  
 Tony Jabor, 9001 Galena, El Paso, Tex. 79904  
 Filed Jun. 16, 1980, Ser. No. 160,095  
 Int. Cl.<sup>3</sup> H05B 39/00  
 U.S. Cl. 315—360



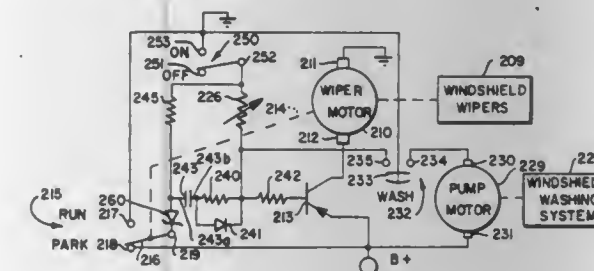
1. A delay circuit adapted to be connected across a light switch for maintaining an electric light bulb on for a given time after the switch has been opened, and wherein the switch has two terminals connected to two leads respectively to which A.C. voltage is applied, with the bulb being connected to one of said leads, said delay circuit comprising:  
 a first lead adapted to be connected to one terminal of the switch,  
 a second lead adapted to be connected to the other terminal of the switch,  
 a switching element having an anode, a cathode, and a gate with its anode and cathode connected to said first and second leads respectively for turning the bulb on when said switching element is on and the switch is open,  
 a capacitor having one terminal coupled to said first lead, an electronic gate coupled to the other terminal of said capacitor and having its output coupled to the gate of said switching element for turning said switching element on when said electronic gate is turned on as said capacitor charges when the switch is opened,  
 said capacitor being charged during each positive portion of each cycle of the A.C. voltage following opening of the switch until it is fully charged,  
 said electronic gate being turned on at later periods during each succeeding positive portion of each cycle of the A.C. voltage following opening of the switch until said capacitor is fully charged at which time said electronic gate will no longer turn on,  
 diode means coupled to said first lead for preventing said capacitor from discharging during the negative portion of each cycle, and  
 a quick discharge circuit for discharging said capacitor when the switch is closed,  
 said quick discharge circuit comprising:  
 a blocking diode having its anode connected to said first lead between said diode means and said capacitor, and  
 a resistor and capacitor connected in parallel to the cathode of said blocking diode and to said second lead.

**4,339,697**  
**PROPULSION MOTOR CONTROL APPARATUS AND METHOD**  
 James H. Franz, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.  
 Filed May 13, 1980, Ser. No. 149,358  
 Int. Cl.<sup>3</sup> H02P 5/16  
 U.S. Cl. 318—341



1. In control apparatus for a motor operative with a power supply and in relation to a control signal within a known frequency bandwidth, the combination of:  
 switch means coupled between the power supply and the motor and having a duty cycle for determining the average operation of the motor;  
 means providing a first signal having a reference frequency and a predetermined magnitude;  
 means providing a motor operation error signal having a magnitude in response to at least one of the actual operation of the motor and a desired operation for said motor;  
 means coupled with the switch means for determining said duty cycle and the average operation of said motor in accordance with a comparison of the magnitude of said first signal and the magnitude of said error signal; and  
 means coupled with the first signal providing means for providing a predetermined deviation of said reference frequency.

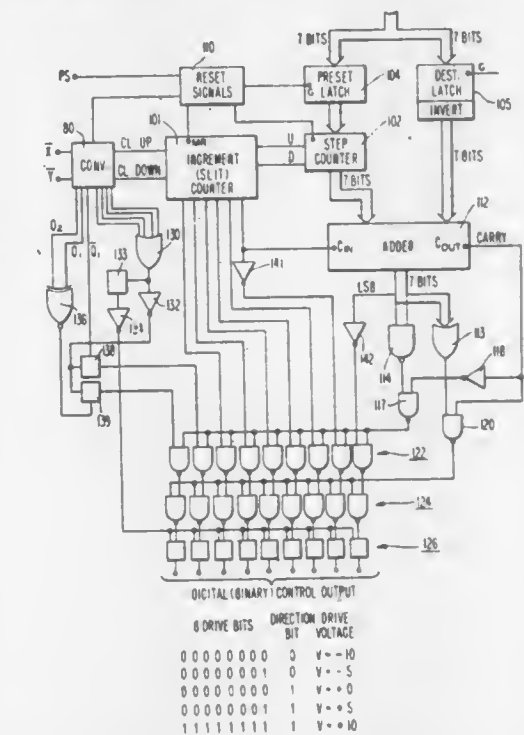
**4,339,698**  
**CONTROL APPARATUS FOR WINDSHIELD WIPER SYSTEM**  
 Robert W. Kearns, 9725 Lookout Pl., Gaithersburg, Md. 20760  
 Filed Apr. 12, 1979, Ser. No. 29,338  
 Int. Cl.<sup>3</sup> H02P 1/04  
 U.S. Cl. 318—444



1. In a window wiper system having a wiper for wiping a window and a control system for driving said wiper intermittently through wipe cycles with dwell periods at the ends of said wipe cycles, the improvement comprising a pump motor adapted when energized to apply fluid to said window, washer control means to energize said pump motor when actuated, said control system including means to drive said wiper through a plurality of wipe cycles without a dwell-period between wipe cycles in response to actuation of said washer control means, said control system including a capacitance and a resistor connected to said capacitance during said dwell period to change the charge on said capacitance during said

dwell period and first circuit means responsive to the potential on one side of said capacitance to initiate a wipe cycle at the end of each dwell period and to initiate dwell periods at the end of wipe cycles, and second circuit means responsive to actuation of said washer control means to change the charge on said capacitance so that said first circuit means will not initiate a dwell period at the end of at least the first wipe cycle following actuation of said washer control.

**4,339,699**  
**MOTOR CONTROL SYSTEM FOR USE IN AN APPARATUS FOR PERFORMING TESTS AND MEASUREMENTS ON LIQUID SAMPLES**  
 Jan H. de Jonge, Dieren, and Johannes H. L. Hogen Esch, Aalten, both of Netherlands, assignors to Vitatron Scientific B.V., Dieren, Netherlands  
 Filed Aug. 19, 1980, Ser. No. 179,502  
 Int. Cl.<sup>3</sup> G05B 13/00  
 U.S. Cl. 318—561



1. A motor control system for controlling movement of a motor which drives an element toward a destination position, comprising:  
 a periodic means for generating a first periodic plural bit signal, each cycle of said plural bit signal corresponding to movement by said element of a first increment of distance, and for generating an increment signal each said cycle;  
 counting means connected to receive said increment signal, for generating a second periodic plural bit signal, each cycle of said second signal corresponding to movement by said element of a second increment of distance,  
 means for generating a third plural bit drive signal, including combining means for combining said first and second plural bit signals,  
 means for enabling said combining means only when said element is within a given range from said destination, said range being a predetermined function of said second increment of distance, and  
 means for driving said motor with said third plural bit drive signal.



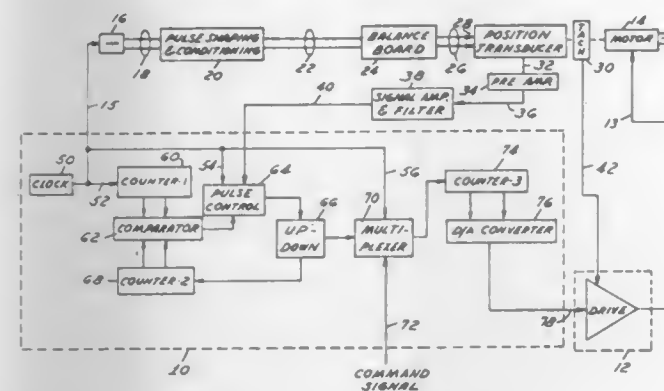
# 4,339,700 HIGH FREQUENCY CONTROL SYSTEM USING DIGITAL TECHNIQUES

Richard L. Desbiens, Claremont, N.H., and Richard H. Gile, North Clarendon, Vt., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Feb. 23, 1981, Ser. No. 236,483  
Int. Cl.<sup>3</sup> G05B 1/06

U.S. Cl. 318—660

5 Claims



1. An apparatus for controlling the rotary shaft position of a high speed position control system having a servo-amplifier means and drive amplifier means, a servo-motor with a tachometer feedback means and rotary position feedback means, the improvement comprising a high frequency phasing network means receiving a timing signal from said servo-amplifier means, a pulse shaping, conditioning and balancing network means connected to said rotary position means, a conditioning feedback network means feeding a control signal to said servo-amplifier, said servo-amplifier means processing said timing signal and said feedback control signal to develop an internal control signal which is processed with said timing signal and a command signal to produce a drive signal for said drive amplifier means.

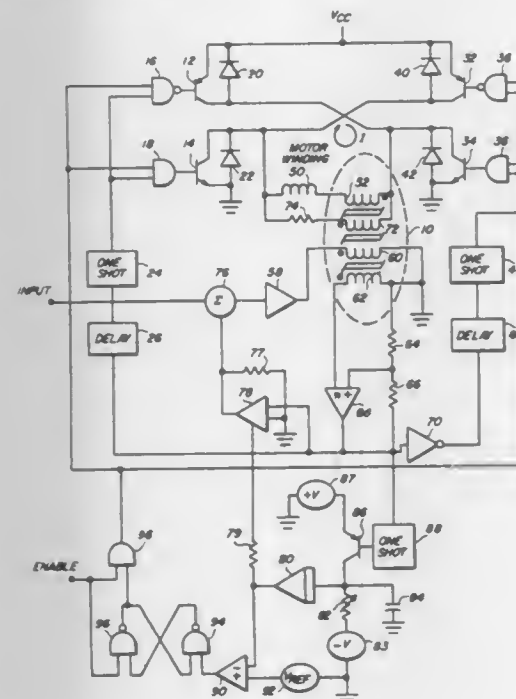
# 4,339,701 SWITCHING FREQUENCY STABILIZATION AND LOAD FAULT DETECTION IN SWITCHING AMPLIFIERS

Eric K. Pritchard, 1702 Plymouth Ct., Bowie, Md. 20716

Filed Apr. 11, 1980, Ser. No. 139,596  
Int. Cl.<sup>3</sup> G05B 19/40

U.S. Cl. 318—696

36 Claims



1. In a switching amplifier for driving inductive loads with output devices comprising a supply voltage; first means for sensing an input signal; non-linear transformer means respon-

sive to said input signal for sensing the load current of said inductive load, for comparing said load current to high and low switching points of said amplifier, said switching points being a function of said transformer parameters, and for providing switching signals indicative of the load current attaining said high and low switch points; and second means for receiving said switching signal and for switching said output devices, the improvement comprising:

means responsive to the voltage across said inductive load for controlling said switching points such that the frequency of said switching signal is stabilized against variations in said supply voltage.

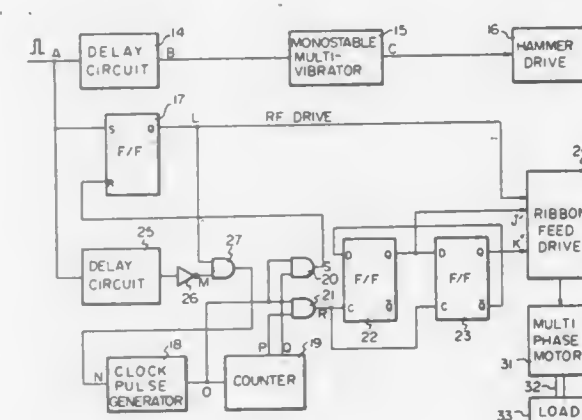
# 4,339,702 STEPPING MOTOR DRIVE APPARATUS

Shigeyuki Araki, and Hideyasu Yamanaka, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 8, 1980, Ser. No. 185,064  
Claims priority, application Japan, Sep. 11, 1979, 54-116307  
Int. Cl.<sup>3</sup> G05B 19/40

U.S. Cl. 318—696

2 Claims



1. A motor drive apparatus comprising a multi phase motor having a shaft and drive means for sequentially energizing the motor phases with a high drive current for rotating the shaft and for energizing a present motor phase with a low hold current for holding the shaft in a respective present position, characterized in that, prior to energizing a next motor phase for rotating the shaft away from the present position, the drive means is constructed to energize the present phase with the high drive current for a predetermined length of time.

# 4,339,703 TWO STEP PHASE RESET GYRO MOTOR POWER SUPPLY

William J. Rolff, Woodcliff Lake; Samuel Costa, Ringwood, and William A. Hendricks, Parsippany, all of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Sep. 3, 1980, Ser. No. 183,686  
Int. Cl.<sup>3</sup> H02P 5/40

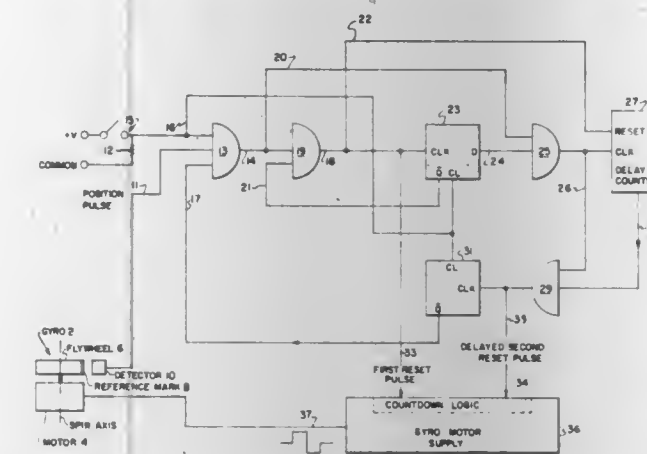
U.S. Cl. 318—702

5 Claims

1. A phase control system for a gyro synchronous motor comprising:

means for detecting cyclical rotation of a reference point on a gyro flywheel and generating a position pulse in response to each rotational cycle;  
power supply means for a gyro synchronous motor;  
means for connecting the output of the power supply means to a synchronous gyro motor; and  
logic circuit means connected at its input to the detecting means at its output to an input of the supply means for providing a first reset pulse to the supply means which establishes a predetermined phase between the flywheel reference point and a vector of the synchronous motor rotating field;  
wherein signal delaying means are included in the logic

circuit means for generating a second reset pulse delayed with respect to the first reset pulse for causing an additional phase shift of a preselected amount to occur thereby



ensuring that the total phase shift exceeds a lag angle of the motor which might otherwise create uncertainty of data collected from a gyro.

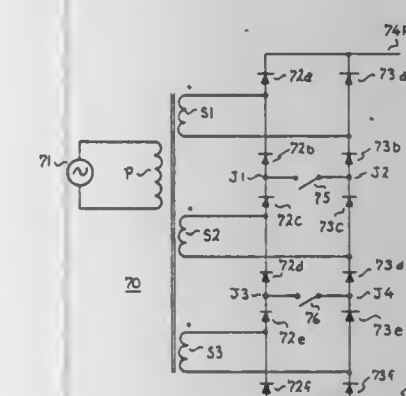
# 4,339,704 SERIES PARALLEL TRANSITION FOR POWER SUPPLY

Lloyd W. McSparran, Erie, and Russell M. Smith, North East, both of Pa., assignors to General Electric Company, Erie, Pa.

Filed Jul. 7, 1980, Ser. No. 166,680  
Int. Cl.<sup>3</sup> H02M 7/00; H02P 9/00

U.S. Cl. 322—90

6 Claims



1. In combination:  
(a) a pair of d-c load buses;  
(b) rectifying means having at least first and second legs interconnected in parallel circuit relationship between said buses, each of said legs comprising first, second, third, and fourth unilaterally conducting devices connected in series with one another and polled to conduct current in a direction from one of said buses to the other;  
(c) an a-c power supply comprising at least first and second separate windings so arranged that in-phase alternating voltages of equal amplitudes are respectively generated therein;  
(d) means for connecting said first winding between a point between the first and second devices of said first rectifier leg and a point between the corresponding devices of said second rectifier leg and for connecting said second winding between a point between the third and fourth devices of said first rectifier leg and a point between the corresponding devices of said second leg, whereby said windings are effectively connected in parallel between said buses; and  
(e) means for interconnecting the respective junctures of the second and third devices in all of the legs of said rectifying means, said interconnecting means having open circuit and closed circuit states between which it is selectively switchable in response to transition command signals and being effective upon switching from open to closed circuit states to short circuit said junctures, whereby the connec-

tion of said first and second windings can be changed from parallel to series.

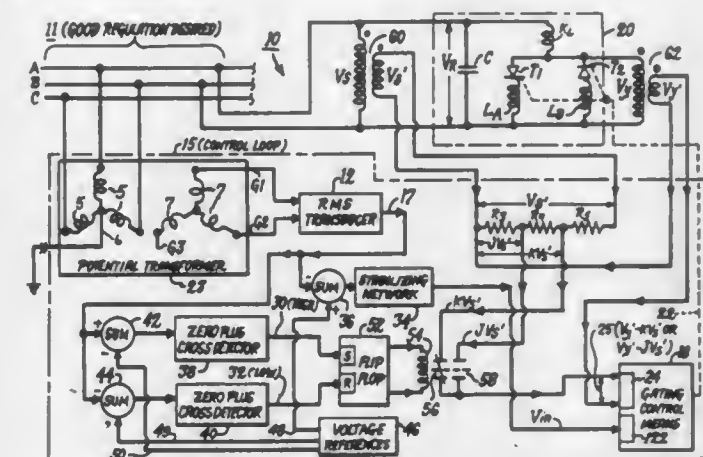
# 4,339,705 THYRISTOR SWITCHED INDUCTOR CIRCUIT FOR REGULATING VOLTAGE

Fred W. Kelley, Media, Pa., assignor to General Electric Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 49,825, Jun. 18, 1979. This application Mar. 11, 1981, Ser. No. 242,784

U.S. Cl. 323—210

6 Claims



1. In a regulating system of the type having: a reactive converter for delivering a leading or lagging current to compensate for a load of varying reactance; means for deriving a first signal representative of voltage at a critical area in the power system at which good voltage regulation is desired; means for deriving a second signal representative of a desired voltage regulation level; means responsive to said first and second signals for developing an error signal for said regulating system which is used to hold the first and second signals in close correspondence if within a desired range of the reactive converter; comparison means for sensing the non-correspondence between said first and second signals and developing in dependence upon said non-correspondence a command signal indicative of whether normal or transient conditions are present in the power system;

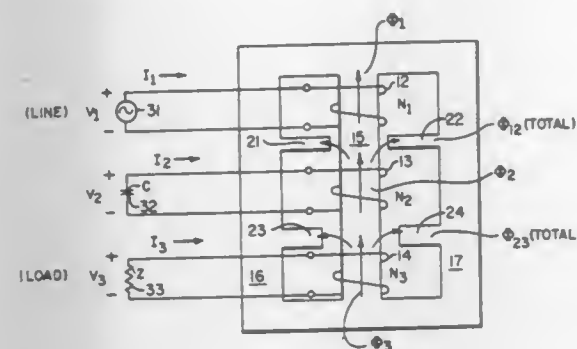
gating control means responsive to said command signal for supplying an output signal therefrom to the reactive converter so as to regulate the voltage at said critical area both during normal and transient conditions, wherein the reactive converter further comprises:

a. two circuit branches connected in parallel across said power system, each branch comprising an inductor and a thyristor connected in series, said thyristors being oppositely poled and each of said thyristor providing a unidirectional path through its inductor;  
b. a capacitor connected across said power system in parallel with said two branches; and

gating control means in effecting said voltage regulation during normal conditions causing each of thyristors to have a conduction angle of 180 degrees or less in response to said comparison means sensing the presence of normal power conditions in the power system and, in effecting said voltage regulation during transient conditions, causing each of said thyristors to have a conduction angle of greater than 180 degrees in response to said comparison means sensing the presence of transient power conditions in the power system.

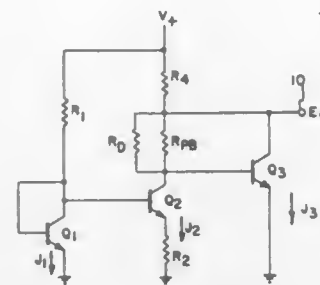


4,339,706  
**CURRENT CONTROLLING**  
 Alexander Kusko, Newton, Mass., assignor to Jodice Controls Corporation, Waltham, Mass.  
 Continuation of Ser. No. 581,876, May 29, 1975, abandoned.  
 This application Aug. 14, 1978, Ser. No. 933,646  
 Int. Cl.<sup>3</sup> G05F 1/38  
 U.S. Cl. 323—248 11 Claims



1. Apparatus for controlling load current comprising, a capacitor, capacitor winding means for coupling to said capacitor, first inductive reactance means for receiving input power for transfer to a load, second inductive reactance means for delivering power to a load, magnetic coupling means for coupling said capacitor winding means to said first inductive reactance means and said second inductive reactance means, input terminals for connection to the a-c line, controlled switching means intercoupling said input terminals with said first inductive reactance means for delivering a voltage to said first inductive means with substantial harmonics of the a-c line frequency and controlled amplitude, and means for controlling the conduction angle of said controlled switching means to control the amount of energy delivered to said first inductive reactance means, said first and second inductive reactance means, said magnetic coupling means and said capacitor winding means being for coaxing with said capacitor connected across said capacitor winding means for establishing the current delivered to a load through means including said second inductive reactance means as substantially sinusoidal with the harmonics of the a-c line frequency significantly attenuated directly proportional to the voltage applied to said apparatus through means including said first inductive reactance means independently of the load coupled to said second inductive reactance means, said first inductive reactance means comprising an input winding, said second inductive reactance means comprising a load winding, there being a leakage reactance of  $\omega N_3^2 P_{12}$  between said input and capacitor winding means referred to said load winding, a leakage reactance  $\omega N_3^2 P_{23}$  between said load winding and said capacitor winding means referred to said load winding and a capacitive reactance of said capacitor  $X_C N_3^2 / N_2^2$  referred to said load winding means with the reactances  $\omega N_3^2 P_{12}$  and  $X_C N_3^2 / N_2^2$  being substantially equal to each other at said a-c line frequency, wherein  $\omega$  is the radian frequency of the electrical power on said a-c line,  $N_2$  is the number of turns of said capacitor winding means,  $N_3$  is the number of turns of said load winding,  $P_{12}$  is the permeance of the leakage flux path between said input winding and said capacitor winding means,  $P_{23}$  is the permeance of the leakage flux path between said capacitor winding means and said load winding, and  $X_C$  is the reactance of said capacitor.

4,339,707  
**BAND GAP VOLTAGE REGULATOR**  
 James L. Gorecki, Plymouth, Minn., assignor to Honeywell Inc., Minneapolis, Minn.  
 Filed Dec. 24, 1980, Ser. No. 219,792  
 Int. Cl.<sup>3</sup> G05F 3/20  
 U.S. Cl. 323—313 29 Claims

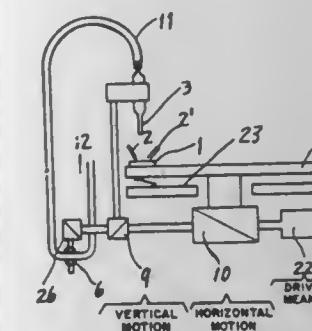


1. An integrated circuit reference voltage source for providing a reference voltage at an output terminal means, the reference voltage source comprising: first transistor means having a base, a collector, and an emitter, the base and collector being connected together; first resistor means connected to the collector of the first transistor means; second transistor means having a base, a collector, and an emitter, the base of the second transistor means being connected to the base of the first transistor means; second resistor means connected to the emitter of the second transistor means; a voltage supply terminal means for connection to a supply voltage; coupling means connected between the voltage supply terminal and the output terminal means; base pinch resistor means connected between the output terminal means and the collector of the second transistor means; and output control transistor means having a base, a collector, and an emitter, the base of the output control transistor means being connected to the collector of the second transistor means and the collector of the output control transistor means being connected to the coupling means to control the reference voltage at the output terminal means as a function of a base-emitter voltage of the output control transistor means and a voltage developed across the base pinch resistor means.

4,339,708  
**TESTING APPARATUS FOR DIELECTRIC BREAKDOWN CAUSED BY TRACKING PHENOMENA**  
 Mitsuru Saito, Hirakata; Yuji Karatani, Amagasaki; Wataru Sakurai, and Ken'ichi Nobuta, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan  
 Filed Feb. 19, 1980, Ser. No. 122,660  
 Claims priority, application Japan, Feb. 20, 1979, 54-19178  
 Int. Cl.<sup>3</sup> G01R 31/18  
 U.S. Cl. 324—54 7 Claims

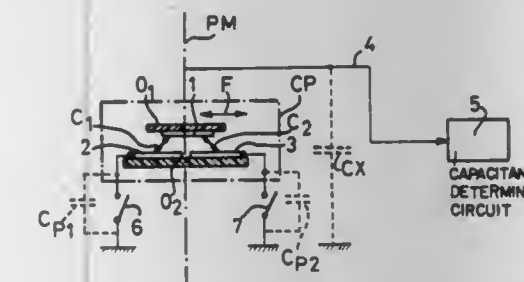
1. A testing apparatus for dielectric breakdown caused by tracking phenomena comprising: a dripping nozzle; a plurality of pairs of opposed electrodes each being adapted to be held in contact with one of a corresponding number of specimens to be tested; moving means for successively moving the pairs of electrodes together with the specimens relative to the nozzle repetitively at an overall time interval but intermittently at a constant smaller time interval in a manner such that each specimen is stopped for a specified period when it is in a position immediately below the nozzle; dripping control means for dripping a test solution from the nozzle to each specimen at a location between each pair of

electrodes when the specimen is immediately below the nozzle; power supply means for supplying electric power to the plurality of pairs of electrodes;



power control means for controlling power supply condition for the electrodes and on-off condition therefor; and means for detecting current through each pair of electrodes.

4,339,709  
**DEVICE FOR MEASURING THE RELATIVE POSITION OF TWO OBJECTS**  
 Gerard C. C. Brihier, Ollainville, France, assignor to Facom, Morangis, France  
 Filed Apr. 3, 1980, Ser. No. 136,766  
 Claims priority, application France, Apr. 9, 1979, 79 08919  
 Int. Cl.<sup>3</sup> G01R 27/26  
 U.S. Cl. 324—61 R 16 Claims



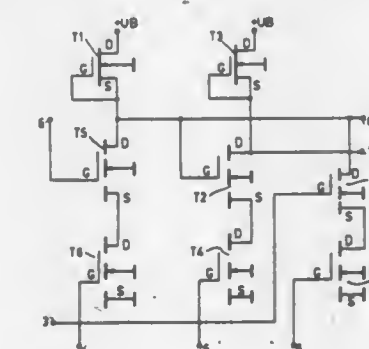
1. A device for measuring the relative position of two objects by variation of capacitance, said device comprising in combination: a capacitive detector of the differential type comprising at least two first electrodes for mechanically connecting to one of said objects, and at least one second electrode for mechanically connecting to the other of said objects and forming with the first electrodes two variable capacitances which vary as a function of the relative position of the objects, said two capacitances being in a ratio which is only a function of said relative position; a circuit for determining the values of said capacitances; switching means selectively connecting said capacitances to an input of said value determining circuit for successively measuring said capacitances and also the parasitic capacitance inherent in the measuring device.

4,339,710  
**MOS INTEGRATED TEST CIRCUIT USING FIELD EFFECT TRANSISTORS**  
 Friedrich Hapke, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.  
 Filed Feb. 1, 1980, Ser. No. 117,885  
 Claims priority, application Fed. Rep. of Germany, Feb. 12, 1979, 2905271  
 Int. Cl.<sup>3</sup> G01R 15/12  
 U.S. Cl. 324—73 R 1 Claim

1. An MOS integrated circuit arrangement with field-effect transistors, in which the individual circuit block sections of the integrated circuit arrangement are interconnected by field-

effect transistor switches which are switchable by external test signals, and in which each field-effect transistor is connected to a voltage no higher than ground through its substrate connection, characterized in that for testing at least two circuit blocks, an input block (EB1) and an output block (AB1), individually and in combination, at least three parallel field-effect transistor-switch groups are provided, each connecting to a common connection point (9) which is connected to the supply voltage (+UB) by a first field-effect transistor (T1) of the depletion type connected as a load resistor, the field-effect transistor-switch groups each comprising two series-connected field-effect transistors of the enhancement type, said switch groups further comprising:

a first group for testing the input block (EB1) and having a second field-effect transistor (T2) connected with its gate connection to the common connection point (9), with its drain connection both to a first external connection point (7) and by a third field-effect transistor (T3) of the depletion type, connected as a load resistor, to the supply voltage (+UB), and with its source connection to the drain



connection of a fourth field-effect transistor (T4) whose source connection is connected to ground and whose gate connection is connected to a first control line (5); a second group for connecting and disconnecting the input block (EB1) and the output block (AB1) and having a fifth field-effect transistor (T5) connected with its drain connection to the common connection point (9), with its gate connection to the output (8) of the input block (EB1), and with its source connection to the drain connection of a sixth field-effect transistor (T6) whose source connection is connected to ground and whose gate connection is connected to a second control line (4); a third group for testing the output block (AB1), in which the drain connection of a seventh field-effect transistor (T7) is connected to the common connection point (9), its gate connection is connected to a second external connection point (3), and its source connection is connected to the drain connection of an eighth field-effect transistor (T8) whose source connection is connected to ground and whose gate connection is connected to a third control line (6).

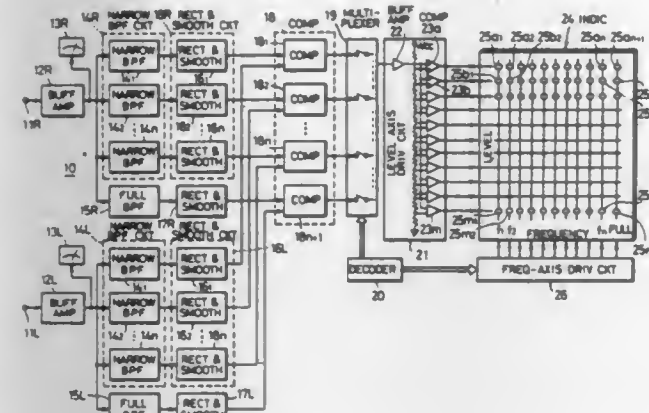
4,339,711  
**SPECTRUM DISPLAYING APPARATUS FOR MULTICHANNEL SIGNALS**  
 Mamoru Inami, Yokohama, and Yoshiaki Tanaka, Tokyo, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan  
 Filed Jul. 9, 1980, Ser. No. 167,142  
 Claims priority, application Japan, Jul. 10, 1979, 54/87186; Aug. 24, 1979, 54/116406[U]; Aug. 31, 1979, 54/111412  
 Int. Cl.<sup>3</sup> G01R 23/16  
 U.S. Cl. 324—77 E 7 Claims

1. An apparatus for displaying the spectrum of multichannel signals comprising: band-pass filtering circuits of a plurality of channels provided to respectively correspond to the channels of a plurality of channels, each of said band-pass filters of



respective channels comprising a group of band-pass filters having filtering bands having respectively different center frequencies and filtering by band dividing input signals;

level comparing means for at least rectifying respectively the outputs of band-pass filters mutually having the same filtering band of the band-pass filtering circuits of said plurality of channels, thereafter level comparing the same, and obtaining the band signal of the higher level;



an indication device having indicating parts of systems of the same number as the number of said band signals thus obtained; and means for supplying said band signals thus obtained to said indicating device and causing the levels thereof to be displayed by the indicating parts of the respectively corresponding systems.

#### 4,339,712 METHOD AND SYSTEM FOR MEASURING WIDTH AND AMPLITUDE OF CURRENT PULSE

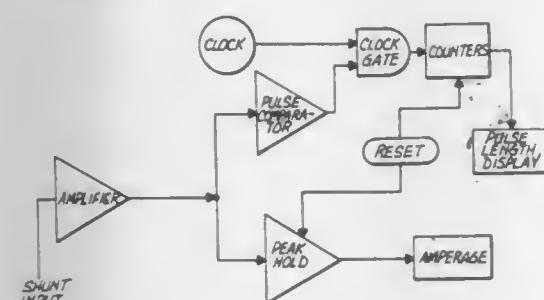
William O. Walters, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 1, 1980, Ser. No. 145,547

Int. Cl.<sup>3</sup> G01R 19/16; G04F 8/00

U.S. Cl. 324—102

3 Claims



1. A system for measuring and indicating width and amplitude of input signal current pulses comprising in combination: a shunt; means for amplifying the input signal voltage across said shunt; a pulse comparator circuit responsive to said amplified input signal voltage; counter circuit means; clock gate circuit means coupled between said pulse comparator circuit and said counter circuit means; amperage readout circuit means including a display for indicating the amplitude of said input signal current pulses; a peak hold circuit coupled between said means for amplifying the input signal voltage across said shunt and said amperage readout circuit means; pulse length display circuit means coupled to said counter circuit means, said pulse length display circuit means

including a display for indicating the pulse length of said input signal current pulses;

reset switching means coupled to said counter circuit means for clearing said counter circuit means and resetting said display for indicating the pulse length of said input signal current pulses;

said peak hold circuit including a holding capacitor; and said reset switching means further coupled to said peak hold circuit for discharging said holding capacitor and resetting said display for indicating the amplitude of said input signal current pulses.

#### 4,339,713 APPARATUS FOR DETECTING ROTATIONS

Yoshiyuki Kago, Okazaki, Aichi, and Masao Kotera, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

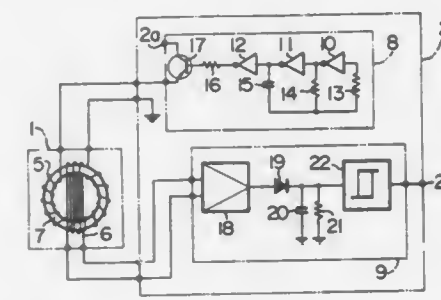
Filed May 12, 1980, Ser. No. 149,245

Claims priority, application Japan, May 25, 1979, 54/65320

Int. Cl.<sup>3</sup> G01P 3/48, 3/54

U.S. Cl. 324—173

3 Claims



1. An apparatus for detecting a rotational speed of an internal combustion engine having a rotatable member made of a magnetically permeable material having a residual magnetism which provides a first magnetic flux, said apparatus comprising:

a magnetic core shaped in the form of a ring positioned in the vicinity of said rotatable member;

a drive coil wound circularly on said magnetic core for generating a second magnetic flux when energized, said second magnetic flux passing through said magnetic core;

an energizing circuit connected to said drive coil for energizing said drive coil by periodic signals generated continuously and having both a predetermined amplitude and a predetermined frequency much higher than the maximum rotational frequency attainable for said rotatable member;

a detection coil wound diametrically on said magnetic core for generating output signals in proportion to changes in magnetic flux passing therethrough, said changes being caused by changes in said first and second magnetic fluxes resulting from the periodic energization of said drive coil and the rotation of said rotatable member; and

a detection circuit connected to said second coil for converting said output signals into pulse signals having a frequency proportional to the rotational speed of said rotatable member by subjecting said output signals to waveform detection.

#### 4,339,714 PROBE HAVING PASSIVE MEANS TRANSMITTING AN OUTPUT SIGNAL BY REACTIVE COUPLING

Victor E. H. Ellis, Bristol, England, assignor to Rolls Royce Limited, London and Renishaw Electrical Limited, Gloucestershire, both of, England

Filed Jun. 25, 1979, Ser. No. 51,389

Claims priority, application United Kingdom, Jul. 7, 1978, 29116/78

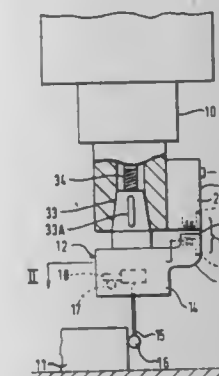
Int. Cl.<sup>3</sup> G01B 7/14; G01R 33/00; G01B 7/02

U.S. Cl. 324—207

6 Claims

1. A machine tool comprising: a head, a probe detachably

secured to said head, said head being movable relative to a workpiece to bring said probe into a predetermined position relative thereto for the purpose of taking a measurement of said workpiece, a first electric circuit provided on said probe, said first electric circuit having no source of operative power, a second electric circuit provided on said head, a reactive coupling having adjacent electric coupling parts which are not wired together and which are respectively provided on opposing portions of said head and said probe and spaced apart by an air gap separating said opposing portions, said electrical coupling parts being respectively arranged in said first and second electric circuits, the coupling part arranged in the first circuit



being separable from the coupling part arranged in the second circuit upon detachment of said probe from said head, an oscillator connected to the second circuit to produce therein oscillations transmittable to the first circuit by virtue of said coupling when the probe is secured to the head, the first and second circuits cooperating to determine the impedance offered to said oscillations in said second circuit, means provided on the probe for stepwise changing the state of the first circuit responsive to the probe attaining said predetermined position to thereby stepwise change said impedance, and sensing means connected to the second circuit for sensing changes in the oscillations in said second circuit produced by a change in said impedance.

#### 4,339,715 CARRIER-DOMAIN MAGNETOMETERS WITH COMPENSATION RESPONSIVE TO VARIATIONS IN OPERATING CONDITIONS

Greville G. Bloodworth, York, and Martin H. Manley, London, both of England, assignors to The General Electric Company Limited, London, England

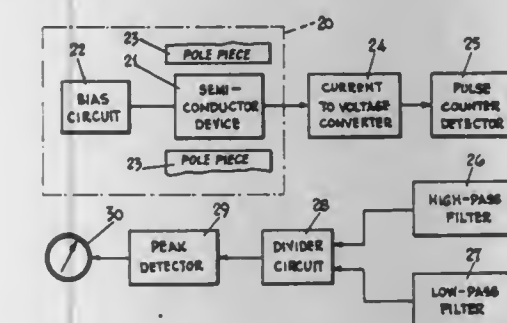
Filed Apr. 23, 1980, Ser. No. 142,971

Claims priority, application United Kingdom, May 4, 1979, 7915666

Int. Cl.<sup>3</sup> G01R 33/02; H01L 29/82

U.S. Cl. 324—252

10 Claims



1. A carrier-domain magnetometer provided with magnetic biasing means for subjecting the p-n-p-n structure of the magnetometer to a substantially constant magnetic field directed substantially parallel to the central axis of said structure and having a magnitude such that over a range of operating conditions of the semiconductor device the magnetometer will be biased for operation on the linear part of its frequency/flux density characteristic, and means for monitoring the value of the ratio  $(F-F_0)/F_0$  or a function thereof, where F represents

the frequency of domain rotation when said structure is subjected to the biasing field together with a magnetic field to be sensed, and  $F_0$  represents the frequency of domain rotation when said structure is subjected to the biasing field in the absence of a field to be sensed.

#### 4,339,716 NUCLEAR MAGNETIC RESONANCE SYSTEMS

Ian R. Young, Sunbury-on-Thames, England, assignor to Picker International Limited, Wembley, England

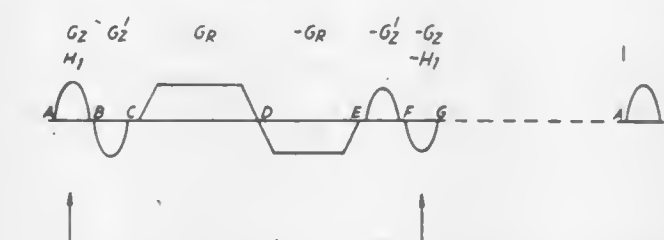
Filed Apr. 21, 1980, Ser. No. 142,130

Claims priority, application United Kingdom, May 23, 1979, 7918052

Int. Cl.<sup>3</sup> G01N 27/00

U.S. Cl. 324—309

9 Claims



1. A method of examining a slice of a body by nuclear magnetic resonance, comprising the steps of: applying to the body a steady magnetic field along an axis therein; applying a first axial gradient magnetic field having a magnitude and having a gradient along said axis which, in conjunction with said steady field, gives a predetermined field in said slice of said body; applying, in conjunction with said first axial gradient magnetic field, a first periodic magnetic field pulse at the Larmor frequency for the said predetermined field in said slice to cause resonance therein; applying a second axial gradient magnetic field 180° displaced in phase from the first axial gradient magnetic field and at a proportion of the magnitude thereof to reduce phase dispersion in said slice; applying, at an appropriate stage in the sequence of steps so as to produce spin-echo, a second periodic magnetic field pulse at said Larmor frequency, wherein the second periodic field pulse is applied in the absence of axial magnetic field gradients; and sensing the resonance signal resulting from resonance in the slice, in the presence of further magnetic fields having gradients transverse to said axis.

#### 4,339,717 NUCLEAR MAGNETIC RESONANCE SPECTROMETER

Munetaka Tsuda; Hiroshi Yokokawa, both of Katsuta, and Yoshiharu Utsumi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP78/00045, § 371 Date Aug. 15, 1979, § 102(e)

Date Aug. 15, 1979, PCT Pub. No. WO79/00412, PCT Pub. Date Jul. 12, 1979

PCT Filed Dec. 8, 1978, Ser. No. 154,401

Claims priority, application Japan, Dec. 20, 1977, 52-153731

Int. Cl.<sup>3</sup> G01N 27/00

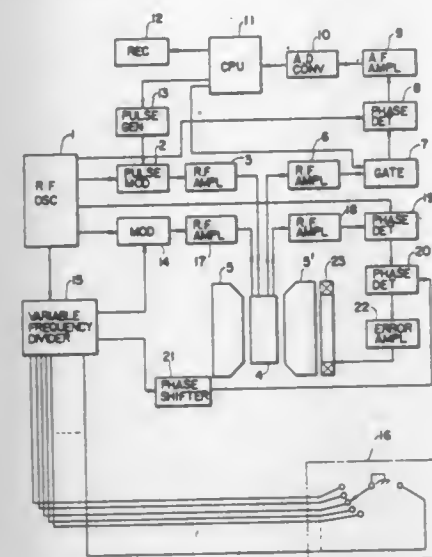
U.S. Cl. 324—313

2 Claims

1. A nuclear magnetic resonance spectrometer comprising: means for generating a unidirectional magnetic field; means for placing a sample and a reference material in said unidirectional magnetic field; means for generating a radio frequency; means for supplying said radio frequency to said sample and to said reference material; means for detecting the resonance signal obtained from said sample and obtaining a nuclear magnetic resonance spectrum; a variable frequency divider capable of optionally dividing the frequency of said radio frequency; means for modulating one of said radio frequency irradiated to



said reference material and said magnetic field in accordance with the output signal of said variable frequency divider; means for obtaining an error signal from the resonance signal

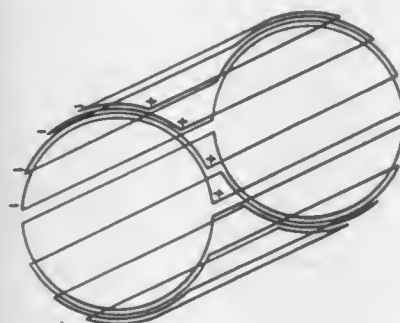


obtained from said reference material; and means for controlling the intensity of said magnetic field on the basis of said error signal.

**4,339,718**  
**COIL ARRANGEMENTS**  
Eric W. Bull, Sunbury-on-Thames, and Robert D. Galloway, Weybridge, both of England, assignors to Picker International Limited, Wembley, England  
Filed May 20, 1980, Ser. No. 151,612  
Claims priority, application United Kingdom, May 25, 1979, 7918403

Int. Cl.<sup>3</sup> G01N 27/00  
U.S. Cl. 324—319

6 Claims



1. A coil arrangement having a given inductance and providing a substantially uniform magnetic field in a cylindrical region, the arrangement comprising:

- a first set of conductors having a first inductance and being sinusoidally distributed around the region and extending parallel to the axis of said region so as to produce a first substantially uniform transverse magnetic field of first uniformity in said region when the coil arrangement is excited by an electric current; and
  - a second set of conductors having a second inductance and being sinusoidally distributed around said region in a corresponding manner to the first set of conductors, so as to produce, when the coil arrangement is excited, a second substantially uniform magnetic field of second uniformity in said region which opposes and is of smaller magnitude than said first uniform magnetic field;
- wherein the resultant magnetic field has a uniformity corresponding to the less uniform of the first and second uniformities of said first and second uniform fields, and the given inductance of the coil arrangement being less than either of the first and second inductances of the first and second sets of conductors individually.

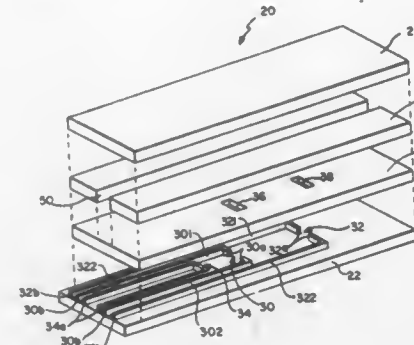
**4,339,719**  
**CONDUCTIVITY SENSOR FOR MONITORING CORRODENTS BEING DEPOSITED IN A STEAM TURBINE**

Archie E. Rhines, and Steven B. Hugg, both of San Antonio, Tex., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jul. 30, 1980, Ser. No. 173,679  
Int. Cl.<sup>3</sup> G01N 27/42

U.S. Cl. 324—446

34 Claims



1. A conductivity sensor for use in a steam turbine in operation to monitor corrosive deposits therein, comprising:
  - a top substrate;
  - a first dielectric layer joined to the bottom of said top substrate, said first dielectric layer defining a crevice to entrap corrosive deposits;
  - a second dielectric layer joined to the bottom of said first dielectric layer, said second dielectric layer having an aperture formed therein to define an opening at the bottom of said crevice;
  - a bottom substrate joined to the bottom of said second dielectric layer;
  - means for measuring the temperature at said bottom substrate; and
  - an electrode pair located on the top of said bottom substrate, an end of said electrode pair located in said aperture to pass a current therethrough to measure the conductivity of the corrosive deposits therein.

**4,339,720**  
**TELLURIC NOISE CANCELLATION IN INDUCED POLARIZATION PROSPECTING**

Mark O. Halverson, Collin County, Tex., assignor to The Anaconda Company, Denver, Colo.

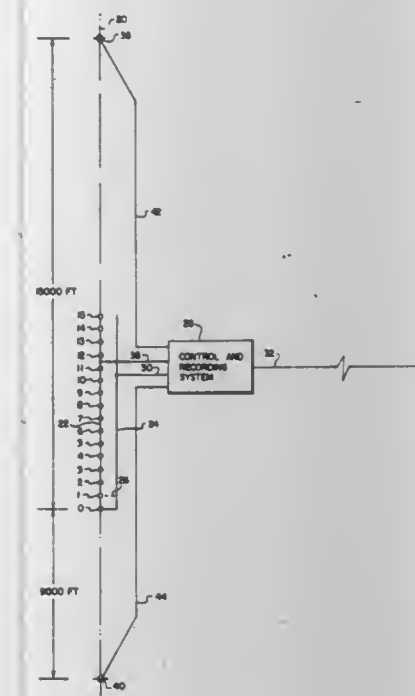
Filed Apr. 4, 1980, Ser. No. 137,430  
Int. Cl.<sup>3</sup> G01V 3/02, 3/38

U.S. Cl. 324—362

11 Claims

6. Improved induced polarization prospecting apparatus including:
  - a plurality of induced polarization electrodes distributed along a prospecting path on the earth's surface, at least one of said electrodes forming a current input electrode and the remaining of said electrodes forming a plurality of induced polarization sensing dipoles;
  - means coupled to said plurality of induced polarization sensing dipoles for detecting induced polarization signals;
  - first and second telluric noise sensing electrodes positioned along said path on opposite sides of said plurality of induced polarization electrodes and each spaced from the nearest of said at least one current electrode by a distance

at least 1.5 times the distance from said at least one current electrode to the most distant of said sensing dipoles; and



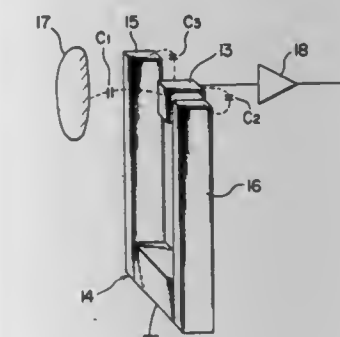
means coupled to said first and second telluric noise sensing electrodes for detecting telluric noise.

**4,339,721**  
**ELECTROSTATIC VOLTMETER**  
Yasuo Nihira, and Takuya Hosoda, both of Tokyo, Japan, assignors to Ando Electric Co., Ltd., Tokyo, Japan  
Filed May 27, 1980, Ser. No. 153,234  
Claims priority, application Japan, Jun. 6, 1979, 54-76766[U]; Jun. 19, 1979, 54-83765[U]

Int. Cl.<sup>3</sup> G01N 27/00

U.S. Cl. 324—457

7 Claims



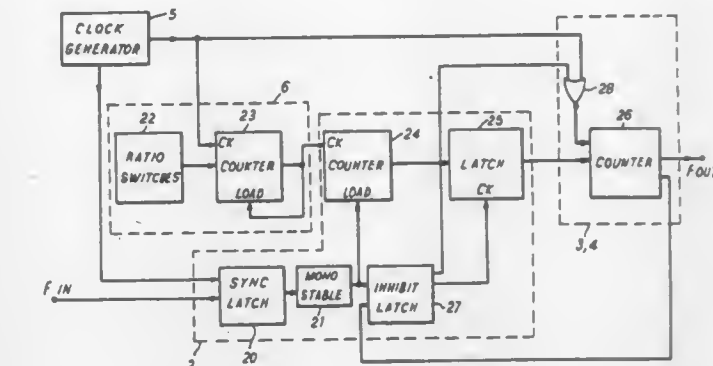
1. An electrostatic voltmeter for measuring the surface potential of a charged body through capacitive division, comprising a detecting electrode locatable in confronting relation to the charged body, and a vibrating element including a pair of parallel spaced legs between which said detecting electrode is disposed in spaced relation, said vibrating element being vibratable to enable said legs to move toward and away from the charged body.

**4,339,722**  
**DIGITAL FREQUENCY MULTIPLIER**  
Philip R. Sydor, Tadley, and Graham J. Brooker, Hungerford, both of England, assignors to Micro Consultants Limited, Berkshire, England  
Filed May 20, 1980, Ser. No. 151,546  
Claims priority, application United Kingdom, May 23, 1979, 7918058

Int. Cl.<sup>3</sup> H03K 21/30

U.S. Cl. 328—38

22 Claims



1. A digital frequency multiplier comprising:
  - a first path and a second path,
  - a first source of clock pulses and a second source of clock pulses for supplying said first and second paths respectively,
  - divider means in said first path for dividing the first clock pulses relative to the incoming rate,
  - first counter means in said first path, said first counter means having a first input for receiving an incoming frequency and for determining the number of pulses occurring from said first source during the period between sequential cycles of said incoming frequency,
  - holding means for periodically holding the count determined by said first counter means updated at a rate dependant on the incoming frequency,
  - second counter means in said second path for counting the number of clock pulses from said second source,
  - comparator means connected to receive the outputs of the first and second paths respectively to produce an output signal having a repetition frequency which is a multiple of the incoming frequency, and
  - inhibit means for momentarily inhibiting a change in the count provided by said second counter means whenever the holding means is being updated.

**4,339,723**  
**PULSE WIDTH DISCRIMINATOR**  
Henry C. Yee, Royal Oak, Mich., assignor to The Bendix Corporation, Southfield, Mich.  
Division of Ser. No. 942,003, Sep. 13, 1978. This application Jan. 24, 1980, Ser. No. 114,795  
Int. Cl.<sup>3</sup> H03K 5/22

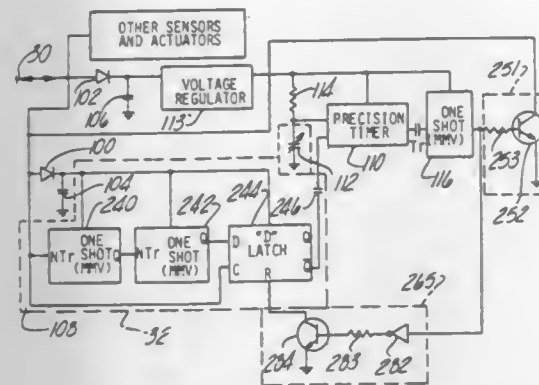
U.S. Cl. 328—111

3 Claims

1. A pulse width discriminator having an input terminal adapted to receive signals where one of said signals has a pulse width of duration  $t_1$ , said pulse width discriminator comprising:
  - first means responsive to the beginning of each signal appearing at the input terminal line, for generating a first test pulse of duration  $(t_1 - \Delta)$ ;
  - second means, responsive to the termination of said first test pulse for generating a second test pulse having a duration  $2\Delta$  wherein  $2\Delta$  corresponds to a time increment smaller than  $t_1$  wherein said first means includes a first monostable multivibrator for generating said first test pulse, in response to the beginning edge of said received signals, and wherein said second means includes a second monostable multivibrator disposed between said first and a third



means responsive to the termination of said first test pulse for generating said second test pulse; and  
third means, responsive to said signals and said second test pulse, for generating a trigger signal indicative of the condition that said signal of duration  $t_1$  has terminated



during the time of said second test pulse and wherein said third means includes a D-latch flip-flop having a data input terminal and a clock input, said D-latch flip-flop receiving said second test pulse at said data input terminal and connected so that the state of the flip-flop is clocked by the trailing edge of the received signals.

#### 4,339,724 FILTER

Kamilo Feher, Unit 37, 3565 Downpatrick, Ottawa, Ontario, Canada K1V 8T3

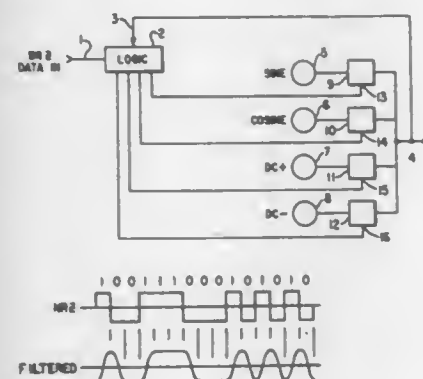
Filed Feb. 8, 1980, Ser. No. 119,899

Claims priority, application Canada, May 10, 1979, 327365

Int. Cl.<sup>3</sup> H03K 13/32, 12/00, 5/01

U.S. Cl. 328—164

7 Claims



1. A filter having an input for receiving a pulse signal form of binary information and an output for providing a synthesized output signal correlated to the input signal comprising:

- means for comparing the output signal with the input signal one bit at a time,
  - means connected to said comparing means and said output for generating a first predetermined output signal waveform when the output signal bit is different from that of the input signal and the input signal is binary "1",
  - means connected to said comparing means and said output for generating a second predetermined output signal waveform when the output signal bit is the same as that of the input signal and the input signal is binary "1",
  - means connected to said comparing means and said output for generating a third predetermined output signal waveform when the output signal bit is the same as that of the input signal and the input signal is binary "0",
  - means connected to said comparing means and said output for generating a fourth predetermined output signal waveform when the output signal bit is the same as that of the input signal and the input signal is binary "0",
- in which the predetermined output signals are continuous, whereby the spectra and sidelobes of the output signal

which is correlated to the input signal are controlled to a predetermined extent.

#### 4,339,725

#### SYNCHRONOUS DEMODULATOR FOR MULTI-PHASE PSK SIGNAL

Osamu Ichiyoshi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

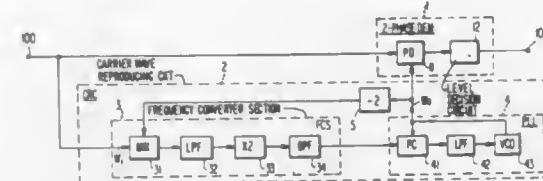
Filed Mar. 25, 1980, Ser. No. 133,744

Claims priority, application Japan, Mar. 30, 1979, 54/39131

Int. Cl.<sup>3</sup> H03D 3/18; H04L 27/22

U.S. Cl. 329—50

5 Claims



1. A PSK demodulator comprising, means for reproducing a carrier wave from an N-phase ( $N=2^n$ ,  $n$  being a natural number) PSK-modulated carrier wave, and an N-phase PSK demodulating means for reproducing  $n$  strings of demodulated signals from said PSK-modulated carrier wave in response to said PSK-modulated carrier wave and said reproduced carrier wave, wherein said carrier reproducing means comprises, means for generating said reproduced carrier wave phase-synchronized with an unmodulated carrier wave applied as an input thereto; means for dividing the frequency of said reproduced carrier wave by two to generate a frequency-divided carrier wave; and frequency converter means for generating said unmodulated carrier wave in response to said PSK carrier wave and said frequency-divided carrier wave, wherein said frequency converter means consists of  $n$  frequency converter circuits connected in series, each having first and second inputs and an output, the output from each frequency converter circuit being applied as the first input of the succeeding frequency converter circuit except that said N-phase PSK-modulated carrier wave is applied as the first input of the first said frequency converter circuit and the output of said last frequency converter circuit is said unmodulated carrier wave, said frequency-divided carrier wave being applied as the second input to each said frequency converter circuits, each of said frequency converter circuits comprising frequency mixing means for frequency mixing its respective first and second inputs and frequency multiplying means for frequency-multiplying the output of said frequency mixing means and supplying said unmodulated carrier wave as its respective output.

#### 4,339,726

#### DEMODULATOR OF ANGLE MODULATED SIGNAL OPERABLE BY LOW POWER VOLTAGE

Masami Miura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1980, Ser. No. 181,930

Claims priority, application Japan, Aug. 29, 1979, 54-110570; Aug. 29, 1979, 54-110571

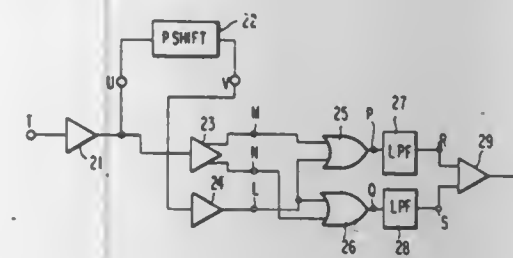
Int. Cl.<sup>3</sup> H03D 3/22

U.S. Cl. 329—103

10 Claims

1. A demodulator comprising an input terminal for receiving an angle modulated signal, means for converting said angle modulated signal into first and second signals having their phases opposite to each other, phase shift means for shifting the phase of a signal having information of said angle modulated signal by a value in accordance with the discrepancy of the frequency thereof from the center frequency of said angle modulated signal, a first OR circuit means, connected to receive as inputs said first signal and the output of said phase shift means, for providing at its output the larger of the two inputs applied thereto, a second OR circuit means, connected to receive as inputs said second signal and the output of said phase

shift means, for providing at its output the larger of the two inputs applied thereto, means for subtracting the respective outputs of said first and second OR circuit means from each



other, and an output terminal for deriving a demodulated output of said angle modulated signal from said subtracting means.

#### 4,339,727

#### WAVEFORM CONVERTING CIRCUIT

Kouzou Kage, and Ikio Yoshida, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

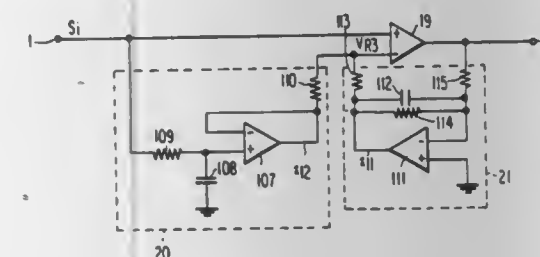
Filed Mar. 7, 1979, Ser. No. 18,396

Claims priority, application Japan, Mar. 7, 1978, 53-26367; Mar. 7, 1978, 53-26368

Int. Cl.<sup>3</sup> H03K 9/08

U.S. Cl. 329—106

6 Claims



1. A waveform converting circuit for receiving an input data signal having an a.c. component varying between high and low levels and providing an output having level variations corresponding to said a.c. component, said circuit comprising:

- a high pass filter for filtering said input data signal to provide a comparison signal;
- a comparator having a comparison signal input terminal supplied with said comparison signal and reference signal input terminal coupled to a reference voltage point for comparing the voltages of said comparison signal and said reference voltage point; and
- a positive feedback means including a resistor and coupled between the output of said comparator and said comparison signal input terminal, for compensating the output d.c. variation of said high pass filter during any period when said input data signal is continuously high or low, whereby the output of said comparator will have a level corresponding to the level of said input data signal even when said input data signal remains continuously at one of said high and low levels to thereby reproduce a data signal having variations of duration faithfully corresponding to the durations of said a.c. component variations.

#### 4,339,728

#### RADIO RECEIVER SIGNAL AMPLIFIER AND AGC CIRCUIT

Dennis M. Monticelli, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 11, 1980, Ser. No. 120,209

Int. Cl.<sup>3</sup> H03F 3/45

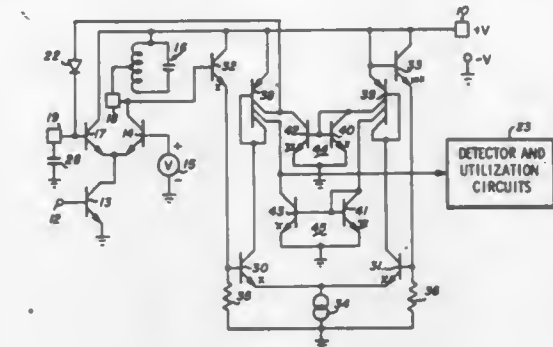
U.S. Cl. 330—254

9 Claims

1. A combined signal amplifier and automatic gain control (AGC) circuit for use in a radio receiver responsive to a modu-

lated carrier signal to produce a signal output characteristic of the modulation on said carrier signal, said receiver having an AGC with a threshold higher than the threshold of response to said carrier signal, said circuit comprising:

- a differential amplifier having a first input coupled to a source capable of supplying said modulated carrier signal within said receiver, a second input coupled to a source of reference potential, and first and second differential outputs;



- a first current mirror load coupled to said first differential output and having a single ended output coupled to an AGC detector;
- a second current mirror load coupled to said second differential output and having a single ended output coupled to a signal detector; and
- means within said first and second current mirror loads for ratioing the thresholds of said AGC detector and said signal detector.

#### 4,339,729

#### ANALOG INTEGRATED FILTER CIRCUIT

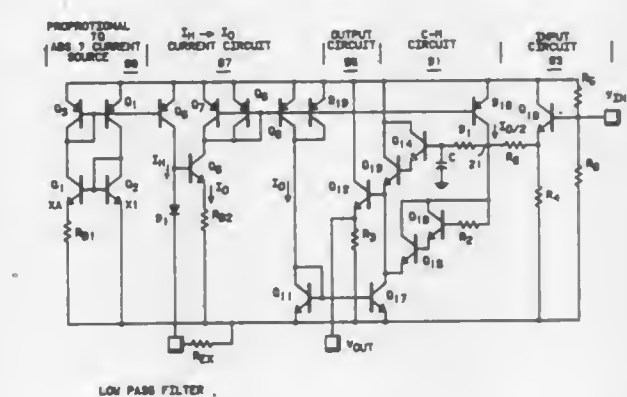
Barry L. Jason, Bedford; Scott M. Hall, Fort Worth, and Richard L. Valley, Bedford, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 27, 1980, Ser. No. 134,382

Int. Cl.<sup>3</sup> H03F 1/34

U.S. Cl. 330—294

10 Claims

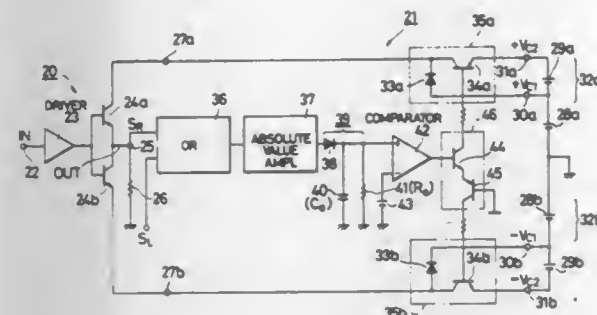


1. An analog integrated filter comprising: capacitance multiplier means, including a capacitor (C), having a first and a second terminal, for providing an effective capacitance  $M$  times that of the capacitor, and including a feedback impedance dependent upon an applied current; resistance means, coupled to the capacitance multiplier means, for providing resistance operative in conjunction with the effective capacitance to provide filtering; and, DC bias-controlled current supplying circuit, coupled to the capacitance multiplier means, for providing a DC bias-controlled current having a temperature dependence which substantially cancels the cumulative temperature dependence of the feedback impedance and the resistance means, so that the filter has a constant operating frequency response characteristic as the filter operates over a range of temperatures.



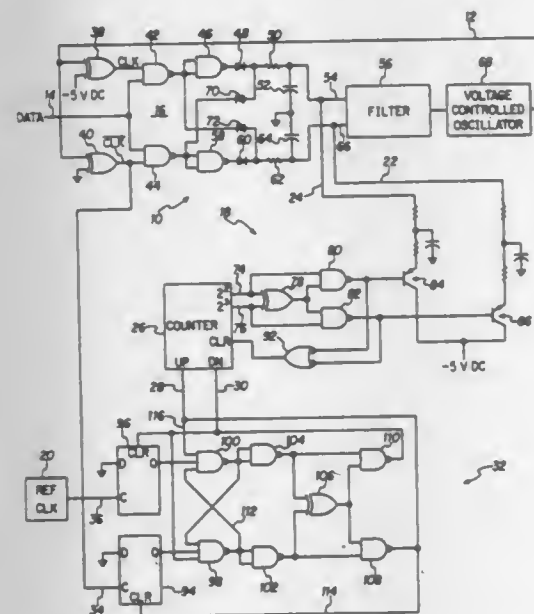
**4,339,730**  
**AMPLIFIER WITH POWER SUPPLY SWITCHING**  
 Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan  
 Filed Mar. 24, 1980, Ser. No. 133,308  
 Claims priority, application Japan, Jul. 27, 1979, 54-95831; Jul. 27, 1979, 54-95832

Int. Cl.<sup>3</sup> H03F 3/04  
 U.S. Cl. 330—297  
 26 Claims



1. An amplifier with power supply switching, comprising: an amplifying element for amplifying the input signal to said amplifier;
- a peak-holding circuit for holding, for a predetermined period of time, a peak value of a signal which varies in accordance with said input signal; and
- a switching circuit for selectively supplying to said amplifying element a supply voltage level selected from among at least two available supply voltage levels in accordance with a level of an output of said peak-holding circuit.

**4,339,731**  
**STABLE, FAST SLEW, PHASE LOCKED LOOP**  
 Tello D. Adams, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.  
 Filed Jun. 5, 1980, Ser. No. 156,534  
 Int. Cl.<sup>3</sup> H03D 13/00; H03L 7/08  
 U.S. Cl. 331—1 A  
 12 Claims

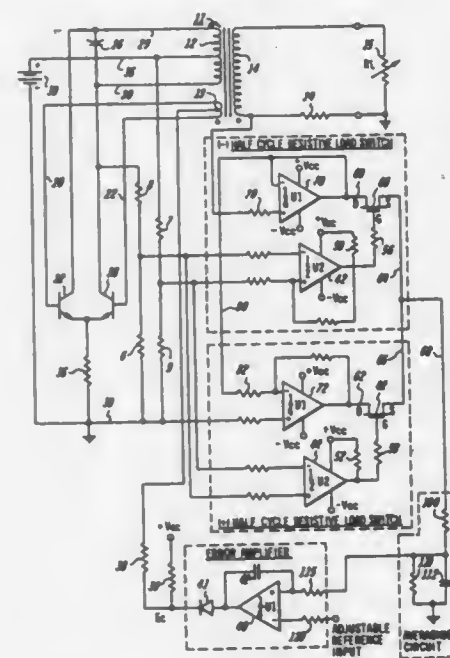


1. In a phase lock loop, the improvement comprising a phase insensitive frequency comparator for comparing the frequency of said loop against a reference frequency for stabilizing the former, wherein said phase insensitive frequency comparator comprises means for counting loop frequency pulses and reference frequency pulses, and means responsive to a given differential between counted pulses for adjusting loop frequency and further wherein said phase insensitive frequency comparator comprises an up/down counter incremented one way by said loop frequency pulses and incremented the other way by said reference frequency pulses, said counter having given over-

flow and underflow set points yielding error correction signals changing said loop frequency.

3. In a phase lock loop, the improvement comprising a phase insensitive frequency comparator for comparing the frequency of said loop against a reference frequency for stabilizing the former, and further comprising a sample and hold phase detector for gating data against loop frequency clock pulses and generating a pair of DC outputs responsive to the phase therebetween for controlling loop frequency, and including energy storage means for said DC outputs and selective isolation means permitting current flow to and from said energy storage means in response to data signals and isolating said energy storage means in the absence of data to sustain said DC outputs for a given time.

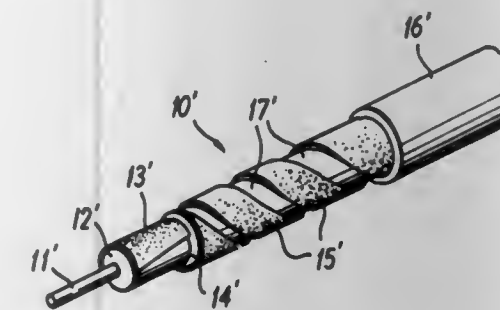
**4,339,732**  
**CLOSED LOOP CONSTANT CURRENT TUNED OSCILLATOR**  
 Hari M. Kesarwani, Cypress, Calif., assignor to Xerox Corporation, Stamford, Conn.  
 Filed Jul. 25, 1980, Ser. No. 172,093  
 Int. Cl.<sup>3</sup> H02M 1/08, 3/335; H03L 5/00  
 U.S. Cl. 331—109  
 4 Claims



1. In a circuit for providing constant current to a varying load including a tuned oscillator network comprised of a transformer having a primary winding, a secondary winding and a feedback winding, a capacitor connected across said primary winding, first and second switching means coupled to said primary winding and said feedback winding, and a source of direct current coupled to said primary winding and to said first and second means, characterized in that a sense resistor is coupled to said secondary winding and said load and a feedback network is coupled to said sense resistor and said feedback winding, said feedback network including third and fourth switching means, electronic buffer means connecting the voltage across said sense resistor to input terminals of said third and fourth switching means whereby only one or the other of said third and fourth switching means conducts during consecutive half cycles of the AC voltage across said primary winding, a voltage averaging circuit connected to the output terminals of said third and fourth switching means for developing a voltage proportional to the load current output of said transformer, and an error amplifier coupled to said averaging circuit and said feedback winding to provide to said feedback winding a control voltage responsive to changes in the voltage developed by said averaging circuit whereby variations in said control voltage cause changes in the current conduction of said first and second switch-

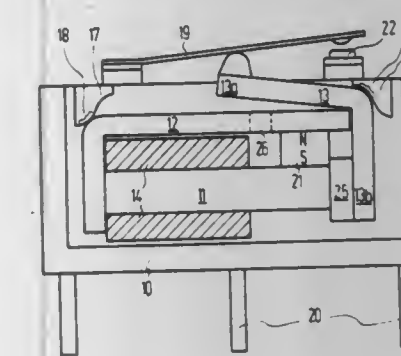
ing means to compensate for variations in core loss of said transformer and variations in said load such that current flow through said load is substantially constant.

**4,339,733**  
**RADIATING CABLE**  
 Kenneth I. Smith, Lubec, Me., assignor to Times Fiber Communications, Inc., Wallingford, Conn.  
 Filed Sep. 5, 1980, Ser. No. 184,527  
 Int. Cl.<sup>3</sup> H01P 3/06  
 U.S. Cl. 333—237  
 9 Claims



1. A radiating cable comprising a center conductor, a cylindrical dielectric core surrounding said conductor, a first radiating sheath disposed along the length of said dielectric core surrounding said center conductor in coaxial relation to said center conductor, an intermediate dielectric layer surrounding said first radiating sheath, and a second radiating sheath disposed along the length of said intermediate dielectric layer in coaxial relation to said center conductor, wherein each of said first and second radiating sheaths is a tubular shaped metal tape having a longitudinal gap along its entire length and wherein said longitudinal gap in the tubular shaped metal tape of the first radiating sheath is positioned directly opposite the radial position of the longitudinal gap in the tubular shaped metal tape of the second radiating sheath.

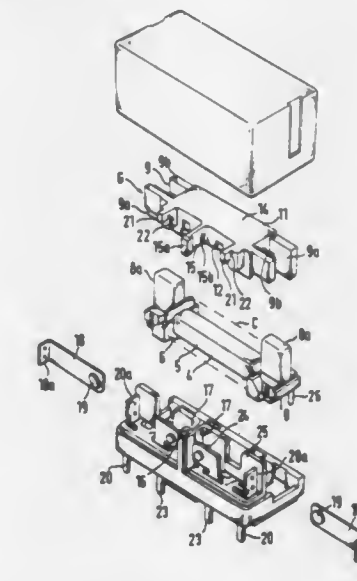
**4,339,734**  
**ENCASED MINIATURE RELAY**  
 Werner Minks, Kleingeschaidt, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.  
 Filed Feb. 4, 1980, Ser. No. 118,013  
 Int. Cl.<sup>3</sup> H01H 51/22  
 U.S. Cl. 335—78  
 12 Claims



1. Encased bistable miniature relay comprising an electric switching element movable between two end positions; means for selectively moving said switching element between said end positions, including an electrically energizable coil having an internal passage, a core partially received in said passage and having an extension projecting out of said passage, a yoke connected to said core and having an end portion substantially coextensive with said extension at a spacing therefrom, an armature having a first and a second arm which extend at an obtuse angle relative to one another to delimit a corner region therebetween, and means for mounting said armature so that said extension and said end portion are situated in and said

switching element is situated across one of said arms from said corner region, and for angular displacement between a first position in which said first arm is proximate to and bridges the spacing between said extension and said end portion and a second position in which said second arm is proximate to said end portion, said one arm acting on said switching element to move the same toward one of said end positions thereof as said armature is displaced from one to the other of said positions thereof; and means for holding said armature in the then assumed position thereof in the absence of energization of said coil, including a permanent magnet extending across said spacing between said extension and said end portion and generating a magnetic flux through said extension, said end portion and said armature which attracts said first arm to said extension in said first position of said armature and said second arm to said end portion in said second position of said armature.

**4,339,735**  
**ELECTROMAGNETIC RELAY**  
 Kenji Ono, Yawata; Kazuhiro Nobutoki, Kadama, both of Japan, and Hans Sauer, Fichtenstrasse 5, Deisenhofen, Fed. Rep. of Germany (D-8024), assignors to Matsushita Electric Works, Ltd., Osaka, Japan and Hans Sauer, Deisenhofen, Fed. Rep. of Germany  
 Filed Jul. 9, 1980, Ser. No. 167,049  
 Claims priority, application Japan, Jul. 18, 1979, 54-91836  
 Int. Cl.<sup>3</sup> H01H 50/28, 50/58  
 U.S. Cl. 335—119  
 7 Claims



1. An electromagnetic relay comprising:
  - (a) an armature block including a pair of armatures and a permanent magnet supported therebetween to magnetize the armatures to opposed polarities, each armature having a portion in contact with said permanent magnet and ends extending beyond said portions,
  - (b) a pair of relay contacts operated by said armature block,
  - (c) a bracket-shaped yoke having projecting ends each disposed in an air gap between the corresponding ends of said armatures,
  - (d) an exciting coil connected to a power supply for energizing said yoke, and
  - (e) a resilient arm supporting said armature block in such a manner that said block may be rotated selectively toward said projecting ends of said yoke, said resilient arm extending from said block in a direction perpendicular to the axis of rotation of said armature block and being secured at its outer end.



4,339,736

**CONVERGENCE UNIT FOR CATHODE-RAY TUBE**  
Peter Burr, Winchester, and Brian D. Chase, Eastleigh, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

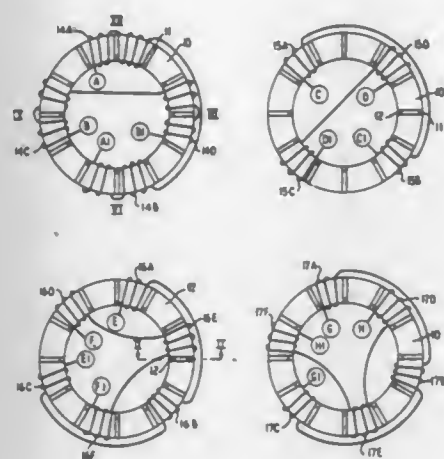
Filed Jun. 8, 1981, Ser. No. 271,739

Claims priority, application European Pat. Off., Jan. 13, 1980, 80301992.6

Int. Cl.<sup>3</sup> H01H 1/00

U.S. Cl. 335—213

3 Claims



1. A convergence unit for use with an in-line gun shadow mask cathode-ray tube, comprises means for generating six-pole and four-pole magnetic fields centered on the central axis of the tube neck, wherein the means for generating the six-pole magnetic fields includes a pair of six-pole windings on a common core and arranged when energized to generate respective six-pole magnetic fields differing in angular position by 30°, wherein the means for generating the four-pole magnetic fields includes a pair of four-pole windings on a common core and arranged when energized to generate respective four-pole magnetic fields differing in angular position by 45°, and wherein the six-pole and four-pole windings are on the same common toroidal core, characterized in that the toroidal core is preformed and that the windings are formed in place thereon, and in that at least one annular surface of the toroid is divided into segments by ribs, whereby the windings are located.

4,339,737

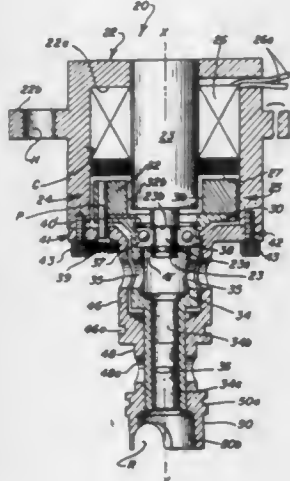
**ROTARY ELECTRICALLY ACTUATED DEVICE**  
Elwood J. Meyers, and Thomas A. Glynn, both of Rockford, Ill., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Sep. 22, 1980, Ser. No. 189,704

Int. Cl.<sup>3</sup> H01F 7/13

U.S. Cl. 335—272

9 Claims



1. A rotary electrically actuated device comprising a stator member having a base section, a post projecting from said base

section and having a distal end, and a plurality of extensions protruding from said base section and being in spaced substantially symmetrical relation with respect to said post, said extensions having interior curved surfaces spaced from the exterior of said post, said interior surfaces coacting with said base section to form a cavity having an open end adjacent said post distal end; coil means disposed within said cavity and having means for connecting to a source of electricity; rotor means in supporting engagement with said post distal end and rotatable through a predetermined sector, said rotor means including a first section extending into said cavity and having a curved peripheral surface disposed adjacent the extension interior surfaces and conforming substantially to the curvature thereof, circumferentially spaced magnetic pole means carried on said first section and having corresponding endfaces disposed adjacent to, but spaced from the extension interior curved surfaces, each endface having a surface configuration wherein one side portion thereof is narrower than the opposite side portion, said endfaces being in substantial registration with said curved surfaces when the coil means is energized and said rotor means is disposed at one location within said predetermined sector, said rotor means being biased to normally assume a second location within said sector wherein only the narrow surface side portions of said pole means endfaces are disposed adjacent the interior surfaces of said extensions and the remainder of the endfaces are out of registration with said extension interior surfaces, said rotor means including a second section extending from said first section and away from said coil means.

4,339,738

**SINGLE POLE DOUBLE THROW THERMOSTATIC SWITCH**

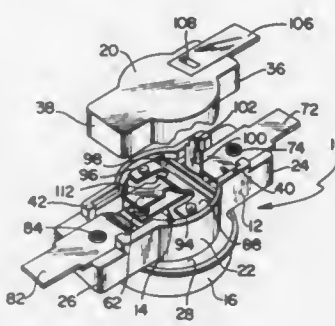
Robert J. Colavecchio, Johnston, R.I., assignor to Elmwood Sensors Inc., Cranston, R.I.

Filed Apr. 30, 1981, Ser. No. 259,241

Int. Cl.<sup>3</sup> H01H 37/52

U.S. Cl. 337—354

8 Claims



1. A single pole double throw thermostatic switch assembly comprising:  
a. a main switch body made of a non-conductive material having an open cavity therein and an opening there-through in communication with said cavity;  
b. a secondary switch body also made of a non-conductive material and having an open cavity therein, said secondary body being mounted on said main body with the cavities in said main and secondary bodies defining an open interior chamber in said assembly;  
c. first, second and third electrical terminal means mounted on the exterior of said assembly;  
d. a fixed contact mounted within said cavity and electrically connected to said second terminal means;  
e. a bendable fixed contact arm mounted within said cavity with a portion of said arm being adjacent to but spaced above said fixed contact, said bendable contact arm being electrically connected to said third terminal means;  
f. a resilient contact arm mounted within said cavity electrically connected to said first terminal means, a portion of said resilient arm being interposed between said fixed contact arm and said fixed contact with said resilient arm being normally spaced from said bendable arm and biased to engagement with said fixed contact but being movable

to an alternative position of spaced disengagement from said fixed contact and engagement with said bendable fixed contact arm to alternatively effect electrical continuity between said first terminal means and said second or third terminal means;  
g. a bimetallic disc responsive to a predetermined temperature change for exerting a flexing action disposed at the bottom end of said assembly adjacent to said opening;  
h. means for mounting said disc at said bottom end without restricting the central portions thereof to permit the unrestricted flexing of said disc; and  
i. means communicating with said disc for alternatively effecting the engagement of said resilient arm with said fixed contact or said bendable fixed contact arm in response to said flexing action to thereby effect said alternative electrical continuity.

4,339,739

**LINEAR DISPLACEMENT TRANSDUCER**

Sylvain M. Dron, Buc, France, assignor to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, "S.N.E.C.M.A.", Paris, France

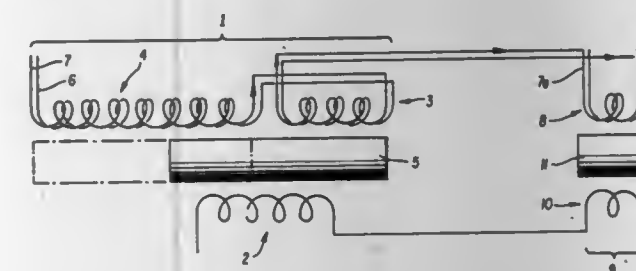
Filed Nov. 5, 1980, Ser. No. 204,341

Claims priority, application France, Nov. 5, 1979, 79 27620

Int. Cl.<sup>3</sup> H01F 21/06

U.S. Cl. 336—136

11 Claims



1. A hybrid-coil linear displacement transducer comprising:  
a base provided with plural recesses along the length of said base;  
a first transformer including a primary coil and two secondary coils having a different number of turns, said secondary coils connected in series and in opposition and wound overlapping with respect to each other facing the primary coil, said secondary coils comprising a pair of windings each made of two simultaneously wound wires;  
a coupling core moving between said primary coil and said secondary coils so as to cause the voltage induced at the terminals of the secondary coils to vary accordingly; and  
a second transformer comprising a secondary coil connected in series with at least one of the wires of one of the windings of the secondary coils of the first transformer and a primary coil connected in series with the primary coil of the first transformer.

4,339,740

**THERMALLY RESPONSIVE SWITCHES**

Keith Greenhalgh, Lancashire, England, assignor to The General Electric Company Limited, London, England

Filed Jun. 8, 1981, Ser. No. 271,247

Claims priority, application United Kingdom, Jun. 6, 1980, 8018670

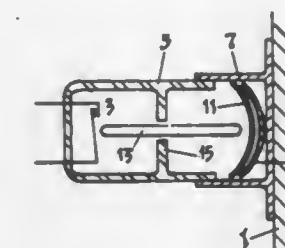
Int. Cl.<sup>3</sup> H01H 61/00

U.S. Cl. 337—39

3 Claims

1. A thermally responsive electric switch including first and second snap-over bimetallic substantially part-spherical thermally responsive actuating elements which reverse curvature with a snap-action in operation, the two elements being disposed at one end of a housing so that their centres move along a common axis in operation coaxial with the housing axis; a pair of electrical contacts disposed at the other end of said housing; a common force transmitting member arranged to transmit the movement of either plate to the contacts, the

contacts being in a first condition only when both plates have a first curvature, the contacts otherwise being in a second condition, the first element reversing from its first curvature to its second curvature when its temperature rises above a first predetermined temperature, and returning to its first curvature if its temperature subsequently falls below a second, lower, predetermined temperature, and said second element reversing from its first curvature to its second curvature when its temperature rises above a third predetermined temperature higher than said first predetermined temperature and thereafter retaining this curvature regardless of temperature, at least over a



range extending appreciably below said second predetermined temperature, thus maintaining the switch contacts in their second condition including the improvement that said first and second elements are dimensionally substantially identical and are freely supported between the force transmitting member and the adjacent end of the housing, so as to lie in nesting contacting relationship, concave towards said member when both elements have their first curvature, the element nearer the force transmitting member bearing directly on the end of said member and the other element bearing on said end of said member via said nearer element.

4,339,741

**THERMALLY ACTUATED TIME DELAY SWITCH**

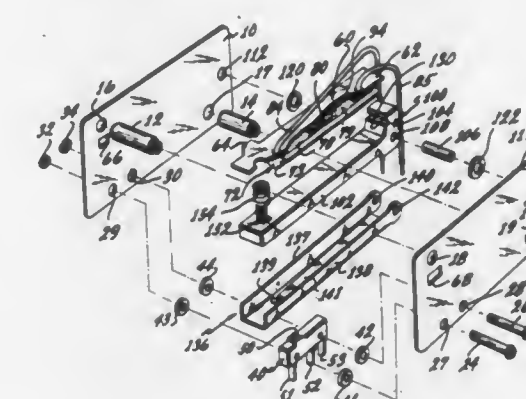
William A. Ray, 888 S. Orange Grove Blvd. #3E, Pasadena, Calif. 91105

Filed Oct. 31, 1980, Ser. No. 202,772

Int. Cl.<sup>3</sup> H01H 61/02

U.S. Cl. 337—124

16 Claims



1. In a thermally actuable switch in combination, a unit including a deformable heat responsive element, the unit forming an enclosure, electrical resistance means positioned within the enclosure to provide a source of heat within the enclosure, the said thermally responsive element having exposure to the exterior of the unit to allow dissipation of heat externally from the unit, means including electrical contacts operable by deformation of the heat responsive element whereby the time for response due to heating and for response due to cooling can be separately controlled.



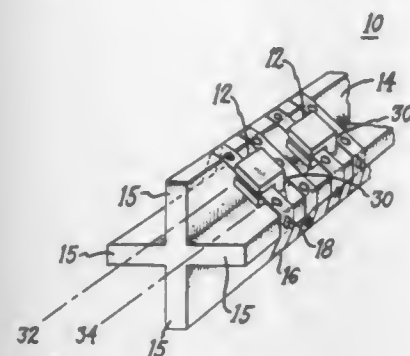
**4,339,742**  
**HIGH VOLTAGE FUSE HAVING MOUNTED GAS EVOLVING MEMBERS AND METHOD OF FORMING SUCH**

John G. Leach, Hickory, N.C., and Robert E. Koch, Pittsfield, Mass., assignors to General Electric Company, Philadelphia, Pa.

Filed Jun. 4, 1981, Ser. No. 270,561  
 Int. Cl.<sup>3</sup> H01H 85/44

U.S. Cl. 337-279

7 Claims



1. A high voltage current limiting fuse having a generally tubular electrically insulating casing, terminal means disposed adjacent to each of the opposite ends of the said casing, and a pulverulent arc quenching filler within said casing, said high voltage current limiting fuse further comprising:

- a core of cross or star-shaped transverse cross-section comprising a plurality of fins, said core axially and longitudinally extending between the opposite ends of said casing;
- one or more ribbon-type fuse elements having a predetermined width and thickness, said fuse element being wound about said core;
- a plurality of gas evolving members adapted to evolve a gas in the presence of an arc which aids in the extinction of the arc within said casing, said gas evolving members being mounted over a portion of at least one said fuse elements, each of said plurality of gas evolving members having a narrow slit, said slit having dimensions relative to the dimensions of said one or more fuse elements to allow the gas evolving member to be slipped over the edge of the ribbon-type fuse element and cover all or part of the width of a portion of the fuse element;
- said plurality of gas evolving members being mounted onto the one or more fuse elements at predetermined locations along the core so as to arrange each of the plurality of gas evolving members between the fins of the core.

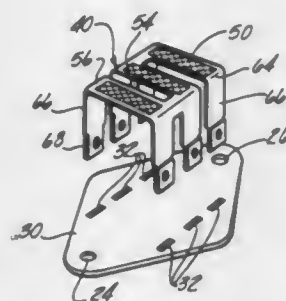
**4,339,743**  
**MULTIPLE RESISTANCE ELEMENT ASSEMBLY AND METHOD OF MAKING SAME**

George C. Ludwig, Florence, S.C., assignor to Tom McGuane Industries, Madison Heights, Mich.

Filed Nov. 10, 1980, Ser. No. 205,405  
 Int. Cl.<sup>3</sup> H01C 3/00

U.S. Cl. 338-206

22 Claims



1. A multiple resistance element assembly comprising: a planar insulator base having two parallel surfaces; and a multiple resistance element attached to said base, said

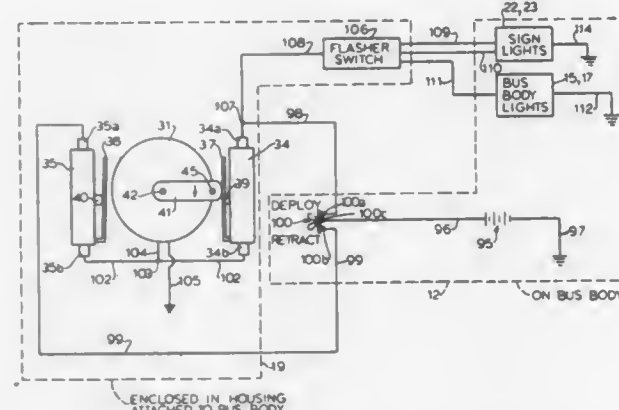
multiple resistance element having a plurality of expanded metal resistance members disposed parallel to each other and serially connected by contiguous non-expanded metal interconnections joining the ends of adjacent resistance members in an alternating sequence, said non-expanded metal interconnections further providing means for fixedly supporting said plurality of resistance members a predetermined distance above one parallel surface of said base and for providing separate electrical terminals to the opposite ends of each resistance member protruding from the other parallel surface of said base.

**4,339,744**  
**SCHOOL BUS STOP SIGN**

Joseph E. Latta, Jr., Rte. 4, Box 56A, Hillsborough, N.C. 27278  
 Filed Mar. 30, 1981, Ser. No. 249,110  
 Int. Cl.<sup>3</sup> B60Q 1/46

U.S. Cl. 340-133

2 Claims



1. A stop sign apparatus for a school bus, comprising in combination:

- (a) a housing having integrally joined walls to provide a box-like internal housing cavity and means enabling said housing to be releasably secured to an exterior school bus sidewall;
- (b) a unidirectional DC motor mounted and secured within said housing;
- (c) a sign mounting and linkage arrangement including switch actuator means positioned by said motor and linkage members connected to be actuated by said motor;
- (d) a sign member with warning lights mounted thereon and having an inner edge portion secured to said linkage members and adapted to being normally pivoted by said sign mounting and linkage arrangement between a retracted position in which it extends rearwardly and parallel to said bus sidewall and a deployed position in which it extends outwardly and perpendicular to said bus sidewall;
- (e) first and second normally closed limit switches mounted in opposed positions proximate said motor and switch actuation means, said first switch being arranged to be contacted by said switch actuator means when said sign is in said deployed position and said second switch being arranged to be contacted by said switch actuator means when said sign is in said retracted position;
- (f) a manual single pole double throw electric switch within said bus in a position accessible to the driver of said bus, said switch having a deploy and retract position corresponding to deployment and retraction of said sign member;
- (g) first circuit means including connecting wiring enabling said motor to be connected to the bus battery through said second limit switch in a first circuit configuration when said control switch is moved to its said deploy position with said actuator means being in contact with said first limit switch and in which first circuit configuration said linkage arrangement is actuated by said motor shaft rotating in a given direction to move said sign member to said deployed position whereupon said second limit switch is

electrically opened by contact with said actuator means and said battery is disconnected from said motor and enabling said motor to be connected to the bus battery through said first limit switch in a second circuit configuration when said control switch is moved to its said retract position with said actuator means being in contact with said second limit switch and in which said second circuit configuration said linkage arrangement is actuated by said motor shaft rotating in the same said direction to move said sign member to said retracted position whereupon said first limit switch is electrically opened by contact with said actuator means and said battery is disconnected from said motor; and

(h) second circuit means including a circuit interrupter, said first circuit means wiring being connected such that said sign warning lights are continuously energized by said battery through said circuit interrupter and independent of the electrical position of said first and second limit switches and electrically flash when and so long as said control switch is in its said deploy position.

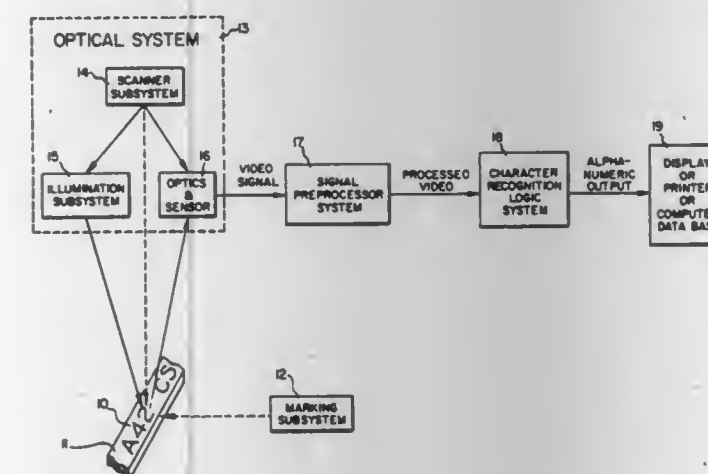
**4,339,745**  
**OPTICAL CHARACTER RECOGNITION**

William D. Barber, Jonesville; Thomas M. Cipolla, Ballston Lake, and Joseph L. Mundy, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 14, 1980, Ser. No. 149,841  
 Int. Cl.<sup>3</sup> G06K 9/28

U.S. Cl. 340-146.3 F

16 Claims



1. A method of generating image data for the automatic recognition of marks on metallic and other specular surfaces which have varying conditions of surface roughness and reflectivity comprising the steps of:

- producing marks on such a surface of an object that have random fluctuations of height and good light scattering properties as compared to background regions;
- scanning the marked surface with an optical system that applies light approximately normal to the surface and limits the light sensed by an optical detector array to that reflected normal to the surface and within a predetermined solid acceptance angle, each detector generating an electrical signal corresponding to light intensity; and
- preprocessing said detector signals to yield high contrast image data in which background signal levels are relatively flat and significantly different than mark signal levels;

wherein said detector signal are each preprocessed by developing a histogram of light intensities, determining whether the histogram is bimodal or unimodal, selecting a background light value between histogram peaks when the histogram is bimodal and a threshold background light value at the edge of the histogram when the histogram is unimodal, and thresholding said detector signal with the background value to thereby produce image data in which the background level is set to a constant.

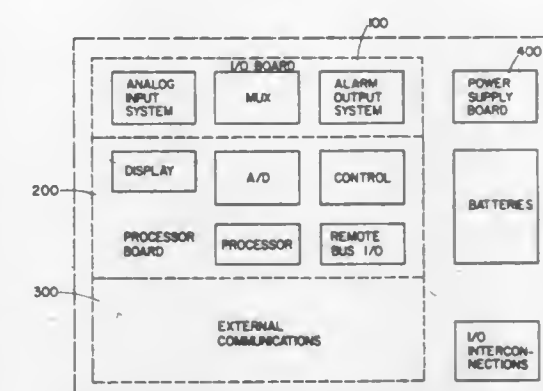
**4,339,746**  
**ALARM CONTROL CENTER**

Edward M. Ulicki, Upper Saddle River, and Gabor Schlusser, Tenafly, both of N.J., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 14, 1980, Ser. No. 206,928  
 Int. Cl.<sup>3</sup> G08B 19/00

U.S. Cl. 340-518

8 Claims



1. An alarm control center for interfacing with an array of input sensor loops, each of said loops having a plurality of sensors each arranged to vary in resistance indicating whether, for example, windows and doors are open, or the presence of smoke or fire, and an array of alarm outputs including, for example, sirens, automatic telephone dialers, local audio buzzers and displays, said alarm control center comprising:

- means for interchangeably preassigning alarm parameters for each of said input sensor loops;
- means for interchangeably preassigning alarm outputs for each of said input sensor loops;
- means for sequentially scanning said array of input sensor loops;
- means for conditioning the signals received from each of the scanned sensor loops;
- means for comparing the signal from each particular scanned input sensor loop with the respective preassigned alarm parameters; and
- means for activating the appropriate alarm outputs when said comparing means indicates an alarm condition in the signal corresponding to the respective input sensor loop.

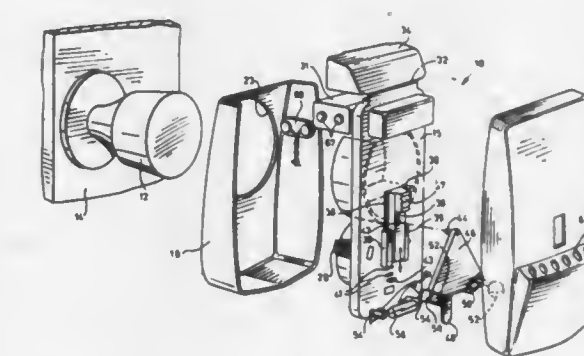
**4,339,747**  
**BURGLAR ALARM**

Richard C. Maybee, 2157 Deyncourt Dr., Burlington, Ontario L7R 1W2, Canada

Filed Nov. 13, 1980, Ser. No. 206,379  
 Claims priority, application Canada, Nov. 13, 1979, 339749  
 Int. Cl.<sup>3</sup> G08B 13/08

U.S. Cl. 340-547

7 Claims



1. An alarm comprising: a mounting base, means for affixing the mounting base to an item whose movement is to be signalled by the alarm, a magnetic reed switch constituting a first element,



a magnet constituting a second element, one of said elements being mounted on a pivotal member capable of pivoting with respect to the mounting base, the other of said elements being capable of retaining a given position with respect to the mounting base, means for adjusting the relative distance from the pivot location for the pivotal member to the location of said other of said elements, between a separated position in which the reed switch is unaffected by the magnet regardless of pivotal movement of the pivotal member, and a juxtaposed position in which the reed switch is (a) unaffected by the magnet when the pivotal member hangs initially in an equilibrium position, (b) closed by the magnet when the pivotal member swings through a given displacement from said equilibrium position, and (c) remains closed after the pivotal member swings back to said equilibrium position, an electrically-powered signal-creating device, and an electrical circuit by which power from a power source is supplied by way of said reed switch to said signal-creating device.

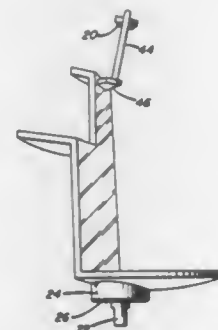
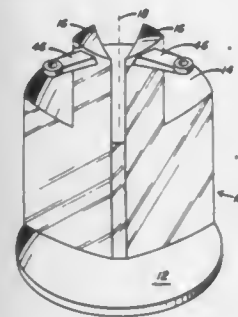
#### 4,339,748 MULTIPLE RANGE PASSIVE INFRARED DETECTION SYSTEM

John K. Guscott, Lynnfield, and Robert Powers, Norwell, both of Mass., assignors to American District Telegraph Company, New York, N.Y.

Filed Apr. 8, 1980, Ser. No. 138,311  
Int. Cl.<sup>3</sup> G02B 5/10; G08B 13/18

U.S. Cl. 340—555

17 Claims



1. A passive infrared intrusion detection system having multiple ranges and operative to detect an intruder moving through said ranges comprising a mirror assembly having a common optical axis and a common focus including: at least two mirror ranks disposed about said common optical axis, each rank having a focal length and a reflecting area; each mirror rank comprising at least one spherical mirror segment, each segment having an optical axis aligned with said common axis and a focal point at said common focus; said mirror ranks arranged in spaced apart relationship along said common optical axis with respective focal lengths and reflecting areas increasing with increasing distance from said common focus for providing said multiple ranges with substantially uniform detection sensitivity for all said ranges; and a detector disposed at said common focus operative to provide electrical signals indicative of intruder detection.

#### 4,339,749 ABNORMAL CONDITION SENSING MONITOR SYSTEM FOR USE WITH MACHINE TOOLS

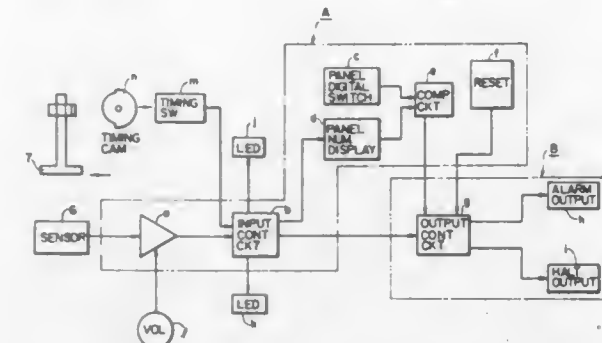
Shoichi Yamada, Moriguchi, Japan, assignor to Toyo Tokushu Kiki Co., Ltd., Osaka, Japan

Filed Jul. 2, 1980, Ser. No. 165,442

Claims priority, application Japan, Jul. 3, 1979, 54-84654  
Int. Cl.<sup>3</sup> G08B 21/00

U.S. Cl. 340—680

7 Claims



1. A method of sensing an abnormal condition of a machine tool, said machine tool including a movable element reciprocatingly movable between a first and a second position and a stationary element confronting said movable element with a certain spacing therebetween, comprising the steps of: sensing a displacement of said movable element from said first position; providing an output indicative of the displacement thereof; processing by subjecting to comparison the output provided as a result of sensing with a value to selectively generate an alarm signal and a halt signal; and indicating the abnormal condition indicative of the displacement of said movable element by generation of said alarm signal.

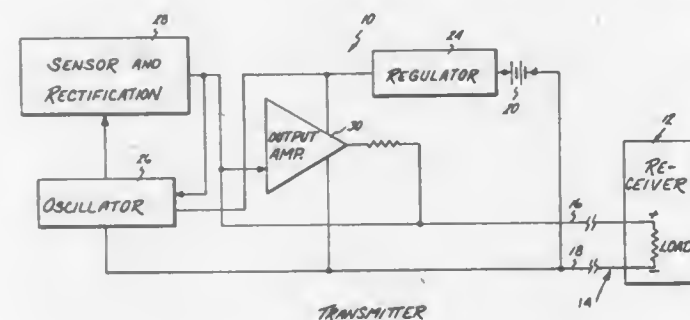
#### 4,339,750 LOW POWER TRANSMITTER

Moises A. Delacruz, Cottage Grove, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Aug. 20, 1980, Ser. No. 179,711  
Int. Cl.<sup>3</sup> G08C 19/10

U.S. Cl. 340—870.37

9 Claims



1. A low power transmitter having power supply means for providing the transmitter with power, voltage regulator means coupled to the power supply means for regulating the voltage provided for the transmitter, oscillator means coupled to the regulator means for providing a time varying voltage as a function of the voltage of the regulator means, sensor means coupled to the oscillator means for receiving the time varying voltage therefrom and for excitation thereof, said sensor means being responsive to changes in a parameter to be sensed and affecting the time varying signal responsive to the change in the parameter, said sensor means further including rectifier means for rectifying the affected time varying signal to provide a D.C. signal as a function of the parameter to be measured,

driver means coupled to the sensor means to drive the oscillator responsive to the D.C. signal, low power consumption amplifier means coupled to receive the D.C. signal and to provide a zero based D.C. voltage output signal representative of the parameter to be measured along two wires, said voltage regulator means further comprising voltage reference means for establishing a stable reference voltage, error amplifier means coupled to the reference voltage means to provide an error signal as a function of the voltage from the reference voltage means and the voltage from the power supply means, and pass element means coupled to receive the error signal and coupled to the power supply to regulate transmitter voltage at a level not substantially greater than ten volts, the voltage regulator means, oscillator means, sensor means, driver means and low power consumption amplifier means providing such D.C. voltage output signal when the power supply means is limited to not substantially greater than ten volts.

#### 4,339,751 MARINE RADAR INCLUDING ANTICOLLISION UNIT

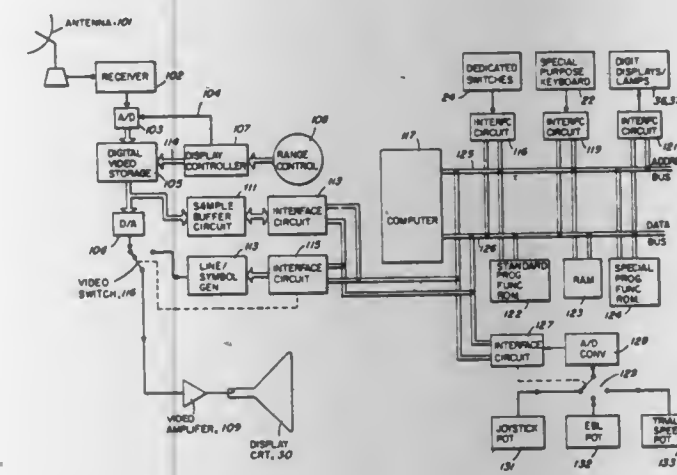
William M. Pease, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 899,952, Apr. 25, 1978, Pat. No. 4,205,313.  
This application Aug. 27, 1980, Ser. No. 70,235

The portion of the term of this patent subsequent to May 27, 1997, has been disclaimed.

U.S. Cl. 343—5 DP

5 Claims



1. In combination: means for providing digital samples of radar echo signals, said digital samples being taken at intervals of time determined by a radar range setting; means for storing said digital samples of said radar echo signals; means for sequentially reading said samples out of said storing means at a rate constant over a plurality of radar range settings; means for displaying in the PPI mode information derived from said samples; a digital computer coupled to said displaying means, said digital computer operating upon at least portions of said samples for producing signals representing data to be displayed; a first set of switches, each of said switches of said first set corresponding to a predetermined set of instructions for performing computer operations, at least some of said operations being performed by said computer for producing display data derived from said samples; and a second set of numerically identified switches, activation of said switches of said second set of switches in a predetermined sequence corresponding to a predetermined set of instructions for performing a computer operation, said oper-

ation performed by said computer for producing display data derived from said samples.

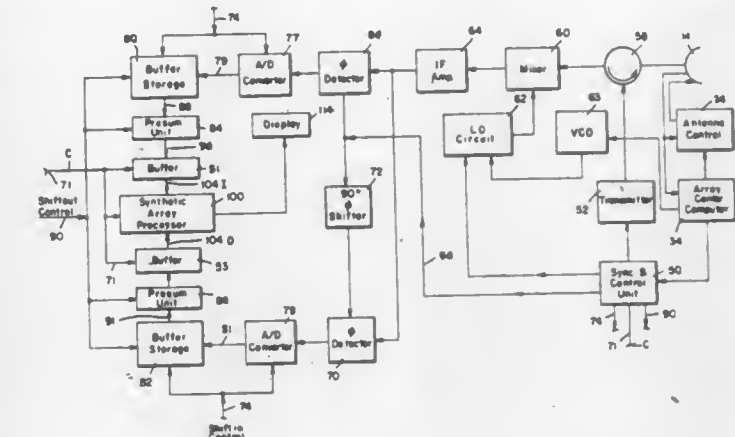
#### 4,339,752 SYNTHETIC ARRAY PROCESSOR

Frederick C. Williams, Topanga, and William W. Clements, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 15, 1971, Ser. No. 154,238

U.S. Cl. 343—5 CM

21 Claims



17. The method of producing high resolution synthetic array data comprising the steps of: transmitting and receiving energy to provide radar data during N subarray flight path segments; adjusting the relative phase and time delay of the radar data received during each subarray flight path segment, and summing the resultant signals associated with the same resolution cell to provide N consecutive sets of imagery data with each set corresponding to the same group of substantially rectangularly oriented resolution cells but different subarray flight path segments; and filtering the data of corresponding resolution cells from each of said N sets of imagery data to produce a subset of high resolution synthetic array imagery data for each resolution cell.

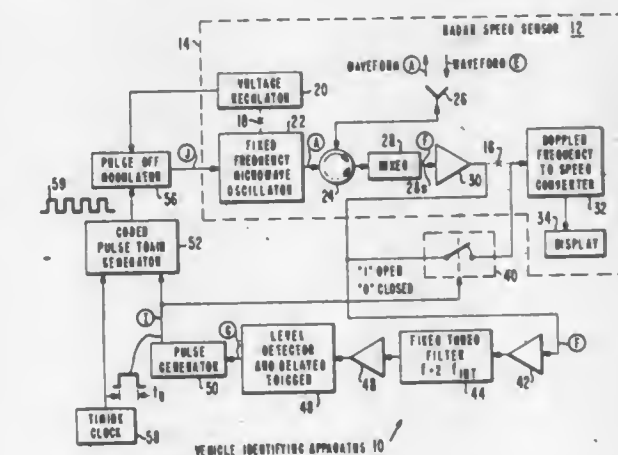
#### 4,339,753 VEHICLE IDENTIFICATION SYSTEM

Daniel D. Mawhinney, Livingston, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,124

U.S. Cl. 343—6.5 SS

5 Claims



1. A combination vehicle speed sensor, mounted on a moving vehicle, and identification system, comprising in combination: said speed sensor including means for transmitting a continu-



ous wave RF signal toward an RF reflecting surface to be thereby reflected back to said vehicle;  
said sensor including means responsive to said reflected signal and to said transmitted signal for producing a signal indicative of speed of said vehicle;  
means in spaced relationship with said vehicle and responsive to said continuous wave RF signal for transmitting an interrogating signal to said vehicle;  
said speed sensor including means responsive to said interrogating signal for temporarily interrupting the transmission of said continuous wave signal and for transmitting a coded signal uniquely identifying said vehicle.

#### 4,339,754 SPATIALLY ADAPTIVE MOVING TARGET INDICATOR SYSTEM FOR RADAR EQUIPMENT

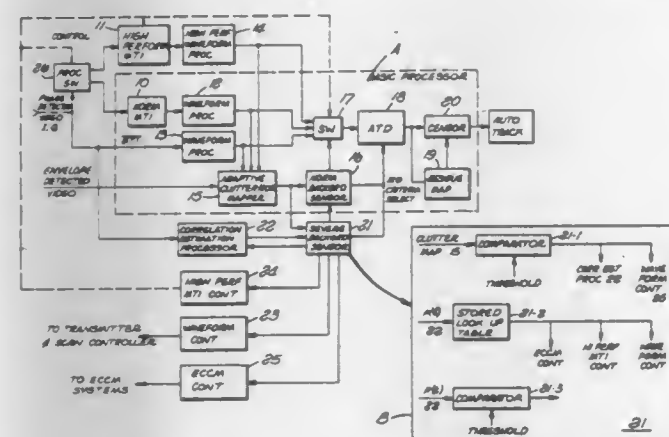
David E. Hammers, Los Angeles, and John M. Milan, Canoga Park, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 972,736

Int. Cl. 3 G01S 13/52

U.S. Cl. 343—7.7

14 Claims



1. In a radar system of the type having a first moving target indicator filter means for suppressing ground clutter returns and a background sensor means for enabling said first filter means in regions of clutter, the improvement comprising: a severe background sensor means for detecting regions of clutter returns not suppressed by said first filter means and for generating a control signal and response thereto; correlation processor means, responsive to said control signal, for calculating the correlation of clutter returns received by said radar system; a second moving target indicator filter means for suppressing sky clutter returns; and means, responsive to the output of said processor means, for enabling said second filter means in those regions wherein the clutter returns exhibit a correlation greater than a first threshold.

#### 4,339,755 PASSIVE-TYPE RANGE DETERMINING SYSTEM USING SCANNING RECEIVING DEVICES

James M. Wright, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 3, 1980, Ser. No. 126,456

Int. Cl. 3 G01S 5/04

U.S. Cl. 343—112 D

10 Claims

1. An apparatus for determining the range of a source of electromagnetic transmission from a monitoring location, comprising:

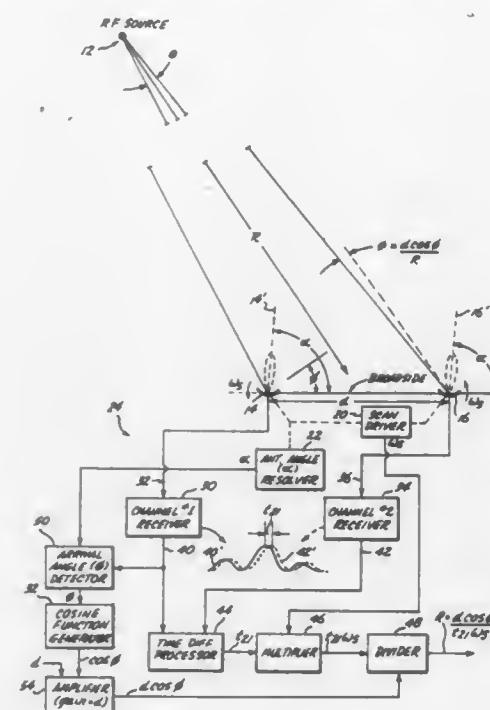
first and second directional receiving means each having a principal receiving axis for receiving the transmission when said axes are aligned with the source, said first and second receiving means being arrayed at relatively spaced-apart positions separated by a distance  $d$  at said monitoring location, and means for mounting said first and second receiving means for scanning;

scan driver means for causing each of said first and second receiving means to scan at a predetermined scan rate  $\omega$ ;

and in phase synchronization so that any instant both said receiving means are oriented at the same angle  $\alpha$  with respect to the broadside of said receiving means, and so that the principal receiving axes of said first and second receiving means are parallel;

first and second channel electrical means connected to said first and second receiving means, respectively, for developing early and late arriving signals representing the receipt by said first and second receiving means of the transmission;

means for measuring a time differential  $t_{21}$  between early and late arriving signals developed by said first and second



channel electrical means, and for producing a signal representing said time differential  $t_{21}$ ;  
angle of arrival measurement means for measuring an angle  $\phi$  at which the transmission arrives at said monitoring location relative to said receiving means, and for producing a signal representing said angle  $\phi$ ; and,  
range determining circuit means responsive to said signals representing said time differential  $t_{21}$  and said angle of arrival  $\phi$ , for producing an output signal proportional to the range as a function of said signals representing said time differential  $t_{21}$ , said angle of arrival  $\phi$ , said separation distance  $d$  and said scan rate  $\omega$ .

#### 4,339,756 ANTENNA EQUIPMENT OF UHF TUNER

Kohei Oyama, Soma, and Eiji Nishizawa, Kakuda, both of Japan, assignors to Alps Electric Co. Ltd., Tokyo, Japan

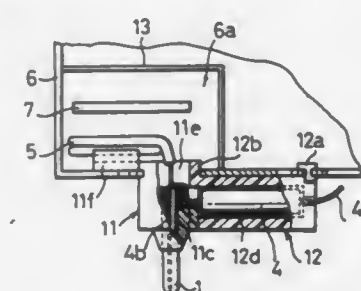
Filed Mar. 10, 1981, Ser. No. 242,366

Claims priority, application Japan, Nov. 3, 1980, 55-30484; Nov. 4, 1980, 55-48848[U]

Int. Cl. 3 H01Q 1/24

U.S. Cl. 343—702

5 Claims



1. An antenna equipment for a UHF tuner, comprising:  
a supporting member made from an insulator and adapted to

be fixed to a wall of a chassis of the UHF tuner, two antenna pins fastened to said supporting member, each of said two antenna pins having its one end protruded outwardly of said supporting member and its base end part exposed in the chassis side of said UHF tuner;  
an antenna coil arranged inside said UHF tuner and electrically coupled with the base end parts of said antenna pins through an opening formed in said UHF tuner;  
a fixed resistor arranged on the outer wall of said chassis of said UHF tuner, one of the two leads of said resistor being electrically connected to either of said two antenna pins and the other of said two leads being electrically connected to said chassis of said UHF tuner; and  
a cover member made from an insulator and adapted to be fixed to said wall of said chassis of said UHF tuner and to be mechanically coupled with said supporting member, said cover member covering said fixed resistor outside said chassis of said UHF tuner.

#### 4,339,757 BROADBAND ASTIGMATIC FEED ARRANGEMENT FOR AN ANTENNA

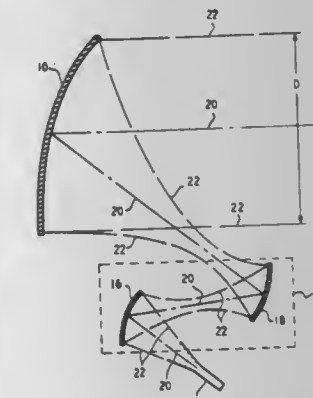
Ta-Shing Chu, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1980, Ser. No. 209,943

Int. Cl. 3 H01Q 19/13

U.S. Cl. 343—781 P

6 Claims



1. A broadband antenna system capable of correcting for astigmatism in a beam which is either radiated or received by the antenna system, the antenna comprising:  
a main focusing reflector (10) arrangement;  
a feed (12) comprising a predetermined aperture distribution and disposed to permit either one of the radiation of the beam in a particular direction and the reception of the beam from a particular direction along a feed axis of the antenna system; and  
astigmatic correction means (14) disposed to perform beam matching between the feed and the main focusing reflector arrangement for either the radiation or reception of the beam

characterized in that the astigmatic correction means comprises:  
a first reflector (16) disposed between the feed and the main focusing reflector arrangement along the feed axis of the antenna system for said beam, the first reflector comprising different focal lengths in each of two orthogonal planes equal to  $1/f_1 - 1/L'_1 + 1/L'_2$  and a radius of curvature according to the relationships

$$R_{\perp} = 2f_1(L)\cos\theta_i, \text{ and } R_{\parallel} = \frac{2f_1(L)}{\cos\theta_i}$$

where  $f_1$  is the focal length in each of the two orthogonal planes,  $L'_1$  is the distance between the center of the first reflector and the center of the feed aperture distribution,  $L'_2$  is the distance between the center of the first reflector and the center of an intermediate image of the feed formed by the first reflector,  $R_{\parallel}$  is the radius of curvature of said

first reflector in the plane of incidence of said beam,  $R_{\perp}$  is the radius of curvature of said first reflector perpendicular to the plane of incidence, and  $\theta_i$  is the angle of incidence of the beam; and

a second reflector (18) disposed between the first reflector and the main focusing reflector arrangement along the feed axis of the antenna system for said beam, the second reflector comprising different focal lengths in each of two orthogonal planes equal to  $1/f_2 - 1/L'_1 + 1/L'_2$  and a radius of curvature according to the relationships

$$R_{\perp} = 2f_2(L)\cos\theta_i, \text{ and } R_{\parallel} = \frac{2f_2(L)}{\cos\theta_i}$$

where  $f_2$  is the focal length in each of the two orthogonal planes,  $L'_1$  is the distance from the center of said second reflector to the center of a next reflector along the feed axis of the antenna system forming a part of the main focusing reflector arrangement, and  $L'_2$  is the distance between the center of the second reflector and said intermediate image of the feed formed by the first reflector, the first and second reflectors being spaced apart a distance,  $l$ , as determined from the relationship

$$l = \frac{L'_1}{h} \left[ \frac{L'_1}{r_1} - 1 \right] - hL'_1 \left( 1 + \frac{L'_1}{r_1} \right)$$

where  $h = L'_1/L'_2/L'_1/L'_1$ ,  $r_1$  is the radius of curvature of the phase distribution at the aperture of the feed, and  $r_1$  is the radius of curvature of the phase distribution at a final image of the feed formed at said next reflector along the feed axis of the antenna system forming a part of the main focusing reflector arrangement.

#### 4,339,758 ELECTROSENSITIVE RECORDING

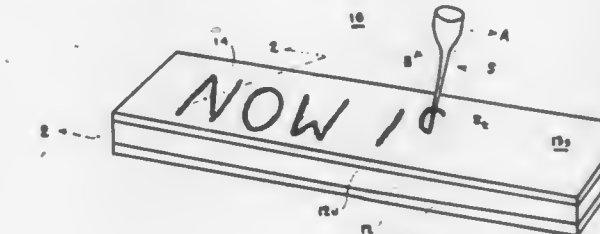
Sushil Bhatia, Framingham, and Ralph J. Shuman, Needham, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed May 15, 1981, Ser. No. 263,964

Int. Cl. 3 G01D 15/24, 9/00

U.S. Cl. 346—1.1

33 Claims



30. The method of electro-sensitive recording which comprises applying an electrically actuated implement to a metallic surface and penetrating the surface electrically to selectively expose portions of an underlying contrast layer, which includes crystalline silicon dioxide therein.

#### 4,339,759 COLLECTOR CONTROLLER FOR CHROMATOGRAPH

Kanji Nakatsu, Kingston, Canada, assignor to Queen's University at Kingston, Kingston, Canada

Filed Nov. 3, 1980, Ser. No. 203,168

Int. Cl. 3 G01D 9/00

U.S. Cl. 346—33 R

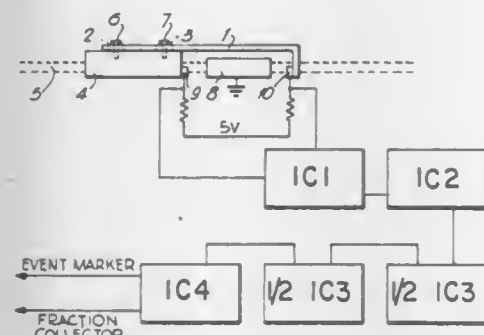
7 Claims

1. In a liquid chromatographic system which includes a strip chart recorder having a pen holder slidable on a guide rail and



a fraction collector, the improvement comprising an electro-mechanical controller for said collector, comprising:

- (a) sensor means including:
- electrically conductive slider means slidably mounted on and electrically insulated from said rail;
  - longitudinally extending bar means mounted on said pen holder and electrically insulated therefrom adapted to draw said slider means along said guide rail in response to movement in one direction of said pen holder, including first electrical contact means to contact said slider means and thereby generate a first output signal;
  - second electrical contact means on said pen holder adapted to electrically contact and push said slider along said guide rail in response to movement in the other direction of said pen holder, and thereby generate a second output signal;



- integrated circuit timer means arranged to receive said first and second output signals and provide a trigger signal and reset signal in response thereto;
- one-shot integrated circuit means arranged to provide a third output signal on receipt of said trigger signal and to reset on receipt of said reset signal;
- dual timer integrated circuit means comprising a free running timer which fires at selected time intervals and a delay timer, arranged to receive said third output signal, fire said free running timer and produce a fourth output signal which initiates said delay timer; and
- one-shot integrated circuit means arranged to receive a fifth output signal from said delay timer and provide an event marker output signal and a fraction collector movement signal.

#### 4,339,760 MAGNETIC PRINTING HEAD HAVING A HIGH SIGNAL-TO-NOISE RATIO

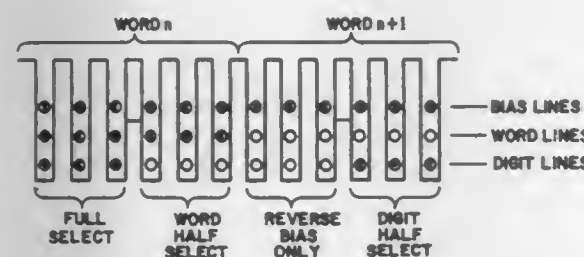
Jish M. Wang, and Richard O. McCarty, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 91,528, Nov. 5, 1979, abandoned. This application Mar. 6, 1981, Ser. No. 241,261

Int. Cl.<sup>3</sup> G01D 15/12; G03G 19/00

U.S. Cl. 346—74.5

10 Claims



- A magnetic printing head, having a high signal-to-noise ratio, for writing information on a magnetic recording medium moving relative to said head, said head comprising: an elongate magnetic member having along the length thereof a plurality of regularly spaced projections, said

member being composed of material having a high permeability;

means to produce a full select signal magnetic field between the tips of selected adjacent pairs of projections, said means being operated by energizing a pair of electrical conductors disposed between said selected projections, each of said conductors producing a half select signal magnetic field, the half-select magnetic fields combining to produce said full select signal magnetic field; and bias means operating to produce a bias magnetic field at least between said selected pairs of projections, said bias magnetic field being opposed to said full select and half select signal magnetic fields so as to increase the ratio of the resultant full select magnetic field strength to the resultant half-select magnetic field strength.

4,339,761

#### COMPACT PLUNGER PUMP

Masafumi Matsumoto, Asukamura, and Matakira Kotani, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

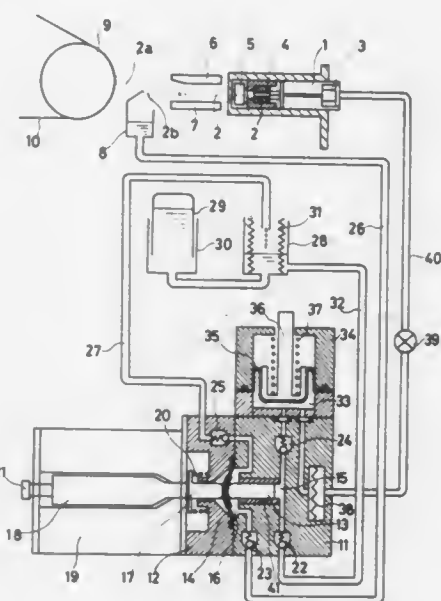
Continuation-in-part of Ser. No. 97,389, Nov. 26, 1979, Pat. No. 4,263,602. This application Mar. 26, 1980, Ser. No. 134,317

Claims priority, application Japan, Mar. 22, 1979, 54-37764[U]

Int. Cl.<sup>3</sup> G01D 15/18; F16J 10/00

U.S. Cl. 346—75

16 Claims



- A constant flow rate plunger pump comprising: a cylinder block including a cylinder portion; a bush secured to said cylinder portion of said cylinder block; a piston slidably disposed in said bush; a first pressure chamber defined by said cylinder block and one end of said piston; a resilient member secured to the other end of said piston; a second pressure chamber defined by said cylinder block, said piston and said resilient member; drive means for reciprocating said piston within said bush; a first inlet valve communicating with said first pressure chamber for introducing a liquid into said first pressure chamber when said piston is driven to travel in a predetermined direction; a first outlet valve communicating with said first pressure chamber for developing the liquid from said first pressure chamber when said piston is driven to travel in a direction counter to said predetermined direction; a second inlet valve communicating with said second pressure chamber for introducing a liquid into said second pressure chamber when said piston is driven to travel in said predetermined direction; and a second outlet valve communicating with said second pressure chamber for developing the liquid from said second

pressure chamber when said piston is driven to travel in a direction counter to said predetermined direction.

4,339,762

#### LIQUID JET RECORDING METHOD

Yoshiaki Shirato, Yokohama; Yasushi Takatori, Sagami-hara; Toshitami Hara, Tokyo; Yukuo Nishimura, Sagami-hara, and Michiko Takahashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

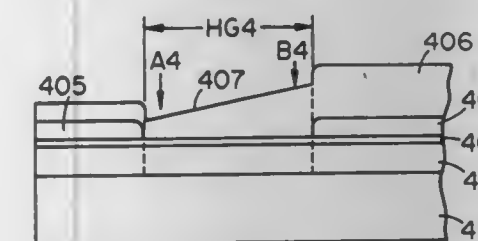
Filed Mar. 31, 1980, Ser. No. 136,179

Claims priority, application Japan, Apr. 2, 1979, 54-39529

Int. Cl.<sup>3</sup> G01D 15/18

U.S. Cl. 346—140 R

9 Claims



- A liquid jet recording method capable of recording gradation which comprises:

- filling a conduit with a liquid, said conduit having, at one end, an orifice for ejecting and projecting a liquid droplet in a predetermined direction, said conduit being provided with a heat actuating portion for generating a force for ejecting the liquid droplet by applying heat energy to the liquid to cause an abrupt state change, wherein the heat actuating portion includes an electrothermal transducer having a heat generating portion of such a structure that the degree of heat supply is different from position to position on the heating surface, and
- controlling the strength of an input electric signal corresponding to the gradation of an image to be recorded, thereby controlling the distribution of the degree of heat supply at the heating surface.

4,339,763

#### APPARATUS FOR RECORDING WITH WRITING FLUIDS AND DROP PROJECTION MEANS THEREFOR

Edmond L. Kyser, and Stephan B. Sears, both of Portola Valley, Calif., assignors to System Industries, Inc., Milpitas, Calif.

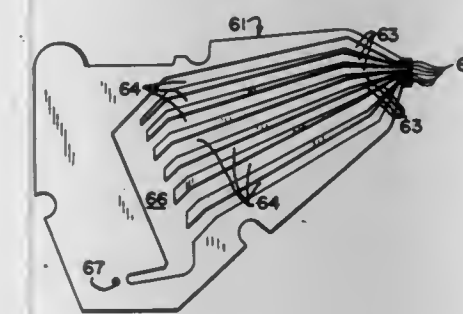
Continuation of Ser. No. 815,502, Jul. 14, 1977, abandoned, which is a continuation-in-part of Ser. No. 489,985, Jul. 19, 1974, Pat. No. 4,189,734, which is a continuation-in-part of Ser. No. 50,445, Jun. 29, 1970, Pat. No. 3,946,398. This application Nov.

26, 1980, Ser. No. 210,799

Int. Cl.<sup>3</sup> G01D 15/16

U.S. Cl. 346—140 R

4 Claims



- A printing ink supply device for ink jet printers comprising: at least two plates located opposite to each other and interconnected, said first plate being provided with pumping means, said

pumping means constituting a piezoelectric crystal and an operatively connected diaphragm, a pump chamber for said pumping means being constituted of a space formed between the pumping means and the second plate, a channel formed in said second plate by means of an elongated shallow groove in a surface facing said first plate together with an adjacent surface of said first plate, a capillary nozzle, said space communicating with said capillary nozzle by means of said channel.

4,339,764

#### PbS<sub>x</sub>Se<sub>1-x</sub> SEMICONDUCTOR

Richard B. Schooler, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

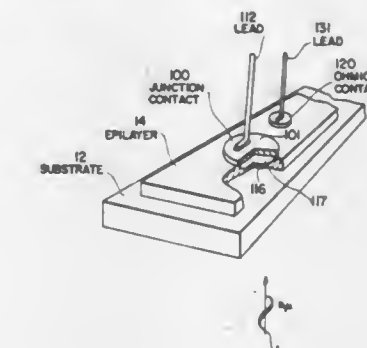
Division of Ser. No. 801,431, May 27, 1977, Pat. No. 4,154,631.

This application Mar. 26, 1979, Ser. No. 23,983

Int. Cl.<sup>3</sup> H01L 27/14

U.S. Cl. 357—30

11 Claims



- A semiconductor device comprising: an insulating crystalline substrate of an alkali halide; and an epitaxial layer of PbS<sub>x</sub>Se<sub>1-x</sub>, having 0 ≤ x ≤ 1 and a minority charge-carrier lifetime greater than one nanosecond at 26° ± 5° Celsius, on said substrate.

4,339,765

#### TRANSISTOR DEVICE

Junichi Nakamura; Seiji Hata, both of Oita, and Iwao Yamasaki, Kitakyushu, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 4, 1980, Ser. No. 156,370

Claims priority, application Japan, Jun. 12, 1979, 54-73874

Int. Cl.<sup>3</sup> H01L 29/06

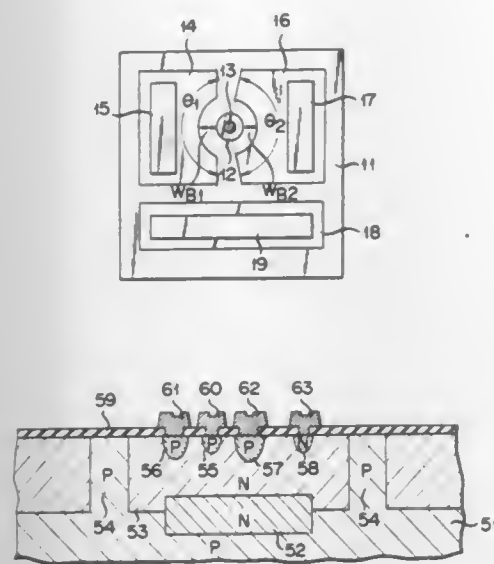
U.S. Cl. 357—36

3 Claims

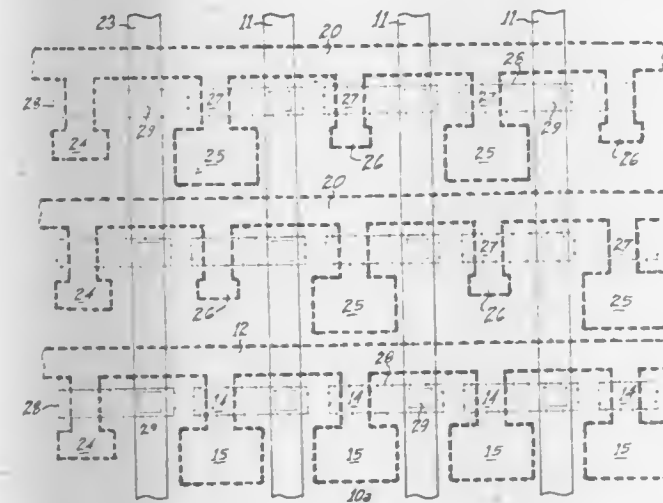
- A transistor device comprising: a semiconductor substrate of one conductivity type; a base region formed on a main surface of said substrate; a first region formed on said main surface in said base region, said first region being of a conductivity type opposite to that of said substrate; at least two second regions formed on said main surface in said base region separately from said first region, said second regions being of a conductivity type opposite to that of said substrate, the diffusion depth of at least one of said second regions being greater than the diffusion depth of at least another of said second regions, and the effective



plane distance between said at least one of said second regions and said first region being different from the effective plane distance between the said another of said second regions and the first region.



**4,339,766**  
**DUMMY COLUMNS FOR REDUCING PATTERN SENSITIVITY IN MOS/LSI DYNAMIC RAM**  
G. R. Mohan Rao, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.  
Filed Oct. 11, 1979, Ser. No. 83,927  
Int. Cl.<sup>3</sup> H01L 27/02, 29/78; G11C 11/24  
U.S. Cl. 357-41



1. A semiconductor memory device comprising an array of rows and columns of memory cells in a face of a semiconductor body, means for accessing data in said array, peripheral circuitry in said face spaced from the array, and a pair of dummy columns positioned in said face at each end of the array between the array and said circuitry to prevent diffusion of minority carriers from said circuitry to the memory, the dummy columns comprising a plurality of memory cells similar to that in said array of memory cells, said means for accessing not being connected to said dummy columns, each dummy column comprising a plurality of one-transistor cells having alternating large and small capacitors.

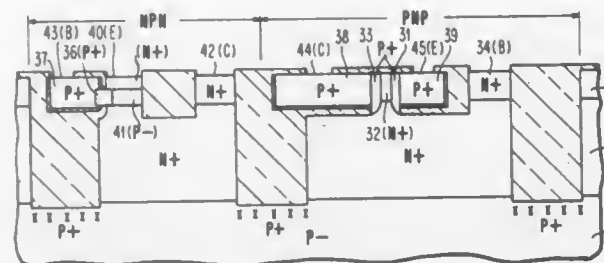
**4,339,767**  
**HIGH PERFORMANCE PNP AND NPN TRANSISTOR STRUCTURE**

Cheng T. Horng, San Jose, Calif.; Richard R. Konian, Poughkeepsie, N.Y.; Robert O. Schwenker, San Jose, Calif., and Armin W. Wieder, Starnberg, Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 5, 1980, Ser. No. 146,921  
Int. Cl.<sup>3</sup> H01L 27/02, 29/04

U.S. Cl. 357-44

3 Claims



1. In an integrated circuit structure including a vertical NPN transistor and a lateral PNP transistor, said NPN transistor being electrically isolated from said PNP transistor, said structure including a monolithic crystalline silicon substrate having a planar surface, a thin epitaxial layer contained on said planar surface of said substrate and monolithically integral with said monolithic crystalline silicon substrate, said thin epitaxial layer having recessed oxide isolation regions and P type polysilicon regions formed therein, said integrated circuit structure being characterized as follows:

- a first electrically isolated P type polysilicon region formed in said epitaxial layer and having at least one perpendicular side wall, said first electrically isolated P type polysilicon region extending laterally in said epitaxial layer in a first direction;
- a second electrically isolated P type polysilicon region formed in said epitaxial layer and having at least one perpendicular side wall, said second electrically isolated P type polysilicon region extending laterally in said epitaxial layer in a second direction opposite to said first direction; said side wall of said second P type polysilicon region being oppositely disposed and spaced from said side wall of said first P type polysilicon region;
- said spacing between said perpendicular side walls of said first and second P type polysilicon regions providing a region of said epitaxial layer having a width in the order of 6000 to 8000 Å;
- a lateral PNP transistor formed in said in the order of 6000 to 8000 Å wide region of said epitaxial layer, said lateral PNP transistor having an emitter region, a base region and a collector region, where said first P type polysilicon region provides electrical contact to said emitter region of said lateral PNP transistor and said second P type polysilicon region provides electrical contact to said collector region of said PNP transistor, an N type base reach through region for said base region of said lateral PNP transistor, said N type base reach through region being contained essentially within said epitaxial layer and remote from and electrically isolated from said first and second electrically isolated P type polysilicon regions;
- a vertical NPN transistor having an emitter region, a base region and a collector region, said emitter region of said NPN transistor having a shallow depth, a limited area and an exposed planar surface, said base region of said NPN transistor having a shallow depth, said base region of said NPN transistor having a limited area essentially equal in area to said limited area of said emitter region of said NPN transistor, said base region of said NPN transistor providing an essentially planar emitter-base junction, said emitter-base junction having an area corresponding essentially to said limited area of said emitter and base regions of said

NPN transistor, said base region having a contact region laterally displaced from said emitter-base junction; a third electrically isolated P type polysilicon region formed in said epitaxial layer, said third polysilicon region laterally extending in said second direction from said base region of said NPN transistor, said third polysilicon region physically and electrically contacting said laterally displaced base contact region of said NPN transistor; and an N type collector reach through region for said NPN transistor, said N type collector reach through region being contained within said epitaxial layer remote from and electrically isolated from said first, second and third electrically isolated P type polysilicon regions.

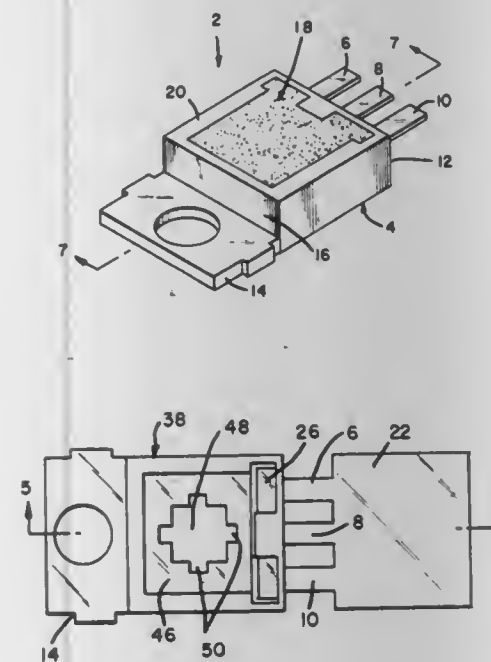
**4,339,768**

**TRANSISTORS AND MANUFACTURE THEREOF**  
Joseph R. Keller, Harrisburg, and Billy E. Olsson, New Cumberland, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 18, 1980, Ser. No. 113,159  
Int. Cl.<sup>3</sup> H01L 23/28, 23/48, 23/02

U.S. Cl. 357-72

7 Claims



1. In a stamped and formed lead frame of the type used for mounting an IC chip, said lead frame being of the type comprising carrier means, a plurality of leads extending from edge portions of said carrier means in side-by-side coplanar relationship, a chip mounting plate on the end of one of said leads, said chip mounting plate having a chip supporting surface and a bottom surface, the remaining leads extending cantilever fashion from said carrier means and having free ends proximate to said chip supporting surface, contact surfaces on said free ends, the improvement to said lead frame comprising:

- a housing comprising molded plastic material molded onto said lead frame in partially encapsulating relationship to said chip mounting plate and said free ends of said remaining leads, said molded plastic material having a well therein extending towards said contact surfaces and towards said chip receiving surface, said bottom surface being exposed, said contact surfaces being in said well and being exposed, said molded plastic material including a floor portion at the inner end of said well, said floor portion extending over a major portion of said chip receiving surface, a chip receiving cavity in said floor portion extending to said chip receiving surface so that said chip receiving surface is exposed at the inner end of said cavity, said cavity having cavity walls which conform to the edges of said chip whereby, upon placement of a chip in said cavity, said chip is precisely

confined in said cavity against said chip receiving surface and is precisely located relative to said contact surfaces.

**4,339,769**

**PHOTOGRAPHY APPARATUS FOR TELEVISION PICTURE**

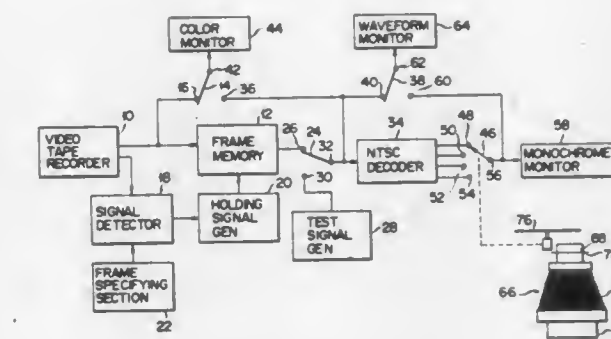
Toshiji Fujita, Niiza; Chihiko Yamada, Tokyo; Takeo Terashima, Shiga, and Masaki Nojima, Urawa, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan  
Filed Jun. 16, 1980, Ser. No. 159,846

Claims priority, application Japan, Jun. 25, 1979, 54-79824; Jul. 2, 1979, 54-83750; Jul. 31, 1979, 54-97685; Sep. 20, 1979, 54-121476; Apr. 11, 1980, 55-48410

Int. Cl.<sup>3</sup> H04N 5/78, 5/84, 9/02

U.S. Cl. 358-6

15 Claims



1. A photography apparatus for television picture comprising:

- video tape recorder means loaded with a video tape which is recorded with a television signal and a frame specifying signal recorded on a location corresponding to a predetermined frame component signal of the television signal, said means being adapted to detect said frame specifying signal during reproduction of the television signal;
- storing means connected to said video tape recorder means for storing the predetermined frame component signal of a reproduction output of the video tape recorder, when said video tape recorder means detects a frame specifying signal;
- decoder means connected to said storage means for causing the frame component signal stored in said storing means to be resolved into three primary color signals;
- monochrome television monitor means for producing a picture for each primary color signal which is generated from said decoder means; and
- photographing means having a film, lens and diaphragm and adapted to cause a picture formed by said monochrome television monitor means to be photographed in an out-of-focus state, the configuration of the diaphragm being longer in a first direction than in a second direction extending along the horizontal scanning line of said monochrome television monitor means, said first direction being orthogonal to said second direction, and the degree of the out-of-focus being such that a picture is defined within a depth of field when viewed in said second direction and outside the depth of field when viewed in said first direction.

**4,339,770**

**SYNCHRONIZING SYSTEM WITH CHROMA PARITY DETECTION**

Robert C. Dennison, Westmont, and James M. Walter, Columbus, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 94,281, Nov. 19, 1979, abandoned. This application Oct. 27, 1980, Ser. No. 200,905  
Int. Cl.<sup>3</sup> H04N 9/46

U.S. Cl. 358-19

21 Claims

1. A television video delay arrangement, adapted to delaying color television signals from a source of television composite



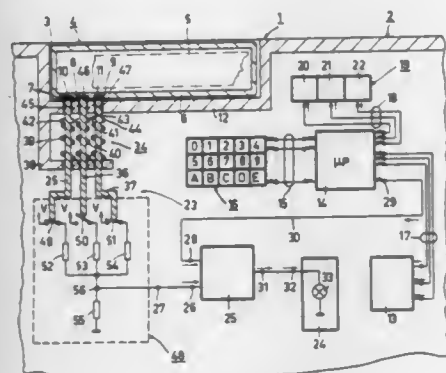
(a) a camera operable at a camera whole-frame rate for producing a camera signal representative of a sequence of whole frames of information, said camera being comprised of (1) an area image sensor that is readable in blocks of photosite rows, (2) means for selecting a number of said blocks of photosite rows for readout wherein the total number of blocks divided by said selected number of blocks is an integer N, (3) means for producing successive pluralities of partial frames of information by reading out said selected number of blocks of photosite rows N times for each whole frame of said camera and (4) means for producing a succession of whole frames of information comprised of respective pluralities of partial frames of information;



(b) means for processing said camera signal to a form suitable for magnetic recording;  
 (c) a video monitor having a nominal display frame rate  
 (d) a magnetic recording means for recording and playing back said processed camera signal, the ratio of the recording tape speed to the playback tape speed being a tape speed reduction ratio that equals the ratio of said camera whole-frame rate to the nominal display frame rate of said video monitor, said played back camera signal being applied to said video monitor to form thereon N temporally displaced, non-interlaced, images corresponding to said selected blocks of photosite rows, said display being a slow motion replay at a partial-frame rate that equals the tape speed reduction ratio multiplied by the number N of partial frames per whole frame.

**4,339,776**  
**PREPROGRAMMABLE RECORDING SYSTEM WITH AUTOMATIC WARNING OF TIME LIMIT**  
 Erich Länger, Helmut Mach, and Harald Melwisch, all of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 24, 1979, Ser. No. 69,442  
 Claims priority, application Austria, Sep. 1, 1978, 634178  
 Int. Cl.<sup>3</sup> G11B 23/04, 23/42  
 U.S. Cl. 360—69 10 Claims



1. A recording system for recording signals on a magnetic tape, comprising a recording apparatus and a cassette containing a given length of magnetic tape and adapted to be placed onto said apparatus, the recording apparatus comprising means for preprogramming an automatic recording at a future time, and a timer for determining at least one start and one stop instant for the automatic recording, wherein the recording apparatus further comprises:

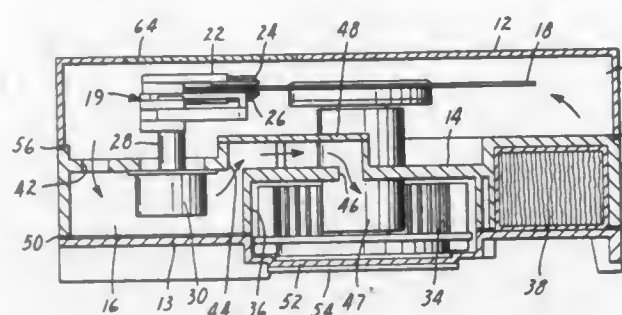
at least one detection unit for detecting the recording time attainable with a cassette placed on the apparatus and providing an output corresponding thereto,  
 a warning device for warning the user of the apparatus, means for deriving a reference quantity from the timer, which reference quantity is a measure of a total preprogrammed automatic recording time, and  
 comparator means for comparing the detection unit output and the reference quantity, the comparator means having an output which controls said warning device, the warning device being actuated when the time needed for the preprogrammed automatic recording exceeds the recording time attainable with the cassette.

**4,339,777**  
**AIR-FLOW SYSTEM FOR A DISK FILE**  
 Norman P. Gruczelak, Thousand Oaks, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.  
 Filed Apr. 10, 1980, Ser. No. 139,021  
 Int. Cl.<sup>3</sup> G11B 17/02 9 Claims

U.S. Cl. 360—97  
 1. In an air-flow system for a disk file comprising a housing defining a chamber containing (a) a blower, (b) a channel containing a main filter through which all air from the blower must pass, (c) at least one rotating memory disk and associated

transducer at the outlet of said channel, (d) a breather filter, and (e) an intake plenum for the blower which receives both recirculating air and outside air directly from the breather filter, the improvement comprising:

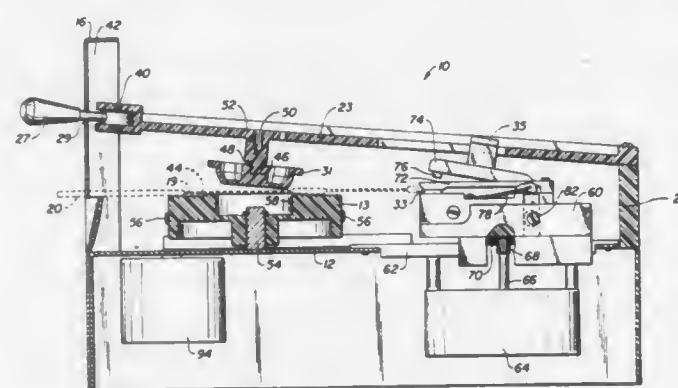
- (1) a partition divides said chamber into two compartments,
- (2) a drive spindle for both said blower and said disk is journaled into the partition, the blower being in one



- compartment and the disk and associated transducer in the other,  
 (3) the breather filter has a very high impedance relative to that of the main filter so that the pressures at all points within the disk compartment exceed atmospheric pressure and the pressure at the intake plenum remains slightly below the atmospheric pressure, and  
 (4) the chamber is sealed except for the breather filter.

**4,339,778**  
**DUAL FLOPPY DISC MACHINE**  
 Eugene H. Wise, Grass Valley, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

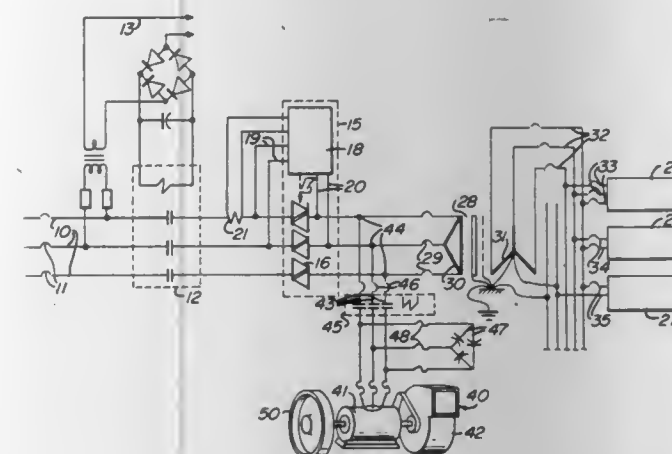
Filed Apr. 11, 1980, Ser. No. 139,534  
 Int. Cl.<sup>3</sup> G11B 5/016, 17/06  
 U.S. Cl. 360—99 12 Claims



1. A dual floppy disc machine comprising:  
 a single drive motor having an output shaft;  
 a pair of rotatable spindles mounted side by side and adapted to receive respective floppy discs thereon;  
 means for coupling the output shaft of the drive motor to the spindles to drive both said spindles simultaneously;  
 a pair of read/write heads having a frequency response substantially less than conventional disc machines;  
 a single carriage having said read/write heads mounted in spaced relationship thereon, said carriage being movable along an axis bisecting a line connecting the centers of the spindles so that the read/write heads are movable in unison radially relative to the respective spindles;  
 a stepping motor coupled to said carriage to move the carriage along said axis; and  
 a pair of latching arms, each arm including means for clamping a floppy disc to its respective spindle and means for biasing the read/write head against its respective disc so that the disc may be clamped in place and the read/write head properly biased by a single movement of the latching arm.

**4,339,779**  
**APPARATUS FOR PREVENTING DAMAGE BY VOLTAGE INTERRUPTION**  
 John F. Kalbach, Altadena, Calif., assignor to A.C. Manufacturing Company, Cherry Hill, N.J. and Computer Power Systems Corp., Carson, Calif.

Filed Aug. 27, 1980, Ser. No. 181,888  
 Int. Cl.<sup>3</sup> H02H 7/08 5 Claims  
 U.S. Cl. 361—33

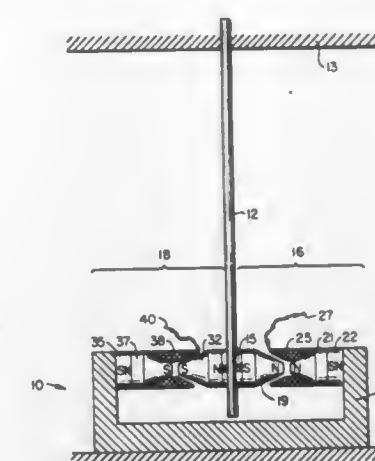


1. Apparatus for preventing malfunction or damage by momentary supply line voltage reduction to an environmentally controlled electronic system having a blower motor; said apparatus comprising motor connection means for connecting the motor across the supply line, power direction sensing means in the supply line upstream of the motor connection means for sensing reverse power flow in the line when the supply line voltage is reduced and the motor operates as a generator, switch means for location in the supply line between the power supply and motor connection means, switch opening means connected between said power direction sensing means and the switch means to open the latter responsive to said reversed power flow, to thereby direct power from the motor operating as a generator to the electronic system, and voltage sensing means for sensing voltages in the supply line on opposite sides of said switch means, and switch closing means connected between said voltage sensing means and switch means to close the latter responsive to resumption of line voltage from the power supply acceptable in phase with voltage from the motor operating as a generator.

**4,339,780**  
**VIBRATION CONTROLLER UTILIZING MAGNETIC FORCES**  
 Shigeo Okubo, Menlo Park, Calif., assignor to Design Professionals Financial Corp., San Francisco, Calif.  
 Filed Nov. 10, 1980, Ser. No. 205,845  
 Int. Cl.<sup>3</sup> F16C 39/06 12 Claims

- U.S. Cl. 361—147  
 1. Apparatus for controlling the vibration of a structural element comprising:  
 a first magnet attached to the structural element;  
 sensing means positioned to detect motion of the structural element including:  
 a second magnet spaced apart from the first magnet, and means for detecting variations in the strength of the magnetic field between the first magnet and the second magnet; and  
 vibration control means connected to receive information from the sensing means concerning the motion of the structural element, the vibration control means including:  
 a third magnet spaced apart from the first magnet, and means for varying the strength of the magnetic field be-

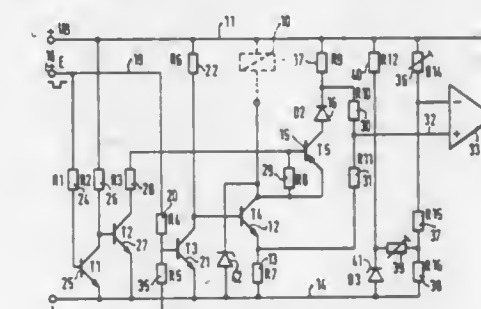
tween the first magnet and the third magnet to increase and decrease the force between the first magnet and the



third magnet to control the vibration of the structural element.

**4,339,781**  
**APPARATUS FOR CONTROLLING THE ELECTRIC CURRENT THROUGH AN INDUCTIVE CONSUMER, IN PARTICULAR THROUGH A FUEL METERING VALVE IN AN INTERNAL COMBUSTION ENGINE**  
 Klaus Harsch, Ditzingen, and Peter Schülzke, Radolfzell-Stahringen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany  
 Filed Nov. 14, 1980, Ser. No. 207,056  
 Claims priority, application Fed. Rep. of Germany, Dec. 17, 1979, 2950692  
 Int. Cl.<sup>3</sup> H01H 47/32 4 Claims

U.S. Cl. 361—154



1. An apparatus for controlling the electric current through an inductive consumer, having first and second ends, of a fuel metering valve for an internal combustion engine, the apparatus including:

- first and second voltage supply lines;  
 a current switching means having first and second ends,  
 a current measuring means which generates a current signal having first and second ends, connected in series with the inductive consumer and the current switching means and connected to the first and second voltage supply lines such that the first voltage supply line is attached to the first end of the inductive consumer, the second end of the inductive consumer is attached to the first end of the current switching means, the second end of the current measuring means is attached to the first end of the current measuring means, and the second end of the current measuring means is connected to the second voltage supply line, the apparatus also including:  
 a freerunning circuit having a measuring resistor which produces a measuring signal with first and second ends wherein the second end is connected to the first voltage supply line;  
 a blocking means connected to the current measuring means to block current from flowing through the current mea-



sure means during generation of the measuring signal by the freerunning circuit; and  
 a threshold switch having an input, wherein the first end of the measuring resistor is connected to the second end of the inductive consumer and the first end of the current switching means, and wherein the threshold switch input is connected to the first end of the measuring resistor to receive the measuring signal, and wherein the threshold switch input is also connected to the second end of the current switching means and the first end of the current measuring means to receive the current signal.

4,339,782

## SUPERSONIC JET IONIZER

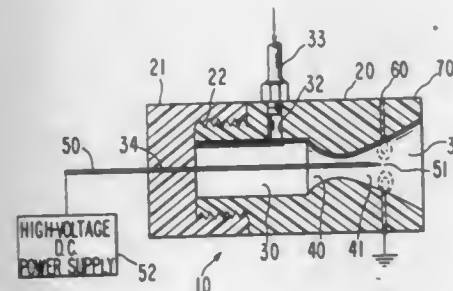
Henry H. S. Yu, and Richard K. Teague, both of Winston-Salem, N.C., assignors to The Bahnsen Company, Winston-Salem, N.C.

Filed Mar. 27, 1980, Ser. No. 134,361

Int. Cl.<sup>3</sup> H01H 143/32; B03C 3/00

U.S. Cl. 361—229

9 Claims



1. A supersonic jet ionizer comprising:

- (a) an electrode connectable to a high-voltage power supply;
- (b) a dielectric structure defining a chamber and a nozzle, said nozzle being in gas-flow communication with said chamber, said dielectric structure having a first channel for admission of a pressurized gas into said chamber, said nozzle being configured to enable said gas to exit from said chamber by passing initially through a region of narrowing cross-sectional area and thereafter through a region of widening cross-sectional area, said dielectric structure having a second channel for insertion of a tip of said high-voltage electrode into said region of widening cross-sectional area; and
- (c) an electrically conductive member mounted in said region of widening cross-sectional area of said nozzle, said electrically conductive member being connectable to ground potential so that an electric field can be maintained between said high-voltage electrode and said electrically conductive member.

4,339,783

## ALTERNATING CURRENT CORONA DISCHARGE APPARATUS

Hiroshi Kinashi, Uji; Yoshihisa Miwa; Shoshichi Kato, both of Yamatokoriyama, and Hiroyuki Kawataki, Kakogawa, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka and Yahata Electric Works Ltd., Kakogawa, both of Japan

Filed Apr. 20, 1979, Ser. No. 32,028

Claims priority, application Japan, Apr. 21, 1978, 53-48082

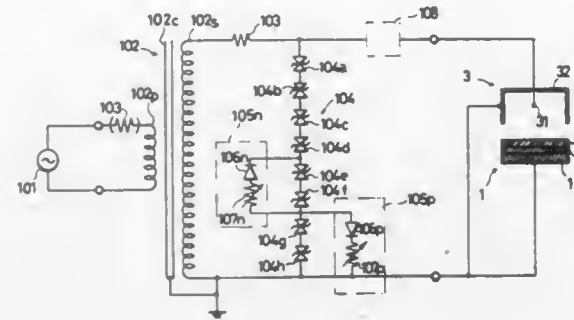
Int. Cl.<sup>3</sup> H02H 9/00

U.S. Cl. 361—235

27 Claims

1. An alternating current (AC) corona discharge apparatus, comprising  
 corona discharge electrode means for supporting said discharge,  
 high AC voltage supply means for supplying a high AC voltage having a waveform with positive and negative going half cycles to said corona discharge electrode means,  
 adjustable slicing off means coupled to said high AC voltage supply means for limiting the peak portion of at least one

of the positive and negative going half cycles of the waveform of said high AC voltage to at least one respective selected limit value, and limiting involving selectively slicing off the peak portion of at least one of said positive and negative half cycles of the waveform at the respective limit value,



wherein the maximum absolute value of the positive half cycle of a high AC voltage that is applied to the corona discharge electrode means may be adjusted to be smaller than the maximum of the absolute value of the negative half cycle, without substantially varying the effective value of the high AC voltage being supplied to the said corona discharge electrode means.

4,339,784

## SOLDER DRAW PAD

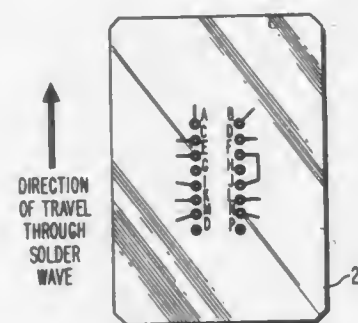
James D. Shearer, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 11, 1980, Ser. No. 176,788

Int. Cl.<sup>3</sup> H05K 3/34

U.S. Cl. 361—403

6 Claims



1. A printed circuit board structure comprising:  
 a piece of printed circuit board material;  
 a plurality of metallic pads located on a surface of said printed circuit board material and aligned in a straight row, each of said plurality of metallic pads having an aperture formed therein;  
 a circuit component element including a body and a plurality of leads formed in a straight row, each of said plurality of leads being inserted in respective ones of said plurality of apertures formed in said metallic pads, said circuit component element being attached to said piece of printed circuit board material by soldering said inserted leads to said metallic pads as said piece of printed circuit board material flows across a wave of solder;  
 said straight row of leads having first and second ends, and being inserted in said piece of printed circuit board material such that said straight row of leads is parallel to the direction that said piece of printed circuit board material travels through said wave of solder, said circuit component element being positioned on said piece of printed circuit board material such that said first end of said row of leads enters said wave of solder prior to said second end of said row; and  
 an additional metallic pad located on said surface of said printed circuit board material, said additional pad being

arranged in alignment with said plurality of metallic pads and adjacent to one of said plurality of metallic pads such that said additional metallic pad provides a draw pad action for reducing solder bridging between adjacent leads located at said second end of said row of leads; said additional metallic pad not providing an attachment point for soldering leads of said circuit component elements or additional circuit component elements.

4,339,785

## ELECTRONIC CIRCUIT ARRANGEMENT MOUNTED ON PRINTED CIRCUIT BOARD

Mitsuo Ohsawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

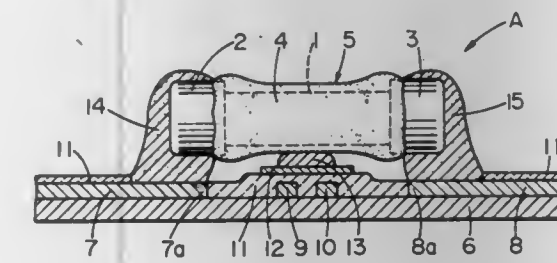
Filed Apr. 8, 1980, Ser. No. 138,438

Claims priority, application Japan, Apr. 26, 1979, 54-56331[U]

Int. Cl.<sup>3</sup> H05K 1/18

U.S. Cl. 361—411

7 Claims



1. An electronic circuit arrangement mounted on a printed circuit board in which leadless circuit parts are attached to the printed circuit board with adhesive, the improvement in which a film of a first color having a high luminosity is attached to said printed circuit board in regions to which said adhesive is applied, and said adhesive containing pigment of a second color contrastable to said first color attached to said film, and said leadless circuit parts attached to said board by said adhesive.

4,339,786

## ANCHORING MEANS FOR AN ELECTRICAL DEVICE

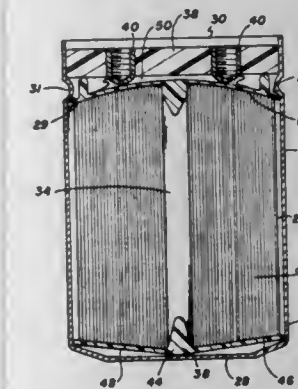
William J. Evans, Indianapolis, and Dennis R. Henderson, Greenwood, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Apr. 28, 1980, Ser. No. 144,450

Int. Cl.<sup>3</sup> H01G 9/06

U.S. Cl. 361—433

7 Claims



1. In an electrical device of the type including a housing having an open end for receiving an electrical component wherein the improvement comprises:  
 said housing including an inwardly extending flange located in proximity to said open end and said flange having surface area facing into said housing and away from said open end;  
 means positioned between said electrical component and said open end for anchoring said electrical component

within said housing, said means for anchoring including a hub and at least two arms extending radially outward from said hub, said arms including radially extending arms having an effective distance therebetween which is larger than the size of said open end; and

means for abutting said hub against said electrical component, said arms being made of semi-rigid resilient material and being concavely deflected into said housing, said arms engaging said surface area with said radially extending ends for creating a biasing force against said electrical component and away from said open end of said housing.

4,339,787

## CHRISTMAS DECORATION

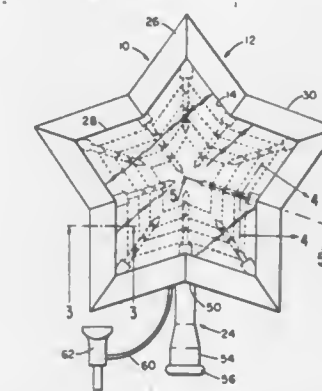
Jack Burnbaum, Newton, Mass., assignor to Bradford Novelty Co., Inc., Boston, Mass.

Filed Jul. 7, 1980, Ser. No. 166,140

Int. Cl.<sup>3</sup> F21P 1/02

U.S. Cl. 362—121

8 Claims



1. A Christmas tree ornament comprising:

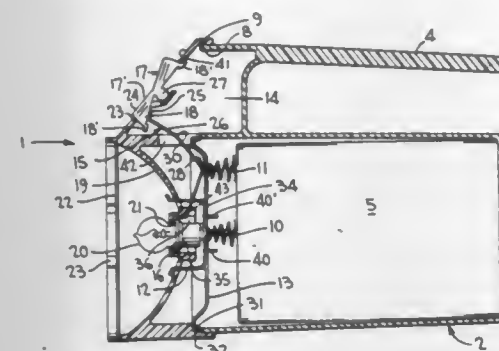
- a star-shaped cover having a peripheral side wall extending to one side of and generally perpendicular to the cover, said side wall conforming to the star shape of the cover and defining alternate inwardly acute angles at the outer points of the star and outward obtuse angles at the inner points of the star,
- an inner wall on the cover generally parallel and spaced inwardly of the peripheral side wall so as also to describe a star and extending from the same side of the cover as the peripheral wall, said peripheral and inner walls defining a channel about the cover,
- slots in the inner wall adjacent the inner and outer points of the star,
- means including parallel flanges extending into the channel from the margins of the slots and lamp sockets supported in the slots with the axes of the sockets parallel to the plane of the cover,
- lights mounted in each of the sockets and disposed within the inner wall and with the center line of the lights generally bisecting the points of the star,
- a window in the cover within the inner wall and through which all the lights are visible from the front of the cover,
- wiring in the channel connected to the sockets and a plug connected to the wiring and disposed outside the channel,
- a back conforming in shape to the star-shaped cover and having a wall on its front face that describes a star very slightly smaller than the star described by the cover inner wall so that when the back is mounted on the cover the back wall lies immediately within the inner wall,
- slots in the back wall opposite the slots in the cover inner wall to engage the sockets,
- said back having a mirrored front surface to reflect images of the lights when the ornament is viewed through the window,
- and means for mounting the ornament on the top of a Christmas tree.



**4,339,788**  
**LIGHTING DEVICE WITH DYNAMIC BULB POSITION**  
 Robert D. White, Warwick, N.Y., and Donald P. Weiss, Cliffside Park, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 15, 1980, Ser. No. 178,446  
 Int. Cl.<sup>3</sup> F21L 7/00  
 U.S. Cl. 362—157

4 Claims



1. A portable, self-contained lighting device comprising a head assembly containing the bulb, bulb positioned means, reflector, switch, electrical contact components and a body assembly with provisions for holding a power source in electrical contact with certain elements of the head assembly, wherein

- (a) a rotating switch assembly is positioned in a handle remote from the head/body assembly substantially directly above the bulb, and
- (b) an electrical contact strip
  - (1) is preloaded against the switch assembly in the "off" position,
  - (2) has an over-travel capacity of up to about 50%,
  - (3) has a compensating flexible knee capable of changing by up to about 40°, and
  - (4) has a flexed bulb restrictor element which engages the bulb at the bulb base and imparts an axial force on the bulb generally away from the reflector core,
- (c) the bulb is housed in a two-pronged, U-shaped bulb retainer that is slidably mounted in slots adjacent the reflector core which engages the bulb terminal at its base and cooperates with the bulb restrictor and the central power source terminal spring to change the position of the bulb axially depending on the presence of the power source, and
- (d) a circular electrical contact disc secured to said head assembly at its perimeter with
  - (1) a central aperture for allowing the central power source terminal spring to contact the base of the bulb retainer, and
  - (2) a contact rim that engages the electrical contact strip in the general area of the compensating flexible knee.

**4,339,789**  
**FLOOD LIGHT AIMING METHOD**  
 Donald E. Husby, Jerry L. Ewing, and William H. Johnson, all of Vicksburg, Miss., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

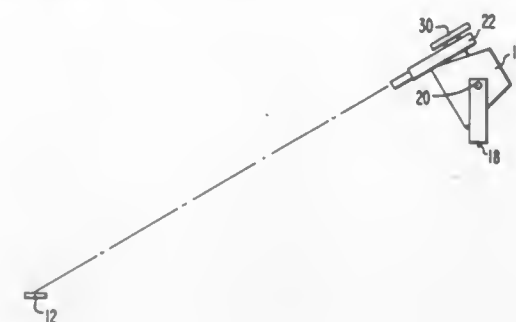
Filed Jul. 22, 1980, Ser. No. 171,063  
 Int. Cl.<sup>3</sup> F21K 7/00

U.S. Cl. 362—259

7 Claims

1. The method of aiming a flood light at a preselected location comprising the steps of:
- situating a laser at said preselected location;
  - directing the collimated radiative output of said laser at a mirror surface on the face of a flood light;
  - adjustably aiming said flood light to cause said laser output

to reflect from said mirror surface back to said preselected location; and



fixing said flood light in a position to remain aimed at said preselected location.

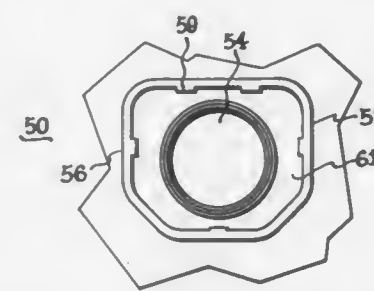
**4,339,790**  
**SEALED PREFOCUSED MOUNT FOR PLASTIC PAR LAMP**

James M. Hanson, Euclid; Martin J. Graf, Wickliffe, and Irving Bradley, Novelty, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,907  
 Int. Cl.<sup>3</sup> F21V 29/00

U.S. Cl. 362—267

3 Claims



1. An automotive headlamp having a lens directly sealed to a plastic reflector member to provide a leak-proof seal using a prefocused light source mount in the form of a sealed plastic block having at least two lead wires extending therefrom, a tungsten halogen lamp joined to the ends of said lead wires, and raised receptacle walls on said reflector member extending rearwardly from the reflector member to which the plastic block is directly sealed to form a final mount assembly which positions the tungsten halogen lamp at the focus of the reflecting surface of said reflector member, the improvement wherein said final mount assembly includes locating elements disposed in said raised receptacle walls to center for the reflecting surface of said reflector member, the improvement wherein said final mount assembly includes locating elements disposed in the center of the receptacle cavity for engagement during a subsequent bonding operation, said locating elements being joined to wall portions of said plastic block by said bonding operation, thus engaging said block to said reflector member.

**4,339,791**  
**DC TO LOW FREQUENCY INVERTER WITH PULSE WIDTH MODULATED HIGH FREQUENCY LINK**  
 Daniel M. Mitchell, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 19, 1980, Ser. No. 188,433  
 Int. Cl.<sup>3</sup> H02M 7/537

U.S. Cl. 363—41

14 Claims

1. A direct current to alternating current pulse width modulated power converter comprising:
- controllable inverter means for inverting a direct current signal into a high frequency alternating current signal at a rate and period determined by a first and second control signal;
  - power steering means for steering the high frequency alternating current signal to its output terminal for a controlla-

ble period of time and at a power that is controlled by a third and fourth control signal and to provide an alternating current output signal;

link means for linking the high frequency alternating current signal to the power steering means;

reference generator means for generating an alternating current reference signal;

control signal generator means for generating the first and second control signals from the reference signal and the alternating current output signal;

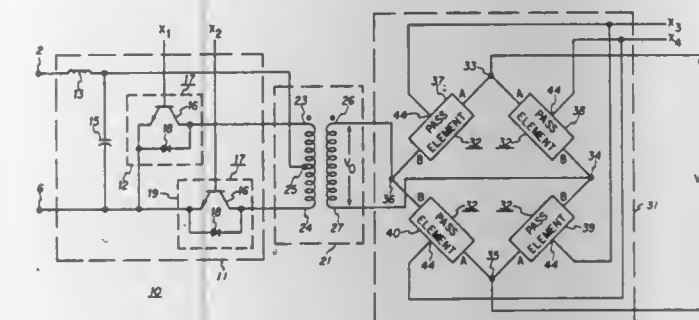
zero cross detector means for detecting each time the alternating current reference signal is at a zero level and to provide a binary detect signal and the complement of the

that no alternating flux is transferred from said primary winding to said control winding;

an AC power source for supplying said primary winding a fluctuating alternating current;

rectifier means connected to said secondary winding for rectifying an AC voltage derived therefrom to produce a DC output voltage; and

control means including an error detector for detecting a deviation of said output voltage from a desired voltage and bias means for supplying a DC control bias to said control winding in response to a signal from said error detector.



**4,339,793**  
**FUNCTION INTEGRATED, SHARED ALU PROCESSOR APPARATUS AND METHOD**

George B. Marenin, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 754,193, Dec. 27, 1976, Pat. No. 4,181,934.  
 This application Aug. 20, 1979, Ser. No. 68,028  
 Int. Cl.<sup>3</sup> G06F 3/00

U.S. Cl. 364—200

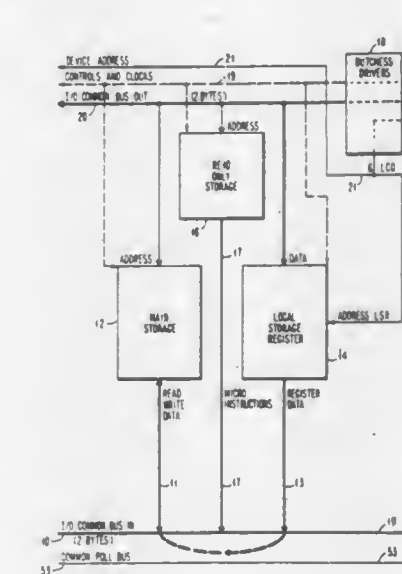
17 Claims

binary detect signal whereby the binary detect signal and the complement of the binary detect signal alternate logic states each time the alternating current reference signal is at a zero state;

means for obtaining the complement of the first and second control signals;

third gate means for providing the third control signal from the complement of the first control signal and the complement of the binary detect signal or the complement of the second control signal and the binary detect signal; and

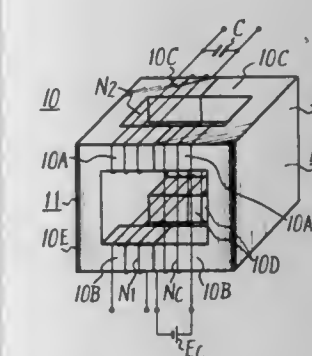
fourth gate means for providing the fourth control signal from the complement of the first control signal and with the binary detect or the complement of the second control signal and the complement of the binary detect signal.



**4,339,792**  
**VOLTAGE REGULATOR USING SATURABLE TRANSFORMER**  
 Masayuki Yasumura, and Yoshio Ishigaki, both c/o Sony Corporation, 7-35, Kitashinagawa 6-chome, Shinagawa-ku, Tokyo, Japan

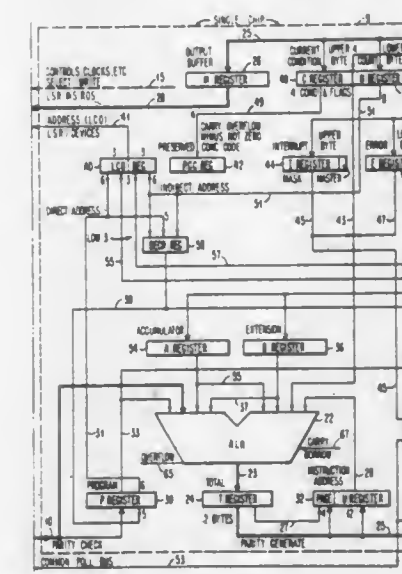
Filed Apr. 8, 1980, Ser. No. 138,341  
 Claims priority, application Japan, Apr. 12, 1979, 54-44811  
 Int. Cl.<sup>3</sup> H01F 29/14; H03F 7/02  
 U.S. Cl. 363—75

5 Claims



1. A voltage regulator using a saturable transformer comprising:
- a transformer including a ferromagnetic core having four legs and two common portions magnetically joining said four legs, a primary winding wound on said first and fourth legs of said core, a secondary winding wound on said second and third legs of said core and a control winding wound on said first and second legs of said core such

1. A computing apparatus, comprising arithmetic logic means for performing arithmetic and logical operations on information and address data;
- a unidirectional internal data bus;
- first buffer means for storing output data including address and information data from said arithmetic logic means for selective forwarding to a plurality of operand registers including an accumulator register over said unidirectional internal data bus, the unidirectional internal data bus receiving data only from said first buffer means;









a third bus connecting the output of said ALU register to the input of said memory and said auxiliary register; said control means connected to said storing means and responsive to one instruction for generating (A) first and second gating signals to simultaneously gate the output of said memory and said auxiliary register to the inputs of said ALU during said input phase; (B) a load register signal to store the output of said ALU unit into said ALU register; and (C) a write memory signal during said output phase of said executing means whereby the byte of data transferred from said ALU register to said memory represents the results of a logical operation by said ALU unit on two operands stored in different locations of said memory.

4,339,798

## REMOTE GAMING SYSTEM

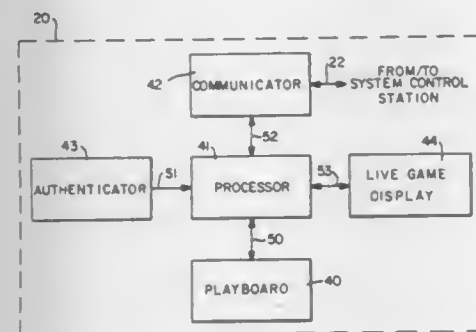
Richard A. Hedges, Oakland; David L. Shockley, San Francisco; Stanley C. Fralick, Saratoga, and Paul H. Kane, Cupertino, all of Calif., assignors to Remote Dynamics, Oakland, Calif.

Filed Dec. 17, 1979, Ser. No. 104,275

Int. Cl.<sup>3</sup> G06F 15/28

U.S. Cl. 364—412

10 Claims



1. In a remote gaming system, a remote gaming terminal comprising: a live game display for displaying a selected one of a plurality of games being played, changeable playboard means for displaying a selected one of a plurality of wagering possibilities corresponding to said selected one of said plurality of games being played and for displaying the results of the game played, and processor means for controlling said game display and said playboard means, wherein said playboard means includes a television monitor for displaying selected games, a transparent matrix of capacitive switches covering said monitor thereby forming a touch-sensitive keyboard having a plurality of touch-sensitive areas representing a plurality of possible wagers, a monitor controller for generating a composite video signal specified by said processor means representing the selected display to be displayed on said monitor such that each of said touch-sensitive areas representing a possible wager corresponds to at least one of said capacitive switches whereby enabling one of said switches permits wagering of the corresponding possible wager for the game played.

4,339,799

## TOMOGRAPHIC SCANNER

Manlio G. Abele, Garden City; Norman E. Chase, Yonkers, both of N.Y., and Gareth A. Mair, Stratford, Conn., assignors to New York University, New York, N.Y.

Filed Nov. 15, 1977, Ser. No. 850,891

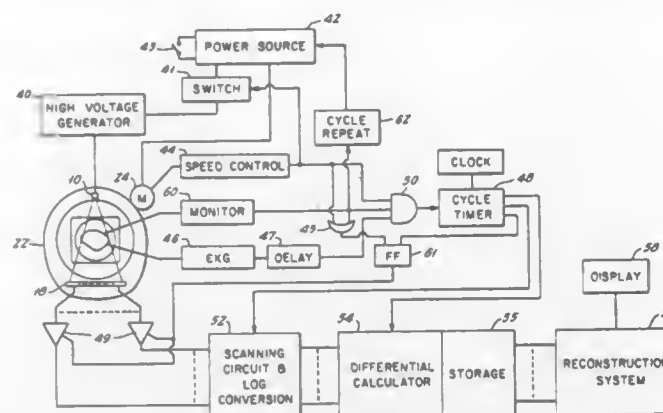
Int. Cl.<sup>3</sup> G06F 15/42; G01N 21/00

U.S. Cl. 364—414

12 Claims

1. An apparatus for tomographically reconstructing differential values of data at points in a plane from input data values which correspond to the values of a plurality of measurable line integrals of said data values, the improvement comprising: means for determining the value of each of said line integrals at least two distinct times; means for forming the difference between said values of each of said line integrals at two of said times for applying

said differences as said data input values, and tomographically reconstructing said differential values, whereby said



reconstructed values at said data points correspond to time differentials of the actual data values at said points.

4,339,800

## VALIDATOR FOR ELECTROCARDIAL DATA PROCESSING SYSTEM

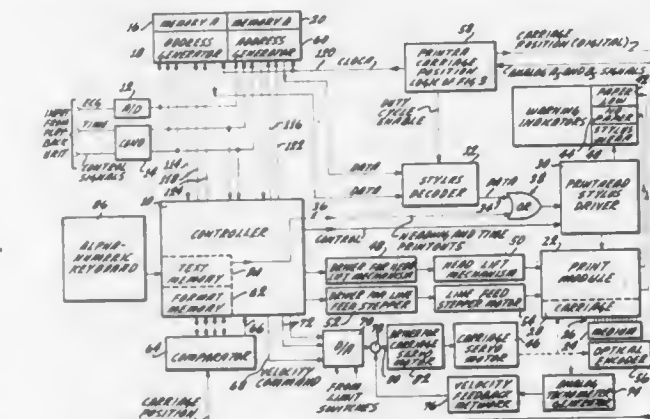
Donald C. Woods, Lompoc, Calif., assignor to Del Mar Avionics, Irvine, Calif.

Continuation-in-part of Ser. No. 957,527, Nov. 3, 1978. This application Oct. 24, 1979, Ser. No. 88,105

Int. Cl.<sup>3</sup> G06F 15/42

U.S. Cl. 364—417

17 Claims



1. In a process for the automatic analysis of ECG data taken at a real time rate for a known period of time over an extended period of time from a patient and wherein the ECG data representing cardiac activity of that patient is stored in a form for later analysis, and wherein the stored ECG data is automatically analyzed at an analysis rate significantly greater than said real time rate, and wherein the validation of said analysis which at least involves ascertaining the location or number of arrhythmic events, or both, with reference to the time when, or during which, such events occurred, the improvement which comprises separately verifying the results of said automatic arrhythmia analysis as compared with the arrhythmia data appearing in at least a portion of said ECG by the steps of:

- providing at a rate at least equal to said analysis rate a visual print-out of at least that portion of the ECG automatically analyzed for arrhythmic events,
- providing with said visual print-out of said portion of the ECG automatically analyzed an indication of the time represented by the portion of the ECG which is printed out, and
- correlating the arrhythmic events reported by said automatic arrhythmia analysis with the arrhythmic events appearing in the corresponding portion of said print-out to ascertain the difference, if any, between the two, wherein the indication of time in the visual print-out is coordinated with the actual time of day stored as part of said ECG data during which that portion of the ECG was taken from the patient.

4,339,801

## AUTOMATIC CONTROL SYSTEM FOR METHOD AND APPARATUS FOR CHECKING DEVICES OF AN AUTOMOTIVE VEHICLE IN USE WITH A MICROCOMPUTER

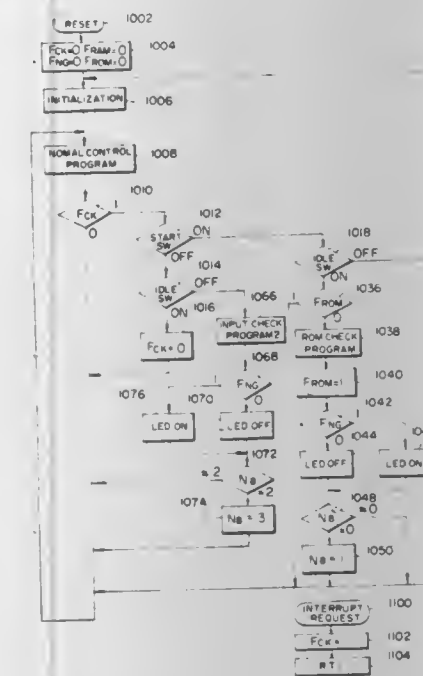
Akio Hosaka, Yokohama, and Kazuhiro Higashiyama, Atsugi, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 21, 1980, Ser. No. 132,647

Int. Cl.<sup>3</sup> G06F 11/00

U.S. Cl. 364—431.04

9 Claims



1. In a control system for an automotive vehicle for controlling various devices in response to sensor signals fed from sensors, said system having a microcomputer for receiving and processing said sensor signals and for controlling said devices, said microcomputer including an input unit, an output unit, a CPU, and a memory storage device including a ROM and a RAM, a method of controlling said vehicle and checking operation of said microcomputer comprising steps of:

- operating a control program in said microcomputer in response to said sensor signals for controlling said vehicle devices,
- determining in said CPU and in response to said sensor signals at least a first and a second engine condition,
- in response to said first determined engine condition, operating a first checking program for checking operation of said memory storage device, operation of said first checking program including the steps of:
  - in said RAM, feeding into said RAM a first plurality of data signals corresponding to a first set of data values,
  - reading out of said RAM said fed-in data signals,
  - comparing each of said read out data signals with each of said first plurality of data signals and generating a first error signal upon non-equivalence of same,
  - providing an indication of said first error signal,
  - in said ROM, reading a second plurality of data values from storage locations of said ROM,
  - comparing at least the least significant bits of the sum of said read data values with a reference sum and generating a second error signal upon non-equivalence thereof,
  - providing an indication of said second error signal,
- in response to said second determined engine condition, operating a second checking program for checking operation of at least one of said input and output units, said second checking program including the steps of:
  - for said input unit, feeding into said input unit a third plurality of data signals corresponding to a third set of data values,
  - comparing in said CPU said third set of data values

with one set of reference values stored in said memory storage device,

- generating a third error signal if each of said third set of data values is not equal to each of said one set of reference values,
- providing an indication of said third error signal,
- for said output unit, feeding a fourth plurality of data signals corresponding to a fourth set of data values from said memory device to said output unit,
- comparing said fourth set of data values with another set of reference values,
- generating a fourth error signal if each of said a fourth set of data values is not equal to each of said other set of reference values, and
- providing an indication of said fourth error signal.

4,339,802

## DIGITAL PROTECTIVE RELAYING DEVICES

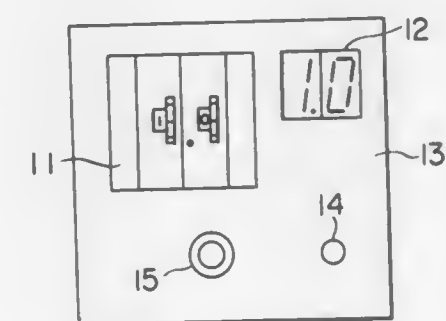
Mitsuru Yamaura; Ryotaro Kondow, both of Fuchu; Megumu Mitani, Tama, and Eiichi Okamoto, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 10, 1979, Ser. No. 65,447

Int. Cl.<sup>3</sup> G06F 15/56; H02H 3/28

U.S. Cl. 364—483

3 Claims





# 4,339,803 VIDEO FRAME STORE AND REAL TIME PROCESSING SYSTEM

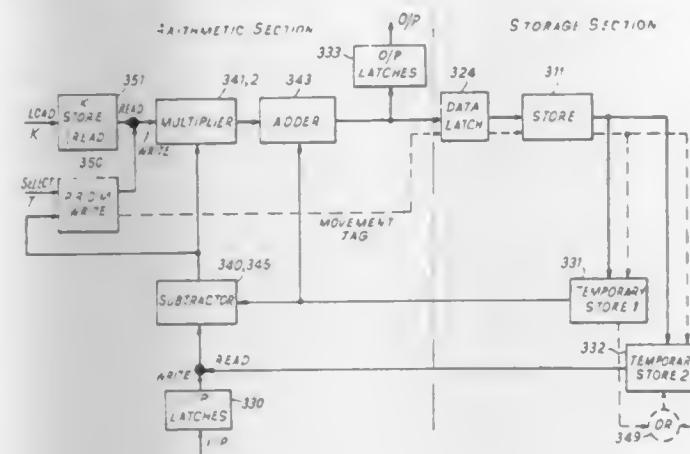
Peter C. Michael, Newbury; Richard J. Taylor, London, and Martin R. Trump, Newbury, all of England, assignors to Micro Consultants Limited, Berkshire, England  
Continuation of Ser. No. 15,678, Feb. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 841,519, Oct. 12, 1977, Pat. No. 4,163,249. This application Aug. 6, 1980, Ser. No. 176,226

Claims priority, application United Kingdom, Oct. 14, 1976, 42751/76; Jul., 1977, 31355/77; Jul., 1977, 31356/77; Jul., 1977, 31357/77

Int. Cl.<sup>3</sup> H04N 5/21

U.S. Cl. 364—724

22 Claims



1. A distributed video frame store and real time processing system for manipulating picture point data comprising, a video frame store for storing the picture point data from a TV picture frame comprising several hundred mutually different lines of video information representing different areas of the frame, said store being subdivided into a plurality of sectors each storing different lines of the video frame and capable of parallel operation; processing means comprising a plurality of discrete arithmetic units capable of parallel operation, each arithmetic unit being only associated with one of said sectors and having input means connected to receive data from the associated one of said sectors for processing picture point data from that particular sector of the store; and means to control said processing means to process a different picture point in each of the sectors of the store simultaneously and produce a different processed output from each sector.

# 4,339,804 MEMORY SYSTEM WHEREIN INDIVIDUAL BITS MAY BE UPDATED

Alan B. Davison, San Diego, and Wayne J. Lewis, Escondido, both of Calif., assignors to NCR Corporation, Dayton, Ohio  
Filed Jul. 5, 1979, Ser. No. 55,207

Int. Cl.<sup>3</sup> G11C 7/00; G06F 13/00

U.S. Cl. 364—900

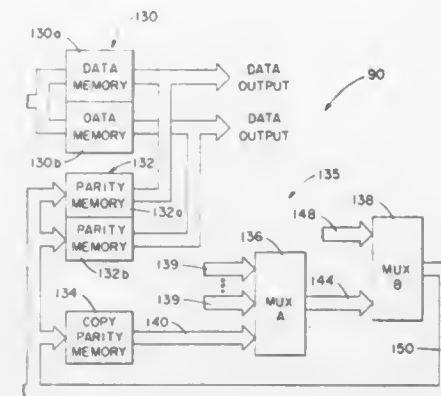
4 Claims

4. In a data processing system having a processor and a parity memory within said processor, the improvement wherein said parity memory comprises:

- a primary parity memory having data inputs and a plurality of memory locations, each memory location for storing a plurality of parity bits, said primary parity memory capable of being accessed only for the entire plurality of parity bits in each memory location at a time;
- a copy parity memory having data inputs and a plurality of memory locations corresponding to the memory locations in said primary memory and for storing the same pluralities of parity bits that are stored in said primary parity memory;
- bit changing circuitry for receiving the parity bits within one

memory location of said copy parity memory, for receiving a new bit having a value to which one of the parity bits from said copy parity memory is to be changed, and for changing the one of the parity bits to the value of the new bit, said bit changing circuitry comprising:

- a first multiplexer for receiving the parity bits within one memory location of said copy parity memory and groups of new bits from one or more first sources that provide the new bits at a fast speed in relation to said processor, and for selecting either the parity bits or one of the groups of new bits; and



a second multiplexer receiving the selected bits from said first multiplexer and groups of new bits from one or more second sources that provide the new bits at a slow speed in relation to said first sources, and for exchanging one of the bits from said second sources with one of the bits from said first multiplexer; and

means for connecting said bit changing circuitry to the data inputs of both said copy parity memory and said primary parity memory so that the parity bits from the bit changing circuitry, including the changed bit, are returned to their corresponding memory locations in both said copy parity memory and said primary parity memory.

# 4,339,805 INFORMATION RECORDING SYSTEM

Kazuhiko Iida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

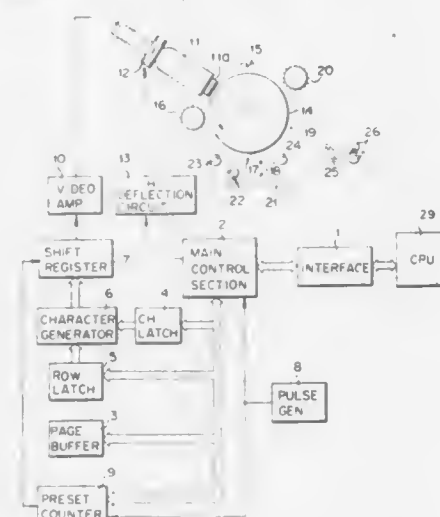
Filed Sep. 12, 1979, Ser. No. 74,893

Claims priority, application Japan, Sep. 18, 1978, 53-114423

Int. Cl.<sup>3</sup> G06F 3/12; G06K 15/02, 15/14

U.S. Cl. 364—900

1 Claim



1. An information recording system for recording one line of characters at a time in dot pattern, through a plurality of horizontal scanings, comprising:

- pulse generating means;
- interface means for latching character code information, horizontal and vertical character size information and

deflection control information, all supplied from an external information supplying device;

buffer means connected to said interface means for storing at least said character code information which is needed to reproduce one page;

latch means connected to said buffer means for latching character code information read from said buffer means;

preset counter means connected to said interface means and said pulse generating means for (a) receiving information supplied via said external information supplying device and said interface means, which represents the horizontal size of characters to be recorded and (b) determining dot intervals in the horizontal direction in accordance with said horizontal character size information and with the pulse signals from said pulse generating means;

vertical size memory means connected to said interface means for storing information, supplied from said interface means, which represents the vertical size of characters to be recorded;

a direct memory access unit connected to said interface means, buffer means, preset counter means and vertical size memory means for transferring the character code information from said buffer means to said latch means;

first counter means connected to said vertical size memory means for measuring a flyback period and determining a time interval between adjacent horizontal scanings according to the vertical size information supplied from said vertical size memory means;

second counter means connected to said first counter means for providing row information determining a dot pattern, in accordance with an output value of said first counter means;

character signal generating means connected to said second counter means for receiving row information therefrom and said latch means for receiving character information therefrom, said character signal generating means for generating parallel character dot information comprising binary codes representing rows of characters to be printed;

parallel-serial converting means connected to said character signal generating means for converting the parallel dot information provided by said character signal generating means into serial dot information;

electronic printer means for printing dot information supplied by said parallel-serial converting means, said printing means having an optical fiber tube and a rotatable photosensitive drum and being adapted to control vertical deflection as a function of the speed at which the photosensitive drum rotates;

a horizontal deflection circuit connected to said electronic printer means for supplying horizontal synchronization signals to said electronic printer means so that characters to be printed by said printer means may be deflected in the horizontal direction; and

main control means connected to said pulse generating means, interface means, latch means, first counter means, second counter means, buffer means, preset counter means and horizontal deflection circuit for controlling information transfer among said interface means, buffer means, latch means, first and second counter means and horizontal deflection circuit in response to the pulse signals from said pulse generating means.

# 4,339,806

ELECTRONIC DICTIONARY AND LANGUAGE INTERPRETER WITH FACILITIES OF EXAMINING A FULL-LENGTH WORD BASED ON A PARTIAL WORD ENTERED AND OF DISPLAYING THE TOTAL WORD AND A TRANSLATION CORRESPONDING THERETO  
Kunio Yoshida, 2541-10, Hari, Tsugemura, Yamabe-gun, Nara-ken, Japan

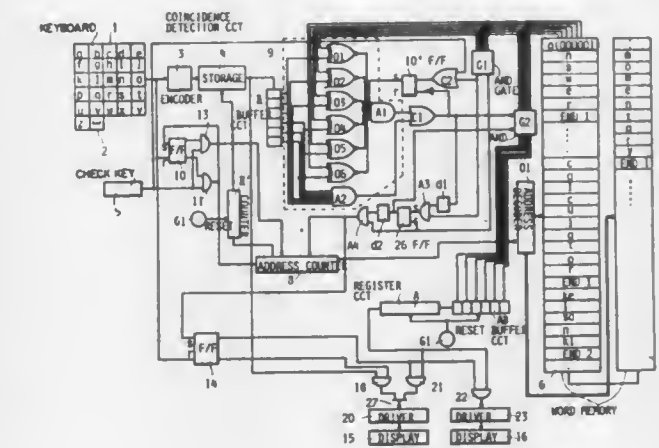
Filed Nov. 15, 1979, Ser. No. 94,569

Claims priority, application Japan, Nov. 20, 1978, 53-160221[U]

Int. Cl.<sup>3</sup> G06F 15/38

U.S. Cl. 364—900

9 Claims



1. A portable word information storage apparatus comprising:

- means for entering a partial word in a specific language, the partial word containing at least one character and at least one blank character;
- first means for storing a plurality of full-length words in the same specific language;
- first means for addressing the storing means so as to search the plurality of full-length words;
- means responsive to the entering means and the storing means for determining a coincidence between the partial word entered by said entering means and corresponding letters of each of the plurality of full-length words stored in the storing means, said means for determining producing a coincidence signal upon detection of each said coincidence;
- second means for storing a plurality of translations corresponding to the plurality of full-length words stored in the first storing means;
- first means responsive to the coincidence signals produced by determining means for indicating the coincident full-length word on a first display;
- second means responsive to the determining means for addressing the second storing means so as to recall each of the plurality of translations corresponding to a coincident full-length word; and
- second means responsive to the second addressing means for indicating the translation corresponding to the coincident full-length word in a second display.



**4,339,807**  
**POSTAL CHARGE PROCESSING SYSTEM INCLUDING A WEIGHT MEASURING UNIT, POSTAL CHARGE CALCULATING UNIT AND A METER STAMP ISSUING UNIT**

Mitsuo Uchimura, Numazu; Masao Oana, and Yoshiharu Nishimura, both of Mishima, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

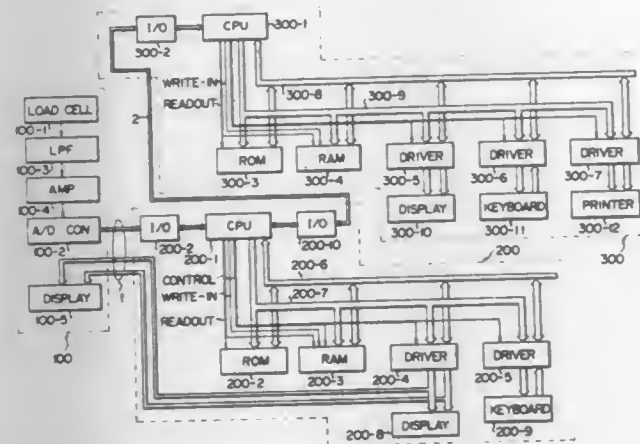
Filed Feb. 25, 1980, Ser. No. 124,610

Claims priority, application Japan, Mar. 7, 1979, 54/26461; Mar. 7, 1979, 54/26464

Int. Cl.<sup>3</sup> G06F 15/20; G01G 23/22

U.S. Cl. 364—900

6 Claims



1. A postal charge processing system comprising: weight measuring means for measuring the weight of a postal article and producing weight data corresponding to the weight of said postal article; charge calculating means coupled to said weight measuring means and including first switching means for selectively setting postal conditions at least including the way of mail and region of mailing destination; first memory means for storing postal condition data produced in accordance with the operation of said first switching means; display means; second switching means; and first data processing means coupled to said weight measuring means, first and second switching means and to said first memory means for calculating the postal charge from the weight data obtained from said weight measuring means and postal condition data stored in said first memory means for displaying the calculated postal charge on said display means, said first data processing unit including means for generating calculated postal charge data in response to the operation of said second switching means; and meter stamp issuing means including third switching means; second memory means for selectively storing charge data produced in response to the operation of said third switching means or charge data produced from said first data processing means; fourth switching means coupled to said second memory means; printing means; fifth switching means; and second data processing means coupled to said first data processing means, second memory means, printing means and to said third through fifth switching means, said second data processing means assuming first and second operative states, wherein said second data processing means includes means for causing when it is in said first operative state, charge data to be written into said second memory means in accordance with the operation of said third switching means, the data in said second memory means to be cleared in response to the operation of said fourth switching means, and a meter stamp corresponding to the data in said second memory means to be issued from said printing means in response to the operation of said fifth switching means, and said second data processing means being set to said second operative state in response to a control signal generated from said first data processing means when charge data calculated in said

first data processing means has been transferred to said second memory means and includes means for causing the charge data stored in said second memory means to be kept uncleared in spite of the operation of said fourth switching means when said second data processing means is in said second operative state.

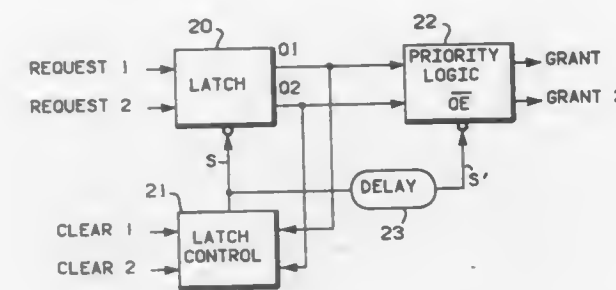
**4,339,808**  
**ASYNCHRONOUS EVENT PRIORITIZING CIRCUIT**  
 Robert P. North, Ithaca, N.Y., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 4, 1980, Ser. No. 127,003

Int. Cl.<sup>3</sup> G06F 9/46

U.S. Cl. 364—900

4 Claims



1. A prioritizing circuit responsive to a plurality of asynchronously occurring request signals, said circuit comprising: a latch circuit responsive to said request signals and to a control signal, said latch circuit generating a plurality of output signals each having a logic level related to that of a respective one of said request signals when said control signal is in a first logic state and latching said output signals when said control signal is in a second logic state; a latch control circuit responsive to a predetermined logic level of said output signals for generating said control signal in said second logic state; delay means responsive to said control signal for generating a delayed control signal; and a priority circuit responsive to said output signals and said delayed control signal, for prioritizing said plurality of output signals having said predetermined logic level and generating a grant signal corresponding to the output signal having the higher priority.

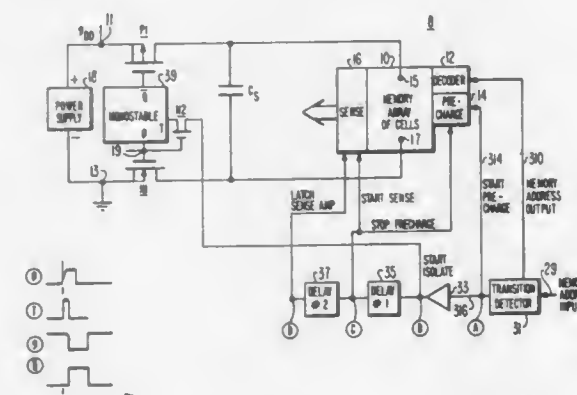
**4,339,809**  
**NOISE PROTECTION CIRCUITS**  
 Roger G. Stewart, Neshanic Station, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 19, 1980, Ser. No. 188,887

Int. Cl.<sup>3</sup> G11C 11/40

U.S. Cl. 365—206

19 Claims



1. The combination comprising: first and second power terminals for the application therebetween of an external operating potential;

an electronic system having first and second points for the application therebetween of the operating potential for the system, said system having an operating cycle during which said system is particularly sensitive to noise signals; means connecting a first switch means between said first power terminal and said first point; means connecting said second point to said second power terminal; and means, responsive to the initiation of said operating cycle coupled to said first switch means for opening said switch means and electrically disconnecting said first point from said first power terminal during said operating cycle.

**4,339,810**  
**METHOD OF COMPENSATING SEISMIC DATA FOR EFFECTS OF FREQUENCY DEPENDENT ATTENUATION**

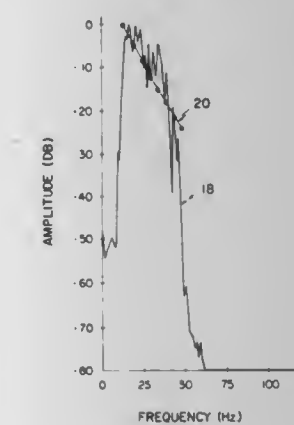
James F. Nichols, 3282 Hunters Glen Dr., Missouri City, Tex. 77459, and Peter P. Van Bommel, 2535 Teague, Houston, Tex. 77080

Filed May 13, 1980, Ser. No. 149,438

Int. Cl.<sup>3</sup> G01V 1/37

U.S. Cl. 367—49

11 Claims



1. A process for compensating received propagated seismic signals for frequency dependent absorption in the earth, wherein such signals have been generated by a vibrator source and propagated in the earth as a transmitted sweep signal, and wherein a recorded sweep signal has been recorded as a counterpart to the transmitted sweep signal, comprising the steps of: producing correlated data obtained by crosscorrelating said received propagated seismic signals with said recorded sweep signal; determining a plurality of Fourier amplitude spectra for said correlated data; establishing an average quantitative amplitude attenuation function from said Fourier amplitude spectra for all frequencies contained in the recorded sweep signal; converting said amplitude attenuation function to an inverse amplitude function for compensation of the attenuation for all frequencies contained in the recorded sweep signal; applying said inverse amplitude function to the recorded sweep signal to obtain a weighted sweep signal for use in correlation; and producing attenuation compensated correlated data obtained by crosscorrelating said received propagated seismic signals with said weighted sweep signal.

**4,339,811**  
**TROLLING DEPTH CONTROLLER**  
 John J. Bednarz, Elmhurst; Phillip J. Moser, Bensenville, and Roger L. Rosenberg, Arlington Heights, all of Ill., assignors to Circom, Inc., Bensenville, Ill.

Filed Nov. 20, 1980, Ser. No. 208,495

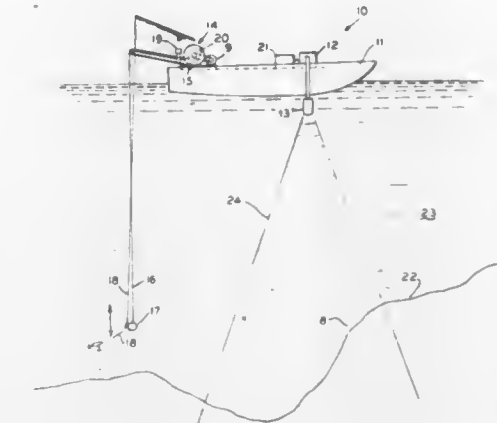
Int. Cl.<sup>3</sup> G01S 15/88; A01K 89/00

U.S. Cl. 367—96

15 Claims

1. An automatic trolling depth controller for a fishing boat, comprising: sonar depth indicating means for positioning on

the boat and having a sonar transducer connected thereto; a trolling line played out from a position on the boat; a reversible motor connected to raise and lower the trolling line; a depth control unit means connected to drive the motor to raise and lower the trolling line in response to depth indicating signals of the depth indicating means so as to automatically maintain the end of the trolling line at a substantially given constant spacing from the bottom despite variations in lake depth as the fishing



boat trolls; the depth control unit means including means for selectively automatically raising the trolling line by a momentary initial operator command during automatic operation so that the end of the trolling line is returned automatically to the surface without operator control during the raising and then upon subsequent operator momentary command automatically lowering the end of the trolling line back to said given spacing without operator control during the lowering.

**4,339,812**  
**SIGNAL PICKUP CARTRIDGE FOR REPRODUCING SIGNALS RECORDED ON ROTATING RECORDING MEDIUMS**

Kunio Goto, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

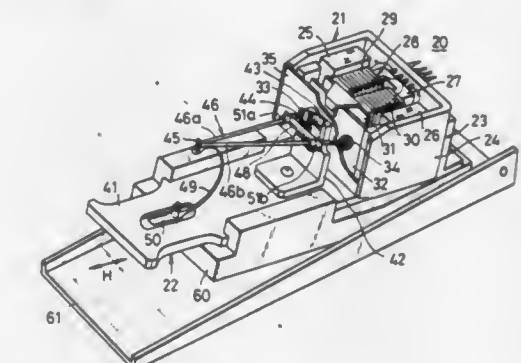
Filed Apr. 2, 1980, Ser. No. 136,741

Claims priority, application Japan, Apr. 4, 1979, 54/40654

Int. Cl.<sup>3</sup> G11B 3/20

U.S. Cl. 369—130

4 Claims



4. A signal pickup cartridge adapted to be detachably mounted in a signal pickup device having pivot bearings and a stylus actuator driven by said pivot bearings in response to a control signal, said pickup cartridge comprising: a cantilever having a reproducing stylus at its free end for tracing along a track which is formed on a rotary recording medium lying in a horizontal plane, said track having at least an information signal recorded therealong; said stylus reproducing said information signal, said cantilever being directly supported in a swinging manner at a proximal base end thereof by said pivot bearings in a manner making it possible for stylus displacement in the longitudinal direction, said cantilever being detachable from said pivot bearings;



a cylindrical elastic member through which said cantilever is inserted and supported, said elastic member being mounted on said cantilever at a part which is disposed at a position away from said pivot bearings, said elastic member absorbing vibration;

a holding member having a support in the form of a hollow cylinder for holding said elastic member therein to elastically support said cantilever; and

magnetic pressure contact means for causing said proximal base end of the cantilever to be pressed into contact with the pivot bearings and for imparting to said reproducing stylus a pressure against said rotary recording medium when the pickup cartridge is mounted in the pickup device, said pressure contact means comprising a permanent magnet mounted on said holding member for exerting a magnetic attractive force between said permanent magnet and another permanent magnet mounted on said pickup device when said pickup cartridge is mounted in the pickup device.

#### 4,339,813 APPARATUS FOR DETECTING GROOVE END OF RECORD DISK

Norio Tomisawa, Atsushi Takeuchi, and Nobuyuki Tamori, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

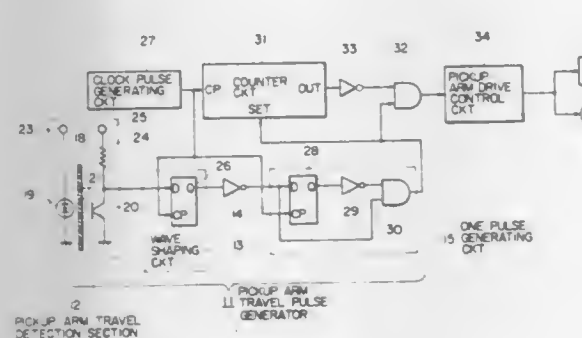
Filed Sep. 4, 1980, Ser. No. 183,994

Claims priority, application Japan, Sep. 5, 1979, 54-113760

Int. Cl.<sup>3</sup> G11B 17/00

U.S. Cl. 369-231

17 Claims



1. A device for detecting a signal groove-end of a record or video disk for use in a phonographic or video signal reproducing apparatus, comprising:

- a pickup arm;
- means for generating a clock pulse of a certain frequency;
- means for generating pickup arm travel pulses of a period inversely proportional to a travel speed of the pickup arm;
- means for: (1) counting, to a first predetermined value, pulses delivered from said clock pulse generating means, and (2) generating a count signal until said counting means has reached said first predetermined value, said counting means being set to a second predetermined value in response to said pickup arm travel pulses;
- means, responsive to said pickup arm travel pulses and said count signal for generating a groove-end detection signal when one of said pickup arm travel pulses is generated during the occurrence of said count signal;
- means responsive to said groove-end detection signal and generating a control signal for controlling the travel of said pickup arm; and
- means responsive to said control signal for driving said pickup arm.

#### 4,339,814 SPINDLE ASSEMBLY FOR A VIDEO RECORDER-PLAYBACK MACHINE

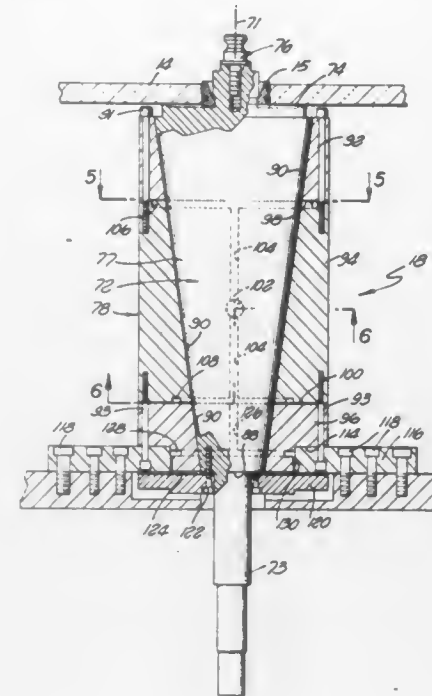
Lawrence S. Canino, Torrance, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Oct. 20, 1980, Ser. No. 198,695

Int. Cl.<sup>3</sup> F16C 32/06; G11B 3/36

U.S. Cl. 369-261

21 Claims



- 1. A spindle assembly for supporting a disc for rotation, comprising:
  - a spindle shaft including a generally truncated and inverted conical journal defining an upwardly presented shoulder for vertically supporting the disc, and a stud projecting upwardly from said shoulder along the axis of said journal for reception through a central opening formed in the disc;
  - a spindle housing formed to define a radially inwardly directed bearing surface of generally truncated conical shape for complementary and supporting reception of said journal for rotation of said journal about a vertical axis, said housing having passage means formed therein for communicating a substantially constant and annularly uniform flow of air under pressure to the conical bearing interface between said journal and said bearing surface; and said spindle housing is formed from a plurality of vertically stacked sections connected together to define said conical bearing surface; and including an annular shim for interposition between each adjacent pair of housing sections in the stack for elevationally adjusting said housing sections with respect to each other for adjusting said conical bearing surface to correspond closely with the shape of said journal.

#### 4,339,815 MULTIPLEX CONNECTION UNIT FOR USE IN A TIME-DIVISION EXCHANGE

Jean-Rene Herledan, Lannion; Bernard Le Dieu, Perros Guirec; Jean-Pierre Martin, Pleumeur Bodou, and Daniel Quemere, Perros Guirec, all of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed May 5, 1980, Ser. No. 146,985

Claims priority, application France, May 4, 1979, 79 11320

Int. Cl.<sup>3</sup> H04Q 11/04

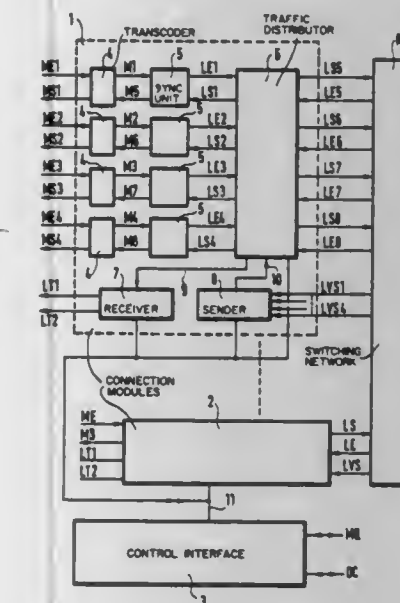
U.S. Cl. 370-58

6 Claims

- 1. A multiplex connection unit for use in a time-division exchange having a local clock, multiregisters, charging units, markers, a monitoring unit connected to an operation and maintenance center and a switching network, and which is connected to other electromechanical or time-division exchanges or line concentrators by incoming and outgoing multiplex lines, wherein the connection unit comprises a control

interface (3) connected to (a) the markers, (b) the monitoring unit and (c) a multiplicity of identical connection modules (1), the connection modules each connected to incoming and outgoing multiplex lines to the local clock, to the switching network (RCX) and to the multiregisters, each connection module comprising:

- a plurality of transcoders (4) each connected to an incoming multiplex line (ME) and to an outgoing multiplex line (MS) to convert a first code to a second code and vice versa;
- a plurality of synchronising units (5), each connected to one transcoder (4) to detect a frame alignment word and to synchronise time slots of the incoming multiplex line with the local clock and to inject the free alignment words into the outgoing multiplex lines;
- a traffic distributor (6) for transferring the time slots of the incoming multiplex lines to the switching network and to a signalling receiver (7) and for transferring the time slots



from the switching network to the outgoing multiplex lines while adding thereto signals received from a signalling sender (8) connected to (a) the input and output of each synchronising unit by two multiplex lines (LE, LS), (b) the input and output of each switching network by as many multiplex pairs (LE5 to LE8, LS5 to LS8) as there are synchronising units, and (c) to the control interface; a signalling receiver (7) for detecting a multiframe alignment word, for receiving incoming signals from each incoming multiplex line and for sending said incoming signals to the multiregisters connected to the traffic distributor (6), to the control interface and to the multiregisters; and the signalling sender (8) receiving outgoing signals from the switching network (RCX) relating to each outgoing multiplex and for sending said outgoing signals to the traffic distributor, said sender being connected to the switching network, to the control interface and to the traffic distributor (6).

#### 4,339,816 CONFERRING APPARATUS AND METHODS FOR A FREQUENCY DIVISION MULTIPLEX COMMUNICATIONS SYSTEM

Joseph Reed, Stamford, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 29, 1980, Ser. No. 154,243

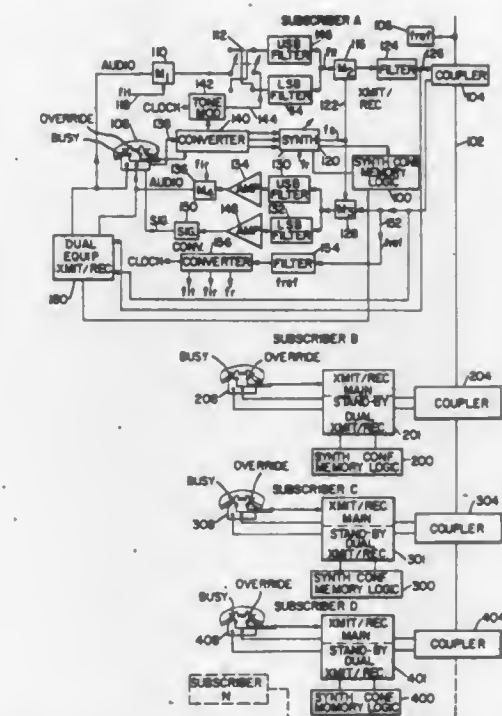
Int. Cl.<sup>3</sup> H04J 1/06

U.S. Cl. 370-71

19 Claims

- 1. A conferencing apparatus for use in a frequency division multiplex communication system, comprising:
  - a plurality of subscriber stations coupled to a transmission path, each of said stations including a first transmitter and a first receiver having an assigned transmitting and receiving frequency and a second transmitter having selectable transmitting frequencies associated with a second receiver,

with said second transmitter and receiver in parallel with said first transmitter and receiver, said assigned frequencies having a fixed frequency difference therebetween corresponding to the difference in the transmitter and receiver intermediate frequencies, mixer means at each station operative to mix a predetermined frequency with said intermediate frequencies to derive an independent sideband signal comprising an upper and lower sideband outputs such that one sideband thereof contains communication information and one sideband thereof contains signaling data, each station including bandpass filter means at said transmitters and said receivers for rejecting undesired mixing products, said transmission path for



receiving said filtered independent sideband signal with said path containing a common reference frequency to permit simultaneous communications and signaling between subscriber stations, each station further containing a memory adapted to store therein data indicative of a subscriber station to which a selected subscriber station is communicating with, and logic means operative to transmit said stored data to any other subscriber station to enable said any other station to select said transmitting frequency according to said data as stored, whereby any selected number of said subscriber stations can communicate with each other in a conference mode with said selected subscriber being the nexus of said conference mode.

#### 4,339,817 CLOCK RECOVERY CIRCUIT FOR BURST COMMUNICATIONS SYSTEMS

Masaharu Hata, Yokosuka, and Kotaro Kato, Tokyo, both of Japan, assignors to Nippon Electric Co., Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,333

Claims priority, application Japan, Sep. 3, 1979, 54-112544

Int. Cl.<sup>3</sup> H04L 7/00; H04J 3/06, 6/00

U.S. Cl. 370-93

4 Claims

- 2. A method of recovering clock pulses from a stream of time division multiple access signals, said method comprising the steps of:
  - a. comparing the phase of a signal generated locally with the phase of burst signals received from various transmitting stations in a multiple access system;
  - b. averaging the phase differences detected in said comparison step;
  - c. storing information of the average phase differences under







signal varying in accordance with a phase error signal applied to a phase control terminal included in said filter means;

phase lock loop means, operatively coupled to the output of said filter means, for generating a recovered clock signal of pulses exhibiting a frequency substantially equal to and locked to the frequency of said approximately sinusoidal signal, and

phase error detecting means, including a first and second inputs operatively coupled to the output of said transition marker generating means and the output of said phase lock loop means, respectively, for generating at the output of said detecting means a phase error signal exhibiting indicia of the difference in phase between a selected transitory edge of said recovered clock signal and the center of said eye intervals, the output of said detecting means being operatively coupled to the phase control terminal of said filter means, such that the phase of said substantially sinusoidal signal is adjusted by said filter means until a selected transitory edge of the pulses of the recovered clock signal occurs at the centers of respective eye intervals.

4,339,824

#### CLOCK RECOVERY CIRCUIT FOR TDMA SYSTEM OR MESSAGE SWITCHING SYSTEM

Yoshio Tanimoto, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

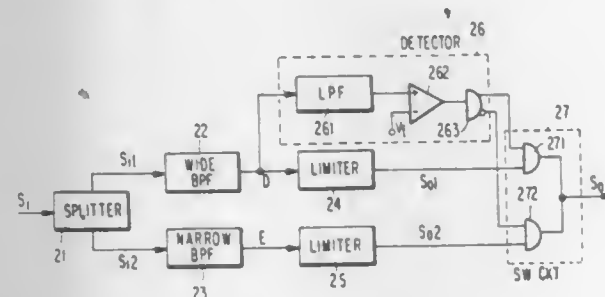
Filed Jun. 20, 1980, Ser. No. 161,534

Claims priority, application Japan, Jun. 20, 1979, 54/77814

Int. Cl.<sup>3</sup> H04L 7/00; H03K 9/04

U.S. Cl. 375-110

2 Claims



1. A clock recovery circuit comprising: splitting means for dividing an input signal containing a clock component into two split outputs provided at first and second output terminals;

first band-pass filter means connected to said first output terminal and having a first bandwidth selected as to permit extraction of said clock component from said input signal; second band-pass filter means connected to said second output terminal and having a second bandwidth narrower than said first bandwidth and also selected as to permit extraction of said clock component from said input signal; first and second amplitude limiter means limiting the output amplitudes of said first and second band-pass filter means, respectively;

switching means responsive to a control signal for selectively supplying one of the outputs of said first and second amplitude limiter means; and

control signal generating means responsive to the output of said first band-pass filter means for generating said control signal, wherein said clock component extracted from said input signal is supplied as an output of said switching means.

4,339,825

#### BI-PLANE ANGIOGRAPHIC APPARATUS

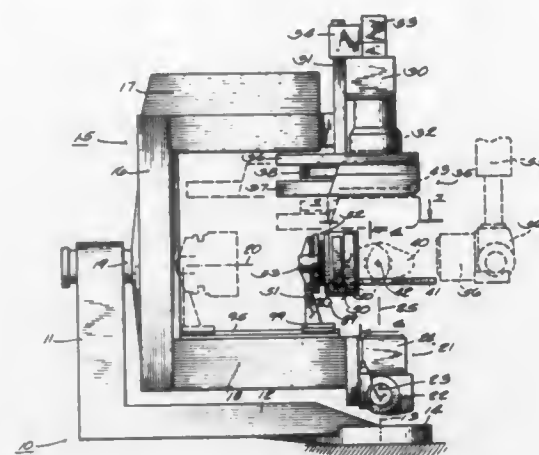
David M. Barrett; Paul M. Stivender, both of Brookfield, and Robert E. Ueberfluss, Greendale, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,093

Int. Cl.<sup>3</sup> G03B 41/16

U.S. Cl. 250-490

12 Claims



1. X-ray apparatus for bi-plane angiography comprising: support means movable about a vertical axis,

a U-arm comprising a base section and means mounting said base section on said support means for rotation about a horizontal axis and said U-arm having leg sections, respectively, extending axially from the base section on opposite sides of the horizontal axis,

an X-ray source mounted to one of the leg sections for projecting an X-ray beam along an axis perpendicular to the horizontal axis, the intersection of said vertical, horizontal and X-ray beam axes constituting an isocenter occurring in a region where a body is to be located for examination,

carriage means mounted to the other of the leg sections for moving radially inwardly and outwardly relative to the horizontal axis,

a first film changer mounted to said carriage means for presenting a radiographic film in planes determined by the radial position of said carriage means, said planes being intersected by the X-ray beam axis and being generally parallel to the horizontal axis, and

a second film changer for making lateral X-ray views and means for mounting said changer to said U-arm between said leg sections and between said isocenter and base section for said second changer to present a radiographic film in a plane to which said horizontal axis is generally perpendicular.

4,339,826

#### RADIO RECEIVER HAVING PHASE LOCKED LOOP FREQUENCY SYNTHESIZER

Minoru Ogita, and Shigenobu Kimura, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jul. 1, 1980, Ser. No. 165,091

Claims priority, application Japan, Jul. 14, 1979, 54-89734

Int. Cl.<sup>3</sup> H04B 1/26; H03J 7/28; H03L 7/18

U.S. Cl. 455-183

5 Claims

1. In a radio receiver comprising a phase locked loop frequency synthesizer including a frequency-variable local oscillator for producing a local oscillator signal of a first frequency; a programmable counter for frequency dividing said local oscillator signal; a source of a reference frequency signal; and a phase comparator for comparing in phase a frequency divided output signal of said programmable counter with said reference frequency signal, said phase comparator providing an output coupled to control said frequency-variable local

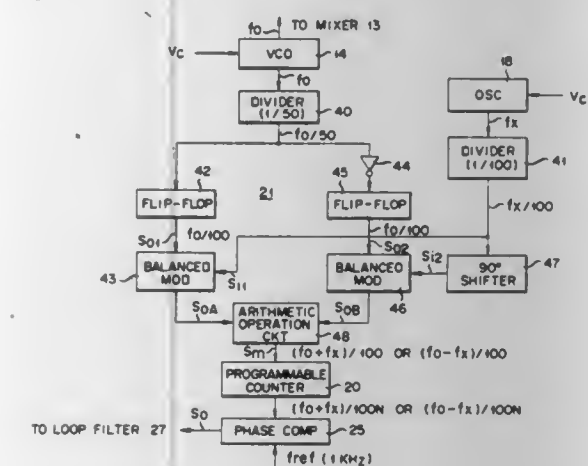
oscillator so as to cause the phase of the frequency divided output signal of said programmable counter to be coincident with the phase of said reference frequency signal;

the improvement comprising:

a first circuit means connected to receive said local oscillator signal of said local oscillator for producing first and second signals having a phase difference of substantially 90° therebetween;

a second oscillator for producing an output signal of a second frequency;

a second circuit means connected to receive said output signal of said second oscillator for producing first and



second modulation signals having a phase difference of substantially 90° therebetween;

a first balanced modulator connected to receive said first signal and said first modulation signal for producing a first modulated output signal;

a second balanced modulator connected to receive said second signal and said second modulation signal for producing a second modulated output signal; and

an arithmetic operation circuit connected to receive said first and second modulated output signals and generating an output signal, said output signal of said arithmetic operation circuit being supplied to said programmable counter.

4,339,827

#### AUTOMATIC TUNING CIRCUIT ARRANGEMENT WITH SWITCHED IMPEDANCES

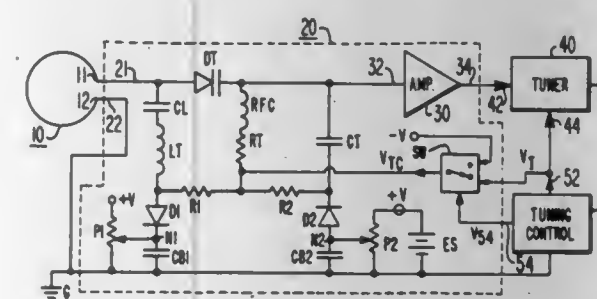
Rafael Torres, Plainsboro, and John G. N. Henderson, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 25, 1980, Ser. No. 210,247

Int. Cl.<sup>3</sup> H04B 1/18

U.S. Cl. 455-188

25 Claims



1. A tuning circuit arrangement for a receiving loop antenna of a receiver having a tuning system comprising:

first and second input signal terminals to which said loop antenna is coupled and an output signal terminal for coupling said tuning circuit arrangement to said tuning system;

resonance circuit means coupled to said first and second input signal terminals for tuning said loop antenna over a

range of frequencies responsive to a first control potential, which first control potential is of first polarity at selected times and which is of second polarity opposite to the first polarity at times other than said selected times, including variable capacitance means for developing a variable capacitance responsive to said first control potential at said selected times when said first control potential is of said first polarity, and for developing a low impedance compared to that of its variable capacitance at said times when said first control potential is of said second polarity, said variable capacitance means being coupled in circuit with said first and second input signal terminals,

at least one other impedance means for exhibiting an impedance, and

switch means for coupling said other impedance means to said resonance circuit means at least at selected times; and amplifying means having an input connection to which said resonance circuit means is coupled, and having an output connection coupled to said output signal terminal.

4,339,828

#### AUTOMATIC METHOD FOR ADVANTAGEOUSLY TRADING SIGNAL DISTORTION FOR IMPROVED NOISE THRESHOLD IN FREQUENCY MODULATED RECEIVERS

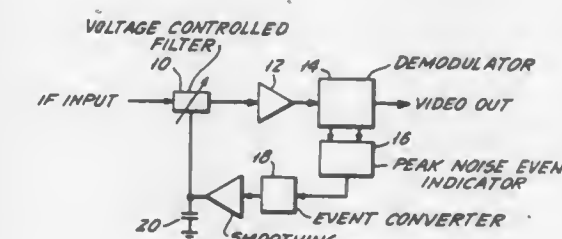
Norman E. Chasek, 24 Briar Brae Rd., Stamford, Conn. 06903

Filed Oct. 12, 1979, Ser. No. 84,182

Int. Cl.<sup>3</sup> H04B 1/16

U.S. Cl. 455-205

12 Claims



2. An FM receiver system which includes an FM receiver for receiving an FM signal having an FM carrier level which is passed through a limiter, said FM receiver automatically and continuously trading increased signal distortion for a reduced FM receiver noise threshold level comprising:

detection means for detecting noise peaks which approach, equal or exceed said FM carrier level and the rate at which said noise peaks occur,

means for converting the rate at which said noise peaks occur into a control voltage whose magnitude is functionally related to the rate of occurrence of said noise peaks, means for averaging out fluctuations in said control voltage, and

a voltage controlled variable bandwidth filter having said control voltage applied thereto for controlling the noise threshold level of said FM receiver by reducing the bandwidth of said filter as the rate of said noise peaks increase and vice versa.

4,339,829

#### AUTOMATIC TUNING SYSTEM FOR A NARROW BANDWIDTH COMMUNICATION

Donald F. Dimon, 2300 E. Oakland Park Blvd., Ste. 314, Fort Lauderdale, Fla. 33306

Filed Dec. 29, 1978, Ser. No. 974,312

Int. Cl.<sup>3</sup> H03J 7/02

U.S. Cl. 455-340

26 Claims

1. Automatic control apparatus for control of center frequency of an adjustable time variant filter, having center frequency control means including:

means applying an input signal to be processed in said filter,



means generating a reference signal,

means applying the reference signal to the center frequency

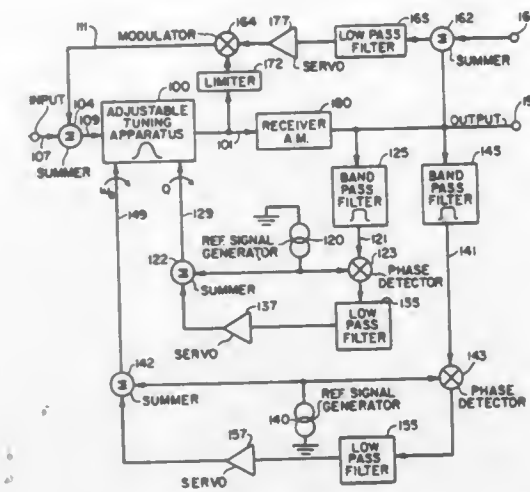
control means of the filter, inducing amplitude modulations of the signal at the filter output,

modulation detection means recovering and reproducing the

reference induced amplitude modulation signal at the filter output,

phase detection means producing a control signal in accordance with the phase difference between the reference

signal and the recovered and reproduced reference induced modulation,



means applying the control signal to the center frequency control means of the filter.

## DESIGN PATENTS

GRANTED JUL. 13, 1982

### ERRATA

For	See
CLASS	PATENT NO.
D34-018 .....	265,391
D34-015 .....	265,392



# DESIGNS

JULY 13, 1982

265,350

## FRAME FOR A FACE GUARD

Ronald H. Davis, 52 Mowat St., Blenheim, New Zealand

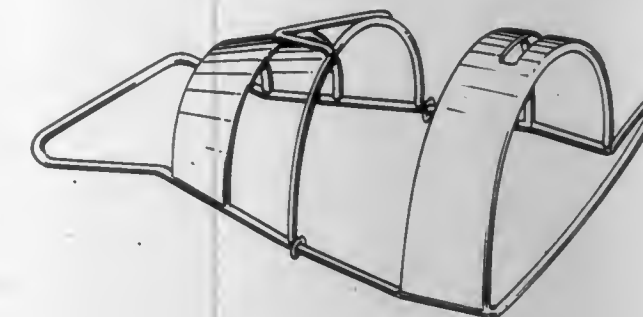
Filed Oct. 10, 1980, Ser. No. 196,103

Claims priority, application New Zealand, Dec. 4, 1978, 15795

Term of patent 14 years

Int. Cl. D02—03

U.S. Cl. D2—233



265,352

## LUGGAGE

Ted Stark, Jersey City, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.

Filed Aug. 14, 1978, Ser. No. 933,724

Term of patent 14 years

Int. Cl. D3—07

U.S. Cl. D3—71



265,351

## CUP HOLDER FOR AN AUTOMOBILE DOOR

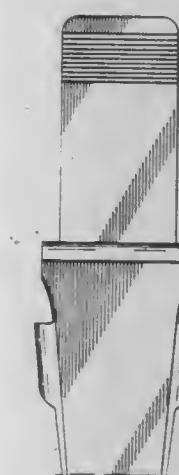
Dwight N. Wooters, LaGrange, Ga., assignor to W. L. Ross Enterprises, Inc., New York, N.Y.

Filed Aug. 7, 1980, Ser. No. 176,126

Term of patent 14 years

Int. Cl. D03—99; D07—99

U.S. Cl. D3—40



265,353

## TOOTHBRUSH

Richard M. Hyman, Iowa City, Iowa, assignor to Cooper Laboratories, Inc., Palo Alto, Calif.

Filed Aug. 12, 1980, Ser. No. 177,439

Term of patent 14 years

Int. Cl. D4—02

U.S. Cl. D4—25



265,354

## TOOTHBRUSH

Richard M. Hyman, Iowa City, Iowa, assignor to Cooper Laboratories, Inc., Palo Alto, Calif.

Filed Aug. 12, 1980, Ser. No. 177,505

Term of patent 14 years

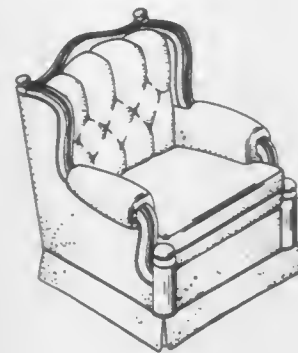
Int. Cl. D4—02

U.S. Cl. D4—25

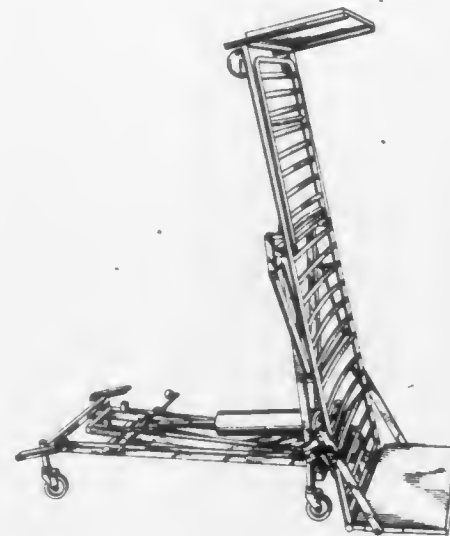




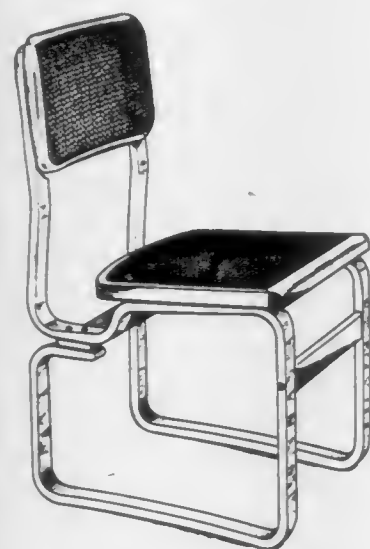
265,355  
SEAT  
Daniel D. Wistehuff, Hickory, N.C., assignor to Pinnacle Furniture Company, Inc., Claremont, N.C.  
Filed Apr. 18, 1980, Ser. No. 141,643  
Term of patent 14 years  
Int. Cl. D6—01  
U.S. Cl. D6—71



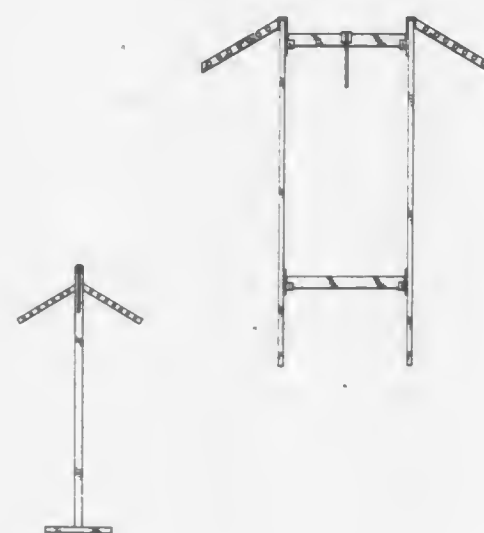
265,357  
INVALID BED OR THE LIKE  
Henning Bergenwall, Trollstigen 2, 811 00 Sandviken, Sweden  
Filed Oct. 1, 1979, Ser. No. 80,480  
Claims priority, application Sweden, Oct. 3, 1978, 782265; Denmark, Mar. 29, 1979, 270/79; Austria, Mar. 30, 1979, 516 186; Fed. Rep. of Germany, Mar. 30, 1979, URA 352/79; Norway, Apr. 2, 1979, 60037; Italy, Apr. 3, 1979, 60349/79[U]  
Term of patent 14 years  
Int. Cl. D6—01  
U.S. Cl. D6—83



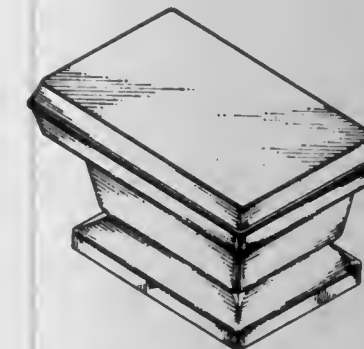
265,356  
CHAIR  
France Berlic, 1190 Sugar Sands Blvd., Singer Island, Riviera Beach, Fla. 33404  
Filed Mar. 25, 1980, Ser. No. 133,886  
Term of patent 14 years  
Int. Cl. D6—01  
U.S. Cl. D6—78



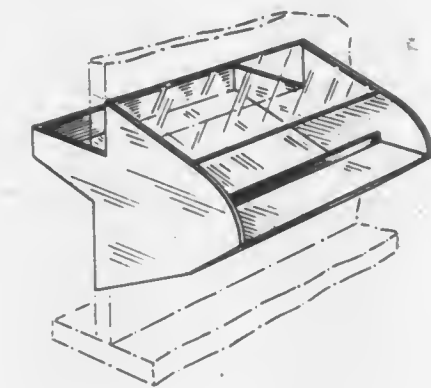
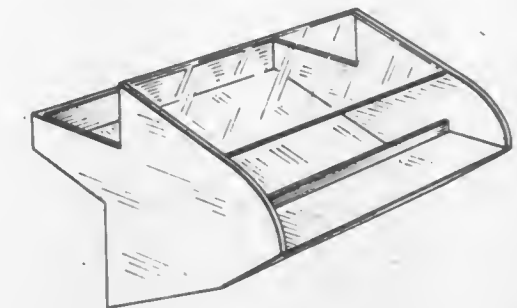
265,358  
APPAREL DISPLAY RACK  
John A. Rekow, 6130 SW. Taylors Ferry Rd., Portland, Oreg. 97219  
Filed Jan. 4, 1980, Ser. No. 109,647  
Term of patent 14 years  
Int. Cl. D20—02  
U.S. Cl. D6—85



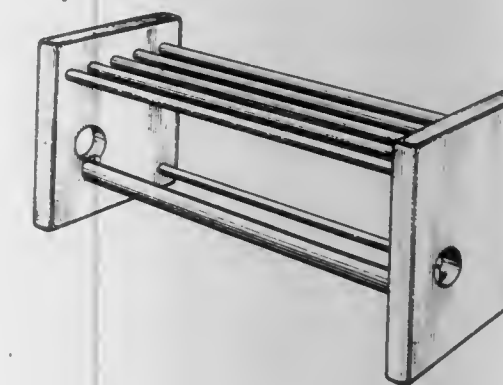
265,359  
DISPLAY STAND  
John H. Malven, Palos Verdes Estates, Calif., assignor to Jack Malven Corporation, El Segundo, Calif.  
Filed Jun. 30, 1980, Ser. No. 164,713  
Term of patent 14 years  
Int. Cl. D6—06  
U.S. Cl. D6—85



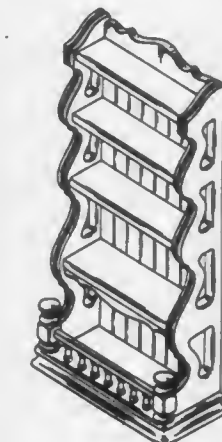
265,361  
DISPLAY BIN  
Romanino Vona, Milton, Canada, assignor to Bunsmaster Bakeries of America Inc., Milton, Canada  
Filed Feb. 6, 1980, Ser. No. 119,172  
Term of patent 14 years  
Int. Cl. D06—04  
U.S. Cl. D6—130



265,360  
COMBINED PAPER TOWEL HOLDER AND SHELF  
James E. Duggan, 1991 Dellwood Dr., Atlanta, Ga. 30309  
Filed Feb. 28, 1980, Ser. No. 125,561  
Term of patent 14 years  
Int. Cl. D23—02; D6—04  
U.S. Cl. D6—91



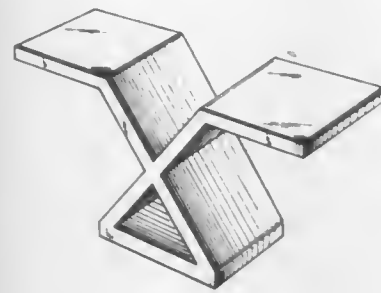
265,362  
BOOKCASE  
Daniel D. Wistehuff, Hickory, N.C., assignor to Pinnacle Furniture Company, Inc., Claremont, N.C.  
Filed Apr. 18, 1980, Ser. No. 141,642  
Term of patent 14 years  
Int. Cl. D06—04  
U.S. Cl. D6—153





265,363  
TABLE OR SIMILAR ARTICLE  
James DiPersia, New York, N.Y., assignor to Avento Designs, Inc., New York, N.Y.  
Filed Dec. 14, 1979, Ser. No. 103,954  
Term of patent 14 years  
Int. Cl. D6—03

U.S. Cl. D6—177



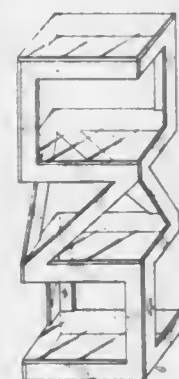
265,364  
NEWSPAPER STAND  
Calvin Walker, P.O. Box 3431, Akron, Ohio 44311  
Filed Jan. 25, 1980, Ser. No. 115,442  
Term of patent 14 years  
Int. Cl. D6—99

U.S. Cl. D6—184



265,365  
ETAGERE OR THE LIKE  
Lawrence J. Gagner, 1 Neptune Park East, Ormand Beach, Fla. 32074  
Filed Jun. 2, 1980, Ser. No. 155,467  
Term of patent 14 years  
Int. Cl. D06—04

U.S. Cl. D6—186



265,366  
ETAGERE OR THE LIKE  
Lawrence J. Gagner, 1 Neptune Park East, Ormand Beach, Fla. 32074  
Filed Jun. 2, 1980, Ser. No. 155,468  
Term of patent 14 years  
Int. Cl. D06—04

U.S. Cl. D6—186



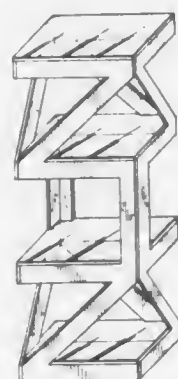
265,367  
ETAGERE OR THE LIKE  
Lawrence J. Gagner, 1 Neptune Park East, Ormand Beach, Fla. 32074  
Filed Jun. 2, 1980, Ser. No. 155,469  
Term of patent 14 years  
Int. Cl. D06—04

U.S. Cl. D6—186



265,368  
ETAGERE OR THE LIKE  
Lawrence J. Gagner, 1 Neptune Park East, Ormand Beach, Fla. 32074  
Filed Jun. 2, 1980, Ser. No. 155,770  
Term of patent 14 years  
Int. Cl. D06—04

U.S. Cl. D6—186



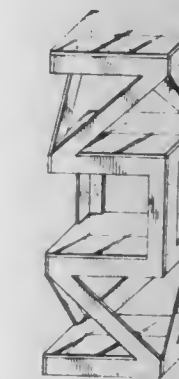
265,369  
ETAGERE OR THE LIKE  
Lawrence J. Gagner, 1 Neptune Park East, Ormand Beach, Fla. 32074  
Filed Jun. 2, 1980, Ser. No. 155,838  
Term of patent 14 years  
Int. Cl. D06—04

U.S. Cl. D6—186



265,370  
ETAGERE OR THE LIKE  
Lawrence J. Gagner, 1 Neptune Park East, Ormand Beach, Fla. 32074  
Filed Jun. 2, 1980, Ser. No. 155,839  
Term of patent 14 years  
Int. Cl. D06—04

U.S. Cl. D6—186



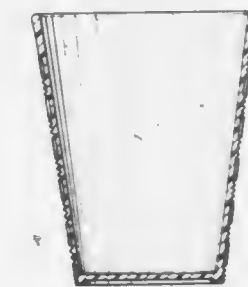
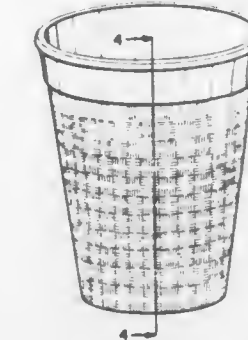
265,371  
ETAGERE OR THE LIKE  
Lawrence J. Gagner, 1 Neptune Park East, Ormand Beach, Fla. 32074  
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Term of patent 14 years  
Int. Cl. D06—04

U.S. Cl. D6—186



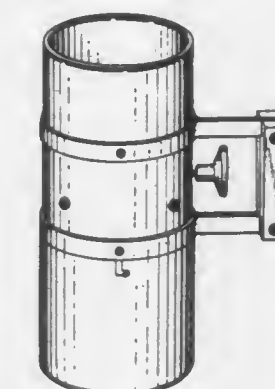
265,372  
EMBOSSED BEVERAGE OR PACKAGING CUP  
Van D. Groenewold; Hubert E. Christian, and James P. Schwartz, all of Phoenix, Ariz., assignors to Dart Industries Inc., Los Angeles, Calif.  
Filed Jan. 7, 1980, Ser. No. 110,022  
Term of patent 14 years  
Int. Cl. D07—01; D09—03

U.S. Cl. D7—6



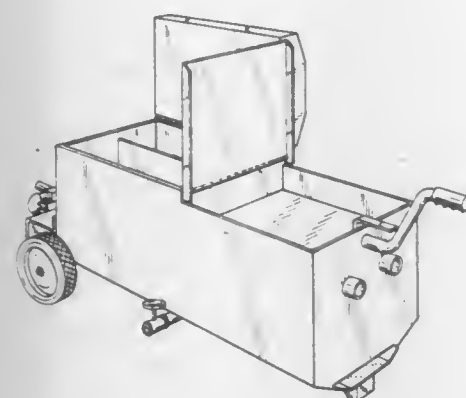
265,373  
COMBINED MEASURING AND DISPENSING  
CONTAINER FOR GRANULATED OR POWDERED  
MATERIAL  
Grover N. Christensen, 18763 Casa Blanca La., Saratoga, Calif. 95070  
Filed Jan. 29, 1979, Ser. No. 7,380  
Term of patent 14 years  
Int. Cl. D8—99

U.S. Cl. D7—47





265,374  
**OUTDOOR COOKER**  
 Bert Hamilton, Jr., Oklahoma City, Okla., assignor to Jet-It-Done, Inc., Oklahoma City, Okla.  
 Filed Apr. 7, 1980, Ser. No. 137,788  
 Term of patent 14 years  
 Int. Cl. D7-02  
 U.S. Cl. D7-108



265,376  
**PRUNER**  
 Christopher R. B. Harrison, Porthcawl, Wales, and Alan K. Pittaway, High Wycombe, England, assignors to Wilkinson Sword Limited, High Wycombe, England  
 Filed Apr. 19, 1979, Ser. No. 31,373  
 Claims priority, application United Kingdom, Oct. 25, 1978, 987007  
 Term of patent 14 years  
 Int. Cl. D8-03  
 U.S. Cl. D8-5



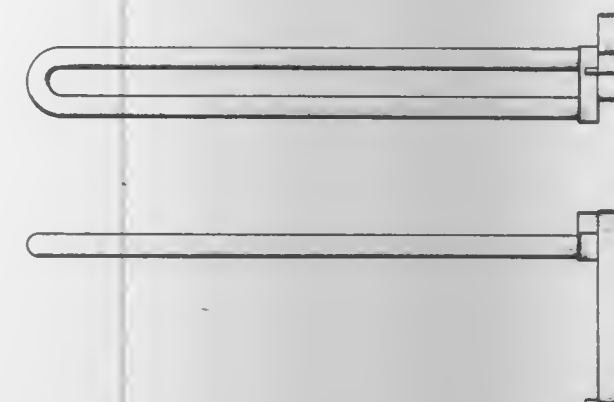
265,375  
**LOG HANDLING DEVICE**  
 Arthur Alvarez, Rte. Two, Birchwood, Wis. 54817  
 Filed Jul. 28, 1980, Ser. No. 172,855  
 Term of patent 14 years  
 Int. Cl. D7-08  
 U.S. Cl. D7-209



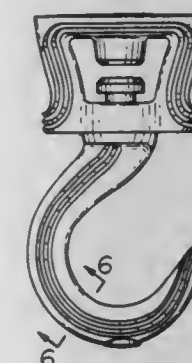
265,377  
**TUBE EXPANDER TOOL**  
 Kauno L. J. Koskinen, 19600 Hartola, KK Konepaja, Finland  
 Filed Apr. 14, 1980, Ser. No. 140,208  
 Term of patent 14 years  
 Int. Cl. D8-05  
 U.S. Cl. D8-14



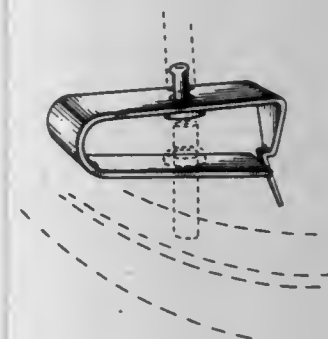
265,378  
**WISE STOP**  
 Stephen G. Roby, Alexandria, Ind., assignor to Flint Tool & Machine Co., Alexandria, Va.  
 Filed Apr. 10, 1980, Ser. No. 139,132  
 Term of patent 14 years  
 Int. Cl. D8-05  
 U.S. Cl. D8-74



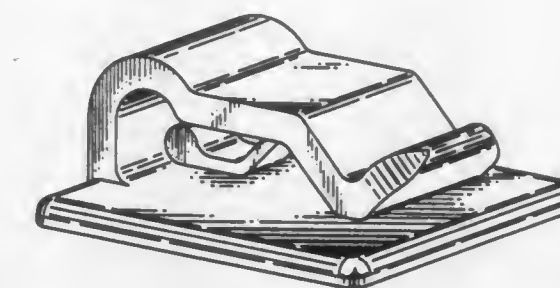
265,379  
**HOOK**  
 Ruediger Einhorn, Katonah, N.Y., assignor to Coats & Clark, Inc., New Rochelle, N.Y.  
 Filed Apr. 25, 1980, Ser. No. 143,886  
 Term of patent 14 years  
 Int. Cl. D8-08  
 U.S. Cl. D8-367



265,380  
**THREADLESS INSTANT RELEASE BICYCLE TIRE PUMP CONNECTOR**  
 William F. Addington, 2823 Terrace Dr., Chevy Chase, Md. 20815  
 Filed Oct. 3, 1979, Ser. No. 72,077  
 Term of patent 14 years  
 Int. Cl. D8-99  
 U.S. Cl. D8-395



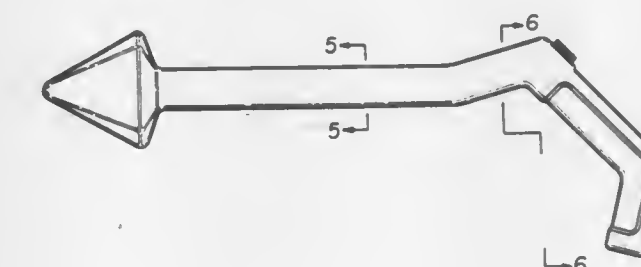
265,381  
**UNIVERSAL WIRE CLIP**  
 Jesus Borja, Glenview, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.  
 Filed Dec. 5, 1979, Ser. No. 100,322  
 Term of patent 14 years  
 Int. Cl. D8-08  
 U.S. Cl. D8-395



265,382  
**BOTTLE**  
 Gunnar V. Jönsson, Surte, Sweden, assignor to Aktiebolaget Ramlösa Hålsobrunn, Helsingborg, Sweden  
 Filed Oct. 3, 1979, Ser. No. 81,727  
 Claims priority, application Sweden, Mar. 30, 1979, 79-0823  
 Term of patent 14 years  
 Int. Cl. D9-01  
 U.S. Cl. D9-349

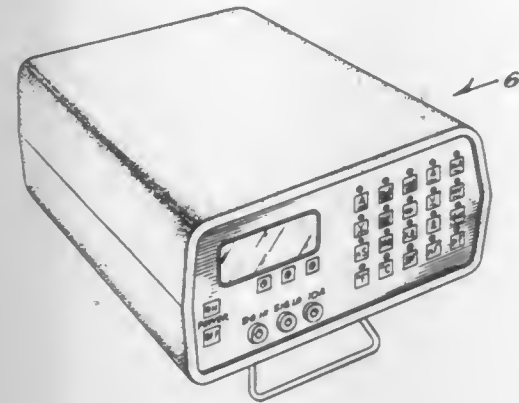


265,383  
**CONSUMER RADIATION MONITOR**  
 Gordon R. Perry, New York, N.Y., assignor to The Narda Microwave Corporation, Hauppauge, N.Y.  
 Filed Apr. 4, 1980, Ser. No. 137,446  
 Term of patent 14 years  
 Int. Cl. D10-04  
 U.S. Cl. D10-47





265,384  
**DIGITAL MULTIMETER**  
 Andrew F. Kay, 340 Serpentine Dr., Del Mar, Calif. 92014  
 Filed Sep. 12, 1980, Ser. No. 186,699  
 Term of patent 14 years  
 Int. Cl. D10—04  
 U.S. Cl. D10—75



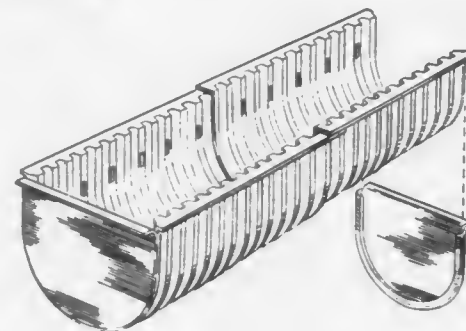
265,386  
**HANGING ORNAMENT**  
 Brigitte Breyer, Am Bruhl 6, 6074 Rodermark/Ober-Roden, Fed. Rep. of Germany  
 Filed Nov. 27, 1978, Ser. No. 964,017  
 Claims priority, application Fed. Rep. of Germany, May 27, 1978, 83078  
 Term of patent 14 years  
 Int. Cl. D11—05  
 U.S. Cl. D11—125



265,385  
**MEDAL**  
 Pierre Rodier, Palaiseau, France, assignor to Hellor S.A., Geneva, Switzerland  
 Filed May 23, 1980, Ser. No. 152,572  
 Claims priority, application Switzerland, Mar. 18, 1980, 000105  
 Term of patent 14 years  
 Int. Cl. D11—03  
 U.S. Cl. D11—106



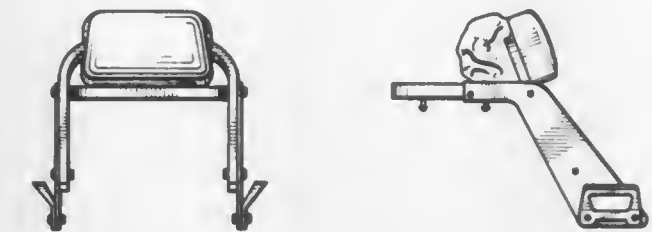
265,387  
**PLANT BOX**  
 Ray A. Nattrass, 61 Clapham Rd., Sefton, New South Wales, Australia (2162)  
 Division of Ser. No. 915,836, Jun. 15, 1978, Pat. No. Des. 258,409. This application Feb. 12, 1980, Ser. No. 120,792  
 Claims priority, application Australia, Dec. 20, 1977, 73619; Apr. 12, 1978, 74456  
 Term of patent 14 years  
 Int. Cl. D11—02  
 U.S. Cl. D11—156



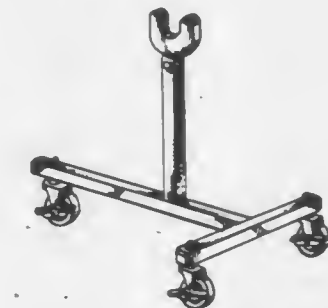
265,388  
**PENNANT**  
 Larry B. Ornatek, 100-14th St., North Chicago, Ill. 60064  
 Filed Mar. 13, 1980, Ser. No. 116,168  
 Term of patent 3½ years  
 Int. Cl. D11—05  
 U.S. Cl. D11—166



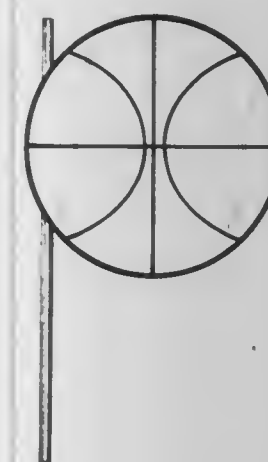
265,390  
**COMBINED SNOWMOBILE LUGGAGE CARRIER AND BACKREST**  
 Keisuke Yoshida, Huntington Beach, Calif., assignor to Yamaha Motor Corporation, U.S.A., Cypress, Calif.  
 Filed Jun. 9, 1980, Ser. No. 157,948  
 Term of patent 14 years  
 Int. Cl. D12—14  
 U.S. Cl. D12—7



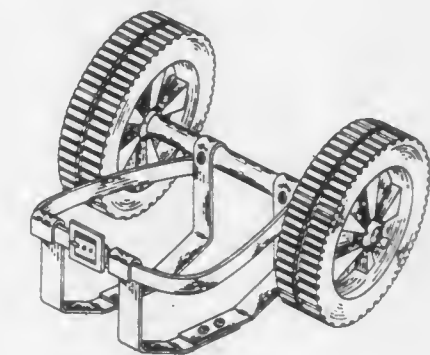
265,391  
**MOBILE SUPPORT FOR SWIMMING POOL COVER REELS**  
 Le Roy M. Dearing, Studio City, Calif., assignor to L. M. Dearing Associates, Studio City, Calif.  
 Filed Sep. 6, 1979, Ser. No. 73,086  
 Term of patent 14 years  
 Int. Cl. D12—02  
 U.S. Cl. D34—18



265,389  
**PENNANT**  
 Larry B. Ornatek, 100-14th St., North Chicago, Ill. 60064  
 Filed Mar. 13, 1980, Ser. No. 116,264  
 Term of patent 3½ years  
 Int. Cl. D11—05  
 U.S. Cl. D11—166



265,392  
**GOLF BAG CART**  
 George J. Baney, 4719 Innsbruck Dr., Fort Wayne, Ind. 46815  
 Filed Apr. 9, 1979, Ser. No. 28,107  
 Term of patent 14 years  
 Int. Cl. D12—02  
 U.S. Cl. D34—15





265,393

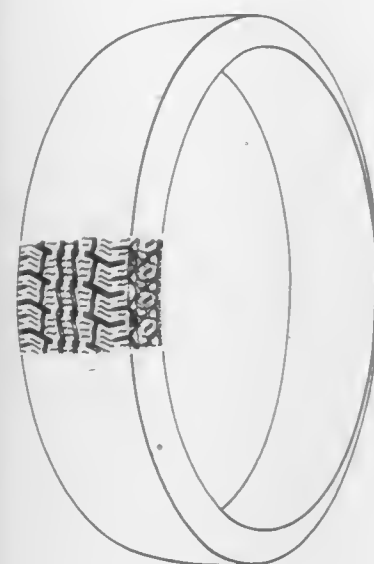
**PNEUMATIC TIRE TREAD AND BUTTRESS**John A. Hutz, Mt. Clemens, Mich., assignor to Uniroyal, Inc.,  
New York, N.Y.

Filed May 8, 1980, Ser. No. 147,764

Term of patent 14 years

Int. Cl. D12-15

U.S. Cl. D12-146



265,395

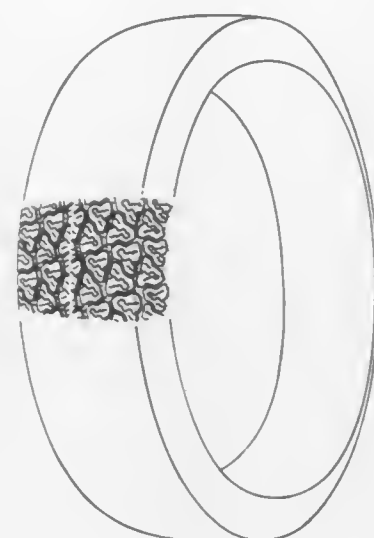
**PNEUMATIC TIRE TREAD AND BUTTRESS**John A. Hutz, Mt. Clemens, Mich., assignor to Uniroyal, Inc.,  
New York, N.Y.

Filed Aug. 7, 1980, Ser. No. 176,169

Term of patent 14 years

Int. Cl. D12-15

U.S. Cl. D12-147



265,394

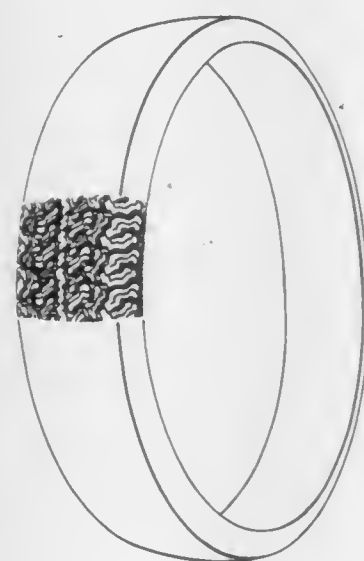
**PNEUMATIC TIRE TREAD AND BUTTRESS**John A. Hutz, Mt. Clemens, Mich., assignor to Uniroyal, Inc.,  
New York, N.Y.

Filed May 15, 1980, Ser. No. 150,108

Term of patent 14 years

Int. Cl. D12-15

U.S. Cl. D12-147



265,396

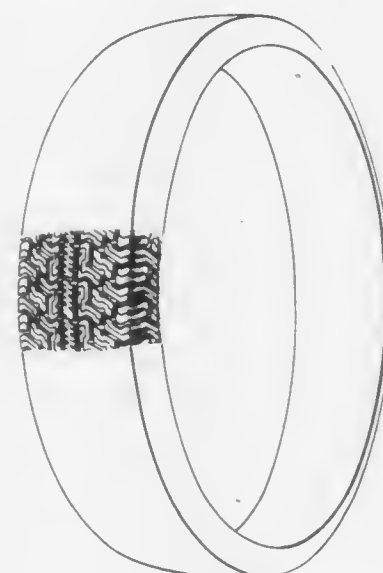
**PNEUMATIC TIRE TREAD AND BUTTRESS**John A. Hutz, Mt. Clemens, Mich., assignor to Uniroyal, Inc.,  
New York, N.Y.

Filed May 8, 1980, Ser. No. 147,901

Term of patent 14 years

Int. Cl. D12-15

U.S. Cl. D12-147



265,397

**COMBINED RAISABLE REAR DECK PANEL, WINDOW  
AND ROOF FOR AN AUTOMOBILE**

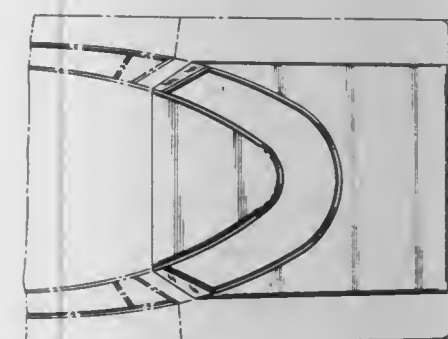
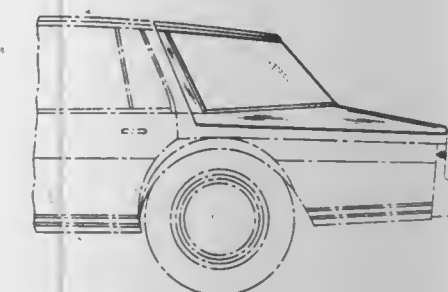
Leonard W. Beck, 5 Marchester Dr., Dayton, Ohio 45429

Filed Feb. 14, 1980, Ser. No. 121,634

Term of patent 14 years

Int. Cl. D12-08

U.S. Cl. D12-156



265,399

**LOUD SPEAKER CABINET**

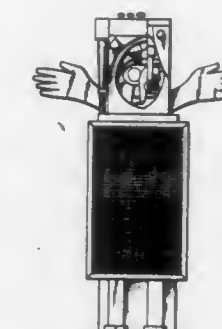
Fred Feldman, 636 Coffeen St., Watertown, N.Y. 13601

Filed Jun. 3, 1980, Ser. No. 156,173

Term of patent 14 years

Int. Cl. D14-01

U.S. Cl. D14-33



265,400

**LOUD SPEAKER CABINET**

Fred Feldman, 636 Coffeen St., Watertown, N.Y. 13601

Filed Jun. 3, 1980, Ser. No. 156,174

Term of patent 14 years

Int. Cl. D14-01

U.S. Cl. D14-33



265,398

**COMBINED TUNER AND TAPE DECK**Kikuo Ohta, Ikoma; Benito Mishiro, Sakai, and Kunio Hoshino,  
Katano, all of Japan, assignors to Matsushita Electric Indus-  
trial Co., Ltd., Kadoma, Japan

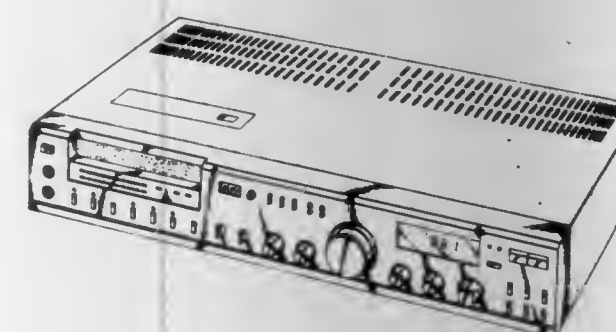
Filed Jun. 12, 1980, Ser. No. 158,998

Claims priority, application Japan, Dec. 20, 1979, 54-53710

Term of patent 14 years

Int. Cl. D14-01, 03

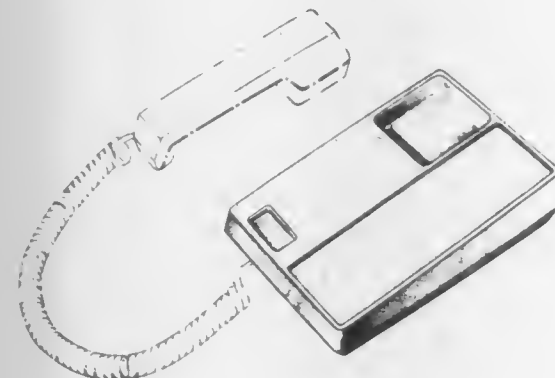
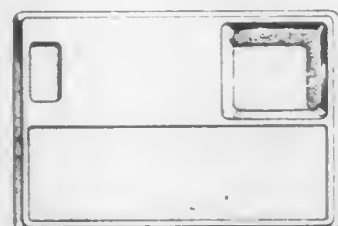
U.S. Cl. D14-5





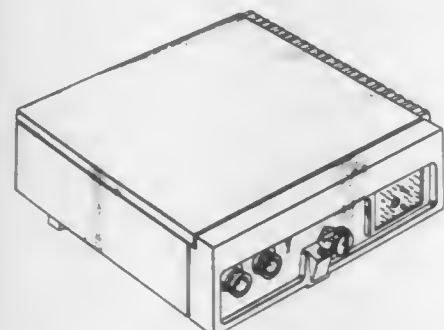
**265,401**  
**TELEPHONE STAND**  
 Donald M. Genaro, Haworth, N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
 Filed Oct. 12, 1979, Ser. No. 84,067  
 Term of patent 14 years  
 Int. Cl. D14—03

U.S. Cl. D14—60



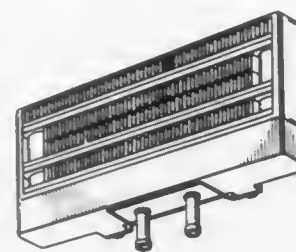
**265,402**  
**TRANSCEIVER FOR A CAR TELEPHONE SET**  
 Hisao Fukushima; Kimpei Yamauchi, and Junji Hirooka, all of Tokyo, Japan, assignors to Oki Electric Industry Co. Ltd., Tokyo, Japan  
 Filed Jun. 17, 1980, Ser. No. 160,833  
 Claims priority, application Japan, Dec. 25, 1979, 54-054180  
 Term of patent 14 years  
 Int. Cl. D14—03

U.S. Cl. D14—68



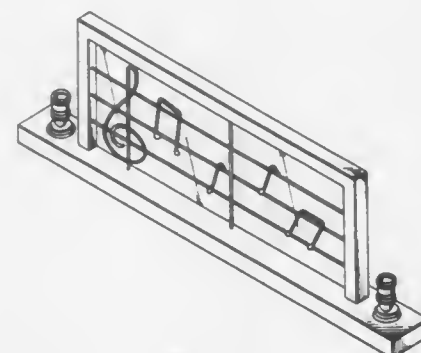
**265,403**  
**MOTORCYCLE BY-PASS OIL COOLER**  
 Yitzhak Gewelber, La Mirada, Calif., assignor to Lockhart Industries, Inc., Paramount, Calif.  
 Filed Jun. 9, 1980, Ser. No. 157,548  
 Term of patent 14 years  
 Int. Cl. D15—01

U.S. Cl. D15—5



**265,404**  
**ORNAMENT FOR AN ORGAN OR THE LIKE**  
 Thomas S. Tender, Fort Brown Apartments, #501, 1900 E. Elizabeth St., Brownsville, Tex. 78520, assignor to Thomas S. Tender and Emma Jane Keck, both of Brownsville, Tex.  
 Filed Nov. 7, 1980, Ser. No. 205,870  
 Term of patent 14 years  
 Int. Cl. D17—01

U.S. Cl. D17—9



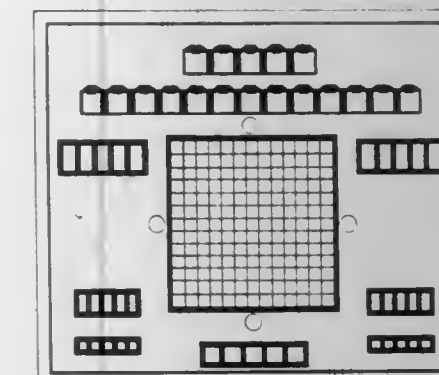
**265,405**  
**GUITAR**  
 Mason Lane, 9602 N. 16th Pl., Phoenix, Ariz. 85020  
 Filed Jun. 5, 1979, Ser. No. 45,786  
 Term of patent 14 years  
 Int. Cl. D17—03

U.S. Cl. D17—14



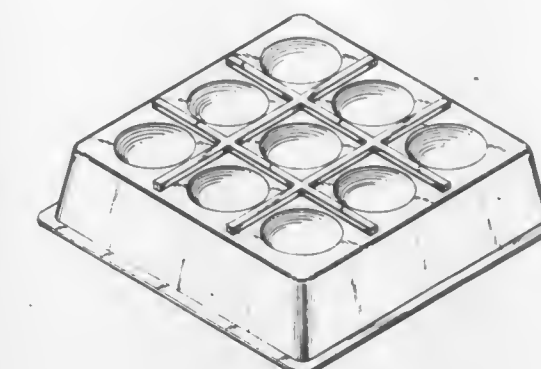
**265,406**  
**TARGET FOR A GAME**  
 Edward C. Lane, Rte. One, Box 579, Campo, Calif. 92006  
 Filed Jul. 2, 1979, Ser. No. 54,135  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D21—6



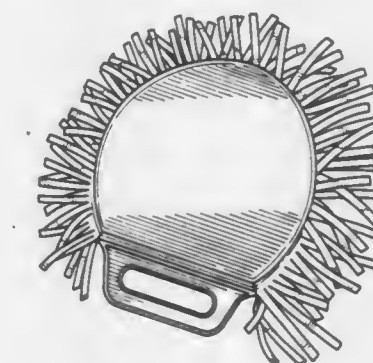
**265,408**  
**GAME BOARD**  
 John L. Ericson, 51 Colombia Blvd., Waterbury, Conn. 06710  
 Filed Oct. 17, 1979, Ser. No. 85,769  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D21—20



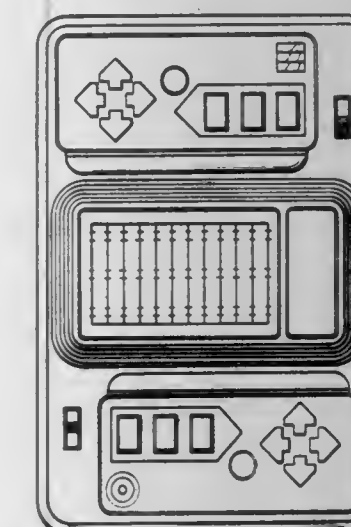
**265,409**  
**COVERED FOAM DISK FOR AMUSEMENT PURPOSES**  
 Ronald W. Braasch, Manitowoc, Wis., assignor to H&B Incentive Marketing, Sheboygan, Wis.  
 Filed Sep. 24, 1979, Ser. No. 78,020  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D21—100



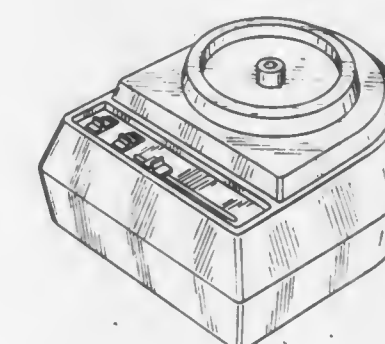
**265,407**  
**HAND-HELD ELECTRONIC FOOTBALL GAME HOUSING OR THE LIKE**  
 Tsuneo Hanzawa, Tokyo, Japan, assignor to Entex Industries, Inc., Compton, Calif.  
 Filed Mar. 14, 1980, Ser. No. 130,365  
 Claims priority, application Japan, Nov. 19, 1979, 54-048471  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D21—13



**265,410**  
**TOY FOOD PROCESSOR BASE**  
 Timothy Ottinger, Cincinnati, Ohio, assignor to CPG Products Corp., Minneapolis, Minn.  
 Filed Jun. 4, 1979, Ser. No. 45,038  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D21—122





265,411  
**EXERCISE BOARD**  
 Robert Hedenblad, Regementsgatan 14, S-211 42 Malmo, and Nils I. Jonsson, S:t Hans Grand 28 D, S-222 Lund, both of Sweden

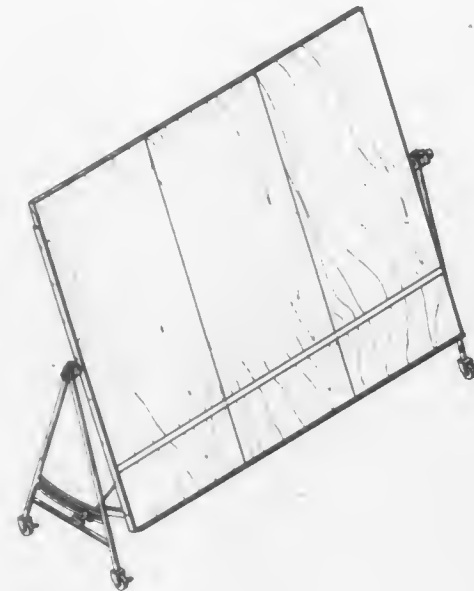
Filed Feb. 4, 1980, Ser. No. 118,483  
 Term of patent 14 years  
 Int. Cl. D21-01

U.S. Cl. D21-191



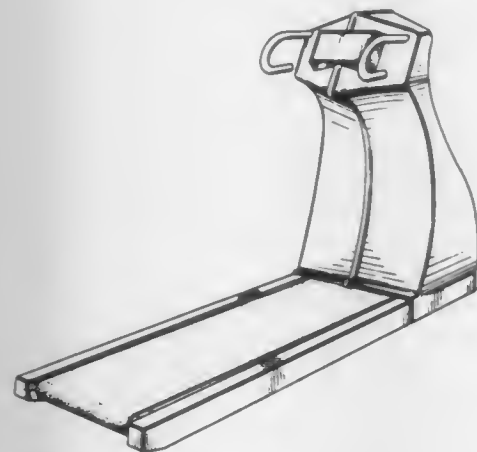
265,413  
**TENNIS REBOUND BOARD**  
 William B. Millikan, 7592 Dehesa Ct., Carlsbad, Calif. 92008  
 Filed Aug. 4, 1980, Ser. No. 175,059  
 Term of patent 14 years  
 Int. Cl. D21-02

U.S. Cl. D21-199



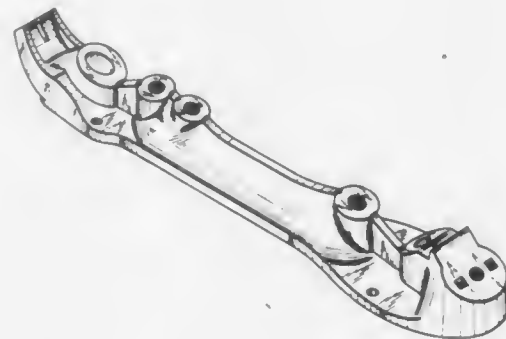
265,412  
**EXERCISE TREADMILL**  
 Raymond L. Summerlot, Terre Haute, Ind., assignor to Nissen Corporation, Cedar Rapids, Iowa  
 Filed May 3, 1979, Ser. No. 35,520  
 Term of patent 14 years  
 Int. Cl. D21-02

U.S. Cl. D21-192



265,414  
**ROLLER SKATE BASE PLATE**  
 Dennis D. Riggs, 415 Pile St., Ramona, Calif. 92065, and Daniel J. Seach, 2082 Villagewood Rd., Encinitas, Calif. 92024  
 Filed Aug. 25, 1980, Ser. No. 181,209  
 Term of patent 14 years  
 Int. Cl. D21-02

U.S. Cl. D21-226



265,415  
**GAME TABLE FOR CUE-DRIVEN BALLS**  
 Mike J. Bighaus, Rte. 2, Box 543C, Rainier, Oreg. 97048  
 Filed Jun. 9, 1980, Ser. No. 157,430  
 Term of patent 14 years  
 Int. Cl. D21-01

U.S. Cl. D21-232



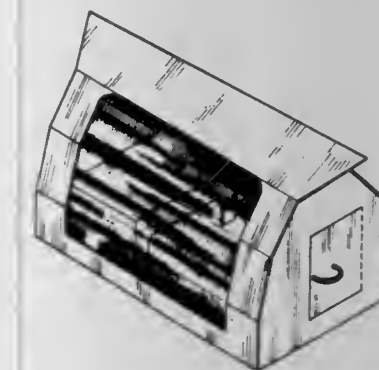
265,418  
**HOSE COUPLING**  
 Ho Chow, River Edge, N.J., and David L. Beaver, Long Beach, Calif., assignors to Beatrice Foods Co., Chicago, Ill.  
 Filed Sep. 26, 1979, Ser. No. 79,234  
 Term of patent 14 years  
 Int. Cl. D23-99

U.S. Cl. D23-43



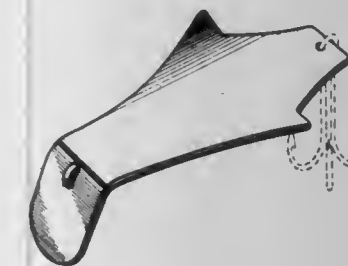
265,416  
**INSECT STORING TOY**  
 Douglas J. Jackson, 14199 Valley View Rd., Eden Prairie, Minn. 55343  
 Filed May 12, 1980, Ser. No. 149,256  
 Term of patent 14 years  
 Int. Cl. D22-06

U.S. Cl. D22-19



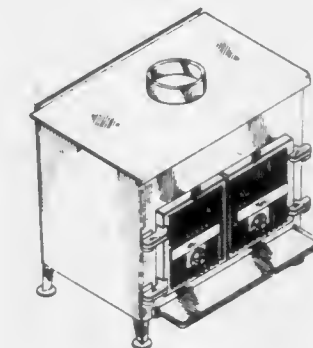
265,417  
**FISH LURE**  
 William Selby, 10605 Altgeld, Melrose Park, Ill. 60164  
 Filed Jul. 16, 1980, Ser. No. 169,304  
 Term of patent 14 years  
 Int. Cl. D22-05

U.S. Cl. D22-29



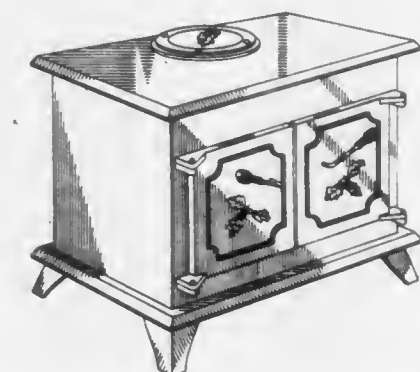
265,419  
**STOVE**  
 Bennie K. Gant, 5691 Lolene Way, Salt Lake City, Utah 84118  
 Filed Jun. 11, 1980, Ser. No. 158,480  
 Term of patent 14 years  
 Int. Cl. D23-03

U.S. Cl. D23-97



265,420  
**STOVE**  
 Richard D. Craver, Orrville, Ohio, assignor to Orrville Products, Inc., Orrville, Ohio  
 Filed May 21, 1980, Ser. No. 151,936  
 Term of patent 14 years  
 Int. Cl. D23-03

U.S. Cl. D23-97





265,421

**SPATULA ATTACHMENT FOR A DENTAL TOOL**

Lonny J. Moore, Denver, and Lincoln P. Tague, Lakewood, both of Colo., assignors to Teledyne Densco, Division of Teledyne Industries, Inc., Denver, Colo.

Filed Apr. 17, 1980, Ser. No. 141,002

Term of patent 14 years

Int. Cl. D24—02

U.S. Cl. D24—10



265,423

**I.V. BANDAGE**

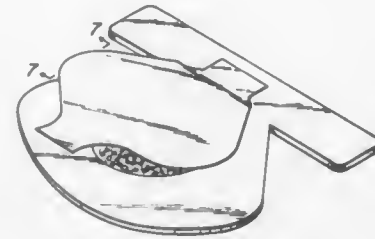
William W. Abraham, New Hartford, and Edward H. Majka, Utica, both of N.Y., assignors to Consolidated Medical Equipment Inc., Utica, N.Y.

Filed Mar. 14, 1980, Ser. No. 130,467

Term of patent 14 years

Int. Cl. D24—04

U.S. Cl. D24—52



265,424

**BUILDING**

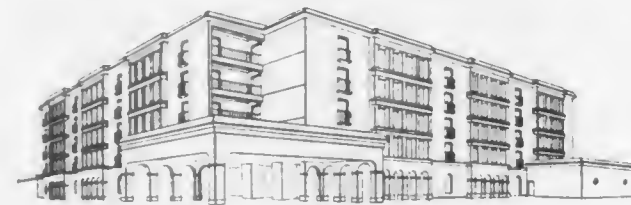
Patrick J. Kennedy, San Antonio, and E. Davis Chauviere, Dallas, both of Tex., assignors to River Hotel Company, San Antonio, Tex.

Filed May 31, 1979, Ser. No. 44,101

Term of patent 14 years

Int. Cl. D25—03

U.S. Cl. D25—25



265,422

**MULTICOMPARTMENT ICE BAG WITH ATTACHING MEANS**

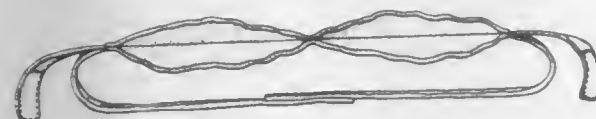
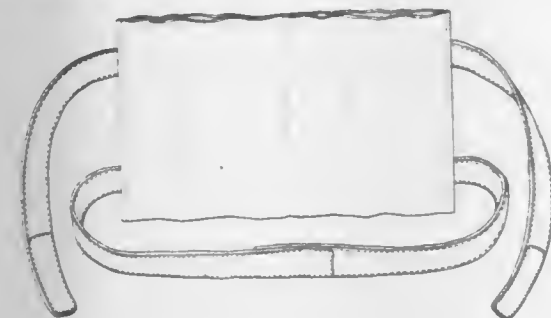
Betty T. Howe, 2611 Dolly Ridge Rd., Birmingham, Ala. 35243

Filed Jun. 5, 1980, Ser. No. 156,676

Term of patent 14 years

Int. Cl. D24—02

U.S. Cl. D24—43



265,425

**COLLAPSIBLE MOBILE WORK PLATFORM HAVING TELESCOPIC LEGS**

Stig Graas, Västra Frölunda, Sweden, assignor to Stig Graas, Västra Frölunda, Sweden

Filed Dec. 27, 1978, Ser. No. 974,133

Claims priority, application Sweden, Jun. 30, 1978, 781637

Term of patent 14 years

Int. Cl. D25—99

U.S. Cl. D25—66



265,426

**BUILDING STRUCTURE**

Walter F. Feuchs, 16 Lake St., White Plains, N.Y. 10603

Filed May 19, 1980, Ser. No. 150,995

Term of patent 14 years

Int. Cl. D25—03

U.S. Cl. D25—18



265,429

**LAMPSHADE**

George S. Miles, 280 Lake View Ridge East, Roswell, Ga. 30067

Filed Aug. 14, 1980, Ser. No. 178,153

Term of patent 14 years

Int. Cl. D26—05

U.S. Cl. D26—118



265,427

**BATTERY OPERATED LANTERN**

Kittson Mann, Kowloon, Hong Kong, assignor to Chung Mei Metal and Plastic Factory Ltd., Kowloon, Hong Kong

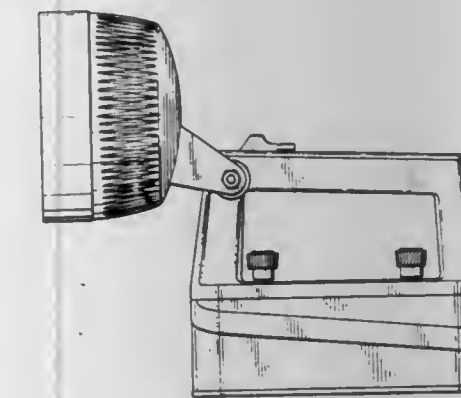
Filed Dec. 3, 1979, Ser. No. 99,593

Claims priority, application United Kingdom, Jun. 19, 1979, 990349

Term of patent 3½ years

Int. Cl. D26—02

U.S. Cl. D26—44



265,430

**CIGARETTE LIGHTER**

Alex Fradkoff, 300 E. 59th St., New York, N.Y. 10022

Filed Feb. 27, 1980, Ser. No. 125,243

Term of patent 14 years

Int. Cl. D27—05

U.S. Cl. D27—36



265,428

**LAMP**

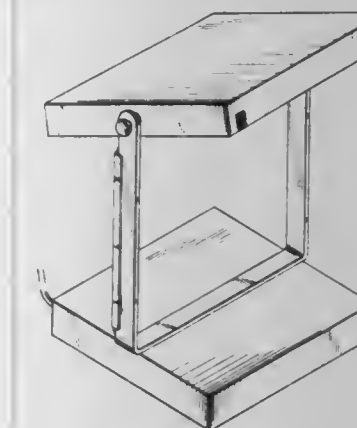
Robert W. Eickmeyer, New York, N.Y., assignor to Estee Lauder Inc., New York, N.Y.

Filed Jul. 1, 1980, Ser. No. 164,856

Term of patent 14 years

Int. Cl. D26—05

U.S. Cl. D26—63



265,431

**ELECTRIC DRY SHAVER**

Knut O. Yran, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

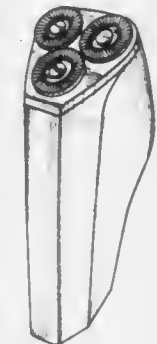
Filed Oct. 6, 1978, Ser. No. 949,301

Claims priority, application United Kingdom, Apr. 11, 1978, 984158/78

Term of patent 14 years

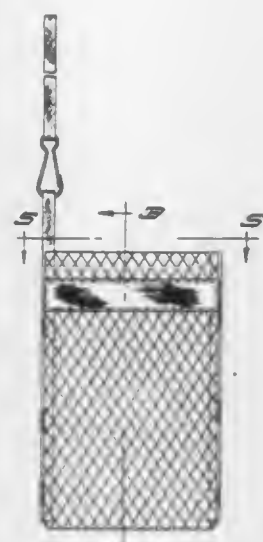
Int. Cl. D28—03

U.S. Cl. D28—50

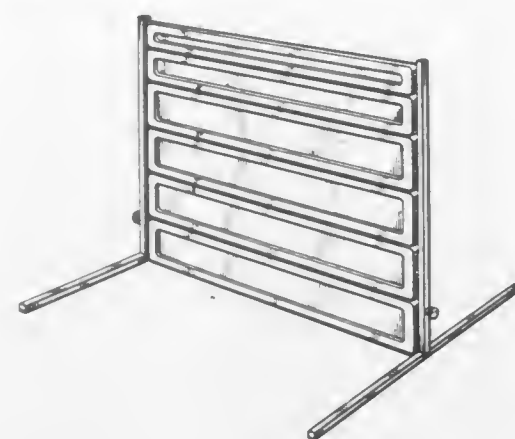




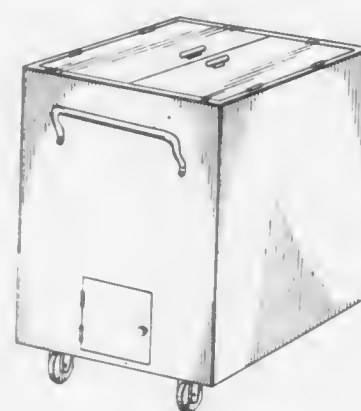
265,432  
**SOAP CONTAINER**  
 Shirley G. Desnick, 2540 Monterey Ave., St. Louis Park, Minn. 55416  
 Filed Apr. 3, 1979, Ser. No. 26,556  
 Term of patent 14 years  
 Int. Cl. D28—99  
 U.S. Cl. D28—63



265,433  
**DOG HURDLE**  
 Robert B. Koenig, P.O. Box 941, Redmond, Wash. 98052  
 Filed Feb. 19, 1980, Ser. No. 122,127  
 Term of patent 14 years  
 Int. Cl. D30—99  
 U.S. Cl. D30—42



265,434  
**WOOD STORING CART**  
 Marie S. Phillips, Rte. 1, Box 210, Goldston, N.C. 27252  
 Filed Jan. 21, 1980, Ser. No. 114,111  
 Term of patent 14 years  
 Int. Cl. D12—02  
 U.S. Cl. D34—18



## LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF JULY, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A.C. Manufacturing Company: See—  
 Kalbach, John F., 4,339,779, Cl. 361-33.000.
- AB Maskinabeten: See—  
 Johansson, Ingvar H.; Johansson, Helle G.; Webing, Kurt; and Thulin, Gunnar, 4,339,047, Cl. 220-1.500.
- Abbott Laboratories: See—  
 Ali, Akhtar; and Tsui, Paulus T. K., 4,339,390, Cl. 260-397.450.  
 Bayard, Michael A.; and Turnbull, James A., 4,338,933, Cl. 128-214.00R.  
 Sato, Moriyuki; and Mori, Yasuki, 4,339,572, Cl. 536-16.100.
- Abele, Manlio G.; Chase, Norman E.; and Mair, Gareth A., to New York University. Tomographic scanner. 4,339,799, Cl. 364-414.000.
- Abex Corporation: See—  
 Smilges, Robert; and Wigmore, Richard, 4,338,856, Cl. 91-420.000.
- Abolins, Andrew, to Strick Corporation. Vehicle king pin assembly. 4,339,140, Cl. 280-433.000.
- Acco Industries Inc.: See—  
 Gilmore, William J., 4,339,213, Cl. 403-316.000.
- ACF Industries, Incorporated: See—  
 Ford, Charles; Gill, Arthur, Jr.; Smith, John W.; and Freeman, Louis L., Jr., 4,339,078, Cl. 239-1.000.
- Acme Highway Products Corporation: See—  
 Puccio, Guy S.; and Kogutek, Robert J., 4,339,214, Cl. 404-69.000.
- Adachi, Norihiko; Fukai, Yoshikazu; and Kanayama, Hisanori, to Japan Synthetic Rubber Co., Ltd. Anti-tumor substance. 4,339,435, Cl. 424-115.000.
- Adams, Tello D., to Rockwell International Corporation. Stable, fast slew, phase locked loop. 4,339,731, Cl. 331-1.00A.
- Addison, Kenneth F., Jr. Rear view mirror and wiper assembly for vehicles. 4,339,169, Cl. 350-61.000.
- Adolph Saurer Ltd.: See—  
 Porter, Allan W. H., 4,338,975, Cl. 139-450.000.
- Advanced Mechanical Technology, Inc.: See—  
 Gerstmann, Joseph; and Vasilakis, Andrew D., 4,338,888, Cl. 122-16.000.
- Agency of Industrial Science & Technology: See—  
 Nakao, Yukimichi; and Fujishige, Shoel, 4,339,345, Cl. 252-309.000.  
 Shimizu, Toshimi; Fujishige, Shoel; and Okada, Akira, 4,339,360, Cl. 524-28.000.
- Agency of Industrial Science & Technology Ministry of International Trade and Industry: See—  
 Ichimura, Kunihiro; Takeuchi, Osamu; Kusama, Hideo; Yamazaki, Kazuo; Saka, Akira; Ito, Hiroshi; and Toyofuku, Kunitaka, 4,339,524, Cl. 430-270.000.
- AGFA-Gevaert Aktiengesellschaft: See—  
 Bauer, Walter, 4,339,038, Cl. 206-455.000.  
 Schranz, Karl-Wilhelm; and Sobel, Johannes, 4,339,515, Cl. 430-17.000.  
 Stumpf, Friedrich; and Scheller, Thomas, 4,339,180, Cl. 352-92.000.
- Aggarwal, Ishwar D.; and Randall, Eric N., to Corning Glass Works. Optical waveguide containing P<sub>2</sub>O<sub>5</sub> and GeO<sub>2</sub>. 4,339,173, Cl. 350-96.300.
- Ahlin, Frank J.: See—  
 Burton, James O.; Dannels, Christopher J.; and Ahlin, Frank J., 4,339,118, Cl. 270-31.000.
- Ahmed, Fahim, to International Standard Electric Corporation. Modular telecommunications system. 4,339,633, Cl. 179-99.00M.
- Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, to Siemens Aktiengesellschaft. Heat resistant positive resists containing polyoxazoles. 4,339,521, Cl. 430-192.000.
- Ahs, Bjorn, to Kamy AB. Mixing apparatus for mixing a fluid fiber suspension with a treatment fluid suspension. 4,339,206, Cl. 366-307.000.
- Aigo, Seiichiro. Apparatus for etching of oxide film on semiconductor wafer. 4,339,297, Cl. 156-345.000.
- Aigo, Seiichiro. Apparatus for plating semiconductor wafers. 4,339,319, Cl. 204-224.00R.
- Aihara, Mamoru: See—  
 Matsuura, Tsuyoshi; Aihara, Mamoru; Takahashi, Yutaka; and Nakajima, Yoshio, 4,339,187, Cl. 354-173.000.
- Air Test Labs, Inc.: See—  
 Jacoby, Marvin; Jacoby, Stuart W.; Jacoby, Robert E.; and Ellison, Robert A., 4,338,826, Cl. 73-864.620.
- Aisin Seiki Company, Ltd.: See—  
 Iwasaki, Shinichiro, 4,338,823, Cl. 73-654.000.
- Aisin Seiki Kabushiki Kaisha: See—  
 Kawata, Shoji; and Kuwana, Kazutaka, 4,339,109, Cl. 251-129.000.  
 Kodama, Hisashi, 4,338,894, Cl. 123-90.580.  
 Mori, Mamoru; and Terada, Takami, 4,339,103, Cl. 248-397.000.  
 Sakakibara, Naoki, 4,339,076, Cl. 236-84.000.
- Aiura, Masato: See—  
 Kageyama, Yoichi; Aiura, Masato; and Moriya, Kikuo, 4,339,329, Cl. 208-10.000.
- Akada, Mitsuo: See—  
 Torii, Shigeru; Nakane, Shoji; Shirakawa, Toshifumi; and Akada, Mitsuo, 4,339,607, Cl. 568-426.000.
- Akimoto, Saburo: See—  
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- Akimoto, Taizo, to Fuji Photo Film Co., Ltd. Color correction method for color negative. 4,339,517, Cl. 430-30.000.
- Akita, Sigeyuki: See—  
 Kago, Yoshiyuki; Akita, Sigeyuki; and Kotera, Masao, 4,339,713, Cl. 324-173.000.
- Aktiengesellschaft Adolph Saurer: See—  
 Lucian, Anton; and Zwiener, Rudolf, 4,338,971, Cl. 139-194.000.
- Akzona Incorporated: See—  
 Hof, Craig R.; and Ulin, Roy A., 4,339,207, Cl. 374-160.000.
- Alaimo, Robert J.; and Gray, Joseph E., to Morton-Norwich Products, Inc. 5-[(3,4-Dimethoxyphenyl)or(4-chlorophenyl)]-2-furancarboxaldehyde-O-[(methylamino)carbonyl]oxime. 4,339,386, Cl. 549-496.000.
- Albaum, Joseph D.; Ponzoni, Ronald W.; and Johnson, Eric C., to General Foods Corporation. Flavor stabilized beet colorant composition. 4,339,451, Cl. 426-250.000.
- Album Graphics, Inc.: See—  
 Panveno, Mike, 4,339,034, Cl. 206-313.000.
- Alden Research Foundation: See—  
 Leighton, Robert D., 4,339,407, Cl. 264-229.000.
- Aldinger, Fritz; Biberbach, Elke; Bischoff, Albrecht; and Harmsen, Nils, to W. C. Heraeus GmbH. Low-power electric contact. 4,339,644, Cl. 200-266.000.
- Alexander, P. Todd; and Roth, Kurt H., to Exxon Research & Engineering Co. Flexible leader. 4,339,211, Cl. 400-248.000.
- Alfa-Laval AB: See—  
 Sjöberg, Peter, 4,339,333, Cl. 210-411.000.
- Alfa Romeo S.p.A.: See—  
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- Ali, Akhtar; and Tsui, Paulus T. K., to Abbott Laboratories. Preferential immunoreactivity of syn-isomer of cortisol derivative. 4,339,390, Cl. 260-397.450.
- Allen Organ Co.: See—  
 Wise, Stephen A., 4,338,843, Cl. 84-1.010.
- Allied Corporation: See—  
 Choi, John I.; Kurtz, Bruce E.; and Omelian, Anatoli, 4,339,415, Cl. 423-126.000.
- Patel, Gordhanbhai N., 4,339,240, Cl. 23-230.00R.
- Allis-Chalmers Corporation: See—  
 Coxhill, Major, 4,338,732, Cl. 34-135.000.
- Gilmore, Thomas P., 4,338,743, Cl. 47-1.300.  
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- Murray, Donald L., 4,339,203, Cl. 366-9.000.
- Pollak, Robert J., 4,339,087, Cl. 241-211.000.
- Shumate, Eldridge J., 4,339,251, Cl. 55-378.000.
- Alps Electric Co. Ltd.: See—  
 Oyama, Kohel; and Nishizawa, Eiji, 4,339,756, Cl. 343-702.000.
- Aluminum Company of America: See—  
 Peterson, Richard W.; and Foster, Perry A., Jr., 4,339,316, Cl. 204-243.00R.
- Alvarez, David C.; Bjorklund, Gary C.; and Burland, Donald M., to International Business Machines Corporation. Process and recording media for continuous wave four-level, two-photon holography. 4,339,513, Cl. 430-1.000.
- Amemiya, Akira: See—  
 Sugio, Akitoshi; Amemiya, Akira; Kuniti, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; and Umemura, Toshikazu, 4,339,569, Cl. 528-240.000.
- American Cyanamid Company: See—  
 Bezwada, Rao S., 4,339,359, Cl. 524-512.000.
- Lim, Sim K.; and Goodman, Richard M., 4,339,331, Cl. 209-167.000.
- Raghu, Sivaraman; and Zweig, Arnold, 4,339,603, Cl. 564-302.000.
- Robinson, Peter M.; Rakowitz, David H.; and Nowakowski, Lesley J., 4,339,371, Cl. 524-310.000.
- Robinson, Peter M., 4,339,373, Cl. 524-521.000.
- American District Telegraph Company: See—  
 Guscott, John K.; and Powers, Robert, 4,339,748, Cl. 340-555.000.
- American Home Products Corporation: See—  
 Freed, Meier E., 4,339,579, Cl. 544-349.000.
- American Seating Company: See—  
 Blodet, Leif; Knapp, Robert L.; and Oppenhuizen, Simon W., 4,338,990, Cl. 160-229.00R.



American Standard Inc.: See—  
Hart, James E., 4,339,155, Cl. 303-38.000.  
Ametex AG: See—  
Meier, Peter E.; Gordon, Otto W.; and Buttiker, Gero, 4,339,273, Cl. 106-90.000.  
AMF Incorporated: See—  
Mullner, James H., 4,339,128, Cl. 273-54.00D.  
Amlani, Kish; Zink, Frederick J.; Morgan, Craig; and Ellwood, Thomas, to Eaton Corporation. Strain gage load cell. 4,338,825, Cl. 73-862.650.  
AMP Incorporated: See—  
Keller, Joseph R.; and Olsson, Billy E., 4,339,768, Cl. 357-72.000.  
Anaconda Company, The: See—  
Halverson, Mark O., 4,339,720, Cl. 324-362.000.  
Anchor/Darling Valve Company: See—  
Karpenko, Anatole N., 4,338,961, Cl. 137-243.200.  
Anderson, Leslie D.: See—  
Meares, Claude F.; and Anderson, Leslie D., 4,339,426, Cl. 424-1.000.  
Anderson, Richard C., to Economics Laboratory, Inc. Methods and compositions for bleaching of mycological stain. 4,339,235, Cl. 8-108.00A.  
Ando Electric Co., Ltd.: See—  
Nihira, Yasuo; and Hosoda, Takuya, 4,339,721, Cl. 324-457.000.  
Anton Schwarzkopf Fahrzeug- und Stahlbau, Firma: See—  
Schwarzkopf, Anton, 4,339,121, Cl. 272-38.000.  
ANVAR: See—  
Kuroda, Kei-ichi; Sillou, Daniel; and Takeuchi, Fujio, 4,339,684, Cl. 313-105.00R.  
Anzai, Shunichi: See—  
Sakamoto, Takeshi; Anzai, Shunichi; Kobayashi, Nariyoshi; and Oshima, Ryoichiro, 4,338,780, Cl. 60-39.050.  
Aoki, Tsunetaka, to Yoshida Kogyo K.K. Adjustable fastener. 4,338,706, Cl. 24-70.00R.  
Aoyagi, Yoshiaki: See—  
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; and Yagi, Masahiro, 4,339,585, Cl. 546-242.000.  
Apex Foot Products Corp.: See—  
Schwartz, Richard B., 4,338,734, Cl. 36-44.000.  
Apgar, Howard G., Jr.: See—  
Kurtz, Stuart J.; and Apgar, Howard G., Jr., 4,339,507, Cl. 428-522.000.  
Arai, Kenichi: See—  
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Takago, Toshio; Arai, Masatoshi; and Futatsumori, Koji, 4,339,563, Cl. 528-14.000.  
Arai, Toshio: See—  
Yamada, Yu; Inoue, Mutsuhiro; Arai, Toshio; Omi, Kokichi; Suzuki, Hiroaki; and Kuwayama, Tetsuro, 4,339,183, Cl. 353-78.000.  
Araki, Shigeyuki; and Yamanaka, Hideyasu, to Ricoh Company, Ltd. Stepping motor drive apparatus. 4,339,702, Cl. 318-696.000.  
Aratani, Matsuhiko: See—  
Hashimoto, Masashi; and Aratani, Matsuhiko, 4,339,449, Cl. 424-246.000.  
Arco Industries Ltd.: See—  
Tsui, Kwok W.; and Yuen, Sing C. J., 4,338,741, Cl. 46-14.000.  
Aricchi, Shigeru: See—  
Takemoto, Tsunematsu; Aricchi, Shigeru; Arihara, Shigenobu; Nakajima, Tadashi; Okuhira, Megumi; and Uchida, Yoshihiro, 4,339,442, Cl. 424-182.000.  
Ariga, Yoshio: See—  
Sasaki, Hiroshi; and Ariga, Yoshio, 4,339,119, Cl. 271-180.000.  
Arihara, Shigenobu: See—  
Takemoto, Tsunematsu; Aricchi, Shigeru; Arihara, Shigenobu; Nakajima, Tadashi; Okuhira, Megumi; and Uchida, Yoshihiro, 4,339,442, Cl. 424-182.000.  
Arkans, Edward J., to Kendall Company, The. Therapeutic device. 4,338,944, Cl. 128-400.000.  
Armco Inc.: See—  
Ricono, Marion P.; and Bridges, Harold D., 4,338,807, Cl. 72-187.000.  
Armould, Jacques, to Le Silicium Semiconducteur SSC. Process for cooling a solar cell and a combined photovoltaic and photothermic solar device. 4,339,627, Cl. 136-259.000.  
Arts et Techniques Nouvelles: See—  
Augros, Jacques, 4,338,952, Cl. 128-757.000.  
Asada, Kazuyoshi: See—  
Hideshima, Keiji; Koyanagi, Haruo; Senda, Shuichi; Asada, Kazuyoshi; Murayama, Norio; Nishashi, Yoshiyuki; and Takaki, Masaaki, 4,339,794, Cl. 364-200.000.  
Asada Machinery Manufacturing Co., Ltd.: See—  
Hori, Shinichi, 4,338,837, Cl. 83-319.000.  
Asahi-Dow Limited: See—  
Kasahara, Hideo; Fukuda, Kunio; and Suzuki, Hiroshi, 4,339,376, Cl. 524-116.000.  
Asahi Kasei Kogyo Kabushiki Kaisha: See—  
Tsushima, Sakae; and Sagami, Hiroshi, 4,339,549, Cl. 521-28.000.  
Yanagihara, Yuzo; Noguchi, Kohji; Suzuki, Hiroshi; and Honda, Makoto, 4,339,500, Cl. 428-402.000.  
Asami, Katsuhiko: See—  
Hashimoto, Koji; Masumoto, Tsuyoshi; Hara, Motoi; Asami, Katsuhiko; and Sakiyama, Kazutaka, 4,339,270, Cl. 148-403.000.

Asano, Masafumi: See—  
Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, 4,339,340, Cl. 252-79.500.  
Asea AB: See—  
Isaksson, Sven-Erik; and Larker, Hans, 4,339,271, Cl. 75-223.000.  
Ashdown, Ronald A., to Foster Wheeler Energy Corporation. Guillotine type damper. 4,338,960, Cl. 137-240.000.  
Astero, Ulf J. E., to Asthausbolagen HB Astero & Stockhaus. Projection screen. 4,339,175, Cl. 350-125.000.  
Asthausbolagen HB Astero & Stockhaus: See—  
Astero, Ulf J. E., 4,339,175, Cl. 350-125.000.  
Astra Lakemedel Aktiebolag: See—  
Eriksson, Bertil F. H.; Helgstrand, Ake J. E.; Misiorny, Alfons; Stening, Goran B.; and Stridh, Stig A., 4,339,445, Cl. 424-212.000.  
Atari, Inc.: See—  
Wise, Eugene H., 4,339,778, Cl. 360-99.000.  
Atchley, Frank W.; Vorbeck, Donald W.; and Wurz, Ronald L., to ATCO Manufacturing Co., Inc. Animal bite valve. 4,338,884, Cl. 119-72.500.  
ATCO Manufacturing Co., Inc.: See—  
Atchley, Frank W.; Vorbeck, Donald W.; and Wurz, Ronald L., 4,338,884, Cl. 119-72.500.  
Atlantic Richfield Company: See—  
Doak, Kenneth W., 4,339,554, Cl. 525-63.000.  
Moore, Thomas F., 4,339,414, Cl. 423-7.000.  
Schuh, Frank J., 4,339,005, Cl. 175-9.000.  
Audi Nsu Auto Union Aktiengesellschaft: See—  
Bauder, Richard; and Will, Peter, 4,338,898, Cl. 123-279.000.  
Augat Inc.: See—  
Damon, Neil F., 4,338,717, Cl. 29-839.000.  
Augros, Jacques, to Arts et Techniques Nouvelles. Device for taking samples of endometrium. 4,338,952, Cl. 128-757.000.  
Automotive Products Limited: See—  
Maycock, Ian C., 4,339,023, Cl. 192-70.250.  
B. F. Goodrich Company, The: See—  
Cowfer, Joseph A.; Eden, Jamal S.; and Magistro, Angelo J., 4,339,620, Cl. 570-243.000.  
Baba, Kazuo; Wakatsuki, Kizuku; and Hikasa, Tadashi, to Sumitomo Chemical Company, Limited. Process for polymerizing olefins. 4,339,560, Cl. 526-142.000.  
Baer, Massimo, to Monsanto Company. Flame retardant resin compositions. 4,339,556, Cl. 523-220.000.  
Bagdis, Judy, to Polaroid Corporation. Digital sample and hold with rollover inhibit. 4,339,184, Cl. 354-23.00D.  
Bahnsen Company, The: See—  
Yu, Henry H. S.; and Teague, Richard K., 4,339,782, Cl. 361-229.000.  
Bahr, Dietrich J.; and Briska, Marian, to International Business Machines Corporation. Process for preparing a pigmented lacquer. 4,339,477, Cl. 427-146.000.  
Bailey, Cecil; Young, Albert C.; and Thold, Dezzo D., to General Electric Company. Power supply for percussion welding. 4,339,632, Cl. 219-95.000.  
Baillie, Alister C.; Wright, Brian J.; and Wright, Kenneth, to FBC Limited. Compounds and compositions. 4,339,443, Cl. 424-200.000.  
Baise, Arnold I.; Czornyj, George; and Wu, Anthony W., to International Business Machines Corporation. Acetylene terminated, branched polyphenylene resist and protective coating for integrated circuit devices. 4,339,526, Cl. 430-296.000.  
Bajusz, Sandor; Ronai, Andras; and Szekely, Jozsef, to Richter Gedeon Vegyeszeti Gyar RT. Enkephalin analogs and a process for the preparation thereof. 4,339,440, Cl. 424-177.000.  
Balaban, John A. Racket stringing device. 4,339,131, Cl. 273-73.00A.  
Balanson, Richard D.; Clecak, Nicholas J.; Grant, Barbara D.; and Ouano, Augustus C., to International Business Machines Corporation. Ultra-violet lithographic resist composition and process. 4,339,522, Cl. 430-192.000.  
Balko, Edward N.; and Lawrance, Richard J., to General Electric Company. Carbon fiber reinforced fluorocarbon-graphite bipolar current collector-separator. 4,339,322, Cl. 204-255.000.  
Ball Corporation: See—  
Gridley, Marvin C., 4,339,254, Cl. 65-27.000.  
Ballard, John S.: See—  
Garmjost, Kenneth D.; and Ballard, John S., 4,338,965, Cl. 137-554.000.  
Ballestrazzi, Aris; and Tassi, Lamberto, to SITMA - Societa Italiana Macchine Automatiche S.p.A. Automatic machine for sorting items of correspondence, particularly magazines, into batches each having a different general destination. 4,338,768, Cl. 53-495.000.  
Baltrukovic, Benjamin J.: See—  
Clark, Ian S. R.; and Baltrukovic, Benjamin J., 4,339,401, Cl. 264-11.000.  
Banitt, Elden H., to Riker Laboratories, Inc. 5-Benzylloxy or 5-hydroxy-2-(2,2,2-trifluoroethoxy)-N-(2-pyridylmethyl)benzamide. 4,339,587, Cl. 546-337.000.  
Bantien, Jurgen: See—  
Base, Horst; Tolasch, Gerhard; and Bantien, Jurgen, 4,339,026, Cl. 198-347.000.  
Barber, William D.; Cipolla, Thomas M.; and Mundy, Joseph L., to General Electric Company. Optical character recognition. 4,339,745, Cl. 340-146.30F.  
Barker, John C.; and McLaughlin, Ivan P., to J. J. Barker Company Limited. Simulated ceramic tile. 4,339,489, Cl. 428-167.000.

Barlow, Carl A., Jr.; and Reid, Lee R., to Texas Instruments Incorporated. System and method for sensing and measuring heart beat. 4,338,950, Cl. 128-687.000.  
Barmag Barmer Maschinenfabrik AG: See—  
Dobbins, Donald J., 4,339,089, Cl. 242-18.00A.  
Barmag Barmer Maschinenfabrik Aktiengesellschaft: See—  
Krenzer, Eberhard, 4,338,776, Cl. 57-246.000.  
Barnette, Willie J.; Henry, Farland E.; and Rapoport, Morris, to Du Pont de Nemours, E. I., and Company. Treatment of olefin hydrocyanation products. 4,339,395, Cl. 260-465.80R.  
Barrett, David M.; Stivender, Paul M.; and Ueberfluss, Robert E., to General Electric Company. Bi-plane angiographic apparatus. 4,339,825, Cl. 250-490.000.  
Barton, C. Dickinson; and Maurer, Glen. Device for holding and spreading trash bags. 4,339,099, Cl. 248-101.000.  
Barton, Derek H. R.: See—  
Willis, Brian J.; Lerner, David I.; and Barton, Derek H. R., 4,339,593, Cl. 560-70.000.  
Basch, William J.; and Moore, Charles D., to United States of America, Navy. Safety selector switch including photoelectric detection. 4,339,662, Cl. 250-229.000.  
Base, Horst; Tolasch, Gerhard; and Bantien, Jurgen, to Hauni-Werke Korber & Co. KG. Apparatus for delivering cigarettes or the like from a maker to a consuming machine. 4,339,026, Cl. 198-347.000.  
BASF Aktiengesellschaft: See—  
Dockner, Toni; Frank, Anton; and Pommer, Ernst-Heinrich, 4,339,448, Cl. 424-245.000.  
Steglich, Wolfgang; Hurnaus, Rudolf; Gruber, Peter; and Kuebel, Boernies, 4,339,589, Cl. 548-228.000.  
BASF Wyandotte Corporation: See—  
Terminello, Michael A.; and Gebura, Stanley E., 4,338,982, Cl. 141-132.000.  
Bates, Jack R.; and Collier, William E., Jr., to United States of America, Navy. Louvre buffer fire prevention system. 4,339,050, Cl. 220-437.000.  
Battelle Development Corporation: See—  
Faulkner, Lynn; and Stulen, Foster B., 4,339,247, Cl. 55-15.000.  
Lankard, David R., 4,339,289, Cl. 156-91.000.  
Bauder, Richard; and Will, Peter, to Audi Nsu Auto Union Aktiengesellschaft. Apparatus for distribution of fuel from an injection nozzle with respect to a piston in an air compressing internal combustion engine with direct fuel injection. 4,338,898, Cl. 123-279.000.  
Bauer, Walter, to AGFA-Gevaert Aktiengesellschaft. Reinforced flexible x-ray film cassette. 4,339,038, Cl. 206-455.000.  
Baumgartner Papiers S.A.: See—  
Siggen, Guy; and Berney, Michel, 4,338,882, Cl. 118-674.000.  
Baxter Travenol Laboratories, Inc.: See—  
Kartinos, Nicholas J.; McGary, Terry J.; and Nolph, Karl D., 4,339,433, Cl. 424-78.000.  
Bayard, Michael A.; and Turnbull, James A., to Abbott Laboratories. Combination quick disconnect coupling and liquid cutoff valve. 4,338,933, Cl. 128-214.00R.  
Bayer Aktiengesellschaft: See—  
Becker, Robert; Rasp, Christian; Stammann, Gunter; and Grolig, Johann, 4,339,592, Cl. 560-25.000.  
Hugl, Herbert; Wolfrum, Gerhard; Mennicke, Winfried; Schundehutte, Karl H.; and Westphal, Jochen, 4,339,380, Cl. 260-207.100.  
Kranz, Eckart; and Siegle, Peter, 4,339,612, Cl. 568-649.000.  
Muschelknautz, Edgar; Vogelsgesang, Roland; Ohse, Helmut; Westermann, Hans; Moller, Eckhard; Hachmann, Klaus; Schiemann, Wilhelm; and Kesper, Bernd, 4,339,570, Cl. 528-272.000.  
Rauchschwalbe, Gunter; Mannes, Karl; and Mayer, Dietmar, 4,339,396, Cl. 260-543.00R.  
Rosenkranz, Hans J.; Striegler, Hellmut; and Bendszus, Otto, 4,339,566, Cl. 528-68.000.  
BBC Brown, Boveri & Company, Ltd.: See—  
Flecher, Pierre; and Kofler, Hansjorg, 4,339,680, Cl. 310-62.000.  
Beach, David L.: See—  
Pellegrini, John P., Jr.; Beach, David L.; and Kobylinski, Thaddeus P., 4,339,350, Cl. 252-429.00R.  
Beall, George H.; Grossman, David G.; Hoda, Syed N.; and Kubinski, Karen R., to Corning Glass Works. Inorganic gels and ceramic papers, films, fibers, boards, and coating made therefrom. 4,339,540, Cl. 501-3.000.  
Beattie Systems, Inc.: See—  
Smith, Harry L. O., 4,339,188, Cl. 354-219.000.  
Beauchamp, Gerson E.: See—  
Ragas, Frank J.; Minnis, Ralph L.; and Beauchamp, Gerson E., 4,339,505, Cl. 428-514.000.  
Becher, David Z.; Christenson, Roger M.; Coalson, Richard L.; Pierce, Percy E.; and Schimmel, Karl F., to PPG Industries, Inc. Coating compositions containing pigment dispersants. 4,339,365, Cl. 523-400.000.  
Beck, Christian A.; and Macaluso, Paul J., to Pitney Bowes Inc. Eccentric cam for electrophotocopier developer unit. 4,339,196, Cl. 355-3.0DD.  
Becker, Dieter: See—  
Raaf, Helmut; Becker, Dieter; Frosch, Franz; Harth, Helmut; and Wagner, Helmar R., 4,339,429, Cl. 424-49.000.  
Becker, Robert; Rasp, Christian; Stammann, Gunter; and Grolig, Johann, to Bayer Aktiengesellschaft. Process for the production of urethanes. 4,339,592, Cl. 560-25.000.  
Becton, Dickinson and Company: See—  
Percarpio, Edward P., 4,338,764, Cl. 53-432.000.

Bednarz, John J.; Moser, Phillip J.; and Rosenberg, Roger L., to Circum, Inc. Trolling depth controller. 4,339,811, Cl. 367-96.000.  
Beekhuis, Lambert J., to Visco B.V. Process and apparatus for applying liquid to web material. 4,339,481, Cl. 427-428.000.  
Beer, Carl C.; and Seng, Robert A., to Sherman Industries, Inc. Vehicle cleaning brush having limited penetration. 4,338,698, Cl. 15-230.160.  
Beitecke, Bernd; and Schmidt, Reinhold, to LUK Lamellen und Kupplungsbau GmbH. Automatic towel dispenser. 4,338,801, Cl. 68-13.00R.  
Belke, William H.; and Grim, George B., to Caterpillar Tractor Co. Rotating fluidized bed combustor. 4,338,781, Cl. 60-39.350.  
Bell, Michael. Garment with absorbent pad. 4,338,686, Cl. 2-93.000.  
Bell, Peter M.; and Mao, Ho-Kwang, to Carnegie Institution of Washington. Apparatus for producing solid hydrogen. 4,339,252, Cl. 62-35.000.  
Bell, Roy L., to Coal Industry (Patents) Limited. Equipment for laying a layer of elongate material adjacent to an exposed rock or mineral surface in an underground mine. 4,339,216, Cl. 405-303.000.  
Bell Telephone Laboratories, Incorporated: See—  
Chu, Ta-Shing, 4,339,757, Cl. 343-781.00P.  
Early, Scott H.; and Savidge, David M., 4,339,632, Cl. 179-90.00B.  
Witt, Eugene F., 4,339,105, Cl. 248-500.000.  
Beltzer, Bernard: See—  
Chemin, Henri; Cluniat, Claude; and Beltzer, Bernard, 4,339,773, Cl. 358-184.000.  
Bendix Corporation, The: See—  
Gollomp, Bernard P., 4,338,810, Cl. 73-1.00E.  
Yee, Henry C., 4,339,723, Cl. 328-111.000.  
Bendszus, Otto: See—  
Rosenkranz, Hans J.; Striegler, Hellmut; and Bendszus, Otto, 4,339,566, Cl. 528-68.000.  
Benjamin, Harry L., to Centro Cororation. Angle measuring device. 4,338,723, Cl. 33-174.00L.  
Benoy, David C.; and Frederick, George T., to Loewy Robertson Engineering Co. Ltd. Rotary cutter for sheet or strip material and its use in a belt wrapper. 4,339,092, Cl. 242-56.00R.  
Benz, Gottlieb; and Egg, Hans-Jakob, to George Fischer Limited. Apparatus for centering and clamping circular workpieces. 4,339,116, Cl. 269-132.000.  
Bergmann, Eduard; and Speidel, Volker, to Leopold Kostal, Firma. Automotive vehicle switching electric circuit. 4,339,667, Cl. 307-10.0LS.  
Berkestad, Karl-Erik; Danielsson, Lennart; Henriksson, Erik; Svensson, Torsten; and Ostlund, Artur, to Stal-Laval Apparat AB. Heat exchanger for recovery of heat energy from dust-containing waste gases. 4,339,249, Cl. 55-269.000.  
Berkstresser, Harold, Jr.; and Spector, George. Lid tidy. 4,339,056, Cl. 220-375.000.  
Bernardi, Herbert: See—  
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Bernstorff, E. Gunter: See—  
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Berrill, William H.; and Bosworth, George H., to USM Corporation. Shoe upper conforming machine. 4,338,695, Cl. 12-10.100.  
Berth, Dieter; Hohfeld, Gottfried; Oliva, Klaus; and Noack, Christian, to VEB Kombinat Fortschritt Landmaschinen Neustadt in Sachsen. Air cooling system for drive engine of an automotive agricultural machine. 4,339,014, Cl. 180-54.00A.  
Bessey, Dorothy K., to Rexham Corporation. Triangular prismatic carton. 4,339,067, Cl. 229-22.000.  
Bethany Fellowship, Inc.: See—  
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Bethlehem Steel Corporation: See—  
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Bezwa, Rao S., to American Cyanamid Company. Composition for the adhesion of rubber to reinforcing materials. 4,339,359, Cl. 524-512.000.  
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Dela Ruy, Jacques, 4,339,541, Cl. 501-71.000.  
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Biber, Conrad H., to Polaroid Corporation. Process for making solid-state color imaging device. 4,339,514, Cl. 430-7.000.  
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Bichet, Lucien, to Societe Immobiliere et Financiere Suchet-Alfort (S.I.F.S.A.). Apparatus for shaping counters in making shoes. 4,338,696, Cl. 12-54.300.  
Biedermann, Horst H., to NCR Corporation. Optical sensing of wire matrix printers. 4,339,208, Cl. 400-124.000.  
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- Bindrum, Irmgard: See—  
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- Binz GmbH & Co.: See—  
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- Biofuel, Inc.: See—  
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- Bisacca, Mildred S.: See—  
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- Bischoff, Albrecht: See—  
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- Bison-werke Bahre & Greden GmbH & Co. KG: See—  
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- Bixby, James A.: See—  
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- Bjorklund, Gary C.: See—  
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- Blake, Robert J.; Sokolik, Joseph E., Jr.; and Sterman, Samuel, to Union Carbide Corporation. Method of reducing the strength of adhesion of solid particulate materials to metal surfaces, 4,339,338, Cl. 252-70.000.
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- Blitz, James E. Temperature control system for automotive storage components, 4,338,891, Cl. 123-41.310.
- Blodee, Leif; Knapp, Robert L.; and Oppenhuizen, Simon W., to American Seating Company. Panel wall systems with modular component build-up, 4,338,990, Cl. 160-229.00R.
- Bloodworth, Greville G.; and Manley, Martin H., to General Electric Company Limited. The Carrier-domain magnetometers with compensation responsive to variations in operating conditions, 4,339,715, Cl. 324-252.000.
- Bloom, Charles S. Cardiopulmonary resuscitation device, 4,338,924, Cl. 128-28.000.
- Bloomfield, Philip: See—  
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- Blount, David H. Process for the production of polyester resins, 4,339,366, Cl. 527-100.000.
- Boden, Richard M., to International Flavors & Fragrances Inc. Process for augmenting or enhancing the aroma of a detergent using 1-ethoxy-1-ethanol acetate, 4,339,341, Cl. 252-174.110.
- Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., to International Flavors & Fragrances Inc. Use of mixture of aliphatic C<sub>10</sub>-branched olefins in augmenting or enhancing the aroma of perfumes and/or perfumed articles, 4,339,344, Cl. 252-187.240.
- Bodenheimer, Dieter: See—  
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- Bodenseewerk Geratechnik GmbH: See—  
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- Bodin, Leo. Switch plate article holder, 4,339,045, Cl. 211-13.000.
- Boeing Company, The: See—  
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- Wright, James M., 4,339,755, Cl. 343-112.00D.
- Bogner, Gunther; and Kullmann, Dieter, to Siemens Aktiengesellschaft. Superconducting field winding for the rotor of an electric machine, 4,339,681, Cl. 310-201.000.
- Boguth, Walter; and Hirth, Georges, to Hoffmann-La Roche Inc. Pharmaceutical preparations, 4,339,447, Cl. 424-244.000.
- Bolinger, Randy L., to Motorola Inc. Electronic cylinder identification apparatus for synchronizing fuel injection, 4,338,903, Cl. 123-476.000.
- Bolinger, Randy L.: See—  
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- Bom, Cornelis J. G.: See—  
van der Lely, Ary; and Bom, Cornelis J. G., 4,339,004, Cl. 172-537.000.
- Boretos, John W.; and Iriguchi, Norio, to United States of America, Health & Human Services. Hydrogel adhesives and sandwiches or laminates using microwave energy, 4,339,295, Cl. 156-275.700.
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- Krueger, Robert H.; Zambrow, John L.; and Cheadle, Brian E., 4,338,997, Cl. 165-134.00R.
- Ruhlman, Harold W., 4,338,828, Cl. 74-475.000.
- Bosch, Franz-Ulrich: See—  
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- Bosworth, George H.: See—  
Berrill, William H.; and Bosworth, George H., 4,338,695, Cl. 12-10.100.
- Bott, John A.; and Cucheran, John S., to Bott, John A. Vehicle wind deflector, 4,339,145, Cl. 296-1.00S.
- Bower, Arnold B., Jr.; and Ojanen, Randall W., to General Electric Company. Method and apparatus for mine roof drilling, 4,339,006, Cl. 175-57.000.
- Boyer, Herbert W.: See—  
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- Bozik, John E.: See—  
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- Bradford Novelty Co., Inc.: See—  
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- Hanson, James M.; Graf, Martin J.; and Bradley, Irving, 4,339,790, Cl. 362-267.000.
- Braida, Richard L., Jr. Battery bracket for bicycles, 4,339,060, Cl. 224-32.00R.
- Brain Dust Patents Establishment: See—  
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- Brandenstein, Manfred: See—  
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- Olschewski, Armin; Brandenstein, Manfred; and Kunkel, Heinrich, 4,339,374, Cl. 524-606.000.
- Branik, Michael, to Heraeus Quarzschmelze GmbH. Baths and processes for electrodepositing palladium, 4,339,311, Cl. 204-47.000.
- Branlard, Paul; and Merle, Jean-Pierre, to Distugil. Process of preparing stabilized polychloroprene latex, 4,339,372, Cl. 524-169.000.
- Brassel, Peter; and Zingg, Rudolf, to Zellweger, Ltd. Method of adjusting a given pretension in threads on tensile strength testing apparatus and the like, 4,338,824, Cl. 73-828.000.
- Braswell, Robert L. Combination air tunnel-andiron device and fire-place construction therefor, 4,338,914, Cl. 126-143.000.
- Bratt, Martin D.; and Cohen, Abraham B., to Du Pont de Nemours, E. I., and Company. Color proofing system using dot-etchable photopolymerizable elements, 4,339,525, Cl. 430-271.000.
- Brauner, Arne H., to International Paper Company. Paperboard food carton, 4,339,068, Cl. 229-33.000.
- Brazdil, James F.: See—  
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- Brennan, John F. Electromagnetic devices for actuating piano keys, 4,338,847, Cl. 84-20.000.
- Brereton, David A.; and Stansbury, Buddy F., to International Business Machines Corporation. Microcontroller for controlling byte transfers between two external interfaces, 4,339,795, Cl. 364-200.000.
- Brereton, David A.; and Stansbury, Buddy F., to International Business Machines Corporation. System for generating a plurality of different addresses for a working memory of a microcontroller during execution of certain instructions, 4,339,796, Cl. 364-200.000.
- Brereton, David A.; and Stansbury, Buddy F., to International Business Machines Corporation. Microcontroller with auxiliary register for duplicating storage of data in one memory location, 4,339,797, Cl. 364-200.000.
- Breslow, Jeffrey D.; Imatt, Alex; and Oberth, Christian H., to Marvin Glass & Associates. Electronic matrix board game apparatus and method, 4,339,135, Cl. 273-237.000.
- Bridges, Harold D.: See—  
Ricono, Marion P.; and Bridges, Harold D., 4,338,807, Cl. 72-187.000.
- Brihier, Gerard C. C., to Facom. Device for measuring the relative position of two objects, 4,339,709, Cl. 324-61.00R.
- Brinkman, Willem, to Holec N.V. Device for distributing fuel to a combustion engine, 4,338,904, Cl. 123-499.000.
- Briska, Marian: See—  
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- Bristol-Myers Company: See—  
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- Tencza, Thomas M., 4,339,428, Cl. 424-21.000.
- British Petroleum Company Limited, The: See—  
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- BroadCom, Incorporated: See—  
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- Broadwater, Caleb. Simplified pool cleaning apparatus, 4,338,697, Cl. 15-1.700.
- Brokmann, Manfred. Support web, 4,339,488, Cl. 428-100.000.
- Brooker, Graham J.: See—  
Sydor, Philip R.; and Brooker, Graham J., 4,339,722, Cl. 328-38.000.
- Brooks, Ralph J.; and Mannices, George F. Automatic tire chains, 4,338,988, Cl. 152-216.000.
- Brooks, Wayne E.; Hodges, Jimmie R.; and Walker, Morris P., to Pennwalt Corporation. Continuous process for the direct conversion of potassium chloride to potassium chlorate by electrolysis, 4,339,312, Cl. 204-95.000.
- Brown & Williamson Tobacco Corporation: See—  
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- Brown, Winthrop K., to Texaco Inc. Pulsed neutron well logging system and method with synchronization/stabilization pulse verification means, 4,339,663, Cl. 250-270.000.
- Brundiek, Horst, to Loesche GmbH Company. Grinding pan bearing arrangement and drive of a roller mill, 4,339,086, Cl. 241-121.000.
- Bruning, Reinhard: See—  
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- Brunswick Corporation: See—  
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- Gifford, Richard L., 4,339,095, Cl. 242-84.21R.
- Buchanan, H. F.: See—  
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- Buchholz, Karl-Otto; Erdmann, Jürgen; and Fetzer, Gunter, to Erwin Sick GmbH Optik-Elektronik. Reflection light barrier apparatus for recognizing both strongly and weakly reflecting objects, 4,339,660, Cl. 250-221.000.
- Bucking, Gunter: See—  
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- Bucking, Hans-Walter: See—  
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- Hoffmann, Erich; Wagemann, Wolfgang; Tauber, Gunther; May, Adolf; and Bucking, Hans-Walter, 4,339,391, Cl. 260-401.000.
- Budan, Gerhard: See—  
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- Buhr, Gerhard: See—  
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- Builders Concrete, Inc.: See—  
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- Bujadoux, Karel, to Societe Chimique des Charbonnages-CdF CHIMIE. Process for reducing metallic halides in the vapor phase by means of solid organomagnesium compounds and catalytic components resulting therefrom, 4,339,392, Cl. 260-429.00R.
- Bull, Eric W.; and Galloway, Robert D., to Picker International Limited. Coil arrangements, 4,339,718, Cl. 324-319.000.
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- Burdeska, Kurt: See—  
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- Burlington Industries, Inc.: See—  
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- Burns, Robert A.: See—  
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- Burr, Peter; and Chase, Brian D., to International Business Machines Corporation. Convergence unit for cathode-ray tube, 4,339,736, Cl. 335-213.000.
- Burri, Peter, to Ciba-Geigy Corporation. Indolinospiropyran compounds, 4,339,385, Cl. 548-409.000.
- Burton, James O.; Dannels, Christopher J.; and Ahlin, Frank J., to Richman Brothers Company, The. Cloth spreading method and apparatus, 4,339,118, Cl. 270-31.000.
- Busby, Donald W. Button assembly for rotary rock cutters, 4,339,009, Cl. 175-374.000.
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- Buyniski, Joseph P.; Cavanagh, Robert L.; and Gordon, Maxwell, to Bristol-Myers Company. Pharmaceutical methods and compositions, 4,339,439, Cl. 424-177.000.
- Byerly, Robert M., to TA Mfg. Corp. Clamp, 4,338,707, Cl. 24-257.000.
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- C. K. Kelley and Sons, Inc.: See—  
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- C. van der Lely N.V.: See—  
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- Caetani, Enzo; and Paradowski, Henri, to Compagnie Francaise d'Etudes et de Construction "Technip". Method of and system for liquefying a gas with low boiling temperature, 4,339,253, Cl. 62-40.000.
- Callahan, George E. Hydrometer with improved temperature compensation, 4,338,817, Cl. 73-448.000.
- Calundann, Gordon W.; Charbonneau, Larry F.; and East, Anthony J., to Celanese Corporation. Poly(ester-amide) capable of forming an anisotropic melt phase derived from p-hydroxybenzoic acid, 2,6-dihydroxynaphthalene, carbocyclic dicarboxylic acid, aromatic monomer capable of forming an amide linkage, and, optionally, additional aromatic diol, 4,339,375, Cl. 524-602.000.
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- Camerano, Angelo. Plate solar-heat collector, 4,338,920, Cl. 126-443.000.
- Camp, Albert T., to Stang, Peter. Gas generating composition, 4,339,288, Cl. 149-8.000.
- Campbell, George T. R. Pressure differential liquid transfer system, 4,339,232, Cl. 417-54.000.
- Candor, James T. Electrostatic method and apparatus for treating material, 4,338,729, Cl. 34-1.000.
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- Yamada, Yu; Inoue, Mutsuhiro; Arai, Toshio; Omi, Kokichi; Suzuki, Hiroaki; and Kuwayama, Tetsuro, 4,339,183, Cl. 353-78.000.
- Capers, Billy G., to Koppers Company, Inc. Method for inserting a void plug into a lift insert for a concrete product, 4,338,715, Cl. 29-451.000.
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- Wust, Willi; Leischner, Hasso; Rahse, Wilfried; Carduck, Franz-Josef; and Kuhne, Norbert, 4,339,573, Cl. 536-84.000.
- Wust, Willi; Leischner, Hasso; Rahse, Wilfried; Carduck, Franz-Josef; and Kuhne, Norbert, 4,339,574, Cl. 536-84.000.
- Carlson, David E., to RCA Corporation. Fabricating amorphous silicon solar cells by varying the temperature of the substrate during deposition of the amorphous silicon layer, 4,339,470, Cl. 427-39.000.
- Carlson, Leon. Device for displacing a member, primarily a stage for optical instruments, in arbitrary directions in one and the same plane, 4,339,101, Cl. 248-178.000.
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- Cason, Charles M.: See—  
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- Castle Rock Enterprises: See—  
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- Caterpillar Tractor Co.: See—  
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- Goloff, Alexander, 4,338,998, Cl. 165-165.000.
- Livesay, Richard E., 4,339,156, Cl. 305-22.000.
- Papadideris, Stamos I., 4,338,896, Cl. 123-198.00D.
- Radigan, Michael T., 4,338,736, Cl. 37-142.00A.
- Shelby, Robert L.; and Wilkins, Douglas A., 4,338,890, Cl. 123-195.00A.
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- Cavazza, Claudio. Device for the quick inhalation of drugs in powder form by humans suffering from asthma, 4,338,931, Cl. 128-203.150.
- CBS Inc.: See—  
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- Celanese Corporation: See—  
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- Hicks, Darrell D.; and Shimp, David A., 4,339,369, Cl. 523-414.000.
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- Central Glass Company, Limited: See—  
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- Centro Cororation: See—  
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- Chafetz, Harry: See—  
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- Roberts, Harry H.; and Cote, Raymond A., 4,339,041, Cl. 206-611.000.
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- Abele, Manlio G.; Chase, Norman E.; and Mair, Gareth A., 4,339,799, Cl. 364-414.000.
- Chasek, Norman E. Automatic method for advantageously trading signal distortion for improved noise threshold in frequency modulated receivers, 4,339,828, Cl. 455-205.000.
- Cheadle, Brian E.: See—
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- Clements, William W.: See—
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- Croslin, Michael E. Method for performing non-invasive blood pressure and pulse rate measurements, 4,338,949, Cl. 128-677.000.
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- Crothers, Charles J., to Thermocon Industries, Inc. Panel and insulation system, 4,338,756, Cl. 52-539.000.
- Croul, Richard D. Surfing slide, 4,339,122, Cl. 272-56.50R.
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- Cushman, David W.: See—
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- Dahlhaus, Peter; Steinfeld, Horst E.; and Striepeke, Wilhelm, to Estel Hoesch Werke AG. Rail mounting system, 4,339,077, Cl. 238-349.000.
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- Danielsson, Lennart: See—
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- d'Arras, Philippe, to Societe Anonyme dite COUPAX. Meat tendering device, 4,338,701, Cl. 17-25.000.
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- Daville, Helene. Incontinence pants, 4,338,939, Cl. 128-286.000.
- Davison, Alan B.; and Lewis, Wayne J., to NCR Corporation. Memory system wherein individual bits may be updated, 4,339,804, Cl. 364-900.000.
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- Dayton, John P. Connector, 4,339,166, Cl. 339-100.000.
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- Johansen, Jack T.; and Widmer, Fred, 4,339,534, Cl. 435-70.000.
- Dearman, Timothy C. Welding fixture for use in joining two tubular members, 4,338,712, Cl. 29-281.600.
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- Decker, Lester H. Multiple section grain drill, 4,338,872, Cl. 111-56.000.
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- Deere & Company: See—
- Schlueter, Francis E., 4,338,770, Cl. 56-33.000.
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Dion, Jean-Luc. Liquid crystal cell for acoustical imaging. 4,338,821, Cl. 73-603.000.

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Doering, Arlin B., to Minnesota Mining and Manufacturing Company. Moldable handle for disk pack assembly. 4,339,037, Cl. 206-444.000.

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Dolan, John E. Method of varying turbine output of a supercritical-pressure steam generator-turbine installation. 4,338,789, Cl. 60-652.000.

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Leon, Albert M., 4,338,887, Cl. 122-4.00D.

Dow Chemical Company, The: See—  
Peil, Charles A.; and McLaren, John W., 4,339,040, Cl. 206-599.000.

Dow, Ray A. Bag holding device and process. 4,338,979, Cl. 141-10.000.

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Lacey, Patrick J., 4,339,217, Cl. 411-55.000.

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D'Silva, Themistocles D. J.; and Hodakowski, Leonard E., to Union Carbide Corporation. Novel oxime-phosphate compounds. 4,339,444, Cl. 424-202.000.

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Barnette, Willie J.; Henry, Farland E.; and Rapoport, Morris, 4,339,395, Cl. 260-465.80R.

Bratt, Martin D.; and Cohen, Abraham B., 4,339,525, Cl. 430-271.000.

Hill, Martin J., 4,339,527, Cl. 430-322.000.

Levitt, George, 4,339,266, Cl. 71-92.000.

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Grier, Nathaniel; Harris, Elbert E.; Joshua, Henry; Patchett, Arthur A.; Witzel, Bruce E.; and Dybas, Richard A., 4,339,453, Cl. 424-251.000.

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Valbona, Bruno M.; and Pound, William C., 4,339,639, Cl. 200-52.00R.

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Tappe, Gunther; Gasper, Bertram; Laubenberger, Herbert; and Weiss, Richard, 4,339,499, Cl. 428-373.000.

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E. R. Squibb & Sons, Inc.: See—  
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Sykes, Richard B.; Wells, Jerry S.; and Liu, Wen-Chih, 4,339,535, Cl. 435-119.000.

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Eastman Kodak Company: See—  
Harvey, Donald M., 4,339,193, Cl. 354-288.000.

Eastman Technology, Inc.: See—  
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Eberwein, Eugen; Elsasser, Heinrich; Gaiser, Willi; Leins, Eberhard; Pape, Klaus; and Walter, Manfred, to Sulzer Morat GmbH. Thread guidance system. 4,338,799, Cl. 66-125.00R.

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Eden, Jamal S.: See—  
Cowfer, Joseph A.; Eden, Jamal S.; and Magistro, Angelo J., 4,339,620, Cl. 570-243.000.

Egawa, Mitsuo: See—  
Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; and Egawa, Mitsuo, 4,339,580, Cl. 544-360.000.

Egg, Hans-Jakob: See—  
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Eggert, Walter S., Jr., to Budd Company, The. Railway truck adaptable to receive a common primary suspension and variable journal bearings. 4,338,865, Cl. 105-202.000.

Eguchi, Tamiyuki; and Izumi, Michinobu, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Tubular membrane separation apparatus end joint seal. 4,339,334, Cl. 210-433.200.

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Eilers, Carl; and Fockens, Pieter, to Zenith Radio Corporation. TV Sound Transmission system. 4,339,772, Cl. 358-144.000.

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Elbel, Karl, to Heinrich Lippert GmbH, Firma. Grinding tool metal machining. 4,338,748, Cl. 51-206.00R.

Elder, James E.: See—  
Van Vliet, Jasper A.; and Elder, James E., 4,338,885, Cl. 119-96.000.

Electric Power Research Institute, Inc.: See—  
Rhines, Archie E.; and Hugg, Steven B., 4,339,719, Cl. 324-446.000.

Elliott, William H. Electrical container. 4,339,637, Cl. 200-51.090.

Ellis, John C., Jr. Distillation apparatus. 4,339,307, Cl. 202-176.000.

Ellis, Victor E. H., to Rolls Royce Limited; and Renishaw Electrical Limited. Probe having passive means transmitting an output signal by reactive coupling. 4,339,714, Cl. 324-207.000.

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Elmes, Terence D. J.; and McGrail, Patrick T., to Imperial Chemical Industries Limited. Photographic film bases. 4,339,531, Cl. 430-535.000.

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Eberwein, Eugen; Elsasser, Heinrich; Gaiser, Willi; Leins, Eberhard; Pape, Klaus; and Walter, Manfred, 4,338,799, Cl. 66-125.00R.

Emhart Industries, Inc.: See—  
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Hronchek, James A., 4,339,649, Cl. 219-10.55B.

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Pitts, Frank; Tiethof, Jack A.; and Burns, Robert A., 4,339,352, Cl. 252-449.000.

Engelmann, John A., to Veda, Inc. Sewage treatment method and apparatus. 4,339,265, Cl. 71-9.000.

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Englund, Richard L. Remote reading, liquid parameter measuring device and improved pump. 4,338,809, Cl. 73-1.00H.

Enneking, Heinrich; Schubert, Gunter; Hauger, Ludwig; and Mladek, Rolf, to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Device for depositing cable into a receiving container. 4,339,091, Cl. 242-47.000.

Enomoto, Hiroshi: See—  
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Ericsson, Ronald J., to Gametrics Limited. Method of increasing the incidence of female offspring. 4,339,434, Cl. 424-105.000.

Eriksson, Bertil F. H.; Helgstrand, Ake J. E.; Misiorny, Alfons; Stening, Goran B.; and Stridh, Stig A., to Astra Lakemedel Aktiebolag. Method for combating virus infection. 4,339,445, Cl. 424-212.000.

Eriksson, Erik F. Pulp refining apparatus with adjustable treating gap. 4,339,084, Cl. 241-37.000.

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Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., 4,339,157, Cl. 308-6.00C.

Erwin Sick GmbH Optik-Elektronik: See—  
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Esper, Friedrich: See—  
Friesse, Karl-Hermann; and Esper, Friedrich, 4,339,320, Cl. 204-195.00S.

Essilor International "Cie Generale d'Optique": See—  
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Exxon Research & Engineering Co.: See—  
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Jacobson, Allan J.; Cheng, Kent H.; and Whittingham, M. Stanley, 4,339,424, Cl. 423-606.000.

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Fahim, Mostafa S., to University of Missouri, The Curators of the. Injectable male animal sterilant for selectively controlling the function of testes. 4,339,438, Cl. 424-145.000.

Faktor, Marc M.; and Haigh, John, to Post Office, The. Semiconductor materials. 4,339,302, Cl. 156-605.000.

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Corben, Leo D.; and Falxa, Martin L., 4,339,532, Cl. 430-567.000.

Fankhauser, Peter: See—  
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Farrell, Warren M., Sr.; and Farrell, Warren M., Jr. Tire cutting machine. 4,338,839, Cl. 83-620.000.

Farrell, Warren M., Sr.; and Farrell, Warren M., Jr. Tire cutting machine. 4,338,840, Cl. 83-622.000.

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Faulkner, Lynn; and Stulen, Foster B., to Battelle Development Corporation. Acoustic degasification of pressurized liquids. 4,339,247, Cl. 55-15.000.

FBC Limited: See—  
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Fehrer, Kamilo. Filter. 4,339,724, Cl. 328-164.000.

Feldstein, Nathan. Dispersions for activating non-conductors for electroless plating. 4,339,476, Cl. 427-98.000.

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Fernstrum, Paul W., to R. W. Fernstrum & Co. Underwater outboard marine heat exchanger. 4,338,993, Cl. 165-44.000.



- Ferranti Limited: See—  
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- Ferrero S.p.A.: See—  
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- Fetzer, Gunter: See—  
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- Fiberdome Incorporated: See—  
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- Fiberglas Canada, Inc.: See—  
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- FICO Fischer & Co. Maschinenbau GmbH: See—  
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- Fields, Ellis K.: See—  
Udovich, Carl A.; and Fields, Ellis K., 4,339,595, Cl. 560-76.000.
- Fink, Allen H.: to UOP Inc. Cogeneration process linking FCC regenerator and power plant turbine. 4,338,788, Cl. 60-648.000.
- First National Packaging Co., Inc.: See—  
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- Fisher, Gerald M.; and Maget, Henri J. R., to Varian Associates, Inc. Solar pond power plant. 4,339,626, Cl. 136-248.000.
- Fishter, Robert E.: See—  
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- Fitoussi, Richard; and Musikas, Claude, to Commissariat a l'Energie Atomique. Uranium recovery process. 4,339,416, Cl. 423-10.000.
- Fives-Cail Babcock: See—  
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- Flasck, Richard A.: See—  
Ovshinsky, Stanford R.; and Flasck, Richard A., 4,339,255, Cl. 65-32.000.
- Fleche, Guy; Gaset, Antoine; Gorrichon, Jean-Pierre; Truchot, Eric; and Sicard, Philippe, to Roquette Freres. Process for manufacturing 5-hydroxymethylfurfural. 4,339,387, Cl. 549-488.000.
- Flecher, Pierre; and Kofler, Hansjorg, to BBC Brown, Boveri & Company, Ltd. Sorption pump for a turbogenerator rotor with superconductive excitation winding. 4,339,680, Cl. 310-62.000.
- FMC Corporation: See—  
Hill, Jerry M.; and Carter, Ronald W., 4,338,818, Cl. 73-462.000.
- Plummer, Ernest L.; and Palmere, Raymond M., 4,339,457, Cl. 424-274.000.
- Fockens, Pieter: See—  
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- Fogarty, Thomas J. Dilatation catheter apparatus. 4,338,942, Cl. 128-344.000.
- Ford, Azel R.; and Ford, David W., to D. B. D. Drilling, Inc. Well notching tool. 4,339,008, Cl. 175-272.000.
- Ford, Charles; Gill, Arthur, Jr.; Smith, John W.; and Freeman, Louis L., Jr. to ACF Industries, Incorporated. Tank car coating apparatus. 4,339,078, Cl. 239-1.000.
- Ford, David W.: See—  
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- Foreman, Richard L.: See—  
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- Forisight Industries, Inc.: See—  
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- Foster, Perry A., Jr.: See—  
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- Foster Wheeler Energy Corporation: See—  
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- Fowkes, Ronald; and Harding, Geoffrey G., to Lucas Industries Limited. Electrically driven vehicles. 4,339,015, Cl. 180-65.00R.
- Fralick, Stanley C.: See—  
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- Frame, Douglas J., to C & H Combustion. High temperature gate valve with fused silica blade. 4,338,963, Cl. 137-375.000.
- Franck, Heinz-Gerhard: See—  
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- Frank, Anton: See—  
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- Frank, Wilhelm. Combined rolling shutter and ventilating box. 4,338,996, Cl. 165-57.000.
- Franz, James H., to Westinghouse Electric Corp. Propulsion motor control apparatus and method. 4,339,697, Cl. 318-341.000.
- Franz, Reinhard; and Dittmar, Wilfried, to Franz, Reinhard. System for expanding the dynamic volume range of electronic musical instruments. 4,338,845, Cl. 84-1.100.
- Frauenberger, Dennis M. Valve service apparatus. 4,338,981, Cl. 141-85.000.
- Frechin, Jean-Paul. Safety device for crampons, and crampons equipped therewith. 4,338,733, Cl. 36-7.300.
- Frederick, George T.: See—  
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- Freed, Meier E., to American Home Products Corporation. 2,6-Bis-(pyrrolopyrazinyl)pyrazines. 4,339,579, Cl. 544-349.000.
- Freeman, Louis L., Jr.: See—  
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- Frenette, Daniel A.: See—  
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- Freyn, Fritz: See—  
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- Friend, Manuel N.: See—  
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- Friese, Karl-Hermann; and Esper, Friedrich, to Robert Bosch GmbH. Heated gas composition sensor structure. 4,339,320, Cl. 204-195.00S.
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- Fringeli, Werner; and Lauton, Alain, to Ciba-Geigy Corporation. Stable aqueous formulations of stilbene fluorescent whitening agents. 4,339,238, Cl. 8-527.000.
- Frisch, David C.; and Weber, Wilhelm, to Kollmorgen Technologies Corporation. Radiation stress relieving of sulfone polymer articles. 4,339,303, Cl. 156-629.000.
- Fritzche Dodge & Olcott Inc.: See—  
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- Fromm, Ingrid; and Unterberger, Hans, to Siemens Aktiengesellschaft. Method and a device for monitoring and minimizing light losses at a splicing location for glass fiber cables. 4,339,658, Cl. 250-227.000.
- Frosch, Franz: See—  
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- Fuji Latex Co., Ltd.: See—  
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- Fuji Photo Film Co., Ltd.: See—  
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- Nakauchi, Kenji; and Terasita, Takaaki, 4,339,185, Cl. 354-31.000.
- Fujii, Osamu: See—  
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- Fujimoto, Hideo: See—  
Kaifu, Masaharu; Tanaka, Kazuo; Fujimoto, Hideo; Takigawa, Jun; Nishimura, Tomohiro; Hirose, Yagoro; and Hirai, Junu, 4,339,510, Cl. 428-654.000.
- Fujisawa, Kazuo: See—  
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- Fujisawa Pharmaceutical Company, Limited: See—  
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- Fujishige, Shoei: See—  
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- Shimizu, Toshimi; Fujishige, Shoei; and Okada, Akira, 4,339,360, Cl. 524-28.000.
- Fujita, Junji. Spray booth assembly for washing or chemically treating objects of desired kind. 4,338,958, Cl. 134-104.000.
- Fujita, Toshiiji; Yamada, Chihiko; Terashima, Takeo; and Nojima, Masaki, to Toppan Printing Co., Ltd. Photography apparatus for television picture. 4,339,769, Cl. 358-6.000.
- Fujiwara, Kiyoshi; Nagatomo, Katsuaki; Shibata, Fumio; Nomura, Shoji; and Yoshinaga, Shoji, to Hitachi, Ltd. Desalting method of fuel oil. 4,339,330, Cl. 208-251.00R.
- Fukui, Yoshikazu: See—  
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- Fukami, Harukazu: See—  
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- Fukuda, Kunio: See—  
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- Furusawa, Tomotaka: See—  
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- Gaffney, Edward J. Bathtub aid for handicapped. 4,338,691, Cl. 4-562.000.
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- Galloway, Robert D.: See—  
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- Gaskiris, Thomas. Outdoor cooking grill. 4,338,912, Cl. 126-25.00A.
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- Gebuerder Buehler AG: See—  
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- Gebura, Stanley E.: See—  
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- GEFITEC S.A.: See—  
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- Geiger, Istvan; Stamm, Klaus; Bruning, Reinhard; and Meyer, Manfred, to Volkswagenwerk Aktiengesellschaft. Method and apparatus for controlling the idling operation of a spark-ignited internal combustion engine. 4,338,899, Cl. 123-339.000.
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- Balko, Edward N.; and Lawrance, Richard J., 4,339,322, Cl. 204-255.000.
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- Barrett, David M.; Stivender, Paul M.; and Ueberfluss, Robert E., 4,339,825, Cl. 250-490.000.
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- Crawford, John G., 4,339,051, Cl. 220-66.000.
- DiMarzio, Alfred W., 4,339,011, Cl. 177-177.000.
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- Hanson, James M.; Graf, Martin J.; and Bradley, Irving, 4,339,790, Cl. 362-267.000.
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- Kelley, Fred W., 4,339,705, Cl. 323-210.000.
- Lauroesch, Hugo C., 4,339,655, Cl. 219-121.0LJ.
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- Greenhalgh, Keith, 4,339,740, Cl. 337-39.000.
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- General Motors Corporation: See—  
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- George Fischer Limited: See—  
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- George Washington University: See—  
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- Georgia-Pacific Corporation: See—  
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- Gerry, Frank S.; and Wiggins, Wayne T., to SOHIO. Tie-layer for coextruded acrylonitrile copolymers. 4,339,502, Cl. 428-411.000.
- Gerstmann, Joseph; and Vasilakis, Andrew D., to Advanced Mechanical Technology, Inc. High efficiency water heating system. 4,338,888, Cl. 122-16.000.
- Gess, Larry C. Machine for producing packages with labels. 4,338,761, Cl. 53-137.000.
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- Gifford, Richard L., to Brunswick Corporation. Oscillator system for fishing reel. 4,339,095, Cl. 242-84.21R.
- Gile, Richard H.: See—  
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- Gill, Arthur, Jr.: See—  
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- Gillam, Eric: See—  
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- Gillespie, Peter J., to United States of America, Energy. Containers for use in a self supporting assembly. 4,339,049, Cl. 220-23.400.
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- Gittings, Neil A. Board game having triangular playing spaces. 4,339,136, Cl. 273-242.000.
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- Glazner Spicer: See—  
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- Glaser, David; and Whelchel, Charles J., to Lucitron, Inc. Flat-panel display and method of manufacture. 4,339,482, Cl. 428-13.000.
- Glynn, Thomas A.: See—  
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- Goloff, Alexander, to Caterpillar Tractor Co. Low profile heat exchanger and method of making the same. 4,338,998, Cl. 165-165.000.
- Golovko, Vladimir N.: See—  
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- Good, Lewis D. Solid fuel burning stove. 4,338,913, Cl. 126-77.000.
- Goodman, Richard M.: See—  
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- Gordon, Maxwell: See—  
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- Gorecki, James L., to Honeywell Inc. Band gap voltage regulator. 4,339,707, Cl. 323-313.000.
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- Goto, Kunio, to Victor Company of Japan, Ltd. Signal pickup cartridge for reproducing signals recorded on rotating recording mediums. 4,339,812, Cl. 369-170.000.



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- Greenberger, William, to Hopp Press, The. Shelf sign device having sinuated edges. 4,338,739, Cl. 40-584.000.
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- Greenhalgh, Keith, to General Electric Company Limited, The. Thermally responsive switches. 4,339,740, Cl. 337-39.000.
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- Gridley, Marvin C., to Ball Corporation. Glass manufacture employing a silicon carbide refining agent. 4,339,254, Cl. 65-27.000.
- Grier, Nathaniel; Harris, Elbert E.; Joshua, Henry; Patchett, Arthur A.; Witzel, Bruce E.; and Dybas, Richard A., to Merck & Co., Inc. Antimicrobial aminopyrimidinium salts. 4,339,453, Cl. 424-251.000.
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- Grof, Helmut; Reimpell, Uwe; and Wamser, Anton, to Leybold-Heraeus GmbH. Electrode clamping device for electroremelting plants. 4,339,624, Cl. 373-52.000.
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- GRRN Company: See—  
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- Grumman Aerospace Corporation: See—  
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- GTE Laboratories Incorporated: See—  
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- Gulf Research & Development Company: See—  
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- Guttmann, Andrew T.; and Grasselli, Robert K., to SOHIO. Preparation of unsaturated acids and esters from saturated carboxylic acid derivatives and carbonyl compounds over catalysts containing V and Sb. 4,339,598, Cl. 560-210.000.
- Haag, Werner O.: See—  
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- Hara, Motoi: See—  
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- Hill, Martin J., to Du Pont de Nemours, E. I., and Company. Process for using photopolymerizable compositions. 4,339,527, Cl. 430-322.000.
- Hill, Paul W., to Hercules Incorporated. Bifol blade. 4,339,230, Cl. 416-226.000.
- Hille, Martin: See—  
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- Hiller, Georg, to Klockner-Humboldt-Deutz AG. Centrifuge for separating solids/liquids mixtures. 4,339,072, Cl. 233-7.000.
- Hills, Richard E.; and Tague, Thomas J., to Pittsburgh-Des Moines Corporation. Secondary seal for floating roof storage tanks. 4,339,052, Cl. 220-226.000.
- Hinosugi, Misturu; and Nakasato, Kouichi, to Hitachi, Ltd. Method of forming a fluorescent screen for cathode-ray tube. 4,339,475, Cl. 427-64.000.
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- Hirano, Hideo: See—  
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- Hirata, Yasunari. Chain conveyor for moving articles accumulatably at an increased speed. 4,339,030, Cl. 198-779.000.
- Hirose, Masahiko; Yasui, Tsuyoshi; and Yotuyanagi, Masahiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Surface processing apparatus utilizing microwave plasma. 4,339,326, Cl. 204-298.000.
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- Hirth, Georges: See—  
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- Hitachi, Ltd.: See—  
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- Hoeckje, Howard H., to PPG Industries, Inc. Solid polymer electrolyte and method of electrolyzing brine. 4,339,314, Cl. 204-98.000.
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- Hollis, Samuel D., to Union Camp Corporation. Method of polymerizing rosin. 4,339,377, Cl. 260-99.500.
- Holly, Harry H. Apparatus for making a ground food patty. 4,338,702, Cl. 17-32.000.
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- Lee, Tzu-Chang, 4,339,176, Cl. 350-162.05F.
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- Hoshino, Kiyoshi: See—  
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- House, Robert C., Jr. Beverage insulating and cooling receptacle. 4,338,795, Cl. 62-372.000.
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- Hsieh, Jung H.; and Hsieh, Jung K. Automatic mechanism for flush and raising toilet seat. 4,338,690, Cl. 4-300.000.
- Hsieh, Jung K.: See—  
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- Huang, Tracy J.; and Haag, Werner O., to Mobil Oil Corporation. Conversion of ketones over metal-containing zeolite catalysts. 4,339,606, Cl. 568-396.000.
- Huber, Bernd: See—  
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- Hugg, Steven B.: See—  
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- Hughes Aircraft Company: See—  
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- Hunninghaus, Roy E.; and Bolinger, Randy L., to Motorola Inc. Electronic engine synchronization and timing apparatus. 4,338,813, Cl. 73-116.000.
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- Hwang, Charles C., to University of Pittsburgh. Solar collector system employing particulate energy collecting media. 4,338,919, Cl. 126-435.000.
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- Ibrahim, Faye F., to Tyler Refrigeration Corporation. Refrigerated merchandiser display case with defrost device. 4,338,792, Cl. 62-256.000.
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- Imatt, Alex: See—  
Breslow, Jeffrey D.; Imatt, Alex; and Oberth, Christian H., 4,339,135, Cl. 273-237.000.
- Imber, Marion, to Ray Control Corp. Table assembled without fasteners. 4,338,867, Cl. 108-159.000.
- Imperial Chemical Industries Limited: See—  
Elmes, Terence D. J.; and McGrail, Patrick T., 4,339,531, Cl. 430-535.000.
- Morley, John O., 4,339,621, Cl. 585-422.000.
- Inami, Mamoru; and Tanaka, Yoshiaki, to Victor Company of Japan, Ltd. Spectrum displaying apparatus for multichannel signals. 4,339,711, Cl. 324-77.00E.
- Inayama, Minoru; and Hamanaka, Hideyuki, to Rinnai Kabushiki Kaisha. Dual fan means for heating chamber of microwave cooking device. 4,339,647, Cl. 219-10.55R.
- INCA Limited: See—  
Tutty, Geoffrey C., 4,339,275, Cl. 524-255.000.
- Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft: See—  
Enneking, Heinrich; Schubert, Gunter; Hauger, Ludwig; and Mladek, Rolf, 4,339,091, Cl. 242-47.000.
- Inoue, Kiyoshi; and Watanabe, Minoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Filter-coated phosphor. 4,339,501, Cl. 428-404.000.
- Inoue, Mutsuhiro: See—  
Yamada, Yu; Inoue, Mutsuhiro; Arai, Toshio; Omi, Kokichi; Suzuki, Hiroaki; and Kuwayama, Tetsuro, 4,339,183, Cl. 353-78.000.
- Institut de Recherches de la Siderurgie Francaise (IRSID): See—  
Delassus, Jean; de Lamberterie, Bertrand; and Michelet, Jacques, 4,339,625, Cl. 373-158.000.
- Instituto Sieroterapico e Vaccinogeno Toscano "Sclavo" S.p.A.: See—  
Meattini, Franco; Papeschi, Giorgio; Tarli, Paolo; and Neri, Paolo, 4,339,317, Cl. 204-195.00B.
- International Actrooi Maatschappij "Oetropa" B.V.: See—  
Kuhn, Werner, 4,338,760, Cl. 53-48.000.
- International Business Machines Corporation: See—  
Alvarez, David C.; Bjorklund, Gary C.; and Burland, Donald M., 4,339,513, Cl. 430-1.000.
- Bahr, Dietrich J.; and Briska, Marian, 4,339,477, Cl. 427-14.000.
- Baise, Arnold I.; Czornyj, George; and Wu, Anthony W., 4,339,526, Cl. 430-296.000.
- Balanson, Richard D.; Clecak, Nicholas J.; Grant, Barbara D.; and Ouano, Augustus C., 4,339,522, Cl. 430-192.000.
- Brereton, David A.; and Stansbury, Buddy F., 4,339,795, Cl. 364-200.000.
- Brereton, David A.; and Stansbury, Buddy F., 4,339,796, Cl. 364-200.000.
- Brereton, David A.; and Stansbury, Buddy F., 4,339,797, Cl. 364-200.000.
- Burr, Peter; and Chase, Brian D., 4,339,736, Cl. 335-213.000.
- Craft, James A.; and Okcuoglu, Selahattin A., 4,339,210, Cl. 400-208.000.
- Hornig, Cheng T.; Konian, Richard R.; Schwenker, Robert O.; and Wieder, Armin W., 4,339,767, Cl. 357-44.000.
- Larson, David D.; and Riddle, Stanley T., 4,339,657, Cl. 235-92.00C.
- Marenin, George B., 4,339,793, Cl. 364-200.000.
- International Computers Limited: See—  
Perry, Graham A., 4,339,673, Cl. 307-270.000.
- International Flavors & Fragrances Inc.: See—  
Boden, Richard M., 4,339,341, Cl. 252-174.110.
- Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,339,344, Cl. 252-187.240.
- Yoshida, Takao, 4,339,467, Cl. 426-538.000.
- International Harvester Co.: See—  
Gerresheim, Jost, 4,339,016, Cl. 180-89.170.
- Swanson, William C., 4,339,139, Cl. 280-43.230.
- International Nickel Company, Inc.: See—  
Clark, Ian S. R.; and Baltrukovic, Benjamin J., 4,339,401, Cl. 264-11.000.
- International Paper Company: See—  
Brauner, Arne H., 4,339,068, Cl. 229-33.000.
- International Standard Electric Corporation: See—  
Ahmed, Fahim, 4,339,633, Cl. 179-99.00M.
- Minks, Werner, 4,339,734, Cl. 335-78.000.
- International Synthetic Rubber Company, Limited, The: See—  
Morgan, Peter J.; and Wyllie, Kenneth I., 4,339,623, Cl. 585-867.000.
- International Telephone and Telegraph Corporation: See—  
Hammers, David E.; and Milan, John M., 4,339,754, Cl. 343-7.700.
- Johnson, Charles B., 4,339,659, Cl. 250-213.0VT.
- Reed, Joseph, 4,339,816, Cl. 370-71.000.
- Iowa Beef Processors, Inc.: See—  
Welton, Myron L.; and Sheneman, Gary L., 4,338,704, Cl. 17-50.000.
- Iriguchi, Norio: See—  
Boretos, John W.; and Iriguchi, Norio, 4,339,295, Cl. 156-275.700.
- Irving, Edward: See—  
Green, George E.; and Irving, Edward, 4,339,567, Cl. 528-102.000.
- Isaksson, Sven-Erik; and Larker, Hans, to Asea AB. Method of manufacturing a sintered powder body. 4,339,271, Cl. 75-223.000.
- Ishida, Takashi: See—  
Nakamura, Hirokazu; Takamiya, Bonnosuke; Miki, Takao; and Ishida, Takashi, 4,338,902, Cl. 123-454.000.
- Ishigaki, Yoshio: See—  
Yasumura, Masayuki; and Ishigaki, Yoshio, 4,339,792, Cl. 363-75.000.
- Ishihara, Toshinobu; Taguchi, Kenichi; and Yamamoto, Akira, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of a sodium salt of l-alkyne compound. 4,339,397, Cl. 260-665.00R.



- Ishii, Hideki: See—  
Saguchi, Norio; Ishii, Hideki; Sakakibara, Yoshiaki; Nagasawa, Masakazu; Saitoh, Osami; Wakimizu, Yukio; and Kanematsu, Susumu, 4,339,685, Cl. 313-113.000.
- Ishii, Yoshiyasu: See—  
Nakao, Shinroku; Ishii, Yoshiyasu; Matsumoto, Susumu; and Hoshino, Kiyoshi, 4,339,149, Cl. 297-250.000.
- Isibasi, Masayasu: See—  
Imai, Ichiro; Matsunaga, Fujihisa; Nakagawa, Hiroaki; Isibasi, Masayasu; and Taguchi, Tohru, 4,339,615, Cl. 568-768.000.
- Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, to Mitsubishi Gas Chemical Company, Inc. Process for producing 2-pentenoic esters, 4,339,597, Cl. 560-205.000.
- Ito, Hiroshi: See—  
Ichimura, Kunihiko; Takeuchi, Osamu; Kusama, Hideo; Yamazaki, Kazuo; Saka, Akira; Ito, Hiroshi; and Toyofuku, Kunitaka, 4,339,524, Cl. 430-270.000.
- Ito, Masaru: See—  
Yasuda, Makoto; Murayama, Seiichi; and Ito, Masaru, 4,339,201, Cl. 356-312.000.
- Itoh, Shuji; and Yoshida, Yoji, to Kyokuto Fatty-Acid Corporation. Method for producing a reinforced, double-faced corrugated board, 4,339,292, Cl. 156-206.000.
- ITT Industries, Inc.: See—  
Pitt, Gillies D.; and Williamson, Roger J., 4,339,661, Cl. 250-227.000.
- IVAC Corporation: See—  
Georgi, Heinz W.; Knute, Wallace L.; and Foreman, Richard L., 4,338,932, Cl. 128-214.00E.
- Iwasaki, Shinichiro, to Aisin Seiki Company, Ltd. Vibration sensor, 4,338,823, Cl. 73-654.000.
- Izawa, Masao: See—  
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- Izumi, Michinobu: See—  
Eguchi, Tamiyuki; and Izumi, Michinobu, 4,339,334, Cl. 210-433.200.
- J. B. Dicks & Ass. Inc.: See—  
Lanier, John H., Jr., 4,338,870, Cl. 110-346.000.
- J. J. Barker Company Limited: See—  
Barker, John C.; and McLaughlin, Ivan P., 4,339,489, Cl. 428-167.000.
- Jabor, Tony. Light switch delay circuit, 4,339,696, Cl. 315-360.000.
- Jacobson, Allan J.; Cheng, Kent H.; and Whittingham, M. Stanley, to Exxon Research & Engineering Co. Method of preparing W or Mo metal oxides, 4,339,424, Cl. 423-606.000.
- Jacobson, Earl B.; and Buchanan, H. F., to Nuclear Power Outfitters. Bag-like contaminant control work module, 4,339,163, Cl. 312-1.000.
- Jacobson, Robert G., to Zehntel, Inc. Programmable sequence generator for in-circuit digital testing, 4,339,819, Cl. 371-16.000.
- Jacoby, Marvin; Jacoby, Stuart W.; Jacoby, Robert E.; and Ellison, Robert A., to Air Test Labs, Inc. Sampling apparatus, 4,338,826, Cl. 73-864.620.
- Jacoby, Robert E.: See—  
Jacoby, Marvin; Jacoby, Stuart W.; Jacoby, Robert E.; and Ellison, Robert A., 4,338,826, Cl. 73-864.620.
- Jacoby, Stuart W.: See—  
Jacoby, Marvin; Jacoby, Stuart W.; Jacoby, Robert E.; and Ellison, Robert A., 4,338,826, Cl. 73-864.620.
- Jacques, Albert M. V., to Union Carbide Corporation. Terephthalic acid derivatives and process for preparing them, 4,339,601, Cl. 562-438.000.
- Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, to L'Oreal. N-(2,5-Dihydroxy-3,4,6-trimethyl-benzyl)-acrylamide and methacrylamide polymers, 4,339,561, Cl. 526-304.000.
- Jagenberg Werke AG: See—  
Thievsen, Karl; Weiss, Peter; and Welkers, Knut, 4,339,094, Cl. 242-68.200.
- Jahn, Volkmar: See—  
Schitteck, Friedrich; and Jahn, Volkmar, 4,339,075, Cl. 236-59.000.
- Janke, Bernhard, to Hef Technische Entwicklung GmbH & Co. KG. Arrangement for connecting two profile members, particularly channel members for metal windows, 4,338,753, Cl. 52-309.130.
- Jansen, Dirk: See—  
Kordulla, Hans; Gerlach, Hans H.; and Jansen, Dirk, 4,339,097, Cl. 244-3.160.
- Janusch, Alois, to Voest-Alpine Aktiengesellschaft. Apparatus for drying organic material, particularly brown coal, 4,339,306, Cl. 159-15.000.
- Japan Synthetic Rubber Co., Ltd.: See—  
Adachi, Norihiko; Fukai, Yoshikazu; and Kanayama, Hisanori, 4,339,435, Cl. 424-115.000.
- Yamazaki, Noboru; Nakahama, Seiichi; and Yamaguchi, Kazuo, 4,339,590, Cl. 549-11.000.
- Jarrett, Robert B.; and LoCascio, James J., to Motorola, Inc. Current ramping controller circuit, 4,339,669, Cl. 307-228.000.
- Jarvis, Richard L., to United States of America, Army. Bump stop for trunnion-mounted weapon, 4,338,852, Cl. 89-37.00E.
- Jason, Barry L.; Hall, Scott M.; and Valley, Richard L., to Motorola, Inc. Analog integrated filter circuit, 4,339,729, Cl. 330-294.000.
- Jasper, Steven C.: See—  
Predina, Joseph P.; and Jasper, Steven C., 4,339,823, Cl. 375-20.000.
- Jasper, Harold C. Pressurized chemical dispenser, 4,339,332, Cl. 210-198.100.
- Jassby, Kenneth; and Zeiger, Aaron, to Ramot University Authority for Applied Research & Industrial Development. Method and apparatus for generating and detecting acoustic surface waves particularly useful in the non-destructive testing of materials, 4,338,820, Cl. 73-597.000.
- Jean, Olivier A. L. Process and apparatus for subjecting a material to electromagnetic waves, 4,339,648, Cl. 219-10.55M.
- Jean Walterscheid GmbH: See—  
Herchenbach, Paul, 4,338,797, Cl. 464-167.000.
- Jeffery, Thomas C.: See—  
Dilmore, Colonel R.; Raetzsch, Carl W., Jr.; Jeffery, Thomas C.; and Dupre, Dallas D., III, 4,339,323, Cl. 204-256.000.
- Jenkins, Thomas E., to General Electric Company. Method for molding straight ribbed articles, 4,339,408, Cl. 264-328.700.
- Jensen, James R., to Container Corporation of America. Container venting arrangement, 4,339,036, Cl. 206-423.000.
- Jet Research Center, Inc.: See—  
Christopher, Glenn B., 4,338,713, Cl. 29-420.500.
- Jodice Controls Corporation: See—  
Kusko, Alexander, 4,339,706, Cl. 323-248.000.
- Johansen, Jack T.; and Widmer, Fred, to De Forende Bryggerier A/S. Process for enzymatic production of peptides, 4,339,534, Cl. 435-70.000.
- Johansson, Helle G.: See—  
Johansson, Ingvar H.; Johansson, Helle G.; Webing, Kurt; and Thulin, Gunnar, 4,339,047, Cl. 220-1.500.
- Johansson, Ingvar H.; Johansson, Helle G.; Webing, Kurt; and Thulin, Gunnar, to AB Maskinarbeten. Collapsible storage and transport crate capable to be stacked, 4,339,047, Cl. 220-1.500.
- Johnson, Charles B., to International Telephone and Telegraph Corporation. Image converter having serial arrangement of microchannel plate, input electrode, phosphor, and photocathode, 4,339,659, Cl. 250-213.0VT.
- Johnson, Douglas E.: See—  
Devitt, John L.; Johnson, Douglas E.; and Willard, Robert S., 4,338,978, Cl. 141-1.100.
- Johnson, Eric C.: See—  
Albaum, Joseph D.; Ponzoni, Ronald W.; and Johnson, Eric C., 4,339,451, Cl. 426-250.000.
- Johnson, Robert R.: See—  
Sanford, Robert A.; and Johnson, Robert R., 4,338,956, Cl. 131-336.000.
- Johnson, Russell D. Tool for positioning and defining holes in wall panels, 4,338,724, Cl. 33-174.00G.
- Johnson, Warren F.: See—  
Warner, Bert J.; Mathis, Melwyn L.; and Johnson, Warren F., 4,339,152, Cl. 299-5.000.
- Johnson, William E.; and Ryan, William H., to Owens-Illinois, Inc. Environmentally protected electronic control for a glassware forming machine, 4,339,260, Cl. 65-160.000.
- Johnson, William H.: See—  
Husby, Donald E.; Ewing, Jerry L.; and Johnson, William H., 4,339,789, Cl. 362-259.000.
- Jones, Addison B., to Rockwell International Corporation. Planar circuit fabrication by plating and liftoff, 4,339,305, Cl. 156-650.000.
- Jones, Joseph K., to Cotton Incorporated. Method and apparatus for removing trash from material, 4,338,705, Cl. 19-80.00R.
- Jones, Robert W.; and Cason, Charles M., to United States of America, Army. Pulsed laser beam intensity monitor, 4,339,199, Cl. 356-213.000.
- Jones, Ruth M.: See—  
Kalman, Sumner M.; and Jones, Ruth M., 4,339,441, Cl. 424-177.000.
- Jones, Stephen H., to Nordson Corporation. Oven regulator for a skin packaging machine, 4,338,769, Cl. 53-509.000.
- Jones, Thomas S., to Ciba-Geigy AG. Method and apparatus for making reeled strip material, 4,339,294, Cl. 156-252.000.
- Jones, William W.: See—  
Kelley, Charles K.; and Jones, William W., 4,339,228, Cl. 415-219.00R.
- Jongsma, Cornelis, to Stamcarbon, B.V. Process for the preparation of benzene-monocarboxylic acids, 4,339,599, Cl. 562-412.000.
- Joshua, Henry: See—  
Grier, Nathaniel; Harris, Elbert E.; Joshua, Henry; Patchett, Arthur A.; Witzel, Bruce E.; and Dybas, Richard A., 4,339,453, Cl. 424-251.000.
- Jouffroy, Guy: See—  
Durand, Pierre; and Jouffroy, Guy, 4,339,412, Cl. 422-117.000.
- Joy Manufacturing Company: See—  
Densmore, Neal W., 4,339,031, Cl. 198-864.000.
- Julius Blum Gesellschaft m.b.H.: See—  
Rock, Erich, 4,338,699, Cl. 16-237.000.
- Just, Gunther; and Carduck, Franz-Josef, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Process for the reduction of the particle size of coarse grain zeolitic sodium aluminosilicates, 4,339,244, Cl. 23-293.00A.
- Kabushiki Kaisha Kawai Gakki Seisakusho: See—  
Murata, Junya, 4,338,844, Cl. 84-1.010.
- Kabushiki Kaisha Mikuni Seisakusho: See—  
Nakagima, Yoshikazu, 4,339,363, Cl. 524-34.000.
- Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: See—  
Suzuki, Osamu; Yoshizawa, Toshio; Yoshida, Yoshiaki; Onoue, Keiji; and Seiki, Kazuo, 4,338,777, Cl. 57-263.000.
- Suzuki, Osamu; Morita, Takayuki; Ushino, Masashi; and Hirano, Hideo, 4,338,778, Cl. 57-276.000.

- Kabushiki Kaisha Uchida Yoko: See—  
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- Kaganovsky, Yaakov: See—  
Gelfer, Vadim; Kaganovsky, Yaakov; Muchnik, Shimon; and Shmutter, Shimon, 4,338,923, Cl. 128-24.00R.
- Kaganowicz, Grzegorz; and Robinson, John W., to RCA Corporation. Method of coating substrates with an abrasive layer, 4,339,471, Cl. 427-40.000.
- Kage, Kouzou; and Yoshida, Ikio, to Nippon Electric Co., Ltd. Wave-form converting circuit, 4,339,727, Cl. 329-106.000.
- Kageyama, Yoichi; Aiura, Masato; and Moriya, Kikuo, to Mitsubishi Chemical Industries, Ltd. Liquefaction of coal, 4,339,329, Cl. 208-10.000.
- Kago, Yoshiyuki; Akita, Sigeyuki; and Kotera, Masao, to Nippon Soken, Inc. Apparatus for detecting rotations, 4,339,713, Cl. 324-173.000.
- Kaifu, Masaharu; Tanaka, Kazuo; Fujimoto, Hideo; Takigawa, Jun; Nishimura, Tomohiro; Hirose, Yagoro; and Hirai, Jun, to Kobe Steel, Ltd. Aluminum-base brazing alloy composite, 4,339,510, Cl. 428-654.000.
- Kaiser Aerospace & Electronics Corporation: See—  
Zieg, Clifford V., 4,338,689, Cl. 4-378.000.
- Kalbach, John F., to A.C. Manufacturing Company; and Computer Power Systems Corp. Apparatus for preventing damage by voltage interruption, 4,339,779, Cl. 361-33.000.
- Kali und Salz Aktiengesellschaft: See—  
Duyster, Hubert; Voigt, Gunter; and Budan, Gerhard, 4,339,274, Cl. 106-106.000.
- Kalman, Sumner M.; and Jones, Ruth M., to Kalman, Sumner M. Cardioactive factor, 4,339,441, Cl. 424-177.000.
- Kamyr AB: See—  
Ahs, Bjorn, 4,339,206, Cl. 366-307.000.
- Kanayama, Hisanori: See—  
Adachi, Norihiko; Fukai, Yoshikazu; and Kanayama, Hisanori, 4,339,435, Cl. 424-115.000.
- Kane, Paul H.: See—  
Hedges, Richard A.; Shockley, David L.; Fralick, Stanley C.; and Kane, Paul H., 4,339,798, Cl. 364-412.000.
- Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: See—  
Eguchi, Tamiyuki; and Izumi, Michinobu, 4,339,334, Cl. 210-433.200.
- Kanematsu, Susumu: See—  
Saguchi, Norio; Ishii, Hideki; Sakakibara, Yoshiaki; Nagasawa, Masakazu; Saitoh, Osami; Wakimizu, Yukio; and Kanematsu, Susumu, 4,339,685, Cl. 313-113.000.
- Kanotz, William M.; Mottine, John J., Jr.; Staats-Westover, Robert F.; and Wilson, Max K., to Western Electric Company, Inc. Apparatus for insulating relatively flexible conductors, 4,339,298, Cl. 156-498.000.
- Kao Soap Co., Ltd.: See—  
Yamamura, Masaki; Igarashi, Taizo; and Ukigai, Toshiyuki, 4,339,246, Cl. 44-51.000.
- Karatani, Yuji: See—  
Saito, Mitsuru; Karatani, Yuji; Sakurai, Wataru; and Nobuta, Ken'ichi, 4,339,708, Cl. 324-54.000.
- Karpenko, Anatole N., to Anchor/Darling Valve Company. Valve for handling hot caustic alumina solution with provision for grinding, 4,338,961, Cl. 137-243.200.
- Kartinos, Nicholas J.; McGary, Terry J.; and Nolph, Karl D., to Baxter Travenol Laboratories, Inc., a part interest. Additives for peritoneal dialysis solutions, 4,339,433, Cl. 424-78.000.
- Kasahara, Hideo; Fukuda, Kunio; and Suzuki, Hiroshi, to Asahi-Dow Limited. Highly heat-resistant thermoplastic resin composition having high oil-resistance, 4,339,376, Cl. 524-116.000.
- Kasatkin, Boris S.; Pokhodnya, Igor K.; Musiachenko, Valentin F.; Golovko, Vladimir N.; Kolomiets, Ljudmila N.; Simonenko, Jury A.; and Gulyar, Anatoly V. Core flux composition for flux-cored wires, 4,339,286, Cl. 148-24.000.
- Kashiyama, Setsuo: See—  
Yoshioka, Naonori; Tada, Hisashi; and Kashiyama, Setsuo, 4,339,490, Cl. 428-213.000.
- Kato, Kochi; and Uemura, Namio, to Nippon Mining Company, Limited. Defoaming apparatus, 4,339,205, Cl. 366-296.000.
- Kato, Koichi; and Uemura, Namio, to Nippon Mining Co., Ltd. Process for the preparation of long-chain dicarboxylic acids by fermentation, 4,339,536, Cl. 435-142.000.
- Kato, Kotaro: See—  
Hata, Masaharu; and Kato, Kotaro, 4,339,817, Cl. 370-93.000.
- Kato, Shoshichi: See—  
Kinashi, Hiroshi; Miwa, Yoshihisa; Kato, Shoshichi; and Kawataki, Hiroyuki, 4,339,783, Cl. 361-235.000.
- Katsura, Tadahiko: See—  
Ueno, Hiroshi; Kojima, Shunji; Taira, Kazuo; Katsura, Tadahiko; Horiguchi, Makoto; and Takahashi, Susumu, 4,339,483, Cl. 428-35.000.
- Kauff, Helmut: See—  
Diger, Peter; Honig, Gunter; and Kauff, Helmut, 4,338,900, Cl. 123-440.000.
- Kaufman, Arthur L.; Vaughan, Quentin D.; von Dohlen, Roy G.; and Kopala, Richard, to Visual Graphics Corporation. Large format camera light baffle apparatus, 4,339,197, Cl. 355-58.000.
- Kawabata, Nobuaki: See—  
Yokoyama, Nobuo; and Kawabata, Nobuaki, 4,339,276, Cl. 106-271.000.
- Kawaguchi, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Variable ratio brake master cylinder device, 4,338,787, Cl. 60-562.000.
- Kawano, Takashi: See—  
Tatsumi, Hisao; and Kawano, Takashi, 4,338,730, Cl. 34-54.000.
- Kawasaki, Hiroyuki: See—  
Ohmura, Yasuhiro; Maruyama, Seiichi; and Kawasaki, Hiroyuki, 4,339,555, Cl. 525-66.000.
- Kawasaki Steel Corporation: See—  
Hashimoto, Osamu; Sato, Susumu; and Tanaka, Tomoo, 4,339,284, Cl. 148-12.00C.
- Kawata, Shoji; and Kuwana, Kazutaka, to Aisin Seiki Kabushiki Kaisha. Electromagnetically operated valve unit, 4,339,109, Cl. 251-129.000.
- Kawataki, Hiroyuki: See—  
Kinashi, Hiroshi; Miwa, Yoshihisa; Kato, Shoshichi; and Kawataki, Hiroyuki, 4,339,783, Cl. 361-235.000.
- Kazumura, Masaru: See—  
Yamanaka, Haruyoshi; and Kazumura, Masaru, 4,338,877, Cl. 118-421.000.
- Yamanaka, Haruyoshi; and Kazumura, Masaru, 4,339,689, Cl. 313-499.000.
- Keams, Robert W. Control apparatus for windshield wiper system, 4,339,698, Cl. 318-444.000.
- Keller Companies, Inc.: See—  
Keller, Robert R., 4,338,917, Cl. 126-429.000.
- Keller, Joseph R.; and Olsson, Billy E., to AMP Incorporated. Transistors and manufacture thereof, 4,339,768, Cl. 357-72.000.
- Keller, Robert R., to Keller Companies, Inc. Low temperature solar furnace and method, 4,338,917, Cl. 126-429.000.
- Kelley, Charles K.; and Jones, William W., to C. K. Kelley and Sons, Inc. Power unit for single line pneumatic tube system, 4,339,228, Cl. 415-219.00R.
- Kelley, Fred W., to General Electric Company. Thyristor switched inductor circuit for regulating voltage, 4,339,705, Cl. 323-210.000.
- Kellogg, Charles W. Pressure relieved plug and socket cleanout assembly, 4,339,054, Cl. 220-295.000.
- Kelly, Robert R.: See—  
Krueger, Robert H.; Kelly, Robert R.; Hempel, Rudolf M.; and Miglin, Bruce P., 4,338,959, Cl. 137-93.000.
- Kemp, Kenneth; and Spector, George. Tethered ball and tube target, 4,339,137, Cl. 273-331.000.
- Kendall Company, The: See—  
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- Kennecott Corporation: See—  
Lai, Ralph W. M.; and Litchfield, John K., 4,339,348, Cl. 252-364.000.
- Kenney, Robert L., Jr.: See—  
Rhodes, Richard R.; and Kenney, Robert L., Jr., 4,338,861, Cl. 102-261.000.
- Kenyon, Douglas A., to Wm. E. Wright Co. Decorative tie bow, 4,339,059, Cl. 223-46.000.
- Kesarwani, Hari M., to Xerox Corporation. Closed loop constant current tuned oscillator, 4,339,732, Cl. 331-109.000.
- Kesper, Bernd: See—  
Muschelnautz, Edgar; Vogelsgesang, Roland; Ohse, Helmut; Westermann, Hans; Moller, Eckhard; Hachmann, Klaus; Schiemann, Wilhelm; and Kesper, Bernd, 4,339,570, Cl. 528-272.000.
- Kessler, Katerina: See—  
Psaila, Alexander; and Kessler, Katerina, 4,339,523, Cl. 430-239.000.
- Ketting, Leendert: See—  
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- Kielsmeier, Lester O., to Leprino Foods Company. Method of preparing pasta filata cheese for brining and cutting, 4,339,468, Cl. 426-582.000.
- Kikuchi, Nobuji; Kisaka, Yoshiyuki; Torige, Kazuo; and Onose, Masayuki, to Mitsubishi Chemical Industries Limited. Process for preparing lithographic printing plate bases, 4,339,315, Cl. 204-129.850.
- Kikuma, Toshio: See—  
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- Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; and Egawa, Mitsuo, to Mitsubishi Chemical Industries, Limited. Piperazinylalkoxyindanes and acid addition salts thereof, 4,339,580, Cl. 544-360.000.
- Kimura, Shigenobu: See—  
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- Kimzey, John S. Equine ambulance, 4,339,147, Cl. 296-24.00C.
- Kinashi, Hiroshi; Miwa, Yoshihisa; Kato, Shoshichi; and Kawataki, Hiroyuki, to Sharp Kabushiki Kaisha; and Yahata Electric Works Ltd. Alternating current corona discharge apparatus, 4,339,783, Cl. 361-235.000.
- Kindermann, Adalbert: See—  
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- King, Francis X.: See—  
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- King, William F., to Chevron Research Company. N-Substituted 3-nitro-benzylamines, 4,339,461, Cl. 424-330.000.
- Kinoshita, Taketoshi: See—  
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- Kiplinger, Terry L.: See—  
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- Kircher, Morton S., to Olin Corporation. Method and apparatus of injecting replenished electrolyte fluid into an electrolytic cell. 4,339,321, Cl. 204-237.000.
- Kirchweber, Karl; Fachbach, Heinz; and Greier, Josef, to List, Hans. Low-noise level internal combustion engine. 4,338,889, Cl. 123-198.00E.
- Kirkpatrick, Joel L., to Gulf Oil Corporation. Process for manufacturing N-arylthiocarbamoyl-2-amino-1H-isindole-1,3-(2H)diones. 4,339,382, Cl. 548-474.000.
- Kirst, Robert J.; and Oppenhuizen, Frederick H., to National-Standard Company. Combine cylinder reel tooth. 4,338,954, Cl. 130-27.00G.
- Kisaka, Yoshiyuki: See—  
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- Kiser, Robert E. Toolholder. 4,338,749, Cl. 51-220.000.
- Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Tamura, Misao, to Mitsubishi Rayon Company, Ltd. Coating composition and process for preparing synthetic resin shaped articles by using same. 4,339,474, Cl. 427-54.100.
- Kita, Harumi, to Takeda Chemical Industries, Ltd. Production of pyridoxine. 4,339,586, Cl. 546-301.000.
- Kittelson, David B.: See—  
Liu, Benjamin Y. H.; Kittelson, David B.; Dolan, Daniel F.; and Pui, David Y. H., 4,338,784, Cl. 60-274.000.
- Kleemann, Axel; Lehmann, Bernd; and Klenk, Herbert, to Degussa Aktiengesellschaft. Process for the production of carboxylic acid cyanides. 4,339,591, Cl. 549-72.000.
- Klenk, Herbert: See—  
Kleemann, Axel; Lehmann, Bernd; and Klenk, Herbert, 4,339,591, Cl. 549-72.000.
- Kliem, Erhard: See—  
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- Klinge, Gerd: See—  
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- Upmeier, Hartmut; Klinge, Gerd; and Winkler, Gerhard, 4,339,404, Cl. 264-40.100.
- Klockner-Humboldt-Deutz AG: See—  
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- Knackstedt, Hans-Gunther; Laug, Reiner; and Muller, Erhard, to Degussa Transnuklear GmbH. Shielding container for the transportation and/or for storage of spent fuel elements. 4,339,411, Cl. 376-272.000.
- Knapp, Robert L.: See—  
Blodde, Leif; Knapp, Robert L.; and Oppenhuizen, Simon W., 4,338,990, Cl. 160-229.00R.
- Knifton, John F., to Texaco Inc. Alkanols from synthesis gas. 4,339,545, Cl. 518-700.000.
- Knippel, Willis H., to Pullman Incorporated. Door locking mechanism for hopper car doors. 4,339,222, Cl. 414-387.000.
- Knol, Dirk: See—  
van Geem, Paul C.; de Graaf, Theodorus F. M.; Knol, Dirk; and Plantema, Otto G., 4,339,604, Cl. 568-357.000.
- Knudsen, Finn B.: See—  
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- Knute, Wallace L.: See—  
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- Kobayashi, Nariyoshi: See—  
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- Kobayashi, Tadashi: See—  
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- Kobe Steel, Ltd.: See—  
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- Kobylnski, Thaddeus P.: See—  
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- Pretzer, Wayne R.; Kobylnski, Thaddeus P.; and Bozik, John E., 4,339,608, Cl. 568-487.000.
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- Koch, Gerhard: See—  
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- Koch, Robert E.: See—  
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- Kodama, Hisashi, to Aisin Seiki Kabushiki Kaisha. Self-contained hydraulic lash adjuster. 4,338,894, Cl. 123-90.580.
- Koehler, Charles E.; McClellan, Thomas R.; and Murray, Pat L., to Upjohn Company, The. Novel process and product. 4,339,343, Cl. 252-182.000.
- Kofler, Hansjorg: See—  
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- Kogutsk, Robert J.: See—  
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- Kohler, Helmut: See—  
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- Koito Manufacturing Company, Ltd.: See—  
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- Kojima, Kazuhisa: See—  
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- Kojima, Shunji: See—  
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- Kollmorgen Technologies Corporation: See—  
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- Kolodzey, James S., to Optical Information Systems, Inc. Diode laser digital modulator. 4,339,822, Cl. 372-26.000.
- Kolomiets, Ljudmila N.: See—  
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- Komatsu, Hiroshi: See—  
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- Komine, Kikui: See—  
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- Komp, Hans J.: See—  
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- Komura, Hirotosugu; Ueguri, Shigeo; and Tabata, Youichiro, to Mitsubishi Denki Kabushiki Kaisha. Glow discharge heating apparatus. 4,339,656, Cl. 219-494.000.
- Komura, Tamotsu; Miyamoto, Takuji; and Nakanaga, Hiroshi, to Sankin Industry Co., Ltd. Hardening resin compositions. 4,339,558, Cl. 525-524.000.
- Kondow, Ryotaro: See—  
Yamaura, Mitsuru; Kondow, Ryotaro; Mitani, Megumu; and Okamoto, Eiichi, 4,339,802, Cl. 364-483.000.
- Konian, Richard R.: See—  
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- Ko'oka, Yoshinobu; Munkage, Mariko; and Minato, Hitoshi, to Shionogi & Co., Ltd. Substituted-imidazolidinyl-3-chloro-3-cephem-4-carboxylic acid. 4,339,575, Cl. 544-20.000.
- Kopala, Richard: See—  
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- Koppers Company, Inc.: See—  
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- Kopse, Odon, to Robert Bosch GmbH. Fuel injection nozzle. 4,339,080, Cl. 239-533.300.
- Kordulla, Hans; Gerlach, Hans H.; and Jansen, Dirk, to Bodenseewerk Geratetechnik GmbH. Target seeking head for a missile. 4,339,097, Cl. 244-3.160.
- Kos, Joseph M.: See—  
Patrick, John P.; Kos, Joseph M.; and Harner, Kermit I., 4,339,666, Cl. 290-44.000.
- Kosuda, Hiroyuki; and Nijima, Kenji, to Toho Beslon Co., Ltd. Carbon fiber reinforced carbon friction element and method of making. 4,339,021, Cl. 191-50.000.
- Kosugi, Yukio; Ikebe, Jun; Takakura, Kintomo; and Kumagai, Yoriaki, to Clinical Engineering Laboratory Limited. Method and randomized electrical stimulation system for pain relief. 4,338,945, Cl. 128-421.000.
- Kotani, Matahira: See—  
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- Kotera, Masao: See—  
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- Kowada, Masaaki: See—  
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- Kowalik, Peter M.: See—  
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- Koyanagi, Haruo: See—  
Hideshima, Keiji; Koyanagi, Haruo; Senda, Shuichi; Asada, Kazuyoshi; Murayama, Norio; Nishii, Yoshiyuki; and Takaki, Masaoki, 4,339,794, Cl. 364-200.000.
- Krackeler, Joseph J.; and Weir, Fred E., to Raychem Corporation. Recoverable sleeve. 4,338,970, Cl. 138-141.000.
- Krankkala, Paul L., to Champion International Corporation. Water resistant starch-based corrugating adhesive composition. 4,339,364, Cl. 524-44.000.
- Kranz, Eckart; and Siegle, Peter, to Bayer Aktiengesellschaft. Preparation of 3,3-dimethyl-1-phenoxyl-butan-2-ols as fungicide intermediates. 4,339,612, Cl. 568-649.000.
- Kraus, Hubert, to Siemens Aktiengesellschaft. Method for soldering leads to electrical components. 4,339,651, Cl. 219-85.0CM.

- Krenzer, Eberhard, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Process for the production of a crimped continuous multifilament yarn. 4,338,776, Cl. 57-246.000.
- Krigas, Thomas: See—  
Rosenberg, Barnett; VanCamp, Loretta; and Krigas, Thomas, 4,339,437, Cl. 424-131.000.
- Krocker, Robert E.: See—  
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- Kronberg, Richard E.; and Walters, Merlin L. Automotive fluid supply funnel unit. 4,338,984, Cl. 141-331.000.
- Krueger, Robert H.; Kelly, Robert R.; Hempel, Rudolf M.; and Miglin, Bruce P., to Borg-Warner Corporation. Device to automatically add a controlled amount of corrosion inhibitor in an engine cooling system. 4,338,959, Cl. 137-93.000.
- Krueger, Robert H.; Zambrow, John L.; and Cheadle, Brian E., to Borg-Warner Corporation. Heat exchanger with bilayered metal end container for anticorrosive addition. 4,338,997, Cl. 165-134.00R.
- Krueger, Wallace F. Power-assisted valve. 4,339,233, Cl. 417-317.000.
- Kruis, Bernhard: See—  
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- Kubinski, Karen R.: See—  
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- Kuchler, Fritz, to Brain Dust Patents Establishment. Slicing machine with slice-depositing device. 4,338,836, Cl. 83-94.000.
- Kuebel, Boerries: See—  
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- Kuhn, Eberhard: See—  
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- Kuhn, Werner, to International Actrooi Maatschappij "Octropa" B.V. Carrier pack for a number of bottles as well as the process and apparatus needed to close the pack. 4,338,760, Cl. 53-48.000.
- Kuhne, Norbert: See—  
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- Wust, Willi; Leischner, Hasso; Rahse, Wilfried; Carduck, Franz-Josef; and Kuhne, Norbert, 4,339,574, Cl. 536-84.000.
- Kullmann, Dieter: See—  
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- Kumagai, Yoriaki: See—  
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- Kummer, Frederick J.; and Coutts, Richard D., to Howmedica, Inc. Bone fracture prosthesis with controlled stiffness. 4,338,926, Cl. 128-92.0BC.
- Kunii, Tadashi: See—  
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- Kunkel, Heinrich: See—  
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- Kuroda, Kei-ichi; Sillou, Daniel; and Takeuchi, Fujio, to ANVAR. Electron multiplier tube with axial magnetic field. 4,339,684, Cl. 313-105.00R.
- Kurtz, Bruce E.: See—  
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- Kurtz, Stuart J.; and Appgar, Howard G., Jr., to Union Carbide Corporation. Linear low density ethylene hydrocarbon copolymer containing composition for extrusion coating. 4,339,507, Cl. 428-522.000.
- Kusama, Hideo: See—  
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- Kushi, Kenji: See—  
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- Kusko, Alexander, to Jodice Controls Corporation. Current controlling. 4,339,706, Cl. 323-248.000.
- Kusumi, Takenori; and Nakanishi, Koji, to Suntory Limited. Plant growth regulators comprising 4-hydroxyisoxazole and related compounds. 4,339,588, Cl. 548-247.000.
- Kuwana, Kazutaka: See—  
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- Kuwayama, Tetsuro: See—  
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- Kwatnoski, Richard; and McHugh, Robert J., to United States of America, Army. Bullet nose filler for improved lethality. 4,338,862, Cl. 102-516.000.
- Kyokuto Fatty-Acid Corporation: See—  
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- Kyowa Hakko Kogyo Kabushiki Kaisha: See—  
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- Kyser, Edmond L.; and Sears, Stephan B., to System Industries, Inc. Apparatus for recording with writing fluids and drop projection means therefor. 4,339,763, Cl. 346-140.00R.
- L.G.T. Laboratoire General des Telecommunications: See—  
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- Laboratoires Jacques Logeais: See—  
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- Laboratoires OM Societe Anonyme: See—  
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- Lacey, Patrick J., to Drillco Devices Limited. Expanding anchor bolt assembly. 4,339,217, Cl. 411-55.000.
- Lada, Henry; and Fishter, Robert E., to United Technologies Corporation. Method and composition for removing aluminide coatings from nickel superalloys. 4,339,282, Cl. 134-3.000.
- Ladouceur, Harold A.: See—  
Steward, John H.; and Ladouceur, Harold A., 4,338,694, Cl. 10-72.00R.
- Lahne, Ulrich; Hesse, Peter; Kliem, Erhard; Kruis, Bernhard; and Lohmuller, Reiner, to Linde Aktiengesellschaft. Methanol-synthesis reactor. 4,339,413, Cl. 422-200.000.
- Lai, Ralph W. M.; and Litchfield, John K., to Kennecott Corporation. Dioxine ion exchangers. 4,339,348, Cl. 252-364.000.
- Lamb, Charles A. Apparatus for accommodating wheelchairs in public transportation vehicles. 4,339,224, Cl. 414-501.000.
- Lamb, Owen L. Slide previewer and tray loader. 4,338,738, Cl. 40-509.000.
- Lambert, Roger: See—  
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- Lange, Karl-Heinz, to FICO Fischer & Co. Maschinenbau GmbH. Apparatus for the production of ornamental link chains (venetian chains) ready for soldering. 4,338,779, Cl. 59-25.000.
- Langer, Erich; Mach, Helmut; and Melwisch, Harald, to U.S. Philips Corporation. Preprogrammable recording system with automatic warning of time limit. 4,339,776, Cl. 360-69.000.
- Lanier, John H., Jr., to Holley Electric Corp.; and J. B. Dicks & Ass. Inc. High temperature oxygen hazardous waste incinerator. 4,338,870, Cl. 110-346.000.
- Lankard, David R., to Battelle Development Corporation. Concrete overlay construction. 4,339,289, Cl. 156-91.000.
- LaPorta, Jr., Phil. Cervical collar. 4,338,685, Cl. 2-2.000.
- Larker, Hans: See—  
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- Larson, David D.; and Riddle, Stanley T., to International Business Machines Corporation. Error logging for automatic apparatus. 4,339,657, Cl. 235-92.00C.
- Lascelles, Daniel J.; and Walker, Jack M., to McDonnell Douglas Corporation. Electrical switch. 4,339,638, Cl. 200-52.00R.
- Lasecki, Robert R.; Reeve, Howard C., III; and Lindan, Nicholas O., to Nuarc Company, Inc. The. Power supply for HID lamp. 4,339,692, Cl. 315-277.000.
- Latta, Joseph E., Jr. School bus stop sign. 4,339,744, Cl. 340-133.000.
- Laubenberger, Herbert: See—  
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- Lauer, George E. Apparatus for orienting halved fruit cut side down. 4,339,027, Cl. 198-383.000.
- Laug, Reiner: See—  
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- Lauroesch, Hugo C., to General Electric Company. Laser undercutting system. 4,339,655, Cl. 219-121.0LJ.
- Lauterbach, Uwe; and Michel, Wolfgang, to Hoechst Aktiengesellschaft. Process for bonding wallpapers to wall insulations and composite sheeting prepared in accordance therewith. 4,339,491, Cl. 428-317.700.
- Lauton, Alain: See—  
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- Lawrance, Richard J.: See—  
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- Lawson Paper Converters Limited: See—  
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- Lay, Harry V. Panel raising and positioning apparatus. 4,339,219, Cl. 414-11.000.
- Le Silicium Semiconducteur SSC: See—  
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- Leach, John G.; and Koch, Robert E., to General Electric Company. High voltage fuse having mounted gas evolving members and method of forming such. 4,339,742, Cl. 337-279.000.
- Leather, Russell A., to Ferranti Limited. Connector having a single segmented deformable grip member for optical cables. 4,339,172, Cl. 350-96.210.
- Leb, Herbert S.: See—  
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- LeBegue, Maurice K.; and Michael, Earl C., to National Mine Service Company. Apparatus for extending and retracting the cutter bars of a boring type mining machine. 4,339,153, Cl. 299-59.000.
- Le Dieu, Bernard: See—  
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- Lee Engineering, Inc.: See—  
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- Lee, Joseph Y.: See—  
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Lee, Tzuo-Chang, to Honeywell Inc. Holographic space-variant system for evaluating the ambiguity integral. 4,339,176, Cl. 350-162.0SF.  
 Lee, Yu-Kuang. Multiple-purpose automatic control system. 4,339,226, Cl. 415-15.000.  
 Legeai, Jacky: See—  
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 Lehmann, Bernd: See—  
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 Lehmann, Roger W. Safety clip-on ornamental badge. 4,338,737, Cl. 40-1.500.  
 Leighton, Robert D., to Alden Research Foundation. Electronic circuit encapsulation. 4,339,407, Cl. 264-229.000.  
 Leingang, John L., to United States of America, Air Force. Two-stage hypersonic ramjet. 4,338,783, Cl. 60-225.000.  
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- Matsushita, Hideo: See—  
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- May, Francis A., to Consolidation Coal Company. Bearing seal for a drill head assembly, 4,339,161, Cl. 308-187.100.
- Maybee, Richard C. Burglar alarm, 4,339,747, Cl. 340-547.000.
- Maycock, Ian C., to Automotive Products Limited. Twin plate friction clutches, 4,339,023, Cl. 192-70.250.
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- McBride, Roy T. Predator control toxic collar, 4,338,886, Cl. 119-106.000.
- McCabe, Francis J., to United States of America, Energy. Universal link bar operator and actuator for rotating blade air, smoke, and fire dampers, 4,338,967, Cl. 137-601.000.
- McCabe, Ralph P., to Colt Industries Operating Corp. Apparatus and system for controlling the air-fuel ratio supplied to a combustion engine, 4,338,901, Cl. 123-440.000.
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- McClure, John E.: See—  
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- McHugh, James D. Sealing arrangement for hot bearing housings, 4,339,160, Cl. 308-36.300.
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- McLaughlin, Ivan P.: See—  
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- McMahon, Karen M.: See—  
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- McNeil Corporation: See—  
Conery, William J.; and Kiplinger, Terry L., 4,339,231, Cl. 417-40.000.
- McNully, Joseph B. Manual tool for stretching wire having diverging handles, 4,338,977, Cl. 140-70.000.
- McQuay, Edgar E., to General Electric Company. Bushing design with crimped adapter for retaining conductor, 4,339,630, Cl. 174-152.00R.
- McSparran, Lloyd W.; and Smith, Russell M., to General Electric Company. Series parallel transition for power supply, 4,339,704, Cl. 322-90.000.
- Meacle, Thomas, to Powers Manufacturing Co. Method and apparatus for checkweighing containers, 4,339,028, Cl. 198-427.000.
- Mead Corporation, The: See—  
Wood, Prentice J., 4,339,032, Cl. 206-158.000.
- Meares, Claude F.; and Anderson, Leslie D., to University of California, Regents of the. Bleomycin analog, 4,339,426, Cl. 424-1.000.
- Medichemie AG: See—  
Hara, Hiroto; and Narimatsu, Akihiro, 4,339,452, Cl. 424-250.000.
- Medtronic, Inc.: See—  
Williams, Terrell M., 4,338,947, Cl. 128-642.000.
- Mego Afek Industrial Measuring Instruments: See—  
Gelfer, Vadim; Kaganovsky, Yaakov; Muchnik, Shimon; and Shmutter, Shimshon, 4,338,923, Cl. 128-24.00R.
- Meiattini, Franco; Papeschi, Giorgio; Tarli, Paolo; and Neri, Paolo, to Istituto Sieroterapico e Vaccinogeno Toscano "Sclavo" S.p.A. Device for performing measurements on fluids, directly in the sample container, 4,339,317, Cl. 204-195.00B.
- Meibauer, Robert H. Dental prophylaxis device and process, 4,338,957, Cl. 132-91.000.
- Meibuhr, Stuart G.: See—  
Witherspoon, Romeo R.; and Meibuhr, Stuart G., 4,339,512, Cl. 429-206.000.
- Meier, Peter E.; Gordon, Otto W.; and Buttiker, Gero, to Ametex AG. Process for producing a fiber-reinforced, hydraulically setting composition, the composition produced and the use thereof, 4,339,273, Cl. 106-90.000.
- Melard Manufacturing Corporation: See—  
Shames, Sidney J.; and Shames, Harold, 4,338,731, Cl. 34-82.000.
- Melwisch, Harald: See—  
Langer, Erich; Mach, Helmut; and Melwisch, Harald, 4,339,776, Cl. 360-69.000.
- Menges, Horst: See—  
Bremer, Clemens; and Menges, Horst, 4,338,851, Cl. 89-33.0BB.
- Mennicke, Winfried: See—  
Hugl, Herbert; Wolfrum, Gerhard; Mennicke, Winfried; Schun-dehutte, Karl H.; and Westphal, Jochen, 4,339,380, Cl. 260-207.100.
- Mercier, Andre, to Fives-Cail Babcock. Process of producing a seeding magma for seeding a solution of a crystallizable product, 4,339,280, Cl. 127-56.000.
- Mercier Corporation, The: See—  
Harris, Morton E., 4,339,308, Cl. 202-263.000.
- Mercier, Jacques H., to Normand Trust. High flow accumulator device having poppet valve control means, 4,338,968, Cl. 138-30.000.
- Merck & Co., Inc.: See—  
Grier, Nathaniel; Harris, Elbert E.; Joshua, Henry; Patchett, Arthur A.; Witzel, Bruce E.; and Dybas, Richard A., 4,339,453, Cl. 424-251.000.
- Racciato, Joseph S., 4,339,239, Cl. 8-561.000.
- Merk, Wolfgang: See—  
Werle, Peter; Merk, Wolfgang; Pohl, Gerhard; and Hoevels, Friedhelm, 4,339,578, Cl. 544-207.000.
- Merle, Jean-Pierre: See—  
Branlard, Paul; and Merle, Jean-Pierre, 4,339,372, Cl. 524-169.000.
- Merry, Ted G.: See—  
Gilligan, Patrick J.; and Merry, Ted G., 4,338,762, Cl. 53-244.000.
- Metallgesellschaft AG: See—  
Reitz, Johannes, 4,338,858, Cl. 92-222.000.
- Metallwerk Max Brosse GmbH and Company: See—  
Hess, Peter; and Rampel, Hans, 4,338,747, Cl. 49-349.000.
- Meyer, Hans R.: See—  
Luthi, Christian; Meyer, Hans R.; and Weber, Kurt, 4,339,393, Cl. 260-459.00A.
- Meyer, Manfred: See—  
Geiger, Istvan; Stamm, Klaus; Bruning, Reinhard; and Meyer, Manfred, 4,338,899, Cl. 123-339.000.
- Meyers, Elwood J.; and Glynn, Thomas A., to Cummins Engine Company, Inc. Rotary electrically actuated device, 4,339,737, Cl. 335-272.000.
- Michael, Earl C.: See—  
LeBegue, Maurice K.; and Michael, Earl C., 4,339,153, Cl. 299-59.000.
- Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., to Micro Consultants Limited. Video frame store and real time processing system, 4,339,803, Cl. 364-724.000.
- Michaelis, Klaus-Peter: See—  
Wegner, Wolfgang; Michaelis, Klaus-Peter; and Schneider, Rainer, 4,339,383, Cl. 548-419.000.
- Michel, Herbert: See—  
Winzer, Gerhard; Reichelt, Achim; and Michel, Herbert, 4,339,290, Cl. 156-159.000.

- Michel, Wolfgang: See—  
Lauterbach, Uwe; and Michel, Wolfgang, 4,339,491, Cl. 428-317.700.
- Michelet, Jacques: See—  
Delassus, Jean; de Lamberterie, Bertrand; and Michelet, Jacques, 4,339,625, Cl. 373-158.000.
- Micro Consultants Limited: See—  
Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., 4,339,803, Cl. 364-724.000.
- Sydor, Philip R.; and Brooker, Graham J., 4,339,722, Cl. 328-38.000.
- Microlec, S.A.: See—  
Delmas, Jean R., 4,338,722, Cl. 33-174.00L.
- Microlife Technics, Inc.: See—  
Vedamuthu, Ebenezer R., 4,339,464, Cl. 426-43.000.
- Miglin, Bruce P.: See—  
Krueger, Robert H.; Kelly, Robert R.; Hempel, Rudolf M.; and Miglin, Bruce P., 4,338,959, Cl. 137-93.000.
- Miki, Takao: See—  
Nakamura, Hirokazu; Takamiya, Bonnosuke; Miki, Takao; and Ishida, Takashi, 4,338,902, Cl. 123-454.000.
- Mikuni Kogyo Kabushiki Kaisha: See—  
Nakamura, Hirokazu; Takamiya, Bonnosuke; Miki, Takao; and Ishida, Takashi, 4,338,902, Cl. 123-454.000.
- Milan, John M.: See—  
Hammers, David E.; and Milan, John M., 4,339,754, Cl. 343-7.700.
- Milburn, William W., Jr., to O'Rourke, Thomas W. Unitary structure and method for utilizing solar energy, 4,338,918, Cl. 126-430.000.
- Miles, Frank N. Tool box, 4,338,987, Cl. 144-285.000.
- Miles Laboratories, Inc.: See—  
Magers, Thomas A.; and Tabb, David L., 4,339,242, Cl. 23-230.00B.
- Magers, Thomas A.; and Tabb, David L., 4,339,243, Cl. 23-230.00B.
- Van Dyke, John W., Jr., 4,339,582, Cl. 546-112.000.
- Miller, Donald A. Conveyor roller bearings, 4,339,159, Cl. 308-20.000.
- Miller, Edward A., to RCA Corporation. RF Heating coil construction for stack of susceptors, 4,339,645, Cl. 219-10.49R.
- Miller, Fred R. Pistol sight base bridge, 4,338,740, Cl. 42-1.0SR.
- Miller, Jo. Pressure injection of bone cement apparatus and method, 4,338,925, Cl. 128-92.00E.
- Miller, Wallace T.: See—  
Marcus, Robert; Geffer, Warren B.; and Miller, Wallace T., 4,339,035, Cl. 206-370.000.
- Miller, William K.: See—  
McDonie, Arthur F.; and Miller, William K., 4,339,469, Cl. 427-10.000.
- Minato, Hitoshi: See—  
Ko'oka, Yoshinobu; Munekage, Mariko; and Minato, Hitoshi, 4,339,575, Cl. 544-20.000.
- Ministry of International Trade & Industry: See—  
Nakao, Yukimichi; and Fujishige, Shoji, 4,339,345, Cl. 252-309.000.
- Shimizu, Toshimi; Fujishige, Shoji; and Okada, Akira, 4,339,360, Cl. 524-28.000.
- Minks, Werner, to International Standard Electric Corporation. Encased miniature relay, 4,339,734, Cl. 335-78.000.
- Minnesota Mining and Manufacturing Company: See—  
Doering, Arlin B., 4,339,037, Cl. 206-444.000.
- Gruzelak, Norman P., 4,339,777, Cl. 360-97.000.
- Minnis, Ralph L.: See—  
Ragas, Frank J.; Minnis, Ralph L.; and Beauchamp, Gerson E., 4,339,505, Cl. 428-514.000.
- Mino, Hisashi; Matsukawa, Masao; and Nagashima, Minematsu, to Sanyo-Kokusaku Pulp Co., Ltd. Heat-sensitive recording material, 4,339,492, Cl. 428-320.400.
- Minolta Camera Kabushiki Kaisha: See—  
Tabuchi, Kenji; Tanaka, Susumu; Wada, Kenichi; and Oka, Tateki, 4,338,880, Cl. 118-652.000.
- Ueda, Nobuo; and Yamagishi, Seiichi, 4,339,182, Cl. 353-27.00R.
- Yamazaki, Keiji, 4,339,186, Cl. 354-38.000.
- Miro, Frank: See—  
Luebbe, Ray H., Jr.; Miro, Frank; and Palermi, Frank M., 4,339,504, Cl. 428-513.000.
- Misawa, Masanaru; Takayama, Shinsaku; Takashige, Yoshiki; and Tsumori, Hiroshi, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for mass propagation of plantlets, 4,338,745, Cl. 47-58.000.
- Mishima Paper Co., Ltd.: See—  
Yoshino, Isamu; Takahashi, Yasohachi; and Fujii, Osamu, 4,339,143, Cl. 282-27.500.
- Misiorny, Alfons: See—  
Eriksson, Bertil F. H.; Helgstrand, Ake J. E.; Misiorny, Alfons; Stening, Goran B.; and Stridh, Stig A., 4,339,445, Cl. 424-212.000.
- Mitani, Megumu: See—  
Yamaura, Mitsuru; Kondow, Ryotaro; Mitani, Megumu; and Okamoto, Eiichi, 4,339,802, Cl. 364-483.000.
- Mitchell, Daniel M., to Rockwell International Corporation. DC to low frequency inverter with pulse width modulated high frequency link, 4,339,791, Cl. 363-41.000.
- Mitchell, Elston. Axle-mounted wheel exercising device, 4,339,127, Cl. 272-127.000.
- Mitsubishi Chemical Industries, Ltd.: See—  
Hasuo, Masayoshi; Suga, Yoshimori; Kojima, Kazuhisa; and Suzuki, Masatoshi, 4,339,557, Cl. 525-247.000.
- Kageyama, Yoichi; Aijura, Masato; and Moriya, Kikuo, 4,339,329, Cl. 208-10.000.
- Kikuchi, Nobuji; Kisaka, Yoshiyuki; Torige, Kazuo; and Onose, Masayuki, 4,339,315, Cl. 204-129.850.
- Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; and Egawa, Mitsuo, 4,339,580, Cl. 544-360.000.
- Ohmura, Yasuhiro; Maruyama, Seiichi; and Kawasaki, Hiroyuki, 4,339,555, Cl. 525-66.000.
- Mitsubishi Denki Kabushiki Kaisha: See—  
Komura, Hirotosugu; Ueguri, Shigeo; and Tabata, Youichiro, 4,339,656, Cl. 219-494.000.
- Nakamura, Hirokazu; Takamiya, Bonnosuke; Miki, Takao; and Ishida, Takashi, 4,338,902, Cl. 123-454.000.
- Tanaka, Yutaka; Yatom, Takeshi; and Ozaki, Yoshio, 4,339,650, Cl. 219-69.00G.
- Mitsubishi Gas Chemical Company, Inc.: See—  
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,339,597, Cl. 560-205.000.
- Sugio, Akitoshi; Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; and Umemura, Toshikazu, 4,339,569, Cl. 528-240.000.
- Mitsubishi Jidosha Kogyo Kabushiki Kaisha: See—  
Nakamura, Hirokazu; Takamiya, Bonnosuke; Miki, Takao; and Ishida, Takashi, 4,338,902, Cl. 123-454.000.
- Mitsubishi Rayon Company, Ltd.: See—  
Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Tamura, Misao, 4,339,474, Cl. 427-54.100.
- Yoshioka, Naonori; Tada, Hisashi; and Kashiya, Setsuo, 4,339,490, Cl. 428-213.000.
- Mitsui Petrochemical Industries Ltd.: See—  
Imai, Ichiro; Matsunaga, Fujihisa; Nakagawa, Hiroaki; Isibasi, Masayasu; and Taguchi, Tohru, 4,339,615, Cl. 568-768.000.
- Mitzel, Wilhelm; Bernhart, Herbert; and Duschek, Rudolf, to G.A.O. Gesellschaft fuer Automation und Organisation mbH. Portable input magazine, 4,339,221, Cl. 414-114.000.
- Miura, Junkichi: See—  
Miyagi, Hiroyuki; Takata, Yoshinori; Miura, Junkichi; and Taki, Mamoru, 4,338,811, Cl. 73-23.100.
- Miura, Masami, to Nippon Electric Co., Ltd. Demodulator of angle modulated signal operable by low power voltage, 4,339,726, Cl. 329-103.000.
- Miwa, Yoshihisa: See—  
Kinashi, Hiroshi; Miwa, Yoshihisa; Kato, Shoshichi; and Kawataki, Hiroyuki, 4,339,783, Cl. 361-235.000.
- Miyagi, Hiroyuki; Takata, Yoshinori; Miura, Junkichi; and Taki, Mamoru, to Hitachi, Ltd. Method and apparatus for diagnosis of disease, 4,338,811, Cl. 73-23.100.
- Miyaguchi, Akinori: See—  
Chino, Yasuyoshi; and Miyaguchi, Akinori, 4,339,367, Cl. 525-131.000.
- Miyahara, Akimitsu, to Rohm and Haas Company. Porous cemented ion exchange resins wherein the beads are cohered to one another in polymer matrix, 4,339,548, Cl. 521-28.000.
- Miyamoto, Takuji: See—  
Komura, Tamotsu; Miyamoto, Takuji; and Nakanaga, Hiroshi, 4,339,558, Cl. 525-524.000.
- Mladek, Rolf: See—  
Enneking, Heinrich; Schubert, Gunter; Hauger, Ludwig; and Mladek, Rolf, 4,339,091, Cl. 242-47.000.
- Mobil Oil Corporation: See—  
Huang, Tracy J.; and Haag, Werner O., 4,339,606, Cl. 568-396.000.
- Warner, Bert J.; Mathis, Melwyn L.; and Johnson, Warren F., 4,339,152, Cl. 299-5.000.
- Weiner, Milton L., 4,339,493, Cl. 428-349.000.
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- Weisz, Paul B.; and Frilette, Vincent J., 4,339,353, Cl. 252-455.00Z.
- Molins, Ltd.: See—  
McCombie, Alan K., 4,339,025, Cl. 198-347.000.
- Moller, Eckhard: See—  
Muschelknautz, Edgar; Vogelsang, Roland; Ohse, Helmut; Westermann, Hans; Moller, Eckhard; Hachmann, Klaus; Schiemann, Wilhelm; and Kesper, Bernd, 4,339,570, Cl. 528-272.000.
- Molson Companies, Limited, The: See—  
Van Gheluwe, George E. A.; Weaver, Robert L.; Dadic, Miroslav; and Knudsen, Finn B., 4,339,466, Cl. 426-430.000.
- Monaghan, Kevin J.: See—  
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- Monma, Shigeki: See—  
Morimiy, Osami; Suzuki, Setsuo; and Monma, Shigeki, 4,339,691, Cl. 315-111.210.
- Monsanto Company: See—  
Baer, Massimo, 4,339,556, Cl. 523-220.000.
- Wilder, Gene R., 4,339,577, Cl. 544-197.000.
- Monticelli, Dennis M., to National Semiconductor Corporation. Radio receiver signal amplifier and AGC circuit, 4,339,728, Cl. 330-254.000.
- Moog Inc.: See—  
Garnjost, Kenneth D.; and Ballard, John S., 4,338,965, Cl. 137-554.000.
- Moore, Charles D.: See—  
Basch, William J.; and Moore, Charles D., 4,339,662, Cl. 250-229.000.
- Moore, Thomas F., to Atlantic Richfield Company. Method for loading of uranyl ion complexes on ion exchange resin, 4,339,414, Cl. 423-7.000.



- Moore, Walter T., to Veda, Inc. Solar powered chemical processing method and apparatus. 4,338,922, Cl. 126-452.000.
- Morgan, Craig: See—  
Amlani, Kish; Zink, Frederick J.; Morgan, Craig; and Ellwood, Thomas, 4,338,825, Cl. 73-862.650.
- Morgan, Peter E. D., to United States of America, Energy. Preparation of powders suitable for conversion to useful  $\beta$ -aluminas. 4,339,511, Cl. 429-189.000.
- Morgan, Peter J.; and Wyllie, Kenneth J., to International Synthetic Rubber Company, Limited, The. Monomer/solvent purification. 4,339,623, Cl. 585-867.000.
- Mori, Kikuo: See—  
Ueyama, Yoshinari; Mori, Kikuo; and Matsushita, Hideo, 4,338,873, Cl. 112-262.100.
- Mori, Mamoru; and Terada, Takami, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Device for adjusting inclined angle of seating surface of seat cushion. 4,339,103, Cl. 248-397.000.
- Mori, Yasuki: See—  
Sato, Moriyuki; and Mori, Yasuki, 4,339,572, Cl. 536-16.100.
- Morimiyu, Osami; Suzuki, Setsuo; and Monma, Shigeki, to Tokyo Shibaura Denki Kabushiki Kaisha. Discharge apparatus having hollow cathode. 4,339,691, Cl. 315-111.210.
- Morishita, Masanobu; and Tanaka, Takanori, to Nippon Electric Co., Ltd. Solid-state color imaging apparatus having an excellent resolution. 4,339,771, Cl. 358-41.000.
- Morita, Takayuki: See—  
Suzuki, Osamu; Morita, Takayuki; Ushino, Masashi; and Hirano, Hideo, 4,338,778, Cl. 57-276.000.
- Moriya, Kikuo: See—  
Kageyama, Yoichi; Aiura, Masato; and Moriya, Kikuo, 4,339,329, Cl. 208-10.000.
- Morley, John O., to Imperial Chemical Industries Limited. Preparation of O-benzyl toluene. 4,339,621, Cl. 585-422.000.
- Morton-Norwich Products, Inc.: See—  
Alaimo, Robert J.; and Gray, Joseph E., 4,339,386, Cl. 549-496.000.
- Moser, Phillip J.: See—  
Bednarz, John J.; Moser, Phillip J.; and Rosenberg, Roger L., 4,339,811, Cl. 367-96.000.
- Motoren-und Turbinen-Union Munchen GmbH: See—  
Rossman, Axel, 4,339,229, Cl. 416-218.000.
- Motorola Inc.: See—  
Bolinger, Randy L., 4,338,903, Cl. 123-476.000.
- Hunninghaus, Roy E.; and Bolinger, Randy L., 4,338,813, Cl. 73-116.000.
- Jarrett, Robert B.; and LoCascio, James J., 4,339,669, Cl. 307-228.000.
- Jason, Barry L.; Hall, Scott M.; and Valley, Richard L., 4,339,729, Cl. 330-294.000.
- North, Robert P., 4,339,808, Cl. 364-900.000.
- Predina, Joseph P.; and Jasper, Steven C., 4,339,823, Cl. 375-20.000.
- Mottine, John J., Jr.: See—  
Kantotz, William M.; Mottine, John J., Jr.; Staats-Westover, Robert F.; and Wilson, Max K., 4,339,298, Cl. 156-498.000.
- Muchnik, Shimon: See—  
Gelfer, Vadim; Kaganovsky, Yaakov; Muchnik, Shimon; and Shmutter, Shimon, 4,338,923, Cl. 128-24.000.
- Mueller, Ruediger; Pomper, Michael; and Leibold, Ludwig, to Siemens Aktiengesellschaft. Monolithically integrated circuit of high dielectric strength for electrically coupling isolated circuits. 4,339,668, Cl. 307-149.000.
- Muller, Erhard: See—  
Knackstedt, Hans-Gunther; Laug, Reiner; and Muller, Erhard, 4,339,411, Cl. 376-272.000.
- Muller, Frohmuth: See—  
Vogel, Sonke; and Muller, Frohmuth, 4,339,012, Cl. 177-262.000.
- Mullet, Willis J. Door panel and manner of making same. 4,339,487, Cl. 428-71.000.
- Multifastener Corporation: See—  
Steward, John H.; and Ladouceur, Harold A., 4,338,694, Cl. 10-72.000.
- Multrner, James H., to AMF Incorporated. Bowling ball path indicator with ROM ball path selector. 4,339,128, Cl. 273-54.000.
- Mundy, Joseph L.: See—  
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- Munekage, Mariko: See—  
Ko'oka, Yoshinobu; Munekage, Mariko; and Minato, Hitoshi, 4,339,575, Cl. 544-20.000.
- Muntwyler, Rene; and Burdeska, Kurt, to Ciba-Geigy Corporation. Antimicrobial 3-hydroxydiphenyl ethers. 4,339,462, Cl. 424-341.000.
- Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuza, to Tokyo Shibaura Electric Co., Ltd. Surface-treating agent adapted for intermediate products of a semiconductor device. 4,339,340, Cl. 252-79.500.
- Murata, Junya, to Kabushiki Kaisha Kawai Gakki Seisakusho. Tone source circuit for electronic musical instruments. 4,338,844, Cl. 84-1.010.
- Murata Kikai Kabushiki Kaisha: See—  
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- Murata Manufacturing Co., Ltd.: See—  
Sakabe, Yukio; Hamaji, Yukio; and Komatsu, Hiroshi, 4,339,544, Cl. 501-136.000.
- Murayama, Norio: See—  
Hideshima, Keiji; Koyanagi, Haruo; Senda, Shuichi; Asada, Kazuyoshi; Murayama, Norio; Nihashi, Yoshiyuki; and Takaki, Masaaki, 4,339,794, Cl. 364-200.000.
- Murayama, Seiichi: See—  
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- Murmann, Gunter, to Cherry Electrical Products Corporation. Push-button key switch. 4,339,643, Cl. 200-159.00A.
- Murphy, Frank H.: See—  
Seymour, Raymond K.; Murphy, Frank H.; and Vergnano, Lelio C., 4,339,642, Cl. 200-153.00G.
- Murray, Donald L., to Allis-Chalmers Corporation. Aggregate storage anti-segregation arrangement for a storage bin. 4,339,203, Cl. 366-9.000.
- Murray, Pat L.: See—  
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- Muschaweck, Roman: See—  
Sturm, Karl; and Muschaweck, Roman, 4,339,446, Cl. 424-228.000.
- Muschelkautz, Edgar; Vogelsang, Roland; Ohse, Helmut; Westermann, Hans; Moller, Eckhard; Hachmann, Klaus; Schiemann, Wilhelm; and Kesper, Bernt, to Bayer Aktiengesellschaft. Process for the production of polyesters. 4,339,570, Cl. 528-272.000.
- Musiachenko, Valentin F.: See—  
Kasatkin, Boris S.; Pokhodnya, Igor K.; Musiachenko, Valentin F.; Golovko, Vladimir N.; Kolomiets, Ljudmila N.; Simonenko, Jury A.; and Gulyar, Anatoly V., 4,339,286, Cl. 148-24.000.
- Musikas, Claude: See—  
Fitoussi, Richard; and Musikas, Claude, 4,339,416, Cl. 423-10.000.
- Muto, Rudolph: See—  
Cauchon, Dorothy O.; and Muto, Rudolph, 4,338,721, Cl. 30-322.000.
- Mykleby, Laurie G., to First National Packaging Co., Inc. Impact resistant foam cushioned packages. 4,339,039, Cl. 206-523.000.
- Nagasaka, Yasumasa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Auto bumper and its manufacturing process. 4,339,144, Cl. 293-120.000.
- Nagasawa, Masakazu: See—  
Saguchi, Norio; Ishii, Hideki; Sakakibara, Yoshiaki; Nagasawa, Masakazu; Saitoh, Osami; Wakimizu, Yukio; and Kanematsu, Susumu, 4,339,685, Cl. 313-113.000.
- Nagashima, Minematsu: See—  
Mino, Hisashi; Matsukawa, Masao; and Nagashima, Minematsu, 4,339,492, Cl. 428-320.400.
- Nagatomo, Katsuaki: See—  
Fujiwara, Kiyoshi; Nagatomo, Katsuaki; Shibata, Fumio; Nomura, Shoji; and Yoshinaga, Shoji, 4,339,330, Cl. 208-251.00R.
- Naigai Ink. Mfg. Co., Ltd.: See—  
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- Naito, Tsutomu: See—  
Onodera, Takashi; Komine, Kikui; Ohashi, Fumio; and Naito, Tsutomu, 4,339,619, Cl. 570-183.000.
- Nakagawa, Hiroaki: See—  
Imai, Ichiro; Matsunaga, Fujihisa; Nakagawa, Hiroaki; Isibasi, Masayasu; and Taguchi, Tohru, 4,339,615, Cl. 568-768.000.
- Nakagima, Yoshikazu, to Kabushiki Kaisha Mikuni Seisakusho. Composite material compositions using wastepaper and method of producing same. 4,339,363, Cl. 524-34.000.
- Nakahama, Seiichi: See—  
Yamazaki, Noboru; Nakahama, Seiichi; and Yamaguchi, Kazuo, 4,339,590, Cl. 549-11.000.
- Nakajima, Tadashi: See—  
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- Nakajima, Yoshio: See—  
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- Nakamura, Hirokazu; Takamiya, Bonnosuke; Miki, Takao; and Ishida, Takashi, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha; Mitsubishi Denki Kabushiki Kaisha; and Mikuni Kogyo Kabushiki Kaisha. Fuel supplying device for internal combustion engine. 4,338,902, Cl. 123-454.000.
- Nakamura, Junichi; Hata, Seiji; and Yamasaki, Iwao, to Tokyo Shibaura Denki Kabushiki Kaisha. Transistor device. 4,339,765, Cl. 357-36.000.
- Nakamura, Matsuo: See—  
Takahashi, Yasuhiro; Ohinata, Yoshiharu; and Nakamura, Matsuo, 4,339,293, Cl. 156-227.000.
- Nakanaga, Hiroshi: See—  
Komura, Tamotsu; Miyamoto, Takuji; and Nakanaga, Hiroshi, 4,339,558, Cl. 525-524.000.
- Nakane, Shoji: See—  
Torii, Shigeru; Nakane, Shoji; Shirakawa, Toshifumi; and Akada, Mitsuo, 4,339,607, Cl. 568-426.000.
- Nakanishi, Koji: See—  
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- Nakano, Yoshiyuki, to Nippon Kogaku K.K. Film advance restraining device of a camera. 4,339,189, Cl. 354-173.000.
- Nakao, Shinroku; Ishii, Yoshiyasu; Matsumoto, Susumu; and Hoshino, Kiyoshi, to Combi Co., Ltd. Child's automotive safety seat. 4,339,149, Cl. 297-250.000.
- Nakao, Yukimichi; and Fujishige, Shoei, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry.

- Method for manufacture of nickel boride colloid. 4,339,345, Cl. 252-309.000.
- Nakasato, Kouichi: See—  
Hinosugi, Misturu; and Nakasato, Kouichi, 4,339,475, Cl. 427-64.000.
- Nakatsu, Kanji, to Queen's University at Kingston. Collector controller for chromatograph. 4,339,759, Cl. 346-33.00R.
- Nakauchi, Kenji; and Terasita, Takaaki, to Fuji Photo Film Co., Ltd. Image information input system. 4,339,185, Cl. 354-31.000.
- Nakayama, Heihachiro: See—  
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- Nalco Chemical Company: See—  
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- Nametkin, Nikolai S.: See—  
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- Narimatsu, Akihiro: See—  
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- National Can Corporation: See—  
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- National Mine Service Company: See—  
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- National Research Development Corporation: See—  
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- National Semiconductor Corporation: See—  
Monticelli, Dennis M., 4,339,728, Cl. 330-254.000.
- National-Standard Company: See—  
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- National Starch & Chemical Corporation: See—  
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- Navarre, Rene A. Self-locking fastener. 4,339,218, Cl. 411-419.000.
- Navarro, Ramon. Reusable bracket assembly for concrete form. 4,339,106, Cl. 249-219.00R.
- NCR Corporation: See—  
Biedermann, Horst H., 4,339,208, Cl. 400-124.000.
- Davison, Alan B.; and Lewis, Wayne J., 4,339,804, Cl. 364-900.000.
- Neff, Georg, to Bernstorff, E. Gunter. Fuel-consumption monitor for diesel engine. 4,338,816, Cl. 73-119.00A.
- Nelson, Byron. Device and method for delivering solid medication to an eye. 4,338,936, Cl. 128-266.000.
- Neri, Paolo: See—  
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- Neubauer, Harry: See—  
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- Neubauer, Rudolf: See—  
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- Neumeyer, Martin J., to United States of America, Army. Means to minimize the backlash of meshing gears. 4,338,853, Cl. 89-41.00R.
- New York University: See—  
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- Newco Synthetics International Inc.: See—  
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- NGK Insulators, Ltd.: See—  
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- Nichols, James F.; and Van Bemmell, Peter P. Method of compensating seismic data for effects of frequency dependent attenuation. 4,339,810, Cl. 367-49.000.
- Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., to Great Lakes Chemical Corporation. Intumescent composition. 4,339,357, Cl. 252-606.000.
- Niedermeyer, William P., to Paper Converting Machine Company. Embossing method to avoid nesting in convolutely wound rolls and product. 4,339,088, Cl. 242-1.000.
- Nihashi, Yoshiyuki: See—  
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- Nihira, Yasuo; and Hosoda, Takuya, to Ando Electric Co., Ltd. Electrostatic voltmeter. 4,339,721, Cl. 324-457.000.
- Nijima, Kenji: See—  
Kosuda, Hiroyuki; and Nijima, Kenji, 4,339,021, Cl. 191-50.000.
- Nijhuis, Johan W., to Machinefabriek G.J. Nijhuis B.V. Apparatus for electrically stunning animals to be slaughtered. 4,338,700, Cl. 17-1.00E.
- Nippon Chemipharm Co., Ltd.: See—  
Masaki, Mitsuo; Yamanaka, Toru; and Kinoshita, Taketoshi, 4,339,378, Cl. 260-112.50R.
- Masaki, Mitsuo; Yamanaka, Toru; Yoshioka, Mitsuko; and Okai, Kazuki, 4,339,379, Cl. 260-112.50R.
- Nippon Electric Co., Ltd.: See—  
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- Ichiyoshi, Osamu, 4,339,725, Cl. 329-50.000.
- Kage, Kouzou; and Yoshida, Ikio, 4,339,727, Cl. 329-106.000.
- Miura, Masami, 4,339,726, Cl. 329-103.000.
- Morishita, Masanobu; and Tanaka, Takanori, 4,339,771, Cl. 358-41.000.
- Tanimoto, Yoshio, 4,339,824, Cl. 375-110.000.
- Nippon Gakki Seizo Kabushiki Kaisha: See—  
Ogita, Minoru; and Kimura, Shigenobu, 4,339,826, Cl. 455-183.000.
- Tomisawa, Norio; Takeuchi, Atsushi; and Tamori, Nobuyuki, 4,339,813, Cl. 369-231.000.
- Yokoyama, Kenji, 4,339,730, Cl. 330-297.000.
- Nippon Kogaku K.K.: See—  
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- Utagawa, Ken; and Shirasu, Hiroshi, 4,339,665, Cl. 250-578.000.
- Nippon Mining Company, Limited: See—  
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- Kato, Koichi; and Uemura, Namio, 4,339,536, Cl. 435-142.000.
- Nippon Oil Company, Limited: See—  
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, 4,339,246, Cl. 44-51.000.
- Yokoyama, Nobuo; and Kawabata, Nobuaki, 4,339,276, Cl. 106-271.000.
- Nippon Shinyaku Co., Ltd.: See—  
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; and Yagi, Masahiro, 4,339,585, Cl. 546-242.000.
- Nippon Soken, Inc.: See—  
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- Nippon Steel Corporation: See—  
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- Nippon Telegraph & Telephone Public Corporation: See—  
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- Nippon Zeon Co., Ltd.: See—  
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- Nishimura, Tomohiro: See—  
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- Nishimura, Yoshiharu: See—  
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- Nishimura, Yukuo: See—  
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- Nishioka, Akira, to Pioneer Electronic Corporation. Phase control device. 4,339,631, Cl. 179-1.0GS.
- Nishizawa, Eiji: See—  
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- Nissan Motor Company, Limited: See—  
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- Hideshima, Keiji; Koyanagi, Haruo; Senda, Shuichi; Asada, Kazuyoshi; Murayama, Norio; Nihashi, Yoshiyuki; and Takaki, Masaaki, 4,339,794, Cl. 364-200.000.
- Hosaka, Akio; and Higashiyama, Kazuhiro, 4,339,801, Cl. 364-431.040.
- Ideta, Yasufumi, 4,338,855, Cl. 91-378.000.
- Nissmo, Jim A.; Sundin, Jan A.; and Sjostrom, Lars B. Method and apparatus for controlling the temperature in greenhouses. 4,339,074, Cl. 236-47.000.
- Noack, Christian: See—  
Berth, Dieter; Hohlfield, Gottfried; Oliva, Klaus; and Noack, Christian, 4,339,014, Cl. 180-54.00A.
- Noble, Lowell A. Process for smoothing surfaces of crystalline materials. 4,339,300, Cl. 156-601.000.
- Nobuta, Ken'ichi: See—  
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- Nobutoki, Kazuhiro: See—  
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- Noeske, Heinz O., to General Electric Company. Nozzle for a puffer-type circuit breaker. 4,339,641, Cl. 200-148.00R.
- Noguchi, Kohji: See—  
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- Nojima, Masaki: See—  
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- Nolph, Karl D.: See—  
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- Nomura, Shoji: See—  
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- Nordson Corporation: See—  
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- Nordstrom, Lennart: See—  
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- Normand Trust: See—  
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- North, Robert P., to Motorola, Inc. Asynchronous event prioritizing circuit. 4,339,808, Cl. 364-900.000.
- Northern Telecom Limited: See—  
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- Norton, David E. P., to Sir James Farmer Norton & Company Limited. Application of liquids to textiles. 4,338,876, Cl. 118-259.000.



- Nowakowski, Lesley J.: See—  
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- Nuarc Company, Inc.: See—  
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- Nuclear Power Outfitters: See—  
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- Nusser, Hermann: See—  
Peters, Klaus-Jürgen; Bosch, Franz-Ulrich; Schindler, Herbert; and Nusser, Hermann, 4,338,815, Cl. 73-118.000.
- Nutter, Dale E.: Gas-liquid contact apparatus, 4,339,399, Cl. 261-112.000.
- Nygren, Lennart: Lock, 4,338,805, Cl. 70-134.000.
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- Obata, Eisuke: See—  
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- Oberth, Christian H.: See—  
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- Obisphere Corporation Wilmington, Succursale de Collonge-Bellerive: See—  
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- Oda, Nobuyuki; and Terada, Haruyoshi, to Hooker Chemicals & Plastics Corp.: Method of surface treatment of tin plated cans and tin plated steel sheets, 4,339,310, Cl. 204-38.00R.
- O'Dair, James R.: See—  
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- Oeding, Volker; Pfaff, Werner; Vertesy, Laszlo; and Weidenmuller, Hans-Ludwig, to Hoechst Aktiengesellschaft:  $\alpha$ -Amylase inhibitor from a streptomycete and process for its preparation, 4,339,436, Cl. 424-115.000.
- Oganesian, Ogan V.: See—  
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- Ogita, Minoru; and Kimura, Shigenobu, to Nippon Gakki Seizo Kabushiki Kaisha: Radio receiver having phase locked loop frequency synthesizer, 4,339,826, Cl. 455-183.000.
- O'Grady Containers, Inc.: See—  
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- Ohashi, Fumio: See—  
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- Ohashi, Taizo: See—  
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- Ohboshi, Toshio: See—  
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- O'Hern, James E., Jr.: Adapter for refrigeration system access valve, 4,338,793, Cl. 62-292.000.
- Ohinata, Yoshiharu: See—  
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- Ohkoshi, Akio; Sato, Hiroki; Hatanaka, Masato; Ohboshi, Toshio; and Tanaka, Sakae, to Sony Corporation: Flat cathode ray tube, 4,339,694, Cl. 315-366.000.
- Ohmann, William; and Wiessner, Edward E., to Whirlpool Corporation: Agitator mounted filter for an automatic washer, 4,338,802, Cl. 68-18.0FA.
- Ohmori, Koichiro; Tashiro, Yasuo; and Nakayama, Heihachiro, to Honshu Paper Co., Ltd.: Method for sealing a container, 4,338,765, Cl. 53-452.000.
- Ohmura, Yasuhiro; Maruyama, Seiichiro; and Kawasaki, Hiroyuki, to Mitsubishi Chemical Industries, Ltd.: Process for the production of a polyamide base resin composition, 4,339,555, Cl. 525-66.000.
- Ohsawa, Mitsuo, to Sony Corporation: Electronic circuit arrangement mounted on printed circuit board, 4,339,785, Cl. 361-411.000.
- Ohse, Helmut: See—  
Muschelknautz, Edgar; Vogelsang, Roland; Ohse, Helmut; Westermann, Hans; Moller, Eckhard; Hachmann, Klaus; Schiemann, Wilhelm; and Kesper, Bernd, 4,339,570, Cl. 528-272.000.
- Oil Tool Molded Products, Inc.: See—  
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- Ojanen, Randall W.: See—  
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- Oji Paper Co., Ltd.: See—  
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- Oka, Tateki: See—  
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- Okada, Akira: See—  
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- Okai, Kazuki: See—  
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- Okamoto, Eiichi: See—  
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- Okamoto, Tadao; Obata, Eisuke; and Enomoto, Yutaka, to Fuji Latex Co., Ltd.: Instrument for induction of labor, 4,338,943, Cl. 128-344.000.
- Okamura, Kazuo; Daimon, Shigeo; and Tomihashi, Nobuyuki, to Dai-kin Kogyo Co., Ltd.: Process of electrostatic printing with fluorinated polymer toner additive, 4,339,518, Cl. 430-126.000.
- Okamura, Yoshio, to Shin-Etsu Chemical Co., Ltd.: Heat curable organopolysiloxane compositions, 4,339,564, Cl. 528-15.000.
- Okawa, Takashi: See—  
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- Okcuoglu, Selahattin A.: See—  
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- O'Keefe, David F.: See—  
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- Okubo, Shigeo, to Design Professionals Financial Corp.: Vibration controller utilizing magnetic forces, 4,339,780, Cl. 361-147.000.
- Okuhira, Megumi: See—  
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- Olah, George A., to PCUK Produits Chimiques Ugine Kuhlmann: Superacid catalyzed preparation of resorcinol from meta-diisopropylbenzene, 4,339,613, Cl. 568-768.000.
- Olah, George A., to PCUK Produits Chimiques Ugine Kuhlmann: Superacid catalyzed preparation of resorcinol from meta-isopropylphenol, 4,339,614, Cl. 568-768.000.
- Oldemeyer, Wilhelm: See—  
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- Olin Corporation: See—  
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- Oliva, Klaus: See—  
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- Olkola, E. Alfred: Grout removing tool, 4,338,718, Cl. 30-171.000.
- Olshewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., to SKF Kugellagerfabriken GmbH: Linear motion rolling bearing, 4,339,157, Cl. 308-6.00C.
- Olshewski, Armin; Brandenstein, Manfred; and Kunkel, Heinrich, to SKF Kugellagerfabriken GmbH: Novel molding composition providing shaped articles of improved strength and heat and age resistance, 4,339,374, Cl. 524-606.000.
- Olsson, Billy E.: See—  
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- Olympus Optical Co., Ltd.: See—  
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- Matsuura, Tsuyoshi; Aihara, Mamoru; Takahashi, Yutaka; and Nakajima, Yoshio, 4,339,187, Cl. 354-173.000.
- Sogi, Shinroku; Izawa, Masao; Hattori, Shinichiro; Tawara, Ikuo; Shinohara, Daizo; and Tachikawa, Sachiko, 4,339,537, Cl. 435-240.000.
- Omark Industries, Inc.: See—  
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- Omelian, Anatoli: See—  
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- Omi, Kokichi: See—  
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- Oncor Corporation: See—  
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- Ondetti, Miguel A.; and Cushman, David W., to E. R. Squibb & Sons, Inc.: Compounds for alleviating angiotensin related hypertension, 4,339,600, Cl. 562-426.000.
- Ono, Kenji; Nobutoki, Kazuhiro; and Sauer, Hans, to Matsushita Electric Works, Ltd.; and Sauer, Hans: Electromagnetic relay, 4,339,735, Cl. 335-119.000.
- Onodera, Takashi; Komine, Kikui; Ohashi, Fumio; and Naito, Tsutomu, to Toa Nenryo Kogyo Kabushiki Kaisha: Solvent dewaxing waxy hydrocarbon oils using dewaxing aid, 4,339,619, Cl. 570-183.000.
- Onose, Masayuki: See—  
Kikuchi, Nobuji; Kisaka, Yoshiyuki; Torige, Kazuo; and Onose, Masayuki, 4,339,315, Cl. 204-129.850.
- Onoue, Keiji: See—  
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- Oppenhuizen, Frederick H.: See—  
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- Oppenhuizen, Simon W.: See—  
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- Optical Information Systems, Inc.: See—  
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- Orain, Michel A., to Glaenzer Spicer: Slidable homokinetic tripod joint and a corresponding transmission having a floating shaft, 4,338,796, Cl. 464-111.000.

- O'Rourke, Thomas W.: See—  
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- Ortega, Robert, to Purex Corporation: Butterfly valve, 4,339,110, Cl. 251-309.000.
- Osaka, Susumu: See—  
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- Oshima, Ryoichiro: See—  
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- Ostlund, Artur: See—  
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- Palermi, Frank M.: See—  
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- Palladium Corporation: See—  
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- Parker, Robert G., to Scott Bader Company Limited: Highly filled crosslinkable emulsion polymer composition, 4,339,370, Cl. 524-424.000.
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- Pittinger, Charles B., Sr.; and Pittinger, Charles B., Jr. Housing and frame system for vegetation filament trimmer, 4,338,720, Cl. 30-276.000.
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- Wust, Willi; Leischner, Hasso; Rahse, Wilfried; Carduck, Franz-Josef; and Kuhne, Norbert, 4,339,574, Cl. 536-84.000.
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- Ramsey, Richard A., to Texas Instruments Incorporated. Logic circuit having a selectable output mode, 4,339,676, Cl. 307-473.000.
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- RCA Corporation: See—  
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- Reed, Edward D.: See—  
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- Reed, Joseph, to International Telephone and Telegraph Corporation. Conferencing apparatus and methods for a frequency division multiplex communications system, 4,339,816, Cl. 370-71.000.
- Reeve, Howard C., III: See—  
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- Regan, Robert J.; Cogan, Adrian; and Buhrer, Carl F., to GTE Laboratories Incorporated. Energy saving fluorescent lighting system, 4,339,690, Cl. 315-97.000.
- Regenbrecht, Ludwig: See—  
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- Reid, Lee R.: See—  
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- Reimpell, Uwe: See—  
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- Reitz, Johannes, to Metallgesellschaft AG. Internal combustion engine piston, 4,338,858, Cl. 92-222.000.
- Remote Dynamics: See—  
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- Rendell, Stanley E., to Sterlingsworth Music, Inc. Musical instrument string modifying device, 4,338,772, Cl. 57-9.000.
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- Renishaw Electrical Limited: See—  
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- Research Corporation: See—  
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- Rheinmetall GmbH: See—  
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- Rhines, Archie E.; and Hugg, Steven B., to Electric Power Research Institute, Inc. Conductivity sensor for monitoring corrosion being deposited in a steam turbine, 4,339,719, Cl. 324-446.000.
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- Rhodes, Richard R.; and Kenney, Robert L., Jr., to United States of America, Army. High "G" firing mechanism, 4,338,861, Cl. 102-261.000.
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- Rhone-Poulenc Industries: See—  
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- Rich, Roland W. T-Joint structure for trampolines and the like, 4,339,123, Cl. 272-65.000.
- Richman Brothers Company, The: See—  
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- Richter Gedeon Vegyeszeti Gyar RT: See—  
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- Richter, Reinhard H.; Tucker, Benjamin W.; and Ulrich, Henri, to Upjohn Company. The 1,3-Alkylene-diazetidine-2,4-diones, 4,339,381, Cl. 260-239.30B.
- Ricketts, John W.: See—  
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- Ricoh Company, Ltd.: See—  
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- Riddle, Stanley T.: See—  
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- Rieter Machine Works Limited: See—  
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- Riker Laboratories, Inc.: See—  
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- Rinnai Kabushiki Kaisha: See—  
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- Riso Kagaku Corporation: See—  
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- Ritchey, Thomas W.; Weaver, John M.; and Sapone, Martin, to Lever Brothers Company. Oral mouthwash containing zinc and glycine, 4,339,432, Cl. 424-54.000.
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- Robbart, Edward. Treatment of cellulose, 4,339,479, Cl. 427-255.100.
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- Friese, Karl-Hermann; and Esper, Friedrich, 4,339,320, Cl. 204-195.00S.
- Harsch, Klaus; and Schulzke, Peter, 4,339,781, Cl. 361-154.000.
- Kopse, Odon, 4,339,080, Cl. 239-533.000.
- Peters, Klaus-Jurgen; Bosch, Franz-Ulrich; Schindler, Herbert; and Nusser, Hermann, 4,338,815, Cl. 73-118.000.



- Romann, Peter, 4,338,814, Cl. 73-118.000.
- Roberts, Harry H.; and Cote, Raymond A., to Champion International Corporation. Composite packaging system including an outer parallelogram container adapted to hold a plurality of wedge shaped inner cartons. 4,339,041, Cl. 206-611.000.
- Robinson, John W.: See—
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- Robinson, Peter M.; Rakowitz, David H.; and Nowakowski, Lesley J., to American Cyanamid Company. High concentration water-soluble polymers in water-in-oil emulsions. 4,339,371, Cl. 524-310.000.
- Robinson, Peter M., to American Cyanamid Company. Granulation and drying aids for polymeric gels. 4,339,373, Cl. 524-321.000.
- Rock, Erich, to Julius Blum Gesellschaft m.b.H. Furniture hinge. 4,338,699, Cl. 16-237.000.
- Rockwell International Corporation: See—
- Adams, Tello D., 4,339,731, Cl. 331-1.00A.
- Furst, Raymond B., 4,339,227, Cl. 415-213.00C.
- Jones, Addison B., 4,339,305, Cl. 156-650.000.
- Macheel, Gary W., 4,339,134, Cl. 273-138.00A.
- Mitchell, Daniel M., 4,339,791, Cl. 363-41.000.
- Rodaway, Keith S. Subtractive and additive differential gear reduction system. 4,338,830, Cl. 74-764.000.
- Rodaway, Keith S. Subtractive and additive differential gear reduction system. 4,338,831, Cl. 74-805.000.
- Rogier, Edgar R., to Henkel Corporation. Polyglycidyl ethers. 4,339,389, Cl. 549-555.000.
- Rohm and Haas Company: See—
- Miyahara, Akimitsu, 4,339,548, Cl. 521-28.000.
- Rolff, William J.; Costa, Samuel; and Hendricks, William A., to Singer Company. The Two step phase reset gyro motor power supply. 4,339,703, Cl. 318-702.000.
- Rolls Royce Limited: See—
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- Fleche, Guy; Gaset, Antoine; Gorrichon, Jean-Pierre; Truchot, Eric; and Sicard, Philippe, 4,339,387, Cl. 549-488.000.
- Rosemount Inc.: See—
- Delacruz, Moises A., 4,339,750, Cl. 340-870.370.
- Rosenberg, Barnett; VanCamp, Loretta; and Krigas, Thomas, to Research Corporation. Anti-tumor method. 4,339,437, Cl. 424-131.000.
- Rosenberg, Roger L.: See—
- Bednarz, John J.; Moser, Phillip J.; and Rosenberg, Roger L., 4,339,811, Cl. 367-96.000.
- Rosenkranz, Hans J.; Striegler, Hellmut; and Bendszus, Otto, to Bayer Aktiengesellschaft. Water-dispersible, radiation-crosslinkable binding agents from urethane acrylates, a process for their production, and the use thereof in aqueous dispersions in color painting, color printing, and textile applications. 4,339,566, Cl. 528-68.000.
- Rosner, Manfred, to Ciba-Geigy AG. Process for the production of substituted nitroaryl compounds. 4,339,618, Cl. 568-937.000.
- Rossman, Axel, to Motoren-und Turbinen-Union Munchen GmbH. Rotor wheel for axial-flow turbomachinery. 4,339,229, Cl. 416-218.000.
- Roth, Kurt H.: See—
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- Rubner, Roland: See—
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- Ruhlman, Harold W., to Borg-Warner Corporation. Transmission shift control guide and detent apparatus. 4,338,828, Cl. 74-475.000.
- Rukavina, Thomas G.; and Lewis, Harold F., to PPG Industries, Inc. Protection of polycarbonate from ultraviolet radiation. 4,339,503, Cl. 428-412.000.
- Rupilius, Wolfgang: See—
- Rutzen, Horst; and Rupilius, Wolfgang, 4,339,616, Cl. 568-867.000.
- Rushing, Kyle W., to Gustafson, Inc. Peanut seed treating. 4,339,456, Cl. 424-274.000.
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- Stadelhofer, Jurgen; Franck, Heinz-Gerhard; Kohler, Hellmut; and Louis, Heinrich, 4,339,328, Cl. 208-8.0LE.
- Rutzen, Horst; and Rupilius, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien; and Deutsche Gold-und Silberscheide Anstalt Vormals Roessler. Process for the manufacture of 1,2-diols having at least 4 carbon atoms. 4,339,616, Cl. 568-867.000.
- Ryan, James P.: See—
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- Ryan, William H.: See—
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- Saitoh, Osami: See—
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- Sakabe, Yukio; Hamaji, Yukio; and Komatsu, Hiroshi, to Murata Manufacturing Co., Ltd. Ceramic dielectric composition. 4,339,544, Cl. 501-136.000.
- Sakakibara, Naoki, to Aisin Seiki Kabushiki Kaisha. Control system for automobile air conditioners. 4,339,076, Cl. 236-84.000.
- Sakakibara, Yoshiaki: See—
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- Sakiyama, Kazutaka: See—
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- Sasaki, Hiroshi; and Ariga, Yoshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Paper sheets separating apparatus. 4,339,119, Cl. 271-180.000.
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- Sauter, Fritz; Eberle, Otto; Suss, Beate; and Weissgerber, Rudolf, to Consortium fur Elektrochemische Industrie GmbH. 1-(3-Pyridyl)-2,2,2-trihaloethyl compounds and fungicidal compositions containing the same. 4,339,455, Cl. 424-263.000.
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- Schittke, Friedrich; and Jahn, Volkmar, to Gustav F. Gerdts KG; and Gestra-Ksb Vertriebsgesellschaft mbH & Co. Kommanditgesellschaft. Bimetallic-controlled steam trap. 4,339,075, Cl. 236-59.000.
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- Schoolar, Richard B., to United States of America, Navy. Pb<sub>3</sub>Se<sub>1-x</sub> semiconductor. 4,339,764, Cl. 357-30.000.
- Schouteeten, Alain; and Christidis, Yanni, to Societe Francaise Hoechst. Process of preparation of racemic hydroxyarylglycolic acids and novel products resulting therefrom. 4,339,602, Cl. 562-466.000.
- Schranz, Karl-Wilhelm; and Sobel, Johannes, to AGFA-Gevaert Aktiengesellschaft. Method of stabilizing color photographic materials and a color photographic material. 4,339,515, Cl. 430-17.000.
- Schroder, Steven L., to Oil Tool Molded Products, Inc. Well blowout preventer packer assembly and packer modules therefor. 4,339,107, Cl. 251-1.00B.
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- Schuh, Frank J., to Atlantic Richfield Company. Curved well conductors for offshore platform. 4,339,005, Cl. 175-9.000.
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- Schultess, Adrian; and Farine, Jean-Claude, to Laboratoires OM Societe Anonyme. Synthetic magnesium aluminosilicate, process for the manufacture thereof, and pharmaceutical compositions containing same. 4,339,421, Cl. 423-330.000.
- Schulz, Johann G. D.; and Cobler, John A., to Gulf Research & Development Company. Bituminous emulsions. 4,339,346, Cl. 252-311.500.
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- Schwarzkopf, Anton, to Anton Schwarzkopf Fahrzeug- und Stahlbau, Firma. Orbital amusement-park ride. 4,339,121, Cl. 272-38.000.
- Schwebel, Paul R.; and Friend, Manuel N. Device for filling medication injectors. 4,338,980, Cl. 141-18.000.
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- Parker, Robert G., 4,339,370, Cl. 524-424.000.
- Scott, William R.; Bloomfield, Philip; Weist, William T.; and McMahon, Karen M., to United States of America, Navy. Electrical connection. 4,339,683, Cl. 310-364.000.
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- Seng, Robert A.: See—
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- Shames, Harold: See—
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- Shankar, Srinivasan: See—
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- Shanklin, Frank G.; and King, Francis X., to Shanklin Corporation. Pneumatic roll lifter. 4,339,093, Cl. 242-58.600.
- Shape, Inc.: See—
- Gelardi, Anthony L.; Gelardi, Paul J.; and MacLeod, Robert B., Jr., 4,339,162, Cl. 312-10.000.
- Sharp Kabushiki Kaisha: See—
- Doi, Keiichi; Makita, Minoru; and Kowada, Masaaki, 4,339,646, Cl. 219-10.55B.
- Kinashi, Hiroshi; Miwa, Yoshihisa; Kato, Shoshichi; and Kawataki, Hiroyuki, 4,339,783, Cl. 361-235.000.
- Matsumoto, Masafumi; and Kotani, Matahira, 4,339,761, Cl. 346-75.000.
- Shaw, Peter V.; and Speed, Stewart, to British Petroleum Company Limited, The. Inert gas supply and salvage system for oil tankers. 4,338,874, Cl. 114-50.000.
- Shearer, James D., to RCA Corporation. Solder draw pad. 4,339,784, Cl. 361-403.000.
- Shelby, Robert L.; and Wilkins, Douglas A., to Caterpillar Tractor Co. Hood, muffler and air cleaner module for an internal combustion engine. 4,338,890, Cl. 123-195.00A.
- Shelley, William. Radiant heating and cooling panel and method of manufacturing. 4,338,995, Cl. 165-49.000.
- Sheneman, Gary L.: See—
- Welton, Myron L.; and Sheneman, Gary L., 4,338,704, Cl. 17-50.000.
- Shergold, Howard L.: See—
- Windle, William; Lofthouse, Charles H.; and Shergold, Howard L., 4,339,042, Cl. 209-5.000.
- Sherman Industries, Inc.: See—
- Beer, Carl C.; and Seng, Robert A., 4,338,698, Cl. 15-230.160.
- Sherrill, John B. Pivotal support with positive stop warp stop-motion. 4,338,972, Cl. 139-369.000.
- Shibagaki, Masahiro: See—
- Sato, Osamu; and Shibagaki, Masahiro, 4,339,079, Cl. 239-43.000.
- Shibano, Tomishi; Maruchi, Sachio; Yakan, Koji; Kobayashi, Tadashi; and Akimoto, Saburo, to Sanyo-Kokusaku Pulp Co., Ltd. Pressure sensitive adhesive products. 4,339,485, Cl. 428-40.000.
- Shibata, Fumio: See—
- Fujiwara, Kiyoshi; Nagatomo, Katsuaki; Shibata, Fumio; Nomura, Shoji; and Yoshinaga, Shoji, 4,339,330, Cl. 208-251.00R.



- Shimamoto, Noboru; and Yumoto, Satoshi, to Shin-Etsu Chemical Co., Ltd. Method for temporarily protecting sticky surface and a thus protected adhesive sheet material. 4,339,486, Cl. 428-40.000.
- Shimazaki, Yuzo: See—  
Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, 4,339,340, Cl. 252-79.500.
- Shimizu, Toshimi; Fujishige, Shoei; and Okada, Akira, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Particles of activated oxidized polysaccharide substance coated with inactive protective layer and method for manufacture thereof. 4,339,360, Cl. 524-28.000.
- Shimp, David A.: See—  
Hicks, Darrell D.; and Shimp, David A., 4,339,369, Cl. 523-414.000.
- Shin-Etsu Chemical Co., Ltd.: See—  
Ishihara, Toshinobu; Taguchi, Kenichi; and Yamamoto, Akira, 4,339,397, Cl. 260-665.00R.
- Okamura, Yoshio, 4,339,564, Cl. 528-15.000.
- Shimamoto, Noboru; and Yumoto, Satoshi, 4,339,486, Cl. 428-40.000.
- Takagishi, Yasushi; Doi, Yoshio; and Hoshi, Noboru, 4,339,463, Cl. 424-35.000.
- Takago, Toshio; Arai, Masatoshi; and Futsumori, Koji, 4,339,563, Cl. 528-14.000.
- Shinohara, Daizo: See—  
Sogi, Shinroku; Izawa, Masao; Hattori, Shinichiro; Tawara, Ikuo; Shinohara, Daizo; and Tachikawa, Sachiko, 4,339,537, Cl. 435-240.000.
- Shionogi & Co., Ltd.: See—  
Ko'oka, Yoshinobu; Muneke, Mariko; and Minato, Hitoshi, 4,339,575, Cl. 544-20.000.
- Takagishi, Yasushi; Doi, Yoshio; and Hoshi, Noboru, 4,339,463, Cl. 424-35.000.
- Shirakawa, Toshifumi: See—  
Torii, Shigeru; Nakane, Shoji; Shirakawa, Toshifumi; and Akada, Mitsuo, 4,339,607, Cl. 568-426.000.
- Shirasu, Hiroshi: See—  
Utagawa, Ken; and Shirasu, Hiroshi, 4,339,665, Cl. 250-578.000.
- Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, to Canon Kabushiki Kaisha. Liquid jet recording method. 4,339,762, Cl. 346-140.00R.
- Shmutter, Shimshon: See—  
Gelfer, Vadim; Kaganovsky, Yaakov; Muchnik, Shimon; and Shmutter, Shimshon, 4,339,923, Cl. 128-24.00R.
- Shockley, David L.: See—  
Hedges, Richard A.; Shockley, David L.; Fralick, Stanley C.; and Kane, Paul H., 4,339,798, Cl. 364-412.000.
- Shukla, Jayendra G.: See—  
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,339,357, Cl. 252-606.000.
- Shuman, Ralph J.: See—  
Bhatia, Sushil; and Shuman, Ralph J., 4,339,758, Cl. 346-1.100.
- Shumate, Eldridge J., to Allis-Chalmers Corporation. Filter bag tensioning arrangement. 4,339,251, Cl. 55-378.000.
- SI Handling Systems, Inc.: See—  
Ziegenfuss, Barry L., 4,338,864, Cl. 104-121.000.
- Sicard, Philippe: See—  
Fleche, Guy; Gaset, Antoine; Gorrichon, Jean-Pierre; Truchot, Eric; and Sicard, Philippe, 4,339,387, Cl. 549-488.000.
- Siegle, Peter: See—  
Kranz, Eckart; and Siegle, Peter, 4,339,612, Cl. 568-649.000.
- Siemens Aktiengesellschaft: See—  
Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, 4,339,521, Cl. 430-192.000.
- Bogner, Gunther; and Kullmann, Dieter, 4,339,681, Cl. 310-201.000.
- Fromm, Ingrid; and Unterberger, Hans, 4,339,658, Cl. 250-227.000.
- Kraus, Hubert, 4,339,651, Cl. 219-85.0CM.
- Mueller, Ruediger; Pomper, Michael; and Leipold, Ludwig, 4,339,668, Cl. 307-149.000.
- Winzer, Gerhard, 4,339,170, Cl. 350-96.160.
- Winzer, Gerhard; Reichelt, Achim; and Michel, Herbert, 4,339,290, Cl. 156-159.000.
- Siggen, Guy; and Berner, Michel, to Baumgartner Papiers S.A. Plasticizer installation for the treatment of a rope of fibres. 4,338,882, Cl. 118-674.000.
- Siglock, John V., to Unicorn Electrical Products. High pressure sodium lamp ballast circuit. 4,339,695, Cl. 315-276.000.
- Sigma Plastique: See—  
Tauzin, Francis, 4,338,863, Cl. 104-89.000.
- Sigmetics Corporation: See—  
Hoeft, Werner H., 4,339,677, Cl. 307-564.000.
- Sigworth, Harrison W., Jr. Combined solar heating and passive cooling apparatus. 4,338,991, Cl. 165-2.000.
- Sillou, Daniel: See—  
Kuroda, Kei-ichi; Sillou, Daniel; and Takeuchi, Fujio, 4,339,684, Cl. 313-105.00R.
- Simms, Robert A. Method of making polarized ophthalmic glass. 4,339,256, Cl. 65-32.000.
- Simonenko, Jury A.: See—  
Kasatkin, Boris S.; Pokhodnya, Igor K.; Musiachenko, Valentin F.; Golovko, Vladimir N.; Kolomiets, Ljudmila N.; Simonenko, Jury A.; and Gulyar, Anatoly V., 4,339,286, Cl. 148-24.000.
- Simons, Leon. Recessed head fastener and driver therefor. 4,338,835, Cl. 81-436.000.
- Sinatra, Gerald: See—  
McNamara, Daniel E.; and Sinatra, Gerald, 4,339,150, Cl. 297-284.000.
- Singer Company, The: See—  
Rolf, William J.; Costa, Samuel; and Hendricks, William A., 4,339,703, Cl. 318-702.000.
- Sir James Farmer Norton & Company Limited: See—  
Norton, David E. P., 4,338,876, Cl. 118-259.000.
- Sirovinsky, Alexandr A.: See—  
Makeev, Anatoly E.; and Sirovinsky, Alexandr A., 4,338,879, Cl. 118-602.000.
- SITMA - Societa Italiana Macchine Automatiche S.p.A.: See—  
Ballestrazzi, Aris; and Tassi, Lamberto, 4,338,768, Cl. 53-495.000.
- Sjoberg, Peter, to Alfa-Laval AB. Filtration device. 4,339,333, Cl. 210-411.000.
- Sjostrom, Lars B.: See—  
Nissmo, Jim A.; Sundin, Jan A.; and Sjostrom, Lars B., 4,339,074, Cl. 236-47.000.
- Skala, Stephen F. Exhaust gas treatment by a reactant. 4,338,785, Cl. 60-311.000.
- SKF Kugellagerfabriken GmbH: See—  
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., 4,339,157, Cl. 308-6.00C.
- Olschewski, Armin; Brandenstein, Manfred; and Kunkel, Heinrich, 4,339,374, Cl. 524-606.000.
- SKF (U.K.) Limited: See—  
Greener, Brian; and Pedder, Simon J., 4,339,158, Cl. 308-20.000.
- Sluys, Wesley W., to Builders Concrete, Inc. Embedded marine pile hoop. 4,339,215, Cl. 405-219.000.
- Smilges, Robert; and Wigmore, Richard, to Abex Corporation. Dual pilot counterbalance valve. 4,338,856, Cl. 91-420.000.
- Smith, Donald P. Cooking apparatus. 4,338,911, Cl. 126-21.00A.
- Smith, Frederick M.; and O'Dair, James R., to Georgia-Pacific Corporation. Tree and brushwood harvester. 4,338,985, Cl. 144-34.00R.
- Smith, Harry L. O., to Beattie Systems, Inc. Bright screen optical viewer apparatus and method. 4,339,188, Cl. 354-219.000.
- Smith, James L., to United States of America, Army. Log-log scale refractor. 4,339,178, Cl. 350-432.000.
- Smith, John W.: See—  
Ford, Charles; Gill, Arthur, Jr.; Smith, John W.; and Freeman, Louis L., Jr., 4,339,078, Cl. 239-1.000.
- Smith, Kenneth L., to Times Fiber Communications, Inc. Radiating cable. 4,339,733, Cl. 333-237.000.
- Smith, Lloyd K.; and Ryan, James P. Apparatus for detachably connecting a removable frame to a vehicle frame. 4,339,148, Cl. 296-35.300.
- Smith, Marc L.: See—  
Tsou, Ivan H.; and Smith, Marc L., 4,339,368, Cl. 523-414.000.
- Smith, Ray E.: See—  
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,339,357, Cl. 252-606.000.
- Smith, Robert H., to Chrysler Corporation. Direct solenoid operated directional control valve. 4,338,966, Cl. 137-596.170.
- Smith, Russell M.: See—  
McSparran, Lloyd W.; and Smith, Russell M., 4,339,704, Cl. 322-90.000.
- Smith, Russell P.: See—  
Duttar, Ralph M.; Estkowski, Michael H.; and Smith, Russell P., 4,339,154, Cl. 303-3.000.
- Snellman, Donald L.; Lewis, Barry J.; Saunders, Arthur G.; and Hester, Wesley W. Sheet binding system. 4,339,299, Cl. 156-563.000.
- Sobel, Johannes: See—  
Schrantz, Karl-Wilhelm; and Sobel, Johannes, 4,339,515, Cl. 430-17.000.
- Socapex: See—  
Malsot, Christian; and Guerrero, Michel, 4,339,165, Cl. 339-41.000.
- Societa Italiana Vetro-Siv-S.p.A.: See—  
Paudice, Ciro; Sassanelli, Vintonio; Di Nocco, Dino; Pracilio, Francesco; and Casa, Nicolo', 4,339,259, Cl. 65-104.000.
- Societe Anonyme dite COUPAX: See—  
d'Arras, Philippe, 4,338,701, Cl. 17-25.000.
- Societe Chimique des Charbonnages-CdF CHIMIE: See—  
Bujadoux, Karel, 4,339,392, Cl. 260-429.00R.
- Durand, Pierre; and Jouffroy, Guy, 4,339,412, Cl. 422-117.000.
- Societe Francaise Hoechst: See—  
Schouteeten, Alain; and Christidis, Yami, 4,339,602, Cl. 562-466.000.
- Societe Immobiliere et Financiere Suchet-Alfort (S.I.F.S.A.): See—  
Bichet, Lucien, 4,338,696, Cl. 12-54.300.
- Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, "S.N.E.C.M.A.": See—  
Dron, Sylvain M., 4,339,739, Cl. 336-136.000.
- Sogi, Shinroku; Izawa, Masao; Hattori, Shinichiro; Tawara, Ikuo; Shinohara, Daizo; and Tachikawa, Sachiko, to Olympus Optical Company Limited. Method of culturing biological substances. 4,339,537, Cl. 435-240.000.
- SOHIO: See—  
Gerry, Frank S.; and Wiggins, Wayne T., 4,339,502, Cl. 428-411.000.
- Guttmann, Andrew T.; and Grasselli, Robert K., 4,339,598, Cl. 560-210.000.
- Sokolik, Joseph E., Jr.: See—  
Blake, Robert J.; Sokolik, Joseph E., Jr.; and Sterman, Samuel, 4,339,338, Cl. 252-70.000.
- Solartron Electronic Group Limited: See—  
March, Adrian A. C., 4,339,177, Cl. 350-431.000.

- Solomon, Frank; and Grun, Charles, to Diamond Shamrock Corporation. One pass process for forming electrode backing sheet. 4,339,325, Cl. 204-296.000.
- Solovieff, Paul G., to Emhart Industries, Inc. Latch bolt operating device having improved shield construction to deter probe manipulation. 4,338,804, Cl. 70-134.000.
- Sommer, Frank G.: See—  
Perez-Mendez, Victor; and Sommer, Frank G., 4,338,948, Cl. 128-660.000.
- Sony Corporation: See—  
Ichimura, Kunihiro; Takeuchi, Osamu; Kusama, Hideo; Yamazaki, Kazuo; Saka, Akira; Ito, Hiroshi; and Toyofuku, Kunitaka, 4,339,524, Cl. 430-270.000.
- Ohkoshi, Akio; Sato, Hiroki; Hatanaka, Masato; Ohboshi, Toshio; and Tanaka, Sakae, 4,339,694, Cl. 315-366.000.
- Ohsawa, Mitsuo, 4,339,785, Cl. 361-411.000.
- Sorensen, Jens O., to Trade Finance International. Prevention of permanent deformation of encased expandites. 4,338,786, Cl. 60-531.000.
- Sorko-Ram, Paul A. Process for producing three-dimensional, mirrored acrylic articles. 4,339,400, Cl. 264-1.900.
- Spademan, Richard G. Dynamic internal fitting system for a sport shoe. 4,338,735, Cl. 36-119.000.
- Spademan, Richard G. Intravascular catheter apparatus. 4,338,934, Cl. 128-214.400.
- Spar Vatten Och Energi AB: See—  
Lindqvist, Lars A., 4,339,081, Cl. 239-552.000.
- Sparton Corporation: See—  
Devitt, John L.; Johnson, Douglas E.; and Willard, Robert S., 4,338,978, Cl. 141-1.100.
- Spector, George: See—  
Berkstresser, Harold, Jr.; and Spector, George, 4,339,056, Cl. 220-375.000.
- Kemp, Kenneth; and Spector, George, 4,339,137, Cl. 273-331.000.
- Tanner, Douglas; and Spector, George, 4,339,142, Cl. 280-759.000.
- Speed, Stewart: See—  
Shaw, Peter V.; and Speed, Stewart, 4,338,874, Cl. 114-50.000.
- Speidel, Volker: See—  
Bergmann, Eduard; and Speidel, Volker, 4,339,667, Cl. 307-10.0LS.
- Sperberg, Lawrence R. Poly spring tires. 4,338,989, Cl. 152-354.0RB.
- Spevak, Stephen T., to Potomac Applied Mechanics, Inc. Article supporting assembly. 4,339,164, Cl. 312-283.000.
- Spielmann, Werner; and Schaeffer, Georg, to Hoechst Aktiengesellschaft. Process for the manufacture of phenylacetic acid and simple derivatives thereof. 4,339,594, Cl. 562-465.000.
- Sprintschnik, Gerhard; Neubauer, Rudolf; and Buhr, Gerhard, to Hoechst Aktiengesellschaft. Developer mixture for developing exposed light-sensitive copying layers. 4,339,530, Cl. 430-331.000.
- Staats-Westover, Robert F.: See—  
Kantot, William M.; Motline, John J., Jr.; Staats-Westover, Robert F.; and Wilson, Max K., 4,339,298, Cl. 156-498.000.
- Stadelhofer, Jurgen; Franck, Heinz-Gerhard; Kohler, Helmut; and Louis, Heinrich, to Rueterswerke Aktiengesellschaft. Process for the production of high grade carbonaceous binders. 4,339,328, Cl. 208-8.0LE.
- Stagner, Michael P.: See—  
Outtrim, John E.; and Stagner, Michael P., 4,338,742, Cl. 46-227.000.
- Staiger, Hans: See—  
Straub, Hans F.; Kindermann, Adalbert; Burkhardt, Friedrich; and Staiger, Hans, 4,338,709, Cl. 29-26.00A.
- Stal-Laval Apparatus AB: See—  
Berkestad, Karl-Erik; Danielsson, Lennart; Henriksson, Erik; Svensson, Torsten; and Ostlund, Artur, 4,339,249, Cl. 55-269.000.
- Staloff, Arthur. Energy conserving thermostat. 4,339,073, Cl. 236-46.00R.
- Stamcarbon, B.V.: See—  
Jongsma, Cornelis, 4,339,599, Cl. 562-412.000.
- van Geem, Paul C.; de Graaf, Theodor F. M.; Knol, Dirk; and Plantema, Otto G., 4,339,604, Cl. 568-357.000.
- Stamm, Klaus: See—  
Geiger, Istvan; Stamm, Klaus; Bruning, Reinhard; and Meyer, Manfred, 4,338,899, Cl. 123-339.000.
- Stammann, Gunter: See—  
Becker, Robert; Rasp, Christian; Stammann, Gunter; and Grolig, Johann, 4,339,592, Cl. 560-25.000.
- Stamp, Custis L., Jr.; and Herzog, Rollie R., to General Electric Company. Microcomputer control for heat pump system. 4,338,791, Cl. 62-160.000.
- Standard Oil Co., The: See—  
Grasselli, Robert K.; Suresh, Dev D.; Brazdil, James F.; and Ratka, Frances I., 4,339,394, Cl. 260-465.300.
- Standard Oil Company (Indiana): See—  
Udovich, Carl A.; and Fields, Ellis K., 4,339,595, Cl. 560-76.000.
- Stanelle, Karl-Heinz. Collapsible silo. 4,338,752, Cl. 52-194.000.
- Stang, Peter: See—  
Camp, Albert T., 4,339,288, Cl. 149-8.000.
- Stanmore, Leonard D. Junction box for housing cable connections. 4,339,629, Cl. 174-50.000.
- Stansbury, Buddy F.: See—  
Brereton, David A.; and Stansbury, Buddy F., 4,339,795, Cl. 364-200.000.
- Brereton, David A.; and Stansbury, Buddy F., 4,339,796, Cl. 364-200.000.
- Brereton, David A.; and Stansbury, Buddy F., 4,339,797, Cl. 364-200.000.
- Starp, Franz; and Rittmann, Dieter. Cable release attachable to a camera shutter. 4,339,192, Cl. 354-269.000.
- Stauner, Rudolf, to Sulzer Brothers Limited. Catch mechanism for a weaving machine. 4,338,973, Cl. 139-439.000.
- Stavros, Anthony J.; and Crandall, Roger L., to Bethlehem Steel Corporation. Gas wiping apparatus and method of using. 4,339,480, Cl. 427-349.000.
- Steglich, Wolfgang; Hurnaus, Rudolf; Gruber, Peter; and Kuebel, Boerries, to BASF Aktiengesellschaft. Preparation of 4-substituted oxazolidin-5-ones. 4,339,589, Cl. 548-228.000.
- Steigerwald, Robert L.: See—  
Park, John N.; and Steigerwald, Robert L., 4,339,671, Cl. 307-253.000.
- Steinfeld, Horst E.: See—  
Dahlhaus, Peter; Steinfeld, Horst E.; and Striepeke, Wilhelm, 4,339,077, Cl. 238-349.000.
- Stening, Goran B.: See—  
Eriksson, Bertil F. H.; Helgstrand, Ake J. E.; Misiorny, Alfons; Stening, Goran B.; and Stridh, Stig A., 4,339,445, Cl. 424-212.000.
- Sterling Drug Inc.: See—  
Gruett, Monte D.; and Leshner, George Y., 4,339,584, Cl. 546-257.000.
- Zenitz, Bernard L., 4,339,576, Cl. 544-130.000.
- Sterlingworth Music, Inc.: See—  
Rendell, Stanley E., 4,338,772, Cl. 57-9.000.
- Sterman, Samuel: See—  
Blake, Robert J.; Sokolik, Joseph E., Jr.; and Sterman, Samuel, 4,339,338, Cl. 252-70.000.
- Stevens, Lee D.; and Grau, Harry C. Lacrosse goal. 4,339,132, Cl. 273-400.000.
- Stevens, Neill F. Tool for attaching a dropper to a fence wire. 4,338,976, Cl. 140-12.000.
- Steward, John H.; and Ladouceur, Harold A., to Multifastener Corporation. Fastener orienting, tapping and collection system. 4,338,694, Cl. 10-72.00R.
- Stewart, Roger G., to RCA Corporation. Noise protection circuits. 4,339,809, Cl. 365-206.000.
- Still, W. Clark. Synthesis of periplanone-B. 4,339,388, Cl. 549-332.000.
- Stivender, Paul M.: See—  
Barrett, David M.; Stivender, Paul M.; and Ueberfluss, Robert E., 4,339,825, Cl. 250-490.000.
- Stockburger, Hermann. Method and device for coding and/or decoding and securing data. 4,339,820, Cl. 371-53.000.
- Stocker, Winfried A. Apparatus and method for simultaneously mixing specimens for performing microanalyses. 4,339,241, Cl. 23-230.00B.
- Stoffelsma, Jan U., to Wavin B.V. Coloring composition for coloring thermoplastic polymers. 4,339,278, Cl. 106-308.00Q.
- Strack, Hans, to Degussa A.G. Process for the production of crystalline zeolite A. 4,339,417, Cl. 423-329.000.
- Strack, Hans, to Degussa A.G. and Henkel Kommanditgesellschaft. Process for the production of zeolite A. 4,339,418, Cl. 423-329.000.
- Strack, Hans, to Degussa A.G. and Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Process for the production of crystalline zeolite powder of type A. 4,339,419, Cl. 423-329.000.
- Strack, Hans, to Degussa A.G. and Henkel Kommanditgesellschaft Aktien (Henkel KGaA). Process for the production of zeolite A. 4,339,420, Cl. 423-329.000.
- Straub, Hans F.; Kindermann, Adalbert; Burkhardt, Friedrich; and Staiger, Hans. Magazine for storing toolholders with tools mounted therein for machine tools. 4,338,709, Cl. 29-26.00A.
- Streit, Kenneth F., to Techplastics, Inc. Knock-down display stand. 4,338,866, Cl. 108-111.000.
- Strick Corporation: See—  
Abolins, Andrew, 4,339,140, Cl. 280-433.000.
- Stridh, Stig A.: See—  
Eriksson, Bertil F. H.; Helgstrand, Ake J. E.; Misiorny, Alfons; Stening, Goran B.; and Stridh, Stig A., 4,339,445, Cl. 424-212.000.
- Striegler, Hellmut: See—  
Rosenkranz, Hans J.; Striegler, Hellmut; and Bendszus, Otto, 4,339,566, Cl. 528-68.000.
- Striepeke, Wilhelm: See—  
Dahlhaus, Peter; Steinfeld, Horst E.; and Striepeke, Wilhelm, 4,339,077, Cl. 238-349.000.
- Strouss, Oran L. Method of de-panning baked goods. 4,339,465, Cl. 426-293.000.
- Stulen, Foster B.: See—  
Faulkner, Lynn; and Stulen, Foster B., 4,339,247, Cl. 55-15.000.
- Stumpf, Friedrich; and Scheller, Thomas, to AGFA-Gevaert Aktiengesellschaft. Motion picture camera with film marking means. 4,339,180, Cl. 352-92.000.
- Sturm, Karl; and Muschaweck, Roman, to Hoechst Aktiengesellschaft. 5-Sulfamoyl-orthanilic acids, processes for their preparation and their use as medicaments. 4,339,446, Cl. 424-228.000.
- Sursa, Ken V.; and Horner, Amos A. Apparatus for forming bores. 4,338,710, Cl. 29-26.00A.
- Stursberg, Bernd; and Regenbrecht, Ludwig, to Pedinghaus, Rolf. Apparatus for slitting workpieces. 4,338,838, Cl. 83-467.00R.
- Suga, Yoshinori: See—  
Hasuo, Masayoshi; Suga, Yoshinori; Kojima, Kazuhisa; and Suzuki, Masatoshi, 4,339,557, Cl. 525-247.000.
- Suganuma, Buro: See—  
Matsui, Isamu; and Suganuma, Buro, 4,339,090, Cl. 242-35.50A.
- Sugio, Akitoshi; Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; and Umehara,



Toshikazu, to Mitsubishi Gas Chemical Co., Inc. Process for continuous production of oxymethylene polymer or copolymer. 4,339,569, Cl. 528-240.000.

Sugiura, Yoji, to Canon Kabushiki Kaisha. Electromagnetically driven focal plane shutter. 4,339,190, Cl. 354-234.000.

Sulzer Brothers Limited: See—  
Stauner, Rudolf, 4,338,973, Cl. 139-439.000.

Sulzer Morat GmbH: See—  
Eberwein, Eugen; Elsasser, Heinrich; Gaiser, Willi; Leins, Eberhard; Pape, Klaus; and Walter, Manfred, 4,338,799, Cl. 66-125.00R.

Sumitomo Chemical Company, Limited: See—  
Baba, Kazuo; Wakatsuki, Kizuku; and Hikasa, Tadashi, 4,339,560, Cl. 526-142.000.

Mashita, Kentaro; and Hanji, Katsumi, 4,339,351, Cl. 252-429.00B.

Sumitomo Metal Industries, Ltd.: See—  
Yamaguchi, Hisao; and Fujisawa, Kazuo, 4,338,822, Cl. 73-643.000.

Sundin, Jan A.: See—  
Nissmu, Jim A.; Sundin, Jan A.; and Sjostrom, Lars B., 4,339,074, Cl. 236-47.000.

Suntory Limited: See—  
Kusumi, Takenori; and Nakanishi, Koji, 4,339,588, Cl. 548-247.000.

Superior Stainless, Inc.: See—  
Welch, Elmer S., 4,339,111, Cl. 251-331.000.

Suresh, Dev D.: See—  
Grasselli, Robert K.; Suresh, Dev D.; Brazdil, James F.; and Ratka, Frances L., 4,339,394, Cl. 260-465.300.

Suss, Beate: See—  
Sauter, Fritz; Eberle, Otto; Suss, Beate; and Weissgerber, Rudolf, 4,339,455, Cl. 424-263.000.

Suzuki, Hiroaki: See—  
Yamada, Yu; Inoue, Mutsuhiro; Arai, Toshio; Omi, Kokichi; Suzuki, Hiroaki; and Kuwayama, Tetsuro, 4,339,183, Cl. 353-78.000.

Suzuki, Hiroshi: See—  
Kasahara, Hideo; Fukuda, Kunio; and Suzuki, Hiroshi, 4,339,376, Cl. 524-116.000.

Yanagihara, Yuzo; Noguchi, Kohji; Suzuki, Hiroshi; and Honda, Makoto, 4,339,500, Cl. 428-402.000.

Suzuki, Masatoshi: See—  
Hasuo, Masayoshi; Suga, Yoshinori; Kojima, Kazuhisa; and Suzuki, Masatoshi, 4,339,557, Cl. 525-247.000.

Suzuki, Osamu; Yoshizawa, Toshio; Yoshida, Yoshiaki; Onoue, Keiji; and Seiki, Kazuo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method and apparatus for starting and stopping an open end spinning machine. 4,338,777, Cl. 57-263.000.

Suzuki, Osamu; Morita, Takayuki; Ushino, Masashi; and Hirano, Hideo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for detecting an erroneously inserted empty bobbin in a spinning frame provided with an automatic doffing and donning apparatus. 4,338,778, Cl. 57-276.000.

Suzuki, Setsuo: See—  
Morimiyama, Osami; Suzuki, Setsuo; and Monma, Shigeki, 4,339,691, Cl. 315-111.210.

Svensson, Torsten: See—  
Berkstad, Karl-Erik; Danielsson, Lennart; Henriksson, Erik; Svensson, Torsten; and Ostlund, Artur, 4,339,249, Cl. 55-269.000.

Swales, Charles W. Line bore gauge. 4,338,726, Cl. 33-178.00R.

Swanson, William C., to International Harvester Co. Hydraulic circuit for synchronous lift of flexible frame implements. 4,339,139, Cl. 280-43.230.

Swerdlow, Albert; and Szegedy, George, to Universal Component Systems, Inc. Method of building construction using concrete reinforced wall modules. 4,338,759, Cl. 52-743.000.

Sydror, Philip R.; and Brooker, Graham J., to Micro Consultants Limited. Digital frequency multiplier. 4,339,722, Cl. 328-38.000.

Sykes, Richard B.; Wells, Jerry S.; and Liu, Wen-Chih, to E. R. Squibb & Sons, Inc. Process for preparing antibiotic EM 4940. 4,339,535, Cl. 435-119.000.

System Industries, Inc.: See—  
Kyser, Edmond L.; and Sears, Stephan B., 4,339,763, Cl. 346-140.00R.

Syston-Donner Corporation: See—  
Marquess, Richard D., 4,338,819, Cl. 73-497.000.

Szegedy, George: See—  
Swerdlow, Albert; and Szegedy, George, 4,338,759, Cl. 52-743.000.

Szekely, Jozsef: See—  
Bajusz, Sandor; Ronai, Andras; and Szekely, Jozsef, 4,339,440, Cl. 424-177.000.

TA Mfg. Corp.: See—  
Byerly, Robert M., 4,338,707, Cl. 24-257.000.

Tabata, Youichiro: See—  
Komura, Hirotugu; Ueguri, Shigeo; and Tabata, Youichiro, 4,339,656, Cl. 219-494.000.

Tabb, David L.: See—  
Magers, Thomas A.; and Tabb, David L., 4,339,242, Cl. 23-230.00B.

Magers, Thomas A.; and Tabb, David L., 4,339,243, Cl. 23-230.00B.

Tabuchi, Kenji; Tanaka, Susumu; Wada, Kenichi; and Oka, Tateki, to Mindita Camera Kabushiki Kaisha. Magnetic brush development apparatus for use in electrophotographic copying machine. 4,338,880, Cl. 118-652.000.

Tachibana, Eiichi; and Hikosaka, Shinichi, to Dai Nippon Insatsu Kabushiki Kaisha. Method for fabricating gravure printing cylinders with synthetic resin surface. 4,339,472, Cl. 427-44.000.

Tachikawa, Sachiko: See—  
Sogi, Shinroku; Izawa, Masao; Hattori, Shinichiro; Tawara, Ikuo; Shinohara, Daizo; and Tachikawa, Sachiko, 4,339,537, Cl. 435-240.000.

Tada, Hisashi: See—  
Yoshioka, Naonori; Tada, Hisashi; and Kashiya, Setsuo, 4,339,490, Cl. 428-213.000.

Taguchi, Kenichi: See—  
Ishihara, Toshinobu; Taguchi, Kenichi; and Yamamoto, Akira, 4,339,397, Cl. 260-665.00R.

Taguchi, Tohru: See—  
Imai, Ichiro; Matsunaga, Fujihisa; Nakagawa, Hiroaki; Isibasi, Masayasu; and Taguchi, Tohru, 4,339,615, Cl. 568-768.000.

Tague, Thomas J.: See—  
Hills, Richard E.; and Tague, Thomas J., 4,339,052, Cl. 220-226.000.

Taira, Kazuo: See—  
Ueno, Hiroshi; Kojima, Shunji; Taira, Kazuo; Katsura, Tadahiho; Horiguchi, Makoto; and Takahashi, Susumu, 4,339,483, Cl. 428-35.000.

Takagishi, Yasushi; Doi, Yoshio; and Hoshi, Noboru, to Shionogi & Co., Ltd.; and Shin-Etsu Chemical Co., Ltd. Enterosoluble hard-capsulated medicaments. 4,339,463, Cl. 424-35.000.

Takago, Toshio; Arai, Masatoshi; and Futatsumori, Koji, to Shin-Etsu Chemical Co., Ltd. Novel organopolysiloxanes and room temperature curable organopolysiloxane compositions containing the same. 4,339,563, Cl. 528-14.000.

Takahashi, Michiko: See—  
Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, 4,339,762, Cl. 346-140.00R.

Takahashi, Susumu: See—  
Ueno, Hiroshi; Kojima, Shunji; Taira, Kazuo; Katsura, Tadahiho; Horiguchi, Makoto; and Takahashi, Susumu, 4,339,483, Cl. 428-35.000.

Takahashi, Yasohachi: See—  
Yoshino, Isamu; Takahashi, Yasohachi; and Fujii, Osamu, 4,339,143, Cl. 282-27.500.

Takahashi, Yasuhiro; Ohinata, Yoshiharu; and Nakamura, Matsuo, to Riso Kagaku Corporation. Process and machine for disposing of sticky sheet. 4,339,293, Cl. 156-227.000.

Takahashi, Yutaka: See—  
Matsuura, Tsuyoshi; Aihara, Mamoru; Takahashi, Yutaka; and Nakajima, Yoshio, 4,339,187, Cl. 354-173.000.

Takaki, Masaaki: See—  
Hideshima, Keiji; Koyanagi, Haruo; Senda, Shuichi; Asada, Kazuyoshi; Murayama, Norio; Nihashi, Yoshiyuki; and Takaki, Masaaki, 4,339,794, Cl. 364-200.000.

Takakura, Kintomo: See—  
Kosugi, Yukio; Ikebe, Jun; Takakura, Kintomo; and Kumagai, Yoriaki, 4,338,945, Cl. 128-421.000.

Takamiya, Bonnosuke: See—  
Nakamura, Hirokazu; Takamiya, Bonnosuke; Miki, Takao; and Ishida, Takashi, 4,338,902, Cl. 123-454.000.

Takashige, Yoshiki: See—  
Misawa, Masanaru; Takayama, Shinsaku; Takashige, Yoshiki; and Tsumori, Hiroshi, 4,338,745, Cl. 47-58.000.

Takashima, Kunihide: See—  
Matsumoto, Fumio; Hayami, Satoshi; Haratani, Tsutomu; Takashima, Kunihide; and Kikuma, Toshio, 4,339,287, Cl. 148-111.000.

Takata, Yoshinori: See—  
Miyagi, Hiroyuki; Takata, Yoshinori; Miura, Junkichi; and Taki, Mamoru, 4,338,811, Cl. 73-23.100.

Takatori, Yasushi: See—  
Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, 4,339,762, Cl. 346-140.00R.

Takayama, Shinsaku: See—  
Misawa, Masanaru; Takayama, Shinsaku; Takashige, Yoshiki; and Tsumori, Hiroshi, 4,338,745, Cl. 47-58.000.

Takeda Chemical Industries, Ltd.: See—  
Kita, Harumi, 4,339,586, Cl. 546-301.000.

Takeda, Mutsuhiko: See—  
Sugio, Akitoshi; Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; and Umemura, Toshikazu, 4,339,569, Cl. 528-240.000.

Takemoto, Tsunematsu; Arichi, Shigeru; Aihara, Shigenobu; Nakajima, Tadashi; Okuhira, Megumi; and Uchida, Yoshihiro. Gynasponins, their use and a process for preparing the same. 4,339,442, Cl. 424-182.000.

Takeuchi, Atsushi: See—  
Tomisawa, Norio; Takeuchi, Atsushi; and Tamori, Nobuyuki, 4,339,813, Cl. 369-231.000.

Takeuchi, Osamu: See—  
Ichimura, Kunihiko; Takeuchi, Osamu; Kusama, Hideo; Yamazaki, Kazuo; Saka, Akira; Ito, Hiroshi; and Toyofuku, Kunitaka, 4,339,524, Cl. 430-270.000.

Takeuchi, Fujio: See—  
Kuroda, Kei-ichi; Sillou, Daniel; and Takeuchi, Fujio, 4,339,684, Cl. 313-105.00R.

Taki, Mamoru: See—  
Miyagi, Hiroyuki; Takata, Yoshinori; Miura, Junkichi; and Taki, Mamoru, 4,338,811, Cl. 73-23.100.

Takigawa, Jun: See—  
Kaifu, Masaharu; Tanaka, Kazuo; Fujimoto, Hideo; Takigawa, Jun; Nishimura, Tomohiro; Hirose, Yagoro; and Hirai, Junu, 4,339,510, Cl. 428-654.000.

Tamori, Nobuyuki: See—  
Tomisawa, Norio; Takeuchi, Atsushi; and Tamori, Nobuyuki, 4,339,813, Cl. 369-231.000.

Tamura, Misao: See—  
Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Tamura, Misao, 4,339,474, Cl. 427-54.100.

Tanaka, Katsumasa: See—  
Sugio, Akitoshi; Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; and Umemura, Toshikazu, 4,339,569, Cl. 528-240.000.

Tanaka, Kazuo: See—  
Kaifu, Masaharu; Tanaka, Kazuo; Fujimoto, Hideo; Takigawa, Jun; Nishimura, Tomohiro; Hirose, Yagoro; and Hirai, Junu, 4,339,510, Cl. 428-654.000.

Tanaka, Sakae: See—  
Ohkoshi, Akio; Sato, Hiroki; Hatanaka, Masato; Ohboshi, Toshio; and Tanaka, Sakae, 4,339,694, Cl. 315-366.000.

Tanaka, Susumu: See—  
Tabuchi, Kenji; Tanaka, Susumu; Wada, Kenichi; and Oka, Tateki, 4,339,622, Cl. 118-652.000.

Tanaka, Takanori: See—  
Morishita, Masanobu; and Tanaka, Takanori, 4,339,771, Cl. 358-41.000.

Tanaka, Takeo; and Yamamoto, Osamu, to Fuji Electric Co., Ltd. Oxygen gas analyzing device. 4,339,318, Cl. 204-195.00S.

Tanaka, Tomoo: See—  
Hashimoto, Osamu; Sato, Susumu; and Tanaka, Tomoo, 4,339,284, Cl. 148-12.00C.

Tanaka, Yoshiaki: See—  
Inami, Mamoru; and Tanaka, Yoshiaki, 4,339,711, Cl. 324-77.00E.

Tanaka, Yutaka; Yatomi, Takeshi; and Ozaki, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Electric discharge machining apparatus. 4,339,650, Cl. 219-69.00G.

Tanigami, Satoshi, to Kabushiki Kaisha Uchida Yoko. Manually operated typing device. 4,339,209, Cl. 400-142.000.

Tanimoto, Yoshio, to Nippon Electric Co., Ltd. Clock recovery circuit for TDMA system or message switching system. 4,339,824, Cl. 375-110.000.

Tanner, Douglas; and Spector, George. Inner tube traction device. 4,339,142, Cl. 280-759.000.

Tanner, James H. Supporting device. 4,338,703, Cl. 17-44.000.

Tappe, Gunther; Gasper, Bertram; Laubenberger, Herbert; and Weiss, Richard, to Dynamit Nobel Aktiengesellschaft. String of a synthetic resin. 4,339,499, Cl. 428-373.000.

Tardot, Jacques; and Lambert, Roger, to L'ETAT FRANCAIS, represente par le Delege General pour l'Armement. Release mechanism for aircraft released loads. 4,339,098, Cl. 244-151.00B.

Tarli, Paolo: See—  
Meiattini, Franco; Papeschi, Giorgio; Tarli, Paolo; and Neri, Paolo, 4,339,317, Cl. 204-195.00B.

Tarro, Richard E. Container with attached pull tab opener and indicator. 4,339,053, Cl. 220-269.000.

Tary, Orville L.: See—  
Walton, Ronald O.; and Tary, Orville L., 4,339,261, Cl. 65-178.000.

Tashiro, Yasuo: See—  
Ohmori, Koichiro; Tashiro, Yasuo; and Nakayama, Heihachiro, 4,338,765, Cl. 53-452.000.

Tassi, Lamberto: See—  
Ballestrazzi, Aris; and Tassi, Lamberto, 4,338,768, Cl. 53-495.000.

Tatsumi, Hisao; and Kawano, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Dryer. 4,338,730, Cl. 34-54.000.

Tauber, Gunther: See—  
Hoffmann, Erich; Wagemann, Wolfgang; Tauber, Gunther; May, Adolf; and Bucking, Hans-Walter, 4,339,391, Cl. 260-401.000.

Tauzin, Francis, to Pomagalski S.A.; and Sigma Plastique. Pneumatic suspension system for ropeway cars. 4,338,863, Cl. 104-89.000.

Tawara, Ikuo: See—  
Sogi, Shinroku; Izawa, Masao; Hattori, Shinichiro; Tawara, Ikuo; Shinohara, Daizo; and Tachikawa, Sachiko, 4,339,537, Cl. 435-240.000.

Taylor, Richard J.: See—  
Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., 4,339,803, Cl. 364-724.000.

TDK Electronics Co., Ltd.: See—  
Tokuoka, Yasumichi, 4,339,425, Cl. 423-633.000.

Teague, Richard K.: See—  
Yu, Henry H. S.; and Teague, Richard K., 4,339,782, Cl. 361-229.000.

Technicon Instruments Corporation: See—  
Chu, Douglas K., 4,339,533, Cl. 435-17.000.

Techplastics, Inc.: See—  
Streit, Kenneth F., 4,338,866, Cl. 108-111.000.

Teledyne Industries, Inc.: See—  
Guajardo, Ciro, 4,339,670, Cl. 307-252.00A.

Temple, Stephen, to Cambridge Consultants Limited. Apparatus and method for generating a dispersed dot half tone picture from a continuous tone picture. 4,339,774, Cl. 358-283.000.

Tencza, Thomas M., to Bristol-Myers Company. Capsule product containing high dosage of aspirin in powder or granulated form and alkaline tablet or pellet comprising magnesium carbonate, calcium carbonate and a magnesium dry component. 4,339,428, Cl. 424-21.000.

Terada, Haruyoshi: See—  
Oda, Nobuyuki; and Terada, Haruyoshi, 4,339,310, Cl. 204-38.00R.

Terada, Takami: See—  
Mori, Mamoru; and Terada, Takami, 4,339,103, Cl. 248-397.000.

Terada, Tsutomu: See—  
Yoshimura, Tatsuhiro; and Terada, Tsutomu, 4,339,553, Cl. 524-544.000.

Terashima, Takeo: See—  
Fujita, Toshiji; Yamada, Chihiko; Terashima, Takeo; and Nojima, Masaki, 4,339,769, Cl. 358-6.000.

Terasita, Takaaki: See—  
Nakauchi, Kenji; and Terasita, Takaaki, 4,339,185, Cl. 354-31.000.

Terminiello, Michael A.; and Gebura, Stanley E., to BASF Wyandotte Corporation. Rotating riffler. 4,338,982, Cl. 141-132.000.

Texaco Inc.: See—  
Brown, Winthrop K., 4,339,663, Cl. 250-270.000.

Hammond, Kenneth G.; and Chafetz, Harry, 4,339,336, Cl. 252-34.000.

Knifton, John F., 4,339,545, Cl. 518-700.000.

Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., 4,339,622, Cl. 585-433.000.

Texas Instruments Incorporated: See—  
Barlow, Carl A., Jr.; and Reid, Lee R., 4,338,950, Cl. 128-687.000.

Ramsey, Richard A., 4,339,675, Cl. 307-473.000.

Ramsey, Richard A., 4,339,676, Cl. 307-473.000.

Rao, G. R. Mohan, 4,339,766, Cl. 357-41.000.

Theissen, Robert J., to Rhone-Poulenc Agrochimie. Herbicidal nitroalkyl 5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoates. 4,339,268, Cl. 71-108.000.

Thermacon Industries, Inc.: See—  
Crothers, Charles J., 4,338,756, Cl. 52-539.000.

Thermatool Corp.: See—  
Harriau, Robert R.; and Udall, Humfrey N., 4,339,654, Cl. 219-107.000.

Thiboutot, Robert, to Les Entreprises Rotot Ltee. Collapsible folding cart. 4,339,141, Cl. 280-652.000.

Thieversen, Karl; Weiss, Peter; and Welkers, Knut, to Jagenberg Werke AG. Device for chucking tubular winding cores. 4,339,094, Cl. 242-68.200.

Thold, Dezso D.: See—  
Bailey, Cecil; Young, Albert C.; and Thold, Dezso D., 4,339,652, Cl. 219-95.000.

Thomson-CSF: See—  
Mage, Jean-Claude; and Deljurie, Claude, 4,339,543, Cl. 501-134.000.

Thorsteinson, Erlind M.: See—  
Decker, Harry J.; and Thorsteinson, Erlind M., 4,339,355, Cl. 252-464.000.

Thulin, Gunnar: See—  
Johansson, Ingvar H.; Johansson, Helle G.; Webing, Kurt; and Thulin, Gunnar, 4,339,047, Cl. 220-1.500.

Thut, Timothy T. Fresh air fountain air filter arrangement. 4,339,250, Cl. 55-316.000.

Tice, Isabelle L.: See—  
Tice, Richard P.; and Tice, Isabelle L., 4,339,043, Cl. 209-44.000.

Tice, Richard P.; and Tice, Isabelle L. Portable mining apparatus. 4,339,043, Cl. 209-44.000.

Tiethof, Jack A.: See—  
Pitts, Frank; Tiethof, Jack A.; and Burns, Robert A., 4,339,352, Cl. 252-449.000.

Times Fiber Communications, Inc.: See—  
Smith, Kenneth I., 4,339,733, Cl. 333-237.000.

Timofeev, Leonid K.: See—  
Malikov, Georgy F.; Chukhno, Vladimir A.; Timofeev, Leonid K.; Ibragimov, Khakim N.; deceased; and Ibragimova, Maria F., administrator, 4,339,010, Cl. 177-134.000.

Tison, Harley R. Wood truss forming apparatus. 4,339,117, Cl. 269-289.00R.

Toa Nenryo Kogyo Kabushiki Kaisha: See—  
Onodera, Takashi; Komine, Kikuji; Ohashi, Fumio; and Naito, Tsutomu, 4,339,619, Cl. 570-183.000.

Tobe, Akihiro: See—  
Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; and Egawa, Mitsuo, 4,339,580, Cl. 544-360.000.

Toda, Minoru; and Osaka, Susumu, to RCA Corporation. Rotative motor using a piezoelectric element. 4,339,682, Cl. 310-321.000.

Toho Beslon Co., Ltd.: See—  
Kosuda, Hiroyuki; and Nijima, Kenji, 4,339,021, Cl. 191-50.000.

Tokuno, Masateru, to Rengo Kabushiki Kaisha. System for controlling width and position of glue or the like applied to a roll. 4,338,881, Cl. 118-673.000.

Tokuoka, Yasumichi, to TDK Electronics Co., Ltd. Process for producing acicular hydrated ferric oxide particles. 4,339,425, Cl. 423-633.000.

Tokyo Electric Co., Ltd.: See—  
Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu, 4,339,807, Cl. 364-900.000.

Tokyo Shibaura Denki Kabushiki Kaisha: See—  
Hashimoto, Masaru, 4,339,674, Cl. 307-362.000.

Hirose, Masahiko; Yasui, Tsuyoshi; and Yotuyanagi, Masahiko, 4,339,326, Cl. 204-298.000.

Iida, Kazuhiko, 4,339,805, Cl. 364-900.000.

Inoue, Kiyoshi; and Watanabe, Minoru, 4,339,501, Cl. 428-404.000.

Morimiyama, Osami; Suzuki, Setsuo; and Monma, Shigeki, 4,339,691, Cl. 315-111.210.

Nakamura, Junichi; Hata, Seiji; and Yamasaki, Iwao, 4,339,765, Cl. 357-36.000.

Sasaki, Hiroshi; and Ariga, Yoshio, 4,339,119, Cl. 271-180.000.

Tatsumi, Hisao; and Kawano, Takashi, 4,338,730, Cl. 34-54.000.



- Yamaura, Mitsuru; Kondow, Ryotaro; Mitani, Megumu; and Okamoto, Eiichi, 4,339,802, Cl. 364-483.000.
- Tokyo Shibaura Electric Co., Ltd.: See—  
Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, 4,339,340, Cl. 252-79.500.
- Satou, Takahisa, 4,339,410, Cl. 376-216.000.
- Tolasch, Gerhard: See—  
Base, Horst; Tolasch, Gerhard; and Bantien, Jurgen, 4,339,026, Cl. 198-347.000.
- Tom McGuane Industries: See—  
Ludwig, George C., 4,339,743, Cl. 338-206.000.
- Tomihashi, Nobuyuki: See—  
Okamura, Kazuo; Daimon, Shigeo; and Tomihashi, Nobuyuki, 4,339,518, Cl. 430-126.000.
- Tomisawa, Norio; Takeuchi, Atsushi; and Tamori, Nobuyuki, to Nippon Gakki Seizo Kabushiki Kaisha. Apparatus for detecting groove end of record disk, 4,339,813, Cl. 369-231.000.
- Tomoda, Masayasu, to Daikin Kogyo Co., Ltd. Adhesive composition for fluorinated rubbers, 4,339,565, Cl. 528-27.000.
- Toppan Printing Co., Ltd.: See—  
Fujita, Toshiiji; Yamada, Chihiko; Terashima, Takeo; and Nojima, Masaki, 4,339,769, Cl. 358-6.000.
- Torige, Kazuo: See—  
Kikuchi, Nobuji; Kisaka, Yoshiyuki; Torige, Kazuo; and Onose, Masayuki, 4,339,315, Cl. 204-129.850.
- Torii, Shigeru; Nakane, Shoji; Shirakawa, Toshifumi; and Akada, Mitsuo, to Otsuka Kagaku Yakuhin Kabushiki Kaisha. Process for preparing anisaldehyde, 4,339,607, Cl. 568-426.000.
- Torres, Rafael, and Henderson, John G. N., to RCA Corporation. Automatic tuning circuit arrangement with switched impedances, 4,339,827, Cl. 455-188.000.
- Totten, George E.; Wesson, John P.; Williams, Thomas C.; and Eagar, Robert G., Jr., to Union Carbide Corporation. Milwecidial silane compounds, 4,339,581, Cl. 546-14.000.
- Toyo Seikan Kaisha Limited: See—  
Ueno, Hiroshi; Kojima, Shunji; Taira, Kazuo; Katsura, Tadahiko; Horiguchi, Makoto; and Takahashi, Susumu, 4,339,483, Cl. 428-35.000.
- Toyo Soda Manufacturing Co. Ltd.: See—  
Hashimoto, Koji; Masumoto, Tsuyoshi; Hara, Motoi; Asami, Katsuhiko; and Sakiyama, Kazutaka, 4,339,270, Cl. 148-403.000.
- Toyo Tokushu Kiki Co., Ltd.: See—  
Yamada, Shoichi, 4,339,749, Cl. 340-680.000.
- Toyoofuku, Kunitaka: See—  
Ichimura, Kunihiro; Takeuchi, Osamu; Kusama, Hideo; Yamazaki, Kazuo; Saka, Akira; Ito, Hiroshi; and Toyoofuku, Kunitaka, 4,339,524, Cl. 430-270.000.
- Toyota Jidosha Kogyo Kabushiki Kaisha: See—  
Kawaguchi, Hiroshi, 4,338,787, Cl. 60-562.000.
- Mori, Mamoru; and Terada, Takami, 4,339,103, Cl. 248-397.000.
- Nagasaki, Yasumasa, 4,339,144, Cl. 293-120.000.
- Tracy, Thomas R., to Palladium Corporation. Safety chute, 4,339,019, Cl. 182-47.000.
- Trade Finance International: See—  
Sorensen, Jens O., 4,338,786, Cl. 60-531.000.
- Trane Company, The: See—  
Saunders, James F.; and Krock, Robert E., 4,338,790, Cl. 62-80.000.
- Trevithick, Mark W.: See—  
Donnelly, Robert B.; and Trevithick, Mark W., 4,339,225, Cl. 414-690.000.
- Tricot, Marc; and Daniel, Jean-Claude, to Rhone-Poulenc Industries. Process for the preparation of magnetic beads of vinylaromatic polymers, 4,339,337, Cl. 252-62.540.
- Trong, Ming-Ching. Oil saver for vehicles, 4,338,908, Cl. 123-572.000.
- Trubiano, Antoine. Container basket for wheelchair, 4,339,063, Cl. 224-273.000.
- Truchot, Eric: See—  
Fleche, Guy; Gaset, Antoine; Gorrichon, Jean-Pierre; Truchot, Eric; and Sicard, Philippe, 4,339,387, Cl. 549-488.000.
- Trump, Martin R.: See—  
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- Turko, John D.; and Petro, John D., to Commercial Shearing, Inc. Control and relief valves, 4,338,962, Cl. 137-269.000.
- Turnbull, James A.: See—  
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- Turner, William D. Electronic transfer organ, 4,338,849, Cl. 84-345.000.
- Tutty, Geoffrey C., to INCA Limited. Color developable composition, 4,339,275, Cl. 524-255.000.
- Twin Disc, Incorporated: See—  
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- Ueda, Kazuo, to Central Glass Company, Limited. Method of producing curved and partly colored glass sheet, 4,339,257, Cl. 65-60.500.
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- Urschel, Edward O., to Litton Systems, Inc. Low-inertia high-torque synchronous induction motor, 4,339,679, Cl. 310-49.00R.
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- Van Bommel, Peter P.: See—  
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- Van Dyke, John W., Jr., to Miles Laboratories, Inc. Quinolizidine-propionanilide compounds, 4,339,582, Cl. 546-112.000.
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- VEB Werkzeugkombinat Schmalkalden: See—  
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- Moore, Walter T., 4,338,922, Cl. 126-452.000.
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- Vitro Tec Fideicomiso: See—  
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- Voest-Alpine Aktiengesellschaft: See—  
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- Vogel & Halke: See—  
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- Vogel, Sonke; and Muller, Frohmut, to Vogel & Halke. Baby scale. 4,339,012, Cl. 177-262.000.
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- Volnina, Elvira A.: See—  
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- Vosper, George W. Screw operated jack. 4,339,113, Cl. 254-13.000.
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- Hoffmann, Erich; Wagemann, Wolfgang; Tauber, Gunther; May, Adolf; and Bucking, Hans-Walter, 4,339,391, Cl. 260-401.000.
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- Wallhauser, Karl H.: See—  
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- Walton, Ronald O.; and Tary, Orville L., to Libbey-Owens-Ford Company. Drive system for glass furnace stirrers. 4,339,261, Cl. 65-178.000.
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- Wang, Jish M.; and McCary, Richard O., to General Electric Company. Magnetic printing head having a high signal-to-noise ratio. 4,339,760, Cl. 346-74.500.
- Wang, Patricia C.; and Wingard, Robert E., Jr., to Dynapol. Free amine-containing polymeric dyes. 4,339,237, Cl. 8-405.000.
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- Warehime, Norwood R. Mallet driven sliding disc game and apparatus. 4,339,133, Cl. 273-126.00R.
- Warnaka, Glenn E., to Lord Corporation. Sound absorbing structure. 4,339,018, Cl. 181-286.000.
- Warner, Bert J.; Mathis, Melwyn L.; and Johnson, Warren F., to Mobil Oil Corporation. Method and apparatus for mixing gaseous oxidant and lixiviant in an in situ leach operation. 4,339,152, Cl. 299-5.000.
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 Frisch, David C.; and Weber, Wilhelm, 4,339,303, Cl. 156-629.000.
- Webing, Kurt: See—  
 Johansson, Ingvar H.; Johansson, Helle G.; Webing, Kurt; and Thulin, Gunnar, 4,339,047, Cl. 220-1.500.
- Wehner, Wolfgang; Michaelis, Klaus-Peter; and Schneider, Rainer, to Ciba-Geigy Corporation. Imide containing stabilizers for chlorinated thermoplastics. 4,339,383, Cl. 548-419.000.
- Weidenmuller, Hans-Ludwig: See—  
 Oeding, Volker; Pfaff, Werner; Vertesy, Laszlo; and Weidenmuller, Hans-Ludwig, 4,339,436, Cl. 424-115.000.
- Weidman, Marilyn V. Floor stand mounted mirror. 4,339,104, Cl. 248-407.000.
- Weigt, Gerald I. Mobile and adaptable wheel chair. 4,339,013, Cl. 180-6.500.
- Weiner, Milton L., to Mobil Oil Corporation. Heat sealable packaging film comprising propylene polymer substrate and olefin surface layer blend of polybutene-1 and an ethylene or a propylene copolymer. 4,339,493, Cl. 428-349.000.
- Weiner, Milton L., to Mobil Oil Corporation. Heat sealable packaging film comprising propylene polymer substrate and olefin surface layer blend of polybutene-1 and an ethylene or a propylene copolymer. 4,339,494, Cl. 428-349.000.
- Weiner, Milton L., to Mobil Oil Corporation. Heat sealable packaging film comprising propylene polymer substrate and olefin surface layer blend of polybutene-1 and ethylene or a propylene copolymer. 4,339,495, Cl. 428-349.000.
- Weiner, Milton L., to Mobil Oil Corporation. Heat sealable packaging film comprising propylene polymer substrate and a surface layer blend of ethylene copolymer and propylene copolymer. 4,339,496, Cl. 428-349.000.
- Weiner, Milton L., to Mobil Oil Corporation. Heat sealable packaging film comprising propylene polymer substrate and a surface layer blend of olefin copolymer or interpolymers. 4,339,497, Cl. 428-349.000.
- Weiner, Milton L., to Mobil Oil Corporation. Heat sealable packaging film comprising propylene polymer substrate and a surface layer blend of olefin copolymer or interpolymers. 4,339,498, Cl. 428-349.000.
- Weir, Fred E.: See—  
 Krackeler, Joseph J.; and Weir, Fred E., 4,338,970, Cl. 138-141.000.
- Weiss, Donald P.: See—  
 White, Robert D.; and Weiss, Donald P., 4,339,788, Cl. 362-157.000.
- Weiss, Jacob B. Eavestrough corner bracket. 4,338,808, Cl. 72-379.000.
- Weiss, Peter: See—  
 Thievsen, Karl; Weiss, Peter; and Welkers, Knut, 4,339,094, Cl. 242-68.200.
- Weiss, Richard: See—  
 Tappe, Gunther; Gasper, Bertram; Laubenberger, Herbert; and Weiss, Richard, 4,339,499, Cl. 428-373.000.
- Weissgerber, Rudolf: See—  
 Sauter, Fritz; Eberle, Otto; Suss, Beate; and Weissgerber, Rudolf, 4,339,455, Cl. 424-263.000.
- Weist, William T.: See—  
 Scott, William R.; Bloomfield, Philip; Weist, William T.; and McMahon, Karen M., 4,339,683, Cl. 310-364.000.
- Weisz, Paul B.; and Frette, Vincent J., to Mobil Oil Corporation. Conversion process. 4,339,353, Cl. 252-455.00Z.
- Welch, Elmer S., to Superior Stainless, Inc. Clean in place diaphragm valve. 4,339,111, Cl. 251-331.000.

- Welkers, Knut: See—  
 Thievsen, Karl; Weiss, Peter; and Welkers, Knut, 4,339,094, Cl. 242-68.200.
- Wells, Jerry S.: See—  
 Sykes, Richard B.; Wells, Jerry S.; and Liu, Wen-Chih, 4,339,535, Cl. 435-119.000.
- Welters, Norbert, to Palitex Project Company GmbH. Yarn brake. 4,338,774, Cl. 57-58.860.
- Welton, Myron L.; and Sheneman, Gary L., to Iowa Beef Processors, Inc. Method for processing beef tongues. 4,338,704, Cl. 17-50.000.
- Wendt, Robert J. Apparatus for dispensing material from a containment vessel in preselected measured amounts. 4,339,058, Cl. 222-309.000.
- Werle, Peter; Merk, Wolfgang; Pohl, Gerhard; and Hoevels, Friedrich, to Degussa Aktiengesellschaft. Bisguanamines. 4,339,578, Cl. 544-207.000.
- Wesson, John P.: See—  
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- Westermann, Hans: See—  
 Muschelknautz, Edgar; Vogelsgesang, Roland; Ohse, Helmut; Westermann, Hans; Moller, Eckhard; Hachmann, Klaus; Schiemann, Wilhelm; and Kesper, Bernt, 4,339,570, Cl. 528-272.000.
- Western Electric Co., Inc.: See—  
 Gursky, Michael T.; and Pchoda, William W., 4,339,296, Cl. 156-345.000.
- Kanotz, William M.; Mottine, John J., Jr.; Staats-Westover, Robert F.; and Wilson, Max K., 4,339,298, Cl. 156-498.000.
- Westinghouse Electric Corp.: See—  
 Franz, James H., 4,339,697, Cl. 318-341.000.
- Husby, Donald E.; Ewing, Jerry L.; and Johnson, William H., 4,339,789, Cl. 362-259.000.
- Zwillich, Alexander; and Patel, Jayant M., 4,339,635, Cl. 200-48.00R.
- Westphal, Jochen: See—  
 Hugl, Herbert; Wolfrum, Gerhard; Mennicke, Winfried; Schun-dehutte, Karl H.; and Westphal, Jochen, 4,339,380, Cl. 260-207.100.
- Whelchel, Charles J.: See—  
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- Whirlpool Corporation: See—  
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- White, Robert D.; and Weiss, Donald P., to Union Carbide Corporation. Lighting device with dynamic bulb position. 4,339,788, Cl. 362-157.000.
- Whittingham, M. Stanley: See—  
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- Whyte, David D., to Procter & Gamble Company, The. Heavily perfumed particles. 4,339,356, Cl. 252-522.00A.
- Widmer, Fred: See—  
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- Wieder, Armin W.: See—  
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- Wiessner, Edward E.: See—  
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- Wiggins, Wayne T.: See—  
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- Wigmore, Richard: See—  
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- Wiklund, Rudolf; and Nordstrom, Lennart, to Pharos AB. Method and apparatus for registration of topography. 4,339,664, Cl. 250-577.000.
- Wilder, Gene R., to Monsanto Company. 2-(Thioamino)-4,6-diamino-1,3,5-triazines. 4,339,577, Cl. 544-197.000.
- Wilhelm, Siegfried: See—  
 Hummel, Wolfgang; Koch, Gerhard; Wilhelm, Siegfried; and Zorn, Horst, 4,338,771, Cl. 56-294.000.
- Wilkins, Douglas A.: See—  
 Shelby, Robert L.; and Wilkins, Douglas A., 4,338,890, Cl. 123-195.00A.
- Will, Peter: See—  
 Bauder, Richard; and Will, Peter, 4,338,898, Cl. 123-279.000.
- Willard, Robert S.: See—  
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- Wm. E. Wright Co.: See—  
 Kenyon, Douglas A., 4,339,059, Cl. 223-46.000.
- Williams, Derek, to Lucas Industries Limited. Drive cam and follower for a liquid fuel injection pumping apparatus. 4,339,234, Cl. 417-490.000.
- Williams, Frederick C.; and Clements, William W., to Hughes Aircraft Company. Synthetic array processor. 4,339,752, Cl. 343-5.0CM.
- Williams, R. Tudor. Airway intubator. 4,338,930, Cl. 128-200.260.
- Williams, Robert M. Reversible material reducing mill. 4,339,085, Cl. 241-62.000.
- Williams, Terrell M., to Medtronic, Inc. Positive fixation heart wire. 4,338,947, Cl. 128-642.000.
- Williams, Thomas C.: See—  
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- Williamson, Roger J.: See—  
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- Willis, Brian J.; Lerner, David I.; and Barton, Derek H. R., to Fritzsche-Dodge & Olcott Inc. Process for the manufacture of 3,6-dialkyl resorcylic acid esters. 4,339,593, Cl. 560-70.000.
- Wilson, Dennis A. Shaker conveyor and drive mechanism therefor. 4,339,029, Cl. 198-750.000.
- Wilson, Elmer C. Syringe support. 4,338,935, Cl. 128-218.00R.
- Wilson, James R.: See—  
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- Wilson, Max K.: See—  
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- Wilson, William W.: See—  
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- Windle, William; Lofthouse, Charles H.; and Shergold, Howard L., to English Clays Lovering Pochin & Company, Ltd. Treatment of minerals. 4,339,042, Cl. 209-5.000.
- Windmoller & Holscher: See—  
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- Upmeyer, Hartmut; Klinge, Gerd; and Winkler, Gerhard, 4,339,404, Cl. 264-40.100.
- Wingard, Robert E., Jr.: See—  
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- Winkler, Gerhard: See—  
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- Upmeyer, Hartmut; Klinge, Gerd; and Winkler, Gerhard, 4,339,404, Cl. 264-40.100.
- Winter, William E.: See—  
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- Winters, David L. Filter paper dispenser. 4,339,057, Cl. 221-213.000.
- Winzer, Gerhard, to Siemens Aktiengesellschaft. Optical device for frequency-selective distributing light and the process of producing the device. 4,339,170, Cl. 350-96.160.
- Winzer, Gerhard; Reichelt, Achim; and Michel, Herbert, to Siemens Aktiengesellschaft. Process for manufacturing a branch element. 4,339,290, Cl. 156-159.000.
- Wise, Eugene H., to Atari, Inc. Dual floppy disc machine. 4,339,778, Cl. 360-99.000.
- Wise, Stephen A., to Allen Organ Co. Asynchronous interface for electronic musical instrument with multiplexed note selection. 4,338,843, Cl. 84-1.010.
- Wiseman, Donald H. Ladder support. 4,339,020, Cl. 182-214.000.
- Witherspoon, Romeo R.; and Meibuh, Stuart G., to General Motors Corporation. Battery having electrode with hydrophilic polymer binder. 4,339,512, Cl. 429-206.000.
- Witschi, Heinz; and Fankhauser, Peter. Device for connecting a structure with a wall to be poured with concrete. 4,338,757, Cl. 52-699.000.
- Witt, Eugene F., to Bell Telephone Laboratories, Incorporated. Clamp for securing large can-type capacitors to a circuit chassis. 4,339,105, Cl. 248-500.000.
- Witt, Frank H., Jr., to Levine, Rosalie S.; Bisacca, Mildred S.; and GRRN Company. Convenience flask. 4,339,062, Cl. 224-148.000.
- Witzel, Bruce E.: See—  
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- Wixon, Harold E., to Colgate Palmolive Co. Free flowing high bulk density particulate detergent-softener. 4,339,335, Cl. 252-8.800.
- Wolfrum, Gerhard: See—  
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- Wollin, Roger W., to Fiberdome Incorporated. Dust-tight silo discharge pipe assembly. 4,339,024, Cl. 193-34.000.
- Wood, Prentice J., to Mead Corporation, The. Bottle carrier with peripheral skirt. 4,339,032, Cl. 206-158.000.
- Woods, David C., to Burlington Industries, Inc. Panelling edging. 4,338,754, Cl. 52-393.000.
- Woods, Donald C., to Del Mar Avionics. Validator for electrocardial data processing system. 4,339,800, Cl. 364-417.000.
- Wovcha, Merle G.; Biggs, Candice B.; and Pyke, Thomas R., to Upjohn Company, The. Biologically pure culture of mutant mycobacterium. 4,339,539, Cl. 435-253.000.
- Wright, Brian J.: See—  
 Baillie, Alistair C.; Wright, Brian J.; and Wright, Kenneth, 4,339,443, Cl. 424-200.000.
- Wright, James M., to Boeing Company, The. Passive-type range determining system using scanning receiving devices. 4,339,755, Cl. 343-112.00D.
- Wright, John T. Brake adjuster tool. 4,338,711, Cl. 29-251.000.
- Wright, Kenneth: See—  
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- Wu, Anthony W.: See—  
 Baise, Arnold I.; Czornyj, George; and Wu, Anthony W., 4,339,526, Cl. 430-296.000.
- Wurmli, Arthur, to Rieter Machine Works Limited. Inner ring for spinning ring. 4,338,775, Cl. 57-119.000.
- Wurz, Ronald L.: See—  
 Atchley, Frank W.; Vorbeck, Donald W.; and Wurz, Ronald L., 4,338,884, Cl. 119-72.500.



- Wust, Willi; Leischner, Hasso; Rahse, Wilfried; Carduck, Franz-Josef; and Kuhne, Norbert, to Henkel Kommanditgesellschaft auf Aktien. Preparation of cellulose derivatives using highly reactive alkali cellulose. 4,339,573, Cl. 536-84.000.
- Wust, Willi; Leischner, Hasso; Rahse, Wilfried; Carduck, Franz-Josef; and Kuhne, Norbert, to Henkel Kommanditgesellschaft auf Aktien. Preparation of alkyl cellulose. 4,339,574, Cl. 536-84.000.
- Wyandotte Paint Products Company: See—  
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- Wyllie, Kenneth I.: See—  
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- Xerox Corporation: See—  
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- Yagi, Masahiro: See—  
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- Yahata Electric Works Ltd.: See—  
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- Yakan, Koji: See—  
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- Yamada, Chihiko: See—  
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- Yamada, Shoichi, to Toyo Tokushu Kiki Co., Ltd. Abnormal condition sensing monitor system for use with machine tools. 4,339,749, Cl. 340-680.000.
- Yamada, Yu; Inoue, Mutsuhiro; Arai, Toshio; Omi, Kokichi; Suzuki, Hiroaki; and Kuwayama, Tetsuro, to Canon Kabushiki Kaisha. Film reader. 4,339,183, Cl. 353-78.000.
- Yamagishi, Seiichi: See—  
Ueda, Nobuo; and Yamagishi, Seiichi, 4,339,182, Cl. 353-27.00R.
- Yamaguchi, Hisao; and Fujisawa, Kazuo, to Sumitomo-Metal Industries, Ltd. Method and apparatus for non-contact ultrasonic flaw detection. 4,338,822, Cl. 73-643.000.
- Yamaguchi, Kazuo: See—  
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- Yamamoto, Akira: See—  
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- Yamamoto, Osamu: See—  
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- Yamamura, Masaki; Igarashi, Taizo; and Ukigai, Toshiyuki, to Kao Soap Co., Ltd.; Lion Corporation; Nippon Oil Company, Limited; and Fats Co., Ltd. Mixed fuel composition. 4,339,246, Cl. 44-51.000.
- Yamanaka, Haruyoshi; and Kazumura, Masaru, to Matsushita Electric Industrial Co., Ltd. Apparatus for making semiconductor devices. 4,338,877, Cl. 118-421.000.
- Yamanaka, Haruyoshi; and Kazumura, Masaru, to Matsushita Electric Industrial Co., Ltd. Light emitting diode and method of making the same. 4,339,689, Cl. 313-499.000.
- Yamanaka, Hideyasu: See—  
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- Yamanaka, Toru: See—  
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- Masaki, Mitsuo; Yamanaka, Toru; Yoshioka, Mitsuko; and Okai, Kazuki, 4,339,379, Cl. 260-112.50R.
- Yamasaki, Iwao: See—  
Nakamura, Junichi; Hata, Seiji; and Yamasaki, Iwao, 4,339,765, Cl. 357-36.000.
- Yamaura, Mitsuru; Kondow, Ryotaro; Mitani, Megumu; and Okamoto, Eiichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Digital protective relaying devices. 4,339,802, Cl. 364-483.000.
- Yamazaki, Kazuo: See—  
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- Yamazaki, Keiji, to Minolta Camera Kabushiki Kaisha. Automatic diaphragm control and mirror release devices for cameras. 4,339,186, Cl. 354-38.000.
- Yamazaki, Noboru; Nakahama, Seiichi; and Yamaguchi, Kazuo, to Japan Synthetic Rubber Company, Limited. Cyclic sulfur compounds. 4,339,590, Cl. 549-11.000.
- Yanagihara, Yuzo; Noguchi, Kohji; Suzuki, Hiroshi; and Honda, Makoto, to Asahi Kasei Kogyo Kabushiki Kaisha. Hydrophilic packing material for chromatography. 4,339,500, Cl. 428-402.000.
- Yasuda, Makoto; Murayama, Seiichi; and Ito, Masaru, to Hitachi, Ltd. Temperature control system for an element analyzer. 4,339,201, Cl. 356-312.000.
- Yasui, Tsuyoshi: See—  
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- Yasumura, Masayuki; and Ishigaki, Yoshio. Voltage regulator using saturable transformer. 4,339,792, Cl. 363-75.000.
- Yatomi, Takeshi: See—  
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- Yee, Henry C., to Bendix Corporation, The. Pulse width discriminator. 4,339,723, Cl. 328-111.000.
- Yokokawa, Hiroshi: See—  
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- Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Amplifier with power supply switching. 4,339,730, Cl. 330-297.000.
- Yokoyama, Nobuo; and Kawabata, Nobuaki, to Nippon Oil Company, Limited. Wax emulsion. 4,339,276, Cl. 106-271.000.
- Yoshida, Ikio: See—  
Kage, Kouzou; and Yoshida, Ikio, 4,339,727, Cl. 329-106.000.
- Yoshida Kogyo K.K.: See—  
Aoki, Tsunetaka, 4,338,706, Cl. 24-70.00R.
- Matsuda, Yoshio, 4,338,800, Cl. 66-194.000.
- Yoshida, Kunio. Electronic dictionary and language interpreter with faculties of examining a full-length word based on a partial word entered and of displaying the total word and a translation corresponding thereto. 4,339,806, Cl. 364-900.000.
- Yoshida, Takao, to International Flavors & Fragrances Inc. Flavoring with methyl substituted oxobicyclo-4,4,0-decane derivatives. 4,339,467, Cl. 426-538.000.
- Yoshida, Yoji: See—  
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- Yoshida, Yoshiaki: See—  
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- Yoshikuni, Yoshiaki: See—  
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- Yoshimura, Tatsuhiro; and Terada, Tsutomu, to Daikin Kogyo Co., Ltd. Water-based fluoroelastomer coating composition. 4,339,553, Cl. 524-544.000.
- Yoshinaga, Shoji: See—  
Fujiwara, Kiyoshi; Nagatomo, Katsuaki; Shibata, Fumio; Nomura, Shoji; and Yoshinaga, Shoji, 4,339,330, Cl. 208-251.00R.
- Yoshino, Isamu; Takahashi, Yasohachi; and Fujii, Osamu, to Mishima Paper Co., Ltd.; and Naigai Ink. Mfg. Co., Ltd., part interest to each. Pressure-sensitive recording material. 4,339,143, Cl. 282-27.500.
- Yoshioka, Mitsuko: See—  
Masaki, Mitsuo; Yamanaka, Toru; Yoshioka, Mitsuko; and Okai, Kazuki, 4,339,379, Cl. 260-112.50R.
- Yoshioka, Naonori; Tada, Hisashi; and Kashiyama, Setsuo, to Mitsubishi Rayon Company, Limited. Fiber reinforced plastic sheet molding compound. 4,339,490, Cl. 428-213.000.
- Yoshizawa, Toshio: See—  
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- Yotuyanagi, Masahiko: See—  
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- Young, Albert C.: See—  
Bailey, Cecil; Young, Albert C.; and Thold, Dezso D., 4,339,652, Cl. 219-95.000.
- Young, Ian R., to Picker International Limited. Nuclear magnetic resonance systems. 4,339,716, Cl. 324-309.000.
- Yu, Henry H. S.; and Teague, Richard K., to Bahnsen Company, The. Supersonic jet ionizer. 4,339,782, Cl. 361-229.000.
- Yuen, Sing C. J.: See—  
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- Yumoto, Satoshi: See—  
Shimamoto, Noboru; and Yumoto, Satoshi, 4,339,486, Cl. 428-40.000.
- Zambrow, John L.: See—  
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- Zehntel, Inc.: See—  
Jacobson, Robert G., 4,339,819, Cl. 371-16.000.
- Zeiger, Aaron: See—  
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- Zellweger, Ltd.: See—  
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- Zenith Radio Corporation: See—  
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- Zenitz, Bernard L., to Sterling Drug Inc. Anti-asthmatic, anti-allergic, anti-cholinergic, bronchodilator and anti-inflammatory 1-[(benzoyl-phenyl)-lower-alkyl]piperidines and analogs thereof. 4,339,576, Cl. 544-130.000.
- Ziaylek, Theodore, Jr. Carrier clamp for fire ladders. 4,339,064, Cl. 224-324.000.
- Zieg, Clifford V., to Kaiser Aerospace & Electronics Corporation. Self-aligning valve assembly. 4,338,689, Cl. 4-378.000.
- Ziegenfuss, Barry L., to SI Handling Systems, Inc. Assembly line driverless vehicle. 4,338,864, Cl. 104-121.000.
- Zika, Harry T.: See—  
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- Zingg, Rudolf: See—  
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- Zink, Frederick J.: See—  
Amlani, Kish; Zink, Frederick J.; Morgan, Craig; and Ellwood, Thomas, 4,338,825, Cl. 73-862.650.
- Zorn, Horst: See—  
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- Zweig, Arnold: See—  
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- Zwiener, Rudolf: See—  
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- Zwillich, Alexander; and Patel, Jayant M., to Westinghouse Electric Corp. Isolated phase bus disconnect switch with grounded operating mechanism. 4,339,635, Cl. 200-48.00R.
- 3U Partners: See—  
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## LIST OF REISSUE PATENTEES

TO WHOM

## PATENTS WERE ISSUED ON THE 13TH DAY OF JULY, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Bertanza, Battista, to Riva Calzoni S.p.A. Control units for vehicle powersteering mechanisms. Re. 30,992, Cl. 60-384.000.
- Column Corporation: See—  
Hopp, Leo A., Re. 30,993, Cl. 239-341.000.
- Dunham-Bush, Inc.: See—  
Shaw, David N., Re. 30,994, Cl. 417-366.000.
- General Electric Company: See—  
Rairden, John R., III, Re. 30,995, Cl. 428-680.000.
- Hopp, Leo A., to Column Corporation. General purpose compression-type sprayer. Re. 30,993, Cl. 239-341.000.
- Rairden, John R., III, to General Electric Company. High integrity CoCrAl(Y) coated nickel-base superalloys. Re. 30,995, Cl. 428-680.000.
- Riva Calzoni S.p.A.: See—  
Bertanza, Battista, Re. 30,992, Cl. 60-384.000.
- Shaw, David N., to Dunham-Bush, Inc. Vertical axis hermetic rotary helical screw compressor with improved rotary bearings and oil management. Re. 30,994, Cl. 417-366.000.

## LIST OF DESIGN PATENTEES

- Abraham, William W.; and Majka, Edward H., to Consolidated Medical Equipment Inc. I.V. Bandage. 265,423, 7-13-82, Cl. D24-52.000.
- Addington, William F. Threadless instant release bicycle tire pump connector. 265,380, 7-13-82, Cl. D8-395.000.
- Aktiebolaget Ramlosa Halsobrunn: See—  
Jonsson, Gunnar V., 265,382, Cl. D9-349.000.
- Alvarez, Arthur. Log handling device. 265,375, 7-13-82, Cl. D7-209.000.
- Avento Designs, Inc.: See—  
DiPersia, James, 265,363, Cl. D6-177.000.
- Baney, George J. Golf bag cart. 265,392, 7-13-82, Cl. D34-15.000.
- Beatrice Foods Co.: See—  
Chow, Ho; and Beaver, David L., 265,418, Cl. D23-43.000.
- Beaver, David L.: See—  
Chow, Ho; and Beaver, David L., 265,418, Cl. D23-43.000.
- Beck, Leonard W. Combined raisable rear deck panel, window and roof for an automobile. 265,397, 7-13-82, Cl. D12-156.000.
- Bell Telephone Laboratories, Incorporated: See—  
Genaro, Donald M.; and McGarvey, John N., 265,401, Cl. D14-60.000.
- Bergenwall, Henning. Invalid bed or the like. 265,357, 7-13-82, Cl. D6-83.000.
- Berlic, France. Chair. 265,356, 7-13-82, Cl. D6-78.000.
- Bighaus, Mike J. Game table for cue-driven balls. 265,415, 7-13-82, Cl. D21-232.000.
- Borja, Jesus, to Illinois Tool Works Inc. Universal wire clip. 265,381, 7-13-82, Cl. D8-395.000.
- Braasch, Ronald W., to H&B Incentive Marketing. Covered foam disk for amusement purposes. 265,409, 7-13-82, Cl. D21-100.000.
- Breyer, Brigitte. Hanging ornament. 265,386, 7-13-82, Cl. D11-125.000.
- Bunsmaster Bakeries of America Inc.: See—  
Vona, Romanino, 265,361, Cl. D6-130.000.
- Chauviere, E. Davis: See—  
Kennedy, Patrick J.; and Chauviere, E. Davis, 265,424, Cl. D25-25.000.
- Chow, Ho; and Beaver, David L., to Beatrice Foods Co. Hose coupling. 265,418, 7-13-82, Cl. D23-43.000.
- Christensen, Grover N. Combined measuring and dispensing container for granulated or powdered material. 265,373, 7-13-82, Cl. D7-47.000.
- Christian, Hubert E.: See—  
Groenewold, Van D.; Christian, Hubert E.; and Schwartz, James P., 265,372, Cl. D7-6.000.
- Chung Mei Metal and Plastic Factory Ltd.: See—  
Mann, Kittson, 265,427, Cl. D26-44.000.
- Coats & Clark, Inc.: See—  
Einhorn, Ruediger, 265,379, Cl. D8-367.000.
- Consolidated Medical Equipment Inc.: See—  
Abraham, William W.; and Majka, Edward H., 265,423, Cl. D24-52.000.
- Cooper Laboratories, Inc.: See—  
Hyman, Richard M., 265,353, Cl. D4-25.000.
- Hyman, Richard M., 265,354, Cl. D4-25.000.
- CPG Products Corp.: See—  
Ottinger, Timothy, 265,410, Cl. D21-122.000.
- Craver, Richard D., to Orrville Products, Inc. Stove. 265,420, 7-13-82, Cl. D23-97.000.
- Dart Industries Inc.: See—  
Groenewold, Van D.; Christian, Hubert E.; and Schwartz, James P., 265,372, Cl. D7-6.000.
- Davis, Ronald H. Frame for a face guard. 265,350, 7-13-82, Cl. D2-233.000.
- Dearing, Le Roy M., to L. M. Dearing Associates. Mobile support for swimming pool cover reels. 265,391, 7-13-82, Cl. D34-18.000.
- Desnick, Shirley G. Soap container. 265,432, 7-13-82, Cl. D28-63.000.
- DiPersia, James, to Avento Designs, Inc. Table or similar article. 265,363, 7-13-82, Cl. D6-177.000.
- Duggan, James E. Combined paper towel holder and shelf. 265,360, 7-13-82, Cl. D6-91.000.
- Eickmeyer, Robert W., to Estee Lauder Inc. Lamp. 265,428, 7-13-82, Cl. D26-63.000.
- Einhorn, Ruediger, to Coats & Clark, Inc. Hook. 265,379, 7-13-82, Cl. D8-367.000.
- Entex Industries, Inc.: See—  
Hanzawa, Tsuneo, 265,407, Cl. D21-13.000.
- Ericson, John L. Game board. 265,408, 7-13-82, Cl. D21-20.000.
- Estee Lauder Inc.: See—  
Eickmeyer, Robert W., 265,428, Cl. D26-63.000.
- Feldman, Fred. Loud speaker cabinet. 265,399, 7-13-82, Cl. D14-33.000.
- Feldman, Fred. Loud speaker cabinet. 265,400, 7-13-82, Cl. D14-33.000.
- Feuchs, Walter F. Building structure. 265,426, 7-13-82, Cl. D25-18.000.
- Flint Tool & Machine Co.: See—  
Roby, Stephen G., 265,378, Cl. D8-74.000.
- Fradkoff, Alex. Cigarette lighter. 265,430, 7-13-82, Cl. D27-36.000.
- Fukushima, Hisao; Yamauchi, Kimpei; and Hirooka, Junji, to Oki Electric Industry Co. Ltd. Transceiver for a car telephone set. 265,402, 7-13-82, Cl. D14-68.000.
- Gagner, Lawrence J. Etagerie or the like. 265,365, 7-13-82, Cl. D6-186.000.
- Gagner, Lawrence J. Etagerie or the like. 265,366, 7-13-82, Cl. D6-186.000.
- Gagner, Lawrence J. Etagerie or the like. 265,367, 7-13-82, Cl. D6-186.000.
- Gagner, Lawrence J. Etagerie or the like. 265,368, 7-13-82, Cl. D6-186.000.
- Gagner, Lawrence J. Etagerie or the like. 265,369, 7-13-82, Cl. D6-186.000.
- Gagner, Lawrence J. Etagerie or the like. 265,370, 7-13-82, Cl. D6-186.000.
- Gagner, Lawrence J. Etagerie or the like. 265,371, 7-13-82, Cl. D6-186.000.
- Gant, Bennie K. Stove. 265,419, 7-13-82, Cl. D23-97.000.
- Genaro, Donald M.; and McGarvey, John N., to Bell Telephone Laboratories, Incorporated. Telephone stand. 265,401, 7-13-82, Cl. D14-60.000.
- Gewelber, Ytzhak, to Lockhart Industries, Inc. Motorcycle by-pass oil cooler. 265,403, 7-13-82, Cl. D15-5.000.
- Graas, Stig, to Graas, Stig. Collapsible mobile work platform having telescopic legs. 265,425, 7-13-82, Cl. D25-66.000.
- Groenewold, Van D.; Christian, Hubert E.; and Schwartz, James P., to Dart Industries Inc. Embossed beverage or packaging cup. 265,372, 7-13-82, Cl. D7-6.000.
- H&B Incentive Marketing: See—  
Braasch, Ronald W., 265,409, Cl. D21-100.000.
- Hamilton, Bert, Jr., to Jet-It-Done, Inc. Outdoor cooker. 265,374, 7-13-82, Cl. D7-108.000.
- Hanzawa, Tsuneo, to Entex Industries, Inc. Hand-held electronic football game housing or the like. 265,407, 7-13-82, Cl. D21-13.000.
- Harrison, Christopher R. B.; and Pittaway, Alan K., to Wilkinson Sword Limited. Pruner. 265,376, 7-13-82, Cl. D8-5.000.
- Hedenblad, Robert; and Jonsson, Nils I. Exercise board. 265,411, 7-13-82, Cl. D21-191.000.



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Hutz, John A., to Uniroyal, Inc. Pneumatic tire tread and buttress. 265,393, 7-13-82, Cl. D12-146.000.  
Hutz, John A., to Uniroyal, Inc. Pneumatic tire tread and buttress. 265,394, 7-13-82, Cl. D12-147.000.  
Hutz, John A., to Uniroyal, Inc. Pneumatic tire tread and buttress. 265,395, 7-13-82, Cl. D12-147.000.  
Hutz, John A., to Uniroyal, Inc. Pneumatic tire tread and buttress. 265,396, 7-13-82, Cl. D12-147.000.  
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Hyman, Richard M., to Cooper Laboratories, Inc. Toothbrush. 265,354, 7-13-82, Cl. D4-25.000.  
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Hedenblad, Robert; and Jonsson, Nils I., 265,411, Cl. D21-191.000.  
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Tender, Thomas S., 265,404, Cl. D17-9.000.  
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Koenig, Robert B. Dog hurdle. 265,433, 7-13-82, Cl. D30-42.000.  
Koskinen, Kauno L. J. Tube expander tool. 265,377, 7-13-82, Cl. D8-14.000.  
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Lane, Edward C. Target for a game. 265,406, 7-13-82, Cl. D21-6.000.  
Lane, Mason. Guitar. 265,405, 7-13-82, Cl. D17-14.000.  
Lockhart Industries, Inc.: See—  
Gewelber, Ytzhak, 265,403, Cl. D15-5.000.  
M & M Luggage Co., Inc.: See—  
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Majka, Edward H.: See—  
Abraham, William W.; and Majka, Edward H., 265,423, Cl. D24-52.000.  
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Genaro, Donald M.; and McGarvey, John N., 265,401, Cl. D14-60.000.  
Miles, George S. Lampshade. 265,429, 7-13-82, Cl. D26-118.000.  
Millikan, William B. Tennis rebound board. 265,413, 7-13-82, Cl. D21-199.000.  
Mishiho, Benito: See—  
Ohta, Kikuo; Mishiho, Benito; and Hoshino, Kunio, 265,398, Cl. D14-5.000.  
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Nissen Corporation: See—  
Summerlot, Raymond L., 265,412, Cl. D21-192.000.

## LIST OF PLANT PATENTEES

Armstrong, David L., to Armstrong Nurseries, Inc. Freestone peach. 4,865, 7-13-82, Cl. 42.000.  
Armstrong Nurseries, Inc.: See—  
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Guymon, Charlene S., executrix: See—  
Olmo, Harold P.; and Guymon, James F., deceased, 4,866, Cl. 47.000.

Ohta, Kikuo; Mishiho, Benito; and Hoshino, Kunio, to Matsushita Electric Industrial Co., Ltd. Combined tuner and tape deck. 265,398, 7-13-82, Cl. D14-5.000.  
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Ornatek, Larry B. Pennant. 265,389, 7-13-82, Cl. D11-166.000.  
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Ottinger, Timothy, to CPG Products Corp. Toy food processor base. 265,410, 7-13-82, Cl. D21-122.000.  
Perry, Gordon R., to Narda Microwave Corporation, The. Consumer radiation monitor. 265,383, 7-13-82, Cl. D10-47.000.  
Phillips, Marie S. Wood storing cart. 265,434, 7-13-82, Cl. D34-18.000.  
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Wistehuff, Daniel D., 265,362, Cl. D6-153.000.  
Pittaway, Alan K.: See—  
Harrison, Christopher R. B.; and Pittaway, Alan K., 265,376, Cl. D8-5.000.  
Rekow, John A. Apparel display rack. 265,358, 7-13-82, Cl. D6-85.000.  
Riggs, Dennis D.; and Seach, Daniel J. Roller skate base plate. 265,414, 7-13-82, Cl. D21-226.000.  
River Hotel Company: See—  
Kennedy, Patrick J.; and Chauviere, E. Davis, 265,424, Cl. D25-25.000.  
Roby, Stephen G., to Flint Tool & Machine Co. Vise stop. 265,378, 7-13-82, Cl. D8-74.000.  
Rodier, Pierre, to Helior S.A. Medal. 265,385, 7-13-82, Cl. D11-106.000.  
Schwartz, James P.: See—  
Groenewold, Van D.; Christian, Hubert E.; and Schwartz, James P., 265,372, Cl. D7-6.000.  
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Riggs, Dennis D.; and Seach, Daniel J., 265,414, Cl. D21-226.000.  
Selby, William. Fish lure. 265,417, 7-13-82, Cl. D22-29.000.  
Stark, Ted, to M & M Luggage Co., Inc. Luggage. 265,352, 7-13-82, Cl. D3-71.000.  
Summerlot, Raymond L., to Nissen Corporation. Exercise treadmill. 265,412, 7-13-82, Cl. D21-192.000.  
Tague, Lincoln P.: See—  
Moore, Lonny J.; and Tague, Lincoln P., 265,421, Cl. D24-10.000.  
Teledyne Densco, Division of Teledyne Industries, Inc.: See—  
Moore, Lonny J.; and Tague, Lincoln P., 265,421, Cl. D24-10.000.  
Tender, Thomas S., to Tender, Thomas S.; and Keck, Emma Jane. Ornament for an organ or the like. 265,404, 7-13-82, Cl. D17-9.000.  
Uniroyal, Inc.: See—  
Hutz, John A., 265,393, Cl. D12-146.000.  
Hutz, John A., 265,394, Cl. D12-147.000.  
Hutz, John A., 265,395, Cl. D12-147.000.  
Hutz, John A., 265,396, Cl. D12-147.000.  
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Yran, Knut O., 265,431, Cl. D28-50.000.  
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Wooters, Dwight N., 265,351, Cl. D3-40.000.  
Walker, Calvin. Newspaper stand. 265,364, 7-13-82, Cl. D6-184.000.  
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Wistehuff, Daniel D., to Pinnacle Furniture Company, Inc. Bookcase. 265,362, 7-13-82, Cl. D6-153.000.  
Wooters, Dwight N., to W. L. Ross Enterprises, Inc. Cup holder for an automobile door. 265,351, 7-13-82, Cl. D3-40.000.  
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Yoshida, Keisuke, 265,390, Cl. D12-7.000.  
Yamauchi, Kimpei: See—  
Fukushima, Hisao; Yamauchi, Kimpei; and Hirooka, Junji, 265,402, Cl. D14-68.000.  
Yoshida, Keisuke, to Yamaha Motor Corporation, U.S.A. Combined snowmobile luggage carrier and backrest. 265,390, 7-13-82, Cl. D12-7.000.  
Yran, Knut O., to U.S. Philips Corporation. Electric dry shaver. 265,431, 7-13-82, Cl. D28-50.000.

## CLASSIFICATION OF PATENTS

ISSUED JULY 13, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	119	4,338,735	40	4,339,253	622	4,338,840	195 A	4,338,890	269	4,338,962	
2	4,338,685	CLASS 37	80	4,338,790	CLASS 84	198 D	4,338,896	375	4,338,963		
93	4,338,686	142 A	160	4,338,791	1.01	4,338,843	198 E	4,338,889	436	4,338,964	
CLASS 3	CLASS 40	256	4,338,792	267	4,338,844	267	4,338,897	554	4,338,965		
13	4,338,687	1.5	4,338,737	292	4,338,793	279	4,338,898	596.17	4,338,966		
CLASS 4	509	4,338,738	348	4,338,794	1.1	4,338,845	339	4,338,899	601	4,338,967	
191	4,338,688	584	372	4,338,795	1.24	4,338,846	440	4,338,900	CLASS 138		
300	4,338,690	CLASS 42	27	4,339,254	20	4,338,847	454	4,338,901	30	4,338,968	
378	4,338,689	1 SR	32	4,339,255	253	4,338,848	476	4,338,902	44	4,338,969	
562	4,338,691	CLASS 44	60.5	4,339,256	345	4,338,849	499	4,338,903	141	4,338,970	
451	4,338,692	51	79	4,339,257	411 M	4,338,850	525	4,338,905	CLASS 139		
500	4,338,693	63	104	4,339,258	33 BB	4,338,851	545	4,338,906	194	4,338,971	
CLASS 5	14	4,338,741	178	4,339,259	37 E	4,338,852	557	4,338,907	369	4,338,972	
108 A	4,339,235	227	182.1	4,339,260	41 R	4,338,853	572	4,338,908	439	4,338,973	
137	4,339,236	CLASS 46	225	4,339,261	CLASS 89	369 A	4,338,854	16	4,338,909	449	4,338,974
405	4,339,237	CLASS 47	239	4,339,262	CLASS 91	378 A	4,338,855	24 R	4,338,910	450	4,338,975
527	4,339,238	1.3	125 R	4,338,799	CLASS 92	369 A	4,338,856	21 A	4,338,911	CLASS 140	
561	4,339,239	58	194	4,338,800	CLASS 98	62	4,338,857	25 A	4,338,912	12	4,338,976
72 R	4,338,694	CLASS 49	349	4,338,747	CLASS 99	222	4,338,858	77	4,338,913	70	4,338,977
CLASS 12	10.1	CLASS 51	206 R	4,338,748	CLASS 101	105	4,338,859	143	4,338,914	CLASS 141	
54.3	4,338,696	CLASS 52	220	4,338,749	CLASS 102	126	4,338,860	163 A	4,338,915	1.1	4,338,978
CLASS 15	1.7	281 R	4,338,750	16	4,338,803	261	4,338,861	298	4,338,916	10	4,338,979
230.16	4,338,698	CLASS 53	134	4,338,804	CLASS 70	516	4,338,862	429	4,338,917	18	4,338,980
CLASS 16	237	187	417	4,338,806	CLASS 71	89	4,338,863	430	4,338,918	85	4,338,981
CLASS 17	1 E	393	9	4,339,265	CLASS 72	121	4,338,864	435	4,338,919	132	4,338,982
25	4,338,701	484	92	4,339,266	CLASS 73	202	4,338,865	443	4,338,920	331	4,338,983
32	4,338,702	539	108	4,339,268	CLASS 74	35	4,339,279	446	4,338,921	CLASS 144	
44	4,338,703	492	134	4,338,804	CLASS 75	90	4,339,273	452	4,338,922	34 R	4,338,985
50	4,338,704	495	379	4,338,808	CLASS 76	106	4,339,274	56	4,339,280	39	4,338,986
CLASS 19	80 R	4,338,705	1 E	4,338,810	CLASS 77	275	4,339,276	24 R	4,338,923	285	4,338,987
CLASS 23	230 B	4,339,241	1 H	4,338,809	CLASS 78	308 Q	4,339,277	28	4,338,924	1.5	4,339,285
432	4,339,242	452	4,338,811	107	4,339,276	111	4,338,866	92 A	4,338,927	12 C	4,339,286
433	4,339,243	492	4,338,812	201	4,339,277	159	4,338,867	92 BC	4,338,926	24	4,339,287
230 R	4,339,240	495	4,338,813	35	4,339,279	246	4,338,868	92 E	4,338,925	111	4,339,287
293 A	4,339,244	499	4,338,814	90	4,339,273	346	4,338,869	136	4,338,928	403	4,339,270
CLASS 24	70 R	4,338,706	119 A	4,338,815	CLASS 108	46	4,338,870	152	4,338,929	CLASS 149	
257	4,338,707	499	4,338,816	4,338,816	CLASS 110	10	4,338,871	200.26	4,338,930	8	4,339,288
CLASS 29	25.13	4,338,708	448	4,338,817	CLASS 111	56	4,338,872	203.15	4,338,931	CLASS 152	
26 A	4,338,709	316	462	4,338,818	CLASS 112	262.1	4,338,873	214 E	4,338,932	216	4,338,988
378	4,338,710	378	497	4,338,819	CLASS 114	50	4,338,874	214 R	4,338,933	354 RB	4,338,989
251	4,338,711	497	597	4,338,820	CLASS 118	221 R	4,338,875	218 R	4,338,934	CLASS 156	
281.6	4,338,712	597	603	4,338,821	CLASS 122	259	4,338,876	266	4,338,936	91	4,339,289
420.5	4,338,713	643	643	4,338,822	CLASS 123	421	4,338,877	283	4,338,937	159	4,339,290
433	4,338,714	828	828	4,338,824	CLASS 124	602	4,338,878	284	4,338,938	195	4,339,291
451	4,338,715	862.65	862.65	4,338,825	CLASS 125	673	4,338,879	303.14	4,338,940	206	4,339,292
456	4,338,716	863.52	863.52	4,338,841	CLASS 126	674	4,338,880	325	4,338,941	227	4,339,293
839	4,338,717	864.62	864.62	4,338,842	CLASS 127	719	4,338,883	344	4,338,942	252	4,339,294
CLASS 30	171	4,338,718	475	4,338,828	CLASS 128	72.5	4,338,884	400	4,338,943	275.7	4,339,295
174 G	276	4,338,719	545	4,338,827	CLASS 129	96	4,338,885	421	4,338,944	345	4,339,296
174 L	322	4,338,720	594.4	4,338,829	CLASS 130	106	4,338,886	481	4,338,945	498	4,339,297
269	4,338,721	263	764	4,338,830	CLASS 131	652	4,338,880	642	4,338,946	563	4,339,298
406	4,338,728	276	805	4,338,831	CLASS 132	673	4,338,881	660	4,338,947	601	4,339,300
CLASS 33	174 G	4,338,724	866	4,338,832	CLASS 133	674	4,338,882	677	4,338,948	603	4,339,301
174 L	174 L	4,338,722	CLASS 59	4,338,779	CLASS 134	719	4,338,883	687	4,338,949	605	4,339,302
174 N	174 N	4,338,723	CLASS 60	4,338,779	CLASS 135	72.5	4,338,884	695	4,338,950	629	4,339,303
178 R	269	4,338,726	39.05	4,338,780	CLASS 136	96	4,338,885	757	4,338,951	635	4,339,304
269	4,338,727	39.46 S	4,338,782	225	CLASS 137	106	4,338,886	774	4,338,953	650	4,339,305
406	4,338,728	274	225	4,338,783	CLASS 138	259	4,338,887	CLASS 130	4,338,955	15	4,339,306
CLASS 34	1	4,338,729	311	4,338,784	CLASS 139	41.31	4,338,891	27 AB	4,338,956	229 R	4,339,300
54	4,338,730	384	Re.30,992	4,338,785	CLASS 140	54 A	4,338,892	27 G	4,338,954	CLASS 165	
82	4,338,731	531	4,338,786	436	CLASS 141	90.16	4,338,893	336	4,338,956	2	4,338,991
135	4,338,732	562	4,338,787	CLASS 83	CLASS 142	90.58	4,338,894	91	4,338,957	9	4,338,992
CLASS 36	54	4,338,733	4,338,788	CLASS 84	CLASS 143	146.5 A	4,338,895	248	4,338,958	44	4,338,993
7.3	4,338,733	652	4,338,789	CLASS 85	CLASS 144	4 D	4,338,887	259	4,338,959	49	4,338,994
44	4,338,734	52	4,338,790	CLASS 86	CLASS 145	16	4,338,888	93	4,338,960	57	4,338,995
CLASS 37	171	4,338,718	475	4,338,828	CLASS 87	54 A	4,338,892	240	4,338,961	134 R	4,338,997
174 G	276	4,338,719	545	4,338,827	CLASS 88	90.16	4,338,893	242.2	4,338,962	165	4,338,998
174 L	322	4,338,720	594.4	4,338,829	CLASS 89	90.58	4,338,894	248	4,338,963	CLASS 166	
269	4,338,721	263	764	4,338,830	CLASS 90	146.5 A	4,338,895	259	4,338,964	117	4,338,999
406	4,338,728	276	805	4,338,831	CLASS 91	41.31	4,338,891	93	4,338,965	322	4,339,000
CLASS 38	174 G	4,338,724	866	4,338,832	CLASS 92	54 A	4,338,892	240	4,338,966	355	4,339,001
174 L	174 L	4,338,722	CLASS 59	4,338,779	CLASS 93	90.16	4,338,893	242.2	4,338,967	CLASS 172	
174 N	174 N	4,338,723	CLASS 60	4,338,779	CLASS 94	90.58	4,338,894	248	4,338,968	229 R	4,339,300
178 R	269	4,338,726	39.05	4,338,780	CLASS 95	146.5 A	4,338,895	259	4,338,969	CLASS 173	
269	4,338,727	39.46 S	4,338,782	225	CLASS 96	4 D	4,338,887	93	4,338,969	117	4,338,999
406	4,338,728	274	225	4,338,783	CLASS 97	16	4,338,888	240	4,338,970	322	4,339,000
CLASS 39	1	4,338,729	311	4,338,784	CLASS 98	54 A	4,338,892	242.2	4,338,971	355	4,339,001
54	4,338,730	384	Re.30,992	4,338,785	CLASS 99	90.16	4,338,893	248	4,338,972	CLASS 174	
82	4,338,731	531	4,338,786	436	CLASS 100	90.58	4,338,894	259	4,338,973	229 R	4,339,300
135	4,338,732	562	4,338,787	CLASS 83	CLASS 101	146.5 A	4,338,895	93	4,338,974	CLASS 175	
CLASS 40	54	4,338,733	4,338,788	CLASS 84	CLASS 102	41.31	4,338,891	240	4,338,975	117	4,338,999
7.3	4,338,733	652	4,338,789	CLASS 85	CLASS 103	54 A	4,338,892	242.2	4,338,976	322	4,339,000
44	4,338,734	52	4,338,790	CLASS 86	CLASS 104	90.16	4,338,893	248	4,338,977	355	4,339,001
CLASS 41	171	4,338,718	475	4,338,828	CLASS 105	90.58	4,338,894	259	4,338,978	CLASS 176	
174 G	276	4,338,719	545	4,338,827	CLASS 106	146.5 A	4,338,895	93	4,338,979	229 R	4,339,300
174 L	322	4,338,720	594.4	4,338,829	CLASS 107	41.31	4,338,891	240	4,338,980	CLASS 177	
269	4,338,721	263	764	4,338,830	CLASS 108	54 A	4,338,892	242.2	4,338,981	117	4,338,999
406	4,338,728	276	805	4,338,831	CLASS 109	90.16	4,338,893	248	4,338,982	322	4,339,000
CLASS 42	174 G	4,338,724	866	4,338,832	CLASS 110	90.58	4,338,894	259	4,338,983	355	4,339,001
174 L	174 L	4,338,722	CLASS 59	4,338,779	CLASS 111	146.5 A	4,338,895	93	4,338,984	CLASS 178	
174 N	174 N	4,338,723	CLASS 60	4,338,779	CLASS 112	41.31	4,338,891	240	4,338,985	229 R	4,339,300
178 R	269	4,338,726	39.05	4,338,780	CLASS 113	54 A	4,338,892	242.2	4,338,986	CLASS 179	
269	4,338,727	39.46 S	4,338,782	225	CLASS 114	90.16	4,338,893	248	4,338,987	117	4,338,999
406	4,338,728	274	225	4,338,783	CLASS 115	146.5 A	4,338,895	259	4,338,988	322	4,339,000
CLASS 43	1	4,338,729	311	4,338,784	CLASS 116	41.31	4,338,891	93	4,338,989	355	4,339,001
54	4,338,730										



## CLASSIFICATION OF PATENTS

CLASS 174	10	4,339,329	18 A	4,339,089	CLASS 266	221	4,339,686	781 P	4,339,757
35 R	251 R	4,339,330	35.5 A	4,339,090	280	4,339,115	CLASS 346		
50			47	4,339,091	CLASS 269	499	4,339,689	1.1	4,339,758
152 R	5	4,339,042	56 R	4,339,092	132	4,339,116	33 R	4,339,759	
	44	4,339,043	58.6	4,339,093	289 MR	4,339,117	74.5	4,339,760	
CLASS 175	167	4,339,331	84.21 R	4,339,095	CLASS 270	111.21	4,339,761	75	4,339,762
9	564	4,339,044	86.5 R	4,339,096	31	4,339,118	140 R	4,339,763	
57					CLASS 271	225	4,339,690		
107					276	4,339,695	CLASS 350		
272	198.1	4,339,332	CLASS 244	3.16	277	4,339,692	3.69	4,339,168	
374	411	4,339,333	151 B	4,339,097	360	4,339,696	61	4,339,169	
	433.2	4,339,334	CLASS 248		366	4,339,694	96.16	4,339,170	
CLASS 177			101	4,339,099	CLASS 272		96.20	4,339,171	
134			123.1	4,339,100	8 R	4,339,120	96.21	4,339,172	
177			178	4,339,101	38	4,339,121	96.30	4,339,173	
262			221.1	4,339,102	56.5 R	4,339,122	96.31	4,339,174	
CLASS 179			397	4,339,103	65	4,339,123	125	4,339,175	
1 GS			407	4,339,104	94	4,339,124	162 SF	4,339,176	
90 B			500	4,339,105	118	4,339,125	431	4,339,177	
99 M					127	4,339,126	432	4,339,178	
CLASS 180					702	4,339,127	CLASS 351		
6.5					54 D	4,339,128	153	4,339,179	
54 A					54 R	4,339,129	CLASS 352		
65 R					73 A	4,339,131	92	4,339,180	
89.17					73 R	4,339,130	CLASS 353		
127					126 R	4,339,133	27 R	4,339,181	
CLASS 181					138 A	4,339,134	78	4,339,183	
286					237	4,339,135	23 D	4,339,184	
CLASS 182					242	4,339,136	31	4,339,185	
47					331	4,339,137	38	4,339,186	
214					400	4,339,132	173	4,339,187	
CLASS 191					428	4,339,138	219	4,339,188	
50					54	4,339,708	234	4,339,190	
CLASS 192					61 R	4,339,709	269	4,339,191	
14					73 R	4,339,710	288	4,339,193	
70.25					77 E	4,339,711	CLASS 355		
CLASS 193					102	4,339,712	3 CH	4,339,195	
34					173	4,339,713	3 DD	4,339,196	
CLASS 198					207	4,339,714	3 FU	4,339,194	
347					252	4,339,715	58	4,339,197	
383					309	4,339,716	CLASS 356		
427					313	4,339,717	144	4,339,198	
750					319	4,339,718	213	4,339,199	
779					362	4,339,720	241	4,339,200	
864					446	4,339,719	312	4,339,201	
CLASS 200					457	4,339,721	CLASS 357		
5 A					43.23	4,339,139	30	4,339,764	
48 A					433	4,339,140	36	4,339,765	
48 R					652	4,339,141	41	4,339,766	
51.09					759	4,339,142	44	4,339,767	
52 R					CLASS 282		72	4,339,768	
61.45 R					27.5	4,339,143	CLASS 358		
148 R					44	4,339,666	6	4,339,769	
153 G					120	4,339,144	19	4,339,770	
159 A					CLASS 296		41	4,339,771	
266					1 S	4,339,145	144	4,339,772	
CLASS 202					19	4,339,146	184	4,339,773	
176					24 C	4,339,147	283	4,339,774	
263					35.3	4,339,148	CLASS 360		
CLASS 203					106	4,339,149	10	4,339,775	
29					250	4,339,149	69	4,339,776	
CLASS 204					284	4,339,150	97	4,339,777	
38 R					464	4,339,151	99	4,339,778	
47					CLASS 299		CLASS 361		
48					5	4,339,152	33	4,339,779	
95					59	4,339,153	147	4,339,780	
98					CLASS 303		154	4,339,781	
129.85					3	4,339,154	229	4,339,782	
195 B					38	4,339,155	235	4,339,783	
195 S					22	4,339,156	403	4,339,784	
224 R					CLASS 307		411	4,339,786	
237					10 LS	4,339,667	433	4,339,787	
243 R					149	4,339,668	121	4,339,788	
255					228	4,339,669	157	4,339,789	
256					252 A	4,339,670	267	4,339,790	
270					253	4,339,671	CLASS 363		
296					270	4,339,672	41	4,339,791	
298					362	4,339,673	75	4,339,792	
299 R					473	4,339,675	CLASS 364		
CLASS 206					564	4,339,677	200	4,339,793	
158					CLASS 308		433	4,339,794	
216					5	4,339,157	133	4,339,795	
313					20	4,339,158	146.3 F	4,339,796	
370					36.3	4,339,159	518	4,339,797	
423					187.1	4,339,161	547	4,339,798	
444					CLASS 310		555	4,339,799	
455					10	4,339,678	680	4,339,800	
523					49 R	4,339,679	870.37		
599					62	4,339,680	CLASS 312		
611					201	4,339,681	1	4,339,163	
CLASS 208					321	4,339,682	10	4,339,162	
8 LE					364	4,339,683	283	4,339,164	
					CLASS 311		105 R	4,339,684	
					10	4,339,678	113	4,339,685	
					49 R	4,339,679			
					62	4,339,680			
					201	4,339,681			
					321	4,339,682			
					364	4,339,683			
					CLASS 312				
					1	4,339,163			
					10	4,339,162			
					283	4,339,164			
					CLASS 313				
					105 R	4,339,684			
					113	4,339,685			

## CLASSIFICATION OF PATENTS

431.04	4,339,801		CLASS 405	182	4,339,441	513	4,339,504	4,339,549	CLASS 546			
483	4,339,802			200	4,339,442	514	4,339,505	4,339,558	14	4,339,581		
724	4,339,803	219	4,339,215	202	4,339,443	519	4,339,506	4,339,559	99	4,339,582		
900	4,339,804	303	4,339,216	212	4,339,444	522	4,339,507	4,339,560	138	4,339,583		
	4,339,805		CLASS 411	212	4,339,445	632	4,339,508	4,339,561		256	4,339,584	
	4,339,806			228	4,339,446	644	4,339,509	4,339,562		257	4,339,585	
	4,339,807	55	4,339,217	244	4,339,447	654	4,339,510	4,339,563		301	4,339,586	
	4,339,808	419	4,339,218	245	4,339,448	680	Re.30,995	4,339,564		337	4,339,587	
			CLASS 414	246	4,339,449			4,339,565				
CLASS 365				248.51	4,339,450	CLASS 429		4,339,566	CLASS 548			
206	4,339,809	11	4,339,219	250	4,339,452	189	4,339,511	4,339,567				
		84	4,339,220	251	4,339,453	206	4,339,512	4,339,568	CLASS 524	228	4,339,589	
CLASS 366		114	4,339,221	254	4,339,454			4,339,569	5	4,339,592	247	4,339,588
8	4,339,202	387	4,339,222	263	4,339,455	CLASS 430		4,339,570	28	4,339,593	409	4,339,585
9	4,339,203	462	4,339,223	274	4,339,456	1	4,339,513	4,339,571	34	4,339,594	419	4,339,583
18	4,339,204	501	4,339,224		4,339,457	7	4,339,514	4,339,572	44	4,339,595	474	4,339,582
296	4,339,205	690	4,339,225	282	4,339,458	17	4,339,515	4,339,573	116	4,339,596	525	4,339,584
307	4,339,206		CLASS 415	316	4,339,459	20	4,339,516	4,339,574	169.372			
				322	4,339,460	34	4,339,517	4,339,575	255	4,339,575	CLASS 549	
CLASS 367		15	4,339,226	330	4,339,461	126	4,339,518	4,339,576	410	4,339,576	11	4,339,590
49	4,339,810	213 C	4,339,227	341	4,339,462	135	4,339,519	4,339,577	324	4,339,577	72	4,339,591
96	4,339,811	219 R	4,339,228			155	4,339,520	4,339,578	459	4,339,578	332	4,339,588
			CLASS 416	CLASS 426		192	4,339,521	4,339,579	512	4,339,579	488	4,339,587
CLASS 369				43	4,339,464		4,339,522	4,339,580	521	4,339,580	496	4,339,586
170	4,339,812	218	4,339,229	250	4,339,451	239	4,339,523	4,339,581	544	4,339,581	555	4,339,589
231	4,339,813	226	4,339,230	293	4,339,465	270	4,339,524	4,339,582	602	4,339,582		
261	4,339,814		CLASS 417	430	4,339,466	271	4,339,525	4,339,583	606	4,339,583	CLASS 560	
CLASS 370		40	4,339,231	538	4,339,467	296	4,339,526	4,339,584			25	4,339,592
58	4,339,815	54	4,339,232	582	4,339,468	322	4,339,527	4,339,585			70	4,339,593
71	4,339,816	317	4,339,233			323	4,339,528	4,339,586			76	4,339,595
93	4,339,817	366	Re.30,994	CLASS 427			4,339,529	4,339,587	63	4,339,554	204	4,339,596
112	4,339,818	490	4,339,234	10	4,339,469	331	4,339,530	4,339,588	66	4,339,555	205	4,339,597
			CLASS 422	39	4,339,470	535	4,339,531	4,339,589	131	4,339,556	210	4,339,598
CLASS 371				40	4,339,471	567	4,339,532	4,339,590	524	4,339,557		
16	4,339,819	117	4,339,412	44	4,339,472			4,339,591			CLASS 562	
53	4,339,820	200	4,339,413		4,339,473	CLASS 435		4,339,592			412	4,339,599
			CLASS 423	54.1	4,339,474		4,339,533	4,339,593			426	4,339,600
CLASS 372		7	4,339,414	64	4,339,475	170	4,339,534	4,339,594	106	4,339,559	438	4,339,601
18	4,339,821	10	4,339,415	98	4,339,476	70	4,339,535	4,339,595	142	4,339,560	465	4,339,602
26	4,339,822	126	4,339,416	146	4,339,477	119	4,339,536	4,339,596	304	4,339,561	466	
CLASS 373		329	4,339,417	212	4,339,478	142	4,339,537	4,339,597			CLASS 527	
52	4,339,824		4,339,418	255.1	4,339,479	240	4,339,538	4,339,598			100	4,339,603
158	4,339,825		4,339,419	349	4,339,480	253	4,339,539	4,339,599	303	4,339,601	302	4,339,603
			4,339,420	428	4,339,481						CLASS 568	
CLASS 374		330	4,339,421		CLASS 428	183	4,339,826	4,339,602			357	4,339,604
160	4,339,207	456	4,339,422	13	4,339,482	188	4,339,827	4,339,603	14	4,339,562	383	4,339,605
CLASS 375		462	4,339,423	35	4,339,483	205	4,339,828	4,339,604			396	4,339,606
20	4,339,823	606	4,339,424	36	4,339,484	340	4,339,829	4,339,605	15	4,339,563	426	4,339,607
110	4,339,824	633	4,339,425	40	4,339,485			4,339,606	27	4,339,564	487	4,339,608
			CLASS 424	71	4,339,486	CLASS 464		4,339,607	68	4,339,565		4,339,609
CLASS 376		1	4,339,426	100	4,339,487	23	4,339,798	4,339,608	102	4,339,566		4,339,610
216	4,339,410		4,339,427	167	4,339,488	111	4,339,796	4,339,609	126	4,339,567		4,339,611
272	4,339,411	21	4,339,428	213	4,339,489	167	4,339,797	4,339,610	240	4,339,568	649	4,339,612
CLASS 400		35	4,339,463	317.7	4,339,490			4,339,611	272	4,339,569	768	4,339,613
124	4,339,208	49	4,339,429	320.4	4,339,491	CLASS 501		4,339,612	361	4,339,571		4,339,614
142	4,339,209	39	4,339,430	349	4,339,492	3	4,339,540	4,339,613			CLASS 536	
208	4,339,210	54	4,339,431		4,339,493	109	4,339,541	4,339,614			16.1	4,339,572
248	4,339,211		4,339,432		4,339,494	134	4,339,542	4,339,615	84	4,339,573	899	4,339,617
			4,339,433		4,339,495	136	4,339,543	4,339,616		4,339,574	937	4,339,618
CLASS 403		78	4,339,434		4,339,496			4,339,617			CLASS 570	
27	4,339,212	105	4,339,435		4,339,497	CLASS 518		4,339,618			183	4,339,619
316	4,339,213	115	4,339,436	373	4,339,498	700	4,339,545	4,339,619			243	4,339,620
		131	4,339,437	402	4,339,499	704	4,339,546	4,339,620			CLASS 585	
CLASS 404		145	4,339,438	404	4,339,500	728	4,339,547	4,339,621			422	4,339,621
		177	4,339,439	411	4,339,501			4,339,622			433	4,339,622
69	4,339,214		4,339,440	412	4,339,502	CLASS 521		4,339,623			867	4,339,623
					4,339,503	28	4,339,548	4,339,624			837	4,339,623



# GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama .....	1	Kentucky .....	21	Oregon .....	41
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# OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

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## PATENT AND TRADEMARK OFFICE NOTICES

### Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	\$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,  
Commissioner of Patents  
and Trademarks.  
Jan. 19, 1982.

### REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,152,922, Re. S.N. 316,992, Filed Nov. 2, 1981, Cl. 73/3, APPARATUS AND METHOD FOR DETERMINING THE CHARACTERISTIC OF A FLOW-METER, Edward E. Francison, Owner of Record: *Flow Technology, Inc., Phoenix, Ariz.*, Attorney or Agent: Leroy T. Rahn, Ex. Gp.: 244

4,185,532, Re. S.N. 366,362, Filed Apr. 7, 1982, Cl. 84/126, ENVELOPE GENERATOR, Teruo Hiyoshi, et al., Owner of Record: *Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan*, Attorney or Agent: Robert Spensley, Ex. Gp.: 217

4,203,788, Re. S.N. 379,937, Filed May 19, 1982, Cl. 156/044, METHOD AND APPARATUS FOR MANUFACTURING CEMENTITIOUS REINFORCED PANELS, Theodore E. Clear, Owner of Record: *Inventor*, Attorney or Agent: Herbert C. Brinkman, et al., Ex. Gp.: 161

4,214,930, Re. S.N. 376,670, Filed May 10, 1982, Cl. 156/1, WEATHERSTRIP AND METHOD FOR SEALING A GAP, Allen J. Burrous, Owner of Record: *Schlegel Corp., Rochester, N.Y.*, Attorney or Agent: George W. Shaw, Ex. Gp.: 161

4,254,045, Re. S.N. 371,650, Filed Apr. 26, 1982, Cl. 260/397.2, 1a-HYDROXY-2B-FLUOROCHOLECALCIFEROL, Hector F. Deluca, et al., Owner of Record: *Wisconsin Alumni Research Foundation, Madison, Wis.*, Attorney or Agent: Howard W. Bremer, Ex. Gp.: 125

4,259,618, Re. S.N. 360,228, Filed Mar. 22, 1982, Cl. 315/360, ELECTRONIC ASSEMBLY, Ole K. Nilsen, Owner of Record: *Inventor*, Attorney or Agent: William E. Lucas, et al., Ex. Gp.: 256

### REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,903,158, Reexam. No. 90/000,218, Requested: June 16, 1982, Cl. 564/73, PROCESS FOR REDUCING THE BIURET CONTENT IN UREA, Jose Cabello Fuentes, et al., Owner of Record: *Guanos y Fertilizantes de Mexico, Mexico 13, D.F.*, Attorney or Agent: Ladas, Parry, Von Gehr, Goldsmith & Deschamps, Ex. Gp.: 117, Requester: James H. Laughlin, Jr., Attorney-At-Law, Arlington, Va.

### Extension of Time for Filing Notices of Opposition to Marks Published in the Official Gazette Dated June 8, 1982

Some copies of the Official Gazette dated June 8, 1982 were not mailed until June 16, 1982. Therefore, for marks published in the Official Gazette dated June 8, 1982, Notices of Opposition filed by July 16, 1982 will be considered timely.

MARGARET M. LAURENCE,  
Assistant Commissioner  
for Trademarks.  
June 17, 1982.

### Extension of Time for Filing Notices of Opposition to Marks Published in the Official Gazette Dated June 15, 1982

Some copies of the Official Gazette dated June 15, 1982 were not mailed until June 23, 1982. Therefore for marks published in the Official Gazette dated June 15, 1982, Notices of Opposition filed by July 23, 1982 will be considered timely.

MARGARET M. LAURENCE,  
Assistant Commissioner  
for Trademarks.  
June 25, 1982.

### New Patent Drawing Correction Procedures

Drawings charged out from the Patent and Trademark Office, for the purpose of making changes or corrections, will be released from the Drafting Branch after the mailing of the Notice of Allowance. Most drawings should be available for charge out one week to ten days after the Notice of Allowance mail date. The major exception to this procedure will be when the examiner requires that drafting corrections be made prior to the Notice of Allowance issuance. We anticipate that this exception requirement will occur only for Design applications being appealed.

Unless a duplicate copy of the Drafting Letter has been filed by the attorney/applicant, the Office will not normally provide the commercial bonded draftsman with copies of either examiner approved drawing correction letters or a copy of the Patent and Trademark Office draftsman's noted informalities. It is the applicant's responsibility to provide copies of the necessary drawing corrections and the noted informalities. When drawings are borrowed from the Office draftsman, the serial number, batch number, and Notice of Allowance mailing date should be identified.

If for any reason a corrected and/or substitute drawing is not acceptable, a letter will be sent to the attorney/applicant. A bonded commercial draftsman

JULY 20, 1982

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1020 OG 19

must present a copy of this letter in order to borrow the unacceptable drawings.

June 28, 1982. THERESA A. BRELSFORD,  
Acting Assistant Commissioner  
for Administration.

### Automated Search Experiments

Research and evaluation projects dealing with 1) automated full text searching of U.S. Trademarks, 2) automated phonetic searching of U.S. Trademarks, and 3) automated prefix/suffix searching of U.S. Trademarks, and 4) automated searching of design marks. To further this objective, the PTO has entered into an agreement with CSG Corp. and Pergamon International Information Corp., to provide the PTO access to and support for the use of their trademark searching systems. Using these systems, the PTO will test and evaluate the effectiveness of searching the full text of up to 80,000 U.S. Trademarks and up to 6,000 design marks. As part of this experiment, the PTO will furnish a special compilation of tapes containing the full text of pending U.S. Trademarks, and a special compilation of copies of design marks, suitable for filming.

The PTO would welcome multiple experiments using the same or similar techniques and/or technology, and thus the PTO is willing to enter into the same agreement, or a similar agreement on mutually agreeable terms, with any other responsible party, within 60 days from the date of this notice. Additional information regarding this matter may be obtained from:

J. Howard Bryant, Administrator for Automation,  
U.S. Patent and Trademark Office, Wash., D.C. 20231  
Tel. (703) 557-0410.

June 15, 1982. GERALD J. MOSSINGHOFF,  
Commissioner of Patents  
and Trademarks.

### Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decisions having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,385,818, O.S. Kauder, RIGID POLYVINYL CHLORIDE RESIN COMPOSITIONS HAVING INCREASED RESISTANCE TO HEAT DETE-RIORATION, Interference No. 99,658, decided Feb. 5, 1982, claims 1, 2, 4, 5, 6, 10 & 11.

Patent No. 3,884,693, S. Bauer & H. Sikora, LIGHT-SENSITIVE TRANSFER MATERIAL, Interference No. 99,992, decided Feb. 10, 1982, claim 10.

Patent No. 3,902,889, L.E. Malin, ELECTRIC ARC MELTING FURNACE, Interference No. 99,999, decided Feb. 2, 1982, claims 1, 4, 5, 9, 10, 13, 14, 16, 20, 21, 22, 24, 28, 29, 32, 33, 35, 38 & 39.

Patent No. 3,973,139, A.G.F. Dingwall, LOW POWER COUNTING CIRCUITS, Interference No. 100,094, decided Feb. 2, 1982, claims 1-10.

Patent No. 4,117,340, E. Goto, T. Souma, M. Idesawa & K. Tanaka, ELECTRON BEAM EXPOSURE SYSTEM, Interference No. 100,196, decided Feb. 24, 1982, claims 1-4 & 7.

Patent No. 4,246,178, A. Yamamoto, K. Taguchi, A. Hayashida & T. Ishihara, TETRAHYDROPYRAN-5-ONE COMPOUNDS, Interference No. 100,769, decided Apr. 7, 1982, claims 1-4.

Patent No. 4,248,601, E.R. McGough & A. Adams, PROCESS FOR REDUCING THE SODIUM CHLORIDE CONTENT OF A POTASSIUM SALT, Interference No. 100,733, decided Apr. 29, 1982, claims 1, 3, 4, 7-11.

NANNIE B. HENRY,  
Deputy Clerk,  
Board of Patent Interferences.

### Errata

The following registration numbers, listed in the "Trademark Registrations Issued" section of the Official Gazette of Feb. 9, 1982, Feb. 23, 1982, May 4, 1982, May 11, 1982, and May 18, 1982, were assigned, prematurely, to published marks for which the opposition period had not yet run:

TMOG Feb. 9, 1982	TMOG May 11, 1982
1,189,330	1,195,159 1,195,363
TMOG Feb. 23, 1982	TMOG May 18, 1982
1,190,489 1,190,594 1,190,770	1,195,820
TMOG May 4, 1982	
1,194,621 1,194,721	

Consequently, certificates of registration bearing the above-identified numbers were not issued on the dates indicated, and these registration numbers have been vacated.

June 15, 1982. MARGARET M. LAURENCE,  
Assistant Commissioner  
for Trademarks.

### Delay in Move of Trademark Post Registration Section and Trademark Classification Team

A notice published in the June 29, 1982 issue of the Official Gazette indicated that the Trademark Post Registration Section and Trademark Classification Team would be moving from the lobby level of Crystal Plz. Bldg. 1 to the 8th floor of Crystal Plz. Bldg. 2 near the end of June. The move has been delayed and is now expected to take place later in the summer. As soon as a new date is scheduled, it will be published in the Official Gazette.

June 24, 1982. MARGARET M. LAURENCE,  
Assistant Commissioner  
for Trademarks.

### Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before Aug. 17, 1982.

June 17, 1982. DONALD J. QUIGG,  
Chairman, Committee  
on Enrollment.

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## PATENT NOTICES

## Certificates of Correction for the Week of July 20, 1982

3,691,372	4,294,187	4,315,981	4,323,077
3,726,348	4,296,431	4,316,037	4,323,290
3,812,533	4,299,105	4,316,060	4,323,337
4,021,566	4,299,516	4,316,070	4,323,414
4,135,135	4,301,004	4,316,095	4,323,493
4,182,712	4,301,226	4,316,203	4,323,548
4,202,802	4,301,608	4,316,397	4,323,972
4,208,977	4,302,590	4,316,731	4,324,311
4,209,261	4,305,981	4,316,878	4,324,415
4,212,863	4,308,100	4,316,893	4,324,571
4,228,940	4,308,994	4,317,560	4,324,683
4,242,138	4,309,429	4,318,139	4,324,722
4,247,439	4,309,528	4,319,352	4,324,772
4,259,183	4,309,758	4,319,435	4,325,509
4,259,699	4,309,841	4,319,690	4,326,049
4,261,579	4,310,316	4,320,001	4,326,291
4,264,340	4,310,583	4,320,260	4,327,132
4,268,509	4,310,900	4,320,487	4,327,146
4,268,582	4,311,320	4,320,609	4,327,156
4,269,771	4,311,789	4,320,660	4,328,098
4,271,086	4,312,703	4,321,025	4,328,348
4,271,843	4,312,981	4,321,066	4,328,386
4,272,354	4,313,124	4,321,240	4,328,737
4,273,577	4,313,200	4,321,403	4,328,852
4,277,207	4,313,242	4,321,892	4,329,125
4,277,391	4,313,684	4,321,899	4,329,247
4,278,555	4,313,732	4,322,003	4,329,464
4,278,779	4,313,831	4,322,251	4,329,750
4,283,726	4,314,071	4,322,297	4,329,775
4,285,264	4,314,103	4,322,351	4,330,357
4,285,720	4,314,228	4,322,441	4,330,528
4,285,919	4,314,360	4,322,671	4,330,717
4,289,790	4,314,495	4,322,695	4,330,824
4,289,860	4,314,700	4,322,861	4,330,882
4,289,989	4,315,766	4,322,900	
4,292,453	4,315,823	4,322,922	
4,293,224	4,315,947	4,322,960	



# Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the

table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	Name of Library	Telephone Contact
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

\*Collection organized by subject matter.

\*\*Call only between the hours of 10:00 a.m. and 5:00 p.m.

1020 OG 24

# PATENT EXAMINING CORPS RENE D. TEGTMEYER, Assistant Commissioner WILLIAM FELDMAN, Deputy Assistant Commissioner CONDITION OF PATENT APPLICATIONS AS OF June 12, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	4-03-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170— R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-12-81
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-11-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications; Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	8-29-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240— G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	6-22-80
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding; Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-03-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330— R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	5-01-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350— A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-24-80

**Expiration of patents:** The patents within the range of numbers indicated below expire during May 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,186,004 to 3,192,535, inclusive  
Plant Patents . . . . . Numbers 2,522 to 2,542 inclusive

1020 OG 25

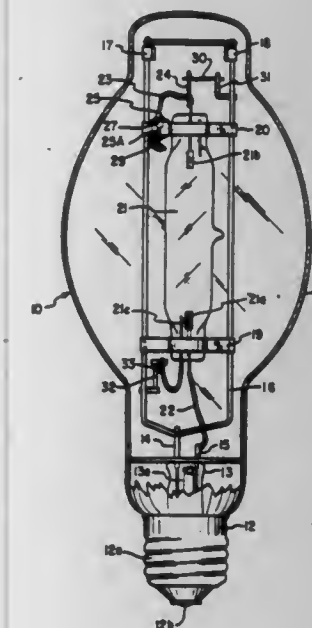


## REEXAMINATIONS

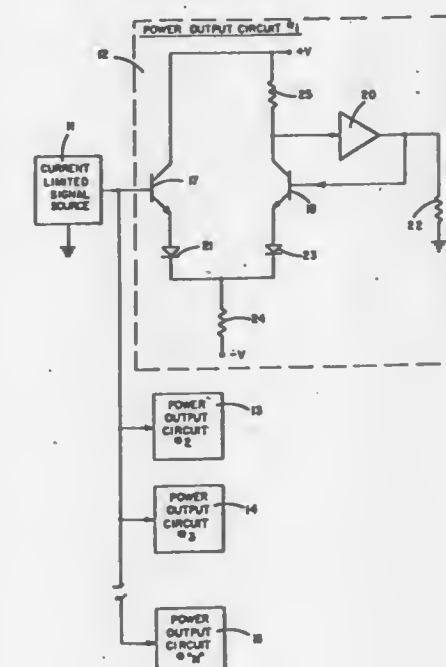
JULY 20, 1982

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 4,156,830 (8th)  
**HIGH INTENSITY DISCHARGE LAMP WITH INTEGRAL MEANS FOR ARC EXTINGUISHING**  
 Herbert S. Strauss, Paramus; Lawrence Sheinberg, Howell Township, Monmouth County, both of N.J., assignor to the Duro-Test Corp., North Bergen, N.J.  
 Reexamination Request No. 90/000,030, Jul. 16, 1981  
 Reexamination Certificate for Patent No. 4,156,830, issued May 29, 1979, Ser. No. 577,096, May 13, 1975.  
 Int. Cl.<sup>3</sup> H01J 7/44, 13/46, 17/34; H01K 1/62.  
 U.S. Cl. 315—73



B1 4,180,780 (9th)  
**INPUT DECOUPLING CIRCUIT FOR TRANSISTOR DIFFERENTIAL AMPLIFIER**  
 Paul S. Rumbaugh, Garden Grove, Calif., assignor to Altec Corporation, Anaheim, Calif.  
 Reexamination Request No. 90/000,050, Aug. 7, 1981.  
 Reexamination Certificate for Patent No. 4,180,780, issued Dec. 25, 1979, Ser. No. 947,629, Oct. 2, 1978.  
 Int. Cl.<sup>3</sup> H03F 3/45  
 U.S. Cl. 330—252



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-17 is confirmed.

1. A high intensity arc discharge lamp comprising: a first envelope having means therein for producing an arc discharge emitting optical radiation at least a portion of which is in the visible range in response to an applied voltage.

means for applying voltage to the arc discharge producing means of said first envelope to produce the arc therein, and

a second, normally sealed envelope within which the first envelope is mounted,

said means for applying the voltage including mechanically operated safety switch means located in the space between said first and second envelopes having at least one spring element against which pressure is exerted by the second envelope, the second element of said switch means having the pressure removed therefrom in response to the breaking of the second envelope and said switch means being activated to remove the voltage applied to the arc discharge producing means of said first envelope and to extinguish the arc.

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-5 is confirmed.

1. A reference voltage source circuit comprising: a differential amplifier having input terminals and an output terminal; a pair of transistors having bases connected in common and collectors respectively connected to differential input terminals of said differential amplifier; load resistors connected to said transistor collectors; means for supplying said transistors with collector currents through said respective load resistors; means for coupling the output terminal of said differential amplifier to the common base junction of said transistors; and adjusting means for adjusting said collector currents of said transistors so that the sum of the base-emitter forward junction voltage  $V_{BE1}$  of one of said pair of transistors and  $\alpha$ -times a difference voltage  $\Delta V_{BE}$  between said voltages  $V_{BE}$  of said pair of transistors,  $\alpha$  being a positive constant, is equal to a silicon energy bandgap voltage; wherein  $\beta$ -times said silicon energy bandgap voltage,  $\alpha$  being a constant at least equal to one, is an output reference voltage of said reference voltage source circuit.



B1 3,654,090 (10th)  
METHOD FOR THE DETERMINATION OF  
ANTIGENS AND ANTIBODIES

Antonius Hermanus Wilhelmus Maria Schuurs; Banke  
Klaas van Weemen, both of Oss, The Netherlands, as-  
signor to Organon, Inc., West Orange, N.J.

Reexamination Request No. 90/000,015, Jul. 1, 1981.  
Reexamination Certificate for Patent No. 3,654,090,  
issued Apr. 4, 1972, Ser. No. 762,120, Sep. 24, 1968.

Int. Cl.<sup>3</sup> G01N 33/54

U.S. Cl. 435/7.

AS A RESULT OF REEXAMINATION, IT HAS  
BEEN DETERMINED THAT:

The patentability of claims 1-7 is confirmed.

1. Method for the immunochemical determination of a  
component of the antigen-antibody reaction comprising  
adding to a sample containing the component to be deter-

mined an amount of one component of said antigen-  
antibody reaction in an insolubilized form and an adjust-  
ed amount of the other component covalently linked to  
an enzyme, allowing the immunochemical reaction to  
take place, separating the free component from the bound  
enzyme-labelled component to form two fractions, and  
determining the enzyme activity of one of these fractions  
which is a measure of the amount of said component  
present in the said sample.

7. A [reagent] test-system for the determination of the  
antigen-antibody reaction, consisting of:

- (a) one component in an insolubilized form; and
- (b) the other component covalently linked to an  
enzyme, whereby  
each of (a) and (b) is provided in a known amount, and  
the ratio of (a) to (b) is known, wherein the known amounts  
are sufficient to provide for an optimal measurement for a  
qualitative or quantitative heterogeneous enzyme immunoas-  
say.

## ERRATA

In the OFFICIAL GAZETTE, Vol. 1019, No. 3, June 15, 1982, incomplete dates appeared in the bibliographic  
portion of patents listed on pages 1011 through 1162, Patent Numbers 4,334,962 through 4,335,470, and on pages  
1163 through 1188, Design Patent Numbers 264,890 through 265,014. The corrected bibliographic portion for these  
patents is as follows:

## CHEMICAL

JUNE 15, 1982

4,334,962  
APPARATUS FOR STRIPPING IMMISCIBLE  
MATERIALS  
Gordon P. Gerow, Davenport, Fla., assignor to FMC Corpora-  
tion, Chicago, Ill.  
Division of Ser. No. 865,150, Dec. 28, 1977, which is a division  
of Ser. No. 399,238, Sep. 20, 1973, Pat. No. 4,113,573. This  
application Jul. 20, 1978, Ser. No. 926,596  
Int. Cl.<sup>3</sup> B01D 3/06  
U.S. Cl. 202—185 R 19 Claims

4,334,963  
EXHAUST HOOD FOR UNLOADING ASSEMBLY OF  
COKE-OVEN BATTERY  
Wilhelm Stog, Waltrop, Fed. Rep. of Germany, assignor to  
WSW. Planungs-GmbH, Waltrop, Fed. Rep. of Germany  
Filed Aug. 29, 1980, Ser. No. 182,651  
Claims priority, application Fed. Rep. of Germany, Sep. 26,  
1979, 2938893; Dec. 22, 1979, 2952179  
Int. Cl.<sup>3</sup> C10B 33/00, 33/14  
U.S. Cl. 202—263 10 Claims

4,334,964  
PROCESS FOR SEPARATING THE REACTION  
PRODUCTS OBTAINED FROM ETHERIFYING LOWER  
ISOOLEFINS WITH METHANOL  
Milan Prezelj, Frankfurt am Main; Gunter Osterburg, Duis-  
burg, and Joachim E. Putz, Dreieich-Offenthal, all of Fed.  
Rep. of Germany, assignors to Edeleanu Gesellschaft mbH,  
Frankfurt am Main, Fed. Rep. of Germany  
Filed Jun. 12, 1981, Ser. No. 273,171  
Claims priority, application Fed. Rep. of Germany, Jun. 27,  
1980, 3024147  
Int. Cl.<sup>3</sup> B01D 3/34  
U.S. Cl. 203—14 11 Claims

4,334,965  
PROCESS FOR RECOVERY OF OLEFINIC NITRILES  
Hsin-Chih Wu, Parma, Ohio, assignor to Standard Oil Com-  
pany, Cleveland, Ohio  
Filed Dec. 31, 1980, Ser. No. 221,666  
Int. Cl.<sup>3</sup> B01D 3/40; C07C 121/32  
U.S. Cl. 203—25 11 Claims

4,334,966  
METHOD OF COPPER PLATING GRAVURE  
CYLINDERS  
Sidney C. Beach, Parma, and C. Richard Frisby, Strongsville,  
both of Ohio, assignors to McGean Chemical Company, Inc.,  
Cleveland, Ohio  
Filed May 19, 1981, Ser. No. 265,143  
Int. Cl.<sup>3</sup> C25D 3/38, 7/00  
U.S. Cl. 204—25 10 Claims

4,334,967  
METHOD FOR PREPARING 1,2-DICHLOROETHANE  
Gurami A. Tedoradze, proezd Shokalskogo, 67, korpus 2, kv.  
268, Moscow; Valentina A. Paprotskaya, mikroraiion Sere-  
bryanka, 3, kv. 90, Moskovskaya oblast, Pushkino; Andrei P.  
Tomilov, 5 Parkovaya ulitsa, 56, korpus 6, kv. 59, Moscow;  
Evegina A. Ponomarenko, shosse Entuziastov, 100, kv. 148,  
Moscow, and Jury M. Sokolov, Okruzhnoi proezd, 33, korpus  
1, kv. 72, Moscow, all of U.S.S.R.  
PCT No. PCT/SU79/00001, § 371 Date Sep. 23, 1980, § 102(e)  
Date Jun. 4, 1980, PCT Pub. No. WO80/01686, PCT Pub.  
Date Aug. 21, 1980  
PCT Filed Jan. 23, 1979, Ser. No. 252,976  
Int. Cl.<sup>3</sup> C25B 3/06  
U.S. Cl. 204—81 5 Claims

4,334,968  
APPARATUS FOR GENERATION OF  
CHLORINE/CHLORINE DIOXIDE MIXTURES  
Charles T. Sweeney, 448 Earle Rd., Hewitt, Tex. 76643  
Continuation-in-part of Ser. No. 92,645, Nov. 8, 1979, Pat. No.  
4,256,552. This application Feb. 13, 1980, Ser. No. 121,114  
The portion of the term of this patent subsequent to Mar. 17,  
1998, has been disclaimed.  
Int. Cl.<sup>3</sup> C25B 1/46, 9/00; C02F 1/76; F04H 3/16  
U.S. Cl. 204—96 28 Claims

ER 1



4,334,969  
PHOTOCHEMICAL PROCESS FOR THE SYNTHESIS OF STROBILURIN

Wolfgang Steglich, Bonn-Röttgen; Georg Schramm, Hennef-Lichtenberg; Timm Anke, and Franz Oberwinkler, both of Tübingen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 2, 1981, Ser. No. 279,737

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025368

Int. Cl.<sup>3</sup> B01J 19/08

U.S. Cl. 204—158 R 1 Claim

4,334,970  
RADIATION CURABLE SOLVENT-FREE COMPOSITIONS RECOVERY SYSTEM

Louis J. Lombardi, Roselle, and Roy J. Coyne, Hometown, both of Ill., assignors to The Richardson Company, Des Plaines, Ill. Division of Ser. No. 739,183, Nov. 5, 1976, Pat. No. 4,201,842, which is a continuation of Ser. No. 405,407, Oct. 11, 1973, abandoned. This application Dec. 26, 1979, Ser. No. 106,556

Int. Cl.<sup>3</sup> C08F 2/50; C08J 3/28; C08K 5/03; C08L 29/08

U.S. Cl. 204—159.15 9 Claims

4,334,971  
MANUFACTURE OF RESILIENT FOAMS BASED ON A MELAMINE-FORMALDEHYDE CONDENSATE

Harald Mahnke; Guenter Kreibiehl, both of Ludwigshafen; Heinz Weber, Gruenstadt, and Frank P. Woerner, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Del.X

Filed Mar. 11, 1981, Ser. No. 242,561

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1980, 3011769

Int. Cl.<sup>3</sup> C08G 2/02

U.S. Cl. 204—159.21 4 Claims

4,334,972  
AMPHOLYTE AND ITS USE IN SEPARATION PROCESSES

John L. Söderberg, Upsala, Sweden, assignor to Pharmacia Fine Chemicals AB, Upsala, Sweden

Continuation of Ser. No. 64,359, Aug. 7, 1979, abandoned, which is a continuation of Ser. No. 891,105, Mar. 28, 1978, abandoned.

This application Oct. 21, 1980, Ser. No. 199,232

Claims priority, application Sweden, Apr. 26, 1977, 7704783

Int. Cl.<sup>3</sup> B01D 57/02; C07C 101/00

U.S. Cl. 204—180 R 8 Claims

4,334,973  
PROCESS FOR ELECTROPHORETICALLY FORMING AN IMIDE COATING ON WIRE

Nancy W. Carlson, Murrysburg; Dean C. Westervelt, Acme, and Luciano C. Scala, Murrysburg, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 18, 1980, Ser. No. 171,932

Int. Cl.<sup>3</sup> C25D 13/06, 13/10, 13/16

U.S. Cl. 204—181 R 17 Claims

4,334,974  
ELECTROCHEMICAL OXYGEN SENSOR, PARTICULARLY FOR USE WITH EXHAUST GASES OF INTERNAL COMBUSTION ENGINES, AND ESPECIALLY FOR POLAROGRAPHIC APPLICATION

Klaus Muller, Tramm; Helmut Maurer, Schwieberdingen; Ernst Linder, Muhlacker; Franz Rieger, Aalen; Karl H. Friese, Leonberg; Harald Reber; Hermann Dietz, both of Gerlingen; Hermann Ziener, Moglingen; Friedrich Esper, Leonberg, and Gerhard Holfelder, Ditzingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 14, 1980, Ser. No. 121,598

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907032

Int. Cl.<sup>3</sup> G01N 27/58

U.S. Cl. 204—195 S 14 Claims

4,334,975  
APPARATUS FOR ELECTROLYTIC PRODUCTION OF MAGNESIUM METAL FROM ITS CHLORIDE

Hiroshi Ishizuka, 19-2, Ebara 6-chome, Shinagawa-ku, Tokyo, Japan

Filed Sep. 18, 1980, Ser. No. 188,589

Claims priority, application Japan, Sep. 27, 1979, 54-124890; Oct. 3, 1979, 54-127710; Sep. 5, 1980, 55-123910

Int. Cl.<sup>3</sup> C25C 3/04, 3/22, 7/02

U.S. Cl. 204—247 16 Claims

4,334,976  
UPGRADING OF RESIDUAL OIL

Tsoun Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 186,927, Sep. 12, 1980. This application Jan. 13, 1981, Ser. No. 224,778

Int. Cl.<sup>3</sup> C10G 1/00, 45/00, 17/00

U.S. Cl. 208—8 LE 16 Claims

4,334,977  
METHOD FOR THE GENERATION OF RECYCLE SOLVENTS IN COAL LIQUEFACTION

Francis J. Derbyshire, Ewing; Philip Varghese, Trenton, and Darrell D. Whitehurst, Titusville, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 15, 1981, Ser. No. 225,283

Int. Cl.<sup>3</sup> C10G 1/00

U.S. Cl. 208—8 LE 5 Claims

4,334,978  
DEWAXING AND WAX FILTERABILITY BY REDUCING SCRAPER SPEED IN SCRAPED SURFACE CHILLING UNITS

Thomas E. Broadhurst, Sarnia, Canada, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 86,455, Oct. 19, 1979, abandoned. This application Nov. 24, 1980, Ser. No. 209,475

Int. Cl.<sup>3</sup> C10G 73/32

U.S. Cl. 208—33 24 Claims

4,334,979  
HYDROCARBON CRACKING PROCESS USING A CATALYST CONTAINING GERMANIUM

Brent J. Bertus, and Dwight L. McKay, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 11, 1980, Ser. No. 139,483

Int. Cl.<sup>3</sup> C10G 11/05

U.S. Cl. 208—114 22 Claims

4,334,980  
NON-PUFFING PETROLEUM COKE

Harry L. Hsu, Johnson City, Tenn., assignor to Great Lakes Carbon Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 8,838, Feb. 2, 1979, abandoned.

This application Mar. 31, 1980, Ser. No. 135,717

Int. Cl.<sup>3</sup> C10G 9/14

U.S. Cl. 208—125 9 Claims

4,334,981  
COKER BLOW DOWN RECOVERY SYSTEM

Richard L. Holloway, Bellingham, Wash.; John A. Miller, Seabrook, Tex., and Jerald E. Winters, El Toro, Calif., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Division of Ser. No. 43,940, May 30, 1979, Pat. No. 4,261,954.

This application Nov. 3, 1980, Ser. No. 202,954

Int. Cl.<sup>3</sup> C10G 9/14

U.S. Cl. 208—131 3 Claims

4,334,982  
PROCESS FOR THE SELECTIVE DESULFURIZATION OF OLEFINIC CUTS

Yves Jacquin, Sevres, and Jean-Francois Le Page, Rueil Malmaison, both of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed May 21, 1980, Ser. No. 152,215

Claims priority, application France, May 21, 1979, 79 13067

Int. Cl.<sup>3</sup> C10G 23/02

U.S. Cl. 208—216 R 18 Claims

4,334,983  
STRIPPING STEAM RECYCLE FOR SOLVENT RECOVERY PROCESSES

David Mentzer, Lake Hiawatha, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 30, 1980, Ser. No. 164,802

Int. Cl.<sup>3</sup> C10G 21/20

U.S. Cl. 208—326 10 Claims

4,334,984  
APPARATUS FOR PROCESSING LOW-GRADE WASTE PAPER

Svetozar Vagac; Anton Kostka; Milan Carsky; Lubor Sedlacek; Jaroslav Navratil, all of Bratislava; Jiri Mueller, Litovel; Rudolf Kmeco, Litovel, and Vaclav Knob, Litovel, all of Czechoslovakia, assignors to Vyzkumny ustav papieru a celulozy, Bratislava, Czechoslovakia

Continuation-in-part of Ser. No. 87,929, Oct. 25, 1979, abandoned. This application Feb. 2, 1981, Ser. No. 230,313

Claims priority, application Czechoslovakia, Oct. 26, 1978, 6953-78

Int. Cl.<sup>3</sup> B03B 7/00, 9/06

U.S. Cl. 209—3 4 Claims

4,334,985  
SELECTIVE RHEOLOGICAL SEPARATION OF CLAYS

Ralph E. Turner, Jr., Tennille, Ga., assignor to Anglo-American Clays Corporation, Sandersville, Ga.

Filed Dec. 15, 1980, Ser. No. 216,652

Int. Cl.<sup>3</sup> B03B 1/00

U.S. Cl. 209—5 12 Claims

4,334,986  
SEPARATOR FOR A MIXTURE OF A SUSPENSION AND COARSE HEAVY PARTICLES

Rune H. Frykhult, Huddinge, Sweden, assignor to AB Cellico, Tumba, Sweden

Filed Feb. 25, 1981, Ser. No. 238,114

Claims priority, application Sweden, Feb. 25, 1980, 8001440

Int. Cl.<sup>3</sup> B04C 9/00

U.S. Cl. 209—17 18 Claims

4,334,987  
METHOD OF SEPARATION OF SOLID PHASE IN DRILLING MUD

Ulmas D. Mamadzhonov, Ts-I, dom 19, kv. 25; Vitold M. Bak-hir, proezd Gaidara, 7"A", kv. 17; Vladimir I. Klimenko, Chilanar, kvartal 23, dom 3, kv. 37; Jury G. Zadorozhny, Chilanar, kvartal 2, dom 59, kv. 12, and Stanislav A. Alekhin, Chilanar, kvartal 24, dom 53, kv. 89, all of Tashkent, U.S.S.R.

PCT No. PCT/SU79/00128, § 371 Date Nov. 27, 1980, § 102(e) Date Sep. 17, 1980, PCT Pub. No. WO80/02041, PCT Pub. Date Oct. 2, 1980

PCT Filed Nov. 27, 1979, Ser. No. 212,087

Claims priority, application U.S.S.R., Mar. 27, 1979, 2736503; Mar. 27, 1979, 2736504

Int. Cl.<sup>3</sup> B03B 5/00

U.S. Cl. 209—210 10 Claims

4,334,988  
CONTROL OF DIALYSIS AND ULTRAFILTRATION

Lee J. Milligan, Englewood, Colo., assignor to Hosal Medical Corp., Littleton, Colo.

Continuation-in-part of Ser. No. 750,151, Dec. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 668,420, Mar. 19, 1976, abandoned, and a continuation-in-part of Ser. No. 645,427, Dec. 30, 1975, abandoned. This application Aug. 4, 1980, Ser. No. 174,856

Int. Cl.<sup>3</sup> B01D 31/00

U.S. Cl. 210—87 8 Claims

4,334,989  
FUEL-WATER SEPARATOR WITH PISTON-CHECK VALVE WATER DISPOSAL TO EVAPORATOR

John F. Hall, Bloomfield Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 29, 1980, Ser. No. 221,140

Int. Cl.<sup>3</sup> B01D 35/02

U.S. Cl. 210—114 3 Claims

4,334,990  
CARTRIDGE FOR ACTIVE FILTRATION AND TREATMENT OF LIQUID METALS AND ALLOYS

Pierre du Manoir de Juaye, Cognin; Pierre Guerit, Chambery; Gilbert Pollet, La Ravoire, and Jean-Marie Hicter, Volron, all of France, assignors to Servimet, Paris, France

Filed Aug. 15, 1980, Ser. No. 178,432

Claims priority, application France, Aug. 24, 1979, 79 21957

Int. Cl.<sup>3</sup> B01D 27/02, 27/04

U.S. Cl. 210—186 21 Claims

4,334,991  
BAFFLES FOR SEPTIC TANK PORTS

Earl R. Beede, R.F.D. #3, Concord, N.H. 03301

Continuation of Ser. No. 47,758, Jun. 12, 1979, abandoned. This application Nov. 18, 1980, Ser. No. 207,956

Int. Cl.<sup>3</sup> B01D 21/24

U.S. Cl. 210—232 10 Claims



4,334,992  
**MODULAR BLOCK FOR OSMOTIC METHODS OF SEPARATION**  
Wulf von Bonin, Leverkusen; Jürgen Lahrs, and Eberhard Born, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Filed Feb. 4, 1980, Ser. No. 118,333  
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1979, 2707319  
Int. Cl.<sup>3</sup> B01D 31/00  
U.S. Cl. 210—241 3 Claims

4,334,993  
**POTTED-TYPED SEAL WITH STRESS RELIEF AND METHOD OF MAKING SAME**  
William W. Norton, Lincolnshire, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.  
Filed Dec. 5, 1979, Ser. No. 100,684  
Int. Cl.<sup>3</sup> B01D 31/00  
U.S. Cl. 210—321.3 7 Claims

4,334,994  
**DISPOSABLE FLUID FILTERS**  
Richard V. Jensen, Cookeville, Tenn., assignor to Fleetguard, Inc., Columbus, Ind.  
Continuation-in-part of Ser. No. 865,544, Dec. 29, 1977, abandoned. This application Dec. 21, 1978, Ser. No. 970,731  
Int. Cl.<sup>3</sup> B01D 25/02  
U.S. Cl. 210—336 6 Claims

4,334,995  
**FILTER ASSEMBLY HAVING AN EXTRUDED FILTER HEAD**  
Robert M. Mahon, Stoughton, Wis., assignor to Nelson Industries, Inc., Stoughton, Wis.  
Filed Aug. 25, 1980, Ser. No. 180,877  
Int. Cl.<sup>3</sup> B01D 29/24  
U.S. Cl. 210—340 7 Claims

4,334,996  
**TUBE PRESSURE FILTERS**  
Bernard H. Broad, St. Austell, England, assignor to English Clays Lovering Pochin & Co. Limited, Cornwall, England  
Continuation of Ser. No. 924,802, Jul. 14, 1978, abandoned, which is a continuation of Ser. No. 748,188, Dec. 7, 1976, abandoned. This application Nov. 26, 1979, Ser. No. 97,934  
Claims priority, application United Kingdom, Dec. 18, 1975, 51974/75  
Int. Cl.<sup>3</sup> B01D 25/12; B30B 9/06  
U.S. Cl. 210—350 7 Claims

4,334,997  
**ANAEROBIC DIGESTER TECHNOLOGY**  
Richard E. Peterson, 382 Pierce Ave., St. Paul, Minn. 55104  
Filed Feb. 6, 1981, Ser. No. 231,959  
Int. Cl.<sup>3</sup> C02F 3/28  
U.S. Cl. 210—603 11 Claims

4,334,998  
**PROCESS FOR PLACING A GAS PHASE, AT LEAST ONE LIQUID PHASE, AND AT LEAST ONE COMMUNITED SOLID PHASE IN CONTACT**  
Gilbert M. Rios; Henri Gibert, and Jean-Louis Baxerres, all of Montpellier, France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France  
Filed Jun. 26, 1980, Ser. No. 163,168  
Claims priority, application France, Jun. 29, 1979, 79 17430  
Int. Cl.<sup>3</sup> C02F 3/08; B01J 47/10  
U.S. Cl. 210—617 12 Claims

4,334,999  
**PROCESS FOR THE EXTRACTION OF METAL IONS**  
David A. Cornwell, Okemos, Mich., assignor to Board of Trustees, Michigan State University, East Lansing, Mich.  
Continuation of Ser. No. 99,019, Nov. 30, 1979, abandoned, which is a continuation-in-part of Ser. No. 25,321, Mar. 30, 1979, abandoned. This application Mar. 3, 1981, Ser. No. 240,186  
Int. Cl.<sup>3</sup> B01D 11/00; C02F 1/26, 1/42  
U.S. Cl. 210—638 19 Claims

4,335,000  
**CHROMATE ION REMOVAL FROM AQUEOUS SOLUTIONS**  
Jesse G. Grier, Gilbertsville, Ky., and Jimmie R. Hodges, Downingtown, Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.  
Continuation-in-part of Ser. No. 956,755, Nov. 1, 1978, abandoned, which is a continuation of Ser. No. 832,866, Sep. 13, 1977, abandoned. This application Feb. 4, 1980, Ser. No. 118,047  
Int. Cl.<sup>3</sup> C02F 1/42  
U.S. Cl. 210—662 17 Claims

4,335,001  
**PROCESS AND DEVICE FOR SEPARATION OF EMULSIONS BY COALESCENCE**  
Yves Aurelle, Aucamville; Jean-Paul Calteau, Saint-Louis, and Henri Roques, Portet-sur-Garo, all of France, assignors to Agence Nationale de Valorisation de la Recherche (A.N.V.A.R.), Neuilly-sur-Seine, France  
Continuation of Ser. No. 866,817, Jan. 4, 1978, abandoned. This application Nov. 21, 1979, Ser. No. 96,580  
Claims priority, application France, Jan. 4, 1977, 77 00203  
Int. Cl.<sup>3</sup> B01D 17/04  
U.S. Cl. 210—708 13 Claims

4,335,002  
**COMPOSITIONS OF MATTER CONTAINING CIS-3-HEXENAL**  
Cynthia J. Mussinan, Bricktown; Braja D. Mookherjee, Holmdel; Manfred H. Vock, Locust; Frederick L. Schmitt, Holmdel; Edward J. Granda, Englishtown; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.  
Division of Ser. No. 85,707, Oct. 17, 1979, Pat. No. 4,241,098. This application Jul. 17, 1980, Ser. No. 169,678  
Int. Cl.<sup>3</sup> A23L 1/226, 2/26; A61K 7/46; C11B 9/00  
U.S. Cl. 252—1 1 Claim

4,335,003  
**PREPARATION AGENT FOR THE PRODUCTION OF SYNTHETIC FILAMENTS**  
Christlieb Nordschild, Stuttgart; Paul Rathfelder, Boeblingen; Horst Rieckert, Calw, and Dieter Wolber, Magstadt, all of Fed. Rep. of Germany, assignors to Schill & Seilacher GmbH & Co., Boeblingen, Fed. Rep. of Germany  
Filed Jul. 3, 1980, Ser. No. 165,569  
Claims priority, application Fed. Rep. of Germany, May 5, 1979, 2927170  
Int. Cl.<sup>3</sup> D06M 13/18; C10M 3/22; D06M 15/08  
U.S. Cl. 252—8.9 8 Claims

4,335,004  
**LUBRICATING COMPOSITIONS CONTAINING DIESTERS OF DIMERCAPTO ETHERS**  
Howard F. Efner, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.  
Filed Jan. 11, 1980, Ser. No. 111,414  
Int. Cl.<sup>3</sup> C10M 1/38  
U.S. Cl. 252—48.6 8 Claims

4,335,005  
**LUBRICANT COMPOSITIONS CONTAINING METAL ANTIFATIGUE ADDITIVES**  
Eldon L. Armstrong, Mullica Hill, and Phillip S. Landis, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.  
Filed Sep. 11, 1980, Ser. No. 186,095  
Int. Cl.<sup>3</sup> C10M 1/10, 3/02, 7/02, 7/48  
U.S. Cl. 252—49.6 5 Claims

4,335,006  
**METHOD OF STABILIZING LUBRICATING FLUIDS**  
Baldev K. Bandlish, Middlebury; Frederick C. Loveless, Cheshire, and Walter Nudenberg, Newtown, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.  
Continuation of Ser. No. 43,995, May 31, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,326  
Int. Cl.<sup>3</sup> C10M 1/10, 1/54  
U.S. Cl. 252—49.7 16 Claims

4,335,007  
**SOAP BAR**  
Dovie A. Owens, Rte. 2, Box 460, Fulton, Miss. 38843  
Filed Mar. 4, 1981, Ser. No. 240,543  
Int. Cl.<sup>3</sup> C11D 17/00, 17/04  
U.S. Cl. 252—92 1 Claim

4,335,008  
**PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OF DETERGENTS USING CYCLOHEXYL PHENETHYLETHER**  
Jacob Kiwala, Brooklyn, N.Y.; Richard J. Tokarzewski, Keyport, N.J.; Frederick L. Schmitt, Holmdel, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.  
Division of Ser. No. 192,238, Sep. 30, 1980, Pat. No. 4,306,096. This application May 28, 1981, Ser. No. 267,900  
Int. Cl.<sup>3</sup> C11D 3/50  
U.S. Cl. 252—174.11 1 Claim

4,335,009  
**MIXTURE OF ALIPHATIC C<sub>10</sub> BRANCHED OLEFIN EPOXIDES AND USE THEREOF IN AUGMENTING OR ENHANCING THE AROMA OF PERFUMES AND/OR ARTICLES**  
Richard M. Boden, Monmouth Beach; Lambert Dekker, Wyckoff; Frederick L. Schmitt, Holmdel, all of N.J., and Augustinus G. Van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.  
Continuation-in-part of Ser. No. 160,788, Jun. 19, 1980, Pat. No. 4,287,084. This application Oct. 9, 1980, Ser. No. 195,630  
Int. Cl.<sup>3</sup> C11D 3/395, 3/39, 7/54  
U.S. Cl. 252—187.27 2 Claims

4,335,010  
**PREPARATION OF MUCONIC ACID MONONITRILES AND COPPER(II)-AMMONIA REAGENT THEREFOR**  
Timothy R. Demmin, Randolph, and Milorad M. Rogic, Whippany, both of N.J., assignors to Allied Corporation, Morris-town, N.J.  
Division of Ser. No. 74,442, Sep. 11, 1979, Pat. No. 4,277,419, which is a continuation-in-part of Ser. No. 942,507, Sep. 15, 1978, abandoned. This application Feb. 2, 1981, Ser. No. 230,761  
Int. Cl.<sup>3</sup> C01G 3/14; C07C 120/00  
U.S. Cl. 252—189 13 Claims

4,335,011  
**CYCLOHEXYL-DIOXANE LIQUID CRYSTALLINE COMPOUNDS**  
Nicholas L. Sethofer, San Jose, Calif., assignor to Timex Corporation, Waterbury, Conn.  
Division of Ser. No. 135,381, Mar. 28, 1980, Pat. No. 4,298,528. This application May 29, 1981, Ser. No. 268,464  
Int. Cl.<sup>3</sup> C09K 3/34; G02F 1/13; C07D 319/04  
U.S. Cl. 252—299.1 7 Claims

4,335,012  
**5-SUBSTITUTED-2-(4-CYANOPHENYL)-1,3-DIOXANES**  
Howard Sorkin, Berkeley Heights, N.J., assignor to Timex Corporation, Waterbury, Conn.  
Division of Ser. No. 136,855, Apr. 3, 1980, Pat. No. 4,322,354, which is a continuation-in-part of Ser. No. 17,635, Mar. 5, 1979, abandoned. This application Jul. 6, 1981, Ser. No. 280,762  
Int. Cl.<sup>3</sup> C09K 3/34; C02F 1/13  
U.S. Cl. 252—299.61 3 Claims

4,335,013  
**SOLVENTS USEFUL IN PRESSURE-SENSITIVE MARK-RECORDING SYSTEMS**  
Pierre J. Allart, Brussels, and Claude A. Guillaume, Jodoigne, both of Belgium, assignors to Monsanto Company, St. Louis, Mo.  
Filed Aug. 18, 1980, Ser. No. 179,414  
Claims priority, application United Kingdom, Aug. 24, 1979, 7929565  
Int. Cl.<sup>3</sup> B01F 1/00  
U.S. Cl. 252—364 11 Claims

4,335,014  
**PROCESS FOR IMPROVING THE ACTIVITY OF SUPPORTED SILVER CATALYSTS**  
Josef Alfranseder, Markt; Sigmund Mayer, Burgkirchen; Siegfried Rebsdat, Burg; Josef Riedl, Burgkirchen, and Iwo Schaffelhofer, Burghausen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany  
Filed Sep. 17, 1980, Ser. No. 188,237  
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938245  
Int. Cl.<sup>3</sup> B01J 23/96, 23/48  
U.S. Cl. 252—412 2 Claims

4,335,015  
**CATALYST COMPONENT FOR POLYMERIZATION OF ALPHA-OLEFINS AND METHOD OF USING IT**  
Masafumi Imai, Ooi; Hiroshi Ueno, Namekawa, and Naomi Inaba, Ooi, all of Japan, assignors to Tos Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan  
Filed Jun. 23, 1980, Ser. No. 161,978  
Claims priority, application Japan, Jul. 25, 1979, 54/93681  
Int. Cl.<sup>3</sup> C08F 4/64  
U.S. Cl. 252—429 B 26 Claims

4,335,016  
**CATALYST AND METHOD**  
Robert A. Dombro, Clinton, Iowa, assignor to Chemplex Company, Rolling Meadows, Ill.  
Filed Feb. 23, 1981, Ser. No. 237,297  
Int. Cl.<sup>3</sup> C08F 4/06, 4/16  
U.S. Cl. 252—429 B 14 Claims



**4,335,017**  
**COMPOSITE MATERIALS COMPRISING DEFORMABLE XEROGEL WITHIN THE PORES OF PARTICULATE RIGID SUPPORTS USEFUL IN CHROMATOGRAPHY**  
 Brynley J. Miles, Cirencester, and Alan Rosevear, Faringdon, both of England, assignors to United Kingdom Atomic Energy Authority, Oxfordshire, England  
 Continuation-in-part of Ser. No. 750,706, Dec. 15, 1976, abandoned. This application Dec. 8, 1977, Ser. No. 858,798  
 Claims priority, application United Kingdom, Dec. 15, 1975, 51345/75; Dec. 15, 1976, 52432/76; Dec. 15, 1976, 52433/76  
 Int. Cl.<sup>3</sup> B01J 20/32, 20/26, 20/14; B01D 15/08  
 U.S. Cl. 252—430 40 Claims

**4,335,018**  
**CATALYST FOR THE PRODUCTION OF MALEIC ANHYDRIDE**  
 Gerhard Franz, Franz Nierlich, and Hans-Josef Ratajczak, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany  
 Division of Ser. No. 114,448, Jan. 22, 1980, Pat. No. 4,268,448.  
 This application Oct. 30, 1980, Ser. No. 202,281  
 Claims priority, application Fed. Rep. of Germany, Jan. 26, 1979, 2902986  
 Int. Cl.<sup>3</sup> B01J 27/14, 29/00  
 U.S. Cl. 252—435 13 Claims

**4,335,019**  
**PREPARATION OF NATURAL FERRIERITE HYDROCRACKING CATALYST AND HYDROCARBON CONVERSION WITH CATALYST**  
 Emmerson Bowes, Woodstown, and Bruce P. Pelrine, Tréanton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.  
 Filed Jan. 13, 1981, Ser. No. 225,079  
 Int. Cl.<sup>3</sup> B01J 29/30, 37/00  
 U.S. Cl. 252—450 12 Claims

**4,335,020**  
**METHOD OF PREPARATION OF COMPOSITE ZEOLITE CATALYSTS**  
 Pochen Chu, West Deptford, N.J.; Francis G. Dwyer, West Chester, and Albin Huss, Chadds Ford, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.  
 Filed Jan. 6, 1981, Ser. No. 222,848  
 Int. Cl.<sup>3</sup> B01J 29/06, 29/28  
 U.S. Cl. 252—455 Z 23 Claims

**4,335,021**  
**CATALYST REGENERATION**  
 Dwight L. McKay, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.  
 Filed Feb. 4, 1980, Ser. No. 117,927  
 Int. Cl.<sup>3</sup> B01J 21/12, 29/16, 29/38  
 U.S. Cl. 252—455 R 5 Claims

**4,335,022**  
**MODIFIED SILICA COMPOSITION**  
 Lynn H. Slaugh, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.  
 Continuation-in-part of Ser. No. 61,205, Jul. 27, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 219,279  
 Int. Cl.<sup>3</sup> B01J 21/12  
 U.S. Cl. 252—455 R 12 Claims

**4,335,023**  
**MONOLITHIC CATALYST MEMBER AND SUPPORT THEREFOR**  
 Joseph C. Dettling, Jackson; John J. Mooney, Wyckoff; Robert M. Skomoroski, Paterson, and Saul G. Hindin, Mendham, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.  
 Filed Jan. 24, 1980, Ser. No. 114,807  
 Int. Cl.<sup>3</sup> B01J 21/04, 23/40, 35/04  
 U.S. Cl. 252—466 PT 32 Claims

**4,335,024**  
**LIQUID DETERGENT COMPOSITIONS COMPRISED OF MIXTURES OF ALKYL POLYGLYCOL ETHERS AND QUATERNARY AMMONIUM COMPOUNDS**  
 Manfred Hennemann, Hilden; Albrecht Loehr, Eggerscheid; Peter Krings, Krefeld, and Rudolf Weber, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany  
 Continuation of Ser. No. 32,462, Apr. 23, 1979, abandoned. This application Mar. 13, 1981, Ser. No. 243,431  
 Claims priority, application Fed. Rep. of Germany, Jun. 1, 1978, 2824024  
 Int. Cl.<sup>3</sup> C11D 1/835, 1/62; D06M 13/46  
 U.S. Cl. 252—545 11 Claims

**4,335,025**  
**PROCESS FOR THE PREPARATION OF SYNTHETIC DETERGENT BARS, AND PRODUCTS PRODUCED THEREBY**  
 Graham Barker, Fair Lawn; Leopold Safran, E. Orange, and Martin J. Barabash, Montvale, all of N.J., assignors to Witco Chemical Corporation, New York, N.Y.  
 Continuation-in-part of Ser. No. 122,538, Feb. 19, 1980, abandoned. This application Mar. 3, 1981, Ser. No. 239,931  
 Int. Cl.<sup>3</sup> C11D 1/04, 1/12, 11/04, 17/00  
 U.S. Cl. 252—550 13 Claims

**4,335,026**  
**PRESSURE-SENSITIVE ADHESIVE COMPOSITIONS HAVING HIGH SHEAR AND LOW PEEL RESISTANCE**  
 Ivan J. Balinthe, Cranford, N.J., assignor to Johnson & Johnson Products Inc., New Brunswick, N.J.  
 Filed Mar. 27, 1981, Ser. No. 248,595  
 Int. Cl.<sup>3</sup> C08L 7/02  
 U.S. Cl. 524—271 14 Claims

**4,335,027**  
**AIR-DRIABLE ALKYD RESINS AND PROCESS FOR THEIR PREPARATION**  
 George E. Cremeans, Groveport, and Richard A. Markle, Columbus, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio  
 Filed Apr. 27, 1981, Ser. No. 257,532  
 Int. Cl.<sup>3</sup> C09D 3/28, 3/58, 3/64  
 U.S. Cl. 528—281 26 Claims

**4,335,028**  
**CATHODIC ELECTROCOATING COMPOSITIONS CONTAINING BASE-FUNCTIONAL GRAFT POLYMERS HAVING EPOXY RESIN BACKBONES, AND SUBSTRATES COATED THEREWITH**  
 Vincent W. Ting, Boulder, Colo.; James T. K. Woo, Medina, and David A. Borovicka, Sr., Parma, both of Ohio, assignors to SCM Corporation, New York, N.Y.  
 Filed Sep. 22, 1980, Ser. No. 188,996  
 Int. Cl.<sup>3</sup> C08L 63/00  
 U.S. Cl. 524—504 32 Claims

**4,335,029**  
**AQUEOUS POLYURETHANE COMPOSITIONS**  
 Shmuel Dabl, Fair Lawn; Peter Loewigkeit, Wyckoff, and Kenneth A. Van Dyk, Stockholm, all of N.J., assignors to Witco Chemical Corporation, New York, N.Y.  
 Filed Dec. 15, 1980, Ser. No. 216,721  
 Int. Cl.<sup>3</sup> C08L 75/06  
 U.S. Cl. 524—589 18 Claims

**4,335,030**  
**AQUEOUS DISPERSION OF FLUOROPOLYMERS IN COMBINATION WITH EPOXY-TYPE FILM FORMERS**  
 Thomas P. Concannon, Newtown Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
 Filed Jun. 30, 1981, Ser. No. 279,162  
 Int. Cl.<sup>3</sup> C08K 5/17  
 U.S. Cl. 523—408 31 Claims

**4,335,031**  
**ELECTROCOATING COMPOSITION WITH POLYHYDROXYAMINE AND POLYBUTADIENE**  
 Isidor Hazan, Clementon, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
 Continuation-in-part of Ser. No. 106,254, Dec. 21, 1979, abandoned. This application Dec. 29, 1980, Ser. No. 220,953  
 Int. Cl.<sup>3</sup> C08L 29/02, 39/00  
 U.S. Cl. 524—504 11 Claims

**4,335,032**  
**POLYCARBONATE RESIN IMPACT MODIFIED WITH POLYOLEFINS AND CONTAINING POLYORGANOSILOXANE FLUIDS**  
 Niles R. Rosenquist, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.  
 Filed Dec. 31, 1980, Ser. No. 221,934  
 Int. Cl.<sup>3</sup> C08L 69/00  
 U.S. Cl. 524—269 9 Claims

**4,335,033**  
**ERASER AND PROCESS FOR ITS MANUFACTURE**  
 Werner Handl, Altdorf, Fed. Rep. of Germany, assignor to J. S. Staedtler, Nuremberg, Fed. Rep. of Germany  
 Filed Aug. 16, 1979, Ser. No. 67,001  
 Claims priority, application Fed. Rep. of Germany, Aug. 25, 1978, 2837159  
 Int. Cl.<sup>3</sup> C08K 5/10  
 U.S. Cl. 524—525 6 Claims

**4,335,034**  
**THERMOPLASTIC COMPOSITIONS AND AUTOMOTIVE CARPETING BACKED THEREWITH**  
 Joseph L. Zuckerman, Livingston, and John W. Bzik, North Haledon, both of N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.  
 Division of Ser. No. 970,693, Dec. 18, 1978, Pat. No. 4,242,395.  
 This application May 12, 1980, Ser. No. 149,091  
 Int. Cl.<sup>3</sup> C08K 3/24, 3/26, 5/01; C08L 9/00  
 U.S. Cl. 524—423 6 Claims

**4,335,035**  
**SILICONE RUBBER COMPOSITION**  
 Masayuki Hatanaka, Ouramachi, and Atsushi Kurita, Ohta, both of Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan  
 Filed Jul. 30, 1980, Ser. No. 173,523  
 Claims priority, application Japan, Sep. 11, 1979, 54-116499  
 Int. Cl.<sup>3</sup> C08L 83/06; C08G 77/12  
 U.S. Cl. 523—212 12 Claims

**4,335,036**  
**PLASTICIZED POLYVINYL BUTYRAL EMPLOYING PROPYLENE OXIDE OLIGOMERS**  
 Peter A. Fowell, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
 Filed May 30, 1980, Ser. No. 154,852  
 Int. Cl.<sup>3</sup> C08F 16/34, 16/06; C08K 5/05; C03C 27/12  
 U.S. Cl. 524—376 8 Claims

**4,335,037**  
**BLEND OF STYRENE-MALEIC ANHYDRIDE AND HIGH IMPACT POLYSTYRENE**  
 Frank E. Lordi, West Chester, and Peter S. Francis, Rose Valley, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.  
 Filed Mar. 26, 1981, Ser. No. 247,689  
 Int. Cl.<sup>3</sup> C08L 51/00; C08K 3/40  
 U.S. Cl. 524—504 2 Claims

**4,335,038**  
**POLYCARBONATE CONTAINING A METAL PERFLUOROBORATE AND AN ORGANOSILANE AS IGNITION DEPRESSANTS**  
 Lowell S. Thomas, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.  
 Filed Sep. 26, 1980, Ser. No. 191,207  
 Int. Cl.<sup>3</sup> C08K 3/38, 5/54  
 U.S. Cl. 524—188 4 Claims

**4,335,039**  
**THERMALLY STABLE POLYCARBONATE COMPOSITIONS**  
 Ronald L. Markezich, Mt. Vernon, Ind., assignor to General Electric Company, Mt. Vernon, Ind.  
 Filed Nov. 2, 1978, Ser. No. 957,427  
 Int. Cl.<sup>3</sup> C08K 5/15, 5/52  
 U.S. Cl. 524—108 7 Claims

**4,335,040**  
**THERAPEUTIC PRODUCT AND METHOD**  
 William S. Livingston, Woodland Hills, Calif., assignor to Livingston Labs., Van Nuys, Calif.  
 Continuation of Ser. No. 583,724, Jun. 4, 1975, abandoned, which is a continuation-in-part of Ser. No. 602,434, Oct. 6, 1966, Pat. No. 3,526,697, which is a continuation-in-part of Ser. No. 207,146, Jun. 26, 1962, abandoned, which is a continuation-in-part of Ser. No. 660,559, May 21, 1957, abandoned, and Ser. No. 655,320, Apr. 26, 1957, abandoned, which is a continuation-in-part of Ser. No. 623,711, Nov. 21, 1956, abandoned, which is a continuation-in-part of Ser. No. 256,334, Nov. 14, 1951, abandoned, which is a continuation-in-part of Ser. No. 127,799, Nov. 16, 1949, abandoned. This application Mar. 7, 1977, Ser. No. 775,225  
 Int. Cl.<sup>3</sup> A61K 35/12, 35/50; C07G 7/00  
 U.S. Cl. 260—112 R 10 Claims

**4,335,041**  
**HIGH SENSITIVITY ASSAYS FOR ANGIOTENSIN CONVERTING ENZYME**  
 James W. Ryan, and Alfred Chung, both of Miami, Fla., assignors to Ventrex Laboratories, Inc., Portland, Me.  
 Division of Ser. No. 854,538, Nov. 25, 1977. This application Sep. 26, 1980, Ser. No. 191,029  
 Int. Cl.<sup>3</sup> C07C 103/52  
 U.S. Cl. 260—112.5 R 3 Claims



4,335,042  
PROCESS TO PRODUCE IMIDAZOBENZODIAZEPINE INTERMEDIATES  
Henry J. Niemczyk, Wayne, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.  
Filed Apr. 21, 1980, Ser. No. 142,581  
Int. Cl.<sup>3</sup> C07D 243/16, 401/04  
U.S. Cl. 260—239 BD 3 Claims

4,335,043  
SUBSTITUTED N-METHYLENE DERIVATIVES OF THIENAMYCIN  
Burton G. Christensen, Metuchen; William J. Leanza, Berkeley Heights, and Kenneth J. Wildonger, Somerville, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.  
Division of Ser. No. 852,425, Nov. 17, 1977, Pat. No. 4,194,047, which is a continuation-in-part of Ser. No. 733,654, Oct. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 676,261, Apr. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 634,296, Nov. 21, 1975, abandoned. This application Oct. 11, 1979, Ser. No. 84,013  
Int. Cl.<sup>3</sup> C07D 487/04; A61K 31/40  
U.S. Cl. 260—245.2 T 3 Claims

4,335,044  
PLANT GROWTH REGULATING PERFLUOROACYL ARYLTHIOUREIDO ISOINDOLEIDONES  
Loren W. Hedrich, Orange, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.  
Division of Ser. No. 175,000, Aug. 4, 1980, Pat. No. 4,289,527. This application May 11, 1981, Ser. No. 262,279  
Int. Cl.<sup>3</sup> C07D 209/48  
U.S. Cl. 548—475 24 Claims

4,335,045  
PREPARATION OF N-ALKENYL-2-AMINOMETHYL-PYRROLIDINES  
Eric-Alain Denzler, Zurich, Switzerland, assignor to Sachim S.A., Geneva, Switzerland  
Filed Mar. 24, 1976, Ser. No. 669,967  
Claims priority, application Switzerland, Dec. 19, 1975, 16485/75  
Int. Cl.<sup>3</sup> C07D 207/09  
U.S. Cl. 548—566 4 Claims

4,335,046  
POLYESTER COMPOSITIONS, SHAPED ARTICLES OBTAINED FROM THEM AND PROCESSES FOR PREPARING THEM  
Patrick J. Horner, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England  
Division of Ser. No. 43,424, May 29, 1979, Pat. No. 4,284,756. This application Apr. 23, 1981, Ser. No. 257,227  
Claims priority, application United Kingdom, Jun. 9, 1978, 26606/78  
Int. Cl.<sup>3</sup> C07D 311/86  
U.S. Cl. 549—392 1 Claim

4,335,047  
PREPARATION OF CYCLIC ACETALS OF TRANS-4-CHLORO-3-METHYL-BUT-2-EN-1-AL, AND PREPARATION OF TRANS-3-METHYL-BUT-2-ENE-1,4-DIAL-1-MONOACETALS  
Hagen Jaedicke, Ludwigshafen, and Joachim Paust, Neuhausen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany  
Filed Apr. 8, 1980, Ser. No. 138,411  
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1979, 2917413  
Int. Cl.<sup>3</sup> C07D 319/04  
U.S. Cl. 549—369 6 Claims

4,335,048  
5-(2-HYDROXYPROPOXY)-8-PROPYL-4H-1-BENZOPYRAN-4-ONE-2-CARBOXYLIC ACID  
Hugh Cairns, Loughborough; Richard Hazard, Cropston; John King, and Thomas B. Lee, both of Loughborough, all of England, assignors to Fisons Limited, London, England  
Continuation of Ser. No. 594,836, Jul. 10, 1975, abandoned. This application Feb. 19, 1980, Ser. No. 122,284  
Claims priority, application United Kingdom, Jul. 10, 1974, 30647/74  
Int. Cl.<sup>3</sup> C07D 311/24  
U.S. Cl. 549—402 2 Claims

4,335,049  
PROCESS FOR PRODUCING 5-METHYLFURFURAL  
Kazuhiko Hamada; Goufu Suzukamo, both of Ibaraki, and Koichi Fujisawa, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan  
Filed Jun. 30, 1981, Ser. No. 279,004  
Claims priority, application Japan, Jul. 16, 1980, 55-98086; Mar. 19, 1981, 56-41111; Mar. 20, 1981, 56-41024  
Int. Cl.<sup>3</sup> C07D 307/46  
U.S. Cl. 549—483 6 Claims

4,335,050  
PROCESS FOR THE PREPARATION OF THE 5- AND 6-NITRO DERIVATIVES OF 1,2,3,4-TETRAHYDRO-ANTHRAQUINONE FROM 1,2,3,4,4A,9A-HEXAHYDRO-9,10-ANTHRACENE-DIONE  
Serge Delavarenne, Francheville le Haut, and Pierre Tellier, Sainte Foy les Lyon, both of France, assignors to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France  
Filed Sep. 28, 1979, Ser. No. 80,030  
Claims priority, application France, Oct. 17, 1978, 78 29507  
Int. Cl.<sup>3</sup> C07C 50/18  
U.S. Cl. 260—369 7 Claims

4,335,051  
PROCESS FOR THE PREPARATION OF DIMETHYL CARBONATE  
Hans-Josef Buysch; Heinrich Krimm, both of Krefeld, and Siegfried Böhm, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Filed May 30, 1980, Ser. No. 155,036  
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925209  
Int. Cl.<sup>3</sup> C07C 68/00  
U.S. Cl. 260—463 8 Claims

4,335,052  
METHOD OF PREPARING SUBSTITUTED BENZALDEHYDES  
Günther Bernhardt, St. Augustin; Egon-Norbert Petersen, Neunkirchen, and Gerhard Daum, Cologne, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany  
Filed Nov. 24, 1980, Ser. No. 210,469  
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1979, 2948058  
Int. Cl.<sup>3</sup> C07C 121/76, 45/28  
U.S. Cl. 260—465 R 13 Claims

4,335,053  
N-CYANOBENZYL HALOACETAMIDES  
Francis H. Walker, Mill Valley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.  
Division of Ser. No. 73,392, Sep. 7, 1979, Pat. No. 4,288,384. This application Apr. 22, 1981, Ser. No. 256,321  
Int. Cl.<sup>3</sup> C07C 121/78  
U.S. Cl. 260—465 D 6 Claims

4,335,054  
PROCESS FOR THE PREPARATION OF ALKENYLBENZENECARBOXYLIC ACID DERIVATIVES AND ALKENYLNAPHTHALENECARBOXYLIC ACID DERIVATIVES  
Hans-Ulrich Blaser, Ettingen, Switzerland; Dieter Reinehr, Kander, Fed. Rep. of Germany, and Alwyn Spencer, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.  
Filed May 8, 1981, Ser. No. 262,000  
Claims priority, application Switzerland, May 13, 1980, 3732/80  
Int. Cl.<sup>3</sup> C07C 121/70, 49/217, 69/618, 103/22  
U.S. Cl. 260—465 G 12 Claims

4,335,055  
PROCESS FOR THE PREPARATION OF ALKENYLBENZENE DERIVATIVES OR ALKENYLNAPHTHALENE DERIVATIVES  
Hans-Ulrich Blaser, Ettingen, Switzerland; Dieter Reinehr, Kander, Fed. Rep. of Germany, and Alwyn Spencer, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.  
Filed May 8, 1981, Ser. No. 262,002  
Claims priority, application Switzerland, May 13, 1980, 3731/80  
Int. Cl.<sup>3</sup> C07C 121/70, 15/52, 25/24, 49/217  
U.S. Cl. 260—465 K 13 Claims

4,335,056  
PROCESSING ACRYLONITRILE WASTE GAS  
James L. Callahan, Wooster; Wilfrid G. Shaw, Lyndhurst, and David B. Terrill, Bedford, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio  
Filed Jan. 5, 1981, Ser. No. 222,448  
Int. Cl.<sup>3</sup> C07C 120/14, 51/215, 45/35  
U.S. Cl. 260—465.3 5 Claims

4,335,057  
4-(2',2,2'-TRIHALOGENOETHYL)-CYCLOBUTANE-1-SULFONIC ACID SALTS WITH OPTICALLY ACTIVE BASES  
John G. Dingwall, Sale, England; Hans Greuter, Cos Cob, Conn.; Pierre Martin, Rheinfelden, Switzerland; Peter Ackermann, Reinach, Switzerland, and Laurenz Gsell, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.  
Division of Ser. No. 103,983, Dec. 17, 1979, Pat. No. 4,299,967. This application Dec. 24, 1980, Ser. No. 219,803  
Claims priority, application Switzerland, Dec. 15, 1978, 12784/73  
Int. Cl.<sup>3</sup> C07C 143/20  
U.S. Cl. 260—501.19 3 Claims

4,335,058  
PREPARATION OF CARBOXYLIC ACID ANHYDRIDES  
Nabil Rizkalla, River Vale, N.J., assignor to Halcon Research and Development Corp., New York, N.Y.  
Continuation-in-part of Ser. No. 219,788, Dec. 24, 1980. This application May 28, 1981, Ser. No. 267,962  
Int. Cl.<sup>3</sup> C07C 51/56, 51/54, 53/12  
U.S. Cl. 260—546 4 Claims

4,335,059  
PREPARATION OF CARBOXYLIC ACID ANHYDRIDES  
Nabil Rizkalla, River Vale, N.J., assignor to Halcon Research and Development Corp., New York, N.Y.  
Filed Dec. 24, 1980, Ser. No. 219,788  
Int. Cl.<sup>3</sup> C07C 51/56, 51/54, 53/12  
U.S. Cl. 260—549 4 Claims

4,335,060  
MULTI-FUEL VAPOR CHARGE CARBURETION SYSTEM AND DEVICE THEREFOR  
Adolfo P. Alegre, No. 119 Bignay St., Project II, Quezon City; Armando E. Guidote, Antipolo, Rizal, and Alfonso G. Puyat, No. 7 Caimito St., Forbes Park, Makati, Metro Manila, all of Philippines  
Filed Mar. 24, 1980, Ser. No. 132,988  
Claims priority, application Philippines, Sep. 7, 1979, 23009; Oct. 18, 1979, 23189  
Int. Cl.<sup>3</sup> F02M 17/22  
U.S. Cl. 261—23 R 2 Claims

4,335,061  
AUXILIARY FUEL SUPPLY DEVICE FOR INTERNAL COMBUSTION ENGINES  
Hiroto Kobayashi, Kamakura, Japan, assignor to Walbro Far East, Inc., Kawasaki, Japan  
Filed Jun. 3, 1980, Ser. No. 156,167  
Claims priority, application Japan, Jun. 18, 1979, 54-082180[U]  
Int. Cl.<sup>3</sup> F02M 1/16  
U.S. Cl. 261—44 G 3 Claims

4,335,062  
CARBURETOR WITH ROTARY THROTTLE  
Hiroto Kobayashi, Kamakura, Japan, assignor to Walbro Far East, Inc., Kawasaki, Japan  
Filed Jun. 3, 1980, Ser. No. 156,179  
Claims priority, application Japan, Jun. 6, 1979, 54-075883[U]  
Int. Cl.<sup>3</sup> F02M 9/08  
U.S. Cl. 261—44 G 1 Claim



4,335,063  
METHOD AND APPARATUS FOR PRESSURE CONTROL  
IN A PRESS

Dieter Kolb; Eugen Kopp, both of Stuttgart, and Manfred Müller-Sybrichs, Shöckingen, all of Fed. Rep. of Germany, assignors to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany  
Filed Jun. 11, 1979, Ser. No. 47,780

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1978, 2825795

Int. Cl.<sup>3</sup> C06B 21/00; B29C 3/06  
U.S. Cl. 264—3 B 5 Claims

4,335,064  
PROCESS FOR PACKING ELECTROLYSIS CELLS FOR  
THE PRODUCTION OF ALUMINUM

Benoit Sulmont, Paralia Distomon, Greece, and Gerard Hudault, St. Jean de Maurienne, France, assignors to Aluminium Pechiney, Lyons, France

PCT No. PCT/FR79/00101, § 371 Date Jul. 7, 1980, § 102(e) Date Jun. 11, 1980, PCT Pub. No. WO80/00978, PCT Pub. Date May 15, 1980

PCT Filed Nov. 7, 1979, Ser. No. 206,540  
Claims priority, application France, Nov. 7, 1978, 78 32055  
Int. Cl.<sup>3</sup> F27D 1/16

U.S. Cl. 264—30 6 Claims

4,335,065  
METHOD AND APPARATUS FOR PRODUCING  
MOULDINGS OF CEMENT MORTAR

Shigeo Ando, 272, Suehirocho 5 chome, Choshi-shi, Chiba 288, Japan

Filed Jul. 9, 1980, Ser. No. 166,919  
Claims priority, application Japan, Dec. 17, 1979, 54-162671; Mar. 24, 1980, 55-036180; Mar. 26, 1980, 55-037381; Apr. 8, 1980, 55-045163

Int. Cl.<sup>3</sup> B28B 1/26  
U.S. Cl. 264—87 17 Claims

4,335,066  
METHOD OF FORMING A FIBROUS WEB WITH HIGH  
FIBER THROUGHPUT SCREENING

James H. Dinius, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 106,142, Dec. 21, 1979, abandoned. This application May 26, 1981, Ser. No. 266,753  
Int. Cl.<sup>3</sup> B29C 13/00

U.S. Cl. 264—121 9 Claims

4,335,067  
PRODUCING REPLICAS OF BODY PARTS

George Castanis, and Thaddeus T. Castanis, both of 444 6th Ave., New York, N.Y. 10011

Filed May 13, 1981, Ser. No. 263,349  
Int. Cl.<sup>3</sup> B29C 1/02

U.S. Cl. 264—222 7 Claims

4,335,068  
METHOD OF MOULDING CONTAINERS FROM AT  
LEAST TWO DIFFERENT PLASTIC MATERIALS,  
MACHINE FOR CARRYING OUT THIS METHOD AND  
CONTAINERS OBTAINED THEREBY

Andre Hemery, Les Andelys, France, assignor to Allibert Exploitation, France

Filed Dec. 18, 1978, Ser. No. 970,181  
Claims priority, application France, Dec. 23, 1977, 77 39069  
Int. Cl.<sup>3</sup> B29F 1/06, 1/12

U.S. Cl. 264—245 6 Claims

4,335,069  
FLAT SHEET PROCESS FOR PRODUCTION OF  
POLYOLEFIN SHRINK FILM

Stanley B. Levy, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 25, 1981, Ser. No. 278,434  
Int. Cl.<sup>3</sup> B29C 17/02

U.S. Cl. 264—290.2 5 Claims

4,335,070  
METHOD OF MANUFACTURING A RETICULAR WEB  
HAVING REINFORCED SELVAGES

Masahide Yazawa; Hiroshi Yazawa, both of Kunitachi; Haruhisa Tani, and Kazuhiko Kurihara, both of Tokyo, all of Japan, assignors to Nippon Petrochemicals Co., Ltd. and Polymer Processing Research Institute, Ltd., both of Japan  
Filed Jan. 7, 1981, Ser. No. 222,972

Claims priority, application Japan, Jan. 12, 1980, 55-2315  
Int. Cl.<sup>3</sup> B29D 00/00, 7/14

U.S. Cl. 264—555 9 Claims

4,335,071  
PRESSURE-VACUUM PURGE CYCLE

David C. Thornton, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Oct. 6, 1980, Ser. No. 194,690  
Int. Cl.<sup>3</sup> A61L 2/06

U.S. Cl. 422—26 2 Claims

4,335,072  
OVERHEAD CORROSION SIMULATOR

Jack W. Barnett, and Roy D. Sawyer, both of Missouri City, Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Aug. 17, 1981, Ser. No. 293,620  
Int. Cl.<sup>3</sup> G01N 17/00; C23F 14/02

U.S. Cl. 422—53 10 Claims

4,335,073  
NOX CONVERSION EFFICIENCY DETECTOR

Loran D. Sherwood, Walled Lake, Mich.; Jack J. Keegan, La Habra, and Stephen A. Gniewek, Glendora, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed May 4, 1981, Ser. No. 260,238  
Int. Cl.<sup>3</sup> G01N 21/76

U.S. Cl. 422—83 23 Claims

4,335,074  
LIQUID AND VAPOR-TIGHT VESSEL FOR  
PERFORMING DECOMPOSITION REACTIONS

Bedrich Bernas, 13 Soroka St., Haifa, Israel

Continuation-in-part of Ser. No. 960,539, Nov. 14, 1978, abandoned. This application Dec. 23, 1980, Ser. No. 219,492  
Claims priority, application Israel, Nov. 14, 1977, 53370

Int. Cl.<sup>3</sup> B01L 3/00

U.S. Cl. 422—102 7 Claims

4,335,075  
DOOR SEAL FOR STERILIZER

Edward M. Kackos, Belmar, N.J., assignor to Vernitron Corporation, Lake Success, N.Y.

Filed Dec. 22, 1980, Ser. No. 218,934  
Int. Cl.<sup>3</sup> A61L 2/06, 2/26; B65D 53/02

U.S. Cl. 422—112 4 Claims

4,335,076  
CONVERTER FOR CONVERTING SULFUR DIOXIDE TO  
SULFUR TRIOXIDE

John McFarland, Campbellville, Canada, assignor to Chemetics International Ltd., Montreal, Canada

Filed Jan. 12, 1981, Ser. No. 224,154  
Claims priority, application Canada, Sep. 19, 1980, 360774

Int. Cl.<sup>3</sup> B01D 50/00  
U.S. Cl. 422—171 26 Claims

4,335,077  
CATALYZER FOR DETOXIFYING EXHAUST GASES  
FROM INTERNAL COMBUSTION ENGINES

Andres Santiago, and Enrique Santiago, both of Augsburg, Fed. Rep. of Germany, assignors to Zeuna-Staerker KG, Augsburg, Fed. Rep. of Germany

Filed Mar. 19, 1973, Ser. No. 342,540  
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1973, 2303789

Int. Cl.<sup>3</sup> F01N 3/15; B01J 8/06  
U.S. Cl. 422—179 8 Claims

4,335,078  
CATALYTIC REACTOR FOR AUTOMOTIVE EXHAUST  
LINE

Takashi Ushijima, Tokyo; Hajime Kawasaki, Yokohama; Takayuki Yamazaki, Tokyo, and Yoshio Iwasa, Nagareyama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 919,791, Jun. 28, 1978, abandoned. This application Feb. 22, 1980, Ser. No. 123,572

Claims priority, application Japan, Sep. 13, 1977, 52-122411[U]; Oct. 11, 1977, 52-135155[U]

Int. Cl.<sup>3</sup> F01N 3/28; B01J 35/04  
U.S. Cl. 422—179 5 Claims

4,335,079  
APPARATUS FOR THE SULFONATION OR SULFATION  
OF ORGANIC LIQUIDS

John E. Vander Mey, 78 Winding Way, Stirling, N.J. 07980

Filed Oct. 20, 1980, Ser. No. 198,779  
Int. Cl.<sup>3</sup> B01J 3/02, 10/02

U.S. Cl. 422—194 15 Claims

4,335,080  
APPARATUS FOR PRODUCING SELECTIVE PARTICLE  
SIZED OXIDE

Robert D. Davis, Costa Mesa, and Roy L. Blizzard, Mission Viejo, both of Calif., assignors to Thermo Electron Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 820,536, Aug. 1, 1977, abandoned. This application Jan. 7, 1980, Ser. No. 104,387

Int. Cl.<sup>3</sup> B01D 5/00  
U.S. Cl. 422—244 8 Claims

4,335,081  
CRYSTAL GROWTH FURNACE WITH TRAP DOORS

Emanuel M. Sachs, Watertown, and Brian H. Mackintosh, Lexington, both of Mass., assignors to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Continuation of Ser. No. 3,765, Jan. 15, 1979, abandoned. This application Feb. 9, 1981, Ser. No. 232,570

Int. Cl.<sup>3</sup> C30B 15/34  
U.S. Cl. 422—246 25 Claims

4,335,082  
METHOD OF DECREASING THE ORGANIC  
SUBSTANCE CONTENT OF ALUM EARTH  
PRODUCTION CYCLE PERFORMED ACCORDING TO  
THE BAYER TECHNOLOGY

Jozsef Matyasi, Budapest; Ferenc Toth, Almasfuzito-felso; Laszlo Revesz, Almasfuzito-felso; Benjaminne Toth, Almasfuzito-felso; Miklos Schlegel, Tata; Jozsef Zoldi, Budapest; Janosne Losonczy, Tata; Lajos Szoke, Almasfuzito-felso, and Maria Orban nee Kelemen, Budapest, all of Hungary, assignors to Magyar Aluminiumipari Troszt, Budapest, Hungary

Filed Oct. 29, 1980, Ser. No. 201,722  
Claims priority, application Hungary, Oct. 30, 1979, AA 940

Int. Cl.<sup>3</sup> C01F 7/06, 7/46  
U.S. Cl. 423—122 5 Claims

4,335,083  
METHOD FOR LEACHING MAGNESIUM FROM  
MAGNESIUM HYDROXIDE-CONTAINING  
COMPOSITION

Robert F. Benson, St. Peterburg, Fla., assignor to Carey Canada Inc., Quebec, Canada

Filed Mar. 5, 1981, Ser. No. 240,712  
Int. Cl.<sup>3</sup> C01F 5/20, 5/24

U.S. Cl. 423—167 16 Claims

4,335,084  
METHOD FOR REDUCING NO<sub>x</sub> EMISSIONS FROM  
COMBUSTION PROCESSES

Thomas R. Brogan, Charlestown, Mass., assignor to Roldiva, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 106,534, Jan. 24, 1980. This application Jun. 19, 1981, Ser. No. 275,096

Int. Cl.<sup>3</sup> B01D 53/34  
U.S. Cl. 423—235 6 Claims

4,335,085  
PROCESS FOR THE PREPARATION OF PHOSPHORUS  
PENTACHLORIDE

Hans-Peter Rieck, and Jürgen Russow, both of Kelkheim, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 2, 1981, Ser. No. 239,455  
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008194

Int. Cl.<sup>3</sup> C01B 25/10  
U.S. Cl. 423—300 17 Claims

4,335,086  
HYDROXYAPATITE AND ITS PREPARATION

Michael Spencer, 34 Bayham Rd., Sevenoaks, Kent, United Kingdom (TN13 3XE)

PCT No. PCT/GB79/00118, § 371 Date Mar. 21, 1980, § 102(e) Date Jan. 25, 1980, PCT Pub. No. WO80/00247, PCT Pub. Date Feb. 21, 1980

PCT Filed Jul. 17, 1979, Ser. No. 190,883  
Claims priority, application United Kingdom, Jul. 21, 1979, 30646/78

Int. Cl.<sup>3</sup> C01B 25/32  
U.S. Cl. 423—308 6 Claims



4,335,087  
PROCESS FOR PREPARING CIS-PT(NH<sub>3</sub>)<sub>2</sub>CL<sub>2</sub>  
Richard N. Rhoda, Suffern, N.Y., assignor to MPD Technology Corporation, Wyckoff, N.J.  
Division of Ser. No. 65,553; Aug. 16, 1979, Pat. No. 4,273,755.  
This application Nov. 14, 1980, Ser. No. 206,883  
The portion of the term of this patent subsequent to Jun. 16, 1998, has been disclaimed.  
Int. Cl.<sup>3</sup> C01G 55/00  
U.S. Cl. 423—413 4 Claims

4,335,088  
PROCESS FOR PRODUCING AMMONIUM CARBONATE  
Vladimir M. Efimov, ulitsa Tsjurupy, 8, korpus 2, kv. 1; Tatyana N. Naumova, ulitsa Festivalnaya, 27, kv. 39; Irina G. Bykova, Otkrytoe shosse, 1, korpus 7, kv. 66, all of Moscow, and Larisa A. Stroganova, poselok Firsanovka, ulitsa Rechnaya, 6, kv. 14, Moskovskaya oblast, all of U.S.S.R.  
Filed Feb. 26, 1981, Ser. No. 238,615  
Int. Cl.<sup>3</sup> C01C 1/26  
U.S. Cl. 423—420 1 Claim

4,335,089  
PROCESS FOR PRODUCING CARBON FIBERS  
Kunio Maruyama, and Akira Okazaki, both of Okayama, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan  
Filed Aug. 29, 1980, Ser. No. 182,611  
Claims priority, application Japan, Aug. 31, 1979, 54-112314  
Int. Cl.<sup>3</sup> D01F 9/14, 9/22  
U.S. Cl. 423—447.4 2 Claims

4,335,090  
PREPARING CALCIUM HYPOCHLORITE FROM TRIPLE SALT  
Walter J. Sakowski, Cleveland; Larry G. Carty, Charleston, and Craig A. Foster, Cleveland, all of Tenn., assignors to Olin Corporation, New Haven, Conn.  
Filed Mar. 4, 1981, Ser. No. 240,339  
Int. Cl.<sup>3</sup> C01B 11/06  
U.S. Cl. 423—474 9 Claims

4,335,091  
PROCESS FOR THE MANUFACTURE OF HYDROXYLAMMONIUM PERCHLORATE  
Eugen Scholz, Garbsen, and Wolfgang Sievert, Wunstorf, both of Fed. Rep. of Germany, assignors to Riedel-de Haen Aktien-gesellschaft, Seelze/Hannover, Fed. Rep. of Germany  
Filed Jul. 9, 1981, Ser. No. 281,844  
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1980, 3026293  
Int. Cl.<sup>3</sup> C01B 11/16  
U.S. Cl. 423—476 2 Claims

4,335,092  
SYNTHESIS OF HYDROGEN PEROXIDE  
Augustine I. Dalton, Jr., and Ronald W. Skinner, both of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.  
Filed Oct. 10, 1980, Ser. No. 195,827  
Int. Cl.<sup>3</sup> C01B 15/02  
U.S. Cl. 423—584 9 Claims

4,335,093  
PROCESS OF CONVERTING WIND ENERGY TO ELEMENTAL HYDROGEN AND APPARATUS THEREFOR  
Robert E. Salomon, Dresher, Pa., assignor to Temple University, Philadelphia, Pa.  
Filed Oct. 20, 1980, Ser. No. 198,449  
Int. Cl.<sup>3</sup> F03B 13/00  
U.S. Cl. 423—644 8 Claims

4,335,094  
MAGNETIC POLYMER PARTICLES  
Klaus H. Mosbach, Lackalunga 31-38, S-240 20 Furulund, Sweden  
PCT No. PCT/SE78/00001, § 371 Date Feb. 2, 1979, § 102(e) Date Jan. 26, 1979, PCT Pub. No. W078/00005, PCT Pub. Date Dec. 7, 1978  
PCT Filed Jun. 1, 1978, Ser. No. 21,603  
Int. Cl.<sup>3</sup> G01N 33/56  
U.S. Cl. 424—1 39 Claims

4,335,095  
INDIUM-111 OXINE COMPLEX COMPOSITION  
James D. Kelly, Buckinghamshire, England, assignor to The Radiochemical Centre Limited, England  
Filed Mar. 10, 1980, Ser. No. 128,923  
Claims priority, application United Kingdom, Mar. 21, 1979, 7909867  
Int. Cl.<sup>3</sup> A61K 49/00, 43/00  
U.S. Cl. 424—1 8 Claims

4,335,096  
ABSORBENT FOR USE IN PASSIVE AGGLUTINATION TEST  
Yoshikatsu Tsuji, Kawasaki, Japan, assignor to Fujizoki Pharmaceutical Co., Ltd., Tokyo, Japan  
Continuation-in-part of Ser. No. 122,998, Feb. 20, 1980, abandoned. This application Sep. 19, 1980, Ser. No. 188,894  
Claims priority, application Japan, Feb. 22, 1979, 54/19092  
Int. Cl.<sup>3</sup> G01N 1/28, 1/34, 33/50, 33/54  
U.S. Cl. 424—12 11 Claims

4,335,097  
STABILIZED, PROSTAGLANDIN-CONTAINING TABLETS WITH CONTROLLED RATE OF SOLUBILITY, FOR LOCAL USE AND PROCESS FOR THE PREPARATION THEREOF  
Agoston David; Tibor Horvath; Csaba Kiss; Gabor Nagy; Kalman Simon; Ilona Simonidesz nee Vermes; Agnes Udvardi, and Sandor Virag, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyszeti Termek Gyara Rt., Budapest, Hungary  
Filed Jan. 15, 1981, Ser. No. 225,361  
Int. Cl.<sup>3</sup> A61K 9/00, 31/215, 31/19  
U.S. Cl. 424—14 9 Claims

4,335,098  
ACYLATED FURANYL AND THIENYL ACRYLIC ACIDS  
Roger A. Parker, Cincinnati, Ohio, assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio  
Continuation-in-part of Ser. No. 181,917, Aug. 27, 1980, abandoned. This application May 26, 1981, Ser. No. 267,236  
Int. Cl.<sup>3</sup> A61K 31/38, 31/34; C07D 307/12, 333/24  
U.S. Cl. 424—275 8 Claims

4,335,099  
EMPLOYMENT OF ENTERIC COATED IGA FOR HYPOPROTEINEMIA IN INTESTINAL INFECTIOUS DISEASES  
Satoshi Funakoshi, Katano; Katuhiro Uriyu, Sakai; Yahiro Uemura; Katashi Nakane, both of Hirakata, and Akio Yamane, Takatsuki, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan  
Continuation of Ser. No. 667,193, Mar. 15, 1976, abandoned.  
This application Sep. 10, 1980, Ser. No. 185,929  
Claims priority, application Japan, May 29, 1975, 50-64713  
Int. Cl.<sup>3</sup> A61K 9/32, 9/34, 9/36, 9/40, 31/78, 31/79, 31/74, 39/00  
U.S. Cl. 424—32 6 Claims

4,335,100  
METHOD OF INHIBITING DEXTRANSUCRASE AND ORAL COMPOSITIONS FOR USE THEREIN  
John F. Robyt, Ames, Iowa, and John N. Zikopoulos, Phoenix, Ariz., assignors to Iowa State University Research Foundation, Inc., Ames, Iowa  
Continuation-in-part of Ser. No. 32,398, Apr. 23, 1979, Pat. No. 4,228,150. This application Aug. 6, 1980, Ser. No. 175,635  
Int. Cl.<sup>3</sup> A61K 7/16, 9/68, 31/10; C07H 5/02  
U.S. Cl. 424—48 14 Claims

4,335,101  
ORAL HYGIENE ENZYMES AND METHOD FOR PREPARATION  
Thomas H. Stoudt, Westfield, and Karl H. Nollstadt, Clark, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.  
Continuation-in-part of Ser. No. 170,642, Aug. 10, 1971, abandoned. This application Jun. 21, 1973, Ser. No. 372,137  
Int. Cl.<sup>3</sup> A61K 7/28; C12N 9/24  
U.S. Cl. 424—50 7 Claims

4,335,102  
ORAL COMPOSITION FOR CRIES PROPHYLAXIS  
Syozu Nakashima, Hatano; Tosiya Ozawa, Minami-ashigara; Takeshi Naganuma, Odawara; Takashi Ujiie, Ninomiya; Satoshi Hayashi, Hiratsuka, and Yoshihito Ochiai, Fujisawa, all of Japan, assignors to Lion Corporation, Tokyo, Japan  
Filed Sep. 9, 1980, Ser. No. 185,964  
Claims priority, application Japan, Sep. 20, 1979, 54-121194  
The portion of the term of this patent subsequent to Mar. 31, 1998, has been disclaimed.  
Int. Cl.<sup>3</sup> A61K 7/18, 9/68  
U.S. Cl. 424—52 16 Claims

4,335,103  
MULTIPHASE COSMETIC COMPOSITION  
Patricia I. M. Barker, Apex; Nathan A. Ziskin, and Michael J. Grossfeld, both of Raleigh, all of N.C., assignors to Almay, Inc., Apex, N.C.  
Filed Mar. 28, 1977, Ser. No. 781,573  
Int. Cl.<sup>3</sup> A61K 7/021, 7/42, 7/48, 7/50  
U.S. Cl. 424—59 15 Claims

4,335,104  
ANHYDROUS MULTI-PURPOSE MOISTURIZING COMPOSITION  
Jon S. VanCleave, West Des Moines, Iowa, assignor to United Chemical Corporation, Des Moines, Iowa  
Filed Aug. 16, 1978, Ser. No. 934,097  
Int. Cl.<sup>3</sup> A61K 7/42, 31/60, 47/00  
U.S. Cl. 424—59 11 Claims

4,335,105  
SPECIFIC ANTIGEN VACCINE FOR TGE IN SWINE  
Patricia M. Gough, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa  
Continuation-in-part of Ser. No. 253,070, Apr. 10, 1981, abandoned, which is a continuation of Ser. No. 93,070, Nov. 13, 1979, abandoned. This application May 11, 1981, Ser. No. 262,768  
Int. Cl.<sup>3</sup> A61K 39/12, 39/215  
U.S. Cl. 424—89 10 Claims

4,335,106  
PROCESSES FOR THE GROWTH OF A MODIFIED PASTEURELLA MULTOCIDA BACTERIA AND PREPARATION OF A VACCINE THEREFROM  
Carrell J. Kucera, Lincoln, Nebr., assignor to Norden Laboratories Inc., Lincoln, Nebr.  
Division of Ser. No. 135,828, Mar. 31, 1980, Pat. No. 4,293,545.  
This application Apr. 17, 1981, Ser. No. 255,144  
Int. Cl.<sup>3</sup> A61K 39/02  
U.S. Cl. 424—92 10 Claims

4,335,107  
MIXTURE TO PROTECT POULTRY FROM SALMONELLA  
Glenn H. Snoeyenbos, 42 Hills Rd., Amherst, Mass. 01002; Olga M. Weinack, 179 Woodbridge St., South Hadley, Mass. 01075, and Charles F. Smyser, 49 Harlow Dr., Amherst, Mass. 01002  
Filed Jun. 5, 1978, Ser. No. 912,829  
Int. Cl.<sup>3</sup> A61K 35/12, 35/66, 35/74, 39/295  
U.S. Cl. 424—93 47 Claims

4,335,108  
PAULOMYCIN A AND B AND PREPARATION THEREOF  
Alexander D. Argoudelis, Portage; Vincent P. Marshall, Kalamazoo, and Leroy E. Johnson, Kalamazoo Township, Kalamazoo County, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.  
Filed Aug. 25, 1980, Ser. No. 180,682  
Int. Cl.<sup>3</sup> A61K 35/00; C12P 1/06; C12N 1/20  
U.S. Cl. 424—117 10 Claims

4,335,109  
WATER REPELLENT AQUEOUS WOOD TREATING SOLUTIONS  
Robert E. Hill, Webster Groves, Mo., assignor to Koppers Company, Inc., Pittsburgh, Pa.  
Continuation of Ser. No. 96,333, Nov. 21, 1979, abandoned. This application Dec. 15, 1980, Ser. No. 216,123  
Int. Cl.<sup>3</sup> A01N 59/20, 59/06  
U.S. Cl. 424—140 2 Claims

4,335,110  
PHARMACEUTICAL COMPOSITIONS OF SANGUINARIA GALANGAL AND ZINC CHLORIDE  
Keith R. Collins, Estoril, Portugal, assignor to Orewa Inc., Estoril, Portugal  
Filed Aug. 18, 1980, Ser. No. 179,159  
Claims priority, application United Kingdom, Aug. 23, 1979, 7929364  
Int. Cl.<sup>3</sup> A01N 59/16, 65/00; A61K 33/30, 35/78  
U.S. Cl. 424—145 11 Claims



4,335,111  
COMPOUNDS ASSOCIATING PEPTIDYL OF  
AMINOACYL RESIDUES TO LIPOPHILIC GROUPS  
AND PHARMACEUTICAL COMPOSITIONS  
CONTAINING SAID NEW COMPOUNDS

Pierre Lefrancier, Bures sur Yvette; Edgar Lederer, Sceaux; Jean Choay, and Louis Chedid, both of Paris, all of France, assignors to Agence National de Valorisation de la Recherche (ANVAR), Neuilly Sur Seine, France

Filed Dec. 21, 1979, Ser. No. 106,022  
Claims priority, application United Kingdom, Dec. 22, 1978, 49887/78

Int. Cl.<sup>3</sup> A61K 37/00, 37/02; C07C 103/52  
U.S. Cl. 424—177

4,335,117  
1-HYDROXY-2,2,2-TRICHLOROETHANE-THIONO-  
PHOSPHONIC ACID DIMETHYL ESTERS AS  
INSECTICIDE

Reimer Cölln, Wuppertal; Wilhelm Sirrenberg, Sprockhövel; Wolfgang Behrenz, Overath-Steinenbrueck, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Continuation of Ser. No. 665,344, Mar. 9, 1976, abandoned. This application Dec. 27, 1977, Ser. No. 865,084

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1975, 2512375

Int. Cl.<sup>3</sup> C07F 9/40; A01N 57/20  
U.S. Cl. 424—217

2 Claims

4,335,112  
METHOD OF TREATING MITES IN POULTRY

Joseph R. Childers, 1123 N. Main St., Mocksville, N.C. 27028  
Filed Mar. 19, 1981, Ser. No. 245,568

Int. Cl.<sup>3</sup> A61K 37/00  
U.S. Cl. 424—177

5 Claims

4,335,113  
TRITERPENIC SAPONIN HAVING  
PHARMACOLOGICAL POTENCY

Henri Combier, Rilleux le Pape; Gisele Prat, Talence, and Henri Pontagnier, Pessac, all of France, assignors to Laboratoires Sarget, Merignac, France

Filed May 12, 1980, Ser. No. 148,932  
Claims priority, application France, May 11, 1979, 79 11964  
Int. Cl.<sup>3</sup> A61K 31/70; C07H 15/20

U.S. Cl. 424—180

7 Claims

4,335,114  
1-N-ALKYLSISOMICIN DERIVATIVES, THEIR  
PRODUCTION AND THEIR MEDICINAL USE

Eckart Voss, Cologne; Karl G. Metzger, Wuppertal; Hans-Joachim Zeller, Velbert; Uwe Petersen, Leverkusen, and Peter Stadler, Haan, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Filed Jun. 20, 1980, Ser. No. 161,527

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928183

Int. Cl.<sup>3</sup> A61K 31/71; C07H 15/22  
U.S. Cl. 424—180

17 Claims

4,335,115  
ANTI-ACNE COMPOSITION

Edward D. Thompson; Stephen B. Carter, both of Cincinnati, and Gary L. Manring, Oxford, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 737,315, Nov. 1, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 842,767

Int. Cl.<sup>3</sup> A61K 31/71  
U.S. Cl. 424—181

2 Claims

4,335,116  
MINERAL-CONTAINING THERAPEUTIC  
COMPOSITIONS

James R. Howard, Brawley, Calif., assignor to University Patents, Inc., Norwalk, Conn.

Filed Oct. 7, 1980, Ser. No. 194,808  
Int. Cl.<sup>3</sup> A61K 31/68, 31/315

U.S. Cl. 424—201

19 Claims

4,335,118  
INSECTICIDAL  
 $\alpha$ -CYANO-3-PHENOXY-BENZYL-2-(4-AZIDOPHENYL)-  
3-METHYLBUTYRATES

Hanspeter Fischer, Bottmingen; Rudolph C. Thummel, Courgenay, and Rudolf Wehrli, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 9, 1980, Ser. No. 195,712  
Claims priority, application Switzerland, Oct. 17, 1979, 9335/79; Jun. 4, 1980, 4332/80

Int. Cl.<sup>3</sup> A01N 47/08; C07C 69/76, 121/86  
U.S. Cl. 424—226

5 Claims

4,335,119  
QUICK-ACTING DIURETIC COMPOSITIONS

Andreas Johnsen, Griesheim, Fed. Rep. of Germany, assignor to Rohm, Pharma GmbH, Darmstadt, Fed. Rep. of Germany

Filed Mar. 30, 1979, Ser. No. 25,586  
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1978, 2815442

Int. Cl.<sup>3</sup> A61K 31/505, 31/52, 31/625  
U.S. Cl. 424—229

3 Claims

4,335,120  
ADMINISTRATION OF BIOLOGICALLY ACTIVE  
VITAMIN D<sub>3</sub> AND VITAMIN D<sub>2</sub> MATERIALS

Michael F. Holick, Sudbury, Mass., and Milan R. Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 137,673, Apr. 4, 1980, abandoned, which is a division of Ser. No. 22,393, Mar. 21, 1979, Pat. No. 4,230,701. This application Nov. 3, 1980, Ser. No. 203,291

Int. Cl.<sup>3</sup> A61K 31/59, 31/56  
U.S. Cl. 424—236

27 Claims

4,335,121  
ANDROSTANE CARBOTHIOATES

Gordon H. Philipps, Wembley; Brian M. Bain, Chalfont St. Peter; Ian P. Steeples, Ruislip Manor, and Christopher Williamson, Cobham, all of England, assignors to Glaxo Group Limited, London, England

Filed Feb. 13, 1981, Ser. No. 234,113  
Claims priority, application United Kingdom, Feb. 15, 1980, 8005174

Int. Cl.<sup>3</sup> C07J 7/00; A61K 31/56  
U.S. Cl. 424—241

25 Claims

4,335,122  
DIHYDRO-DIBENZOXEPINES-THIEPINES AND  
-MORPHANTHRIDONES, COMPOSITIONS AND USE

Arthur R. McFadden, East Brunswick, and Daniel E. Aultz, Middlesex, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Mar. 18, 1981, Ser. No. 225,122  
Int. Cl.<sup>3</sup> A61K 31/335, 31/55; C07D 223/20, 313/12  
U.S. Cl. 424—244

87 Claims

4,335,123  
1-ACYL-8-(3-AMINO-2-HYDROXYPROPOXY)-1,2,3,4-  
TETRAHYDROQUINOLINES, COMPOSITIONS AND  
USE

Otto Gräwinger, Frankfurt am Main; Thomas Raabe, Rodenbach; Rudi Beyerle, Frankfurt am Main; Josef Scholtholtz, Hanau-Mittelbuchen, and Rolf-Eberhard Nitz, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 15, 1980, Ser. No. 178,475  
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1979, 2934609

Int. Cl.<sup>3</sup> A61K 31/54, 31/47; C07D 215/26, 417/12  
U.S. Cl. 424—246

17 Claims

4,335,124  
1-ALKYL, 1-PHENYL-BUTENES

Eugene E. Galantay, Liestal, Switzerland, assignor to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 65,277, Aug. 9, 1979, Pat. No. 4,273,787, which is a continuation of Ser. No. 656,785, Feb. 10, 1976, abandoned, which is a continuation-in-part of Ser. No. 626,943, Oct. 29, 1975, abandoned, which is a continuation-in-part of Ser. No. 390,032, Aug. 20, 1973, abandoned. This application Oct. 14, 1980, Ser. No. 196,474

Int. Cl.<sup>3</sup> A61K 31/03; C07C 25/24; A61K 31/535  
U.S. Cl. 424—248.4

8 Claims

4,335,125  
1-(1,3-DIOXOLAN-2-YLMETHYL)-1H-IMIDAZOLES

Jan Heeres, Vosselaar; Leo J. J. Backx, Arendonk, and Joseph H. Mostmans, Antwerp, all of Belgium, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

Division of Ser. No. 853,728, Nov. 21, 1977, Pat. No. 4,144,346, which is a continuation-in-part of Ser. No. 764,263, Jan. 31, 1977, abandoned. This application Jan. 8, 1979, Ser. No. 1,613

Int. Cl.<sup>3</sup> A61K 405/14  
U.S. Cl. 424—250

11 Claims

4,335,126  
1-[3-(3,4,5-TRIMETHOXYPHENOXY)-2-HYDROXY-  
PROPYL]-4-ARYL-PIPERAZINE-DERIVATIVES  
HAVING PHARMACEUTICAL ACTIVITY

Axel Kleemann, Hanau; Vladimir Jakovlev, Maintal; Klaus Thieme, Hanau, and Jürgen Engel, Alzenau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 891,382, Mar. 29, 1978, abandoned. This application Oct. 3, 1980, Ser. No. 193,482  
Claims priority, application United Kingdom, Apr. 4, 1977, 10100/77

Int. Cl.<sup>3</sup> A61K 31/495; C07D 295/08  
U.S. Cl. 424—250

43 Claims

4,335,127  
PIPERIDINYLALKYL QUINAZOLINE COMPOUNDS,  
COMPOSITION AND METHOD OF USE

Jan Vandenberg, Beerse; Ludo Kennis, Vosselaar; Marcel Van der Aa, and Albert Van Heertum, both of Vosselaar, all of Belgium, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 1,493, Jan. 8, 1979, abandoned. This application Oct. 12, 1979, Ser. No. 84,272  
Int. Cl.<sup>3</sup> C07D 401/06; A61K 31/445

U.S. Cl. 424—251

15 Claims

4,335,128  
PROCESS FOR THE TREATMENT OF PATIENTS  
SUFFERING FROM DREPANOCYTOSIS

Jean Blanchard, Toulouse, and Monique Verry, Saint-Cloud, both of France, assignors to Omnium Financier Aquitaine pour l'Hygiene et la Sante (Sanoli), Paris, France  
Continuation of Ser. No. 917,374, Jun. 20, 1978, Pat. No. 4,210,649. This application May 19, 1980, Ser. No. 150,890  
Claims priority, application France, Jun. 22, 1977, 77 19161  
The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> A61K 31/435  
U.S. Cl. 424—256

10 Claims

4,335,129  
THIAZOLO[3,2-6]ISOQUINOLINES, COMPOSITIONS  
AND USE THEREOF

Kazuo Kubo, Urawa; Noriki Ito, Iwatsuki; Isao Souzu, Urawa; Yasuo Isomura, Yokohama, and Hiroshige Homma, Omiyu, all of Japan, assignors to Yamanouchi Pharmaceutical Co. Ltd., Tokyo, Japan  
Continuation of Ser. No. 29,000, Apr. 11, 1979, abandoned, which is a division of Ser. No. 861,980, Dec. 19, 1977, Pat. No. 4,163,844. This application Jan. 28, 1981, Ser. No. 229,183  
Claims priority, application Japan, Dec. 28, 1976, 51-157867; Oct. 11, 1977, 52-121666

Int. Cl.<sup>3</sup> A61K 31/47; C07D 513/04  
U.S. Cl. 424—258

17 Claims

4,335,130  
ANTIFUNGAL COMPOSITION

Thomas J. Schwan, and Joseph E. Gray, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed May 12, 1981, Ser. No. 263,071  
Int. Cl.<sup>3</sup> A01N 43/42

U.S. Cl. 424—258

1 Claim

4,335,131  
AMRINONE-N-GLUCURONIDE, SALTS AND  
CARDIOTONIC USE THEREOF

James F. Baker, East Greenbush, and Bernard W. Chalecki, Jr., Sand Lake, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Nov. 24, 1980, Ser. No. 209,393  
Int. Cl.<sup>3</sup> A61K 31/44; C07D 405/14

U.S. Cl. 424—263

5 Claims

4,335,132  
5-(PY-Y)-1H-BENZIMIDAZOL-2-OLS AND  
5-(PY-Y)-1H-BENZIMIDAZOLE-2-THIOLS

George Y. Leshner, Schodack, and Baldev Singh, East Greenbush, both of N.Y., assignors to Sterling Drug, Inc., New York, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,977  
Int. Cl.<sup>3</sup> A61K 31/46; C07D 487/02

U.S. Cl. 424—263

12 Claims



4,335,133  
ARYLAMINO-4,4-DIALKYL-5-METHYLENE-1,3-THIAZOLINES  
Edward I. Aoyagi, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.  
Division of Ser. No. 115,654, Jan. 28, 1980, Pat. No. 4,271,306.  
This application Nov. 6, 1980, Ser. No. 204,437  
Int. Cl.<sup>3</sup> C07D 277/08  
U.S. Cl. 424—270 7 Claims

4,335,134  
PESTICIDALLY ACTIVE N,N-DIMETHYL-CARBAMIC ACID  
O-(4,6-DIHYDRO-2H-THIENO[3,4-C]PYRAZOL-3-YL) ESTERS AND 5-OXIDES AND 5,5-DIOXIDES THEREOF  
Fritz Maurer, Wuppertal; Ingeborg Hammann, Cologne, and Bernhard Homeyer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Filed Jan. 15, 1981, Ser. No. 225,548  
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1980, 3003019  
Int. Cl.<sup>3</sup> A01N 43/56; C07D 495/04  
U.S. Cl. 424—273 P 8 Claims

4,335,135  
5 AMINO-3,4,5,6  
TETRAHYDRO-1H-[6-CYCLOHEPT[C,D]INDOL-3-OL] AND A METHOD FOR THEIR USE AS HYPOTENSIVES  
Lucien Nedelec, Le Raincy; Daniel Frechet, Paris; Claude Dumont, Nogent sur Marne; Guy Plassard, Savigny sur Orge, and Neil L. Brown, Paris, all of France, assignors to Roussel Uclaf, Paris, France  
Filed Feb. 23, 1981, Ser. No. 236,610  
Claims priority, application France, Feb. 26, 1980, 80 04198; Nov. 18, 1980, 80 24406  
Int. Cl.<sup>3</sup> A61K 31/40; C07D 209/80  
U.S. Cl. 424—274 12 Claims

4,335,136  
ANTI-INFLAMMATORY  
4,5-DIARYL-α-(POLYFLUOROALKYL)-1H-PYRROLE-2-METHANAMINES  
Saul C. Cherkofsky, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
Continuation-in-part of Ser. No. 141,664, Apr. 18, 1980, abandoned. This application Mar. 4, 1981, Ser. No. 237,638  
Int. Cl.<sup>3</sup> A61K 31/40, 31/44; C07D 207/335, 401/04  
U.S. Cl. 424—274 32 Claims

4,335,137  
HALOETHENYLTHIENYLETHANONES FOR SYSTEMIC NEMATODE CONTROL  
Donald R. James, Lockport, N.Y., assignor to FMC Corporation, Philadelphia, Pa.  
Filed Mar. 17, 1980, Ser. No. 130,937  
Int. Cl.<sup>3</sup> A01N 43/02  
U.S. Cl. 424—275 6 Claims

4,335,138  
NOVEL CARBAMATES, THEIR PREPARATION, AND PHARMACEUTICAL FORMULATIONS CONTAINING THESE COMPOUNDS  
Walter-Wielant Wiersdorff, Mutterstadt; Karl-Heinz Geiss, Beindersheim; Harald Weifenbach, Ludwigshafen; Wolfgang Worstmann, Gruenstadt; Dieter Lenke, Ludwigshafen, and Rolf Kretschmar, Gruenstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany  
Filed Sep. 15, 1980, Ser. No. 186,841  
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939660  
Int. Cl.<sup>3</sup> C07C 125/065, 125/04; C07D 339/08, 339/06, 333/36, 307/66; A01N 47/12, 47/20  
U.S. Cl. 424—275 15 Claims

4,335,139  
PHARMACEUTICAL FORMULATIONS CONTAINING PROSTACYCLIN COMPOUNDS  
Ian S. Watts, Sidcup, and Peter H. Marsden, Dartford, both of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.  
Continuation of Ser. No. 39,645, May 16, 1979, abandoned. This application Aug. 28, 1980, Ser. No. 182,054  
Claims priority, application United Kingdom, May 17, 1978, 20175/78  
Int. Cl.<sup>3</sup> A61K 31/34  
U.S. Cl. 424—285 34 Claims

4,335,140  
INSECTICIDAL TRIFLUOROETHANIMIDOTHIOATE DISULFIDES  
Marcus P. Moon, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
Filed Feb. 9, 1981, Ser. No. 232,565  
Int. Cl.<sup>3</sup> A01N 37/06; C07C 119/20  
U.S. Cl. 424—298 37 Claims

4,335,141  
2-SUBSTITUTED-AMINOPROPENE-AND PROPANENITRILE ANTIMICROBIAL AND ANTI-INFLAMMATORY AGENTS  
Nathaniel Grier, Englewood; Richard A. Dybas, Somerville, and Bruce E. Witzel, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.  
Filed Dec. 26, 1979, Ser. No. 106,616  
Int. Cl.<sup>3</sup> C07C 121/45, 121/48, 121/43; A61K 31/275  
U.S. Cl. 424—304 10 Claims

4,335,142  
ARYL (1-ARYLSULFONYL) VINYL SULFONES  
Douglas I. Relyea, and Robert A. Davis, both of New Haven, Conn., assignors to Uniroyal, Inc., New York, N.Y.  
Filed Sep. 11, 1979, Ser. No. 74,271  
Int. Cl.<sup>3</sup> C07C 147/06; A01N 31/08  
U.S. Cl. 424—337 21 Claims

4,335,143  
DRIED ALBEDO CLOUDING AGENT AND PROCESS THEREFOR  
Claire Wiener, Spring Valley, N.Y., and Gerhard J. Haas, Woodcliff Lake, N.J., assignors to General Foods Corporation, White Plains, N.Y.  
Filed Sep. 30, 1980, Ser. No. 192,262  
Int. Cl.<sup>3</sup> A23L 1/212, 2/00  
U.S. Cl. 426—50 10 Claims

4,335,144  
PREPARATION OF POROUS ACTIVE YEAST GRANULES  
Franz-Josef Carduck, Haan; Dietrich Kloetzer, Dusseldorf, and Gerard Veldman, Brueggen, all of Fed. Rep. of Germany, assignors to Deutsche Hefewerke GmbH, Hamburg-Wandsbek, Fed. Rep. of Germany  
Continuation-in-part of Ser. No. 21,781, Mar. 19, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,146  
Int. Cl.<sup>3</sup> C12C 11/18, 11/32  
U.S. Cl. 426—62 10 Claims

4,335,145  
METHOD FOR CONTROLLING THE FLOW OF FRUIT AND FRUIT JUICE THROUGH A JUICE EXTRACTION FACILITY  
Robert C. Stanley, Lakeland, Fla., assignor to FMC Corporation, Chicago, Ill.  
Filed Jul. 24, 1980, Ser. No. 171,917  
Int. Cl.<sup>3</sup> G01N 33/14  
U.S. Cl. 426—231 3 Claims

4,335,146  
PROCESSING FISH RAW MATERIAL  
Per V. H. Bladh, Jarna, Sweden, assignor to Alfa-Laval, Inc., Poughkeepsie, N.Y.  
Filed Feb. 2, 1981, Ser. No. 230,702  
Int. Cl.<sup>3</sup> A01K 43/00  
U.S. Cl. 426—231 13 Claims

4,335,147  
METHOD FOR MAKING CONFECTIONS  
Helmut Sollich, Albernberg 194, 4925 Kalletal-Talle, Fed. Rep. of Germany  
Filed Mar. 12, 1980, Ser. No. 129,672  
Int. Cl.<sup>3</sup> A23G 3/00  
U.S. Cl. 426—295 7 Claims

4,335,148  
METHODS OF PREVENTING GRAIN SPROUTING AFTER HARVEST THROUGH THE APPLICATION OF SULFUR DIOXIDE, NITROGEN AND AMMONIA GASES  
Frederick D. Vidal, Englewood Cliffs, and Anantharman Jayaraman, Nutley, both of N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.  
Continuation-in-part of Ser. No. 156,501, Jun. 4, 1980, Pat. No. 4,309,451, which is a division of Ser. No. 50,162, Jun. 20, 1979, abandoned, and a continuation-in-part of Ser. No. 38,739, May 14, 1979, abandoned. This application Aug. 11, 1980, Ser. No. 176,708  
Int. Cl.<sup>3</sup> A23B 9/00; A23L 3/34  
U.S. Cl. 426—319 6 Claims

4,335,149  
DIRECT CONDENSATION OF FOOD VOLATILES ONTO A FOOD SUBSTRATE AT CRYOGENIC TEMPERATURES  
Gordon K. Stipp, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio  
Filed Jun. 2, 1980, Ser. No. 155,709  
Int. Cl.<sup>3</sup> A23F 5/24  
U.S. Cl. 426—386 19 Claims

4,335,150  
LOW TEMPERATURE FOOD DRYING PROCESS  
Hideaki Hosaka, Fukuyama, and Setuya Kuri, Kamakura, both of Japan, assignors to Chlorine Engineers Corp. and Kun Chemical Engineers, both of Tokyo, Japan  
Continuation of Ser. No. 50,131, Jun. 19, 1979, abandoned. This application Oct. 14, 1980, Ser. No. 196,672  
Int. Cl.<sup>3</sup> A23B 4/04, 7/02, 9/00; F26B 5/00  
U.S. Cl. 426—465 8 Claims

4,335,151  
METHOD FOR DECORTICATING SEEDS  
Jacques-Jean Caubet, St. Etienne, France, assignor to Centre Stephanois de Recherches Mecaniques Hydro-Mecanique et Frottement, France  
Continuation of Ser. No. 909,801, May 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 696,462, Jun. 16, 1976, abandoned. This application Apr. 4, 1980, Ser. No. 137,385  
Claims priority, application France, Jun. 16, 1975, 75 19495  
Int. Cl.<sup>3</sup> B02B 3/00  
U.S. Cl. 426—482 7 Claims

4,335,152  
METHYL SUBSTITUTED NORBORNANE CARBOXYALDEHYDES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME  
Philip T. Klemarczyk, Old Bridge; James M. Sanders, Eatontown; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank; Frederick L. Schmitt, Holmdel, and Edward J. Granda, Englishtown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.  
Division of Ser. No. 152,187, May 22, 1980, Pat. No. 4,284,824.  
This application Dec. 29, 1980, Ser. No. 220,646  
The portion of the term of this patent subsequent to Apr. 27, 1999, has been disclaimed.  
Int. Cl.<sup>3</sup> A23L 2/26  
U.S. Cl. 426—538 2 Claims

4,335,153  
IMITATION COCOA POWDER AND METHOD OF PREPARING SAME  
Steven M. Rikon, Strongsville, Ohio, and Frank del Valle, St. Ann, Ill., assignors to SCM Corporation, New York, N.Y.  
Continuation-in-part of Ser. No. 46,156, Jun. 5, 1979, abandoned. This application Jun. 5, 1980, Ser. No. 156,618  
Int. Cl.<sup>3</sup> A23G 1/00  
U.S. Cl. 426—540 15 Claims

4,335,154  
METHOD FOR PREPARING A BAKED PRODUCT CONTAINING ALKALI METAL ALUMINUM PHOSPHATE  
Robert E. Benjamin, and Thomas E. Edging, both of Nashville, Tenn., assignors to Stauffer Chemical Company, Westport, Conn.  
Division of Ser. No. 972,097, Dec. 21, 1978, Pat. No. 4,260,591.  
This application Aug. 11, 1980, Ser. No. 176,882  
The portion of the term of this patent subsequent to Apr. 7, 1998, has been disclaimed.  
Int. Cl.<sup>3</sup> A21D 8/00  
U.S. Cl. 426—551 10 Claims



- 4,335,155**  
COMPOSITION FOR AERATED FROZEN DESSERTS CONTAINING FRUIT PUREE AND METHOD OF PREPARATION  
Jon R. Blake, Brooklyn Center; Richard K. Knutson, Corcoran, and Deon L. Strommer, Minneapolis, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.  
Filed Mar. 6, 1981, Ser. No. 241,293  
Int. Cl.<sup>3</sup> A23G 9/02  
U.S. Cl. 426—565 14 Claims
- 4,335,156**  
EDIBLE FAT PRODUCT  
Lawrence Kogan, Stamford, and Turiddu A. Peloso, Danbury, both of Conn., assignors to Nabisco Brands, Inc., New York, N.Y.  
Filed Sep. 19, 1980, Ser. No. 188,657  
Int. Cl.<sup>3</sup> A23D 3/02; C11C 3/10  
U.S. Cl. 426—603 19 Claims
- 4,335,157**  
FLUID SHORTENING  
R. Douglas Varvil, Olmsted Falls, Ohio, assignor to SCM Corporation, New York, N.Y.  
Filed Aug. 5, 1980, Ser. No. 175,432  
Int. Cl.<sup>3</sup> A21D 2/16; A23D 5/02  
U.S. Cl. 426—606 6 Claims
- 4,335,158**  
BANDAGE CARRYING ION-LEACHABLE CEMENT COMPOSITIONS  
Charles H. Beede, East Brunswick, and Richard N. Zirnite, Somerset, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.  
Filed Nov. 7, 1980, Ser. No. 204,983  
Int. Cl.<sup>3</sup> A61F 5/04  
U.S. Cl. 427—2 9 Claims
- 4,335,159**  
METHOD FOR DEVELOPING LATENT ELECTROSTATIC IMAGES  
Delmer G. Parker, Irondequoit, N.Y., assignor to Xerox Corporation, Stamford, Conn.  
Continuation of Ser. No. 728,803, Oct. 1, 1976, abandoned, which is a division of Ser. No. 615,658, Sep. 22, 1975, Pat. No. 4,050,413. This application Nov. 15, 1979, Ser. No. 94,530  
Int. Cl.<sup>3</sup> B05D 3/06  
U.S. Cl. 427—14.1 3 Claims
- 4,335,160**  
CHEMICAL PROCESS  
Michael P. Neary, 409 E. Coronado, #2, Santa Fe, N. Mex. 87501, and Thomas A. Wilson, 14 Bayview Ct., Manhasset, N.Y. 11030  
Continuation-in-part of Ser. No. 962,770, Nov. 21, 1978, abandoned. This application Dec. 4, 1980, Ser. No. 213,039  
Int. Cl.<sup>3</sup> B05D 3/06; C23C 11/00, 13/00  
U.S. Cl. 427—38 18 Claims
- 4,335,161**  
THIN FILM TRANSISTORS, THIN FILM TRANSISTOR ARRAYS, AND A PROCESS FOR PREPARING THE SAME  
Fang C. Luo, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.  
Filed Nov. 3, 1980, Ser. No. 203,218  
Int. Cl.<sup>3</sup> H01L 21/285  
U.S. Cl. 427—86 6 Claims
- 4,335,162**  
METHOD OF PRODUCING A FAULT TRANSPARENT BUBBLE MEMORY BY DIFFUSING MANGANESE IN PRESELECTED PERMALLOY ELEMENTS  
James A. Cunningham, Saratoga, and Anthony M. Tuxford, San Francisco, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.  
Filed Apr. 25, 1980, Ser. No. 143,624  
Int. Cl.<sup>3</sup> G11C 19/08; B05D 5/12  
U.S. Cl. 427—130 1 Claim
- 4,335,163**  
HIGH GLOSS WATER-BASE COATING COMPOSITION  
Jack Y. Wong, 10173 Miner Pl., Cupertino, Calif. 95014  
Filed Sep. 25, 1980, Ser. No. 190,604  
Int. Cl.<sup>3</sup> B05D 5/00  
U.S. Cl. 427—256 18 Claims
- 4,335,164**  
CONDITIONING OF POLYAMIDES FOR ELECTROLESS PLATING  
David A. Dillard, Diamond Bar; Eileen Maguire, Arcadia, and Lawrence P. Donovan, III, Monrovia, all of Calif., assignors to Crown City Plating Co., El Monte, Calif.  
Continuation-in-part of Ser. No. 159,585, Jun. 16, 1980, which is a continuation-in-part of Ser. No. 970,923, Dec. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 159,503, Jun. 16, 1980, Pat. No. 4,309,462, which is a continuation-in-part of Ser. No. 970,929, Dec. 19, 1978, abandoned. This application Dec. 22, 1980, Ser. No. 218,513  
Claims priority, application United Kingdom, Nov. 7, 1979, 7948565  
Int. Cl.<sup>3</sup> B05D 3/10  
U.S. Cl. 427—304 32 Claims
- 4,335,165**  
SNAP TOGETHER ORNAMENT  
Roy A. Powers, 18537 Arrow Hwy., Covina, Calif. 91722  
Filed Mar. 20, 1981, Ser. No. 245,942  
Int. Cl.<sup>3</sup> A47G 33/08  
U.S. Cl. 428—8 5 Claims
- 4,335,166**  
METHOD OF MANUFACTURING A MULTIPLE-PANE INSULATING GLASS UNIT  
Renato A. Lizardo, Minnetonka, and Roger D. O'Shaughnessy, Chaska, both of Minn., assignors to Cardinal Insulated Glass Co., Minneapolis, Minn.  
Filed May 11, 1981, Ser. No. 262,424  
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1980, 3043973  
Int. Cl.<sup>3</sup> E06B 3/24  
U.S. Cl. 428—34 10 Claims
- 4,335,167**  
BRAKE FLUID RESERVOIR COMPRISING POLYMETHYLPENTENE AND 10-20% GLASS FIBERS  
John W. Kolditz, Alton, Ill., assignor to Edison International, Inc., Rolling Meadows, Ill.  
Filed Jun. 2, 1980, Ser. No. 155,453  
Int. Cl.<sup>3</sup> B65D 6/34; B32B 27/20; C08K 7/14  
U.S. Cl. 428—35 8 Claims

- 4,335,168**  
HAIR STYLER EXTRUSION  
Rayko Ergaver, Nassau, The Bahamas, assignor to Capella Inc., Freeport, The Bahamas  
Filed Aug. 26, 1980, Ser. No. 181,508  
Int. Cl.<sup>3</sup> B32B 1/08  
U.S. Cl. 428—36 10 Claims
- 4,335,175**  
THERMOPLASTIC FILM LAMINATES  
James L. Webb, Simpsonville, S.C., assignor to W. R. Grace & Co., Duncan, S.C.  
Filed Oct. 1, 1980, Ser. No. 193,245  
Int. Cl.<sup>3</sup> B32B 27/08, 27/18  
U.S. Cl. 428—213 4 Claims
- 4,335,176**  
BONDED NEEDED FIBER GLASS THERMOPLASTIC REINFORCED MATS  
John A. Baumann, Lower Burrell, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.  
Filed Nov. 24, 1980, Ser. No. 209,442  
Int. Cl.<sup>3</sup> D04H 3/10, 3/12  
U.S. Cl. 428—228 12 Claims
- 4,335,170**  
SIMULATED STAINED AND LEADED GLASS WINDOWS  
Donald Butler, Costa Mesa, Calif., assignor to Stained Glass Overlay, Inc., Mission Viejo, Calif.  
Division of Ser. No. 962,123, Nov. 20, 1978, abandoned. This application Jun. 12, 1980, Ser. No. 158,919  
Int. Cl.<sup>3</sup> B44F 1/06  
U.S. Cl. 428—38 12 Claims
- 4,335,171**  
TRANSFER TAPE HAVING ADHESIVE FORMED FROM TWO LAMINAE  
Robert E. Zenk, River Falls, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.  
Filed Oct. 6, 1980, Ser. No. 194,460  
Int. Cl.<sup>3</sup> A61F 13/02; B32B 27/00; C09U 7/02  
U.S. Cl. 428—40 4 Claims
- 4,335,172**  
PRESSURE SENSITIVE LABEL STRIP  
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato, Japan  
Continuation-in-part of Ser. No. 926,704, Jul. 20, 1978, Pat. No. 4,210,688, which is a continuation-in-part of Ser. No. 867,007, Jan. 5, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,634  
Claims priority, application Japan, Nov. 14, 1978, 53/155772[U]  
Int. Cl.<sup>3</sup> G09F 3/00; B65D 65/30; B32B 3/16  
U.S. Cl. 428—42 9 Claims
- 4,335,173**  
METHOD AND MEANS FOR REDUCING UNDESIRABLE EFFECTS OF DIRT PARTICLES ON A FLEXIBLE RECORD DEVICE  
Angel Caraballo, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
Filed Sep. 22, 1980, Ser. No. 189,503  
Int. Cl.<sup>3</sup> B32B 3/02, 27/30; H04N 5/76  
U.S. Cl. 428—65 9 Claims
- 4,335,174**  
HONEYCOMB STRUCTURE END CLOSURE  
Raymond P. Belko, Blackwood, N.J., assignor to The Boeing Company, Seattle, Wash.  
Filed Sep. 4, 1980, Ser. No. 183,939  
Int. Cl.<sup>3</sup> B32B 3/12, 5/18  
U.S. Cl. 428—73 6 Claims
- 4,335,177**  
GLASS FIBER-REINFORCED CEMENT PLATES  
Shigeru Takeuchi, Osaka, Japan, assignor to Kurimoto Iron Works, Ltd., Osaka, Japan  
Filed Sep. 29, 1980, Ser. No. 191,801  
Claims priority, application Japan, Oct. 3, 1979, 54-129019; Jul. 18, 1980, 55-99041; Jul. 21, 1980, 55-99647  
Int. Cl.<sup>3</sup> B32B 5/12, 5/14, 5/28, 13/14  
U.S. Cl. 428—247 11 Claims
- 4,335,178**  
TEXTILES CONTAINING A POLY(OXYORGANOPHOSPHATE/PHOSPHONATE) FLAME RETARDANT  
Ralph B. Fearing, Bardonia, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.  
Division of Ser. No. 73,836, Sep. 10, 1979, Pat. No. 4,268,633, which is a division of Ser. No. 898,241, Apr. 20, 1978, Pat. No. 4,199,534. This application Jan. 12, 1981, Ser. No. 224,430  
Int. Cl.<sup>3</sup> D06M 9/00, 13/32; B32B 27/00  
U.S. Cl. 428—253 2 Claims
- 4,335,179**  
IMPREGNATED HIGH VOLTAGE SPACERS  
Morris A. Mendelsohn, Wilkins Township, Allegheny County, and Francis W. Navish, East Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.  
Filed Feb. 2, 1981, Ser. No. 230,489  
Int. Cl.<sup>3</sup> B32B 7/00  
U.S. Cl. 428—273 12 Claims
- 4,335,180**  
MICROWAVE CIRCUIT BOARDS  
G. Robert Traut, South Killingly, Conn., assignor to Rogers Corporation, Rogers, Conn.  
Continuation-in-part of Ser. No. 972,994, Dec. 26, 1978, abandoned. This application Dec. 8, 1980, Ser. No. 213,876  
Int. Cl.<sup>3</sup> B32B 27/00  
U.S. Cl. 428—303 14 Claims
- 4,335,181**  
MICROWAVEABLE HEAT AND GREASE RESISTANT CONTAINERS  
John P. Marano, Jr., Princeton, and Maya S. Farag, North Brunswick, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.  
Filed Jul. 1, 1980, Ser. No. 164,993  
Int. Cl.<sup>3</sup> B32B 5/18, 7/00, 27/00  
U.S. Cl. 428—319.3 7 Claims



4,335,182  
METHOD OF PRODUCING A MOLDED COMPOSITE  
FOAM BODY PROVIDED WITH A COVER LAYER AND  
THE RESULTANT PRODUCT

Konrad Brand, Hoehenkirchen, and Dieter Franz, Jettenbach, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany  
Filed Jan. 13, 1981, Ser. No. 224,658  
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1980, 3002584

Int. Cl.<sup>3</sup> B29D 27/00  
U.S. Cl. 428—319.3

4,335,183  
MAGNETIC RECORDING MEDIUM AND METHOD OF  
FABRICATING IT

Hiroshi Hosaka, Tokyo, Japan, assignor to Tokyo Magnetic Printing Co., Ltd., Japan  
Filed Apr. 27, 1981, Ser. No. 257,944

Int. Cl.<sup>3</sup> B05D 3/06  
U.S. Cl. 428—336

4,335,184  
RECORDING PAPER

Shigehiko Miyamoto, Kamagaya, and Yoshinobu Watanabe, Matsudo, both of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan  
Filed Oct. 14, 1980, Ser. No. 196,560  
Claims priority, application Japan, Oct. 15, 1979, 54-132542

Int. Cl.<sup>3</sup> B41M 5/00; G01D 15/34  
U.S. Cl. 428—342

4,335,185  
INDIGO-DYEABLE POLYESTER FIBERS

Robert L. Adelman, and John J. P. Turner, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 29, 1980, Ser. No. 220,809  
Int. Cl.<sup>3</sup> D02G 3/00

U.S. Cl. 428—361

4,335,186  
CHEMICALLY MODIFIED ASPHALT COMPOSITIONS

Alfred Marzocchi, Michael G. Roberts, and Charles E. Bolen, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio  
Division of Ser. No. 852,898, Nov. 18, 1977, Pat. No. 4,166,752. This application May 18, 1979, Ser. No. 40,368

Int. Cl.<sup>3</sup> C08L 95/00; D02G 3/18, 3/36  
U.S. Cl. 428—375

4,335,187  
METHOD FOR BONDING POLYCARBONATE TO  
METAL

Thomas G. Rukavina, Lower Burrell, and Alfred L. Maryland, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 2, 1981, Ser. No. 239,854  
Int. Cl.<sup>3</sup> B32B 27/36

U.S. Cl. 428—412

4,335,188  
LAMINATES

Keishiro Igi, Kurashiki, and Ishii Masao, Ibara, both of Japan, assignors to Kuraray Company, Limited, Kurashiki, Japan  
Filed May 22, 1980, Ser. No. 152,320

Claims priority, application Japan, Jun. 7, 1979, 54/71867  
Int. Cl.<sup>3</sup> B32B 15/08

U.S. Cl. 428—458

4,335,189  
RESOLUTION STANDARD FOR SCANNING ELECTRON  
MICROSCOPE COMPRISING PALLADIUM SPINES ON  
A METAL SUBSTRATE

Carmelo F. Aliotta, Beacon, and Morris Anschel, Carmel, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,577  
Int. Cl.<sup>3</sup> H01F 1/00; G01N 31/00

U.S. Cl. 428—611

4,335,190  
THERMAL BARRIER COATING SYSTEM HAVING  
IMPROVED ADHESION

Robert C. Bill, Rocky River, and James S. Sovey, Strongsville, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 28, 1981, Ser. No. 229,233  
Int. Cl.<sup>3</sup> B32B 15/04; B21D 39/00

U.S. Cl. 428—623

4,335,191  
LITHIUM CELLS

Emanuel Peled, Even Yehuda, Israel, assignor to Tadiran Israel Electronics Industries Ltd., Tel-Aviv, Israel

Filed Jul. 28, 1980, Ser. No. 172,688  
Int. Cl.<sup>3</sup> H01M 4/00

U.S. Cl. 429—94

4,335,192  
METHOD OF PREPARING A SINTERED IRON  
ELECTRODE

Antony Oliapuram, Frankfurt, Fed. Rep. of Germany, assignor to Varta Batterie A.G., Hanover, Fed. Rep. of Germany  
Filed Oct. 15, 1980, Ser. No. 197,216

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1979, 2941765

Int. Cl.<sup>3</sup> H01M 4/26, 4/52  
U.S. Cl. 429—221

4,335,193  
MICROPOROUS FILM, PARTICULARLY BATTERY  
SEPARATOR, AND METHOD OF MAKING

Yoshinao Doi, Kanagawa; Shigeo Kaneko, Tokyo; Takeo Hanamura, Kanagawa; Osamu Fujii, Tokyo; Katsumi Yoshitake; Tetsuhiko Hirata, both of Kanagawa, and Yasuhiro Tanabe, Shizuoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 694,173, Jun. 9, 1976, abandoned. This application Feb. 28, 1979, Ser. No. 16,176

Claims priority, application Japan, Jun. 18, 1975, 50/73031  
Int. Cl.<sup>3</sup> H01M 2/16

U.S. Cl. 429—251

4,335,194  
TWO COLOR ELECTROPHOTOGRAPHIC PROCESS  
AND MATERIAL

Katsuo Sakai, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 15, 1979, Ser. No. 12,571  
Claims priority, application Japan, Feb. 20, 1978, 53-18754; Apr. 25, 1978, 53-49671; Nov. 28, 1978, 53-146998; Nov. 28, 1978, 53-146999

Int. Cl.<sup>3</sup> G03G 13/01, 13/22  
U.S. Cl. 430—42

4,335,195  
ELECTROPHOTOSENSITIVE ELEMENT HAS RESIN  
ENCAPSULATED CDS PARTICLES IN BINDING RESIN

Yuji Nishigaki, Yokohama, and Hirokuni Kawashima, Sakurashin, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1980, Ser. No. 175,021  
Claims priority, application Japan, Aug. 10, 1979, 54-102488

Int. Cl.<sup>3</sup> G03G 5/087  
U.S. Cl. 430—94

4,335,196  
ELECTROSTATIC IMAGE DEVELOPING AND  
TRANSFER METHOD USES SINGLE COMPONENT  
MAGNETIC DEVELOPER

Yuzo Ohmuro, Machida; Nin-ichi Kamogawa, Tokyo; Shigeru Uetake, Sayama, and Yoshio Yamazaki, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 25,783, Apr. 2, 1979, Pat. No. 4,295,427, which is a continuation of Ser. No. 829,795, Sep. 1, 1977, abandoned. This application Nov. 28, 1980, Ser. No. 211,344

Int. Cl.<sup>3</sup> G03G 13/09  
U.S. Cl. 430—122

4,335,197  
PHOTOIMAGING PROCESS

William J. Chambers, and Louis Plambeck, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 25, 1980, Ser. No. 210,232  
Int. Cl.<sup>3</sup> G03C 5/00

U.S. Cl. 430—271

4,335,198  
PROCESS FOR RECORDING

Hiroshi Hanada, Yokohama; Masanao Kasai; Hitoshi Hanadate, both of Tokyo, and Yoko Oikawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 858,161, Dec. 6, 1977, abandoned, which is a continuation of Ser. No. 579,700, May 21, 1975, abandoned.

This application May 14, 1979, Ser. No. 38,840  
Claims priority, application Japan, May 25, 1974, 49-59215; Aug. 6, 1974, 49-90568; Sep. 20, 1974, 49-108357

Int. Cl.<sup>3</sup> B05D 3/02, 3/06; G01D 15/10  
U.S. Cl. 430—348

4,335,199  
HIGH CONTRAST BY IMAGEWISE IODIDE INFECTION  
IN A MIXED SILVER HALIDE SYSTEM

daniel J. Mickewich, Arden, Del.; John R. Shock, Plainsboro, N.J., and Daniel F. Juers, Fairport, N.Y., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 19, 1980, Ser. No. 122,502  
Int. Cl.<sup>3</sup> G03C 1/84, 5/24

U.S. Cl. 430—434

4,335,200  
SILVER HALIDE PHOTOGRAPHIC MATERIALS

Minoru Ohashi, and Katsuaki Iwaosa, both of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Aug. 28, 1981, Ser. No. 297,419  
Claims priority, application Japan, Oct. 30, 1980, 55/152772

Int. Cl.<sup>3</sup> G03C 1/34  
U.S. Cl. 430—446

4,335,201  
ANTISTATIC COMPOSITIONS AND ELEMENTS  
CONTAINING SAME

Donald N. Miller, Penfield, and Richard A. Kydd, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 24, 1980, Ser. No. 209,554  
Int. Cl.<sup>3</sup> G03C 1/84, 1/38; C09K 3/16

U.S. Cl. 430—527

4,335,202  
TETRAAZAUNDECANE AND COMPLEXES AS  
SENSITIZERS FOR SILVER HALIDE EMULSION

Rolf Hengel, Heilbronn, Fed. Rep. of Germany, and David F. Eaton, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 12, 1981, Ser. No. 292,261  
Int. Cl.<sup>3</sup> G03L 1/28

U.S. Cl. 430—604

4,335,203  
METHOD FOR IDENTIFYING POTENTIAL CONTRAST  
MEDIA REACTORS

Elliott C. Lasser, La Jolla, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Jul. 10, 1980, Ser. No. 167,278  
Int. Cl.<sup>3</sup> C12Q 1/38

U.S. Cl. 435—23

4,335,204  
EASILY SPLIT SUBSTRATES FOR THE  
QUANTIFICATION OF PROTEASES

Karl G. Claeson, Lidingö; Leif E. Aurell, Särö; Leif R. Simonsson, Hising Backa, and Salo Arielly, Kungsbacka, all of Sweden, assignors to Kabi AB, Stockholm, Sweden

Division of Ser. No. 7,447, Jan. 29, 1979, Pat. No. 4,279,810. This application Mar. 25, 1981, Ser. No. 247,488

Claims priority, application Sweden, Feb. 7, 1978, 7801373  
Int. Cl.<sup>3</sup> C12Q 1/38

U.S. Cl. 435—23

4,335,205  
LOW PROTEIN DEGRADATION PRODUCT BASAL  
MEDIUM FOR IDENTIFICATION OF  
NON-FERMENTATIVE GRAM-NEGATIVE BACILLI  
AND OTHER MICROORGANISMS

James R. Greenwood, 1275 Barry Ave., Apt. #4, Los Angeles, Calif. 90025

Filed Apr. 6, 1979, Ser. No. 27,843  
Int. Cl.<sup>3</sup> C12Q 1/04

U.S. Cl. 435—34



4,335,206  
**APPARATUS AND PROCESS FOR MICROBIAL DETECTION AND ENUMERATION**  
 Judd R. Wilkins, and David C. Grana, both of Hampton, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.  
 Filed Feb. 19, 1981, Ser. No. 235,796  
 Int. Cl.<sup>3</sup> C12Q 1/04  
 U.S. Cl. 435—34 9 Claims

4,335,207  
**PROCESS FOR THE PRODUCTION OF HIGH FRUCTOSE SYRUPS AND ETHANOL**  
 Robert E. Heady, Park Forest, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.  
 Filed Jun. 3, 1980, Ser. No. 156,152  
 Int. Cl.<sup>3</sup> C12P 7/14, 19/02, 19/04  
 U.S. Cl. 435—94 14 Claims

4,335,208  
**SACCHARIFICATION OF STARCH HYDROLYSATES**  
 Barrie E. Norman, Farum, Denmark, assignor to Novo Industri A/S, Denmark  
 Filed Mar. 11, 1980, Ser. No. 129,314  
 Int. Cl.<sup>3</sup> C12P 19/16, 19/20; C12R 1/38, 1/685  
 U.S. Cl. 435—96 8 Claims

4,335,209  
**PROCESS FOR PREPARATION OF L-TRYPTOPHAN BY ENZYME**  
 Yoshiyuki Asai, Yokohama; Masao Shimada, Yamato, and Kenji Soda, Uji, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan  
 Filed Apr. 25, 1980, Ser. No. 145,267  
 Claims priority, application Japan, May 9, 1979, 54-55645; Jun. 26, 1979, 54-79619; Mar. 24, 1980, 55-36197  
 Int. Cl.<sup>3</sup> C12P 13/22  
 U.S. Cl. 435—108 10 Claims

4,335,210  
**METHOD OF PRODUCING L-CYSTEINE**  
 Alton Meister, New York, and Joanne M. Williamson, Roosevelt Island, both of N.Y., assignors to Cornell Research Foundation, Ithaca, N.Y.  
 Filed Feb. 11, 1981, Ser. No. 233,564  
 Int. Cl.<sup>3</sup> C12P 13/12  
 U.S. Cl. 435—113 1 Claim

4,335,211  
**PROCESS FOR PRODUCING OPTICALLY ACTIVE CEPHALOSPORIN ANALOGS**  
 Yukio Hashimoto, Yamato; Seigo Takasawa, Hadano; Tadashi Hirata, Yokohama; Ikuro Matsukuma, Yokkaichi, and Shigeo Yoshiie, Sakai, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan  
 Filed Nov. 13, 1980, Ser. No. 206,556  
 Claims priority, application Japan, Nov. 14, 1979, 54-146489  
 Int. Cl.<sup>3</sup> C12P 17/18  
 U.S. Cl. 435—119 4 Claims

4,335,212  
**FERMENTATION PROCESS FOR (5R,6S,8S)-3-(2-AMINOETHYLTHIO)-6-(1-HYDROXYETHYL)-7-OXO-1-AZABICYCLO[3.2.0]HEPT-2-ENE-2-CARBOXYLIC ACID**  
 Kenneth E. Wilson, Westfield, N.J., and August J. Kempf, Staten Island, N.Y., assignors to Merck & Co., Inc., Rahway, N.J.  
 Filed Jun. 17, 1981, Ser. No. 274,702  
 Int. Cl.<sup>3</sup> C12P 17/18, 17/10  
 U.S. Cl. 435—119 2 Claims

4,335,213  
**PROCESS FOR THE PREPARATION OF GALACTOSE OXIDASE**  
 Osamu Terada, and Kazuo Aisaka, both of Machida, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan  
 Filed Jul. 2, 1980, Ser. No. 164,523  
 Claims priority, application Japan, Jul. 5, 1979, 54-84407  
 Int. Cl.<sup>3</sup> C12N 9/04  
 U.S. Cl. 435—190 6 Claims

4,335,214  
**PROCESS FOR PURIFYING PARTICLES OF BIOLOGICAL ORIGIN, PARTICULARLY THE SURFACE ANTIGEN OF THE VIRUS OF HEPATITIS B (AGHB)**  
 Philippe J. Adamowicz, Garches; Alberte Platel nee Bonnet, La Garenne Colombes, and Ludwig Muller, Plessis Robinson, all of France, assignors to Institut Pasteur, Paris, France  
 Filed Dec. 5, 1980, Ser. No. 213,315  
 Claims priority, application France, Dec. 7, 1979, 79 30135  
 Int. Cl.<sup>3</sup> A61K 39/12; C12K 7/00  
 U.S. Cl. 435—239 16 Claims

4,335,215  
**METHOD OF GROWING ANCHORAGE-DEPENDENT CELLS**  
 William R. Tolbert, Manchester; Mary M. Hitt, St. Louis; Joseph Feder, University City, and Richard C. Kimes, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.  
 Filed Aug. 27, 1980, Ser. No. 181,582  
 Int. Cl.<sup>3</sup> C12N 5/02; C12M 3/02, 1/24; C12P 1/00  
 U.S. Cl. 435—241 10 Claims

4,335,216  
**LOW TEMPERATURE FIRED DIELECTRIC CERAMIC COMPOSITION AND METHOD OF MAKING SAME**  
 Charles E. Hodgkins, Lewiston, and Mark J. Giermek, Tonawanda, both of N.Y., assignors to TAM Ceramics, Inc., Niagara Falls, N.Y.  
 Filed May 1, 1981, Ser. No. 259,520  
 Int. Cl.<sup>3</sup> C04B 35/00, 35/46  
 U.S. Cl. 501—32 14 Claims

4,335,217  
**SIC-Si<sub>3</sub>N<sub>4</sub> COMPOSITE SYSTEM FOR SPECIAL HEAT-RESISTING CERAMIC MATERIALS AND ITS FABRICATION METHOD**  
 Tokuaki Hatta; Haruyuki Ueno; Yuji Katsura; Kazushige Fukuda, and Hiroshi Kubota, all of Kitakyushu, Japan, assignors to Kurosaki Refractories Co., Ltd., Fukuoka, Japan  
 Filed Nov. 26, 1980, Ser. No. 210,647  
 Claims priority, application Japan, Nov. 30, 1979, 54-156032  
 Int. Cl.<sup>3</sup> C04B 35/56, 35/58  
 U.S. Cl. 501—92 11 Claims

4,335,218  
**PROCESS FOR THE PREPARATION OF A FOAM-CORED LAMINATE HAVING METAL FACERS AND RIGID POLYISOCYANURATE FOAM CORE PREPARED IN THE PRESENCE OF A DIPOLAR APROTIC ORGANIC SOLVENT**  
 David T. DeGuseppi, Hamden, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.  
 Filed Oct. 27, 1980, Ser. No. 201,137  
 Int. Cl.<sup>3</sup> C08G 18/14  
 U.S. Cl. 521—99 6 Claims

4,335,219  
**PROCESS FOR REACTING ISOCYANATES IN THE PRESENCE OF QUATERNARY AMMONIUM ZWITTERIONS**  
 Donald H. Clarke, Essexville; George J. Pomranky, and Donald L. Schmidt, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.  
 Filed Apr. 6, 1981, Ser. No. 251,628  
 Int. Cl.<sup>3</sup> C08G 18/18  
 U.S. Cl. 521—128 12 Claims

4,335,220  
**SEQUESTERING AGENTS AND COMPOSITIONS PRODUCED THEREFROM**  
 Charles H. Coney, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.  
 Filed Apr. 6, 1981, Ser. No. 251,646  
 Int. Cl.<sup>3</sup> C08J 3/02; C08L 35/02  
 U.S. Cl. 523—414 23 Claims

4,335,221  
**PREPARATION OF MIXTURES OF LINEAR THREE-BLOCK COPOLYMERS, AND MOLDINGS PRODUCED THEREFROM**  
 Karl Gerberding, Wachenheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany  
 Filed Sep. 9, 1980, Ser. No. 185,531  
 Claims priority, application Fed. Rep. of Germany, Oct. 9, 1979, 2940861  
 Int. Cl.<sup>3</sup> C08F 257/02  
 U.S. Cl. 525—89 4 Claims

4,335,222  
**ADHESIVE SYSTEMS AND LAMINATES**  
 Darrell A. Klemme, South Lyndeboro, N.H., assignor to USM Corporation, Farmington, Conn.  
 Filed Jul. 18, 1980, Ser. No. 170,071  
 Int. Cl.<sup>3</sup> C08L 63/00  
 U.S. Cl. 523—454 13 Claims

4,335,223  
**HIGH IMPACT MOLDING COMPOSITIONS**  
 Paul W. Flood, Lake Hopatcong; Charles D. Mason, Chatham Township, Morris County, and Stephen R. Schulze, West Caldwell, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.  
 Continuation-in-part of Ser. No. 46,536, Jun. 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 914,705, Jun. 12, 1978, abandoned. This application Nov. 21, 1980, Ser. No. 209,182  
 Int. Cl.<sup>3</sup> C08L 77/00  
 U.S. Cl. 525—179 32 Claims

4,335,224  
**POLYMER COMPOSITIONS COMPRISING ETHYLENE POLYMER BLENDS**  
 Kazuo Matsuura, Tokyo; Noboru Yamaoka; Sinichi Yanahashi, both of Yokohama; Katumi Usui, Yokosuka, and Mituji Miyoshi, Kanagawa, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan  
 Filed Mar. 2, 1981, Ser. No. 239,555  
 Claims priority, application Japan, Feb. 29, 1980, 55/24136  
 Int. Cl.<sup>3</sup> C08L 23/06, 23/08  
 U.S. Cl. 525—240 6 Claims

4,335,225  
**ELASTOMERIC POLYPROPYLENE**  
 John W. Collette, Wilmington, Del., and Charles W. Tullock, Landenberg, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
 Continuation of Ser. No. 917,282, Jun. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 814,878, Jul. 12, 1977, abandoned. This application Mar. 3, 1981, Ser. No. 240,138  
 Int. Cl.<sup>3</sup> C08F 10/06  
 U.S. Cl. 525—240 15 Claims

4,335,226  
**ADSORBENT FOR THE AFFINITY-SPECIFIC SEPARATION OF MACROMOLECULAR MATERIALS**  
 Werner Müller, Bielefeld, and Hans Bünemann, Steinhagen, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany  
 Filed Feb. 24, 1978, Ser. No. 880,914  
 Claims priority, application Fed. Rep. of Germany, Mar. 2, 1977, 2709094  
 Int. Cl.<sup>3</sup> C08F 279/00  
 U.S. Cl. 525—281 13 Claims

4,335,227  
**RUBBER COMPOSITIONS AND METHOD OF VULCANIZING SAME IN ULTRAHIGH-FREQUENCY FIELD**  
 Ruediger F. Bender, Marl, Fed. Rep. of Germany, and Gerardus J. van Veersen, Gouda, Netherlands, assignors to Emery Industries, Inc., Cincinnati, Ohio  
 Filed Jul. 25, 1980, Ser. No. 172,349  
 Claims priority, application Netherlands, Aug. 2, 1979, 7905944  
 Int. Cl.<sup>3</sup> C08J 3/28  
 U.S. Cl. 525—333 13 Claims

4,335,228  
**ISOCYANATE BLOCKED IMIDAZOLES AND IMIDAZOLINES FOR EPOXY POWDER COATING**  
 Burton D. Belchman, Springfield, and Philip J. Zaluska, Schnecksville, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.  
 Filed Feb. 27, 1978, Ser. No. 881,339  
 Int. Cl.<sup>3</sup> C08G 18/58; 59/40  
 U.S. Cl. 525—528 16 Claims

4,335,229  
**PROCESS FOR POLYMERIZING AN  $\alpha$ -OLEFIN**  
 Hisaya Sakurai; Yoshihiko Katayama; Tadashi Ikegami, and Masayasu Furusato, all of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan  
 Filed Aug. 13, 1980, Ser. No. 177,546  
 Claims priority, application Japan, Sep. 25, 1979, 54-123015; Sep. 28, 1979, 54-124912  
 Int. Cl.<sup>3</sup> C08F 4/64, 10/00  
 U.S. Cl. 526—122 40 Claims



4,335,230  
NOVEL COMPOSITIONS COMPRISING  
ASYMMETRICAL PEROXYDICARBONATES AND  
METHODS FOR THEIR USE  
James R. Kolczynski, Clarence Center, and Gerald A. Schultz,  
Lockport, both of N.Y., assignors to Akzona Incorporated,  
Asheville, N.C.  
Division of Ser. No. 107,999, Dec. 26, 1979, Pat. No. 4,269,726.  
This application Dec. 3, 1980, Ser. No. 212,941  
Int. Cl.<sup>3</sup> C08F 4/38  
U.S. Cl. 526—228

4,335,236  
 $\alpha$ -D-GALACTURONIDE DERIVATIVES  
Shinji Tsuyumu, and Keiichi Ota, both of Shizuoka, Japan,  
assignors to Otsuka Pharmaceutical Co., Ltd., Japan  
PCT No. PCT/JP79/00155, § 371 Date Feb. 11, 1980, § 102(e)  
Date Feb. 11, 1980, PCT Pub. No. WO80/00082, PCT Pub.  
Date Jan. 24, 1980  
PCT Filed Jun. 19, 1979, Ser. No. 192,513  
Claims priority, application Japan, Jun. 21, 1978, 53/74093;  
Jun. 21, 1978, 53/74094; Jul. 17, 1978, 53/86071; Jul. 17, 1978,  
53/86072  
Int. Cl.<sup>3</sup> C07H 15/04, 5/10  
U.S. Cl. 536—18.2

4,335,231  
SULFUR CURABLE MILLABLE POLYURETHANE GUM  
Ajaib Singh, Shelton, Conn., assignor to Uniroyal, Inc., New  
York, N.Y.  
Filed Apr. 3, 1981, Ser. No. 251,007  
Int. Cl.<sup>3</sup> C08G 18/67  
U.S. Cl. 528—49

4,335,237  
ADIABATIC POLYMERIZATION OF ACRYLAMIDE IN  
THE PRESENCE OF SODIUM SULFATE  
DECAHYDRATE  
Edward G. Ballweber, Glenwood, Ill., assignor to Nalco Chemi-  
cal Company, Oak Brook, Ill.  
Filed Jul. 28, 1980, Ser. No. 173,108  
Int. Cl.<sup>3</sup> C08F 2/00, 20/56  
U.S. Cl. 526—234

4,335,232  
OPTICALLY ANISOTROPIC MELT FORMING  
POLYESTERS  
Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de  
Nemours and Company, Wilmington, Del.  
Filed Jul. 7, 1981, Ser. No. 281,200  
Int. Cl.<sup>3</sup> C08G 63/02, 63/18  
U.S. Cl. 528—128

4,335,238  
FLUOROPOLYMER HEXAFLUOROPROPENE,  
TETRAFLUORETHENE AND 1,1-DIFLUOROETHENE  
Albert L. Moore; Clare A. Stewart, Jr., and Isadore Swerlick, all  
of Wilmington, Del., assignors to E. I. Du Pont de Nemours  
and Company, Wilmington, Del.  
Filed Oct. 6, 1980, Ser. No. 193,375  
Int. Cl.<sup>3</sup> C08F 214/28  
U.S. Cl. 526—254

4,335,233  
POLYPHENYLENE ETHER COPOLYMERS  
Akiyoshi Somemiya, Akashi; Shunitsu Miyashita, and Masaaki  
Azuma, both of Kobe, all of Japan, assignors to Kanegafuchi  
Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan  
Filed Mar. 30, 1981, Ser. No. 249,996  
Claims priority, application Japan, Mar. 31, 1980, 55/42171  
Int. Cl.<sup>3</sup> C08G 65/44  
U.S. Cl. 528—211

4,335,239  
POLYRIBONUCLEOTIDES CAPABLE OF PROMOTING  
THE GENESIS OF LEUCOCYTES AND BLOOD  
PLATELETS  
Mirko Beljanski, 46 Bd de Port Royal, Paris, France (75005)  
Division of Ser. No. 800,435, May 25, 1977, Pat. No. 4,190,649.  
This application Jul. 3, 1979, Ser. No. 54,960  
Claims priority, application France, Jun. 3, 1976, 76 16875  
Int. Cl.<sup>3</sup> C07H 21/02  
U.S. Cl. 536—27

4,335,234  
USE OF MANGANESE CHELATE TO OXIDATIVELY  
COUPLE PHENOLIC COMPOUND IN A  
SELF-PRECIIPITATING SYSTEM  
Walter K. Olander, Mt. Vernon, Ind., and Otto S. Zamek, Sche-  
nectady, N.Y., assignors to General Electric Company, Pitts-  
field, Mass.  
Filed Oct. 31, 1979, Ser. No. 89,999  
Int. Cl.<sup>3</sup> C08G 65/44  
U.S. Cl. 528—214

4,335,240  
PROCESS FOR CYCLIZATION  
Stjepan Kukolja, Carmel, and Janice L. Pfeil, Indianapolis, both  
of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.  
Division of Ser. No. 137,862, Apr. 7, 1980, Pat. No. 4,293,493.  
This application May 18, 1981, Ser. No. 264,263  
Int. Cl.<sup>3</sup> C07D 498/02  
U.S. Cl. 544—90

4,335,235  
CRYSTALLINE CO-POLYBENZYL PREPARATION  
John E. Chandler, Stamford, Conn., and Robert W. Lenz, Am-  
herst, Mass., assignors to Exxon Research & Engineering Co.,  
Florham Park, N.J.  
Division of Ser. No. 25,225, Mar. 29, 1979, Pat. No. 4,255,562.  
This application Oct. 20, 1980, Ser. No. 198,402  
Int. Cl.<sup>3</sup> C08G 61/02  
U.S. Cl. 528—397

4,335,241  
4- $\alpha$ -AMINO-ARYLMETHYL-6-METHYL-1,3-DIHYDRO-  
FURO[3,4-C]PYRIDIN-7-OLS  
Walter Boell, Dannstadt-Schauernheim, Fed. Rep. of Germany,  
assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany  
Filed Feb. 23, 1981, Ser. No. 236,904  
Claims priority, application Fed. Rep. of Germany, Mar. 6,  
1980, 3008522  
Int. Cl.<sup>3</sup> C07D 491/048  
U.S. Cl. 544—127

4,335,242  
TRIAZINE DERIVATIVES  
Hartmut Wiezer, Gersthofen, and Gerhard Pfahler, Augsburg,  
both of Fed. Rep. of Germany, assignors to Hoechst Aktien-  
gesellschaft, Frankfurt, Fed. Rep. of Germany  
Filed Aug. 13, 1980, Ser. No. 177,861  
Claims priority, application Fed. Rep. of Germany, Aug. 16,  
1979, 2933078  
Int. Cl.<sup>3</sup> C07D 251/50, 251/70  
U.S. Cl. 544—198

4,335,247  
NOVEL NITROSOUREA DERIVATIVES AND PROCESS  
FOR THEIR PRODUCTION  
Kichitaro Takatori, Nagoya; Takashi Yamaguchi, Urawa, and  
Masahiko Nagakura, Sayama, all of Japan, assignors to Kowa  
Co., Ltd., Nagoya, Japan  
Filed Feb. 23, 1981, Ser. No. 237,273  
Claims priority, application Japan, Feb. 28, 1980, 55-24491  
Int. Cl.<sup>3</sup> C07C 127/1  
U.S. Cl. 548—140

4,335,243  
OXIMES OF  
11-(3-OXOOCTYL)-HEXAHYDRO-2,6-METHANO-3-BEN-  
ZAZOCINES  
William F. Michne, Poestenkill, N.Y., assignor to Sterling Drug  
Inc., New York, N.Y.  
Division of Ser. No. 147,084, May 7, 1980, Pat. No. 4,296,238,  
which is a division of Ser. No. 9,594, Feb. 5, 1979, Pat. No.  
4,255,579, which is a continuation-in-part of Ser. No. 877,166,  
Feb. 13, 1978, Pat. No. 4,180,667, which is a continuation-in-part  
of Ser. No. 741,227, Nov. 12, 1976, Pat. No. 4,100,164, which is  
a continuation-in-part of Ser. No. 695,977, Jun. 14, 1976,  
abandoned, which is a continuation-in-part of Ser. No. 576,313,  
May 12, 1976, which is a continuation-in-part of Ser. No.  
471,571, May 20, 1974, Pat. No. 3,932,422. This application  
Mar. 12, 1981, Ser. No. 243,031  
Int. Cl.<sup>3</sup> C07D 221/26  
U.S. Cl. 546—97

4,335,248  
FLUORINATED POLYENES  
Ka-Kong Chan, Hopatcong, and Beverly A. Pawson, Verona,  
both of N.J., assignors to Hoffmann-La Roche Inc., Nutley,  
N.J.  
Division of Ser. No. 149,389, May 13, 1980, Pat. No. 4,299,995,  
which is a division of Ser. No. 37,803, May 10, 1979, Pat. No.  
4,231,944, which is a division of Ser. No. 936,466, Aug. 24, 1978,  
Pat. No. 4,171,318, which is a continuation-in-part of Ser. No.  
809,738, Jun. 24, 1977, Pat. No. 4,137,246, which is a  
continuation-in-part of Ser. No. 722,939, Sep. 13, 1976,  
abandoned, which is a continuation-in-part of Ser. No. 632,028,  
Nov. 14, 1975, abandoned. This application Jun. 29, 1981, Ser.  
No. 278,224  
Int. Cl.<sup>3</sup> C07D 333/16, 307/12; A61K 31/38, 31/34  
U.S. Cl. 549—78

4,335,244  
MONOLACTATE SALTS OF  
4'-(9-ACRIDINYLAMINO)METHANESULFON-M-ANISI-  
DIDE  
Murray A. Kaplan, Syracuse, and Alphonse P. Granatek, Bald-  
winsville, both of N.Y., assignors to Bristol-Myers Company,  
New York, N.Y.  
Continuation-in-part of Ser. No. 99,163, Nov. 30, 1979,  
abandoned. This application May 23, 1980, Ser. No. 150,401  
Int. Cl.<sup>3</sup> C07D 219/10; A61K 31/47  
U.S. Cl. 546—106

4,335,249  
HERBICIDAL DIPHENYL ETHERS, SULFIDES,  
SULFOXIDES AND SULFONES  
Wayne O. Johnson, Warminster, and Roy Y. Yih, Doylestown,  
both of Pa., assignors to Rohm and Haas Company, Philadel-  
phia, Pa.  
Continuation-in-part of Ser. No. 610,481, Sep. 3, 1975,  
abandoned. This application Jul. 30, 1976, Ser. No. 710,074  
Int. Cl.<sup>3</sup> C07C 69/76  
U.S. Cl. 560—11

4,335,245  
PROCESS FOR PREPARING CERTAIN PYRIDINE  
2,3,6-TRIONES  
William E. Long, Brentwood, England, assignor to Ciba-Geigy  
AG, Basel, Switzerland  
Division of Ser. No. 123,867, Feb. 22, 1980, Pat. No. 4,288,598.  
This application Feb. 26, 1981, Ser. No. 238,346  
Claims priority, application United Kingdom, Mar. 26, 1979,  
7910539  
Int. Cl.<sup>3</sup> C07D 213/56, 213/57  
U.S. Cl. 546—288

4,335,250  
COMPOUND WITH IMMUNOPOTENTIATING  
ACTIVITY AND PRODUCTION AND USES THEREOF  
Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Takaaki  
Aoyagi, Fujisawa; Masaaki Ishizuka, Tokyo; Hajime Mori-  
shima, Tokyo; Takuzo Yamamoto, Tokyo; Junji Yoshizawa,  
Tokyo; Masaaki Hosoi, Kawasaki, and Ikuo Matsumoto,  
Tokyo, all of Japan, assignors to Banyu Pharmaceutical Co.,  
Ltd., Tokyo, Japan  
Filed Jul. 12, 1979, Ser. No. 57,014  
Claims priority, application Japan, Jul. 17, 1978, 53/86178  
Int. Cl.<sup>3</sup> C07C 69/88  
U.S. Cl. 560—67

4,335,246  
SUBSTITUTED ARYLAMINE INTERMEDIATES FOR  
DYES  
Francesco De Feo, Milan; Giovanni Burei, Seregno, and Roberto  
Cipolli, Novara, all of Italy, assignors to Aziende Colori Na-  
zionali Affini ACNA S.p.A., Milan, Italy  
Division of Ser. No. 934,676, Aug. 18, 1978, abandoned. This  
application Sep. 24, 1979, Ser. No. 78,378  
Claims priority, application Italy, Aug. 23, 1977, 26872 A/77  
Int. Cl.<sup>3</sup> C07D 213/74; C07C 125/065, 143/78  
U.S. Cl. 546—309

4,335,251  
PHENYL-I-PROPIONIC ACID ESTERS AND  
PHARMACEUTICAL USE THEREOF  
Kanji Noda, Chikushino; Akira Nakagawa; Yuji Ishikura, both  
of Tosu, and Hiroyuki Ide, Fukuoka, all of Japan, assignors to  
Hisamitsu Pharmaceutical Co. Inc., Saga, Japan  
Continuation of Ser. No. 956,446, Nov. 1, 1978, abandoned,  
which is a continuation of Ser. No. 748,454, Dec. 8, 1976,  
abandoned. This application Aug. 5, 1980, Ser. No. 175,498  
Int. Cl.<sup>3</sup> C07B 69/76  
U.S. Cl. 560—105



**4,335,252**  
**INSECTICIDAL PYRETHROID ENANTIOMER PAIR**  
 John F. Engel, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.  
 Continuation-in-part of Ser. No. 42,372, May 24, 1979, Pat. No. 4,263,319, which is a continuation of Ser. No. 927,198, Jul. 24, 1978, abandoned, and Ser. No. 870,973, Jan. 20, 1978, abandoned. This application Dec. 31, 1980, Ser. No. 221,581 The portion of the term of this patent subsequent to Apr. 21, 1998, has been disclaimed.  
 Int. Cl.<sup>3</sup> A01N 53/00; C07C 69/743  
 U.S. Cl. 560—124

**4,335,253**  
**PREPARATION OF DIHALOVINYL COMPOUNDS**  
 Petrus A. Kramer, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.  
 Filed May 22, 1981, Ser. No. 266,578  
 Claims priority, application United Kingdom, May 30, 1980, 8017697  
 Int. Cl.<sup>3</sup> C07C 67/317, 45/65, 41/48  
 U.S. Cl. 560—124

**4,335,254**  
**POLYMERIZABLE**  
**ACRYLOYLOXYARYLENESULFONAMIDES**  
 John C. Wilson, and Paul D. Yacobucci, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y. Division of Ser. No. 22,406, Mar. 21, 1979, Pat. No. 4,289,865. This application May 29, 1981, Ser. No. 268,547  
 Int. Cl.<sup>3</sup> C07C 69/54, 69/653  
 U.S. Cl. 560—138

**4,335,255**  
**ALKYL PERFLUORO**  
**(2-METHYL-5-OXO-3-OXAHEXANOATE)**  
 Carl G. Krespan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
 Filed Apr. 3, 1980, Ser. No. 136,991  
 Int. Cl.<sup>3</sup> C07C 69/708, 69/716, 121/34  
 U.S. Cl. 560—174

**4,335,256**  
**PROCESS FOR MANUFACTURING**  
**D,L- $\beta$ -BENZOYLAMINO-ISOBUTYRIC ACID**  
 Paolo de Witt, and Enrico Diamanti, both of Rome, Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy  
 Filed Nov. 16, 1978, Ser. No. 961,102  
 Claims priority, application Italy, Nov. 30, 1977, 52004 A/77  
 Int. Cl.<sup>3</sup> C07C 101/12  
 U.S. Cl. 562—450

**4,335,257**  
**PREPARATION OF THE CALCIUM SALT OF**  
**ALPHA-HYDROXY-GAMMA-METHYLMERCAP-**  
**TOBUTYRIC ACID**  
 Earl W. Cummins; Steven I. Gleich, and Robert M. Vigilant, all of Wilmington, Del., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.  
 Filed Sep. 5, 1980, Ser. No. 184,210  
 Int. Cl.<sup>3</sup> C07C 149/20  
 U.S. Cl. 562—581

**4,335,258**  
**PROCESS FOR PRODUCING METHACRYLIC ACID**  
 Takeru Onoda; Masayuki Otake, both of Yokohama, and Jutaro Yamaguchi, Yamato, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd.  
 Filed Jan. 3, 1980, Ser. No. 109,219  
 Claims priority, application Japan, Jan. 16, 1979, 54-3488  
 Int. Cl.<sup>3</sup> C07C 51/377, 57/05  
 U.S. Cl. 562—599

**4,335,259**  
**QUATERNIZED POLYAMINES**  
 Hans-Peter Baumann, Ettingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland  
 Continuation-in-part of Ser. No. 50,881, Jun. 21, 1979, Pat. No. 4,297,296. This application Jan. 5, 1981, Ser. No. 222,483  
 Claims priority, application Switzerland, Jun. 26, 1978, 6933/78  
 Int. Cl.<sup>3</sup> C07C 87/30  
 U.S. Cl. 564—290

**4,335,260**  
**PROCESS FOR THE PREPARATION OF**  
**N-DI-N-PROPYL-2,6-DINITRO-4-TRIFLUOROME-**  
**THYLANILINE HAVING A LOW CONTENT OF**  
**NITROSAMINES**  
 Mario Bornengo, Massa, and Sergio Bacciarelli, Orzonovo, both of Italy, assignors to Montedison S.p.A., Milan, Italy  
 Filed May 14, 1981, Ser. No. 263,508  
 Claims priority, application Italy, May 15, 1980, 22073 A/80  
 Int. Cl.<sup>3</sup> C07C 85/04  
 U.S. Cl. 564—406

**4,335,261**  
**PROCESS FOR PURIFYING MACROCYCLIC KETONES**  
 Yoichiro Ueda, Ohimachi, Japan, assignor to Daicel Chemical Industries, Ltd., Osaka, Japan  
 Filed Jun. 17, 1981, Ser. No. 274,682  
 Claims priority, application Japan, Jul. 18, 1980, 55-98258  
 Int. Cl.<sup>3</sup> C07C 45/83  
 U.S. Cl. 568—366

**4,335,262**  
**PROCESS FOR THE PREPARATION OF MUSCONE**  
 Karl H. Schulte-Elte, Onex/Ge; Joseph J. Becker, and Walter Schenk, both of Geneva, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland  
 Filed Sep. 3, 1980, Ser. No. 183,722  
 Claims priority, application Switzerland, Sep. 13, 1979, 8293/79  
 Int. Cl.<sup>3</sup> C07C 45/57  
 U.S. Cl. 568—361

**4,335,263**  
**PROCESS FOR PREPARING AROMATIC ALDEHYDES**  
 Masayoshi Minai, Moriyama, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan  
 Filed Dec. 19, 1980, Ser. No. 218,135  
 Claims priority, application Japan, Dec. 21, 1979, 54/167013  
 Int. Cl.<sup>3</sup> C07C 45/43, 37/01  
 U.S. Cl. 568—437

**4,335,264**  
**HIGH YIELD, LOW BYPRODUCT  $\alpha$ ,  $\beta$ -UNSATURATED**  
**ALDEHYDES FROM OLEFINS**  
 Paul C. Yates, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
 Filed Jul. 7, 1976, Ser. No. 703,285  
 Int. Cl.<sup>3</sup> C07C 45/34  
 U.S. Cl. 568—479

## ELECTRICAL

JUNE 15, 1982

**4,335,265**  
**ROBOT TAPPING ELECTRODE FOR ELECTRIC ARC**  
**FURNACES**  
 Serge Roberge, Shawinigan Nord, and Jacques Normand, Shawinigan Sud, both of Canada, assignors to Gulf Canada Limited, Toronto, Canada  
 Filed Dec. 16, 1980, Ser. No. 216,886  
 Int. Cl.<sup>3</sup> C21B 11/10, 13/12  
 U.S. Cl. 373—83

**4,335,266**  
**METHODS FOR FORMING THIN-FILM**  
**HETEROJUNCTION SOLAR CELLS FROM I-III-VI<sub>2</sub>**  
**CHALCOPYRITE COMPOUNDS, AND SOLAR CELLS**  
**PRODUCED THEREBY**  
 Reid A. Mickelsen, Bellevue, and Wen S. Chen, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.  
 Filed Dec. 31, 1980, Ser. No. 221,761  
 Int. Cl.<sup>3</sup> H01L 31/06, 31/18  
 U.S. Cl. 136—260

**4,335,267**  
**GAS INSULATED TRANSMISSION LINE INCLUDING**  
**PROVISIONS FOR MINIMIZING PARTICLE**  
**GENERATION**  
 Melvyn D. Hopkins, Grafton, Mass., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.  
 Filed Oct. 26, 1979, Ser. No. 88,740  
 Int. Cl.<sup>3</sup> H01B 9/06  
 U.S. Cl. 174—14 R

**4,335,268**  
**PARTICLE TRAP WITH DIELECTRIC BARRIER FOR**  
**USE IN GAS INSULATED TRANSMISSION LINES**  
 Steinar J. Dale, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.  
 Filed Nov. 14, 1980, Ser. No. 206,753  
 Int. Cl.<sup>3</sup> H01B 9/06, 9/04; H02G 5/06  
 U.S. Cl. 174—14 R

**4,335,269**  
**ISOLATOR DEVICE AND WIRE DISTRIBUTING**  
**SYSTEM UTILIZING THE SAME**  
 Paul L. Haskins, Aliquippa, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.  
 Filed Sep. 19, 1980, Ser. No. 188,852  
 Int. Cl.<sup>3</sup> H02G 3/28  
 U.S. Cl. 174—48

**4,335,270**  
**SWITCH HOUSING INCORPORATING FLEXIBLY**  
**ATTACHED MOUNTING PLATE**  
 Thomas J. Holce, Portland, and Charles M. Huckins, Tigard, both of Oreg., assignors to Sentrol, Inc., Portland, Oreg.  
 Filed Oct. 16, 1980, Ser. No. 197,522  
 Int. Cl.<sup>3</sup> H05K 5/00  
 U.S. Cl. 174—52 R

**4,335,271**  
**ELECTRICAL BOX**  
 Joseph Haslbeck, West Vancouver, Canada, assignor to Highland Mfg. Company Ltd., Burnaby, Canada  
 Filed Jan. 21, 1980, Ser. No. 113,850  
 Claims priority, application Canada, Feb. 20, 1979, 321962  
 Int. Cl.<sup>3</sup> H02G 3/08  
 U.S. Cl. 174—65 R

**4,335,272**  
**BREAKAWAY CIRCUIT BOARD WITH FLEXIBLE**  
**COUPLING**  
 Daniel I. Pittenger, Libertyville, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.  
 Filed Jul. 28, 1980, Ser. No. 172,921  
 Int. Cl.<sup>3</sup> H05K 1/02  
 U.S. Cl. 174—68.5

**4,335,273**  
**ELECTRICALLY INSULATING SEAL ASSEMBLY**  
 Harry P. Levin, N. Hollywood, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.  
 Filed May 25, 1979, Ser. No. 42,670  
 Int. Cl.<sup>3</sup> F16J 15/10  
 U.S. Cl. 174—52 S

**4,335,274**  
**SOUND REPRODUCTION SYSTEM**  
 Richard A. Ayers, 10801 De Witt Ct., El Cajon, Calif. 92020  
 Filed Jan. 11, 1980, Ser. No. 111,232  
 Int. Cl.<sup>3</sup> H04R 3/08, 9/06  
 U.S. Cl. 179—1 F

**4,335,275**  
**SYNCHRONOUS METHOD AND APPARATUS FOR**  
**SPEECH SYNTHESIS CIRCUIT**  
 George L. Brantingham, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.  
 Continuation of Ser. No. 901,151, Apr. 28, 1978. This application Feb. 4, 1980, Ser. No. 117,911  
 Int. Cl.<sup>3</sup> G10L 1/00  
 U.S. Cl. 179—1 SM

**4,335,276**  
**APPARATUS FOR NON-INVASIVE MEASUREMENT**  
**AND DISPLAY NASALIZATION IN HUMAN SPEECH**  
 Glen L. Bull; Wesley E. McDonald, both of Charlottesville, and Milton T. Edgerton, Timberville, all of Va., assignors to The University of Virginia, Charlottesville, Va.  
 Filed Apr. 16, 1980, Ser. No. 140,951  
 Int. Cl.<sup>3</sup> G10L 1/00  
 U.S. Cl. 179—1 SP

**4,335,277**  
**CONTROL INTERFACE SYSTEM FOR USE WITH A**  
**MEMORY DEVICE EXECUTING VARIABLE LENGTH**  
**INSTRUCTIONS**  
 Ajay K. Puri, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.  
 Continuation of Ser. No. 36,928, May 7, 1979, abandoned. This application Apr. 3, 1981, Ser. No. 250,982  
 Int. Cl.<sup>3</sup> G10L 1/00  
 U.S. Cl. 179—1 SM

**4,335,278**  
**COMBINED TAPE RECORDING AND PLAYBACK**  
**APPARATUS AND TELEPHONE ANSWERING**  
**APPARATUS CONTROLLED BY PRE-RECORDED**  
**SIGNALS**  
 Tseng Chee, Kowloon, Hong Kong, assignor to Elite Electrical Products Limited, Kowloon, Hong Kong  
 Filed Oct. 17, 1980, Ser. No. 112,992  
 Int. Cl.<sup>3</sup> H04M 1/64  
 U.S. Cl. 179—6.06



4,335,279  
MECHANICAL TELEPHONE CONVERSATION TIME  
LIMITING DEVICE  
Donato Colombo, Via S. Ammirato, 61, and Lapo Baldacchi, Via  
Lungo l'Affrico, 212, both of Florence, Italy  
Filed Apr. 18, 1980, Ser. No. 141,745  
Claims priority, application Italy, Apr. 24, 1979, 22110 A/79  
Int. Cl.<sup>3</sup> H04M 1/00  
U.S. Cl. 179—7.1 R 7 Claims

4,335,280  
TELEPHONE CONSTRUCTION  
Joseph J. Butchko, P.O. Box G-747, Station "G", Calgary,  
Alberta, Canada  
Continuation-in-part of Ser. No. 43,169, May 29, 1979,  
abandoned. This application Oct. 14, 1980, Ser. No. 197,002  
Int. Cl.<sup>3</sup> H04M 1/31, 1/35  
U.S. Cl. 179—90 R 5 Claims

4,335,281  
POST-AURICLE CONTOURED HEADSET FOR  
TWO-WAY VOICE COMMUNICATION  
Charles G. Scott, Aptos; James B. Robertson, Soquel, and Ro-  
bert L. Harris, Aptos, all of Calif., assignors to Plantronics,  
Inc., Santa Cruz, Calif.  
Filed Jun. 24, 1980, Ser. No. 162,634  
Int. Cl.<sup>3</sup> H04M 1/04  
U.S. Cl. 179—156 A 6 Claims

4,335,282  
TIMER SWITCH MODULE  
Richard E. Adams, Indianapolis, and Richard W. Stafford, Clay-  
ton, both of Ind., assignors to Emhart Industries, Inc., Indian-  
apolis, Ind.  
Filed Mar. 24, 1980, Ser. No. 133,532  
Int. Cl.<sup>3</sup> H01H 7/00  
U.S. Cl. 200—38 R 9 Claims

4,335,283  
TEMPERATURE COMPENSATED FILL  
VALVE/PRESSURE SWITCH  
Robert S. Migrin, Dearborn, Mich., assignor to Eaton Corpora-  
tion, Cleveland, Ohio  
Filed Dec. 5, 1979, Ser. No. 100,687  
Int. Cl.<sup>3</sup> H01H 35/24  
U.S. Cl. 200—61.25 37 Claims

4,335,284  
SWITCH FOR DIRECTION INDICATOR OF VEHICLE  
Takeshi Ochiai, Toyota; Jun Ohta, Nagoya; Minoru Izawa,  
Okazaki, and Takashi Haneda, Toyota, all of Japan, assignors  
to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan  
Filed Jan. 22, 1980, Ser. No. 114,367  
Claims priority, application Japan, Jan. 24, 1979, 54-8076[U]  
Int. Cl.<sup>3</sup> H01H 3/16  
U.S. Cl. 200—61.27 11 Claims

4,335,285  
FLOAT OPERATED ELECTRICAL SWITCH ASSEMBLY  
Norman West, High Wycombe, England, assignor to Bestobell  
Mobrey Limited, Slough, England  
Filed Feb. 19, 1980, Ser. No. 122,046  
Claims priority, application United Kingdom, Feb. 20, 1979,  
7905876  
Int. Cl.<sup>3</sup> H01H 35/18  
U.S. Cl. 200—84 C 10 Claims

4,335,286  
WATERPROOF ELECTRICAL SWITCH  
Gunnar Nelson, P.O. Box 2847, Marathon Shores, Fla. 33052  
Filed Feb. 25, 1980, Ser. No. 124,067  
Int. Cl.<sup>3</sup> H01H 9/04  
U.S. Cl. 200—302 11 Claims

4,335,287  
LEVER SEAL FOR MINIATURE SEALED TOGGLE  
SWITCH  
Louis F. Aschenbach, Menomonee Falls, and Selami Y. Pusatci-  
oglu, Milwaukee, both of Wis., assignors to Eaton Corpora-  
tion, Cleveland, Ohio  
Filed Mar. 16, 1981, Ser. No. 244,486  
Int. Cl.<sup>3</sup> H01H 9/04, 21/04  
U.S. Cl. 200—302 7 Claims

4,335,288  
ELECTRIC SWITCHING APPARATUS PARTICULARLY  
A CAM SWITCH  
Bernd Ludwig, Marienheide, and Jürgen Donner, Gummers-  
bach, both of Fed. Rep. of Germany, assignors to Starkstrom  
Gummersbach GmbH, Marienheide, Fed. Rep. of Germany  
Filed May 5, 1980, Ser. No. 147,092  
Claims priority, application Fed. Rep. of Germany, May 7,  
1979, 2918289  
Int. Cl.<sup>3</sup> H01H 9/02  
U.S. Cl. 200—307 14 Claims

4,335,289  
MICROWAVE OVEN  
Duaine W. Smith, Tiffin, Iowa, assignor to Amana Refrigeration,  
Inc., Amana, Iowa  
Filed Dec. 21, 1978, Ser. No. 971,717  
Int. Cl.<sup>3</sup> H05B 6/72  
U.S. Cl. 219—10.55 F 24 Claims

4,335,290  
MICROWAVE OVEN BLOWER RADIATOR  
Wesley W. Teich, Wayland, Mass., assignor to Raytheon Com-  
pany, Lexington, Mass.  
Continuation of Ser. No. 866,970, Jan. 5, 1978, abandoned. This  
application Aug. 24, 1979, Ser. No. 69,479  
Int. Cl.<sup>3</sup> H05B 6/72  
U.S. Cl. 219—10.55 F 10 Claims

4,335,291  
POPPED CORN MAKING APPARATUS USED IN A  
MICROWAVE OVEN  
Ken Ishino; Taro Miura, and Yasuo Hashimoto, all of Tokyo,  
Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan  
Filed Apr. 4, 1980, Ser. No. 137,257  
Claims priority, application Japan, Jul. 23, 1979, 54-92596  
Int. Cl.<sup>3</sup> H05B 6/80  
U.S. Cl. 219—10.55 E 6 Claims

4,335,292  
HIGH FREQUENCY OVEN WITH DRAWER TYPE DOOR  
Junzo Tanaka, Fujiidera; Chikao Nakano, and Hitoshi Kurita,  
both of Yamatokoriyama, all of Japan, assignors to Matsu-  
shita Electric Industrial Co., Ltd., Kadoma, Japan  
Filed Apr. 4, 1980, Ser. No. 137,444  
Claims priority, application Japan, May 9, 1979, 54-57329;  
May 9, 1979, 54-62072[U]  
Int. Cl.<sup>3</sup> H05B 6/78  
U.S. Cl. 219—10.55 F 9 Claims

4,335,293  
HEATING CONTROL APPARATUS BY HUMIDITY  
DETECTION  
Tetsu Kobayashi; Takato Kanazawa, both of Nara, and Makoto  
Tsuboi, Yamatokoriyama, all of Japan, assignors to Matsu-  
shita Electric Industrial Co., Ltd., Osaka, Japan  
Continuation of Ser. No. 768,191, Feb. 14, 1977, abandoned.  
This application Jun. 6, 1980, Ser. No. 157,171  
Claims priority, application Japan, Feb. 17, 1976, 51-16737;  
Feb. 20, 1976, 51-18116; Sep. 25, 1976, 51-115288  
Int. Cl.<sup>3</sup> H05B 6/68  
U.S. Cl. 219—10.55 B 11 Claims

4,335,294  
EDM METHOD AND APPARATUS HAVING A GAP  
DISCHARGE CIRCUIT CONSTRUCTED WITH LIMITED  
STRAY CAPACITANCES  
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research  
Incorporated, Yokohama, Japan  
Filed Jul. 24, 1980, Ser. No. 171,943  
Claims priority, application Japan, Jul. 25, 1979, 54/94737;  
Jul. 25, 1979, 54/94738; Jul. 25, 1979, 54/106164  
Int. Cl.<sup>3</sup> B23P 1/08  
U.S. Cl. 219—69 M 25 Claims

4,335,295  
METHOD OF MARKING A METAL DEVICE  
Gary J. Fowler, 121 31st St., Manhattan Beach, Calif. 90266  
Filed May 9, 1979, Ser. No. 37,341  
Int. Cl.<sup>3</sup> B23K 27/00  
U.S. Cl. 219—121 LM 2 Claims

4,335,296  
MACHINE TOOL WITH A LASER BEAM CUTTING  
DEVICE  
Walter Bredow, Alfeld, Fed. Rep. of Germany, assignor to C.  
Behrens AG, Alfeld, Fed. Rep. of Germany  
Filed Jul. 24, 1980, Ser. No. 172,845  
Claims priority, application Fed. Rep. of Germany, Aug. 21,  
1979, 2933700  
Int. Cl.<sup>3</sup> B23K 27/00  
U.S. Cl. 219—121 LG 9 Claims

4,335,297  
ELECTRON BEAM PROCESSOR  
Roger G. Little, Bedford, Mass., assignor to Spire Corporation,  
Bedford, Mass.  
Division of Ser. No. 76,592, Sep. 18, 1979, Pat. No. 4,306,272.  
This application Dec. 19, 1980, Ser. No. 218,067  
Int. Cl.<sup>3</sup> B23K 15/00  
U.S. Cl. 219—121 EQ 10 Claims

4,335,298  
REINFORCED PLASTIC CONTAINER WITH AN  
INTEGRAL HEATING ELEMENT  
Robert W. Newbold, Jr., Cincinnati, Ohio, assignor to Plas-  
Tanks Industries, Inc., Fairfield, Ohio  
Division of Ser. No. 34,775, Apr. 30, 1979, Pat. No. 4,287,663.  
This application Apr. 6, 1981, Ser. No. 251,150  
Int. Cl.<sup>3</sup> F27D 11/02  
U.S. Cl. 219—441 3 Claims

4,335,299  
THERMOSTATIC CONTROL FOR ELECTRIC ROOF  
HEATING CABLE  
James F. Belohlavek, 647 Range Line Rd., Mosinee, Wis. 54455  
Filed Sep. 29, 1980, Ser. No. 191,919  
Int. Cl.<sup>3</sup> H05B 1/02  
U.S. Cl. 219—510 4 Claims

4,335,300  
DIET CONTROL APPARATUS AND METHOD  
William C. Shepherd, 725 Palomares Ave., San Dimas, Calif.  
91773  
Filed Aug. 27, 1980, Ser. No. 181,867  
Int. Cl.<sup>3</sup> G06C 1/00  
U.S. Cl. 235—123 4 Claims

4,335,301  
WAVE SHAPING CIRCUIT FOR ELECTRO-OPTICAL  
CODE READERS  
Roger C. Palmer, and William J. Purdue, both of Edmonds,  
Wash., assignors to Interface Mechanisms, Inc., Lynnwood,  
Wash.  
Filed Sep. 27, 1979, Ser. No. 79,326  
Int. Cl.<sup>3</sup> G06K 7/10  
U.S. Cl. 235—462 34 Claims

4,335,302  
BAR CODE SCANNER USING NON-COHERENT LIGHT  
SOURCE  
Jean J. Robillard, Amherst, Mass., assignor to R.L.S. Indus-  
tries, Inc., Elk Grove, Ill., a part interest  
Filed Aug. 20, 1980, Ser. No. 179,754  
Int. Cl.<sup>3</sup> G06K 7/10  
U.S. Cl. 235—462 15 Claims

4,335,303  
METHOD FOR COLLECTING MARKET SURVEY DATA  
FROM UNIVERSAL PRODUCT TYPE CODED ITEMS  
James Call, 8 Soundview Dr., Larchmont, N.Y. 10538  
Division of Ser. No. 970,986, Dec. 19, 1978, Pat. No. 4,290,688.  
This application Oct. 23, 1979, Ser. No. 87,476  
Int. Cl.<sup>3</sup> G06K 15/12; G03B 27/00  
U.S. Cl. 235—463 8 Claims

4,335,304  
SIGNAL DETECTION MECHANISM FROM ELECTRON  
MULTIPLIER  
Paul W. Palmberg, Minneapolis, Minn., assignor to The Perkin-  
Elmer Corporation, Norwalk, Conn.  
Filed Jul. 31, 1980, Ser. No. 174,022  
Int. Cl.<sup>3</sup> H01J 40/14  
U.S. Cl. 250—207 8 Claims

4,335,305  
TWISTING GEOMETRY SCANNER UTILIZING  
STAGGERED LENS ARRAY  
Ned J. Seachman, Penfield, N.Y., assignor to Xerox Corpora-  
tion, Stamford, Conn.  
Filed Aug. 18, 1980, Ser. No. 179,204  
Int. Cl.<sup>3</sup> H01J 3/14  
U.S. Cl. 250—216 8 Claims

4,335,306  
SURVEYING INSTRUMENT  
Alfred F. Gort, Loveland, Colo., and Charles E. Moore, Roches-  
ter, N.Y., assignors to Hewlett-Packard Company, Palo Alto,  
Calif.  
Division of Ser. No. 842,864, Oct. 17, 1977, abandoned, which is  
a division of Ser. No. 742,938, Nov. 18, 1976, Pat. No. 4,108,539.  
This application Oct. 29, 1979, Ser. No. 89,007  
Int. Cl.<sup>3</sup> G01D 5/34  
U.S. Cl. 250—231 SE 10 Claims



4,335,307  
**RADIOGRAPHIC APPARATUS AND METHOD WITH AUTOMATIC EXPOSURE CONTROL**  
 Richard C. DeVries, Aurora, and Edwin R. Hill, Chardon, both of Ohio, assignors to Technicare Corporation, Solon, Ohio  
 Filed Apr. 21, 1980, Ser. No. 142,187  
 Int. Cl.<sup>3</sup> G03B 41/16; N05G 1/30; A61B 6/00; H04N 5/32  
 U.S. Cl. 250—322 10 Claims

4,335,308  
**INSPECTION OF UNDERWATER STRUCTURES**  
 Leonard R. Caldecourt, Faringdon; Gordon V. Evans, Blewbury, and Tony V. Parsons, Didcot, all of England, assignors to United Kingdom Atomic Energy Authority, London, England  
 Filed Jan. 8, 1980, Ser. No. 110,406  
 Claims priority, application United Kingdom, Jan. 10, 1979, 7900845  
 Int. Cl.<sup>3</sup> G01N 23/00  
 U.S. Cl. 250—358 R 11 Claims

4,335,309  
**METHOD AND DEVICE FOR THE RAPID DEFLECTION OF A PARTICLE BEAM**  
 Klaus Anger, and Jürgen Frosien, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany  
 Filed Jul. 24, 1980, Ser. No. 172,085  
 Claims priority, application Fed. Rep. of Germany, Sep. 13, 1979, 2937136  
 Int. Cl.<sup>3</sup> H01J 37/00, 36/147  
 U.S. Cl. 250—396 R 4 Claims

4,335,310  
**X-RAY DIAGNOSTIC GENERATOR COMPRISING ADJUSTMENT MEANS FOR THE X-RAY TUBE VOLTAGE**  
 Kurt Franke, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany  
 Filed Jan. 21, 1981, Ser. No. 226,847  
 Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 3005182  
 Int. Cl.<sup>3</sup> H05G 1/32  
 U.S. Cl. 250—408 3 Claims

4,335,311  
**X-RAY DIAGNOSTIC APPARATUS WITH AN IMAGE-INTENSIFIER TV CHAIN**  
 Herbert Lutz, Seukendorf, and Rolf Pfeifer, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany  
 Continuation of Ser. No. 969,193, Dec. 13, 1978, abandoned.  
 This application Jun. 30, 1980, Ser. No. 164,053  
 Claims priority, application Fed. Rep. of Germany, Jan. 30, 1978, 2803913  
 Int. Cl.<sup>3</sup> H05G 1/30  
 U.S. Cl. 250—409 1 Claim

4,335,312  
**COUPLING BAR FOR X-RAY TOMOGRAPHY APPARATUS**  
 Volker Onken, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.  
 Filed Jul. 2, 1980, Ser. No. 165,176  
 Claims priority, application Fed. Rep. of Germany, Jul. 6, 1979, 2927380  
 Int. Cl.<sup>3</sup> G03B 41/16  
 U.S. Cl. 250—445 T 3 Claims

4,335,313  
**METHOD AND APPARATUS FOR ALIGNING AN OPAQUE MASK WITH AN INTEGRATED CIRCUIT WAFER**  
 Justin L. Kreuzer, Trumbull, and David H. Kittell, Stamford, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.  
 Filed May 12, 1980, Ser. No. 149,106  
 Int. Cl.<sup>3</sup> G01N 21/00, 23/00  
 U.S. Cl. 250—491 13 Claims

4,335,314  
**GENERATOR FOR PULSED ELECTRON BEAMS**  
 Jochen Geerk, Stutensee, and Fritz Ratzel, Linkenheim-Hochstetten, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany  
 Filed Aug. 5, 1980, Ser. No. 175,833  
 Claims priority, application Fed. Rep. of Germany, Apr. 12, 1980, 3014151  
 Int. Cl.<sup>3</sup> H01J 3/00  
 U.S. Cl. 250—492.3 11 Claims

4,335,315  
**X-RAY EXAMINATION APPARATUS**  
 Hans Waerve, Sollentuna, and Sten Djurson, Stockholm, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany  
 Division of Ser. No. 942,413, Sep. 14, 1978, Pat. No. 4,223,230.  
 This application Jan. 15, 1980, Ser. No. 112,337  
 Claims priority, application Fed. Rep. of Germany, Oct. 12, 1977, 2745883  
 Int. Cl.<sup>3</sup> H01J 35/16  
 U.S. Cl. 250—523 5 Claims

4,335,316  
**WEB BREAK DETECTOR WITH ADJUSTABLE SCANNING HEAD**  
 Richard Glanz, Crystal Lake, and Sun C. Chang, Naperville, both of Ill., assignors to Baldwin-Korthe Web Controls, Inc., Addison, Ill.  
 Filed Apr. 9, 1980, Ser. No. 138,499  
 Int. Cl.<sup>3</sup> G01N 21/88  
 U.S. Cl. 250—572 17 Claims

4,335,317  
**CIRCUIT FOR SENSOR-CONTROLLED TELEMETRY**  
 Hans-Peter Grassl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany  
 Filed Jul. 25, 1980, Ser. No. 173,195  
 Claims priority, application Fed. Rep. of Germany, Sep. 10, 1979, 2936521  
 Int. Cl.<sup>3</sup> H01J 40/14  
 U.S. Cl. 250—578 11 Claims

4,335,318  
**ENGINE-DRIVEN MODEL TOY**  
 Kenichi Mabuchi, and Tatsuo Katsunuma, both of Matsudo, Japan, assignors to Mabuchi Motor Co., Ltd., Japan  
 Filed Mar. 31, 1980, Ser. No. 135,996  
 Claims priority, application Japan, Apr. 24, 1979, 54-50442; May 18, 1979, 54-66624[U]  
 Int. Cl.<sup>3</sup> A63H 27/14  
 U.S. Cl. 290—31 11 Claims

4,335,319  
**HYDRO-ELECTRIC POWER APPARATUS UTILIZING OCEAN CURRENTS**  
 John H. Mettersheimer, Jr., Sanford, Fla., assignor to Charles B. Cannon, Chicago, Ill.  
 Filed Aug. 27, 1980, Ser. No. 181,718  
 Int. Cl.<sup>3</sup> F03B 13/10  
 U.S. Cl. 290—54 13 Claims

4,335,320  
**MULTI-ZONE ENERGY SUPPLY CONTROLLER**  
 Thomas L. Garver, Kannapolis, N.C., assignor to W. A. Brown & Son, Inc., Salisbury, N.C.  
 Filed Feb. 13, 1980, Ser. No. 121,158  
 Int. Cl.<sup>3</sup> G05B 11/00; H02J 13/00  
 U.S. Cl. 307—39 6 Claims

4,335,321  
**ELECTRONIC BALANCE CONTROL CIRCUIT ARRANGEMENT**  
 Michael D. Lyons, and Richard A. Strobel, both of Lexington, Ky., assignors to American Standard Inc., Lexington, Ky.  
 Filed Dec. 14, 1979, Ser. No. 103,800  
 Int. Cl.<sup>3</sup> H03K 17/72, 5/153  
 U.S. Cl. 307—252 B 14 Claims

4,335,322  
**PULSE GENERATOR FOR PRODUCING A PULSE HAVING A PULSE WIDTH DEPENDENT ON AN INPUT SIGNAL**  
 Kouichi Tanaka, Tokyo, and Masaharu Mori, Warabi, both of Japan, assignors to Nippon Electric Co., Ltd. and Clarion Co., Ltd., both of Tokyo, Japan  
 Filed Sep. 17, 1979, Ser. No. 75,872  
 Int. Cl.<sup>3</sup> H03K 5/00, 17/28  
 U.S. Cl. 307—542 7 Claims

4,335,323  
**STAMPED SHEET METAL FRAME FOR DYNAMOELECTRIC MACHINE**  
 Earl R. Kebbon, Farmington, Me.; Bobby E. McMillen, Columbus, Miss.; Kenneth W. Stewart, Sr., Columbus, Miss., and Dennis A. Bloodworth, Jr., Columbus, Miss., assignors to AMBAC Industries, Incorporated, Farmington, Conn.  
 Filed Jan. 17, 1980, Ser. No. 113,078  
 Int. Cl.<sup>3</sup> H02K 5/00  
 U.S. Cl. 310—40 R 23 Claims

4,335,324  
**ROTOR FOR HYDROGEN-COOLED ROTARY ELECTRIC MACHINES**  
 Kazumasa Fujioka, Shimoinayoshi, and Wataru Nakayama, Kashiwa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
 Filed Aug. 6, 1980, Ser. No. 175,699  
 Claims priority, application Japan, Aug. 8, 1979, 54-100261  
 Int. Cl.<sup>3</sup> H02K 1/32  
 U.S. Cl. 310—61 1 Claim

4,335,325  
**DYNAMOELECTRIC MACHINE STATOR ASSEMBLY**  
 Sammy L. Miller, Bowling Green, Ky., and Alan L. Kindig, Holland, Mich., assignors to General Electric Company, Fort Wayne, Ind.  
 Division of Ser. No. 918,055, Jun. 22, 1978, Pat. No. 4,216,571.  
 This application Apr. 16, 1980, Ser. No. 140,739  
 Int. Cl.<sup>3</sup> H02K 3/48  
 U.S. Cl. 310—214 3 Claims

4,335,326  
**MERCURY DISPENSER FOR DISCHARGE LAMPS**  
 Frank M. Latassa, Magnolia; John G. Ray, Topsfield, and Joseph A. Roy, Danvers, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.  
 Filed Apr. 23, 1980, Ser. No. 142,904  
 Int. Cl.<sup>3</sup> H01J 61/28  
 U.S. Cl. 313—177 6 Claims

4,335,327  
**X-RAY TUBE TARGET HAVING PYROLYTIC AMORPHOUS CARBON COATING**  
 John S. Waugh, Wellesley, Mass., and Richard G. Weber, Stamford, Conn., assignors to The Machlett Laboratories, Incorporated, Stamford, Conn.  
 Continuation of Ser. No. 965,764, Dec. 4, 1978, abandoned. This application Apr. 18, 1980, Ser. No. 141,525  
 Int. Cl.<sup>3</sup> H01J 35/08  
 U.S. Cl. 313—330 11 Claims

4,335,328  
**SELECTIVELY ERASABLE STORAGE TARGET WITH INSULATED WEB COLLECTOR**  
 Duane A. Haven, Banks, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.  
 Continuation-in-part of Ser. No. 42,172, May 24, 1979, abandoned, which is a continuation-in-part of Ser. No. 6,146, Jan. 24, 1979, abandoned. This application Feb. 23, 1981, Ser. No. 236,489  
 The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.  
 Int. Cl.<sup>3</sup> H01J 29/39, 31/08  
 U.S. Cl. 313—395 12 Claims

4,335,329  
**MASK SUPPORT FOR SHADOW MASK ASSEMBLY**  
 Kenichi Fukuzawa, Mobara, and Tetsuo Kumazawa, Dejima, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
 Filed May 8, 1980, Ser. No. 147,962  
 Claims priority, application Japan, May 18, 1979, 54-60438  
 Int. Cl.<sup>3</sup> H01J 29/07  
 U.S. Cl. 313—406 8 Claims

4,335,330  
**LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP**  
 Robert C. Peters; Louis E. Vrenken; Winston D. Couvbenberg, and Franciscus A. S. Ligthart, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.  
 Continuation of Ser. No. 38,616, May 14, 1979, abandoned, which is a continuation of Ser. No. 845,926, Oct. 27, 1977, abandoned. This application Feb. 12, 1980, Ser. No. 120,602  
 Claims priority, application Netherlands, Nov. 2, 1976, 7612157; Nov. 2, 1976, 7612158; Aug. 23, 1977, 7709263  
 Int. Cl.<sup>3</sup> H01J 61/44  
 U.S. Cl. 313—486 7 Claims

4,335,331  
**LOW PRESSURE METAL VAPOR DISCHARGE LAMP**  
 Yoshio Watanabe, Tokyo; Mikiya Yamane, and Teruichi Tomura, both of Kunitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
 Continuation of Ser. No. 932,546, Aug. 10, 1978, abandoned.  
 This application Jun. 10, 1980, Ser. No. 158,264  
 Claims priority, application Japan, Aug. 10, 1977, 52-95041; Sep. 28, 1977, 52-115622; Sep. 28, 1977, 52-115623; Sep. 28, 1977, 52-115624  
 Int. Cl.<sup>3</sup> H05B 41/16  
 U.S. Cl. 315—334 18 Claims



4,335,332  
FOCUS MESH STRUCTURE AND BIASING TECHNIQUE  
FOR FLAT PANEL DISPLAY DEVICES  
Thomas L. Credelle, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 30, 1981, Ser. No. 230,362  
Int. Cl.<sup>3</sup> H01J 29/70, 29/72  
U.S. Cl. 315—366 7 Claims

4,335,333  
RASTER SCAN COLOR DISPLAY SYSTEM AND  
METHOD HAVING IMPROVED PIN CUSHION  
NON-LINEARITY CORRECTION  
Michael Ramsay, San Jose, Calif., and Warren Pratt, Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 29, 1980, Ser. No. 116,421  
Int. Cl.<sup>3</sup> H01J 29/70  
U.S. Cl. 315—371 11 Claims

4,335,334  
HORIZONTAL SCANNING CIRCUIT  
Nobukazu Hosoya, Nara, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Sep. 17, 1980, Ser. No. 188,149  
Claims priority, application Japan, Sep. 20, 1979, 54-122442; Aug. 29, 1980, 55-123602[U]  
Int. Cl.<sup>3</sup> H01J 29/70, 29/76  
U.S. Cl. 315—408 5 Claims

4,335,335  
TELEVISION RECEIVER HIGH VOLTAGE  
PROTECTION CIRCUIT  
Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 11, 1980, Ser. No. 120,473  
Int. Cl.<sup>3</sup> H01J 29/80  
U.S. Cl. 315—411 15 Claims

4,335,336  
DEVICE FOR CONTROLLING SPEED  
Fulvio Filippini, Versailles, France, assignor to Enertec, Montrouge, France

Filed May 21, 1980, Ser. No. 152,005  
Claims priority, application France, May 23, 1979, 79 13211  
Int. Cl.<sup>3</sup> H02P 5/16  
U.S. Cl. 318—6 13 Claims

4,335,337  
CONTROL SYSTEM FOR ELECTRIC MOTOR VEHICLE  
Shigetoshi Okamoto; Takashi Tsuboi; Masahiko Ibamoto, and Hiroshi Narita, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 23, 1979, Ser. No. 59,559  
Claims priority, application Japan, Jul. 21, 1978, 53-88454  
Int. Cl.<sup>3</sup> B61C 15/08  
U.S. Cl. 318—52 3 Claims

4,335,338  
LINEAR MOTOR  
Bruce A. Sawyer, Santa Rosa, Calif., assignor to Xynetics, Inc., Santa Clara, Calif.

Filed Jun. 30, 1980, Ser. No. 164,827  
Int. Cl.<sup>3</sup> B64C 13/18  
U.S. Cl. 318—135 37 Claims

4,335,339  
ELECTRONIC SAFETY DEVICE  
Joseph L. Brickner, 2215 S. Grand Ave., Santa Ana, Calif. 92705  
Filed Nov. 20, 1979, Ser. No. 95,936  
Int. Cl.<sup>3</sup> E05F 15/10; H02H 7/09; H02P 3/00  
U.S. Cl. 318—282 15 Claims

4,335,340  
ELECTRIC REVERSIBLE MOTOR CONTROL  
Takanori Hara, Hiroshima, and Yoshihiro Shimamura, Kosai, both of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima and ASMO Co., Ltd., Shizuoka, both of Japan  
Filed Oct. 1, 1980, Ser. No. 192,838  
Claims priority, application Japan, Oct. 8, 1979, 54/130627  
Int. Cl.<sup>3</sup> H02P 1/00  
U.S. Cl. 318—282 6 Claims

4,335,341  
AUTOMATIC CONTROL METHOD AND APPARATUS  
Hitoshi Ogasawara, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 3, 1980, Ser. No. 166,703  
Claims priority, application Japan, Jul. 6, 1979, 54/85005  
Int. Cl.<sup>3</sup> G05B 5/01  
U.S. Cl. 318—624 6 Claims

4,335,342  
RECIPROCATING DRIVE SYSTEM FOR A BODY SUCH  
AS A CARRIAGE SUPPORTING ELECTROSTATIC  
MEANS FOR SPRAYING A PULVERIZED MATERIAL,  
THE SYSTEM INCLUDING AN ASYNCHRONOUS  
SQUIRREL CAGE MOTOR

Roger Tholome, La Tronche, France, assignor to Air Industrie, Societe Anonyme, Courbevoie, France  
Filed Dec. 20, 1979, Ser. No. 105,526  
Claims priority, application France, Dec. 22, 1978, 78 36615  
Int. Cl.<sup>3</sup> G05G 5/00  
U.S. Cl. 318—627 9 Claims

4,335,343  
CIRCUIT FOR GENERATING AN ELECTRIC SIGNAL  
PROPORTIONAL TO A FLUX COMPONENT OF A  
ROTATING-FIELD MACHINE

Walter Dreiseitl; Dieter Kollensperger; Theodor Salzmann, all of Erlangen; Thomas Schlegel, Hemhofen, and Wolf-Dieter Weigel, Kleinsendelbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany  
Filed Jul. 18, 1979, Ser. No. 58,832  
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1978, 2833593  
Int. Cl.<sup>3</sup> H02P 5/28, 5/34  
U.S. Cl. 318—798 8 Claims

4,335,344  
VOLTAGE REGULATOR FOR A CONTROLLED FIELD  
GENERATOR

Leroy A. Gant, 521 Jasmine La., Santa Maria, Calif. 93454  
Filed Sep. 2, 1980, Ser. No. 183,184  
Int. Cl.<sup>3</sup> H02J 7/14  
U.S. Cl. 322—25 7 Claims

4,335,345  
CURRENT LIMITING CIRCUIT FOR SWITCHING  
REGULATOR

Merle E. Converse, Helotes, Tex., assignor to Transaction Control Industries, Bryan, Tex.  
Filed Oct. 9, 1980, Ser. No. 195,666  
Int. Cl.<sup>3</sup> G05F 1/44  
U.S. Cl. 323—278 5 Claims

4,335,346  
TEMPERATURE INDEPENDENT VOLTAGE SUPPLY  
Klaus Streit, Tubingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany  
Filed Feb. 18, 1981, Ser. No. 235,757  
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006598  
Int. Cl.<sup>3</sup> G05F 3/20  
U.S. Cl. 323—313 8 Claims

4,335,347  
POWER COMBINING OR DIVIDING ARRANGEMENTS  
John W. Heavside, Hurstpierpoint, England, assignor to The Marconi Company Limited, Chelmsford, England  
Filed Apr. 25, 1980, Ser. No. 143,734  
Claims priority, application United Kingdom, Apr. 26, 1979, 7914571  
Int. Cl.<sup>3</sup> H01Q 23/00  
U.S. Cl. 323—328 7 Claims

4,335,348  
CABLE CONDUCTOR CONTINUITY TESTER WITH  
MAGNETICALLY COUPLED DRIVE MEANS AND  
SENSOR

William C. Reed, Lilburn, and Donald T. Smith, Norcross, both of Ga., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Apr. 10, 1980, Ser. No. 139,100  
Int. Cl.<sup>3</sup> G01R 31/02  
U.S. Cl. 324—51 1 Claim

4,335,349  
SIMULATED OHMS GENERATION METHOD AND  
APPARATUS FOR CALIBRATING RESISTANCE TYPE  
MEASURING INSTRUMENTS

K. Paul Baldock, Marysville, and J. Craig Smith, Jr., Everett, both of Wash., assignors to John Fluke Mfg. Co., Inc., Mountlake Terrace, Wash.  
Filed Jun. 5, 1980, Ser. No. 156,569  
Int. Cl.<sup>3</sup> G01R 27/02  
U.S. Cl. 324—62 25 Claims

4,335,350  
APPARATUS FOR PROBING SEMICONDUCTOR  
WAFERS

James T. C. Chen, 1526 Cherrywood Dr., San Mateo, Calif. 94403  
Filed May 23, 1980, Ser. No. 152,664  
Int. Cl.<sup>3</sup> G01R 27/14  
U.S. Cl. 324—64 12 Claims

4,335,351  
MOVING MAGNET ELECTRICAL METER WITH  
SINGLE PIVOT PIN FOR THE MOVING MAGNET AND  
A FIXED RETURN MAGNET

Thomas G. Faria, 17 Park Dr., Waterford, Conn. 06385  
Division of Ser. No. 892,032, Mar. 31, 1978, abandoned. This application Apr. 9, 1980, Ser. No. 138,530  
Int. Cl.<sup>3</sup> G01R 5/16, 1/04  
U.S. Cl. 324—146 10 Claims

4,335,352  
YIELD STRENGTH DETERMINATION OF  
FERROMAGNETIC MATERIALS

David D. Stephen, Houston, Tex., assignor to Homco International Inc., Houston, Tex.  
Filed Dec. 12, 1979, Ser. No. 102,790  
Int. Cl.<sup>3</sup> G01R 33/12; G01N 27/72; B07C 5/344  
U.S. Cl. 324—228 28 Claims

4,335,353  
METHOD AND APPARATUS FOR DETECTING AN  
ANOMALY IN A RESISTIVITY MEASUREMENT OF AN  
EARTH FORMATION  
Philippe J. Lacour-Gayet, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.  
Filed Jun. 18, 1979, Ser. No. 49,382  
Int. Cl.<sup>3</sup> G01V 3/24 43 Claims

4,335,354  
SENSITIVE DEMODULATOR FOR FREQUENCY SHIFT  
KEYED CARRIER SIGNALS  
Kenneth C. Crandall, Foster City, and Michael A. Robinton, Palo Alto, both of Calif., assignors to Robinton Products, Inc., Sunnyvale, Calif.

Filed Apr. 4, 1980, Ser. No. 137,488  
Int. Cl.<sup>3</sup> H03D 3/00  
U.S. Cl. 329—126 16 Claims

4,335,355  
CMOS OPERATIONAL AMPLIFIER WITH REDUCED  
POWER DISSIPATION

Yusuf A. Haque, San Jose, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.  
Continuation-in-part of Ser. No. 80,153, Sep. 28, 1979, Pat. No. 4,284,957. This application Feb. 13, 1981, Ser. No. 234,239  
Int. Cl.<sup>3</sup> H03F 3/45 3 Claims

4,335,356  
PROGRAMMABLE TWO-QUADRANT  
TRANSCONDUCTANCE AMPLIFIER

Philip S. Crosby, pPortland, OR, assignor to Tektronix, Inc., Beaverton, Oreg.  
Filed Jan. 21, 1980, Ser. No. 113,857  
Int. Cl.<sup>3</sup> H03F 3/45; H03G 3/30  
U.S. Cl. 330—254 5 Claims

4,335,358  
CLASS "B" TYPE AMPLIFIER  
Werner H. Hoeft, Santa Clara County, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Jan. 21, 1980, Ser. No. 113,928  
Int. Cl.<sup>3</sup> H03F 3/30, 3/45 6 Claims

4,335,359  
MONOLITHICALLY INTEGRABLE LOWPASS FILTER  
CIRCUIT

Hans Kriedt, and Andreas Dietze, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany  
Filed Jan. 25, 1980, Ser. No. 115,257  
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1979, 2903299  
Int. Cl.<sup>3</sup> H03F 1/34 7 Claims

4,335,360  
CLASS AB PUSH-PULL AMPLIFIERS

Merle V. Hoover, R.D. #6, Box 220, Flemington, N.J. 08822  
Filed Nov. 23, 1979, Ser. No. 97,040  
Int. Cl.<sup>3</sup> H03F 3/16, 3/30 9 Claims



4,335,361  
**VARIABLE GAIN AMPLIFIER**  
 William F. Acker, Seminole, Fla., assignor to Honeywell Inc., Minneapolis, Minn.  
 Division of Ser. No. 829,705, Sep. 1, 1977. This application Dec. 12, 1979, Ser. No. 102,600  
 Int. Cl.<sup>3</sup> H03G 3/30; H03F 1/34  
 U.S. Cl. 330—285 15 Claims

4,335,362  
**SEMICONDUCTOR DEVICE AND A METHOD OF CONTACTING A PARTIAL REGION OF A SEMICONDUCTOR SURFACE**  
 Rene P. Salathe, Bern; E. Gerhard Badertscher, Bolligen, and Willy A. R. Lüthy, Köniz, all of Switzerland, assignors to Institut für Angewandte Physik der Universität Bern, Bern, Switzerland  
 Filed Nov. 14, 1979, Ser. No. 94,236  
 Claims priority, application Switzerland, Nov. 17, 1978, 11827/78  
 Int. Cl.<sup>3</sup> H01S 3/19  
 U.S. Cl. 372—46 5 Claims

4,335,363  
**AMPLITUDE MODULATOR USING A CARRIER TUBE AND A PEAKING TUBE**  
 Douglas F. Bowers, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, England  
 Filed Aug. 5, 1980, Ser. No. 175,832  
 Claims priority, application United Kingdom, Aug. 14, 1979, 7928255  
 Int. Cl.<sup>3</sup> H03C 1/24  
 U.S. Cl. 332—37 R 9 Claims

4,335,364  
**TRANSITION FROM A COAXIAL CABLE TO A MULTIPOLE PLUG-IN CONNECTOR**  
 Johannes Schmitz, and Roland Röhrbein, both of Backnang, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany  
 Filed Dec. 1, 1980, Ser. No. 211,787  
 Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949013  
 Int. Cl.<sup>3</sup> H01P 5/08  
 U.S. Cl. 333—33 4 Claims

4,335,365  
**TEMPERATURE STABILIZED AND FREQUENCY ADJUSTABLE MICROWAVE CAVITIES**  
 Enzo Pome', Sesto S. Giovanni, Italy, assignor to Telettra-Telefonica Electronica e Radio S.p.A., Milan, Italy  
 Filed Sep. 25, 1980, Ser. No. 190,566  
 Claims priority, application Italy, Oct. 15, 1979, 26491 A/79  
 Int. Cl.<sup>3</sup> H01P 7/06  
 U.S. Cl. 333—229 4 Claims

4,335,366  
**COLOR TELEVISION DISPLAY SYSTEM HAVING IMPROVED CONVERGENCE**  
 Roger C. Alig, Princeton Junction; William H. Barkow, Pennsauken, and Josef Gross, Princeton, all of N.J., assignors to RCA Corporation, New York, N.Y.  
 Filed Feb. 25, 1980, Ser. No. 119,132  
 Int. Cl.<sup>3</sup> H01F 3/12, 7/00  
 U.S. Cl. 335—211 5 Claims

4,335,367  
**ELECTRICALLY INSULATED COIL**  
 Hisayasu Mitsui; Ryozi Kumazawa; Yoshiyuki Inoue; Shuichi Suzuki, all of Yokohama; Takeo Ito, Kawasaki; Sinichi Sanada, and Shuzi Hayase, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan  
 Filed Aug. 14, 1980, Ser. No. 178,154  
 Claims priority, application Japan, Aug. 17, 1979, 54/104074; Aug. 17, 1979, 54/104075  
 Int. Cl.<sup>3</sup> H01F 27/32; B32B 19/00, 27/38  
 U.S. Cl. 336—205 10 Claims

4,335,368  
**DEAD CASE THERMOSTAT ASSEMBLY**  
 Omar R. Givler, North Canton, Ohio, assignor to Portage Electric Products, Inc., North Canton, Ohio  
 Filed Feb. 13, 1981, Ser. No. 234,242  
 Int. Cl.<sup>3</sup> H01H 37/04, 37/52  
 U.S. Cl. 337—372 7 Claims

4,335,369  
**OXYGEN SENSOR**  
 Harutaka Taniguchi; Kenichi Hara, and Hideo Shiraishi, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan  
 PCT No. PCT/JP79/00195, § 371 Date Mar. 14, 1980, § 102(e) Date Mar. 14, 1980  
 PCT Filed Jul. 26, 1979, Ser. No. 194,242  
 Claims priority, application Japan, Jul. 26, 1978, 53/91203  
 Int. Cl.<sup>3</sup> H01L 7/00  
 U.S. Cl. 338—34 9 Claims

4,335,370  
**VEHICLE SECURITY DEVICE**  
 Douglas M. Scalle, 21 McGregor Rd., Ravenswood, Cumberland, and John M. Mullin, 11 Kirriemuir Gdns., Bishopbriggs, Glasgow, both of Scotland  
 Filed May 21, 1981, Ser. No. 265,726  
 Int. Cl.<sup>3</sup> B60R 25/04, 25/10  
 U.S. Cl. 340—64 12 Claims

4,335,371  
**DIGITAL ERROR CORRECTING TRIMMING IN AN ANALOG TO DIGITAL CONVERTER**  
 Joseph J. Connolly, Jr.; Thomas P. Redfern, and Thomas M. Frederiksen, all of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.  
 Filed Apr. 9, 1979, Ser. No. 28,464  
 Int. Cl.<sup>3</sup> H03K 13/08  
 U.S. Cl. 340—347 CC 7 Claims

4,335,372  
**DIGITAL SCALING APPARATUS**  
 Maurice B. Aufderheide, Scottsdale, and Sam M. Daniel, Tempe, both of Ariz., assignors to Motorola Inc., Schaumbur, Ill.  
 Filed Mar. 28, 1980, Ser. No. 134,859  
 Int. Cl.<sup>3</sup> G06F 3/00  
 U.S. Cl. 340—347 DD 11 Claims

4,335,373  
**METHOD FOR ANALYZING A DIGITAL-TO-ANALOG CONVERTER WITH A NONIDEAL ANALOG-TO-DIGITAL CONVERTER**  
 Edwin A. Sloane, Los Altos, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.  
 Continuation-in-part of Ser. No. 204,979, Nov. 7, 1980. This application May 18, 1981, Ser. No. 264,928  
 Int. Cl.<sup>3</sup> H03K 13/02  
 U.S. Cl. 340—347 CC 10 Claims

4,335,374  
**KEY DISCRIMINATION CIRCUIT**  
 Tomoaki Nyuji, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan  
 Continuation-in-part of Ser. No. 964,438, Nov. 28, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,834  
 Claims priority, application Japan, Dec. 2, 1977, 52-145234  
 Int. Cl.<sup>3</sup> G06F 3/02  
 U.S. Cl. 340—365 S 2 Claims

4,335,375  
**CONTAINER FOR AN ALARM TRANSMITTER ADAPTED FOR INSERTION INTO A WALL**  
 Daniel D. Schaeffer, 757 Ocean Ave., Santa Monica, Calif. 90402  
 Filed Feb. 13, 1978, Ser. No. 877,377  
 Int. Cl.<sup>3</sup> G08B 1/08, 13/08  
 U.S. Cl. 340—539 7 Claims

4,335,376  
**ELECTRONIC CONTROL DEVICE**  
 Ralph E. Marquardt, 2020 Eagle St. North, Cambridge, Ontario, Canada  
 Filed Apr. 12, 1979, Ser. No. 29,558  
 Int. Cl.<sup>3</sup> G08B 13/08  
 U.S. Cl. 340—547 9 Claims

4,335,377  
**MEDICAL ALERT ALARM**  
 John S. Bostic, Parma Heights, Ohio, assignor to Joseph E. Belavich, Plant City, Fla.  
 Filed Jul. 11, 1980, Ser. No. 167,786  
 Int. Cl.<sup>3</sup> G08B 3/00  
 U.S. Cl. 340—573 11 Claims

4,335,378  
**TIMED DUAL COMPARATOR ALARM**  
 Charles Coleman, Lakewood, Colo., assignor to Emerson Electric Company, St. Louis, Mo.  
 Filed Dec. 20, 1978, Ser. No. 971,510  
 Int. Cl.<sup>3</sup> G08B 17/10  
 U.S. Cl. 340—629 11 Claims

4,335,379  
**METHOD AND SYSTEM FOR PROVIDING AN AUDIBLE ALARM RESPONSIVE TO SENSED CONDITIONS**  
 John R. Martin, 2345 W. Mill Rd., Milwaukee, Wis. 53209  
 Filed Sep. 13, 1979, Ser. No. 75,218  
 Int. Cl.<sup>3</sup> G08B 17/10  
 U.S. Cl. 340—634 5 Claims

4,335,380  
**MULTI-BEAM RASTER SCAN DISPLAY MONITOR**  
 David Y. Wright, 560 McMunn, South Lyon, Mich. 48178  
 Filed Jun. 16, 1980, Ser. No. 159,570  
 Int. Cl.<sup>3</sup> H01J 46/00  
 U.S. Cl. 340—744 24 Claims

4,335,381  
**REMOTE CONTROL OF ELECTRICAL DEVICES**  
 Robin Palmer, Harlow, England, assignor to Rovex Limited, England  
 Filed Aug. 14, 1979, Ser. No. 66,550  
 Claims priority, application United Kingdom, Aug. 15, 1978, 33372/78; May 22, 1979, 7917702  
 Int. Cl.<sup>3</sup> H04Q 9/00  
 U.S. Cl. 340—825.21 36 Claims

4,335,382  
**TRAFFIC RADAR SYSTEM**  
 Bryce K. Brown, Decatur; Stephen Correll, Sadorus; Jay Schreiber, Villa Grove; Lawrence E. Mayfield, Decatur, and Darrell D. Jenkins, Argenta, all of Ill., assignors to Decatur Electronics, Inc., Decatur, Ill.  
 Filed Mar. 10, 1980, Ser. No. 128,510  
 Int. Cl.<sup>3</sup> G01S 13/60, 7/40  
 U.S. Cl. 343—8 12 Claims

4,335,383  
**METHOD AND APPARATUS FOR DIGITALLY DETERMINING THE SPEED OF A TARGET VEHICLE WHILE THE RADAR PLATFORM VEHICLE IS IN MOTION**  
 Fred M. Berry, Lenexa, Kans., assignor to Kustom Electronics, Inc., Lenexa, Kans.  
 Continuation of Ser. No. 11,210, Feb. 12, 1979, abandoned. This application Nov. 6, 1980, Ser. No. 204,587  
 Int. Cl.<sup>3</sup> G01S 13/58  
 U.S. Cl. 343—8 35 Claims

4,335,384  
**LOGARITHMIC AMPLIFIER CALIBRATION MEANS**  
 John C. Roos, Thousand Oaks, Calif., assignor to Bunker Ramo Corporation, Oak Brook, Ill.  
 Filed Jan. 10, 1980, Ser. No. 110,892  
 Int. Cl.<sup>3</sup> G01S 5/02  
 U.S. Cl. 343—114 14 Claims

4,335,385  
**STRIPLINE ANTENNAS**  
 Peter S. Hall, Swindon, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England  
 Filed Jul. 6, 1979, Ser. No. 55,259  
 Claims priority, application United Kingdom, Jul. 11, 1978, 29460/78  
 Int. Cl.<sup>3</sup> H01Q 1/38  
 U.S. Cl. 343—700 MS 16 Claims

4,335,386  
**BIFILAR ANTENNA TRAP**  
 Robert H. Johns, 3379 Papermill Rd., Huntingdon Valley, Pa. 19006  
 Continuation-in-part of Ser. No. 162,928, Jul. 17, 1980. This application Jan. 2, 1981, Ser. No. 222,241  
 Int. Cl.<sup>3</sup> H01Q 9/20, 1/14  
 U.S. Cl. 343—722 5 Claims



4,335,387  
**RADAR ANTENNA WITH ROTATING LINEAR POLARIZATION DESIGNED TO REDUCE JAMMING**  
 Francois Salvat, Jean Bouko, and Jean Le Foll, all of Paris, France, assignors to Thomson-CSF, Paris, France  
 Filed Jun. 12, 1980, Ser. No. 158,794  
 Claims priority, application France, Jun. 13, 1979, 79 15139  
 Int. Cl.<sup>3</sup> H01Q 15/24; G01S 7/36; H01Q 19/00  
 U.S. Cl. 343—756 5 Claims

4,335,388  
**NULL CONTROL OF MULTIPLE BEAM ANTENNA**  
 William G. Scott, Saratoga; Edgar W. Matthews, Jr., Los Altos; Howard H. S. Luh, Sunnyvale, all of Calif., and Charles A. Klein, Centerburg, Ohio, assignors to Ford Aerospace & Communications Corp., Dearborn, Mich.  
 Continuation of Ser. No. 13,597, Feb. 21, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 168,964  
 Int. Cl.<sup>3</sup> H01Q 3/30  
 U.S. Cl. 343—854 21 Claims

4,335,389  
**LIQUID DROPLET EJECTING RECORDING HEAD**  
 Yoshiaki Shirato, Yokohama; Yasushi Takatori, Sagami-hara; Toshitami Hara, Tokyo; Yukuo Nishimura, Sagami-hara, and Michiko Takahashi, Higashi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan  
 Filed Mar. 24, 1980, Ser. No. 133,140  
 Claims priority, application Japan, Mar. 27, 1979, 54-36041; Dec. 28, 1979, 54-171335  
 Int. Cl.<sup>3</sup> G01D 15/18  
 U.S. Cl. 346—140 R 11 Claims

4,335,390  
**CATHODE RAY TUBE PRINTING APPARATUS AND METHOD**  
 John G. Axford, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.  
 Filed Dec. 7, 1979, Ser. No. 101,343  
 Claims priority, application United Kingdom, Dec. 27, 1978, 49993/78  
 Int. Cl.<sup>3</sup> G01D 15/06  
 U.S. Cl. 346—158 13 Claims

4,335,391  
**NON-VOLATILE SEMICONDUCTOR MEMORY ELEMENTS AND METHODS OF MAKING**  
 Henry B. Morris, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.  
 Filed Dec. 11, 1978, Ser. No. 968,544  
 Int. Cl.<sup>3</sup> H01L 29/78  
 U.S. Cl. 357—23 11 Claims

4,335,392  
**SEMICONDUCTOR DEVICE WITH AT LEAST TWO SEMICONDUCTOR ELEMENTS**  
 Karl Reiter, Mannheim, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie Aktiengesellschaft, Mannheim, Fed. Rep. of Germany  
 PCT No. PCT/DE79/00020, § 371 Date Nov. 21, 1979, § 102(e) Date Nov. 21, 1979, PCT Pub. No. WO79/00817, PCT Pub. Date Oct. 18, 1979  
 PCT Filed Mar. 6, 1979, Ser. No. 175,208  
 Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 7808801[U]  
 Int. Cl.<sup>3</sup> H01L 23/16, 23/32, 29/74  
 U.S. Cl. 357—75 5 Claims

4,335,393  
**METHOD AND SYSTEM USING SEQUENTIALLY ENCODED COLOR AND LUMINANCE PROCESSING OF VIDEO TYPE SIGNALS TO IMPROVE PICTURE QUALITY**  
 Gilbert J. Pearson, Sunnyvale, Calif., assignor to Harris Video Systems, Inc., Sunnyvale, Calif.  
 Filed Apr. 15, 1980, Ser. No. 140,550  
 Int. Cl.<sup>3</sup> H04N 5/76, 9/42, 9/32, 9/535  
 U.S. Cl. 358—4 75 Claims

4,335,394  
**CROSSTALK FILTERING ARRANGEMENT WITH VARIABLE FREQUENCY FILTERING TO REMOVE EFFECTS OF FM CARRIER**  
 Henry R. Warren, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.  
 Filed Dec. 19, 1979, Ser. No. 105,111  
 Int. Cl.<sup>3</sup> H04N 5/795  
 U.S. Cl. 358—8 15 Claims

4,335,395  
**STANDARDS CONVERSION OF COLOR TELEVISION SIGNALS**  
 Christopher K. P. Clarke, Crawley, England, assignor to British Broadcasting Corporation, London, England  
 Filed Sep. 8, 1980, Ser. No. 185,068  
 Claims priority, application United Kingdom, Oct. 5, 1979, 7934695  
 Int. Cl.<sup>3</sup> H04N 9/42  
 U.S. Cl. 358—11 4 Claims

4,335,396  
**AUTOMATIC EQUALIZATION SYSTEM FOR TELEVISION RECEIVER**  
 Theodore S. Rzeszewski, Lombard, Ill., assignor to Matsushita Electric Corporation, Franklin Park, Ill.  
 Filed Nov. 13, 1980, Ser. No. 206,648  
 Int. Cl.<sup>3</sup> H04N 9/535  
 U.S. Cl. 358—21 R 8 Claims

4,335,397  
**METHOD AND APPARATUS FOR DIGITALLY ADJUSTING WHITE BALANCE**  
 Eiji Tamura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan  
 Filed Jun. 24, 1980, Ser. No. 162,640  
 Int. Cl.<sup>3</sup> H04N 9/535  
 U.S. Cl. 358—29 10 Claims

4,335,398  
**DIGITAL COLOR CONTROL METHOD AND MACHINE**  
 Mitsuhiro Yamada, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan  
 Filed Apr. 22, 1980, Ser. No. 142,650  
 Claims priority, application Japan, Apr. 23, 1979, 54-49077; Apr. 23, 1979, 54-49078; Apr. 23, 1979, 54-49079  
 Int. Cl.<sup>3</sup> G03F 3/00  
 U.S. Cl. 358—80 36 Claims

4,335,399  
**NORMALIZING CIRCUIT FOR COLOR PRINTING SYSTEM**  
 Fumio Matsumoto, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan  
 Filed Jun. 16, 1980, Ser. No. 159,620  
 Claims priority, application Japan, Jun. 18, 1979, 54-76626  
 Int. Cl.<sup>3</sup> G03F 3/00  
 U.S. Cl. 358—80 12 Claims

4,335,400  
**ADAPTIVE POST-FILTER FOR INFRARED SCAN CONVERTER**  
 Sen-Te Chow, Alexandria, and Tsan H. Lin, Vienna, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.  
 Filed Oct. 22, 1980, Ser. No. 199,419  
 Int. Cl.<sup>3</sup> H04N 5/14, 5/21, 5/33  
 U.S. Cl. 358—113 2 Claims

4,335,401  
**RAPID CORRELATION OF RECORDED INFORMATION**  
 George S. Zorbalas, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.  
 Filed Aug. 28, 1980, Ser. No. 181,998  
 Int. Cl.<sup>3</sup> G11B 15/46  
 U.S. Cl. 358—127 5 Claims

4,335,402  
**INFORMATION TRANSMISSION DURING FIRST-EQUALIZING PULSE INTERVAL IN TELEVISION**  
 David D. Holmes, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.  
 Filed Nov. 14, 1980, Ser. No. 206,946  
 Claims priority, application United Kingdom, Jul. 1, 1980, 8021570  
 Int. Cl.<sup>3</sup> H04N 7/08  
 U.S. Cl. 358—147 10 Claims

4,335,403  
**HORIZONTAL COUNTDOWN SYSTEM FOR TELEVISION RECEIVERS**  
 Gopal K. Srivastava, Buffalo Grove, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.  
 Filed Jan. 9, 1981, Ser. No. 223,611  
 Int. Cl.<sup>3</sup> H04N 5/04  
 U.S. Cl. 358—148 14 Claims

4,335,404  
**VIDEO SIGNAL MIXER APPARATUS AND METHOD**  
 John R. Martinson, Jr., 453 N. Doheny Dr., Apt. C, Beverly Hills, Calif. 90210  
 Filed Oct. 10, 1980, Ser. No. 195,797  
 Int. Cl.<sup>3</sup> H04N 5/44  
 U.S. Cl. 358—188 12 Claims

4,335,405  
**MOS-IMAGE SENSOR**  
 Toshio Sakane, and Tokuchi Tsunekawa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan  
 Filed Apr. 22, 1980, Ser. No. 142,749  
 Claims priority, application Japan, Apr. 28, 1979, 54-52621  
 Int. Cl.<sup>3</sup> H04N 3/15  
 U.S. Cl. 358—213 14 Claims

4,335,406  
**SOLID-STATE IMAGING DEVICE**  
 Shinya Ohba, Kokubunji; Masaharu Kubo, Hachioji; Iwao Takemoto, Tokyo; Shoji Hanamura, Kokubunji, and Masakazu Aoki, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
 Filed Jun. 26, 1980, Ser. No. 163,298  
 Claims priority, application Japan, Jul. 2, 1979, 54-82630  
 Int. Cl.<sup>3</sup> H04N 3/15  
 U.S. Cl. 358—213 6 Claims

4,335,407  
**SHARPNESS EMPHASIZING METHOD AND MACHINE USED IN A PICTURE REPRODUCING MACHINE**  
 Hitomi Atoji, Kyoto; Masuo Kunisawa, Uji; Atsuro Hirata, Kyoto, and Yasuaki Araki, Kyoto, all of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Tenjin-kitamachi, Japan  
 Filed May 1, 1980, Ser. No. 145,443  
 Claims priority, application Japan, May 2, 1979, 54-53507  
 Int. Cl.<sup>3</sup> H04N 1/40  
 U.S. Cl. 358—284 10 Claims

4,335,408  
**DIGITAL TRACKING SYSTEM**  
 Konrad M. Dinter, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.  
 Filed May 28, 1980, Ser. No. 153,969  
 Claims priority, application United Kingdom, Apr. 8, 1980, 8011560  
 Int. Cl.<sup>3</sup> G11B 21/10  
 U.S. Cl. 360—77 17 Claims

4,335,409  
**TAPE PACK EJECTING MECHANISM FOR TAPE PLAYER**  
 Tadashi Yokota; Wataru Watanabe, and Makoto Kondo, all of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan  
 Filed Feb. 21, 1980, Ser. No. 123,197  
 Claims priority, application Japan, Feb. 26, 1979, 54-020765  
 Int. Cl.<sup>3</sup> G11B 15/66, 5/78  
 U.S. Cl. 360—96.6 5 Claims

4,335,410  
**THIN FILM MAGNETIC TRANSDUCER**  
 William F. Neu, Oklahoma City, Okla., assignor to Magnex Corporation, San Jose, Calif.  
 Division of Ser. No. 3,380, Jan. 15, 1979, Pat. No. 4,260,450.  
 This application Apr. 4, 1980, Ser. No. 137,137  
 Int. Cl.<sup>3</sup> G11B 5/20  
 U.S. Cl. 360—123 5 Claims

4,335,411  
**LENGTH COUNTER FOR WEB TRANSPORT SYSTEM**  
 William A. Dischert, Camden, N.J., assignor to RCA Corporation, New York, N.Y.  
 Filed Jan. 28, 1980, Ser. No. 116,253  
 Int. Cl.<sup>3</sup> G11B 15/18, 15/48; B65H 23/08, 59/00  
 U.S. Cl. 360—137 2 Claims

4,335,412  
**TRIAX SAFETY CIRCUIT**  
 Felix Aschwanden, Thawil, Switzerland, assignor to RCA Corporation, Princeton, N.J.  
 Filed Feb. 13, 1981, Ser. No. 234,541  
 Claims priority, application United Kingdom, Sep. 12, 1980, 8029527  
 Int. Cl.<sup>3</sup> H02H 3/16  
 U.S. Cl. 361—50 11 Claims

4,335,413  
**CIRCUIT INTERRUPTER WITH REMOTE INDICATOR AND POWER SUPPLY**  
 Joseph C. Engel, Monroeville; John A. Wafer, Beaver; Bernard J. Mercier, Pittsburgh, and Joseph J. Matsko, Beaver, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.  
 Filed Apr. 15, 1980, Ser. No. 140,556  
 Int. Cl.<sup>3</sup> H02H 3/04  
 U.S. Cl. 361—93 10 Claims



4,335,414  
AUTOMATIC RESET CURRENT CUT-OFF FOR AN  
ELECTROSTATIC PRECIPITATOR POWER SUPPLY  
William G. Weber, West Chester, Ohio, assignor to United Air  
Specialists, Inc., Cincinnati, Ohio  
Filed Oct. 30, 1980, Ser. No. 202,314  
Int. Cl.<sup>3</sup> H02H 3/24

U.S. Cl. 361—100 15 Claims

4,335,415  
ANTENNA LIGHTNING ARRESTOR  
William D. Hooberry, 114 Enterprise St., Brunswick, Ga. 31520  
Filed Feb. 7, 1980, Ser. No. 119,465  
Int. Cl.<sup>3</sup> H02H 7/20, 3/08

U.S. Cl. 361—104 2 Claims

4,335,416  
TELEPHONE PROTECTOR MODULE HAVING FLAG  
INDICATOR  
Thomas A. Hollfelder, Huntington, and Paul V. De Luca, Pland-  
ome Manor, both of N.Y., assignors to Porta Systems Corp.,  
Syosset, N.Y.  
Filed Feb. 13, 1981, Ser. No. 234,209  
Int. Cl.<sup>3</sup> H02H 3/22

U.S. Cl. 361—119 3 Claims

4,335,417  
HEAT SINK THERMAL TRANSFER SYSTEM FOR ZINC  
OXIDE VARISTORS  
Eugene C. Sakshaug, Lanesborough, and Earl W. Stetson, Pitts-  
field, both of Mass., assignors to General Electric Company  
Continuation-in-part of Ser. No. 939,792, Sep. 5, 1978,  
abandoned. This application Apr. 7, 1980, Ser. No. 138,169  
Int. Cl.<sup>3</sup> H02H 3/22

U.S. Cl. 361—127 6 Claims

4,335,418  
ELECTRONIC INTERRUPTER  
Mark W. P. Clement, Owen Sound, Canada, assignor to General  
Signal Corporation, Stamford, Conn.  
Filed Oct. 27, 1980, Ser. No. 201,100  
Int. Cl.<sup>3</sup> H01H 47/32

U.S. Cl. 361—152 11 Claims

4,335,419  
INSULATED DUST CONTROL APPARATUS FOR USE IN  
AN EXPLOSIVE ENVIRONMENT  
Edward E. Hastings, 28 Wistar Rd., Villanova, Pa. 19085  
Filed Oct. 20, 1980, Ser. No. 198,739  
Int. Cl.<sup>3</sup> B05B 5/02

U.S. Cl. 361—228 15 Claims

4,335,420  
CORONA DISCHARGE DEVICE  
Tanaka Mitsuo, Machida; Tagawa Kazuaki, and Yano Takashi,  
both of Tokyo, all of Japan, assignors to Ricoh Co., Ltd.,  
Tokyo, Japan  
PCT No. PCT/JP79/00183, § 371 Date Mar. 11, 1980, § 102(e)  
Date Mar. 11, 1980, PCT Pub. No. WO80/00276, PCT Pub.  
Date Feb. 21, 1980  
PCT Filed Jul. 10, 1979, Ser. No. 209,101  
Claims priority, application Japan, Jul. 11, 1978, 53-84689  
Int. Cl.<sup>3</sup> H01T 19/04

U.S. Cl. 361—230 4 Claims

4,335,421  
LIGHT FIXTURE, LIGHT APERTURE AND METHOD OF  
UNIFORMLY ILLUMINATING AN OPTICALLY  
DIFFUSIVE VIEWING AREA  
Joseph W. Modia, and James McCarthy, III, both of 1508  
Edenton Ct., Fort Wayne, Ind. 46804  
Filed Mar. 17, 1980, Ser. No. 130,743  
Int. Cl.<sup>3</sup> G09F 13/10; G02B 5/08, 27/14; F21L 3/00; F21V 7/12

U.S. Cl. 362—223 22 Claims

4,335,422  
ELASTIC LIGHT MOUNTING TAPES  
John C. Van Ess, Chicago, Ill., assignor to Walter A. Ross,  
Schiller Park, Ill.  
Continuation of Ser. No. 14,225, Feb. 22, 1979, abandoned,  
which is a continuation-in-part of Ser. No. 966,439, Dec. 4, 1978,  
Pat. No. 4,244,014. This application Jul. 23, 1980, Ser. No.  
171,321  
The portion of the term of this patent subsequent to Jan. 6, 1998,  
has been disclaimed.  
Int. Cl.<sup>3</sup> F21V 21/00, 21/08

U.S. Cl. 362—388 12 Claims

4,335,423  
TRANSFORMER  
Akio Koizumi; Hiroshi Nakazawa, both of Tokyo, and Akira  
Endo, Tagajyo, all of Japan, assignors to Sony Corporation,  
Tokyo, Japan  
Filed Oct. 20, 1980, Ser. No. 198,451  
Claims priority, application Japan, Oct. 19, 1979, 54-135801  
Int. Cl.<sup>3</sup> H02M 3/335

U.S. Cl. 363—21 15 Claims

4,335,424  
CYCLING FIRING METHOD FOR BYPASS OPERATION  
OF BRIDGE CONVERTERS  
Zivan Zabar, 99-72 66th Rd., Apt. 9N, Forest Hills, N.Y. 11375  
Filed Aug. 25, 1980, Ser. No. 181,067  
Int. Cl.<sup>3</sup> H02H 7/125

U.S. Cl. 363—54 1 Claim

4,335,425  
DATA PROCESSING APPARATUS HAVING DIAGNOSIS  
FUNCTION  
Humio Goto; Chikahiko Izumi, and Riujiro Imai, all of Hadano,  
Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
Filed Dec. 13, 1979, Ser. No. 103,405  
Claims priority, application Japan, Dec. 29, 1978, 53-165216  
Int. Cl.<sup>3</sup> G06F 11/32

U.S. Cl. 364—200 9 Claims

4,335,426  
REMOTE PROCESSOR INITIALIZATION IN A  
MULTI-STATION PEER-TO-PEER  
INTERCOMMUNICATION SYSTEM  
Hiram M. Maxwell; Roger E. McKay; Niconedi P. Nacheber,  
Jr., and Daniel T. Sze, all of Boca Raton, Fla., assignors to  
International Business Machines Corporation, Armonk, N.Y.  
Filed Mar. 10, 1980, Ser. No. 129,004  
Int. Cl.<sup>3</sup> G06F 3/04, 15/16; H04M 11/00

U.S. Cl. 364—200 6 Claims

4,335,427  
METHOD OF SELECTING A PREFERRED DIFFERENCE  
IMAGE  
Willard F. Hunt, Cleveland, and Robert H. McCarthy, Chagrin  
Falls, both of Ohio, assignors to Technicare Corporation,  
Solon, Ohio  
Filed Apr. 21, 1980, Ser. No. 142,188  
Int. Cl.<sup>3</sup> G06F 15/42; H04N 5/32

U.S. Cl. 364—414 8 Claims

4,335,428  
ELECTRONIC SYSTEM FOR CONTROLLING AN  
AUTOMATIC TRANSMISSION IN RESPONSE TO  
CHANGES IN SLOPE  
Nobuaki Miki; Mutsumi Kawamoto, both of Nagoya; Hiroyuki  
Amano, Chiryu; Tsuneo Hida, Toyokawa, and Tsuyoshi Yo-  
shida, Toyota, all of Japan, assignors to Aisin-Waker Kabu-  
shiki Kaisha, Aichi, Japan  
Filed Jan. 24, 1980, Ser. No. 115,166  
Claims priority, application Japan, Feb. 14, 1979, 54-16483  
Int. Cl.<sup>3</sup> G06F 15/20; B60K 41/08

U.S. Cl. 364—424 8 Claims

4,335,429  
CONTROL APPARATUS FOR ENGINE/ELECTRIC  
HYBRID VEHICLE  
Shiro Kawakatsu, Suita, Japan, assignor to Daihatsu Motor Co.,  
Ltd., Ikeda, Japan  
Filed Mar. 12, 1980, Ser. No. 129,718  
Claims priority, application Japan, Mar. 20, 1979, 54-34977  
Int. Cl.<sup>3</sup> B60K 1/00

U.S. Cl. 364—424 26 Claims

4,335,430  
CONTROL AND COMPENSATION DEVICE IN AN  
ANTI-SKID CONTROL SYSTEM  
Taiji Ohmori, Kawagoe, and Makoto Sato, Kamifukuoka, both  
of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha,  
Shibuya, Japan  
Filed Feb. 14, 1980, Ser. No. 121,585  
Claims priority, application Japan, Mar. 16, 1979, 54-30723  
Int. Cl.<sup>3</sup> B60T 8/00

U.S. Cl. 364—426 7 Claims

4,335,431  
SKID CONTROL METHOD  
Junichi Takahashi, Katsuta, Japan, assignor to Hitachi, Ltd.,  
Tokyo, Japan  
Filed Mar. 10, 1980, Ser. No. 128,863  
Claims priority, application Japan, Mar. 14, 1979, 54-30447  
Int. Cl.<sup>3</sup> B60T 8/02

U.S. Cl. 364—426 11 Claims

4,335,432  
OPTIMAL VEHICLE FOLLOWING CONTROL SYSTEM  
Alan J. Pue, Columbia, Md., assignor to United States of Amer-  
ica, Washington, D.C.  
Filed Jan. 28, 1980, Ser. No. 115,651  
Int. Cl.<sup>3</sup> B61L 23/00

U.S. Cl. 364—436 9 Claims

4,335,433  
METHOD FOR CORRECTING NAVIGATION ERRORS  
DUE TO WATER CURRENTS  
Russell H. Bauer, Glendale, Md., and Madeleine Heidkamp,  
Buena Park, Calif., assignors to The United States of America  
as represented by the Secretary of the Navy, Washington,  
D.C.  
Filed Jun. 16, 1980, Ser. No. 160,049  
Int. Cl.<sup>3</sup> G06F 15/20, 15/50

U.S. Cl. 364—443 5 Claims

4,335,434  
ELECTRONICALLY CONTROLLED FRANKING  
MACHINE  
Kurt Baumann; Peter Kusche, both of Berlin, and Reinhard  
Redecker, Bielefeld, all of Fed. Rep. of Germany, assignors to  
Postalia GmbH, Berlin, Fed. Rep. of Germany  
Filed Apr. 28, 1980, Ser. No. 144,337  
Claims priority, application Fed. Rep. of Germany, Apr. 26,  
1979, 2916840  
Int. Cl.<sup>3</sup> G06F 15/20

U.S. Cl. 364—464 6 Claims

4,335,435  
METHOD OF CHANGING ROLLING SCHEDULE  
DURING ROLLING IN TANDEM ROLLING MILL  
Keiichi Miura, Kobe, Japan, assignor to Mitsubishi Denki Kabu-  
shiki Kaisha, Tokyo, Japan  
Filed Nov. 1, 1979, Ser. No. 90,311  
Claims priority, application Japan, Nov. 1, 1978, 53-135395  
Int. Cl.<sup>3</sup> G06F 15/46; B21B 37/00

U.S. Cl. 364—469 3 Claims

4,335,436  
MICROPROCESSOR-CONTROLLED EDM SYSTEM  
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research  
Incorporated, Yokohama, Japan  
Filed Dec. 7, 1979, Ser. No. 101,080  
Claims priority, application Japan, Dec. 8, 1978, 53-152500;  
Dec. 12, 1979, 53-154522  
Int. Cl.<sup>3</sup> G06F 15/46; B23P 1/08

U.S. Cl. 364—474 8 Claims

4,335,437  
CIRCUIT INTERRUPTER WITH ENERGY  
MANAGEMENT FUNCTIONS  
John T. Wilson; John A. Wafer, both of Beaver, and Joseph C.  
Engel, Monroeville, all of Pa., assignors to Westinghouse  
Electric Corp., Pittsburgh, Pa.  
Filed Apr. 15, 1980, Ser. No. 140,554  
Int. Cl.<sup>3</sup> H02H 3/08; G06F 15/56

U.S. Cl. 364—483 10 Claims

4,335,438  
METHOD AND APPARATUS FOR AUTOMATIC  
DISSOLUTION TESTING OF PRODUCTS  
Victor F. Smolen, 227 Timbercrest Rd., West Lafayette, Ind.  
47906  
Filed Apr. 17, 1980, Ser. No. 141,093  
Int. Cl.<sup>3</sup> G06F 15/46; G01N 31/00

U.S. Cl. 364—497 15 Claims



**4,335,439**  
**WEIGHT MONITORING DEVICE FOR STRIP METAL STOCK**  
 Andrew R. St. Denis, 3541 Rankin Ave., Windsor, Ontario, Canada  
 Filed Apr. 25, 1980, Ser. No. 143,729  
 Int. Cl.<sup>3</sup> G06F 15/46

U.S. Cl. 364—862 10 Claims

**4,335,440**  
**SIGNAL ENHANCEMENT CIRCUIT**  
 Vance B. Gold, Lombard, Ill., assignor to American Can Company, Greenwich, Conn.  
 Filed Dec. 20, 1979, Ser. No. 105,533  
 Int. Cl.<sup>3</sup> G06G 7/12; G06J 1/00

U.S. Cl. 364—571 4 Claims

**4,335,441**  
**ELECTRONICALLY CONTROLLED INDICATOR AND TESTING DEVICE FOR FRANKING MACHINES**  
 Kurt Baumann; Peter Kusche, both of Berlin, and Reinhard Redeker, Bielefeld, all of Fed. Rep. of Germany, assignors to Postalia GmbH, Offenbach am Main, Fed. Rep. of Germany  
 Filed Apr. 28, 1980, Ser. No. 144,336  
 Claims priority, application Fed. Rep. of Germany, Apr. 26, 1979, 2916811

Int. Cl.<sup>3</sup> G06F 15/20  
 U.S. Cl. 364—580 4 Claims

**4,335,442**  
**SYNCHRONOUS OSCILLATOR DEMODULATOR SYSTEM**  
 Soren B. Backe, Dundee, Ill., assignor to American Can Company, Greenwich, Conn.  
 Filed Dec. 20, 1979, Ser. No. 105,532  
 Int. Cl.<sup>3</sup> G06J 1/00

U.S. Cl. 364—608 10 Claims

**4,335,443**  
**ELECTRONIC ANGLE RESOLVER**  
 Baron C. Dickey, 982 Yorktown Dr., Sunnyvale, Calif. 94087  
 Filed Dec. 21, 1979, Ser. No. 106,044  
 Int. Cl.<sup>3</sup> G06G 7/22; G06J 1/00

U.S. Cl. 364—815 16 Claims

**4,335,444**  
**MULTIPLE PULSE-WIDTH MULTIPLIER**  
 Felix Blaschke, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany  
 Filed May 9, 1980, Ser. No. 148,141  
 Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919786

Int. Cl.<sup>3</sup> G06G 7/22  
 U.S. Cl. 364—815 9 Claims

**4,335,445**  
**SYSTEM FOR INTERFACING COMPUTERS WITH PROGRAMMABLE POWER SUPPLIES**  
 Sarkis Nercessian, Flushing, N.Y., assignor to Kepco, Inc., Flushing, N.Y.  
 Filed Feb. 26, 1979, Ser. No. 15,453  
 Int. Cl.<sup>3</sup> G06F 3/00

U.S. Cl. 364—900 3 Claims

**4,335,446**  
**TERMINAL EQUIPMENT FOR DATA-TRANSMISSION NETWORK INCLUDING DIGITALLY OPERATING MODEM**  
 Francesco Gandini, Turin; Giuseppe Giondano, Rivalba-Turin; Enrico Impallomeni, and Roberto Montagna, both of Turin, all of Italy, assignors to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy  
 Continuation of Ser. No. 902,164, May 2, 1978, abandoned. This application Dec. 6, 1979, Ser. No. 100,908  
 Claims priority, application Italy, May 2, 1977, 67967 A/77  
 Int. Cl.<sup>3</sup> H04B 12/00; G06F 7/48

U.S. Cl. 364—900 7 Claims

**4,335,447**  
**POWER OUTAGE RECOVERY METHOD AND APPARATUS FOR DEMAND RECORDER WITH SOLID STATE MEMORY**  
 John W. Jerrim, Lilburn, Ga., assignor to Sangamo Weston, Inc., Atlanta, Ga.  
 Filed Feb. 5, 1980, Ser. No. 118,830  
 Int. Cl.<sup>3</sup> G11C 11/00, 7/00

U.S. Cl. 364—900 9 Claims

**4,335,448**  
**ELECTRONIC CONTROL SYSTEM**  
 Bradford O. VanNess, Paradise Valley, Ariz., assignor to Engineered Systems, Inc., Tempe, Ariz.  
 Continuation of Ser. No. 13,007, Feb. 21, 1979, abandoned. This application Apr. 6, 1981, Ser. No. 251,310  
 Int. Cl.<sup>3</sup> G06F 3/04, 15/20

U.S. Cl. 364—900 10 Claims

**4,335,449**  
**SEMICONDUCTOR MEMORY DEVICE**  
 Jyoji Nokubo, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan  
 Filed Mar. 26, 1980, Ser. No. 133,999  
 Claims priority, application Japan, Mar. 26, 1979, 54/3518  
 Int. Cl.<sup>3</sup> G11C 11/40

U.S. Cl. 365—177 10 Claims

**4,335,450**  
**NON-DESTRUCTIVE READ OUT FIELD EFFECT TRANSISTOR MEMORY CELL SYSTEM**  
 Donald R. Thomas, Westford, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.  
 Filed Jan. 30, 1980, Ser. No. 116,736  
 Int. Cl.<sup>3</sup> G11C 11/40

U.S. Cl. 365—182 19 Claims

**4,335,451**  
**SIGNALING METHOD AND APPARATUS FOR ENHANCING ECHO IMAGES**  
 Mervyn L. Feuer, Grass Valley, Calif., assignor to Leonard Frazier, Suisun, Calif.  
 Continuation of Ser. No. 942,965, Sep. 18, 1978, abandoned. This application Mar. 24, 1980, Ser. No. 133,525  
 Int. Cl.<sup>3</sup> G01S 15/06

U.S. Cl. 367—115 15 Claims

**4,335,452**  
**ELECTRO-ACOUSTIC DEVICE FOR THE UNDERWATER SIGNALLING AND IDENTIFICATION OF A VESSEL**  
 Philippe Eberlin, Geneva, and Mario Rossi, Lausanne, both of Switzerland, assignors to Blanchut & Bertrand S.A., Switzerland  
 Filed Aug. 13, 1980, Ser. No. 178,379  
 Claims priority, application Switzerland, Aug. 14, 1979, 7424/79  
 Int. Cl.<sup>3</sup> H04B 11/00

U.S. Cl. 367—134 10 Claims

**4,335,453**  
**ELECTRONIC WATCH**  
 Jean-Claude Fatton, Le Landeron, Switzerland, assignor to Ebauches Electroniques S.A., Marin, Switzerland  
 Filed May 21, 1980, Ser. No. 151,780  
 Claims priority, application Switzerland, Jun. 1, 1979, 5133/79  
 Int. Cl.<sup>3</sup> G04B 19/24, 19/30; G04C 19/00

U.S. Cl. 368—30 4 Claims

**4,335,454**  
**GEAR TRAIN MECHANISM FOR A TIMEPIECE**  
 Haruyoshi Yamada, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan  
 Filed Nov. 9, 1979, Ser. No. 93,097  
 Claims priority, application Japan, Nov. 17, 1978, 53-141891  
 Int. Cl.<sup>3</sup> G04B 19/02

U.S. Cl. 368—220 9 Claims

**4,335,455**  
**METHOD AND APPARATUS FOR FOUR-WIRE TYPE TRANSMISSION OF DIGITAL MESSAGE SIGNALS**  
 Peter Hirschmann, Puchheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany  
 Filed Jun. 2, 1980, Ser. No. 155,389  
 Claims priority, application Fed. Rep. of Germany, Jul. 5, 1979, 2927228  
 Int. Cl.<sup>3</sup> H04M 3/00

U.S. Cl. 370—29 14 Claims

**4,335,456**  
**SWITCH-THROUGH UNIT FOR BIT GROUPS WITHIN A PROGRAM CONTROLLED, ELECTRONIC DATA SWITCHING SYSTEM**  
 Rainer Gaiser, Munich; Rolf Hagen, Unterhaching, and Bernhard Schaffer, Lochham, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany  
 Continuation of Ser. No. 887,964, Mar. 20, 1978, abandoned, which is a continuation of Ser. No. 660,939, Feb. 24, 1976, abandoned. This application Jan. 28, 1980, Ser. No. 116,235  
 Claims priority, application Fed. Rep. of Germany, Feb. 26, 1975, 2508323  
 Int. Cl.<sup>3</sup> H04J 3/00

U.S. Cl. 370—58 2 Claims

**4,335,457**  
**METHOD FOR SEMICONDUCTOR MEMORY TESTING**  
 James M. Early, Palo Alto, CA, assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.  
 Filed Aug. 8, 1980, Ser. No. 176,353  
 Int. Cl.<sup>3</sup> G01R 31/28; G11C 29/00

U.S. Cl. 371—28 7 Claims

**4,335,458**  
**MEMORY INCORPORATING ERROR DETECTION AND CORRECTION**  
 Thijs Krol, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.  
 Filed Apr. 27, 1979, Ser. No. 34,096  
 Claims priority, application Netherlands, May 2, 1978, 7804674  
 Int. Cl.<sup>3</sup> G06F 11/10

U.S. Cl. 371—38 11 Claims

**4,335,459**  
**SINGLE CHIP RANDOM ACCESS MEMORY WITH INCREASED YIELD AND RELIABILITY**  
 Richard L. Miller, P.O. Box 489, Harvard Square Post Office, Cambridge, Mass. 02238  
 Filed May 20, 1980, Ser. No. 151,690  
 Int. Cl.<sup>3</sup> G11C 29/00

U.S. Cl. 371—38 28 Claims

**4,335,460**  
**PRINTER SYSTEM HAVING PARITY CHECKING OF PRINT HAMMERS USING SOFTWARE CONTROL**  
 Richard D. Bolcavage, Kirkwood; Armand J. Ferraro, Endicott, both of N.Y., and Arthur E. Fleek, Cary, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.  
 Filed Jan. 28, 1980, Ser. No. 115,841  
 Int. Cl.<sup>3</sup> G06F 11/10

U.S. Cl. 371—49 16 Claims

**4,335,461**  
**INJECTION LASERS WITH LATERAL SPATIAL THICKNESS VARIATIONS (LSTV) IN THE ACTIVE LAYER**  
 William Streifer, Palo Alto; Donald R. Scifres, Los Altos, and Robert D. Burnham, Los Altos Hills, all of Calif., assignors to Xerox Corporation, Stamford, Conn.  
 Filed Aug. 25, 1980, Ser. No. 181,262  
 Int. Cl.<sup>3</sup> H01S 3/19

U.S. Cl. 372—45 5 Claims

**4,335,462**  
**APPARATUS AND METHOD FOR GENERATING A GLOW DISCHARGE**  
 Victor H. Hasson, and Hubertus M. Von Bergmann, both of Pretoria, South Africa, assignors to The South African Inventions Development Corporation, Pretoria, South Africa  
 Continuation of Ser. No. 958,858, Nov. 8, 1978, abandoned. This application Nov. 14, 1980, Ser. No. 207,095  
 Claims priority, application South Africa, Nov. 25, 1977, 77/7022; Feb. 5, 1978, 78/0669  
 Int. Cl.<sup>3</sup> H01S 3/097

U.S. Cl. 372—85 38 Claims

**4,335,463**  
**SIMULTANEOUS INTEGRAL MULTI-ACCESS TRANSMISSION SYSTEM ON TRANSMISSION LINES BY OPTICAL FIBRES**  
 Joseph Foucard, Valence, France, assignor to Crouzet, Paris, France  
 Filed Oct. 7, 1980, Ser. No. 194,906  
 Claims priority, application France, Oct. 15, 1979, 79 25741  
 Int. Cl.<sup>3</sup> H04K 1/04

U.S. Cl. 375—1 1 Claim



4,335,464  
DUAL MULTIPOINT DATA TRANSMISSION SYSTEM  
MODEM

Thomas R. Armstrong, Largo, Fla.; Gordon Bremer, Clearwater, and William Betts, Madeira Beach, all of Fla., assignors to Paradyne Corporation, Largo, Fla.  
Filed Jan. 24, 1980, Ser. No. 115,118  
Int. Cl. H04J 1/18

U.S. Cl. 375—43

2 Claims

4,335,465  
METHOD OF PRODUCING AN ACCELERATING  
ELECTRONS AND IONS UNDER APPLICATION OF  
VOLTAGE AND ARRANGEMENTS CONNECTED  
THEREWITH

Jens Christiansen, An den Hornwiesen 4, 8521 Erlangen-Buckenhof, and Christoph Schultheiss, Schleifweg 19, 8521 Erlangen-Uttenreuth, both of Fed. Rep. of Germany  
Filed Jan. 31, 1979, Ser. No. 8,162  
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1978, 2804393

Int. Cl. G21G 1/06; H01J 17/00  
U.S. Cl. 376—156

23 Claims

4,335,466  
METHOD AND APPARATUS FOR MEASURING  
IRRADIATED FUEL PROFILES

David M. Lee, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.  
Filed Mar. 27, 1980, Ser. No. 134,352  
Int. Cl. G21C 17/00

U.S. Cl. 376—257

16 Claims

4,335,467  
LIQUID METAL COOLED NUCLEAR REACTOR

Marcel Robin, Sevres, France, assignor to Commissariat a l'Energie Atomique, Paris, France  
Filed Jun. 22, 1979, Ser. No. 51,520  
Claims priority, application France, Jun. 23, 1978, 78 18821

U.S. Cl. 376—285

3 Claims

4,335,468  
SIMULTANEOUS TRANSMISSION SIGNAL  
DETECTION SYSTEM

George B. Foster, 7140 Linworth Rd., Worthington, Ohio 43085, and David E. Harris, 193 Clinton Hts., Columbus, Ohio 43202  
Continuation-in-part of Ser. No. 928,825, Jul. 28, 1978, abandoned. This application Jan. 9, 1980, Ser. No. 110,623  
Int. Cl. H04B 1/44

U.S. Cl. 455—67

38 Claims

4,335,469  
METHOD AND SYSTEM FOR RADIATING RF POWER  
FROM A TRAILING WIRE ANTENNA

Nelson B. Tharp, Ellicott City, and Harry F. Hartley, Glen Burnie, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 18, 1980, Ser. No. 160,354  
Int. Cl. H01Q 1/30

U.S. Cl. 455—125

7 Claims

4,335,470  
AUDIO DE-EMPHASIS CIRCUIT

James C. Marsh, Jr., and Marcus L. Snell, Jr., both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.  
Filed Oct. 29, 1980, Ser. No. 201,829

U.S. Cl. 455—205

9 Claims

## DESIGNS

JUNE 15, 1982

264,890  
PATIENT SUPPORTING HARNESS

Rutger Nandorf, S-593 00 Västervik, Sweden  
Filed Dec. 11, 1979, Ser. No. 102,572  
Claims priority, application Sweden, Jun. 11, 1979, 79-1435

U.S. Cl. D2—27

264,896  
TOOL BOX

Donald R. Perkins, 6 Hammond Rd., Natick, Mass. 01760  
Filed Sep. 24, 1979, Ser. No. 78,100

U.S. Cl. D3—74

264,891  
WELDING SHIELD

Claes E. Rosenius, Malmö, Sweden, assignor to Tegma AB, Malmö, Sweden  
Filed Nov. 14, 1979, Ser. No. 94,022

U.S. Cl. D2—233

264,897  
PAINT TRAY AND LINER THEREFOR

Morley L. Smith, Beaconsfield, Canada, assignor to T. S. Simms & Co. Limited, Saint John, Canada  
Filed Mar. 11, 1980, Ser. No. 129,811

U.S. Cl. D4—38.2

U.S. Cl. D2—233

264,892  
TIE OR SIMILAR ARTICLE

Dennis T. Stewart, Jr., 2801 Byron St., Wheaton, Md. 20902, and Jerome N. Corbett, 12406 Applecross Dr., Clinton, Md. 20735

U.S. Cl. D2—343

264,898  
CHAIR

Richard Baker, and Steven Baker, both of 880 Dillingham Rd., Pickering, Ontario, Canada (L1W 1Z6)  
Filed Dec. 10, 1979, Ser. No. 101,909

U.S. Cl. D6—26

U.S. Cl. D2—343

264,893  
ATHLETIC GLOVE FOR GOLF, TENNIS, BASEBALL  
AND RACQUETBALL

Carl Schroeder, 289 NW. Cerritos Dr., Palm Springs, Calif. 92262

U.S. Cl. D2—361

264,899  
CHAIR

Gerd Lange, Kapsweyer, Fed. Rep. of Germany, assignor to Schlapp Moebel GmbH & Co. KG, Neu-Anspach, Fed. Rep. of Germany

U.S. Cl. D6—47

Filed Jan. 21, 1980, Ser. No. 113,711  
Term of patent 14 years  
Int. Cl. D2—06

Filed Mar. 20, 1979, Ser. No. 22,157  
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 59

U.S. Cl. D6—47

264,894  
GLOVE BOX ORGANIZER

Marilyn F. Halder, 25956 Vista Dr. East, Capistrano Beach, Calif. 92624

U.S. Cl. D3—40

264,900  
CHAIR

Leon Rosen, Scarsdale, N.Y., assignor to The Pace Collection, New York, N.Y.  
Filed Jun. 8, 1979, Ser. No. 46,646

U.S. Cl. D6—56

Filed Jan. 19, 1981, Ser. No. 115,008  
Term of patent 14 years  
Int. Cl. D3—02

Filed Oct. 15, 1979, Ser. No. 84,997  
Term of patent 14 years  
Int. Cl. D6—01

U.S. Cl. D6—63

264,895  
FLEXIBLE HOSIERY CADDY CASE

Doris H. Hoefert, 188 River Dr., Cary, Ill. 60013  
Filed Nov. 26, 1979, Ser. No. 97,224

U.S. Cl. D3—48

264,902  
SEAT

Alan H. Friedman, Millburn, N.J., assignor to The Bean Station Furniture Factory, Bean Station, Tenn.  
Filed Oct. 15, 1979, Ser. No. 85,028

U.S. Cl. D6—63



264,903  
SOFA  
Walter F. Dybal, Westminster, and Robert D. Anderson, Orange, both of Calif., assignors to Shelly & Anderson Furniture Mfg. Co., Compton, Calif.  
Filed Apr. 15, 1980, Ser. No. 140,566  
Term of patent 14 years  
Int. Cl. D6—01

U.S. Cl. D6—63

264,904  
CLOTHES HANGER HOLDER  
Rolf W. Helbig, 24-6679 Shelter Bay Rd., Mississauga, Ontario, Canada (L5N 2A2)  
Filed Jul. 10, 1979, Ser. No. 56,349  
Claims priority, application Canada, Jun. 22, 1979, 220679  
Term of patent 14 years  
Int. Cl. D6—08; D8—08

U.S. Cl. D6—113

264,905  
PLASTIC BAG HOLDING RACK  
Gerhard Adamson, West Milford, N.J., assignor to Union Carbide Corporation, Danbury, Conn.  
Filed Apr. 22, 1980, Ser. No. 142,733  
Term of patent 14 years  
Int. Cl. D6—06

U.S. Cl. D6—114

264,906  
COMBINED DISPLAY AND STORAGE UNIT FOR A MODEL TRAIN  
Ollie N. Franklin, Rte. 1, Box 265A, Anderson, Mo. 64831  
Filed Dec. 28, 1979, Ser. No. 108,678  
Term of patent 14 years  
Int. Cl. D06—04

U.S. Cl. D6—127

264,907  
COMBINED ROTATING CAFETERIA TYPE FOOD SERVICE COUNTER AND DISPLAY SHELF  
Donald R. Barnhill, Hamilton, Ohio, assignor to B&W Metals Company, Inc., Fairfield, Ohio  
Filed Aug. 6, 1979, Ser. No. 63,931  
Term of patent 14 years  
Int. Cl. D6—03, 04

U.S. Cl. D6—146

264,908  
COMBINED CUP DISPENSER AND STRAW HOLDER  
Jonathan Cooper, Clarke County, Ga., assignor to Royston Manufacturing Corporation, Royston, Ga.  
Filed May 27, 1980, Ser. No. 153,432  
Term of patent 14 years  
Int. Cl. D9—99; D7—06

U.S. Cl. D6—157

264,909  
TABLE  
John W. Caldwell, 1829 Warwick Rd., San Marino, Calif. 91108  
Filed Nov. 13, 1979, Ser. No. 93,212  
Term of patent 14 years  
Int. Cl. D6—03

U.S. Cl. D6—177

264,910  
COMBINED SEAT AND BACKREST FOR A CHAIR  
William I. Stephens, Emmaus, Pa., assignor to Knoll International, Inc., New York, N.Y.  
Filed May 11, 1979, Ser. No. 38,124  
Term of patent 14 years  
Int. Cl. D6—06

U.S. Cl. D6—197

264,911  
HANGER FOR ORGANIZING JEWELRY  
George R. Annis, Hurst, and Warren E. Persky, Dallas, both of Tex., assignors to Item House, Inc., Dallas, Tex.  
Filed Mar. 14, 1980, Ser. No. 130,265  
Term of patent 14 years  
Int. Cl. D6—04, 08

U.S. Cl. D6—248

264,912  
GARMENT HANGER  
Malcolm Bliss, Ridgefield, Conn., and David McCalmont, Bloomfield, N.J., assignors to J. C. Penney Co., Inc., New York, N.Y.  
Filed Jul. 1, 1980, Ser. No. 164,940  
Term of patent 14 years  
Int. Cl. D6—08

U.S. Cl. D6—254

264,913  
FOOD DISH  
James F. Pomroy, St. Paul, Minn., assignor to Plastics, Inc., St. Paul, Minn.  
Filed Oct. 13, 1977, Ser. No. 841,694  
Term of patent 14 years  
Int. Cl. D07—01

U.S. Cl. D7—21

264,914  
DINNER PLATE OR SIMILAR ARTICLE  
Frank A. Warren, Denville, N.J., assignor to Syracuse China Corporation, Syracuse, N.Y.  
Filed Jun. 19, 1980, Ser. No. 161,117  
Term of patent 14 years  
Int. Cl. D07—01

U.S. Cl. D7—23

264,915  
DINNER PLATE OR SIMILAR ARTICLE  
Frank A. Warren, Denville, N.J., assignor to Syracuse China Corporation, Syracuse, N.Y.  
Filed Jun. 19, 1980, Ser. No. 161,118  
Term of patent 14 years  
Int. Cl. D07—01

U.S. Cl. D7—23

264,916  
DINNER PLATE OR SIMILAR ARTICLE  
Alan H. Friedman, Millburn, N.J., assignor to Syracuse China Corporation, Syracuse, N.Y.  
Filed Jul. 25, 1980, Ser. No. 172,145  
Term of patent 14 years  
Int. Cl. D07—01

U.S. Cl. D7—23

264,917  
DINNER PLATE OR SIMILAR ARTICLE  
Alan H. Friedman, Millburn, N.J., assignor to Syracuse China Corporation, Syracuse, N.Y.  
Filed Jul. 25, 1980, Ser. No. 172,146  
Term of patent 14 years  
Int. Cl. D07—01

U.S. Cl. D7—23

264,918  
DINNER PLATE OR SIMILAR ARTICLE  
David P. G. Williams, Englewood, N.J., assignor to Syracuse China Corporation, Syracuse, N.Y.  
Filed Sep. 15, 1980, Ser. No. 187,210  
Term of patent 14 years  
Int. Cl. D07—01

U.S. Cl. D7—23

264,919  
DINNER PLATE OR SIMILAR ARTICLE  
Frank A. Warren, Denville, N.J., assignor to Syracuse China Corporation, Syracuse, N.Y.  
Filed Jun. 19, 1980, Ser. No. 161,119  
Term of patent 14 years  
Int. Cl. D07—01

U.S. Cl. D7—35

264,920  
DINNER PLATE OR SIMILAR ARTICLE  
Frank A. Warren, Denville, N.J., assignor to Syracuse China Corporation, Syracuse, N.Y.  
Filed Jun. 19, 1980, Ser. No. 161,120  
Term of patent 14 years  
Int. Cl. D07—01

U.S. Cl. D7—35

264,921  
DINNER PLATE OR SIMILAR ARTICLE  
Frank A. Warren, Denville, N.J., assignor to Syracuse China Corporation, Syracuse, N.Y.  
Filed Jun. 19, 1980, Ser. No. 161,121  
Term of patent 14 years  
Int. Cl. D07—01

U.S. Cl. D7—35

264,922  
DINNER PLATE OR SIMILAR ARTICLE  
Frank A. Warren, Denville, N.J., assignor to Syracuse China Corporation, Syracuse, N.Y.  
Filed Jul. 14, 1980, Ser. No. 168,692  
Term of patent 14 years  
Int. Cl. D07—01

U.S. Cl. D7—35

264,923  
DINNER PLATE OR SIMILAR ARTICLE  
Frank A. Warren, Denville, N.J., assignor to Syracuse China Corporation, Syracuse, N.Y.  
Filed Jul. 14, 1980, Ser. No. 168,695  
Term of patent 14 years  
Int. Cl. D07—01

U.S. Cl. D7—35

264,924  
CUTTING AND SERVING BOARD OR THE LIKE  
James B. Swett, Altamonte Springs, Fla., assignor to Dart Industries, Inc., Northbrook, Ill.  
Filed Apr. 28, 1980, Ser. No. 144,467  
Term of patent 14 years  
Int. Cl. D07—04

U.S. Cl. D7—46

264,925  
STAPLER  
Michael Bass, North Plainfield, and Charles P. Housel, Hackensack, both of N.J., assignors to The Bates Manufacturing Company, Hackettstown, N.J.  
Filed Oct. 3, 1979, Ser. No. 81,385  
Term of patent 14 years  
Int. Cl. D19—02

U.S. Cl. D8—50

264,926  
PITCHER WITH SCREW TOP  
Donald R. McClelland, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio  
Filed Jul. 2, 1980, Ser. No. 164,549  
Term of patent 14 years  
Int. Cl. D07—01

U.S. Cl. D7—65

264,927  
CAN HOLDER  
Karl A. Kurzius, 4246 Eubank, NE, Albuquerque, N. Mex. 87111  
Filed Aug. 18, 1980, Ser. No. 179,342  
Term of patent 14 years  
Int. Cl. D07—99

U.S. Cl. D7—70

264,928  
POT OR PAN RESTRAINT WITH SLOTTED BASE FOR ENGAGING RADIAL BARS OF RECREATION VEHICLE STOVE TOP GRATING  
Dominic J. DiFede, 2431 Tartarian Way, Union City, Calif. 94587  
Filed Apr. 7, 1980, Ser. No. 138,157  
Term of patent 14 years  
Int. Cl. D7—99

U.S. Cl. D7—136

264,929  
GARDEN TOOL  
Peter Haddad, 118 Taylor St., Titusville, Fla. 32780  
Filed Dec. 4, 1978, Ser. No. 966,102  
Term of patent 14 years  
Int. Cl. D8—01

U.S. Cl. D8—09

264,930  
DRILL GUIDE  
Raymond Lindsay, Arcadia, Calif., assignor to The La-Bar Co., Inc., Duarte, Calif.  
Filed Jul. 25, 1979, Ser. No. 60,507  
Term of patent 14 years  
Int. Cl. D8—05

U.S. Cl. D8—70



264,931  
HAMMER IMPLEMENT HEAD  
Dale A. Jones, Rte. One, Palmetto, Ga. 30268  
Division of Ser. No. 857,797, Dec. 5, 1977, Pat. No. Des.  
257,826. This application Apr. 4, 1980, Ser. No. 137,377  
Term of patent 14 years  
Int. Cl. D8—02  
U.S. Cl. D8—78

264,932  
EMERGENCY EXIT DOOR LATCH WITH PANIC BAR  
Joseph T. Miller, Frederick, and Roy E. VanDerLinden, New  
Windsor, both of Md., assignors to Reliable Security Systems,  
Cockeysville, Md.  
Filed Oct. 1, 1979, Ser. No. 80,251  
Term of patent 14 years  
Int. Cl. D8—07  
U.S. Cl. D8—315

264,933  
METER BOX PADLOCK  
Marvin G. Woempner, Rte. 4, Box 707, Thomasville, N.C. 27360  
Filed May 5, 1980, Ser. No. 146,912  
Term of patent 14 years  
Int. Cl. D8—07  
U.S. Cl. D8—334

264,934  
ROPE HOOK  
Kenneth Brooks, 469 S. Delaware Ave., Lindenhurst, N.Y. 11757  
Filed May 16, 1980, Ser. No. 150,315  
Term of patent 14 years  
Int. Cl. D8—08  
U.S. Cl. D8—367

264,935  
COMBINED SUPPORT AND DISPLAY BRACKET FOR A  
SELF-CONTAINED BREATHING APPARATUS  
Theodore Ziaylek, Jr., Yardley, Pa., assignor to Ziamatic Cor-  
poration, Yardley, Pa.  
Filed Jun. 13, 1980, Ser. No. 159,033  
Term of patent 14 years  
Int. Cl. D6—04; D8—08  
U.S. Cl. D8—373

264,936  
CURTAIN ROD  
Damien Ross, 1615 Gouin Blvd. West, Montreal, Quebec, Can-  
ada  
Filed Apr. 29, 1980, Ser. No. 144,176  
Claims priority, application Canada, Feb. 13, 1980, 13-02-80-1  
Term of patent 14 years  
Int. Cl. D8—08  
U.S. Cl. D8—376

264,937  
BOTTLE  
James B. Groark, London, England, assignor to Seagram United  
Kingdom Limited, Great Britain  
Filed Jun. 27, 1980, Ser. No. 163,575  
Term of patent 14 years  
Int. Cl. D9—01  
U.S. Cl. D9—349

264,938  
BOTTLE OR THE LIKE  
Hugh J. Stock, Saratoga, Calif., assignor to Pacer Technology &  
Resources, Inc., Campbell, Calif.  
Filed Jul. 21, 1980, Ser. No. 170,518  
Term of patent 14 years  
Int. Cl. D9—01  
U.S. Cl. D9—352

264,939  
BOTTLE OR THE LIKE  
Hugh J. Stock, Saratoga, Calif., assignor to Pacer Technology &  
Resources, Inc., Campbell, Calif.  
Filed Jul. 21, 1980, Ser. No. 170,519  
Term of patent 14 years  
Int. Cl. D9—01  
U.S. Cl. D9—352

264,940  
BOTTLE OR THE LIKE  
Hugh J. Stock, Saratoga, Calif., assignor to Pacer Technology  
and Resources, Inc., Campbell, Calif.  
Filed Aug. 25, 1980, Ser. No. 180,649  
Term of patent 14 years  
Int. Cl. D9—01  
U.S. Cl. D9—352

264,941  
BOTTLE OR THE LIKE  
Hugh J. Stock, Saratoga, Calif., assignor to Pacer Technology  
and Resources, Inc., Campbell, Calif.  
Filed Aug. 25, 1980, Ser. No. 180,665  
Term of patent 14 years  
Int. Cl. D9—01  
U.S. Cl. D9—370

264,942  
BOTTLE  
Warren J. Schieser, Dublin, and Craig L. Duffey, Galena, both  
of Ohio, assignors to Liqui-Box Corporation, Worthington,  
Ohio  
Filed May 27, 1980, Ser. No. 153,191  
Term of patent 14 years  
Int. Cl. D9—01  
U.S. Cl. D9—401

264,943  
HOUSING FOR CLOCK OR TIMER  
Gene R. Hammond, Torrington, Conn., assignor to Cole &  
Mason U.S.A., Ltd., Great Neck, N.Y.  
Filed May 6, 1980, Ser. No. 147,403  
Term of patent 14 years  
Int. Cl. D10—01  
U.S. Cl. D10—1

264,944  
CLOCK  
Gerald C. Palmer, Eagan, Minn., assignor to Sakon Industries,  
Inc., New York, N.Y.  
Filed Jun. 16, 1980, Ser. No. 159,683  
Term of patent 14 years  
Int. Cl. D10—01  
U.S. Cl. D10—15

264,945  
WRISTWATCH  
Brian Pennell, 9 Cod Fish La., Weston, Conn. 06883  
Filed Feb. 4, 1980, Ser. No. 118,497  
Term of patent 14 years  
Int. Cl. D10—02  
U.S. Cl. D10—32

264,946  
WATCHCASE  
Yoshio Hirabayashi, Suwa, Japan, assignor to Kabushiki Kaisha  
Suwa Seikosha, Tokyo, Japan  
Filed May 9, 1980, Ser. No. 148,334  
Claims priority, application Japan, Nov. 12, 1979, 47297  
Term of patent 14 years  
Int. Cl. D10—02  
U.S. Cl. D10—38

264,947  
RING  
George J. Solow, 7 Fieldstone La., Great Neck, N.Y. 11020;  
Jack Guttschneider, 200 E. 71st St., New York, N.Y. 10021,  
and Peter H. Solow, 6 Madison Ave., Jericho, N.Y. 11753  
Filed Mar. 31, 1980, Ser. No. 136,295  
Term of patent 14 years  
Int. Cl. D11—01  
U.S. Cl. D11—36

264,948  
MEDALLION  
Thaddeus Krawchuk, and Christine Opalinski, both of Winnipeg,  
Canada, assignors to Ukrainian Catholic Mission of the Most  
Holy Redeemer, Winnipeg, Canada  
Filed Apr. 21, 1980, Ser. No. 142,074  
Term of patent 14 years  
Int. Cl. D11—01  
U.S. Cl. D11—96

264,949  
TREE ORNAMENT  
Lucy Smart, 229 51st St., Lindenhurst, N.Y. 11791  
Filed May 23, 1980, Ser. No. 152,654  
Term of patent 14 years  
Int. Cl. D11—05  
U.S. Cl. D11—118

264,950  
FIGURINE OF A KOALA BEAR  
Jesus A. Santa-Eulalia Carbajales, and Javier B. Santa-Eulalia  
Carbajales, both of Montevideo, Uruguay, assignors to John  
J. Madison Company, Inc., Laguna Hills, Calif.  
Filed Mar. 9, 1979, Ser. No. 19,229  
Term of patent 14 years  
Int. Cl. D11—02  
U.S. Cl. D11—158

264,951  
FIGURINE OF A HUSKY PUP  
Jesus A. Santa-Eulalia Carbajales, and Javier B. Santa-Eulalia  
Carbajales, both of Montevideo, Uruguay, assignors to John  
J. Madison Company, Inc., Laguna Hills, Calif.  
Filed Oct. 4, 1979, Ser. No. 81,912  
Term of patent 14 years  
Int. Cl. D11—02  
U.S. Cl. D11—158

264,952  
FIGURINE OF A SEAL  
Jesus A. Santa-Eulalia Carbajales, and Javier B. Santa-Eulalia  
Carbajales, both of Montevideo, Uruguay, assignors to John  
J. Madison Company, Inc., Laguna Hills, Calif.  
Filed Dec. 17, 1979, Ser. No. 104,694  
Term of patent 14 years  
Int. Cl. D11—02  
U.S. Cl. D11—158

264,953  
MOTORCYCLE  
Hiroshi Shimoyama, Fujimi, Japan, assignor to Honda Giken  
Kogyo Kabushiki Kaisha, Tokyo, Japan  
Filed Jul. 30, 1979, Ser. No. 62,227  
Claims priority, application Japan, Feb. 6, 1979, 54/4217  
Term of patent 14 years  
Int. Cl. D12—11  
U.S. Cl. D12—110

264,954  
BICYCLE BOTTLE CAGE  
James R. Blackburn, Campbell, Calif., assignor to Jim Black-  
burn Designs, Campbell, Calif.  
Filed Aug. 29, 1979, Ser. No. 70,854  
Term of patent 14 years  
Int. Cl. D12—11  
U.S. Cl. D12—114

264,955  
STROLLER  
Frederick M. Johnson, 762 Lazy Circle Dr., Vista, Calif. 92083  
Filed May 15, 1980, Ser. No. 149,822  
Term of patent 14 years  
Int. Cl. D12—12  
U.S. Cl. D12—129

264,956  
TIRE  
Claude A. Hart, Sutton Coldfield, England, assignor to Dunlop  
Limited, London, England  
Filed Jul. 9, 1980, Ser. No. 167,062  
Claims priority, application United Kingdom, Feb. 2, 1980,  
80993439  
Term of patent 14 years  
Int. Cl. D12—15  
U.S. Cl. D12—146

264,957  
CENTER HUB FOR A STEERING WHEEL  
John R. Schinella, 3317 Greentree Dr., Bloomfield Hills, Mich.  
48013, and Herbert L. Adams, III, 1036 San Carlos Rd.,  
Pebble Beach, Calif. 93953  
Filed Mar. 15, 1979, Ser. No. 20,659  
Term of patent 14 years  
Int. Cl. D12—16  
U.S. Cl. D12—176



264,958  
WHEEL ASSEMBLY FOR POULTRY CAGE-TOP  
SERVICE VEHICLE  
Gerald L. Kitson, 9709 Belding Rd. NE., Rockford, Mich. 49341  
Continuation of Ser. No. 577,196, May 14, 1975, abandoned,  
which is a continuation of Ser. No. 315,288, Dec. 15, 1972,  
abandoned, which is a division of Ser. No. 160,244, Jun. 6, 1971,  
Pat. No. Des. 288,024. This application Dec. 29, 1976, Ser. No.  
755,580  
Term of patent 14 years  
Int. Cl. D12—16  
U.S. Cl. D12—204

264,959  
TRANSFORMER CORE MEMBER  
Junpei Ota, Matsudo; Masaru Wasaki, Chiba, and Tadashi  
Mitsui, Tokyo, all of Japan, assignors to TDK Electronics Co.  
Ltd., Tokyo, Japan  
Filed Jun. 22, 1979, Ser. No. 51,005  
Claims priority, application Japan, Jan. 25, 1979, 54-002041  
Term of patent 14 years  
Int. Cl. D13—02  
U.S. Cl. D13—4

264,960  
HOUSING FOR A SILICON CONTROLLED RECTIFIER  
DEVICE  
Ronald Secrest, P.O. Box 61, Langhorne, Pa. 19047  
Filed Oct. 9, 1979, Ser. No. 82,500  
Term of patent 14 years  
Int. Cl. D13—02  
U.S. Cl. D13—4

264,961  
COVER FOR BATTERY CASE  
Terry Oxenreider, Wernersville, Pa., assignor to General Bat-  
tery Corporation, Reading, Pa.  
Filed Mar. 6, 1980, Ser. No. 127,730  
Term of patent 14 years  
Int. Cl. D13—02  
U.S. Cl. D13—10

264,962  
PORTABLE POWER SOURCE FOR A GRASS CUTTER  
Ruedi Fellmann, Dietlikon, Switzerland, assignor to Max Lan-  
genstein Feld- und Gartengeräte, Illertissen, Fed. Rep. of  
Germany  
Filed Mar. 24, 1980, Ser. No. 133,329  
Claims priority, application Fed. Rep. of Germany, Sep. 24,  
1979, MR898  
Term of patent 14 years  
Int. Cl. D13—01  
U.S. Cl. D13—11

264,963  
COMPONENT MOUNTING PLATE FOR A PC BOARD  
INDICATOR AND CONTROL DEVICE  
Ralph J. McComas, Boulder Creek, Calif., assignor to Percep-  
tion Electronics, Inc., San Jose, Calif.  
Filed Jun. 1, 1979, Ser. No. 44,523  
Term of patent 14 years  
Int. Cl. D13—03  
U.S. Cl. D13—12

264,964  
HEAT SINK OR SIMILAR ARTICLE  
Howard G. Hinshaw, Dallas, Tex., assignor to Thermalloy In-  
corporated, Dallas, Tex.  
Filed Jul. 14, 1980, Ser. No. 168,541  
Term of patent 14 years  
Int. Cl. D13—03  
U.S. Cl. D13—23

264,965  
ELECTRICAL CONNECTOR ADAPTER  
Robert H. Frantz, Newville, Pa., assignor to AMP Incorporated,  
Harrisburg, Pa.  
Filed Dec. 17, 1979, Ser. No. 103,875  
Term of patent 14 years  
Int. Cl. D13—03  
U.S. Cl. D13—24

264,966  
VIDEO TAPE MAGAZINE  
Kimiyoshi Ban, Kasukabe, Japan, assignor to Tokyo Shibaura  
Denki Kabushiki Kaisha, Kawasaki, Japan  
Filed Jun. 24, 1980, Ser. No. 161,306  
Claims priority, application Japan, Dec. 26, 1979, 54-54358  
Term of patent 14 years  
Int. Cl. D14—01  
U.S. Cl. D14—11

264,967  
TELEPHONE CONSOLE  
Alfred R. Ender, West Windsor Township, Mercer County, and  
Robert F. Iacullo, Tenafly, both of N.J., assignors to Western  
Electric Company, Incorporated, New York, N.Y.  
Filed May 8, 1980, Ser. No. 147,779  
Term of patent 14 years  
Int. Cl. D14—03  
U.S. Cl. D14—56

264,968  
RADIO TRANSMITTER  
Keisuke Iwata, Tokyo, Japan, assignor to Iwata Electric Co.,  
Ltd., Tokyo, Japan  
Filed Jul. 23, 1979, Ser. No. 59,987  
The portion of the term of this patent subsequent to Jul. 22,  
1994, has been disclaimed.  
Term of patent 14 years  
Int. Cl. D14—03  
U.S. Cl. D14—95

264,969  
CABINET FOR ELECTRONIC EQUIPMENT  
Michael J. McGourty, Littleport, England, assignor to Pye  
(Electronic Products) Limited, Cambridge, England  
Filed Feb. 9, 1979, Ser. No. 10,878  
Claims priority, application United Kingdom, Nov. 8, 1978,  
985888/78; Nov. 8, 1978, 985889/78  
Term of patent 14 years  
Int. Cl. D14—03  
U.S. Cl. D14—96

264,970  
FLOPPY DISK READER/RECORDER OR THE LIKE  
Vincent Giannotti, Jr., Austin, Tex., assignor to International  
Business Machines Corporation, Armonk, N.Y.  
Filed Jun. 16, 1980, Ser. No. 159,714  
Term of patent 14 years  
Int. Cl. D14—02  
U.S. Cl. D14—109

264,971  
MODULAR COMPUTER SYSTEM PRINTER  
George E. Chadima, Jr., Cedar Rapids, Iowa, assignor to Norand  
Corporation, Cedar Rapids, Iowa  
Filed Nov. 5, 1979, Ser. No. 91,184  
Term of patent 14 years  
Int. Cl. D14—02  
U.S. Cl. D14—111

264,972  
FLUID PUMP  
John R. McMillin, Maplewood, Minn., and Gene A. Tracy,  
Amery, Wis., assignors to The Coca-Cola Company, Atlanta,  
Ga. and The Cornelius Company, Anoka, Minn.  
Filed Jan. 31, 1980, Ser. No. 117,339  
Term of patent 14 years  
Int. Cl. D15—02  
U.S. Cl. D15—7

264,973  
SEWING MACHINE CONTROLLER  
Susumu Hanyu, Hachioji, Japan, assignor to Janome Sewing  
Machine Co. Ltd., Tokyo, Japan  
Filed Nov. 1, 1979, Ser. No. 90,484  
Claims priority, application Japan, Sep. 7, 1979, 54-37475  
Term of patent 14 years  
Int. Cl. D15—99  
U.S. Cl. D15—72

264,974  
APPARATUS FOR CLEANING DRILLING MUD AND  
FLUIDS  
Don D. Summers, P.O. Box 30106, Lafayette, La. 70503  
Filed Feb. 6, 1980, Ser. No. 119,092  
Term of patent 14 years  
Int. Cl. D15—09  
U.S. Cl. D15—199

264,975  
PHOTOGRAPHIC CAMERA  
Norbert Schlagheck; Herbert Schultes, both of Fuerstenfeld-  
bruck, and Karlheinz Rubner, Munich, all of Fed. Rep. of  
Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed.  
Rep. of Germany  
Filed Dec. 10, 1979, Ser. No. 102,322  
Claims priority, application Fed. Rep. of Germany, Sep. 6,  
1979, SMR559G163791  
Term of patent 14 years  
Int. Cl. D16—01  
U.S. Cl. D16—1

264,976  
EYE GLASS CASE  
Dorothy R. Greene, 28064 Fairacres La., P.O. Box 69, Helen-  
dale, Calif. 92342  
Filed Mar. 31, 1980, Ser. No. 135,707  
Term of patent 14 years  
Int. Cl. D16—99  
U.S. Cl. D16—129

264,977  
DRUM Mallet  
Robert Starks, 1831 N. Gramercy Pl., Hollywood, Calif. 90028  
Filed Mar. 17, 1980, Ser. No. 131,145  
Term of patent 14 years  
Int. Cl. D17—04  
U.S. Cl. D17—22

264,978  
PRINTING DEVICE  
Toshiro Ohno, Tokyo, Japan, assignor to Oki Electric Industry  
Co., Ltd., Tokyo, Japan  
Filed Sep. 4, 1980, Ser. No. 184,190  
Claims priority, application Japan, Mar. 14, 1980, 55-009698  
Term of patent 14 years  
Int. Cl. D18—02  
U.S. Cl. D18—13

264,979  
CALENDAR HOLDER  
Edward J. Goldman, P.O. Box 2113, Mansfield, Mass. 02048  
Filed Jul. 28, 1980, Ser. No. 173,088  
Term of patent 14 years  
Int. Cl. D19—03  
U.S. Cl. D19—20

264,980  
MECHANICAL GAME  
Michael W. Nuttall, Pasadena, Calif., assignor to Tomy Kogyo  
Co., Inc., Tokyo, Japan  
Filed May 18, 1979, Ser. No. 40,598  
Term of patent 14 years  
Int. Cl. D21—01  
U.S. Cl. D21—2

264,981  
DOLL HOUSE OR SIMILAR ARTICLE  
Charles L. Clemons, 2180 Hillside Dr., Eau Claire, Wis. 54701  
Filed Mar. 10, 1980, Ser. No. 128,954  
Term of patent 14 years  
Int. Cl. D21—01  
U.S. Cl. D21—114

264,982  
TOY CAROUSEL  
Hubert H. Jackson, 1875 Catalpa Way, Hayward, Calif. 94545  
Filed Mar. 31, 1980, Ser. No. 135,520  
Term of patent 14 years  
Int. Cl. D21—01  
U.S. Cl. D21—124

264,983  
EXERCISER  
Terry Logan, 1004 Michigan Ave., Santa Monica, Calif. 90404  
Filed Sep. 21, 1979, Ser. No. 77,736  
Term of patent 14 years  
Int. Cl. D21—02  
U.S. Cl. D21—198

264,984  
ICE SKATE BLADE  
Icaro Olivieri, Montebelluna, Italy, assignor to Gamebridge  
Inc., St. Jerome, Canada  
Filed Jun. 24, 1980, Ser. No. 162,602  
Term of patent 14 years  
Int. Cl. D21—02  
U.S. Cl. D21—225



264,985  
SKI ROPE HANDLE AND HOLDER  
Terry M. Haber, Santa Ana, Calif.; James H. Wilson, 29962 Happy Sparran, Laguna Niguel, Calif. 92677, and Edward E. Darrow, 1811 Bridal Path Way, Santa Ana, Calif. 92705, assignors to James H. Wilson and Edward E. Darrow, both of Laguna Niguel, Calif., a part interest  
Filed May 19, 1980, Ser. No. 151,198  
Term of patent 14 years  
Int. Cl. D21—02

U.S. Cl. D21—230

264,986  
BOWLING PIN CORE  
Herbert J. Booms, 1723 S. Van Dyke, Bad Axe, Mich. 48413  
Filed Apr. 28, 1980, Ser. No. 145,581  
Term of patent 14 years  
Int. Cl. D21—02

U.S. Cl. D21—233

264,987  
ROCKING TOY  
Maebelle C. Wise, P.O. Box 453, Munday, Tex. 76371  
Filed Jul. 22, 1980, Ser. No. 171,085  
Term of patent 14 years  
Int. Cl. D21—03

U.S. Cl. D21—251

264,988  
FISHING REEL FOR MOUNTING ON ARCHERY BOW  
Robert L. Finlay, Emporia, Kans., assignor to BPE, Inc., Emporia, Kans.  
Filed Aug. 25, 1980, Ser. No. 180,868  
Term of patent 14 years  
Int. Cl. D22—05

U.S. Cl. D22—25

264,989  
SUPPORT DEVICE FOR SIGHTING FIREARMS  
Agneta S. Palm nee Wohlfahrt, Prostrvägen 43, S-871 00 Härnösand; Lars Wohlfahrt, Sjöfullsbacken 15, S-155 25 Stockholm, and Thomas Wohlfahrt, Bygatan 20, S-260 40 Viken, all of Sweden  
Filed Oct. 4, 1978, Ser. No. 948,443  
Claims priority, application Sweden, Apr. 4, 1978, 78-909  
Term of patent 14 years  
Int. Cl. D22—99

U.S. Cl. D22—99

264,990  
WOOD AND COAL BURNING STOVE  
Peter Kilham, Box 98, Mill Rd., Foster, R.I. 02825  
Filed Jun. 16, 1980, Ser. No. 160,101  
Term of patent 14 years  
Int. Cl. D23—03

U.S. Cl. D23—97

264,991  
APPARATUS FOR PREPARING SPECIMENS FOR HISTOLOGICAL EXAMINATION  
Robert S. Quandt, Libertyville, Ill., assignor to Sybron Corporation, Rochester, N.Y.  
Filed Jun. 12, 1980, Ser. No. 158,855  
Term of patent 14 years  
Int. Cl. D24—02

U.S. Cl. D24—8

264,992  
HYDROTHERAPY SPA  
Lino Z. Topete, 1845 E. San Antonio St., San Jose, Calif. 95116  
Filed Nov. 19, 1979, Ser. No. 95,206  
Term of patent 14 years  
Int. Cl. D24—01; D23—02; D25—99  
U.S. Cl. D24—38

264,993  
SIMULATED BREAST NURSER  
Judith Kestenberg, New York, N.Y., assignor to Child Development Research, Sands Point, N.Y.  
Filed Oct. 24, 1979, Ser. No. 88,042  
Term of patent 14 years  
Int. Cl. D24—04

U.S. Cl. D24—47

264,994  
CANISTER FOR LIQUID MEDICATION AND WATER  
S. Mark Rippley, 302 Island Dr., Richardson, Tex. 75081  
Filed Apr. 11, 1980, Ser. No. 139,355  
Term of patent 14 years  
Int. Cl. D24—04

U.S. Cl. D24—56

264,995  
RESTAURANT BUILDING  
John E. Gearhart, Mt. Wolf, Pa.  
Filed Jul. 2, 1980, Ser. No. 165,364  
Term of patent 14 years  
Int. Cl. D25—03

U.S. Cl. D25—11

264,996  
SCULPTURED VENTILATING CONCRETE BLOCK  
Arnold C. Siedschlag, 3219 E. Earll Dr., Phoenix, Ariz. 85018  
Filed Apr. 11, 1980, Ser. No. 139,351  
Term of patent 14 years  
Int. Cl. D25—01

U.S. Cl. D25—91

264,997  
VENTILATING CONCRETE BLOCK  
Arnold C. Siedschlag, Phoenix, Ariz., assignor to Warren F. B. Lindsley, Phoenix, Ariz., a part interest  
Filed Apr. 11, 1980, Ser. No. 139,279  
Term of patent 14 years  
Int. Cl. D25—01

U.S. Cl. D25—97

264,998  
LOUVERED CONCRETE BLOCK  
Arnold C. Siedschlag, Phoenix, Ariz., assignor to Warren F. B. Lindsley, Phoenix, Ariz., a part interest  
Filed Apr. 11, 1980, Ser. No. 139,350  
Term of patent 14 years  
Int. Cl. D25—01

U.S. Cl. D25—97

264,999  
CIGARETTE LIGHTER  
Laura S. Eisenberg, Mt. Vernon, N.Y., assignor to Seymour C. Yuter, Briarcliff Manor, N.Y.  
Filed Dec. 20, 1979, Ser. No. 105,716  
Term of patent 14 years  
Int. Cl. D27—05

U.S. Cl. D27—41

265,000  
PORTABLE FLUORESCENT LIGHT  
Noel E. Zeller, White Plains, N.Y., assignor to Zelco Industries, Inc., Mt. Vernon, N.Y.  
Filed Feb. 28, 1980, Ser. No. 120,131  
Term of patent 14 years  
Int. Cl. D26—02

U.S. Cl. D26—42

265,001  
LAMP  
Ellis M. Graham, 6316 Linwood Ave., Norfolk, Va. 23513  
Filed Jan. 23, 1979, Ser. No. 6,334  
Term of patent 14 years  
Int. Cl. D26—05

U.S. Cl. D26—104

265,002  
RADIANT HEAT HAIR DRYER  
Otto Hubner, Mauerkircher Strasse 199, Herzog Park, Munich (8000 Munchen 81), Fed. Rep. of Germany  
Filed Jan. 24, 1980, Ser. No. 114,850  
Term of patent 14 years  
Int. Cl. D28—03

U.S. Cl. D28—13

265,003  
CURLING IRON  
Steven R. Groner, Glen Ellyn, Ill., assignor to Sunbeam Corporation, Chicago, Ill.  
Filed Jul. 11, 1980, Ser. No. 167,587  
Term of patent 14 years  
Int. Cl. D28—03

U.S. Cl. D28—35

265,004  
DENTAL FLOSS HOLDER  
Michael D. Davis, Box 25, Sadorus, Ill. 61872  
Filed Apr. 7, 1980, Ser. No. 138,200  
Term of patent 14 years  
Int. Cl. D24—99

U.S. Cl. D28—64

265,005  
ELECTRIC AMBIENT AIR BREATHING PUMP  
Edwin Reinhorn, 8402-E N. Magnolia, Santee, Calif. 92071  
Filed May 12, 1980, Ser. No. 149,277  
Term of patent 14 years  
Int. Cl. D24—01; D15—02

U.S. Cl. D29—7

265,006  
FILTERING FACE PIECE  
William T. Levy, London, England, assignor to Martindale Protection Limited, London, England  
Filed Oct. 3, 1979, Ser. No. 81,441  
Claims priority, application United Kingdom, Apr. 4, 1979, 989357

Term of patent 14 years  
Int. Cl. D29—99

U.S. Cl. D29—8

265,007  
SNOW REMOVAL DEVICE  
Robert J. Cuta, 5017 Twin Oaks Dr., Madison, Wis. 53714  
Filed Feb. 28, 1980, Ser. No. 125,691  
Term of patent 14 years  
Int. Cl. D7—05

U.S. Cl. D32—49

265,008  
APPLIQUE FOR A SHIRT OR THE LIKE  
E'Su B. O'Bassey, Newcastle upon Tyne, England, assignor to Continents Five Agencies Limited, Newcastle upon Tyne, England  
Filed Dec. 10, 1979, Ser. No. 101,683  
Claims priority, application United Kingdom, Jun. 15, 1979, 990313

Term of patent 14 years  
Int. Cl. D5—04

U.S. Cl. D33—32 R

265,009  
BOTTLE CRATE  
Theodor M. Box, Brielle, N.J., assignor to Cities Service Company, Tulsa, Okla.  
Filed May 1, 1980, Ser. No. 145,490  
Term of patent 14 years  
Int. Cl. D9—04

U.S. Cl. D34—40

265,010  
CARRIER FOR CONTAINERS OR THE LIKE  
Prentice J. Wood, Hapeville, Ga., assignor to The Mead Corporation, Dayton, Ohio  
Filed May 19, 1980, Ser. No. 151,532  
Term of patent 14 years  
Int. Cl. D9—04

U.S. Cl. D34—44

265,011  
EXPANDED PANEL OF EXTRUDED METAL  
William L. Jury, Royal Park, Australia, assignor to John McIlwraith Industries, Ltd., Royal Park, Australia  
Filed Mar. 28, 1980, Ser. No. 134,790  
Claims priority, application Australia, Oct. 2, 1979, 79,143  
Term of patent 14 years  
Int. Cl. D25—01

U.S. Cl. D92—26

265,012  
SAFE WITH DEPOSIT BOX  
Dieter Eppler, Geesthacht, and Karl-Heinz Kremson, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany  
Filed Apr. 30, 1980, Ser. No. 145,045

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, MR 10887

Term of patent 14 years  
Int. Cl. D99—00

U.S. Cl. D99—28

265,013  
SAFE  
Dieter Eppler, Geesthacht, and Karl-Heinz Kremson, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany  
Filed Apr. 30, 1980, Ser. No. 145,046

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, MR 10887

Term of patent 14 years  
Int. Cl. D99—00

U.S. Cl. D99—28



265,014  
SAFE DEPOSIT BOX  
Dieter Eppler, Geesthacht, and Karl-Heinz Kremson, Hamburg,  
both of Fed. Rep. of Germany, assignors to Hauni-Werke  
Körber & Co. KG, Hamburg, Fed. Rep. of Germany  
Filed Apr. 30, 1980, Ser. No. 145,047  
Claims priority, application Fed. Rep. of Germany, Nov. 8,  
1979, 10887  
Term of patent 14 years  
Int. Cl. D99—00  
U.S. Cl. D99—28

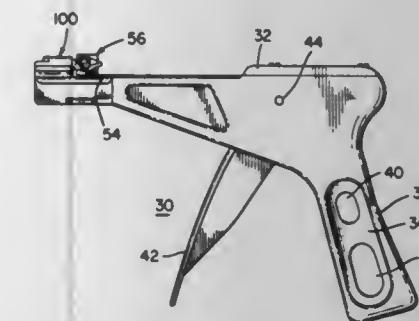
## REISSUES

JULY 20, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,996  
STRAP TENSION SENSING AND CUT OFF MECHANISM  
Walter Pobuta, Elizabeth, and Charles Dolgos, Linden, both of  
N.J., assignors to Thomas & Betts Corporation, Raritan, N.J.  
Original No. 4,064,918, dated Dec. 27, 1977, Ser. No. 776,489,  
Mar. 10, 1977. Application for reissue Dec. 4, 1979, Ser. No.  
100,119

Int. Cl.<sup>3</sup> B21F 9/02  
U.S. Cl. 140—123.6 29 Claims



1. A strap tension sensing and cut off mechanism comprising:  
stationary block means having a first end and a second end and  
an intermediate wall intermediate said first and second ends;  
movable block means having a first end and a second end, said  
movable block means first end adjacent said stationary block  
means first end and said movable block means second end  
adjacent said intermediate wall; means for applying a force to  
said first end of said movable block means; pin means having a  
first position in engagement with said movable block means to  
prevent the movement of said movable block means in re-  
sponse to the force applied thereto and a second position out of  
engagement with said movable block means to permit move-  
ment of said movable block means in response to the force  
applied thereto; and selectively presettable means coupled to  
said stationary block means for applying a selected restraining  
force to said pin means to position said pin means in said first  
position; said pin means moved from said first to said second  
position when the force applied to said first end of said move-  
able block means exceeds the selected restraining force upon  
said pin means.

Re. 30,997  
TAPER HEADED FASTENER TO INCREASE WORK  
FATIGUE LIFE

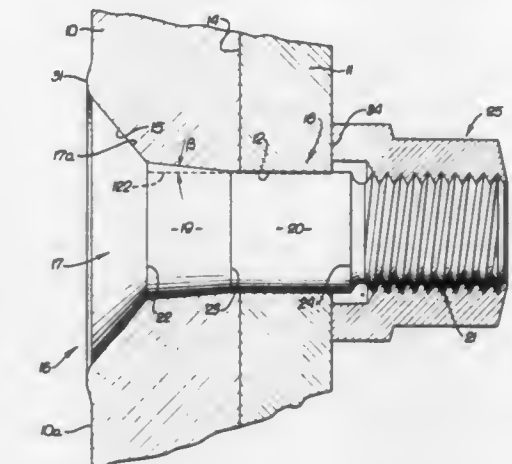
Franklin S. Briles, 1301 Dolphin, Corona del Mar, Calif. 92625  
Original No. 4,050,833, dated Sep. 27, 1977, Ser. No. 600,388,  
Jul. 30, 1975. Application for reissue Jan. 16, 1979, Ser. No.  
3,867

Int. Cl.<sup>3</sup> F16B 5/02  
U.S. Cl. 403—388 9 Claims

1. In a fastening assembly capable of displacing work material  
between first and second locations, the first location being  
proximate the junction between a workbore and a conical  
countersink surface in the work, the second location being at  
the work surface adjacent and closely bounding the counter-  
sink surface, the combination that comprises:

- a fastener head and shank, the head being conical to  
closely interfit the work countersink surface, the conical  
head defining an included conical angle of at least about  
100°;
- the shank defining first, second and third sections in a  
lengthwise axially forward sequence away from the head,  
the third section being threaded to receive a tightening  
nut, the second section being cylindrical and having an  
outer diameter to closely fit the workbore diameter,
- the first shank section being conically tapered forwardly  
away from the head and toward the second section and

being sufficiently oversized in relation to the workbore  
that interference force will develop in response to forward  
displacement and seating of the fastener into the work,  
thereby to effect said displacement of work material be-  
tween said locations, said first section taper being less than  
about 4° and greater than about  $\frac{1}{4}$ °, the work to include  
first and second panels, the combined axial extents of said  
conical head and said shank first section being less than the

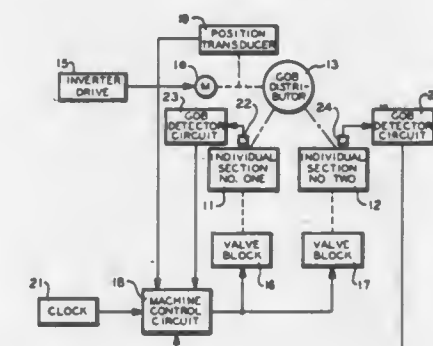


thickness of said first panel, whereby said first section will  
be located entirely within the first panel,  
d. the work to have a rear side face into which said counter-  
sink is sunk, whereby when said fastener is seated in said  
work said work rear side face will form a rearward bulge  
extending annularly about the rearward facing side of the  
head at said second location, the entirety of the bulge  
being immediately proximate to the radially outermost  
periphery of the head.

Re. 30,998  
HOT GOB DETECTOR FOR CONTROLLING A  
GLASSWARE FORMING MACHINE

Homer D. F. Peters, Sylvania, Ohio, assignor to Owens-Illinois,  
Inc., Toledo, Ohio  
Original No. 4,162,909, dated Jul. 31, 1979, Ser. No. 856,473,  
Dec. 1, 1977. Application for reissue Jul. 30, 1981, Ser. No.  
288,252

Int. Cl.<sup>3</sup> C03B 9/40  
U.S. Cl. 65—163 16 Claims



1. In a glassware forming machine including means for  
distributing gobs of molten glass at a predetermined rate from  
a source of the gobs; means for forming glassware articles in a  
timed, predetermined sequence of steps from the gobs received  
from the distributing means; means for generating timing sig-  
nals; and control means responsive to the timing signals for



cyclically controlling the actuation of the forming means in cycles of the timed, predetermined sequence of steps, the improvement comprising: a gob detection means responsive to the presence of a gob proximate the forming means for generating a time reference signal to the control means and wherein the control means includes means responsive to said time reference signal for adjusting the starting time of the subsequent forming cycle of the timed, predetermined sequence of steps.

Re. 30,999  
**HUMIDIFIER DRIVE SYSTEM**  
 Theodore E. Tinsler, Sidney, Ohio, assignor to White-Westinghouse Corporation, Pittsburgh, Pa.  
 Original No. 4,112,015, dated Sep. 5, 1978, Ser. No. 790,012, Apr. 22, 1977. Continuation of Ser. No. 597,527, Jul. 21, 1975, abandoned. Application for reissue Sep. 3, 1980, Ser. No. 183,760

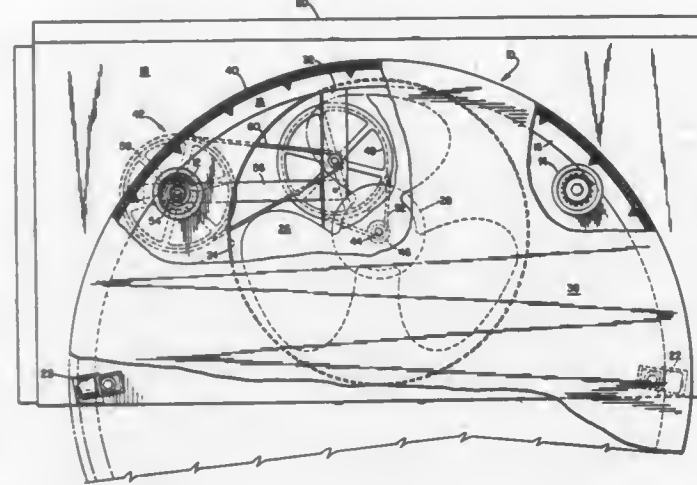
Int. Cl.<sup>3</sup> B01F 3/04

U.S. Cl. 261—92

18 Claims

16. In a humidifier of the type embodying a rotatable media wheel rotating on a horizontal axis so that a lower sector passes through a water reservoir and in which humidifier an airflow path is provided from the exterior of the humidifier to and through the water soaked portion of the rotating media wheel above the reservoir to a humidified air exhaust path from the humidifier, the improvement comprising: a support structure having an upright panel provided with an opening, a media wheel at one side of the panel, means including drive roller means at said one side of said panel for rotatably supporting and driving said media wheel in operative association with said opening, a driving shaft for said drive roller means having bearing support on said panel and

extending through said panel, an electric motor mounted on said support structure, said motor having a rotary motor shaft each end of which projects from respective ends of the motor; a fan mounted on and fixedly secured on one end of the motor shaft disposed concentric with and adjacent said panel opening to force air



through the opening toward said media wheel, a plural belt and pulley high speed reduction drive system, with input and output pulleys located on the opposite side of said panel from said media wheel and with an input pulley directly secured on the other end of said motor shaft and an output pulley secured on said roller driving shaft.

## PLANT PATENTS

GRANTED JULY 20, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,867  
**ROSE PLANT**  
 Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277  
 Filed Dec. 1, 1980, Ser. No. 212,016  
 Int. Cl.<sup>3</sup> A01H 5/00

U.S. Cl. Plt.—7

1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit, substantially as illustrated and described, characterized by buds and flowers variegated or striped, in differing degrees and patterns, with red and white, the bud being pointed in the early opening stage, resembling in form Yellow Doll (miniature — U.S. Plant Pat. No. 2,450), with the full open flower being rather flat with many (40 or more) petals ranging from long (outer petals) to quite short (inner petals); and further characterized by a plant of compact, vigorous, well rounded shape, with main stems and shoots of average thorniness, the said plant being easy to propagate from soft wood cuttings, with an abundance of small semi-glossy to matt foliage, the flowers being born singly or several to the stem in clusters.

4,868  
**ROSE PLANT — MEIRILOCRA VARIETY**  
 Marie L. Meiland, Antibes, France, assignor to Conard-Pyle Company, West Grove, Pa.  
 Filed Sep. 26, 1980, Ser. No. 191,133  
 Int. Cl.<sup>3</sup> A01H 5/00

U.S. Cl. Plt.—15

1 Claim

1. A new and distinct variety of Hybrid Tea rose plant of vegetative reproduction characterized by the fact that: from the physical point of view the plant with bronze green adult wood is erect, forms double flowers having consistent petals which are buttercup yellow on the inside and tangerine orange on the outside with a Chinese yellow unguis on the upper surface, and bears few prickles; and from the biological point of view the plant has vigorous vegetation, is highly susceptible to forcing, is not particularly susceptible to cryptogamic diseases, and forms flowers which last normally when cut having petals which drop off cleanly; substantially as shown and described.



## PATENTS

GRANTED JUL. 20, 1982

### ERRATA

For CLASS	See PATENT NO.
464-111.....	4,339,931
374-162.....	4,339,951
411-466.....	4,339,983
350-106.....	4,340,301
148-428.....	4,340,425
376-342.....	4,340,443
524-005.....	4,340,510
524-504.....	4,340,511
523-122.....	4,340,512
524-013.....	4,340,513
524-077.....	4,340,514
524-274.....	4,340,515
523-216.....	4,340,516
524-059.....	4,340,517
524-061.....	4,340,518
523-414.....	4,340,519
523-209.....	4,340,520
524-002.....	4,340,521
524-766.....	4,340,522
524-504.....	4,340,523
524-297.....	4,340,524
524-292.....	4,340,526
524-432.....	4,340,527
524-513.....	4,340,528
524-105.....	4,340,529
524-515.....	4,340,530
524-556.....	4,340,531
524-854.....	4,340,532
524-099.....	4,340,533
524-099.....	4,340,534
548-440.....	4,340,540
548-503.....	4,340,541
549-368.....	4,340,542
549-414.....	4,340,543
549-356.....	4,340,544
549-241.....	4,340,545
424-049.....	4,340,628
071-123.....	4,340,765



# PATENTS

GRANTED JULY 20, 1982

## GENERAL AND MECHANICAL

4,339,830

### BASEBALL GLOVE

Kyozo Sasaki, Ashiya, Japan, assignor to Sasaki Kabushiki Kaisha, Osaka, Japan

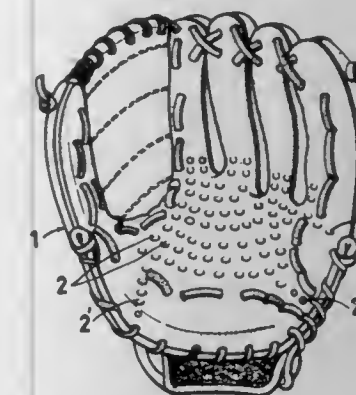
Filed Sep. 11, 1979, Ser. No. 74,810

Claims priority, application Japan, Sep. 18, 1978, 53-128917

Int. Cl.<sup>3</sup> A41D 13/10

U.S. Cl. 2-19

6 Claims



1. A baseball glove or mitt comprising:
  - a front portion of engaging a ball and a rear portion for receiving the hand of a wearer;
  - said front portion including a palm portion comprising a single thickness sheet of leather only, which substantially corresponds to the palm of the hand of the wearer and which is used for catching a ball; and
  - said palm portion having in the outer surface thereof means for increasing the flexibility of said palm portion and for dampening rotation of a ball when caught thereby, said means comprising a plurality of dimple-like recesses hot died into said outer surface.

4,339,831

### DYNAMIC ANNULUS HEART VALVE AND RECONSTRUCTION RING

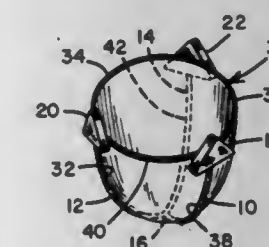
Keith M. Johnson, Coon Rapids, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 27, 1981, Ser. No. 248,624

Int. Cl.<sup>3</sup> A61F 1/22

U.S. Cl. 3-1.5

19 Claims



10. A prosthetic heart valve for permanent implantation in the heart valve annulus comprising:
  - a. expansible valve frame means further comprising a plurality of flexible, curved valve struts and means for joining one end of each valve strut together to form a curved, open framework, the other free ends of said valve struts extending in a common direction with respect to the other and spaced from one another;
  - b. a like plurality of valve leaflets made of thin, flexible, impermeable sheet material, each leaflet formed to fit between adjacent ones of said valve struts and having a

- free edge extending in an arc between the respective free ends of said valve struts;
- c. means for attaching said leaflets from the joined end to the free end of adjacent ones of said valve struts to form a fluid tight covering over said framework; and
- d. support means for attaching the free ends of said valve struts to the tissue annulus, whereby said leaflets may bellow out and contact the tissue annulus during closure of said valve and may collapse inwardly against one another during opening of said valve.

4,339,832

### FLUSH MOUNTED POP UP DRAIN FITTING

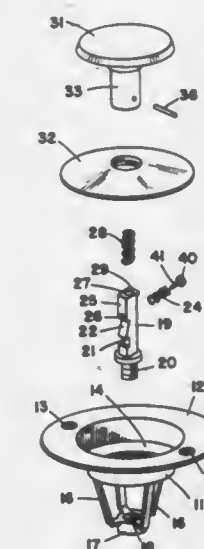
Casper Cuschera, 800 Durham Rd., Fremont, Calif. 94538

Filed Apr. 25, 1980, Ser. No. 143,791

Int. Cl.<sup>3</sup> A47K 1/14; E03C 1/26

U.S. Cl. 4-287

6 Claims



1. In a drain valve including a drain body having a flow channel therethrough and a post extending axially through said flow channel, and a drain sealing cover provided with a tubular portion having a central passage receiving said post for slidable translation thereabout and radial clearance therefrom, said drain sealing cover being translatable from a first upper position to a second lower position, detent means in said post for selectively securing said post and said tubular portion with said drain sealing cover in said second position, the improvement comprising an annular lip extending radially inwardly in said flow channel and disposed at the lower end of said drain body, said drain sealing cover impinging on said lip when in said second position to effect a seal of said flow channel, the uppermost extent of said drain sealing cover extending substantially flush with the upper end of said drain body when in said second position.

4,339,833

### RECIPROCATING HYDRO-MASSAGE APPARATUS

Gerald D. Mandell, 5427 N. Bryn Mawr, Ventura, Calif. 93003

Filed Dec. 31, 1980, Ser. No. 221,838

Int. Cl.<sup>3</sup> A47C 19/12

U.S. Cl. 4-542

9 Claims

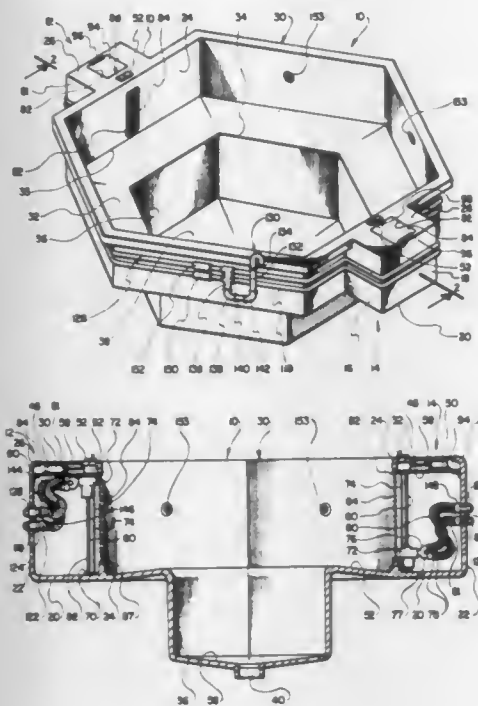
1. A reciprocating hydro-massaging apparatus comprising:
  - a housing having at least one wall with an elongated opening provided therein, said wall having a front face and a rear face;
  - a nozzle reciprocally mounted in said housing adjacent said rear face of said wall in fluid communication with said elongated opening;
  - means coupled to said nozzle for reciprocating it with respect to said elongated opening; and



means connected to said nozzle for supplying a massaging fluid to said elongated opening, whereby a user of said apparatus may position a body part adjacent said elongated opening and said front face of said wall for massaging said body part.

8. In combination with a hot tub including an encompassing sidewall having an inner surface and an outer surface and an incoming water supply, the improvement which comprises:

- A. An elongated slot in said sidewall; and
- B. A reciprocating massaging apparatus affixed to the outer surface of said encompassing sidewall in fluid communication with said elongated slot, said apparatus comprising:



1. a housing having an open front, a rear wall, an open top and a bottom wall;
2. means affixing said housing to the outer surface of said encompassing sidewall with the open front of said housing communicating with said elongated slot;
3. a partition mounted in said housing adjacent said open top;
4. a hydro-jet-type nozzle;
5. means reciprocally mounting said nozzle in said housing in fluid communication with said elongated slot; and
6. a flexible conduit connecting said nozzle to said incoming water supply.

**4,339,834**  
**BOX SPRING ASSEMBLY WITH INTERLOCKED FORMED WIRE COMPONENTS AND METHOD OF ASSEMBLING SAME**  
 Ned W. Mizelle, Lexington, Ky., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

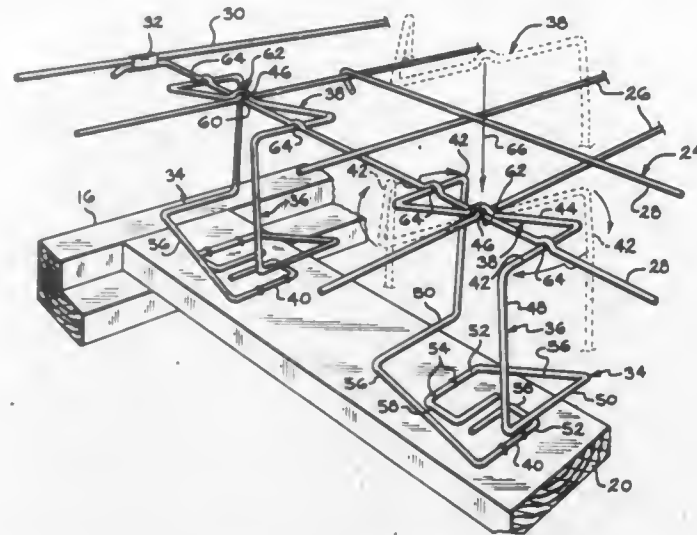
Filed Mar. 21, 1980, Ser. No. 131,935  
 Int. Cl.<sup>3</sup> A47C 23/02; F16F 3/00

U.S. Cl. 5—255

11 Claims

1. In a box spring assembly which includes a generally horizontal rectangular frame and a generally horizontal spring wire mattress support deck disposed a predetermined distance above said frame, said deck including a plurality of substantially straight wires arranged criss-cross fashion, some of said wires extending lengthwise of said frame and others of said wires extending crosswise of said frame; a plurality of deck support springs arranged in a regular pattern between said deck and said frame so as to yieldably support said deck on said frame, each of said springs including a vertically yieldable portion secured at the lower end to said frame and terminating at the upper end in a deck-attaching portion, each said deck-attaching portion including a pair of generally parallel spaced wire sections and a connecting wire section integral with and extending diagonally between said spaced wire sections, each said attaching portion being located so that a mid portion of

the connecting wire section therein is at the juncture of a lengthwise wire with a crosswise wire in said deck and the parallel wire sections extend crosswise of one of said crosswise

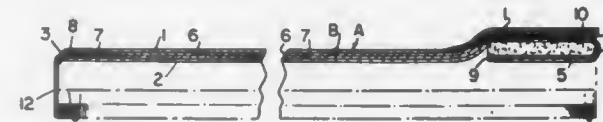


or lengthwise wires on opposite sides of said juncture, said parallel wire sections and said connecting wire section being located on opposite top and bottom sides of the deck wires at said juncture so as to clamp said spring to said deck.

**4,339,835**  
**SLEEPING SACK**  
 Fern Jaffe, 6 W. 77th St., New York, N.Y. 10024, and Rose Blacker, 429 71st St., North Bergen, N.J. 07047  
 Filed Mar. 19, 1980, Ser. No. 131,638  
 Int. Cl.<sup>3</sup> A47G 9/08

U.S. Cl. 5—413

11 Claims



1. A sleeping sack arrangement for use on top of a sleeping surface, and having a foot end, a head end and opposite sides extending from said foot end to said head end, comprising: an outer sack (A) having a lower layer (2) and an upper layer (1) secured to said lower layer at the foot end of the sleeping sack and at least along a portion of the sides of said sleeping sack, said outer sack (A) further comprising operable pocket means (4) for removably retaining a pillow member (5) in said pocket means at the head end of the sleeping sack, the upper and lower layers of the outer sack being always unconnected from each other at the sides thereof at the head end portion of the outer sack to provide an opening between the upper and lower layers of the outer sack at the head end portion of the outer sack; an inner sack (B) removably received between the inner and outer layers of said outer sack (A), and comprising an upper layer (6) and a lower layer (7), said upper and lower layers of said inner sack being secured together along the foot end of said inner sack and at least along a portion of the sides of said inner sack, said inner sack further comprising a further operable pocket means (7') at the head end portion of said inner sack for engaging and substantially enclosing and removably covering the pillow retaining means (4) of said outer sack to prevent said pillow

retaining means (4) of said outer sack from being uncovered by said head end portion of said inner sack during normal use, while permitting easy intended removal of said further pocket means from said pillow retaining means (4) of said outer sack, the upper and lower layers (6, 7) of said inner sack being always unconnected from each other at the sides thereof at the head end portion of said inner sack to permit entry of user into said inner sack between the upper and lower layers of said inner sack, the inner sack being removably received in the outer sack through at least said opening at the head end portion of the outer sack;

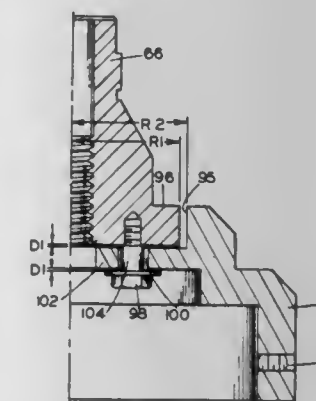
means (24, 25; 26, 27) for releasably securing said inner and outer sacks together at least in the vicinity of the foot end of said sleeping sack;

and at least one permanently open access opening in said outer sack, in the vicinity of the foot end thereof, through which a hand is passable for facilitating insertion and arrangement of said inner sack (B) within said outer sack (A).

**4,339,836**  
**LEAD SCREW THREADING ASSEMBLY**  
 Kenneth D. Kloster, 6649 Millridge, Maumee, Ohio 43537  
 Continuation-in-part of Ser. No. 86,787, Oct. 22, 1979, abandoned. This application May 26, 1981, Ser. No. 266,885  
 Int. Cl.<sup>3</sup> B23G 1/26, 5/04

U.S. Cl. 10—123 P

1 Claim



1. An apparatus for forming threads on an end wall of a hollow cylindrical shroud of a shock absorber assembly comprising:

guide means for insertion into the interior of the cylindrical shroud, said guide means including a collet having a first plurality of outwardly adjustable arms terminating at one end of said collet and having a second plurality of outwardly adjustable arms terminating at the opposite end of said collet, each of said first and second arms provided with an arcuate engaging surface generally conforming to the inner wall of the shroud, said guide means including means for moving said first and second arms outwardly whereby the arcuate engaging surfaces of said first and second arms are moved into engagement with the inner wall of the shroud to maintain said guide means in coaxial alignment with the interior of the shroud, said guide means further including an arbor means extending axially from one end of said collet, said arbor means having an externally threaded section of a predetermined pitch in coaxial alignment with the axis of said guide means;

driver means rotatably mounted on said guide means for longitudinal movement along the axis of said guide means, said driver means provided with an internally threaded section for threaded engagement with the externally threaded section of said arbor means;

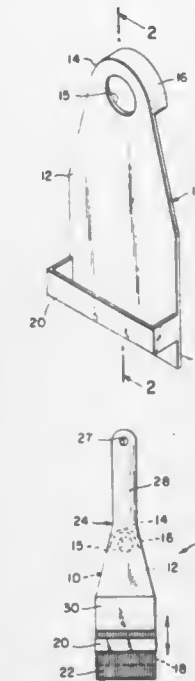
thread forming means for forming threads having a pitch corresponding to the pitch of the threaded sections of the arbor means of said guide means and said drive means; and means for mounting said thread forming means on said driver means to permit limited radial movement of said thread forming means relative to the axis of said guide

means whereby the axis of said thread forming means can vary relative to the axis of said guide means.

**4,339,837**  
**PAINT BRUSH ACCESSORY**  
 Christiaan Reeberg, 111-67 145th St., Jamaica, N.Y. 11435  
 Filed Oct. 27, 1980, Ser. No. 200,963  
 Int. Cl.<sup>3</sup> A46B 9/10, 17/04

U.S. Cl. 15—169

2 Claims



1. A one piece accessory for paint brushes having bristles connected by a single ferrule to a handle in line therewith; comprising

(a) a single integral rectangular box-like girdle connecting said accessory to said paint brush, said girdle slidably embracing said bristles;

an integral flat plate-like straight edger shield extending upwardly and downwardly from one sidewall of said girdle, alongside of and parallel to the brush ferrule and handle above the girdle, as well as to the bristles below; and

(A) a lateral integral arcuate flange extending at right angles to the upper end of said shield, which flange serves as a finger piece for reinforcing and for manually adjusting said girdle alongside of and longitudinally with respect to the free end of said bristles to confine and control the bristles before as well as during painting; the lower edge of said flat plate-like shield which extends below said girdle being straight and extending downwardly below said girdle to a length such that said girdle encompasses a portion of the length of said bristles when said lower edge of said shield is in cooperative engagement with the free ends of said bristles during painting, said girdle serving to control the effective length of said bristles as well as to strip or squeeze excess paint therefrom, and provides a sales display kit in which the brush bristles are protected and held in place by the girdle.

**4,339,838**  
**SQUEEGEE**  
 Gerald P. Pekarek, 1112 67th St. NW., Bradenton, Fla. 33529  
 Filed Nov. 19, 1980, Ser. No. 208,310  
 Int. Cl.<sup>3</sup> A47L 1/06

U.S. Cl. 15—245

15 Claims

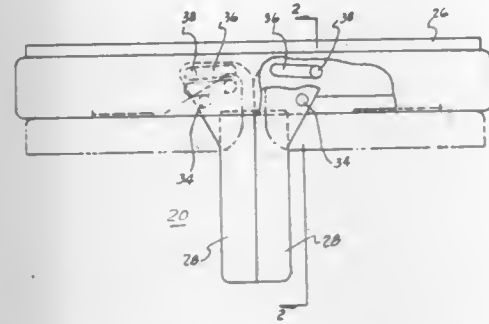
1. A squeegee, comprising:

(a) an elongated blade housing having an elongated rectangular opening through its upper surface;

(b) an elongated blade holder moveably positioned in the interior of said blade housing;



- (c) an elongated blade held by said blade holder for vertical movement through said opening in said blade housing;  
 (d) means for vertically moving said blade holder and said blade;



- (e) means for securing said blade holder and said blade in their uppermost positions; and  
 (f) means for securing said blade holder and said blade in their lowermost positions.

4,339,839

## WINDSCREEN WIPERS

Robert E. Knights, Derby, England, assignor to Knights, Brooks and Partners Limited, Spondon, England

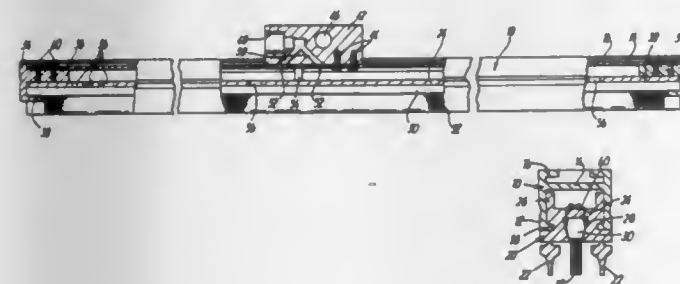
Filed Mar. 14, 1980, Ser. No. 130,297

Claims priority, application United Kingdom, Mar. 23, 1979, 7910270

Int. Cl.<sup>3</sup> B60S 1/46, 1/38

U.S. Cl. 15—250.04

16 Claims



1. A windscreen wiper comprising:  
 an elongate blade carrier,  
 a flexible blade arrangement mounted on the carrier, the blade arrangement including a pair of longitudinally extending parallel spaced resilient lip members adapted to engage a windscreen surface so as to bound a hollow space which is closed in use by the windscreen,  
 at least one conduit for cleaning fluid communicating with said space, and  
 a longitudinally extending resilient screen scrubbing arrangement mounted in the hollow space between but spaced from the lip members, the scrubbing arrangement when in use contacting the windscreen surface,  
 the blade carrier, the blade arrangement, and the scrubbing arrangement each having a constant cross-section along its entire length, a recess in one of the blade carrier and blade arrangement for accommodating the scrubbing arrangement,  
 the blade arrangement and the scrubbing arrangement each being uniformly longitudinally flexible at all points along its length.

4,339,840

## ROTARY FLOORING SURFACE TREATING DEVICE

Clifford L. Monson, #714, 411 Hobron La., Honolulu, Hi. 96815

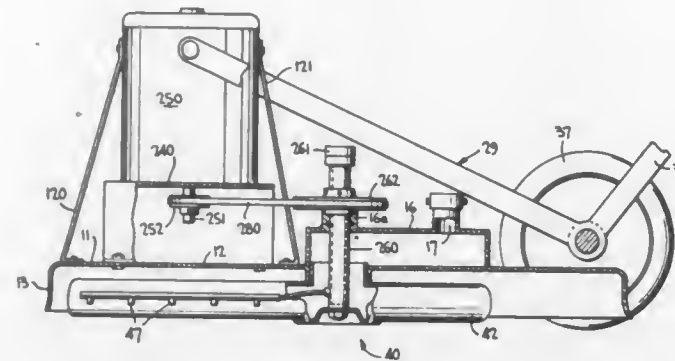
Continuation-in-part of Ser. No. 89,486, Oct. 30, 1979, Pat. No. 4,264,999, and Ser. No. 166,396, Jul. 7, 1980. This application Apr. 6, 1981, Ser. No. 251,118

The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed.

Int. Cl.<sup>3</sup> A47L 11/34

U.S. Cl. 15—321

10 Claims



1. A rotary flooring surface treating device which is movable on and over the surface to be treated, said device comprising a lower carriage unit and an upper handle unit,  
 said lower carriage unit including a shroud means, a wand means, a hollow center shaft, a drive means and an interconnection mechanism,  
 said shroud means including a generally disc-shaped cover part having a skirt extending downwardly from the periphery thereof and an opening therethrough at the center thereof, said shroud means also including means forming a vacuum chamber positioned on the upperside of said cover part so as to enclose said opening, said vacuum chamber including means forming a port for sealing attachment thereto of one end of a flexible hose which is connectable at its other end to a remotely positioned vacuum generating means, said shroud means also including an annular vacuum seal means extending downwardly from the underside thereof so as to enclose said opening, said seal means being capable of forming a substantially vacuum-tight seal with an upper part of a hollow cylindrical portion of a wand means positioned therein, yet allow for free rotation of said upper part therein;  
 said wand means including a hollow cylindrical portion whose upper part is generally sealingly yet rotationally mounted within said annular vacuum seal means and multiple radially-extending arms, said arms each including a radially-extending vacuum duct means with a bottom vacuum slot, each of said vacuum duct means being operatively connected to the lower part of said hollow cylindrical portion, and a discharge pipe with spray nozzles attached to the side of each vacuum duct means;  
 said hollow center shaft extending from below said shroud means upwardly through said vacuum chamber and above said shroud means, the lowermost end of the hollow center shaft mounting said wand so as to rotate same and the uppermost end of said hollow center shaft connecting with a removable, rotatable liquid-tight coupling means, said drive means being mounted on said shroud means such that the downwardly extending drive shaft thereof will be spaced from said hollow center shaft,  
 said interconnecting mechanism connecting the drive shaft of said drive means to the hollow center shaft such that rotation of the former will cause rotation of the latter, multiple hose means sealingly connected to separately extend between one opening in the lower end of said hollow center shaft and a separate discharge pipe, each of said hose means acting to deliver a portion of the treating solution which has passed downwardly through the hol-

4,339,842

## COMBINATION CASTER AND FIXED SUPPORT

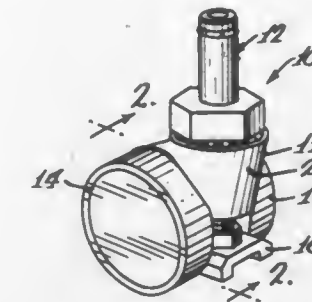
Frank J. Fontana, Stratford, and Francis J. Forte, Huntington, both of Conn., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Oct. 6, 1980, Ser. No. 194,377

Int. Cl.<sup>3</sup> B60B 33/06

U.S. Cl. 16—32

17 Claims



1. A combined dual wheel caster and support pad assembly comprising; horn means, a wheel supported on each side of the horn means for rotation, a pad support mounted for vertical adjusting movement in the horn means and having a lower thrust surface, a pad mounted on the pad support for pivotal movement, said pad support being movable downwardly to engage the thrust surface with the pad to lower the pad into engagement with the floor and raise the wheels from the floor, and means for locking the pad in an upward tilting position so that the pad does not interfere with obstacles when the wheels operatively engage the floor.

4,339,841

## SQUEEGEE SUPPORT ASSEMBLY FOR AUTOMATIC FLOOR CLEANING MACHINES

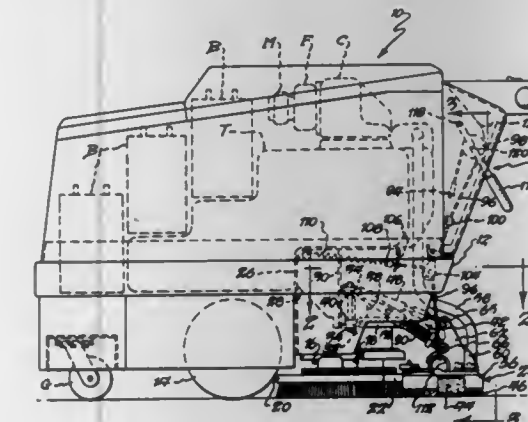
Steven J. A. Waldhauser, and Richard D. Masbruch, both of Lewiston, N.Y., assignors to Wetrok, Inc., Niagara Falls, N.Y.

Filed Nov. 12, 1980, Ser. No. 206,276

Int. Cl.<sup>3</sup> A47L 7/00, 11/30

U.S. Cl. 15—359

12 Claims



1. In an automatic floor cleaning machine having a housing, drive wheels supported by the housing for rotation about a horizontal axis, a pair of spaced holders for floor treating devices supported by the housing for rotation about a vertical axis and a squeegee blade carrying assembly mounted to the housing for at least lateral movement about a vertical axis; the improvement of means for supporting said squeegee assembly, said means including:

- an arm support member pivotally mounted to said housing for pivotal movement about a vertical axis;  
 a compound arm assembly including an upper arm having one end pivotally connected to said arm support member for rotation about a horizontal axis, a lower arm having one end pivotally connected to said arm support member below said upper arm for rotation about a horizontal axis; means for pivotally connecting the other ends of said upper and lower arms to said squeegee blade carrying assembly centrally of the extremities thereof whereby said arms and said assembly are constrained to vertical movement with respect to said arm support member; and means supported by said housing for vertically lifting said assembly from its operative position whereat the blades thereof are in contacting relation to a floor surface to its inoperative position whereat such blades are vertically lifted.

4,339,843

## DOOR CLOSER WITH ASSIST OR DOOR OPERATING FEATURES

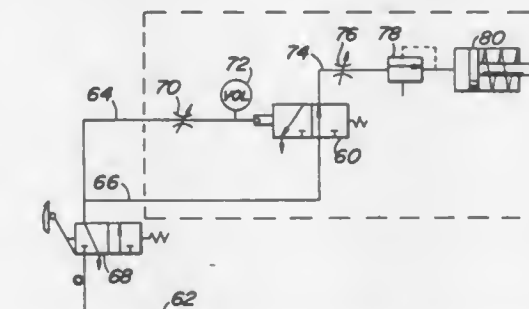
L. Nelson Burnett, Jr., Pottstown, Pa., assignor to Reading-Dorma Closer Corporation, Reamstown, Pa.

Continuation-in-part of Ser. No. 888,217, Mar. 20, 1978, Pat. No. 4,222,147. This application May 27, 1980, Ser. No. 153,741

Int. Cl.<sup>3</sup> E05F 3/00

U.S. Cl. 16—62

10 Claims



1. Hydraulic door closer apparatus comprising a housing having a cylinder therein, a piston disposed in said cylinder, force transmitting means operatively coupled to said piston for transmitting forces to and from said piston to control movement of a door, biasing means in said cylinder in force-transmitting engagement with said piston for biasing said piston toward a rest position, actuator means operatively coupled to said piston for selectively applying to said piston force in opposition to said biasing means, said actuator means being secured to said housing and including a force-transmitting member in force-transmitting engagement with said piston and operable in a direction parallel to the axis of said cylinder and said piston to oppose said biasing means, said actuator means being a fluid actuator of the pneumatic type, and control means operatively coupled to said actuator means for selectively operating said actuator means, said control means comprising a source of air pressure, conduit means coupled to said source and said actuator means, a fluid relay disposed in said conduit means, and manually operable means operatively associated



with said conduit means for selectively operating said fluid relay and placing said actuator means in fluid communication with said source, said manually operable means comprising time-responsive means for interrupting fluid communication between said source and said actuator when said time-responsive means times out, and valve means operatively coupled to said fluid relay, said time-responsive means and said source, so that actuation of said valve means causes said time-responsive means to operate, said time-responsive valve being so constructed and arranged that said actuator means is rendered inoperative when said time-responsive means is timed out.

#### 4,339,844 ASSEMBLY FOR HOLDING OPEN A DOOR OR THE LIKE

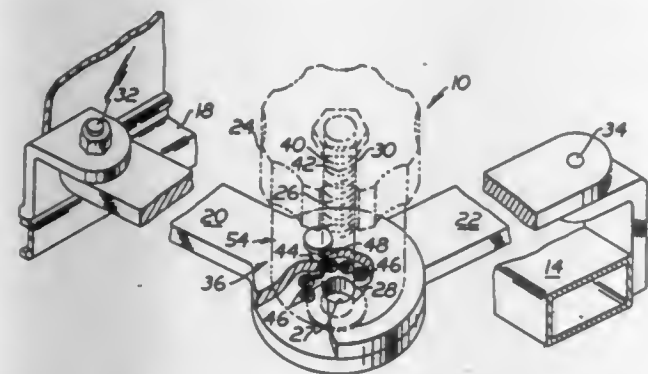
Dale R. Shatters, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 30, 1978, Ser. No. 921,017

Int. Cl.<sup>3</sup> E05F 5/02, 7/06; F16C 11/06

U.S. Cl. 16—82

9 Claims

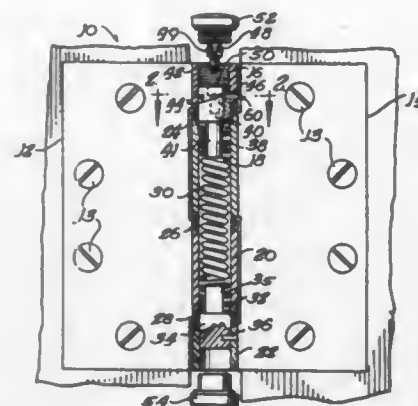


9. In an arm assembly (10) having first and second arms (20,22), first means (26) for pivotally connecting said first and second arms (20,22) and an adjusting element (24) connected to said first means (26), said first arm (20) being positioned between the second arm (22) and the adjusting element (24), said adjusting element (24) being controllably movable between a first position (36) at which said adjusting element (24) is immediately adjacent and contactable with the first arm (20) and a second position (38) at which said adjusting element (24) is spaced from the first arm (20), the improvement comprising: said first arm (20) having an opening (44); said second arm (22) having an opening (46) alignable with the opening (44) of the first arm (20) in response to pivotally moving one of said arms (20,22); a member (48) having first and second end portions (50,52) and being connected to the adjusting element (24) and movable between a first position (54) at which said first end portion (50) is positioned in the openings (44,46) of the first and second arms (20,22) and a second position (56) at which said first end portion (50) is spaced from said second arm opening (46) in response to moving the adjusting element (24); said adjusting element (24) having an opening (64); and second means (58) for biasing said member (48) in a direction (60) toward the second arm (22), said second means (58) including a spring (66) and first and second retaining members (68,70), said spring (66) having a preselected spring constant and being positioned in said opening (64) of the adjusting element (24), said first retaining member (68) having an opening (72) alignable with the opening (44) of the first arm (20) and being rotatably connected to said adjusting element (24) and positioned in the opening (64) of said adjusting element (24), said second retaining member (70) being positioned between the spring (66) and the first retaining member (68) and connected to the second end portion (52) of the member (48).

4,339,845  
SPRING HINGE  
Robert L. Newlon, Sterling, and Delmar McNinch, Rock Falls, both of Ill., assignors to Lawrence Brothers, Inc., Sterling, Ill.  
Filed May 9, 1978, Ser. No. 904,276  
Int. Cl.<sup>3</sup> E05F 1/12

U.S. Cl. 16—300

11 Claims

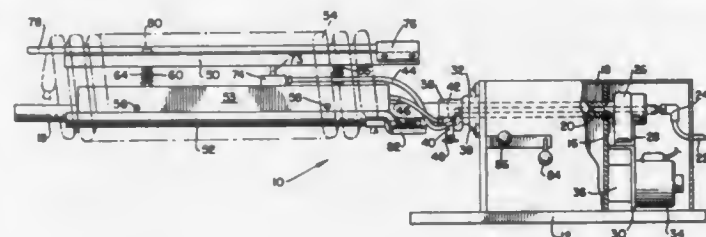


1. A spring hinge comprising: first and second adjacent hinge leaves, each having at least one hinge knuckle, said hinge knuckles being axially aligned and defining a knuckle bore, a spring member mounted within said knuckle bore and having first and second ends, said first end engaged for rotation in unison with a first one of said knuckles, the second end engaged with a capstan member rotatably mounted within the other of said hinge knuckles, and means for selectively achieving and maintaining a spring force, said means including aperture means formed in said other hinge knuckle, socket means formed in said capstan member, and a retaining pin member selectively insertable through said aperture means into said socket means for maintaining said capstan member in a selected position, said pin member including a first forward portion sized to be received within said knuckle aperture means and said capstan socket means, and a second rearward portion of lesser diameter than said first portion and said knuckle aperture, with the juncture of said first and second portions defining an intermediate shoulder, said first portion having a length in relation to the depth of said capstan socket means such that upon insertion of said pin member, said intermediate shoulder is received within said capstan socket, and said second portion is disposed in said knuckle aperture, and said second portion being of lesser diameter than said aperture, said pin is free to move relative to said aperture, such that said intermediate shoulder is disposed for movement out of registry with said aperture means in said hinge knuckle in response to the force exerted on said capstan by said spring, said movement of said pin member bringing said intermediate shoulder in position to engage the inner end of said aperture means, thus precluding movement of said pin member out of said socket due to vibrational forces or the like.

4,339,846  
SAUSAGE COILING MACHINE  
Anthony W. Zamara, Spencerport, N.Y., assignor to Maplecrest Foods, Inc., Rochester, N.Y.  
Filed Jun. 20, 1980, Ser. No. 161,403  
Int. Cl.<sup>3</sup> A22C 15/00

U.S. Cl. 17—1 R

8 Claims



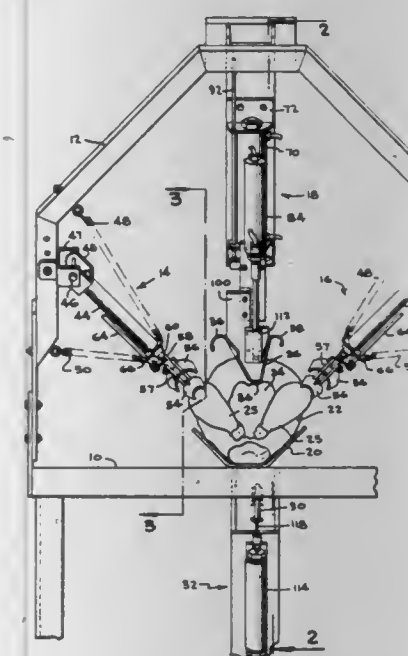
1. A sausage coiling machine comprising:

- (a) an elongated drive shaft,
- (b) drive means for rotating said shaft,
- (c) a pair of spaced semi-arcuate arms,
- (d) means on one of said arms adapted to receive a smoke stick and means on the other arm adapted to receive an end of a chain of sausage,
- (e) at least one of said arms being secured about said drive shaft so that said arms and shaft rotate together,
- (f) connecting means extending between said arms for securing said arms together,
- (g) said connecting means including at least one rod depending from one of said arms and at least one receptacle located on the other one of said arms in alignment therewith, said rod being moveable within said receptacle to allow relative radial movement between said arms,
- (h) piston means secured between said pair of arms, and
- (i) pneumatic means connected to said piston means for pressurizing said piston means to move said rod within said receptacle, thereby adjusting the distance between said arms so that the radial distance between said arms is altered and the diameter of the rope of sausage to be coiled thereabout is adjusted.

4,339,847  
DRESSED FOWL LEG HOLD-DOWN MEANS  
Paul L. Niccolls, 3631 N. Dawn Ct., Springfield, Mo. 65803  
Filed Sep. 15, 1980, Ser. No. 187,176  
Int. Cl.<sup>3</sup> A22C 21/00

U.S. Cl. 17—1 S

18 Claims



1. Leg holding and positioning apparatus for positioning in a dressed fowl comprising the combination of a wirelike bail having a central portion with first and second leg hooks extending outwardly therefrom and dimensioned to be hooked over the leg ends of a fowl with the central portion extending into the body cavity of the fowl and bail anchor means dimensioned to extend through the back of the fowl to the body cavity including connector means connectable to the central portion of the wirelike bail for holding the wirelike bail in position to restrain outward movement of the wirelike bail and the legs of the fowl legs.

11. Apparatus for applying leg restraining tie-down means to a fowl comprising:

- (a) fowl support means for supporting a dressed fowl on its back;
- (b) leg positioning means positioned above the fowl support means for moving the legs of a fowl positioned on the support means inwardly to a tucked position adjacent the body cavity;
- (c) bail positioning means for positioning a wirelike bail having a central portion and first and second leg hooks in a holding position in which the first and second leg hooks

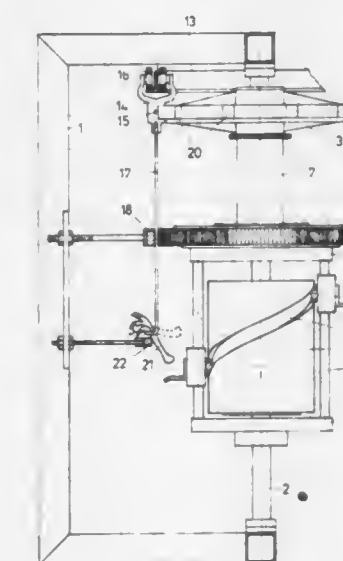
engage the legs of the fowl and the central portion is in the body cavity of the fowl; and

(d) anchor inserting means for moving an elongated anchor member up through the back of the fowl to connectingly engage holding means on one end of the elongated anchor member with the central portion of the wirelike bail to preclude subsequent outward movement of the wirelike bail.

4,339,848  
APPARATUS FOR REMOVING THE CUT OFF FEET OF A FOWL FROM AN OVERHEAD CONVEYOR SHACKLE  
Pieter Meyn, P.O. Box 16, 1510 AA Oostzaan, Netherlands  
Filed Oct. 20, 1980, Ser. No. 199,079  
Int. Cl.<sup>3</sup> A22C 21/00

U.S. Cl. 17—11

5 Claims



1. An apparatus for removing the cut-off feet of a fowl from a shackle of a continuously moving overhead conveyor, comprising

- a frame;
- a support, movably supported by said frame;
- a clamping means associated with said support, for gripping and holding said shackle against movement relative to said conveyor, during part of the path thereof;
- first moving means for moving said support and said clamping means along in synchronisation with said conveyor, during said part of said path;
- second moving means for additionally moving said support up and down relative to said conveyor and said clamping means;
- an unloading member carried by said support and adapted to wipe the face of said shackle for lifting said feet out of said shackle as said support move upwards relative to said conveyor; and
- means for controlling said second moving means in such manner, that said support is in its lowermost position relative to said conveyor as said shackle is gripped by said clamping means, and has reached its uppermost position before said shackle is released again by said clamping means.



4,339,849

**METHOD OF CUTTING A SLAUGHTERED BIRD FROM VENT TO BREAST**

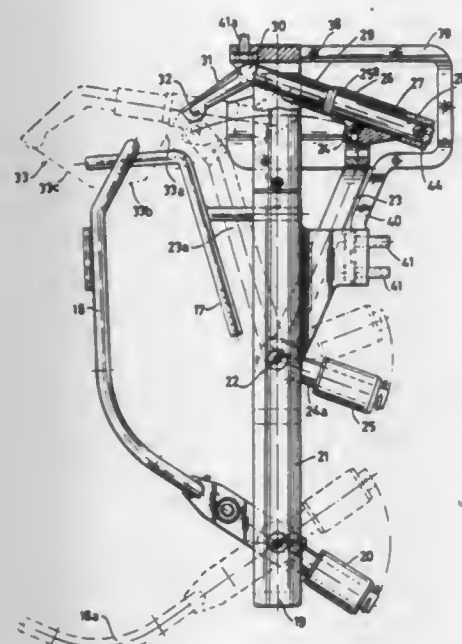
Martinus P. G. van Mil, Boxmeer, Netherlands, assignor to Stork PMT B.V., Boxmeer, Netherlands  
Division of Ser. No. 10,233, Feb. 8, 1979, Pat. No. 4,266,322.

This application Dec. 8, 1980, Ser. No. 214,234  
Claims priority, application Netherlands, Feb. 15, 1978, 7801712

Int. Cl.<sup>3</sup> A22C 21/00

U.S. Cl. 17—52

8 Claims



1. A method of cutting open a slaughtered bird between its vent and breast point while the bird is moving along a conveyor which comprises

- cutting a circular opening at the vent of the bird as a first cut, said opening having its axis aligned with a straight line from the vent to the breast point,
- starting a second cut in the bird at the circular opening and extending toward the breast point along said axis,
- continuing the second cut along a portion of the cut that is laterally offset from said line between the vent and breast point by a predetermined lateral distance so as to avoid cutting certain entrails located within the bird below said straight line and
- completing the second cut in a movement back to said breast point.

4,339,850

**MULTI-PURPOSE WATER OUTLET AND ACCESSORIES**

Wilbur E. Altman, 1509 Richland Dr., Charlotte, N.C. 28205, and William C. McQuay, 214 W. LaPorte Dr., Charlotte, N.C. 28216

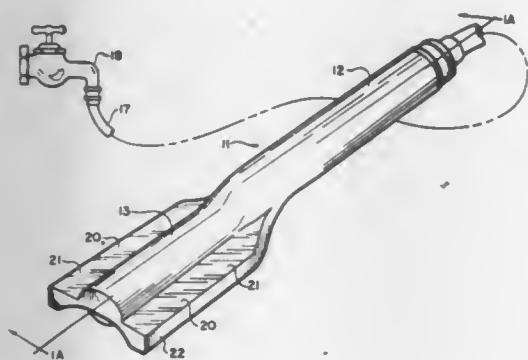
Division of Ser. No. 131,233, Mar. 17, 1980, Pat. No. 4,297,765.

This application Jun. 29, 1981, Ser. No. 278,050

Int. Cl.<sup>3</sup> A22C 25/02

U.S. Cl. 17—69

5 Claims



1. A water handle for association with a desired cleaning

tool and for directing water against a surface to be cleaned, said water handle comprising a handle portion and an outlet portion having an internal passage way extending axially through the handle and outlet portions, means at the free end of the handle portion for establishing communication between the longitudinal passageway and a source of water, said outlet portion including a tubular housing about the internal passageway, oppositely directed flanges extending laterally and forwardly from the tubular housing of the outlet portion, each flange including a straight horizontally extending top wall, a vertically extending sidewall and a bottom wall extending inwardly from its juncture with the side wall in parallel relation to the horizontal top wall and then upwardly and inwardly in an arc to its juncture with the tubular housing of the outlet portion to define a channel along the tubular housing of the outlet portion, the tubular housing of outlet portion having at least one outlet port communicating with the longitudinal passageway and with the outer surface of the outlet portion, a cleaning tool, and guide means on the cleaning tool compatible with the flanges on the outlet portion whereby the cleaning tool may be operatively assembled on the outlet portion for a desired cleaning function.

4,339,851

**BEATER ROLL FOR OPEN-END SPINNING MACHINES**

Karl-Heinz Schmolke, Neuweiler, Fed. Rep. of Germany, assignor to Hollingsworth GmbH, Neublach, Fed. Rep. of Germany

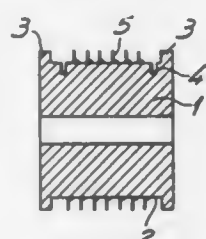
Filed Oct. 15, 1979, Ser. No. 84,789

The portion of the term of this patent subsequent to Jan. 4, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> D01G 15/14

U.S. Cl. 19—97

7 Claims



1. An opening or beater roll for open-end spinning machines comprising a cylindrical roller body and a sawtooth wire wound helically onto the outer surface thereof which has a base region widened in relation to the teeth and which is wound under tension onto the outer surface and fixed at its ends to the roller body, base regions of adjacent turns of the sawtooth wire being separated by a gap from one another, the ratio of the height to the width of the base regions being  $\leq 1$ ; said sawtooth wire being wound on a portion of the outer surface of the cylindrical roller body; said portion being free of grooves so that said wire lies directly on the outer grooveless surface of said cylindrical roller body.

4,339,852

**CLEARER DEVICE FOR DRAFT ROLLS**

Yoshio Murao, No. HA-173, Nukaotomaru-cho, Kanazawa-shi, Japan

Filed Jun. 3, 1980, Ser. No. 155,966

Claims priority, application Japan, Jun. 13, 1979, 54-75096

Int. Cl.<sup>3</sup> D01H 5/64

U.S. Cl. 19—264

4 Claims

1. An apron clearer device for draft rolls, said apron traveling in contact with lower surface portions of said draft rolls; said clearer device comprising: side frames each having one end pivoted on an intermittently driven shaft to allow the side frames to rotate; an apron driving roll disposed between said side frames for transmitting unidirectional rotation from said

4,339,854

**BUCKLE ASSEMBLY FOR SEAT BELT**

Haruyuki Ikesue, Fujisawa, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

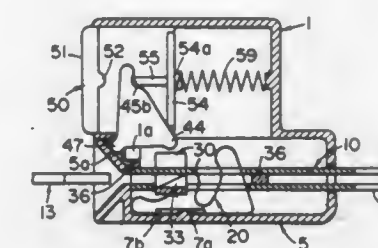
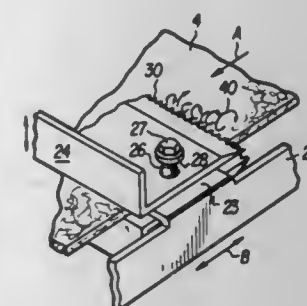
Filed Feb. 4, 1980, Ser. No. 118,208

Claims priority, application Japan, Feb. 5, 1979, 54-12809[U]; Feb. 5, 1979, 54-12810[U]

Int. Cl.<sup>3</sup> A44B 11/25

U.S. Cl. 24—230 AL

8 Claims



apron in the direction of travel of said apron while sandwiching said apron therebetween, wherein said combs comprise an outer comb for clearing the outer surface side of said apron and an inner comb for clearing the inner surface side of said apron while being in contact with the lower side of said apron under pressure, said combs being driven with said intermittently driven shaft via a swing arm and a rod; and an inclinable stand on the front lower side of said side frames.

4,339,853

**MAGNETIC DECOUPLER**

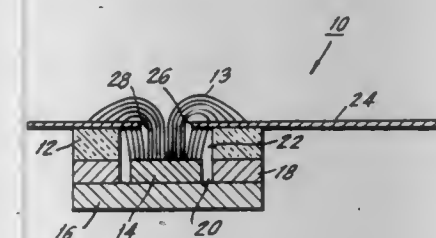
Henry Lipschitz, Atlantic Beach, N.Y., assignor to Permag Corporation, Hicksville, N.Y.

Filed Mar. 4, 1980, Ser. No. 127,188

Int. Cl.<sup>3</sup> H01F 3/12

U.S. Cl. 24—155 BR

9 Claims



1. A composite magnet, comprising:  
an annular, ceramic magnet having opposed substantially flat faces and a bore extending between said faces along a first axis, a first of said flat faces defining a first pole of said ceramic magnet having a first polarity, a second of said flat faces defining a second pole of said ceramic magnet having a second, opposite, polarity;  
a cylindrical rare earth magnet having opposite substantially flat faces and a central axis coaxial with said first axis, a first of said flat faces of said rare earth magnet defining a first pole of said rare earth magnet having said first polarity, the second of said flat faces of said rare earth magnet defining a second pole of said rare earth magnet having said second polarity; and  
means for orienting said magnets relative to one another such that said ceramic magnet serves to both focus and add to the flux lines of said rare earth magnet and such that said flux lines extend between said first flat face of said rare earth magnet and said second flat face of said ceramic magnet along a path which passes through said bore of said ceramic magnet in a direction substantially parallel to said first axis whereby a strong magnetic field is defined in said bore.

4,339,855

**WEB-SPREADING ROLLER**

Armand Demiere, Epalinges, Switzerland, assignor to Arcomac S.A., Lausanne, Switzerland

Filed Apr. 19, 1977, Ser. No. 788,882

Claims priority, application Switzerland, Apr. 30, 1976, 5435/76

Int. Cl.<sup>3</sup> D06C 3/06

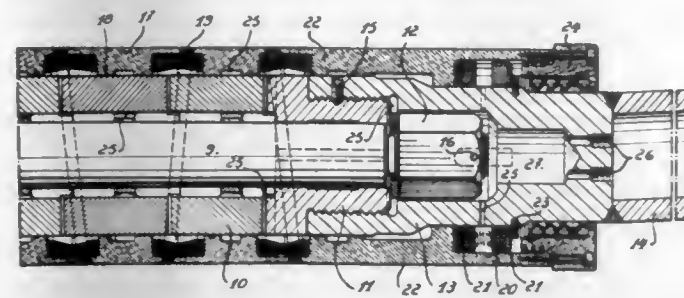
U.S. Cl. 26—103

10 Claims

1. A web-spreading roller comprising a stationary central shaft and a plurality of cylindrical sleeves mounted for rotation thereon, said central shaft comprising a prestressed rod and a plurality of stationary cylindrical rings, the end faces of each of said rings being disposed in planes forming an acute angle with each other, the cylindrical rings being disposed on the pre-



stressed rod with their long sides in alignment, said central shaft comprising further means tensioning said rod and com-



pressing said rings against each other thereby imparting an arcuate shape to the central shaft.

#### 4,339,856 APPARATUS FOR CONTINUOUS UNTWISTING AND CRIMPING OF A CLOTH

Yoshikazu Sando, Hiroshi Ishidoshiro, and Matsuo Minakata, all of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

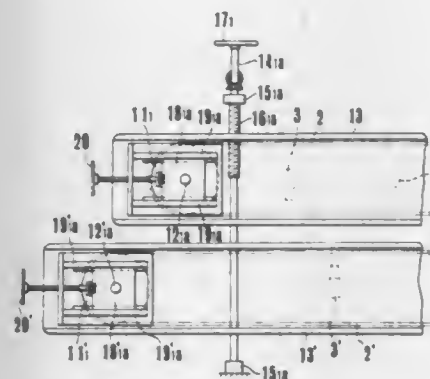
Filed May 15, 1980, Ser. No. 150,063

Claims priority, application Japan, May 16, 1979, 54-64986[U]; Jun. 1, 1979, 54-74401[U]; Jul. 11, 1979, 54-95176[U]; Aug. 24, 1979, 54-116521[U]; Aug. 30, 1979, 54-119590[U]

Int. Cl.<sup>3</sup> D06C 29/00

U.S. Cl. 28—155

2 Claims



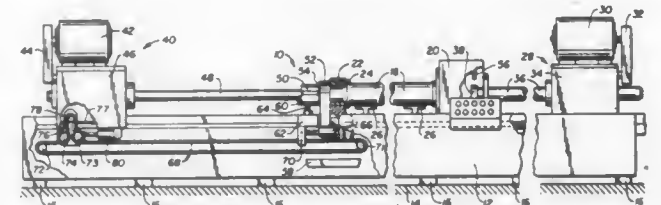
1. An apparatus for continuously untwisting and crimping of a cloth, comprising a treating chamber, a pair of endless net conveyers located in said treating chamber one positioned above the other forming a gap therebetween to serve as a cloth passage, a plurality of jet pipes each having a series of nozzles for jetting a high pressure fluid into the cloth passage, with said jet pipes arranged in a zigzag manner up and down on both outer sides of the gap within said net conveyers so that said nozzles direct the jets of high pressure fluid through said net conveyers into the gap, a support plate for each of said endless net conveyers, said jet pipes supported on said support plates supporting said endless net conveyers within which said jet pipes are arranged, means for moving at least one of said support plates toward and away from the other with the opposite ends of the support plate being movable independently of one another for varying the gap between said endless net conveyers and between said jet pipes so that the gap between said endless net conveyers can be uniform for the length thereof and so the gap can be of a variable dimension along the length, a pair of guide rollers located at the opposite ends of each said endless conveyers and said guide rollers supported on said support plate which supports said endless conveyor at the opposite ends of which said guide rollers are located, and second means mounted on said support plates for supporting each said pair of guide rollers for controlling the tension applied to said endless conveyers.

#### 4,339,857 INTEGRATED CYLINDER FINISHING SYSTEM

Lawrence C. Dickinson, 2255 Eva Adams, Reno, Nev. 89504  
Filed Aug. 11, 1980, Ser. No. 176,941  
Int. Cl.<sup>3</sup> B23B 41/16, 47/34

U.S. Cl. 29—26 A

14 Claims



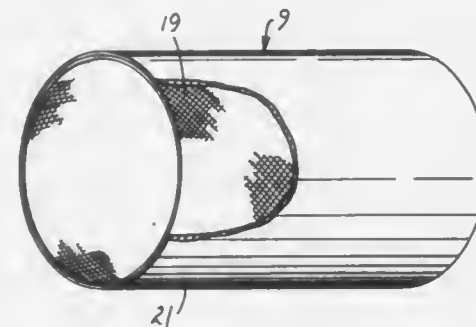
9. A method for finishing the cylindrical interior of a workpiece comprising the steps of:  
mounting the workpiece to allow access to the cylindrical interior thereof from each end;  
advancing a skiving tool into and through the cylindrical interior of the workpiece from one end thereof to machine said cylindrical interior;  
introducing cutting oil into the cylindrical interior of the workpiece to entrain the chips resulting from the skiving tool advancing step and flush said chips out through the second, opposite end of the workpiece;  
deflecting the cutting oil and entrained chips at the second end of the workpiece into a collector during said skiving tool advancing step;  
moving the deflecting means to expose the second end of the workpiece upon completion of the skiving tool advancing step;  
and  
advancing a finishing tool into and through the cylindrical interior of the workpiece from the second end thereof subsequent to said moving step to remove imperfections in the surface of the cylindrical interior of the workpiece formed during said skiving tool advancing step.

#### 4,339,858 DAMPENER ROLL COVER

Stanley G. Peterson, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.  
Filed Nov. 3, 1980, Ser. No. 203,233  
Int. Cl.<sup>3</sup> B21B 31/08; B60B 7/02

U.S. Cl. 29—131

12 Claims



1. A cylindrical shaped article of substantially uniform cross-sectional dimension having inner and outer concentrically positioned layers, said inner layer comprising a water wickable textile fabric, and said outer layer comprising a porous, smooth, continuous surfaced, hygroscopic, cohesive, non-woven member of hydrophilic randomly disposed fibers, bonding means for bonding said inner layer to said outer layer along the interface of said inner and outer layers, said cylindrical article having a first radial dimension when dry, a second radial dimension when wetted in the presence of a radially expansive force, said second radial dimension being greater than said first radial dimension, said article being capable of retaining said second radial dimension upon drying, and a third

radial dimension upon rewetting, said third radial dimension being smaller than said second radial dimension.

#### 4,339,859 WIRE SPOKE AUTOMOTIVE WHEEL MANUFACTURING METHOD

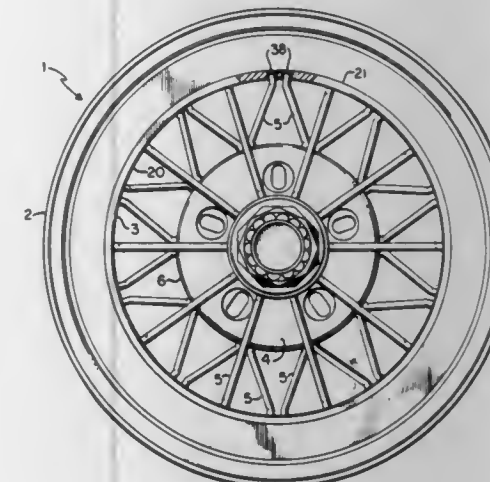
Richard G. Weld, Independence, Mo., assignor to Weldwheels, Inc., Kansas City, Mo.

Continuation-in-part of Ser. No. 918,606, Jun. 23, 1978, Pat. No. 4,226,479. This application Aug. 18, 1980, Ser. No. 178,795

Int. Cl.<sup>3</sup> B21K 1/34

U.S. Cl. 29—159.03

10 Claims



1. In the manufacture of a wire spoke automotive wheel having a felly with spaced spoke receiving bores extending circumferentially therearound and spokes having radially outer ends and each having an associated felly bore, a method of producing said bores and securing said spoke outer ends within said bores comprising the steps of:  
(a) securing a die having at least one channel therethrough to the outer circumferential surface of the felly;  
(b) placing a circular punch adjacent the inner circumferential surface of the felly at a point radially inward from a corresponding channel in the die, said punch being of substantially smaller diameter than said channel;  
(c) punching a plug out of the felly by forcibly applying the punch to the inner circumferential surface of the felly whereby the bore punched in the felly has a generally frusto-conical shape such that an outer circumferential dimension of the bore is larger than a corresponding inner circumferential dimension;  
(d) inserting a spoke outer end having a side surface partially within a felly bore, thereby leaving a cavity within said felly bore atop said spoke outer end, said spoke side surface being spaced from said bore wall; and  
(e) feeding a welding wire into said cavity under wire melting conditions thereby producing a weld formation fused to said spoke outer end, side surface, and felly.

#### 4,339,860 METHOD OF PRODUCING CHANNEL-SHAPED TRIM

Keizo Hayashi, Nagoya, Japan, assignor to Toyoda Gosei Co., Ltd., Nagoya, Japan

Filed Jun. 29, 1979, Ser. No. 53,551

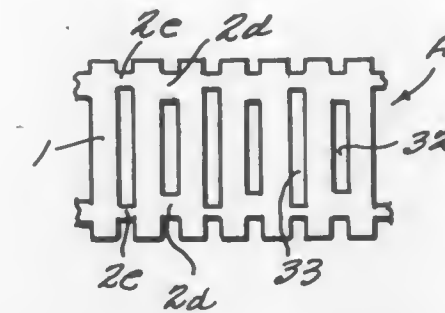
Claims priority, application Japan, Jun. 30, 1978, 53-91206[U]  
Int. Cl.<sup>3</sup> B23P 17/00

U.S. Cl. 29—413

6 Claims

1. A method for producing channel-shaped trim having a longitudinally extending opening for embracing and clamping an edge flange of a support member comprising the steps of forming a core member for said trim by slotting a band of material to produce a plurality of cut out areas defining a plurality of spaced apart transversely extending strip-shaped pieces each of which is connected to adjacent strip-shaped pieces by connecting portions located adja-

cent each edge of the band, weakening predetermined opposed pairs of the connecting portions so as to define a plurality of core pieces comprised of at least two strip-shaped pieces joined together by at least two unweakened connecting portions located on opposite edges of said core piece,



covering said core member with a covering material to form a composite band structure;  
breaking the weakened connecting portions thereby separating the core pieces, and  
bending the composite band structure to provide said channel-shaped trim.

#### 4,339,861 CONTINUOUS WORKING PROCESS OF STEEL BARS FOR REINFORCED CONCRETE AND APPARATUS THEREFOR

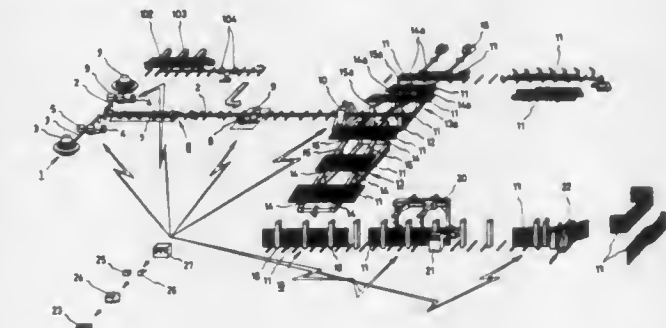
Hiroshi Shiraishi, Mitaka, and Shigeru Moriguchi, Chiba, both of Japan, assignors to Kajima Corporation and Mitsui Engineering and Shipbuilding Co., both of Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 133,105

Claims priority, application Japan, Mar. 23, 1979, 54-33946  
Int. Cl.<sup>3</sup> B23P 17/00

U.S. Cl. 29—416

8 Claims



1. A continuous working process of steel bars for reinforced concrete, comprising: feeding an endless steel bar material to a cutter by intermittently repeating the advance of said material in a predetermined distance and the stop thereof; cutting the endless steel bar thus fed by said cutter into steel bars having a predetermined length; firmly banding together the steel bars thus cut by a predetermined plural number into a laterally slat-like shaped bundle; and bending the bundle into a predetermined shape while retaining the lateral slat-shape.

#### 4,339,862 METHOD OF MAKING RUBBER/VISCOUS TORSIONAL VIBRATION DAMPERS

Ronald L. McLean, Tonawanda, and Gordon W. Kamman, Elma, both of N.Y., assignors to Houdaille Industries, Inc., Fort Lauderdale, Fla.

Division of Ser. No. 119,218, Feb. 7, 1980. This application Apr. 29, 1981, Ser. No. 258,565

Int. Cl.<sup>3</sup> B23P 11/00, 17/00

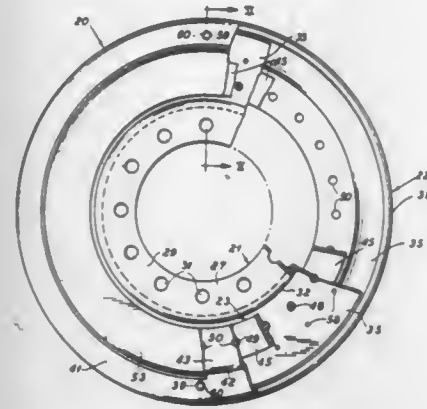
U.S. Cl. 29—424

17 Claims

1. A method of making a rubber/viscous torsional vibration damper assembly of the type having supporting rotor disk



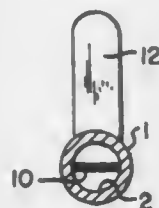
means with a radially outwardly extending circular body and a radially inner hub portion adapted to be secured to a rotary member such as a crankshaft subject to vibrations to be damped by the damper, said body being received concentrically within a radially inwardly opening annular working chamber of an annular inertia mass, a viscous damping medium in said chamber between shear film spaced cooperatively confronting working surfaces of said body and said inertia mass, and said inertia mass having concentric annular grooves at opposite sides of and facing axially toward said body radially inwardly adjacent to the opening from said chamber, with elastic tuning spring, spacing and sealing rubber rings coupling



surface areas on said inertia mass in said grooves with opposing surface areas on said body, comprising:

- providing low melting point metal barrier means between said working chamber and said grooves;
- molding and vulcanizing said rubber rings in said grooves and bonding them to said surface areas, while relying on said barrier means against any detrimental intrusion of the material of said rings into said working chamber;
- curing said rings;
- and melting and removing said barrier means and thereby freeing the volume within said inertia mass occupied by said barrier means then providing a fill of said viscous damping medium.

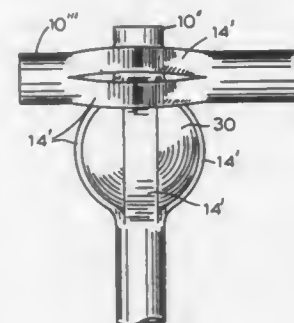
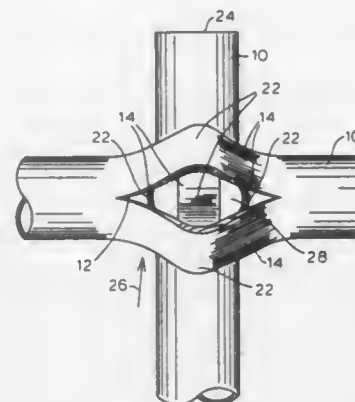
**4,339,863**  
**LOCK OPENING TOOL**  
Andrew Block, 90 Eton Rd., Thornwood, N.Y. 10594  
Filed Oct. 8, 1980, Ser. No. 194,994  
Int. Cl.<sup>3</sup> B23B 35/00; B23P 19/04  
U.S. Cl. 29—426.4



1. A process for opening a mortise cylinder-type lock without a key comprising:
  - a. drilling a hole through the cylinder of said lock;
  - b. inserting into said hole, an elongated, hollow member having a first opening at one end and a circumferential opening at the opposite end, a strip of spring steel being inserted through said first opening to said circumferential opening;
  - c. inserting said elongated member within said hole formed in said lock until the circumferential opening extends beyond the lock body;
  - d. extending said spring steel strip through said circumferential opening to engage the end of said strip with the lock cylinder counterpart; and
  - e. turning said elongated member so that the end of said steel

strip engaged with said lock cylinder counterparts opens the lock.

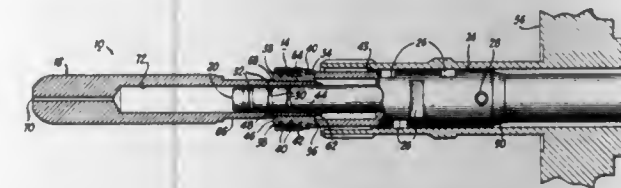
**4,339,864**  
**METHOD OF FORMING INTERLOCKING PIPE JOINT**  
Daniel W. Seregely, P.O. Box 2021, Santa Monica, Calif. 90406  
Filed Oct. 29, 1979, Ser. No. 89,632  
Int. Cl.<sup>3</sup> B23P 11/02; B29C 19/00  
U.S. Cl. 29—450



1. The method of joining two like cylindrical tubes of resiliently flexible material at substantially right angles comprising the steps of:

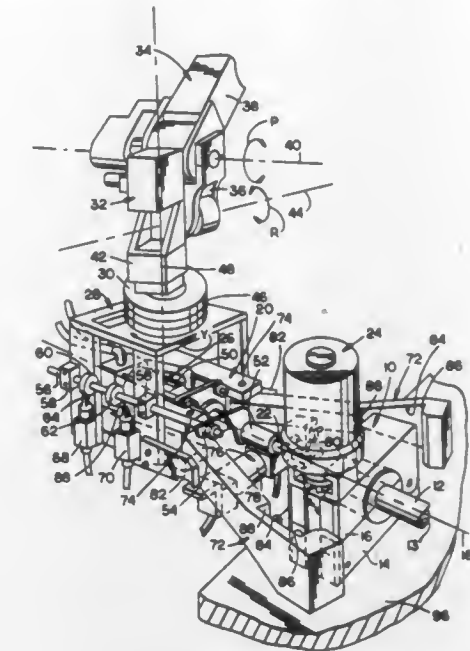
- (a) forming longitudinal members from the sidewalls of each of the tubes at substantially 90° intervals at the intended point of joining about the circumference thereof for a length of between two and four times the diameter of the tubes;
- (b) bowing said longitudinal members of each of the tubes outwardly at right angles to the longitudinal axis of the tube to a point where the centers of adjacent ones of said longitudinal members are spaced at a distance substantially equal to the diameter of the tubes;
- (c) inserting the end of one of the tubes between a first two of said longitudinal members of the other tube normal to the longitudinal axis thereof;
- (d) passing said one of the tubes through said other of the tubes to emerge from between the other two of said longitudinal members of said other tube;
- (e) continuing to pass said one of the tubes through said other tube between said longitudinal members thereof until said longitudinal members of said one tube are adjacent said longitudinal members of said other tube; and
- (f) urging said longitudinal members of said one tube through the space between said first two of said longitudinal members of said other tube into bowed engagement with the interior space formed in said other tube by said longitudinal members thereof.

**4,339,865**  
**APPARATUS AND METHOD FOR INSERTING AND REMOVING BUSHINGS AND BEARINGS**  
William E. Shultz, 239 N. Main St., Lombard, Ill. 60148  
Filed Mar. 7, 1980, Ser. No. 127,939  
Int. Cl.<sup>3</sup> B23P 19/04; B25B 27/02  
U.S. Cl. 29—525



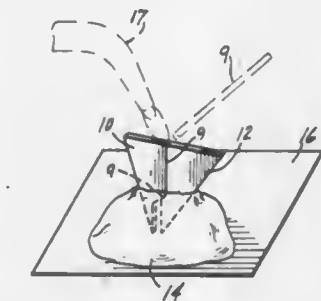
1. Apparatus for removing or inserting a bushing or bearing comprising an elongated bushing or bearing driving shaft; means for contacting an annular bushing or bearing surface, said bushing or bearing contacting means including a bushing or bearing contacting shoulder, said bushing or bearing contacting means being connected to said elongated bushing or bearing driving shaft when operatively assembled for removing or inserting a bushing or bearing; and means for adjusting said bushing or bearing contacting shoulder comprising an elongated spreading shaft having an interior surface adapted to be operatively positioned over said driving shaft, and an exterior surface of said spreading shaft contacting an inner surface of said bushing or bearing contacting means when operatively assembled for removing or inserting a bushing or bearing, said exterior spreading shaft surface in contact with said inner surface of said bushing or bearing contacting means being of substantially constant diameter to apply consistent pressure on said interior surface of said bushing or bearing contacting means each time the spreading shaft is operatively positioned and to adjust said bushing or bearing contacting shoulder outwardly an accurate, consistent predetermined distance each time said spreading shaft is operatively positioned.

expanding the tube (12) radially outwardly into interlocking engagement with the flange (120) by operation of a



second powered actuator (26) of the force-transmitting apparatus (20).

**4,339,867**  
**METHOD FOR FIXTURING WORKPIECES FOR HEAT EFFECTED JOINING OF SAME**  
Barry D. Reznik, 2224 E. 59th Pl., Brooklyn, N.Y. 11234  
Filed Dec. 27, 1979, Ser. No. 106,888  
Int. Cl.<sup>3</sup> B23Q 7/00; B23P 17/00; B27F 7/02; B23K 9/28  
U.S. Cl. 29—559



1. A method for fixturing two or more workpieces in a desired positional relationship to one another for the heat effected joining of same comprising in the following order the steps of:
  - a. depositing a quantity of moldable, heat resistance work-piece holding material on a work surface;
  - b. inserting portions of each of the workpieces to be joined into said holding material with portions thereof to be heated left exposed;
  - c. moving the inserted workpieces to the desired positional relationship with one another by adjusting the relative positions of the workpieces; and
  - d. manipulating said holding material for conformance to the contours of the inserted portions of the workpieces whereby said workpieces can be joined by heat effected means such as welding.

**4,339,866**  
**METHOD OF CONNECTING A TUBE TO A FLANGE**  
Edward R. Horton, Dunlap, and John L. Hughes, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.  
PCT No. PCT/US80/00642, § 371 Date May 27, 1980, § 102(e)  
Date May 27, 1980, PCT Pub. No. WO81/03443, PCT Pub. Date Dec. 10, 1981  
PCT Filed May 27, 1980, Ser. No. 245,226  
Int. Cl.<sup>3</sup> B21D 39/00; B23P 11/02

- U.S. Cl. 29—523
1. A method of connecting a tube (12) to a flange (120), comprising:
  - Step (a) placing tube (12) with the flange (120) on the end thereof between first and second portions (14,16) of a holding apparatus (10);
  - Step (b) closing one of the portions (14,16) of the holding apparatus (10) and gripping the tube (12) securely between the portions (14,16) by operation of a first powered actuator (24);
  - Step (c) positioning a force-transmitting apparatus (20) including a punch (22) of preselected external contour into axial alignment with the tube (12) and the flange (120);
  - Step (d) closing a pair of gripping arms (72) of the force-transmitting apparatus (20) embracingly on the holding apparatus (10) by operation of a third powered actuator (76); and
  - Step (e) forcing the punch (22) axially into the tube (12) and



4,339,868

# PLASTIC TUBE ELEMENT MANUFACTURING APPARATUS

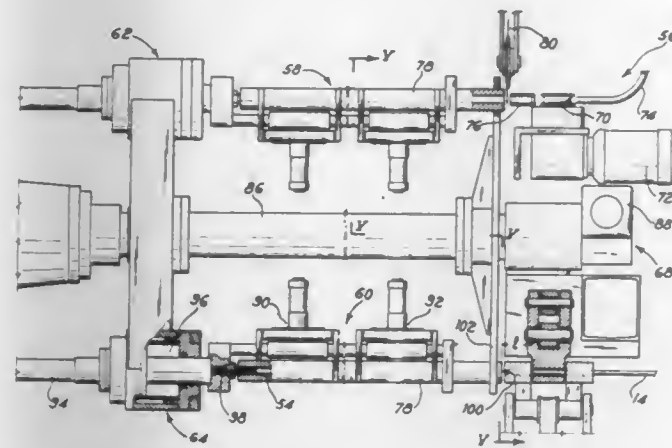
Giacomo Mazzer, Pontelambro, Italy, assignor to Mazzer Materie Plastiche, Como, Italy

Filed Mar. 12, 1980, Ser. No. 129,703

Claims priority, application Italy, Mar. 28, 1979, 21376 A/79  
Int. Cl.<sup>3</sup> B23P 19/02

U.S. Cl. 29—564.1

8 Claims



1. An apparatus for automatically forming plastic tubular members of predetermined length and for connecting a coupling to at least one end thereof, said apparatus comprising: a rectilinear conveyor guide; feed means for feeding plastic tubing along said conveyor guide; detector means for detecting when a predetermined length of said tubing has been fed onto said conveyor guide and then for stopping said feed means; cutter means for, upon stopping said feed means, cutting said tubing to thereby form a plastic tubular member of predetermined length; means for transferring said tubular member from said conveyor guide to a coupling connection position; means at said coupling connection position for gripping said tubular member against axial movement thereof; means for supplying a coupling to said coupling connection position and for aligning said coupling axially of an end of said tubular member; a mandrel; and connecting means at said coupling connection position for inserting said mandrel through said coupling, for inserting said mandrel into said end of said tubular member, for moving said coupling through a first movement axially toward said end of said tubular member before connection therebetween, and for further moving said coupling through a second movement axially of said end of said tubular member and achieving connection therebetween.

4,339,869

# METHOD OF MAKING LOW RESISTANCE CONTACTS IN SEMICONDUCTOR DEVICES BY ION INDUCED SILICIDES

Robert F. Reihl, Gloversville, N.Y., and Kang-Lung Wang, Santa Monica, Calif., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,043

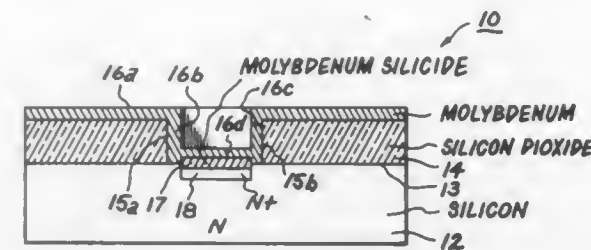
Int. Cl.<sup>3</sup> H01L 29/72, 21/285, 21/265

U.S. Cl. 29—576 B

15 Claims

1. The method of forming an electrical contact comprising: providing a substrate of silicon semiconductor material having a major surface, forming a layer of a refractory metal selected from the class consisting of molybdenum and tungsten over a portion of said surface of said substrate, implanting dosage of ions of one conductivity inducing type through said layer of refractory metal and into said substrate to form a layer of a compound including said refractory

metal and said silicon semiconductor material at the interface of said layer of refractory metal and said substrate and to form a region of said one conductivity type in said substrate contiguous to said layer of said compound, said dosage



being sufficiently large to provide a net activator concentration in said region whereby conduction between said layer of said compound and said region occurs predominantly by electron tunneling.

4,339,870

# SERIES-CONNECTED TWO-TERMINAL SEMICONDUCTOR DEVICES AND THEIR FABRICATION

Geoffrey Ball, Sandy; Harry A. Deadman, Clifton Shefford; John G. Smith, Biggleswade, and John C. Vokes, Harpenden, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

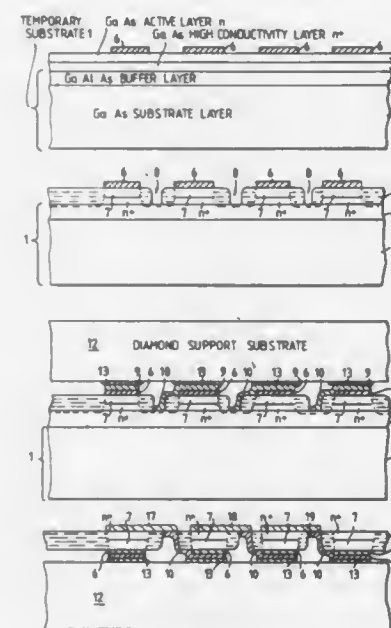
Filed Nov. 13, 1980, Ser. No. 206,680

Claims priority, application United Kingdom, Nov. 15, 1979, 7939564

Int. Cl.<sup>3</sup> H01L 21/265, 21/283, 21/308

U.S. Cl. 29—576 B

14 Claims



1. A method of fabricating a series-connected combination of two-terminal semiconductor devices on a common substrate comprising the steps of:

forming a layer of high quality semiconductor material on the surface of a temporary substrate to provide active areas for the devices the layer having a first free surface not in contact with the temporary substrate, forming first contact pattern conductors on the free surface of said high quality semiconductor layer to provide a separate first contact to this layer for each of the devices, bonding an insulating support substrate to said first contact pattern, removing said temporary substrate to expose a second surface of the high quality semiconductor material, forming second contact pattern conductors on the second

surface of said high quality layer to provide a separate second contact to this layer for each of the devices, removing regions of the high quality layer separating the conductors of one of said patterns at any step of the method after beginning formation of said first contact pattern thereby defining said device active areas and exposing parts of said first contact pattern when both the temporary substrate and said regions of the high quality layer have been removed such that both said first and said second contacts are accessible from the same side of said devices, and providing interconnections between the exposed parts of said first contact pattern and parts of said second contact pattern, whereby to connect the devices in series.

6. A method of fabricating a series connected combination of two-terminal semiconductor devices on a common substrate comprising

fabricating a first precursor by the following procedure: forming a layer of high quality semiconductor material on the surface of a temporary substrate to provide active areas for the devices, forming first contact pattern conductors on the free surface of said high quality semiconductor layer to provide a separate first contact to this layer for each of the devices thereon, bonding an insulating support substrate overlaying by a conducting interconnection pattern to said first contact pattern so as to provide contact between said first and the interconnection patterns, removing said temporary substrate, forming second contact pattern conductors on the other surface of said high quality layer to provide a separate second contact to this layer for the devices thereon, at any stage after high quality semiconductor layer formation removing regions of this layer which separate a contact pattern's conductors so as to form isolated regions sandwiched between said first and second contact pattern conductors, fabricating a second precursor by the same procedure as that used for said first precursor, and bonding said first and second precursors together so as to provide contact between the second contact pattern of the one and the interconnection contact pattern of the other.

4,339,871

# METHOD OF CENTER LOCKING FOR THE BEARING OF A ROTOR SHAFT UNIT ON THE STATOR OF AN ELECTRIC MOTOR

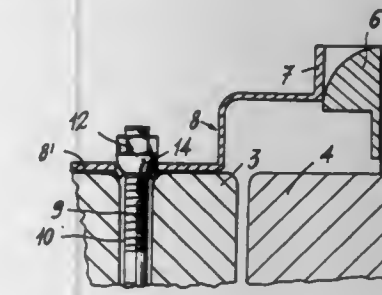
Adriano Magnaghi, Mozzate Coma, Italy, assignor to Olmo Emerson S.p.A., Caronno Pertusella, Italy

Filed Sep. 13, 1979, Ser. No. 74,956

Claims priority, application Italy, Sep. 19, 1978, 27834 A/78  
Int. Cl.<sup>3</sup> H02K 15/14

U.S. Cl. 29—596

3 Claims



1. A method for center locking a cap of a stator of an electric motor, said motor including a rotor, said cap being attached to said stator by rods passing through channels in said stator, said cap having openings in it for loose passage of said rods, and means associated with said cap along said openings for mounting said cap to said stator, said mounting means initially being

in a plane parallel to an end face of said stator, comprising the steps:

registering said rotor relative to said stator; placing at least one cap at centered relationship with respect to said stator; and tightening at least one nut on said rods so as to cause a force deforming the mounting means associated with said openings in said cap from said parallel plane so as to engage said channels and ensuring a constant center for the cap relative to the stator, thereby positioning said rotor with respect to said stator to maintain a proper air gap therebetween.

4,339,872

# APPARATUS AND METHOD FOR WINDING ARMATURES

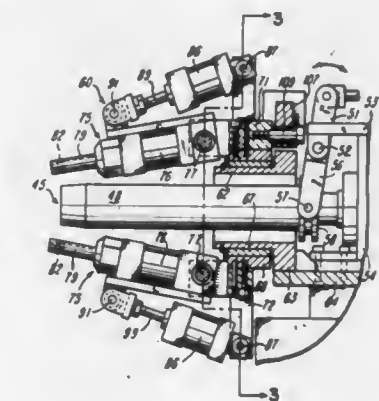
Robert D. George, and Robert P. Hoy, both of Dayton, Ohio, assignors to Mechaneer, Inc., Dayton, Ohio

Filed Aug. 6, 1980, Ser. No. 175,905

Int. Cl.<sup>3</sup> H02K 15/09

U.S. Cl. 29—597

14 Claims



1. In apparatus for winding an armature having a shaft supporting a core and a commutator having laterally spaced hook-shaped commutator tangs, said apparatus including means for supporting an armature at a winding station, power driven winding means supported for rotation relative to said supporting means for successively winding at least one wire into a series of coils on the core, means for selectively presenting each of the commutator tangs for receiving a lead wire extending from a coil to said winding means, and wire gripping means for engaging the wire extending from said winding means to the coil, the improvement comprising means supporting said wire gripping means for rotation on generally the axis of the armature shaft from a first position where the wire is engaged by said wire gripping means to a second position disposed at a substantial angle from said first position where the wire is severed generally adjacent a commutator tang.

4,339,873

# METHOD OF MAKING ROTOR OF ROTARY MACHINES

Hisanobu Kanamaru, Ibaraki; Moisei Okabe, Tokyo; Hideo Tatsumi, Ibaraki; Akira Tohkairin, Ibaraki, and Ryoji Kasama, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 27, 1980, Ser. No. 125,094

Claims priority, application Japan, Mar. 5, 1979, 54-24492  
Int. Cl.<sup>3</sup> H02K 15/02

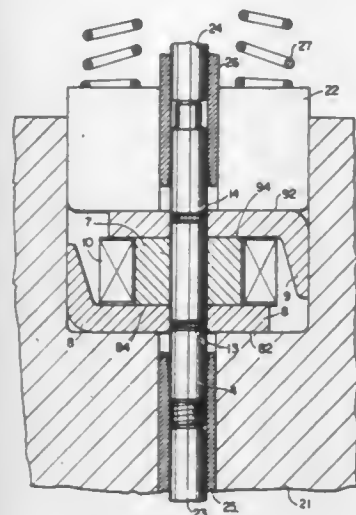
U.S. Cl. 29—598

7 Claims

1. A method of fastening a rotor core for a rotary machine, comprising: providing a rotary shaft having at least one annular groove in the circumference thereof; inserting said rotary shaft into a shaft receiving hollow portion of a rotor core so as to position the annular groove at a position slightly on the inner side of an end surface of said rotary core; and

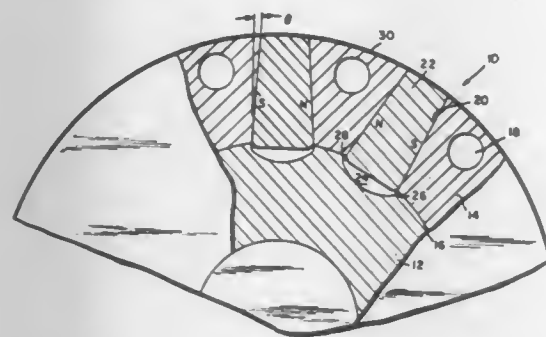


cold-pressing a portion of said end surface near the shaft receiving hollow portion of said rotary core while exerting a preload on the remaining portion of said end surface of said rotary core said preload subjecting said core mem-



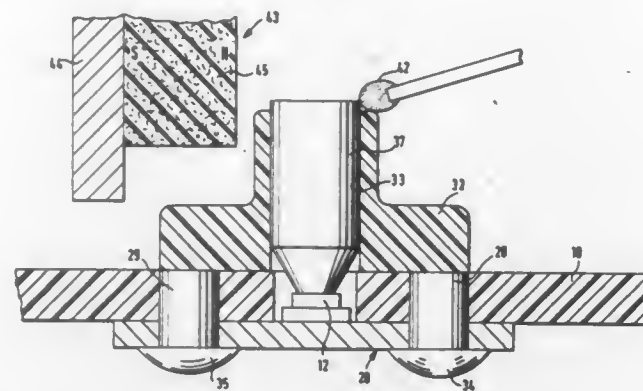
ber to a stress which is nearly equal to or slightly smaller than the deformation resistance thereof, said cold-pressing causing a portion of said rotary core to flow plastically into the groove of said rotary shaft, thereby to fasten the core and the rotary shaft together.

**4,339,874**  
**METHOD OF MAKING A WEDGE-SHAPED PERMANENT MAGNET ROTOR ASSEMBLY**  
Frederick B. McCarty, San Pedro, and Alexander Silver, Tarzana, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.  
Division of Ser. No. 973,346, Dec. 26, 1978, Pat. No. 4,242,610.  
This application Mar. 10, 1980, Ser. No. 214,357  
Int. Cl.<sup>3</sup> H02K 15/02  
U.S. Cl. 29—598 6 Claims



1. A method of forming a rotor for a permanent magnet machine, comprising the steps of:  
affixing a plurality of inwardly converging, wedge-shaped support members equally spaced around the periphery of a rotor hub to form a plurality of outwardly converging, wedge-shaped slots therebetween;  
inserting a plurality of wedge-shaped permanent magnets having outwardly converging sides, individual magnets disposed in individually outwardly converging wedge-shaped slots between support members; and  
rotating the rotor to wedge the outwardly converging permanent magnets into the outwardly converging slots without additional restraint on said magnets.

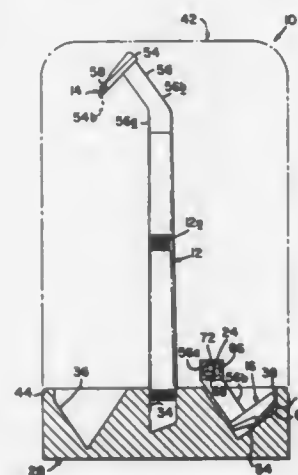
**4,339,875**  
**METHOD OF ASSEMBLING A GALVANOMAGNETIC SENSOR IN A CAVITY IN A CONDUCTING PLATE**  
Rolf Müller, St. Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren KG, St. Georgen, Fed. Rep. of Germany  
Filed Apr. 25, 1980, Ser. No. 143,604  
Claims priority, application Fed. Rep. of Germany, May 7, 1979, 2918329  
Int. Cl.<sup>3</sup> H01F 41/02  
U.S. Cl. 29—602 R 7 Claims



1. A manufacturing method for assembling and mounting a galvanomagnetic sensor, such as a hall generator, in a cavity in a circuit board, means being provided for flux concentration including on one side of the circuit board a flat flux concentrator and on the other side of said circuit plate, a flux concentrating body that is tapered toward said galvanomagnetic sensor, said method comprising the steps of:

- mounting said galvanomagnetic sensor in said cavity in said circuit board;
- thereafter affixing a first flux concentrating means of generally flat configuration on the one side of said sensor;
- bringing said flux concentrating body which is tapered toward said sensor, into position immediately adjacent that sensor by force fitting into a holder; and
- fixing said tapered flux concentrator in its position adjacent to said galvanomagnetic sensor, relative to said circuit board.

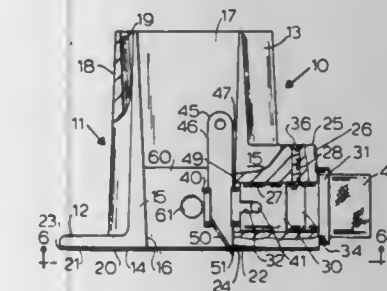
**4,339,876**  
**SHAVING SYSTEM AND METHOD**  
Alton A. Davis, 15900 NW. 45th Ave., Opa-Locka, Fla. 33054  
Filed Nov. 3, 1980, Ser. No. 203,350  
Int. Cl.<sup>3</sup> B26B 21/40  
U.S. Cl. 30—90 6 Claims



1. A shaving kit comprising an elongated handle, a pair of blade assemblies to be used in sequence, each assembly having an elongated neck and a head formed integrally with the neck, a single edge blade mounted in one shaving assembly head, a pair of closely spaced, parallel blades mounted in the other shaving assembly head, coacting means on an end of the handle

and on the free end of the neck of each blade assembly for detachably connecting the neck to the handle, and a caddy for removably retaining the handle and the two blade assemblies, said caddy comprising a container having three receptacles, one receptacle sized to receive and retain an end of the handle and the other two receptacles sized to receive and retain the two blade assemblies.

**4,339,877**  
**HAND-HELD CUTTER FOR CUTTING MOUNTING BOARD AND THE LIKE**  
Donald C. Pierce, 1253 C Redwood Blvd., Novato, Calif. 94947  
Division of Ser. No. 55,345, Jul. 6, 1979, Pat. No. 4,262,419, which is a continuation-in-part of Ser. No. 22,423, Mar. 21, 1979, abandoned. This application Oct. 3, 1980, Ser. No. 193,884  
Int. Cl.<sup>3</sup> B26B 29/00  
U.S. Cl. 30—293 25 Claims

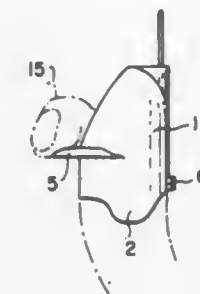


1. A handheld cutter for cutting mounting board and the like, including in combination:  
a handle and support member-shaped as an annular segment bounded by a pair of aligned substantially vertical planar surfaces extending on both sides of a gap in the annulus, and having a generally flat bottom wall and an upstanding hand-engaging portion,  
said handle and support member having a generally cylindrical wall, a first horizontal through opening generally parallel to said planar surfaces, a generally vertical wall around the outer end of said first through opening, and a second horizontal through opening extending perpendicularly to the direction of said first through opening and facing said gap,  
a blade-holding means extending through said first through opening and rotatable therein and secured to said handle and support member for retaining a cutting blade at a plurality of angular positions and for adjusting the cutting depth of the blade,  
retention means extending into said first through opening and engaging said blade-holding means in a desired rotational position,  
a cutting blade adjustably held in said blade-holding means, and  
a rod attachment extending through and adjustably secured to said second opening.

**4,339,878**  
**DEVICE FOR CUTTING FLOWERS, FRUIT AND THE LIKE**  
Vincenzo G. A. Tozzi, 1166 Monticello Rd., Lafayette, Calif. 94549  
Filed Oct. 20, 1980, Ser. No. 198,622  
Int. Cl.<sup>3</sup> B26B 27/00  
U.S. Cl. 30—298 5 Claims

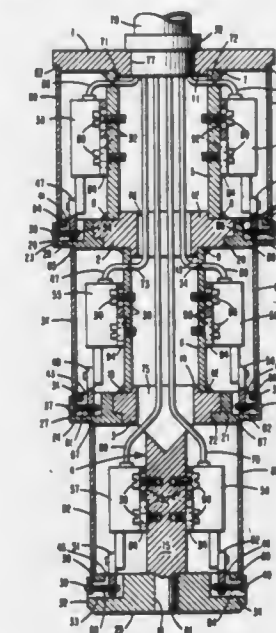
1. A device for cutting flowers, fruit or the like which comprises a thimble to be inserted on the thumb of one hand, the thimble comprising an essentially cylindrical portion and a tapered portion closed at the top and integral with said cylindrical portion, said thimble being provided with a channel for insertion of a cutting tool in a direction parallel to the axis of the thimble, and with a flange on the side opposite to the

cutting tool, said flange being spaced from the lower end of the thimble, said flange being essentially perpendicular to the axis



of the thimble, said flange providing support for the index finger of the same hand to rest during the cutting operation.

**4,339,879**  
**METHOD FOR ADJUSTING THE POSITION OF THE PROBES OF A PLUG GAUGE AND RELEVANT PLUG GAUGE**  
Narciso Sella, Monteveglio, Italy, assignor to Finike Italiana Marpos, S.p.A., S. Marino di Bentivoglio, Italy  
Filed Jul. 22, 1980, Ser. No. 171,162  
Claims priority, application Italy, Aug. 3, 1979, 3479 A/79  
Int. Cl.<sup>3</sup> G01B 5/12, 7/12  
U.S. Cl. 33—178 E 19 Claims



6. A plug gauge comprising a support adapted to define a geometrical axis of the plug gauge; a protection plug adapted to be fixed to the support; and measuring heads adapted to be fixed to the support, the measuring heads including probes adapted to cooperate with the surface of the part to be checked and adjusting means for adjusting the rest position of the probes with respect to the support, and wherein said plug has a shape substantially annular, with a limited height with respect to the height of the gauge, for protecting the probes while permitting the accessibility of the measuring heads, the plug defining radial openings for the passage of the probes, said radial openings providing spatial references for adjusting the probes with respect to the support.



4,339,880

**DEVICE FOR HOLDING SURVEYOR'S INSTRUMENT**

George W. Hall, Sioux City, Iowa, assignor to Beverly J. Hall, Sioux City, Iowa, a part interest

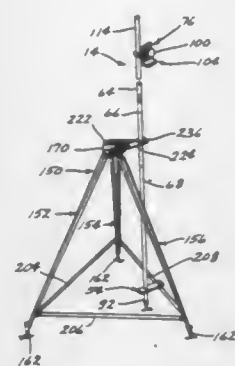
Continuation-in-part of Ser. No. 953,704, Oct. 23, 1978, Pat. No. 4,192,076. This application Nov. 26, 1979, Ser. No. 97,193.

The portion of the term of this patent subsequent to Mar. 11, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> G01C 15/08

U.S. Cl. 33—293

9 Claims



1. A device for holding a surveyor's instrument comprising: a tripod having a platform member and three legs hinged together at their upper ends to said platform member; three connecting members interconnecting said lower ends of said legs, each of said connecting members having one of its ends detachably secured adjacent the lower end of one of said legs and the other of its ends detachably secured adjacent the lower end of another of said legs, whereby said connecting members when so secured to said legs hold said legs against pivotal movement of said legs about their hinged connections to said platform member;

a vertical range pole having upper and lower ends; range pole holding means on said tripod for holding said range pole against movement with respect to said tripod, said range pole holding means comprising an upper bracket and a lower bracket, said upper bracket being operatively mounted to said platform and said lower bracket being operatively connected to one of said connecting members, a range pole adapter mounted to said upper end of said range pole for vertical sliding movement thereon, said adapter having manually operable securing means thereon for selectively holding said adapter against vertical sliding movement on said range pole;

a surveyor's instrument operably attached to said adapter so as to be carried therewith during said vertical sliding movement of said adapter on said range pole.

4,339,881

**PARALLEL-RULING STRAIGHTEDGE**

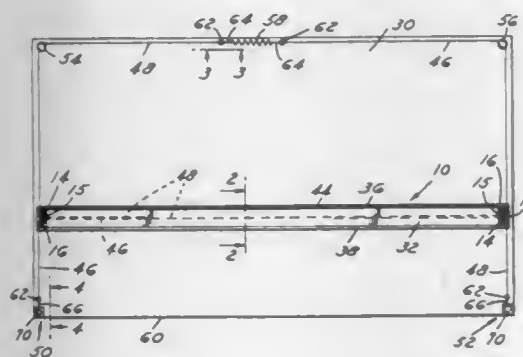
Dennis R. Kapp, 7780 Chichester, Canton, Mich. 48187

Filed Aug. 19, 1977, Ser. No. 826,275

Int. Cl.<sup>3</sup> B43L 13/02, 7/00

U.S. Cl. 33—444

12 Claims



1. A parallel-ruling straightedge assembly for a drafting and

graphic arts table comprising an elongated base member, means carried by said base member for mounting said base member to translate over the surface of a drafting and graphic arts table in a direction generally perpendicular to the elongated dimension of said base member, and first and second straightedge means extending along opposite longitudinal edges of said base member, said first straight-edge means being of a transparent plastic material and having a longitudinally extending edge remote from said base member constructed and arranged for drafting, and said second straightedge means being a metallic material and having a longitudinally extending edge remote from said member constructed and arranged for stripping sheet material.

4,339,882

**ORGANIC SOLID SUBSTRATE DEWATERING PROCESS UTILIZING PRIMARY AND SECONDARY SOLVENTS**

Leland C. Dickey, and Maya Tayter, both of Omaha, Nebr., assignors to InterNorth, Inc., Omaha, Nebr.

Filed Jul. 2, 1981, Ser. No. 280,264

Int. Cl.<sup>3</sup> F26B 3/00

U.S. Cl. 34—9

6 Claims

1. A method of removing water from organic solid substrates which comprises:

- (a) contacting the substrate with a primary solvent to remove at least a large portion of the water therefrom,
- (b) separating the substrate from the mixture of primary solvent and water,
- (c) contacting said mixture with a secondary solvent which is miscible with the primary solvent but not with water to separate the primary solvent from the water,
- (d) separating the water from the mixture of primary solvent and secondary solvent, and
- (e) separating the primary and secondary solvents.

4,339,883

**PROCESS AND APPARATUS FOR THE SEPARATION OF HARMFUL SUBSTANCES FROM WASTE GASES, PARTICULARLY IN THE DRYING OF WOOD CHIPS**

Günter Waldmann, Packenreiterstr. 18b, D-8000 München, Fed. Rep. of Germany

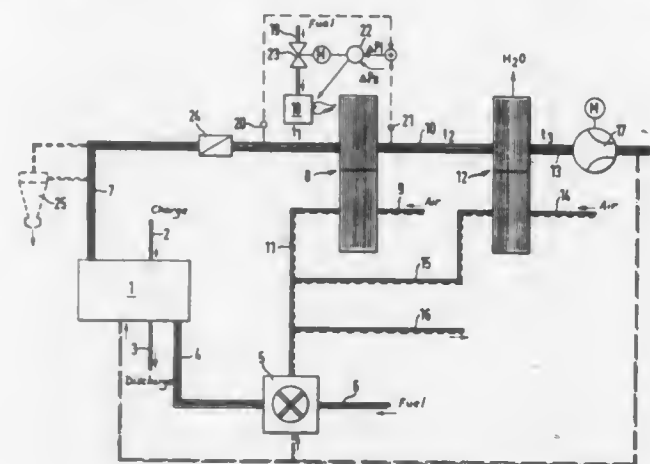
Filed Jun. 23, 1980, Ser. No. 162,109

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1979, 2926663

Int. Cl.<sup>3</sup> F26B 3/04

U.S. Cl. 34—27

27 Claims



1. A process for drying wood chips and/or lacquer comprising providing a stream of hot gas; passing the hot gas over the wood chips and/or lacquer to be dried; removing the now waste gas from the wood chips and/or lacquer to be dried; cooling the waste gas by exchanging heat until the volatile substances carried will condense and/or precipitate concomitantly binding dust and/or similar materials; and intermittently burning off the precipitated and/or condensed material.

4,339,884

**APPARATUS FOR DRYING FISH, ESPECIALLY SQUID**

Donald Andrews, P.O. Box 88, Topsail, Newfoundland, Canada (AOA 3Y0)

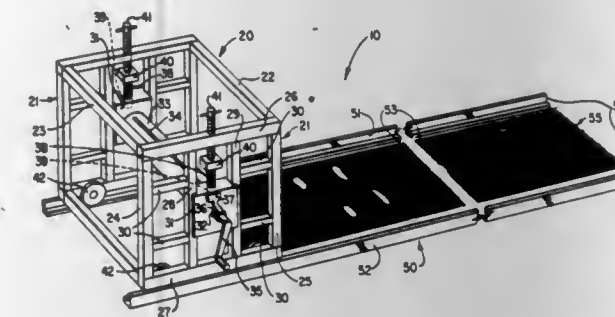
Filed Nov. 5, 1980, Ser. No. 204,317

Claims priority, application Canada, Jul. 28, 1980, 357145

Int. Cl.<sup>3</sup> F26B 25/10, 11/18

U.S. Cl. 34—93

19 Claims



1. Apparatus for the processing of fish which comprises:
  - (a) a frame having an upper perforated bed or flake and a lower pair of parallel tracks or rails;
  - (b) an upright framework associated with said frame and disposed at one end of said frame and adapted to be moved along the tracks or rails from said one end of said frame to the opposite end of said frame;
  - (c) a roller mechanism including a round or polygonal roller rotatably mounted in said upright framework;
  - (d) a mesh material;
  - (e) means for securing one end of said mesh material to said roller;
  - (f) means for securing the other end of said mesh material to the opposite end of said frame; and
  - (g) means for simultaneously moving said upright framework along said rails from said one end of said frame to the opposite end of said frame while winding said mesh material on said roller mechanism, whereby said mesh material is converted from a spread orientation disposed in an extended position atop said flake with said framework at said one end of said frame, and a storage orientation with said mesh material wound on said roller mechanism with said framework at said opposite end of said frame.

4,339,885

**IDENTIFICATION MEANS FOR ROLLED-UP ARTICLES, SUCH AS DRAWINGS AND THE LIKE**

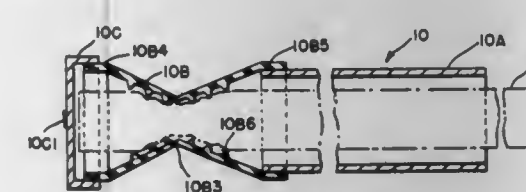
Richard K. Brown, 8116 Kenova La., Springfield, Va. 22153

Filed Nov. 25, 1980, Ser. No. 210,406

Int. Cl.<sup>3</sup> G09F 3/00, 3/18; B05C 17/00; B65D 69/00

U.S. Cl. 40—309

7 Claims



1. An identification means for enclosing at least a portion of rolled-up articles and for identifying said articles, comprising:
  - first body means having one end thereof for receiving the rolled-up article, the first body means being made of a rigid material;
  - second body means having one end thereof attached to the opposite end of said first body means, said second body means being made of a resilient material for gripping the rolled-up article placed therein, and being made in the form of a single unitary structure, said second body means being concave in shape and including a central apex point and two opposite ends, the central apex point pointing internally of said first body means, the thickness of the

two opposite ends of the second body means being greater than the thickness of said second body means at said central apex point;

cover means for enclosing the opposite end of said second body means; and

label means disposed on said cover means for identifying the rolled-up article placed therein.

4,339,886

**LETTERING KIT AND ALIGNMENT GRID THEREFOR**

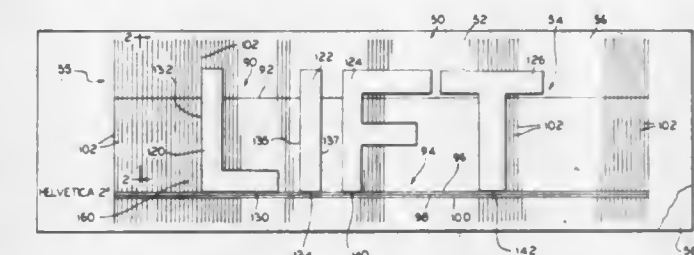
Kenneth G. Griffiths, Downers Grove, and Stephen C. Woods, Clarendon Hills, both of Ill., assignors to Zipatone Inc., Hillside, Ill.

Filed Jul. 25, 1980, Ser. No. 172,431

Int. Cl.<sup>3</sup> G09F 7/16

U.S. Cl. 40—595

16 Claims



1. In a lettering kit arrangement providing English alphabet letters of a predetermined font and nominal height for manually applying selected letters thereof to a selected substrate in a predetermined order and spacing, having their undersides coated with a pressure sensitive adhesive and releasably mounted on the release agent coated side of a backing sheet, an alignment grid sheet bearing an alignment grid for laying out said selected letters aligned in their said predetermined order on one side of same that is release agent coated, and a transfer sheet having one side of same coated with a pressure sensitive adhesive to which is releasably adhered a release coated backing that is removed for laying said one side of same over the laid out letters for pressure sensitive adherence thereto and manual transfer and application to the substrate, the improvement wherein:

said grid comprises a working face, including a head horizontal base line indicia and a foot horizontal base line indicia delineated on said one side of said grid sheet, said foot base line indicia comprising a top base line, a middle base line and a bottom base line extending in parallelism across said one side of said grid sheet with said middle base line centered between said top and bottom base lines, said head base line indicia comprising a base line spaced above said middle base line of said foot base line indicia a dimension approximating three-fourths of said foot lettering nominal height,

said font base line indicia top and bottom base lines being spaced from the middle base line thereof a distance approximating one-half the difference between the height of the font capital letters that have horizontally rectilinear upper and lower ends and the height of the font capital letters that have rounded upper and lower ends,

said grid working face further comprising closely spaced vertical lines delineated on said one side of said grid sheet across said face,

said transfer sheet comprising a transparent film bearing said pressure sensitive adhesive,

said grid having a length to receive for layout purposes a predetermined number of the font letters for word forming purposes and said transfer sheet having a length that approximates the length of said grid,

with the adhesive coating of said letters having a release from said one side of said grid that is on the order of twenty grams and a release from the substrate that exceeds two hundred grams,

with the adhesive coating of said transfer sheet when said backing sheet thereof is removed having a release from

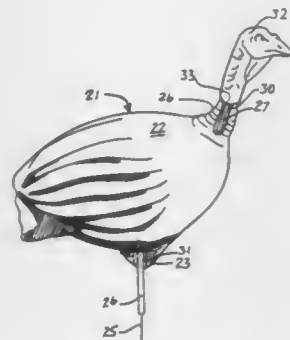


the top sides of said letters that is in the range of from about seventy to ninety grams and a release from the substrate that is in the range of from about one hundred to about one hundred twenty grams, said font letters being layable out in uniform horizontal alignment by laying the lower ends of the font capital letters with horizontally rectilinear lower ends aligned with the top base line of said foot base line indicia, laying out the font capital letters that have convexly rounded lower ends in tangency with the lower base line of said foot base line indicia, and laying out the font elongated lower case letters with horizontally rectilinear upper portions thereof aligned with said base line of said head base line indicia, with predetermined vertical line separation between adjacent letters to achieve said spacing.

**4,339,887**  
**DECOY, MOLD AND METHOD OF CONSTRUCTION**  
Wesley R. Streeter, Rte. 1, Box 548, Bastrop, La. 71220  
Filed Apr. 18, 1980, Ser. No. 141,415  
Int. Cl.<sup>3</sup> A01M 31/06

U.S. Cl. 43—2

1 Claim

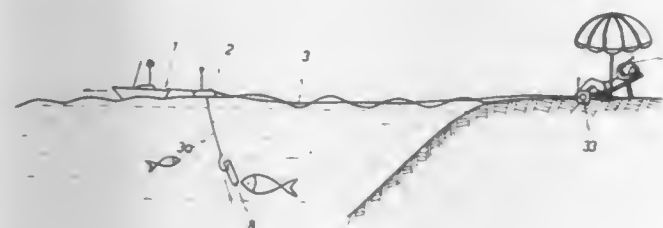


1. A decoy formed from an expanded foam material and comprising a body shaped to resemble a game bird; a cavity in the bottom of said body; leg projections on each side of said cavity and leg seats in said leg projections for removably receiving legs to support said decoy and a neck projection on the top of said body and a neck seat in said neck projection for removably receiving a head, said neck seat and said leg seats formed of a casting resin containing particles of aluminum.

**4,339,888**  
**REMOTE CONTROL FISHING DEVICE WITH AUTOMATIC LINE RETRIEVAL**  
Tseng Sheng-Jung, No. 50 Chiung Tai Rd., Hsin Chuang Chen, Taipei, Taiwan  
Filed Apr. 23, 1979, Ser. No. 32,408  
Int. Cl.<sup>3</sup> A01K 97/00

U.S. Cl. 43—26.1

5 Claims



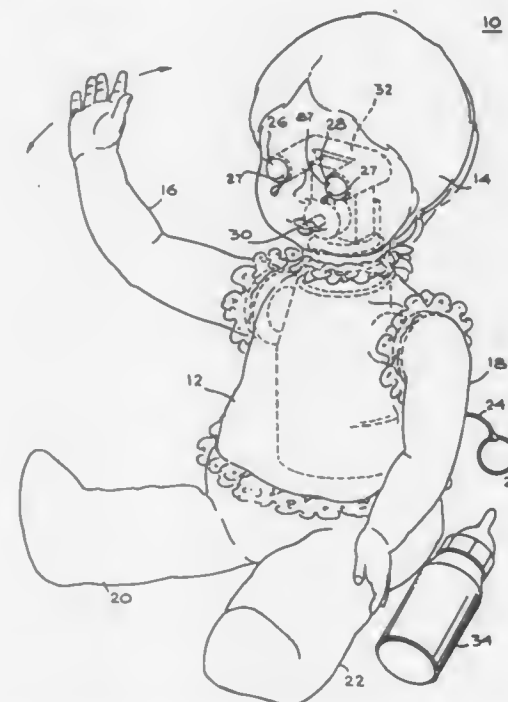
1. An automatic fishing system for catching fish with an automatic fishing line retrieval which will eventually reel in a hooked fish regardless of the drag of the fish on the line, said system comprising:  
a capstan retrieval means for recovering a primary fishing line, said capstan retrieval means including a capstan

activation receiver means for activating a capstan motor upon receipt of a preset radio signal;  
a fishing float means, connected to said capstan retrieval means by a primary fishing line, said float means including a line control motor means for controllably dispensing a secondary fishing line and a radio signal transmission means, responsive to forces applied to said secondary fishing line, for sending said preset radio signal to said capstan receiver means; and  
a radio controlled boat means, controllably connected to said fishing float means, for controllably towing said fishing float means to a desired fishing location.

**4,339,889**  
**MULTIPLE FUNCTION DOLL**  
Benjamin G. Guerrero, Los Angeles; Diana C. Troup, Cerritos, and Peter C. White, Rancho Palos Verdes, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.  
Filed Feb. 1, 1980, Ser. No. 117,746  
Int. Cl.<sup>3</sup> A63H 11/00

U.S. Cl. 46—135 A

7 Claims



1. A doll comprising a body; a limb mounted to the body; a head having eyes supported by the body; and an operating mechanism positioned in the body including a motor, a cam driven by said motor, means linking the cam to the limb whereby the limb is moved by the operation of the motor, a drive shaft driven by the cam, a reservoir for liquid, means for conducting the liquid from the reservoir to an exit opening adjacent the eyes, and a pump connected to be operated by the driven shaft to move liquid from the reservoir through the conducting means to the exit opening.

3. A doll operating mechanism comprising a motor, a shaft driven by the motor, an offset crank driven by the shaft, a cam surface driven by the motor, means connected to the cam surface for providing reciprocating circular motion, pump means connected to the crank for moving liquid, and a housing shaped to define a reservoir and to define conduits from the reservoir to the exterior of the mechanism, from the reservoir to the pump means and from the pump means to the exterior of the mechanism, the housing being further shaped to define eyes for a doll where the conduits from the pump means emerge to the exterior of the mechanism.

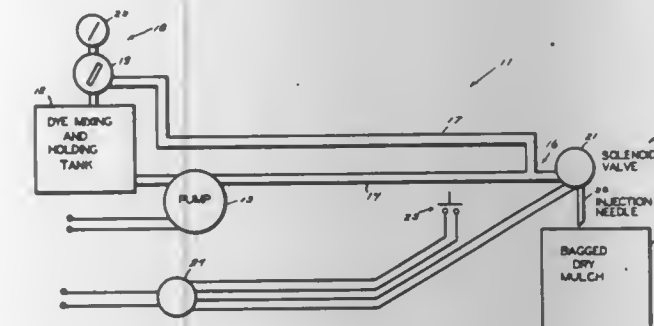
**4,339,890**  
**DRY SEEDING MULCH AND PROCESS OF MAKING SAME**

Bruce E. Koenig, 2499 Jolly Rd., Okemos, Mich. 48864, and Thomas E. Niswander, 139 Woodmere St., Apt. 13, East Lansing, Mich. 48823, assignors to Bruce E. Koenig, East Lansing, Mich. and Thomas E. Niswander, Shaker Heights, Ohio, a part interest

Filed Jul. 18, 1980, Ser. No. 170,077  
Int. Cl.<sup>3</sup> A01G 7/00

U.S. Cl. 47—9

1 Claim

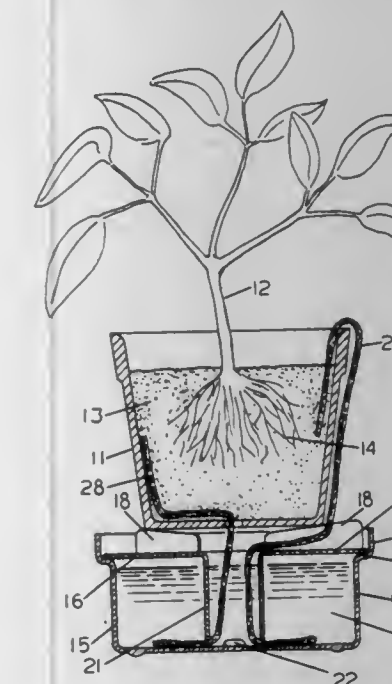


1. In a process for producing a dry seeding mulch, the steps which include:  
(a) reducing dry waste paper products into fine divided particles;  
(b) mixing said finely divided particles of dry waste paper products with a dry chemical wetting agent in powder form so as to provide a dry seeding mulch mixture;  
(c) placing said dry seeding mulch mixture into shipping bags;  
(d) preparing said bags for shipment; and  
(e) injecting a viscous liquid coloring dye into said bagged dry seeding mulch mixture.

**4,339,891**  
**PLANT SUPPORTING AND WATERING DEVICE**  
Ronald M. Bassett, 2107 Summerdale Ave., Chicago, Ill. 60625  
Filed Oct. 6, 1980, Ser. No. 194,554  
Int. Cl.<sup>3</sup> A01G 9/04, 25/00

U.S. Cl. 47—71

3 Claims



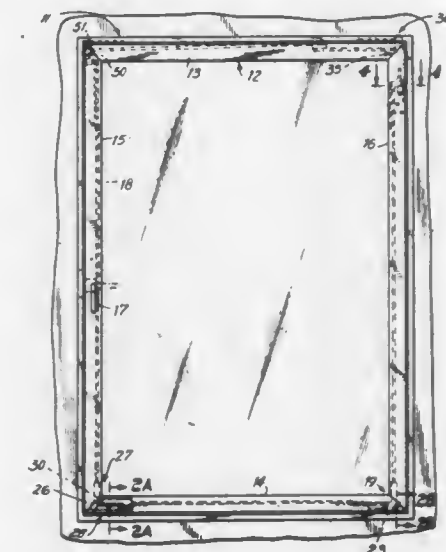
1. A supporting and watering device for a plant contained in a pot having soil therein, comprising:  
A. a water reservoir stand comprising a container adapted to contain water and having:  
1. an outer wall,  
2. a bottom,  
3. a flanged rim at the upper edge of the outer wall defin-

ing a shoulder at the inner surface of said outer wall, and  
4. a plurality of gussets affixed to the outer wall and bottom of said container for supporting said outer wall, and  
B. A disc-form cover positioned within said flanged rim and supported on said shoulder, said cover having radial ribs on the upper surface thereof for supporting said pot, and having a central aperture and a central tube vertically depending from said cover permitting a wick to pass through said tube and said cover, the lower lip of said tube being provided with recesses permitting said wick to pass thereunder and to be imbedded in the soil of the plant pot.

**4,339,892**  
**SAFETY WINDOW OF THE TILT AND TURN TYPE**  
Roger Ulbricht, Hicksville, and Ralph Cavallucci, New York, both of N.Y., assignors to Flour City Architectural Metals, Glen Cove, N.Y.  
Filed Oct. 9, 1980, Ser. No. 195,408  
Int. Cl.<sup>3</sup> E05D 15/52

U.S. Cl. 49—192

8 Claims

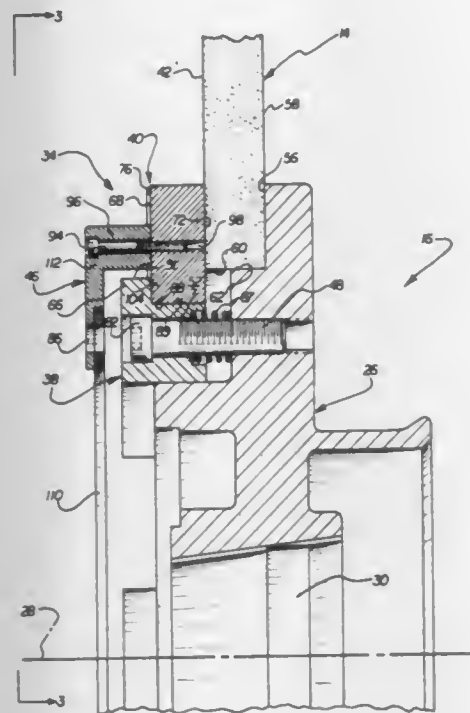


1. A safety window construction of the type which is shiftable between locked, vent and casement conditions of operation, said window including a fixed rectangular frame, a movable hollow rectangular sash pivotally connected thereto and carrying a pane, an operating handle on said sash shiftable between locking, vent and casement positions, drive means in said hollow sash operatively connected to said handle, a permanent pivot connection between a lower corner of said sash and frame permitting horizontal and vertical pivotal movements of said sash relative to said frame, a removable pivot connection between the other lower corner of said sash and frame and operatively associated with said drive means, permitting movement about a horizontal axis between said sash and frame in said vent condition and clearing said sash for horizontal movement relative to said frame in said casement condition, and a third pivot connection including a bearing aperture on said frame in coaxial alignment with said permanent connection, and a trunnion member formed on a fitting movably mounted on said sash and operatively connected to said drive means, said trunnion member being in axial alignment with said bearing aperture and shiftable axially thereinto responsive to movement of said handle to said casement condition, said window being characterized in that said frame includes a fixture mounted thereon having vertically spaced stop portions defining a horizontal clearance slot, said fitting including a finger member located in lateral displaced relation to and in horizontal alignment with said slot in said casement position of said handle when said sash is in a coplanar aligned condition with said frame, said finger being positioned to be shifted into said slot responsive to pivotal movements of said sash about said vertical axis away from said coplanar aligned condition, whereby vertical movements of said fitting are positively pre-



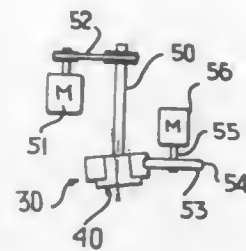
vented by interference between said finger and stop portions, thus to lock said trunnion from removal from said bearing aperture.

**4,339,893**  
**QUICK RELEASE HUB ASSEMBLY**  
Roger H. Fournier, Millbury, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio  
Filed Oct. 9, 1980, Ser. No. 195,413  
Int. Cl.<sup>3</sup> B24B 41/00, 45/00  
U.S. Cl. 51—168 5 Claims



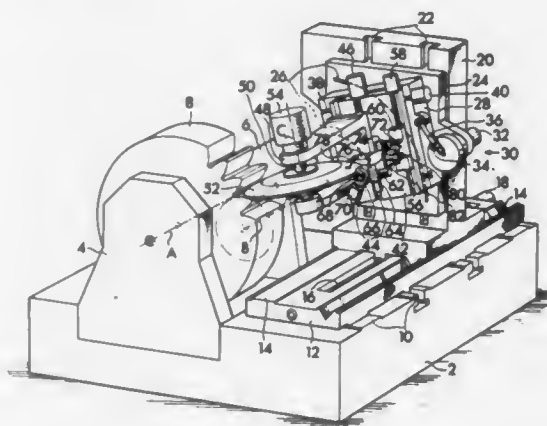
1. A hub assembly for rotatably mounting a grinding wheel having a pair of major side surfaces, said assembly comprising a rotatable hub having surface means for engaging a first major side surface of the grinding wheel, a circular clamp member disposed in a coaxial relationship with said hub, said clamp member having a plurality of radially outwardly projecting arms, fastener means for connecting said clamp member with said hub and for holding said clamp member against rotation relative to said hub, an annular flange ring circumscribing and disposed in a coaxial relationship with said clamp member, said flange ring including first surface means which defines a plurality of recesses which extend radially outwardly from a central opening in said flange ring for a distance sufficient to enable said flange ring to be moved axially outwardly from said clamp member when said arms are aligned with said recesses, said flange ring including second surface means which defines a plurality of clamping surfaces which are disposed on a radially extending and axially outer side portion of said flange ring and are disposed between adjacent recesses in said flange ring, said flange ring including third surface means for defining a radially extending and axially inner side portion of said flange ring which is adapted to engage a second major side surface of the grinding wheel, said flange ring being rotatable relative to said hub and clamp member between a retaining position and a release position, said radially extending arms on said clamp member being disposed in abutting engagement with said clamping surfaces and said fastener means being effective to press said third surface means against the second major side surface of the grinding wheel when said flange ring is in the retaining position, said radially extending arms on said clamp member being disposed in alignment with the recesses in said flange ring when said flange ring is in the release position to thereby enable said flange ring to be moved axially outwardly from the grinding wheel.

**4,339,894**  
**CONVOLUTED SHIRING WHEEL**  
Alfred D. Story, and Dixon R. Asquith, both of Danville, Ill., assignors to Teepak, Inc., Chicago, Ill.  
Filed Nov. 13, 1979, Ser. No. 93,338  
Int. Cl.<sup>3</sup> A22C 11/00; B24B 1/00  
U.S. Cl. 51—281 R 19 Claims



15. A method of forming a shirring wheel, said method comprising the steps of providing a wheel blank having a plurality of circumferentially spaced radially projecting lugs and a hub receiving bore, providing a special hub having a wheel mounting surface concentric about a first axis and a shaft receiving bore having an axis tilted relative to said first axis, mounting said wheel blank on said hub, and machining shirring surfaces on said lugs in a customary manner.

**4,339,895**  
**METHOD OF GRINDING GEAR TEETH FLANKS**  
Daniel A. Fivian, Horgen, Switzerland, assignor to Maag Gear-Wheel & Machine Co. Ltd., Zurich, Switzerland  
Filed Aug. 14, 1979, Ser. No. 66,443  
Claims priority, application Switzerland, Aug. 18, 1978, 8774/78  
Int. Cl.<sup>3</sup> B24B 1/00, 9/00  
U.S. Cl. 51—287 8 Claims

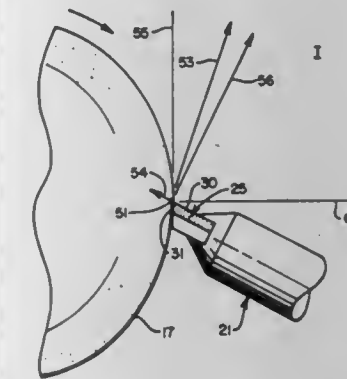


1. A method of grinding tooth flanks upon a gear grinding machine comprising a workpiece support and a tool base relatively movable with respect to one another, a grinding wheel support pivotally mounted at the tool base for pivotal movement about a pivot axis, a grinding wheel mounted to be rotatably drivable at said grinding wheel support, said grinding wheel having an axis of rotation arranged transversely with respect to said pivot axis, pivot drive means for connecting said grinding wheel support with said tool base, said pivot drive means enabling, during grinding of a tooth flank, random changes of the grinding-angle of attack between the grinding wheel and the tooth flank within predetermined limits, and gearing means for to-and-fro partial generating movements between the tooth flank and the grinding wheel, which method comprises the steps of:

increasing the grinding-angle of attack along the path from the tooth root to the intermediate region of the tooth flank; and  
increasing the grinding-angle of attack also along the path

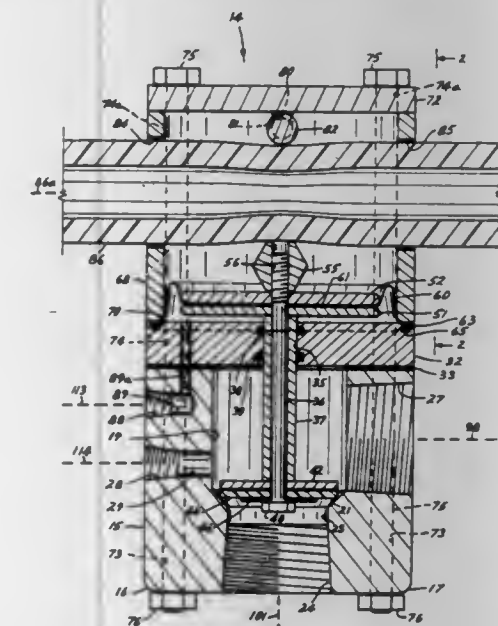
from the tooth head to the intermediate region of the tooth flank and at that location said grinding angle of attack reaches its maximum.

**4,339,896**  
**ABRASIVE COMPACT DRESSING TOOLS, TOOL FABRICATION METHODS FOR DRESSING A GRINDING WHEEL WITH SUCH TOOLS**  
Mahlon D. Dennis, Columbus, Ohio, and Frank R. Skinner, St. Joseph, Mich., assignors to General Electric Company, Worthington, Ohio  
Continuation-in-part of Ser. No. 805,759, Jun. 13, 1977, abandoned. This application May 15, 1978, Ser. No. 906,288  
Int. Cl.<sup>3</sup> B24D 17/00  
U.S. Cl. 51—298 13 Claims



1. A method for dressing a grinding wheel comprising the steps of rotating said wheel and engaging the periphery of the rotating wheel with a dressing tool having a tip which is a composite compact disposed at a positive back rake angle of between 5 and 30 degrees.

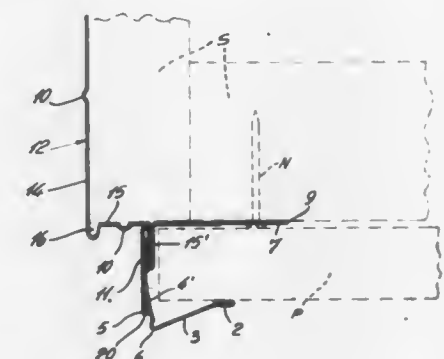
**4,339,897**  
**SANDBLASTING METHODS AND APPARATUS**  
Robert E. Thompson, Houston, and Richard P. McNinney, Richmond, both of Tex., assignors to Schmidt Manufacturing, Inc., Houston, Tex.  
Continuation-in-part of Ser. No. 92,199, Nov. 7, 1979, abandoned. This application Nov. 5, 1980, Ser. No. 204,345  
Int. Cl.<sup>3</sup> B24C 7/00  
U.S. Cl. 51—436 34 Claims



1. Sandblast control valve, comprising valve body means having a valve chamber therein, a fluid outlet passage through said body means from said chamber, a fluid inlet passage through said body means to said chamber, a valve seat around the inner end of said fluid outlet passage, first valve means within said chamber movable between a closed position against

said seat and an opened position away from said seat, gas operated actuating means outside of said chamber for opening and closing said first valve means, and second valve means comprising elastomeric tube means extending through said body means which is pinched to close by said actuating means when said actuating means is moved to open said first valve means and which is released to open when said actuating means is moved to close said first valve means.

**4,339,898**  
**COMBINATION FASCIA AND J-TRIM**  
Carol D. Pichette, 163, rue de l'Eglise, Chateau-Richer, Prov. of Quebec, Canada (GOA 1NO)  
Filed Sep. 16, 1980, Ser. No. 187,950  
Int. Cl.<sup>3</sup> E04B 7/00  
U.S. Cl. 52—94 2 Claims



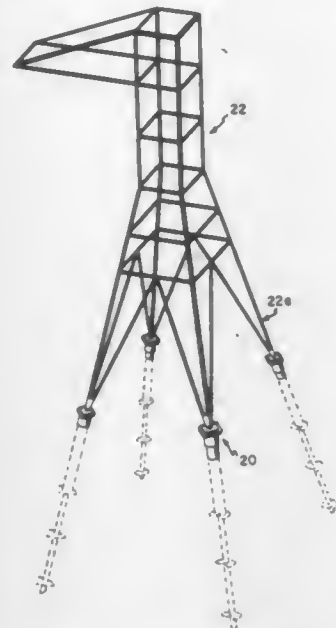
1. A combination fascia and J-trim moulding comprising, firstly, a J-trim moulding in two pieces, a first piece and a second piece, each piece having a generally L-shaped profile and being made of a flexible material; each piece comprising a first branch and a second branch; the second branches being attachable one to the other by overlapping attaching means; the first branches projecting in the same direction relative to the second branches such that the said two pieces when attached define a U-shaped profile; the first branch of the first piece being provided with a longitudinally extending deep slot; the said second branch of the said first piece and said deep slot defining a longitudinally extending space; the top portion of the said second branch of the said second piece being adapted to be slid into said longitudinally extending space up to a limit locking position; comprising, secondly, a fascia moulding having a vertical portion and a horizontal portion wherein the free edge of said horizontal portion is provided with a downwardly extending flange; said flange being adapted to slide in said deep slot up to a final secured position; said second branches of said two pieces serving as joining branches, and said first branch of said first piece serving as an attaching branch and said first branch of said second piece serving as a covering branch.

**4,339,899**  
**ADJUSTABLE CONNECTOR FOR COUPLING TOWER LEG TO FOUNDATION SUPPORT ANCHOR**  
William A. Klenk, Missouri City; Albert B. Atkinson, Houston, both of Tex., and Donald E. Bobbitt, Centralia, Mo., assignors to A. B. Chance Company, Centralia, Mo.  
Filed Oct. 28, 1980, Ser. No. 201,593  
Int. Cl.<sup>3</sup> E02D 5/74 24 Claims

1. A support assembly for a tower leg comprising: a screw anchor adapted to be rotatively driven into the ground at a preselected location and having an upper support extremity; a connector unit located in adjustable disposition relative to the screw anchor before being fixedly secured thereto; coupling means for joining the connector unit to the tower leg for support of the latter by the screw anchor; and means for fixedly securing the connector unit to the support

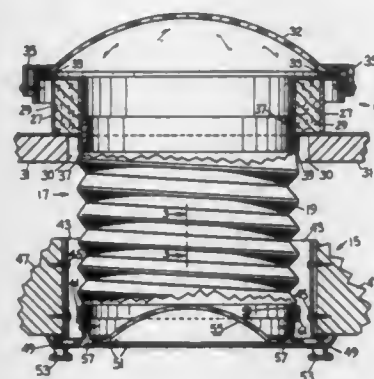


extremity of the screw anchor after the connector means has been moved into disposition bringing the connector



unit into required aligned, supporting relationship to the leg.

**4,339,900**  
**SKY-LIGHT STRUCTURE HAVING A FLEXIBLE-TUBE SHAFT**  
William T. Freeman, RR-4, Springfield, Ill. 62707  
Filed Sep. 29, 1980, Ser. No. 191,380  
Int. Cl.<sup>3</sup> E04B 7/18; E04D 13/03  
U.S. Cl. 52-200 10 Claims



1. In a skylight installation having a roof-installed closure for a light-transmitting opening therein, and a ceiling-installed light-transmitting window, the improvement comprising: a flexible-walled tube enclosing the space between said closure and said window to provide light-channeling through, thermal insulation for, and dust- and insect-exclusion from, said space.

**4,339,901**  
**SYSTEM FOR IMPROVING HEAT INSULATING CHARACTERISTICS OF A BUILDING WALL STRUCTURE**  
S. Eugene Hubbard, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.  
Continuation of Ser. No. 963,187, Nov. 24, 1978, abandoned.  
This application Jan. 16, 1981, Ser. No. 225,771  
Int. Cl.<sup>3</sup> E06B 3/26 17 Claims

1. A separate, self-contained, discrete insulating sash for use with a building wall structure of the type including at least one pair of generally parallel, spaced apart, opposed, facing, undifferentiated, relatively flat fixed wall surfaces having spaced apart first and second longitudinal edges and a second wall surface extending generally normal to one of

said fixed wall surfaces adjacent a first longitudinal edge thereof toward a first longitudinal edge of the opposite fixed wall surface, said fixed wall surfaces and said second wall surface defining a recess in said wall structure having an open side adjacent said second longitudinal edges of said fixed wall surfaces;

said insulating sash adapted for mounting in said recess between said first and second edges of said fixed wall surfaces, said sash including a sash panel having one side facing said second surface of said wall structure and an opposite side facing toward an open side of said recess; a frame around a peripheral edge portion of said sash panel including at least one pair of elongated frame elements parallel and spaced between said first and second longitudinal edges of said fixed wall surfaces, said frame elements including a pair of spaced apart, wall segments having opposing wall faces generally normal to and projecting toward said open side of said recess from said sash panel, said wall segments being structurally bonded to the adjacent edges of said sash panel;

each elongated frame element having a transverse cross-section with a flange element extending generally parallel to a face of said sash panel and said wall segments extending generally normal to said face of said sash panel, said cross-section providing a greater strength to resist against longitudinally spaced bending forces applied to said frame element by virtue of a wind load acting on said sash in a direction generally normal to the face of said sash panel than against applied forces acting on said sash in a direction generally parallel to a face of said sash panel; and a pair of pivot pins mounted on said respective wall segments of said frame elements adapted to engage said respective adjacent fixed wall surfaces of said building wall structure for pivotally supporting said sash in said recess for movement about a pivot axis extending through said opposing wall faces of said frame elements between said fixed wall surfaces, said axis aligned in spaced apart, parallel relation to said opposite side of said sash panel toward said open side of said recess and adjacent a transverse edge of said sash extending between said frame elements and adjacent to said second wall surface of said building wall structure, said pivot axis being spaced a radial distance from said transverse edge less than the radial distance between said pivot axis and said second wall surface of said recess in said building wall structure to permit said sash to pivot on said pivot axis to a position sloping away from said second wall surface without interference between said transverse edge of said sash and said second wall surface of said building wall structure.

**4,339,902**  
**MULTIPLE LAYER THERMAL INSULATION DEVICE**  
Anthony E. Cimochoowski, Sedalia, and Brad A. Heffelmire, Littleton, both of Colo., assignors to Manville Service Corporation, Denver, Colo.  
Filed Jun. 30, 1980, Ser. No. 164,477  
Int. Cl.<sup>3</sup> E04B 1/38; E04C 1/40 4 Claims

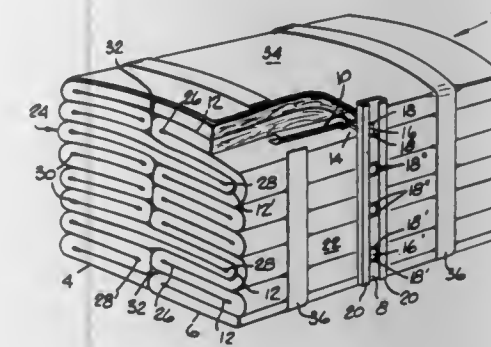
1. A thermal insulating device adapted to be affixed to a surface of a furnace or like structure and having a hot face and a cold face, said cold face being adjacent to said surface and said hot face being exposed to the highest service temperature in the furnace or like structure when said insulating device is in use, said insulating device comprising:

(a) a first insulation layer comprised of a first serpentine folded fibrous insulating blanket defining a first plurality of inner and outer folds, said first inner folds being nearest said cold face and said first outer folds being nearest said hot faces;

(b) attachment means secured to said first insulation layer and adapted to affix said device to said surface of said

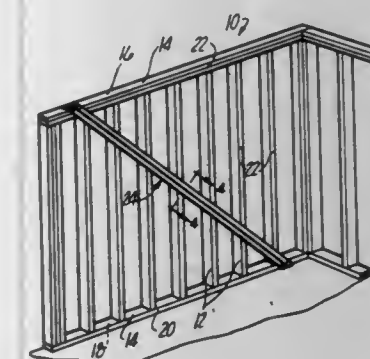
furnace or like structure, said first insulation layer thereby providing the cold face of said device;

(c) a second insulation layer comprised of a second serpentine folded fibrous insulating blanket defining a second plurality of inner and outer folds, said second inner folds being nearest the cold face and said second outer folds being nearest said hot face, some of the inner folds of said second insulation layer abutting the outer folds of said first insulation layer, said second insulation layer thereby providing the hot face of said device; and



(d) at least one of the inner folds of said second serpentine folded fibrous insulating blanket extending from said second insulation layer into said first insulation layer and being disposed within one of the inner folds of said first serpentine folded thermal insulating blanket to a depth sufficient to retain said first insulation layer and said second insulation layer in abutting relationship without the need for additional mechanical connections therebetween.

**4,339,903**  
**METAL CROSS SUPPORT**  
Richard J. Menge, 4103 Anchor Dr., Brighton, Mich. 48116  
Continuation of Ser. No. 862,038, Dec. 19, 1977, abandoned.  
This application Jun. 13, 1979, Ser. No. 48,274  
Int. Cl.<sup>3</sup> E04C 2/38 8 Claims

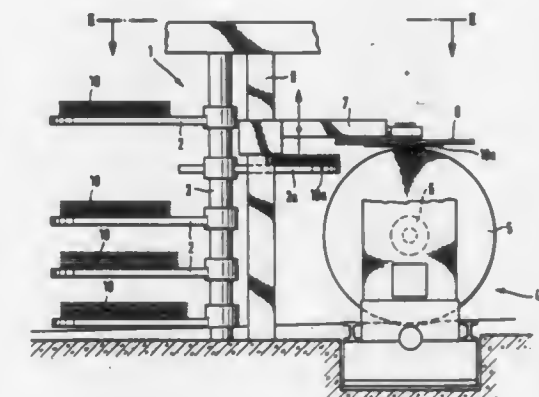


1. In a wooden truss structure or the like for supporting structural elements the improvement which comprises: a plurality of spaced wooden truss elements,

a wooden stringer element extending across at least one end of said truss element and generally perpendicular thereto, a narrow transversely extending channel in each truss element, said channels being in alignment with each other, a metal support strip having a base leg which is positioned in said channels,

means for securing said base leg in said channel, means for bending an end of said strip in the direction of said base leg, said means for bending comprising a flat overlapping portion formed at at least one end thereof by removal of a segment of said base leg from said at least one end so that one surface of said overlapping portion lies in a substantially horizontal plane and flatly abuts against a substantially horizontal surface of said stringer element, and means for attaching said overlapping portion to said stringer element.

**4,339,904**  
**ROLL PACKAGING ARRANGEMENT**  
Pauli Koutonen, and Lars-Erik Alanco, both of Järvenpää, Finland, assignors to Oy Wartsila Ab, Helsinki, Finland  
Filed Oct. 29, 1979, Ser. No. 88,956  
Claims priority, application Finland, Nov. 3, 1978, 783352  
Int. Cl.<sup>3</sup> B65B 61/22 7 Claims



2. A packaging arrangement for selecting and applying roll headers or corresponding package units onto horizontally oriented rolls of different diameter, which arrangement comprises:

- a storage unit for said headers or the like;
- an application unit including a horizontally movable and vertically oriented press member;
- a transmission member provided with catch means for transmitting a selected header from said storage unit to said press member;
- said storage unit comprising a plurality of basically horizontally oriented movable storage levels, one for each header size, carrying headers in an exactly defined position;
- means for moving said storage levels from a storage position to a working position for delivering headers of a desired size;
- means for moving said transmission member to a position corresponding to the working position of a selected storage level to catch a selected header, by means of said catch means, from said selected storage level brought to said working position, as well as for moving said transmis-



sion member to a basically vertical header delivery position adjacent said press member for transmitting thereby said selected header from said selected storage level to said press member; and

each of said headers having an edge portion to be placed at the bottom of said roll, whereby the exact location of the header on each storage level is determined on the basis of the location of said edge portion of said headers with respect to a movement pattern of said storage levels as well as of said transmission members, and, in particular, with respect to a lower edge of said transmission member when being in said vertical header delivery position, said edge portion of the different size headers being always in the same position on each of said storage levels and on said transmission member, thereby ensuring proper positioning of any selected header at the end face of said roll, irrespective of the size of the roll to be headed and the corresponding size of the selected header.

4,339,905

Patent Not Issued For This Number

4,339,906

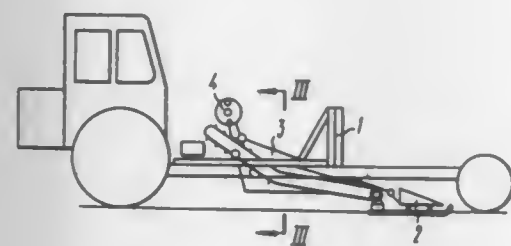
## VEGETABLE HARVESTING MACHINE

Valentin P. Chichkin, ulitsa Mira, 12, kv. 2; Efraim A. Shpigel; ulitsa Mira, 13, kv. 36; Gennady P. Gokin, ulitsa Mira, 13, kv. 20; Georgy E. Matjuschenko, ulitsa Junosti, 12/2, kv. 33; Nikolai N. Kurakov, ulitsa Mira, 7, kv. 1; Grigory B. Rabonovich, ulitsa Krasnodonskaya, 46, kv. 21, all of Tiraspol; Sergei A. Samoilovsky, ulitsa Gagarina, 225/1, kv. 14, selo Sukleya; Boris S. Angel, ulitsa Mira, 13, kv. 26, Tiraspol; Vladimir S. Ilienkov, ulitsa Mira, 13, kv. 17, Tiraspol; Vladimir P. Miterev, ulitsa Mira, 19, kv. 2, Tiraspol; Leonid S. Zemlyanov, ulitsa Solnechnogorskaya, 10, kv. 15, and Anatoly F. Krutkov, ulitsa S. Kovalevskoi, 2, korpus 4, kv. 40., both of Moscow, all of U.S.S.R.

Filed Dec. 30, 1980, Ser. No. 221,385  
Int. Cl.<sup>3</sup> A01D 46/00

U.S. Cl. 56—327 R

5 Claims



1. A vegetable harvesting machine comprising: a frame; lifters designed for aligning the plants being harvested and mounted on said frame; two walkers obliquely mounted on said frame and set some distance apart; an eccentric drive designed to oscillate said walkers in anti-phase in a vertical plane about a pivot point on the lifter for the purpose of detaching fruits from the plants guided onto the walkers by said lifters;

said walkers being attached to said lifters at one end and to said eccentric drive at the other end; a system of conveyors for delivering the removed fruits outside the machine.

4,339,907

## ENDLESS BELT CHANGING IN A ROTARY CROP BALER

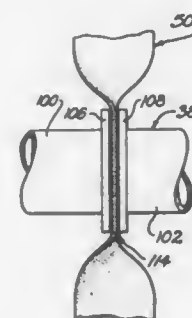
Arnold F. Kopaska, and Larry A. Kopaska, both of Guthrie Center, Iowa

Filed Nov. 24, 1980, Ser. No. 209,822

Int. Cl.<sup>3</sup> A01D 39/00

U.S. Cl. 56—341

15 Claims



1. In a farm implement for making round bales from crop material: a pair of horizontally spaced uprights; means holding said uprights a fixed distance apart; a plurality of transverse, horizontal elements rotatably supported by the uprights and arranged in mutually spaced parallelism, each of said elements being coupled with said uprights in a manner to present a normally uninterrupted, continuous span across and between the uprights; a series of endless, flexible members trained around the elements in engagement therewith; and means associated with each element for temporarily interrupting said span and presenting a clearance for the members to permit replacement of the latter.

4,339,908

## VEGETATION CLEARING DEVICES

Richard M. Johnson, 48 Onerahi Rd., Onerahi, New Zealand  
Continuation of Ser. No. 59,772, Jul. 23, 1979, abandoned. This application Sep. 10, 1980, Ser. No. 185,801

Int. Cl.<sup>3</sup> A01D 49/00

U.S. Cl. 56—503

9 Claims

1. A gravity rolling arrangement for use in clearing vegetation on slopes adapted to be mounted on a vehicle comprising: a free-moving heavy roller means for crushing vegetation by rolling down a slope under the force of gravity;

4,339,910

## OPEN-END SPINNING MACHINE

Ramadan A. Ali, Reutlingen; Heinz Muller, Metzlingen; Karl-Heinz Lehmann, Altenriet; Peter Artzt, Reutlingen, and Anton Schenek, Bempflingen, all of Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

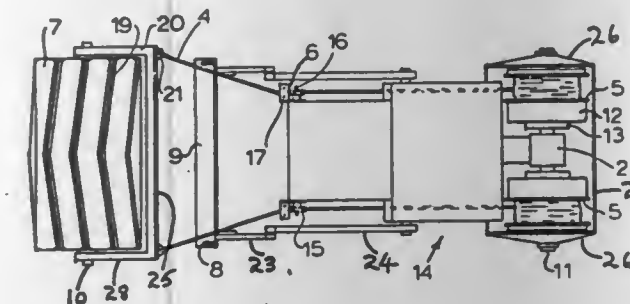
Filed Jul. 25, 1980, Ser. No. 172,297

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1979, 2931567

Int. Cl.<sup>3</sup> D01H 7/882

U.S. Cl. 57—411

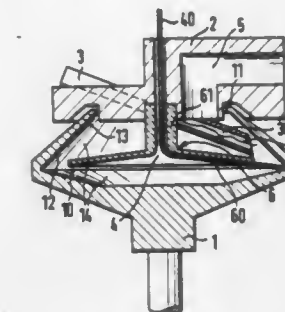
19 Claims



to said yoke, at least one control line being connected to each side of said yoke; and each of said control lines passing through a fair lead system located between said winch drum and said yoke.

1. An open-end spinning apparatus with a spinning rotor having an interior wall, a yarn takeoff channel opening and a fiber feed channel opening communicating with the interior of said spinning rotor, and a source of reduced pressure, the improvement comprising:

a suction opening (5, 50, 51) connected to said source of reduced pressure and being directed to said interior wall, said suction opening being positioned so that a suction air stream flowing therethrough is separated from the path of said yarn between said interior wall and said yarn takeoff channel opening and the path of fibers between said fiber feed channel opening and said interior wall.



4,339,909

## ROTARY QUADRANTS OF CABLE-MAKING MACHINES

Jean Godderidge, 11 boulevard H. Barbusse, 78800 Houilles, France

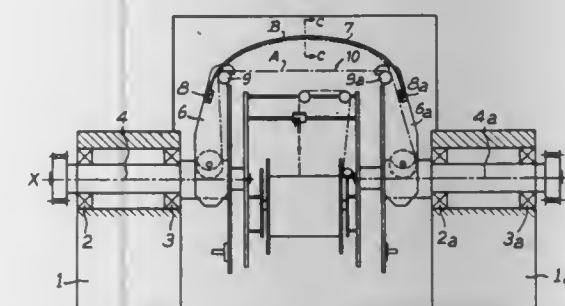
Filed Jul. 7, 1980, Ser. No. 166,409

Claims priority, application France, Jul. 9, 1979, 79 17786

Int. Cl.<sup>3</sup> D07B 3/12; D01H 7/24, 7/86

U.S. Cl. 57—58.52

3 Claims



1. In a double-twist stranding or cabling machine; the improvement of a rotary quadrant characterized by elimination thereon of prior conventional strand guiding members, said rotary quadrant comprising spaced-apart driven support members mounted for rotation in said machine about the same axis for engagably receiving the strand being processed, and an elongate incurved supple member without strand guides or enclosed conduits therein and extending between and mounted on opposite end to said respective support members, so that the strand being processed is stretched between said support members out of contact with said supple member when said machine is not operating and said rotary quadrant is at rest and the strand being processed is in contact with said supple member under the influence of centrifugal force when said machine is operating and said rotary quadrant is rotating.

4,339,911

## OPEN-END SPINNING ROTOR CONSISTING OF A BASIC MEMBER AND A ROTOR MEMBER

Eberhard Hofmann, Ingolstadt, Fed. Rep. of Germany, assignor to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

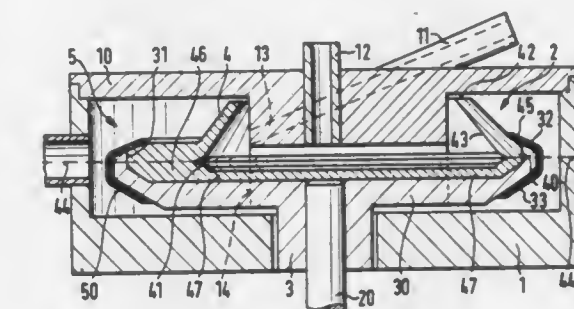
Filed Sep. 17, 1980, Ser. No. 188,219

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939325

Int. Cl.<sup>3</sup> D01H 1/135, 7/882

U.S. Cl. 57—416

11 Claims



1. An open-end spinning rotor including a basic member and a rotor member, said basic member being carried by a bearing and drive element and has a substantially radial supporting surface with a centering surface at its outer edge, said rotor member which includes a collecting surface has a centering surface which co-operates with said centering surface of said basic member comprising:

a connecting element means (5) engaging said rotor member



and said basic member providing a detachable connection between said basic member (3,6,8) and said rotor member (4,7,9);  
said connecting element means being separated from the centering surfaces of said basic member and rotor member.

4,339,912

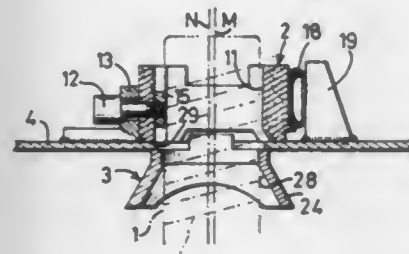
# DEVICE FOR GRIPPING YARN SUPPORTS ON REVOLVING-SPINDLE TEXTILE MACHINES

Pierre Close, Modelheim, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse, France  
Filed Sep. 24, 1980, Ser. No. 190,271

Claims priority, application France, Sep. 28, 1979, 79 24186  
Int. Cl.<sup>3</sup> D01H 9/08

U.S. Cl. 57—275

6 Claims



1. A device for gripping yarn supports such as bobbins, tubes, cops and the like whether full or empty on textile machines having revolving spindles for receiving supports of this type such as ring spinning frames, twisting frames, roving frames and like machines, comprising a movable supporting element on which are mounted (1) a holder comprising a deformable annular member of flexible and elastic material which can be freely engaged on the yarn support and (2) means for controlling the clamping action of the holder by causing deformation of said holder in the radial direction; wherein the movable supporting element comprises a support plate pierced by a hole providing a passageway for the upper end of a yarn support, said deformable annular member being adapted to rest on the peripheral edge portion of said hole and being fixed on said support plate at only one point of the lateral surface thereof whilst the clamping-action control means which is also mounted on said support plate is located opposite to a thrust zone of the lateral surface of the deformable annular member which is diametrically opposite to said one point.

4,339,913

# DEVICE FOR SZ TWISTING OF TWIST ELEMENTS OF ELECTRIC CABLES AND WIRES

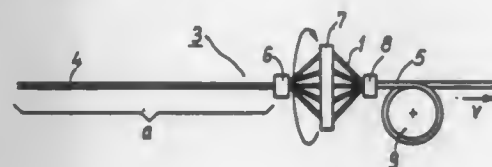
Dieter Vogelsberg, Coburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany  
Filed Apr. 16, 1980, Ser. No. 140,742

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2916520

Int. Cl.<sup>3</sup> H01B 13/04

U.S. Cl. 57—294

5 Claims



1. In an apparatus for the SZ-twisting of twist elements of electric cables and wires to form an SZ-twisted unit, including a first twisting device comprising one or more twisting means which are arranged between a first and a last twisting point and revolve in a stepwise alternating manner, and a storage device for the twist elements twisted at least one first time, the storage

device having a very large storage capacity, the improvement comprising:

a second twisting device in series with the first twisting device and including, a retwisting disc, adapted to be driven with alternating direction of rotation, through which the SZ-twisted twist elements twisted in the first twisting device pass, and at least one twisting closer point associated with said retwisting disc;  
the free distance of said retwisting disc from the last point of contact with the SZ-twisted elements in the first twisting device being at least five times the resulting SZ length of lay,  
the speed of rotation of said retwisting disc being equal to the difference in speed between two successive steps of said first twisting device; and  
the direction of rotation of said retwisting disc adapted to be changed in the same rhythm as the change from a speed reduction to a speed increase of the first twisting device or vice versa.

4,339,914

# METHOD AND APPARATUS FOR CLEANING AN OPEN-END SPINNING ROTOR

Hermann Pfelfer, Moillesulaz, Switzerland, assignor to Officine Savio, S.p.A., Pordenone, Italy

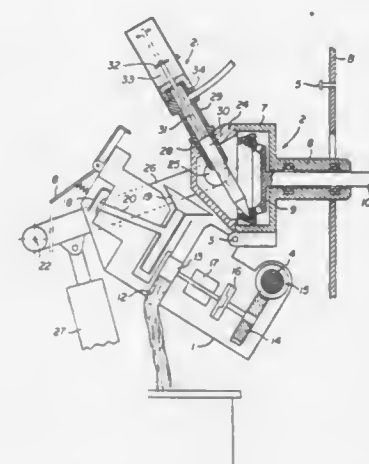
Filed Jun. 26, 1980, Ser. No. 163,104

Claims priority, application Switzerland, Jun. 26, 1979, 5935/79

Int. Cl.<sup>3</sup> D01H 11/00

U.S. Cl. 57—302

2 Claims



1. A process for cleaning a driven rotor of a spinning unit in an open-ended type spinning frame, comprising after stopping the spinning procedure introducing a certain quantity of fibers into the rotating rotor so as to form a ring of fibers at the periphery of said rotating rotor, disconnecting the rotor from a positive drive device driving the spinning frame, holding the ring of fibers at an angle against the rotor until the friction between said ring of fibers and the rotor halts the rotor, freeing said ring of fibers from contact with said rotor and discharging said ring of fibers together with the detached impurities lying in said rotor.

4,339,915

# APPARATUS FOR FALSE TWISTING YARN

Peter Dammann; Heinz Schippers, and Karl Bauer, all of Remscheid-Lennep, Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik, Remscheid, Fed. Rep. of Germany  
Filed Jul. 14, 1980, Ser. No. 168,734

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928522; Dec. 24, 1979, 2952305; Mar. 4, 1980, 3008233; Apr. 11, 1980, 3013948

Int. Cl.<sup>3</sup> D02G 1/08; D01H 7/92

U.S. Cl. 57—339

28 Claims

1. A yarn false twisting apparatus comprising

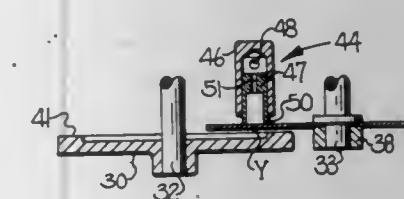
a pair of twist imparting members, at least one of said members comprising a relatively thin circular disc having opposite flat faces, with one of said faces defining a yarn engaging friction surface, and with said disc being readily flexible in a direction perpendicular to said faces, the other of said members having a generally flat yarn engaging friction surface,

means mounting said members for rotational movement wherein portions of the respective yarn engaging friction surfaces are disposed in opposing, substantially non-contacting relationship and define a twisting zone therebetween,

means for rotating each of said members such that their respective yarn engaging friction surfaces run in different directions through said twisting zone, and

means operatively mounted adjacent said circular disc for biasing said disc toward the other member at said twisting zone and during the rotation thereof,

whereby a yarn may be continuously moved through said twisting zone while having twist imparted thereto by frictional contact between the yarn and the respective



opposed friction surfaces resulting from the force exerted by the biasing means, and while the yarn engaging friction surfaces remain in substantially non-contacting relationship with respect to each other.

19. A yarn false twisting apparatus comprising a pair of twist imparting discs, with each disc having a yarn engaging friction surface on one face thereof, means mounting said discs for rotation about parallel, spaced apart axes and such that portions of the respective yarn engaging friction surfaces are disposed in opposing, substantially non-contacting relationship and define a twisting zone therebetween,

means for rotating each of said discs in a common rotational direction and such that their respective yarn engaging friction surfaces run in different directions through said twisting zone, and

yarn guide means for guiding a moving yarn through said twisting zone in a direction parallel to and laterally spaced from a line extending perpendicularly between said axes of rotation and so as to have twist imparted thereto by frictional contact between the yarn and the respective opposed friction surfaces.

4,339,916

# PNEUMATIC STARTER OVERTEMPERATURE CONTROL

Darrel W. Burch, and James P. Wojciehowski, both of Phoenix, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 886,381, Mar. 13, 1978, Pat. No. 4,220,439.  
This application Aug. 18, 1980, Ser. No. 179,351

Int. Cl.<sup>3</sup> F02C 7/26

U.S. Cl. 60—39.02

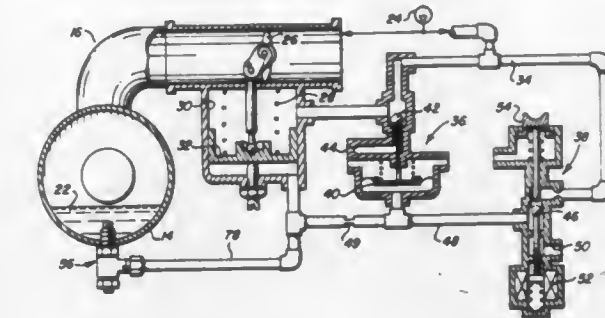
1 Claim

1. A method of providing automatic shutdown capabilities in an aircraft engine pneumatic starter in the event of a failure creating excessive heat within the starter, comprising the steps of:

delivering a flow of pressurized fluid to operate an actuator to open a control valve;

directing a flow of pressurized gas across said opened control valve to said starter to operate the latter;

providing a dump valve having a closed position blocking communication between the actuator and an exhaust port to permit normal starter operation; continuously urging the dump valve toward an open position connecting the actuator with the exhaust port to close



said control valve and thereby interrupt the flow of pressurized gas and shut down starter operation; and securing the dump valve in its closed position by a heat sensitive fusible material immersed in the lubricating oil of the starter, said fusible material melting whenever said lubricating oil exceeds a preselected temperature to permit the dump valve to move to its open position and automatically shut down starter operation.

4,339,917

# FUEL DELIVERY SYSTEM AND METHOD

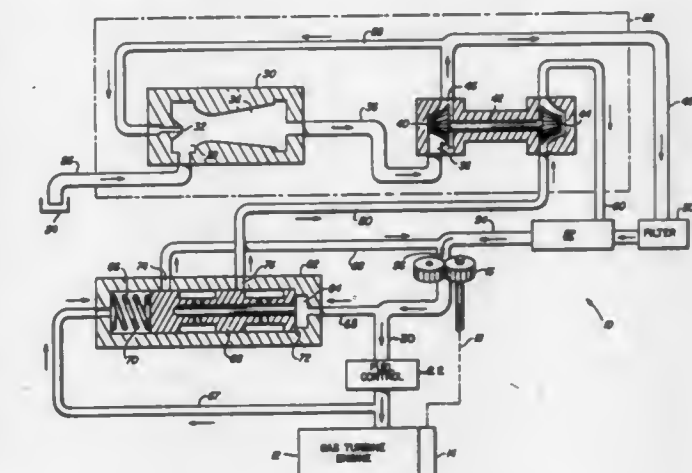
Charles H. LaGrone, Tempe, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jun. 13, 1979, Ser. No. 48,288

Int. Cl.<sup>3</sup> F02C 9/38

U.S. Cl. 60—39.28 R

12 Claims



1. A fuel delivery system for a gas turbine engine comprising:

a fuel tank;  
an ejector pump having nozzle means, an intake port communicating with said fuel tank, and an exhaust port;

first and second pumps disposed serially downstream of said ejector pump for pumping fuel flow to said engine, each of said first and second pumps having intake and exhaust ports, said exhaust port of the first pump feeding fuel flow to said intake port of the second pump;

a turbine driven by exhaust flow from said exhaust port of the second pump, said turbine operatively connected to mechanically driven said first pump;

a pressure boost feedback conduit delivering flow from said exhaust port of the first pump to said nozzle means of the ejector pump;

said second pump being a positive displacement pump;

fuel control means disposed downstream of said positive displacement pump for controlling fuel flow to said engine;

a pressure differential control valve responsive to pressure upstream and downstream of said fuel control means, said



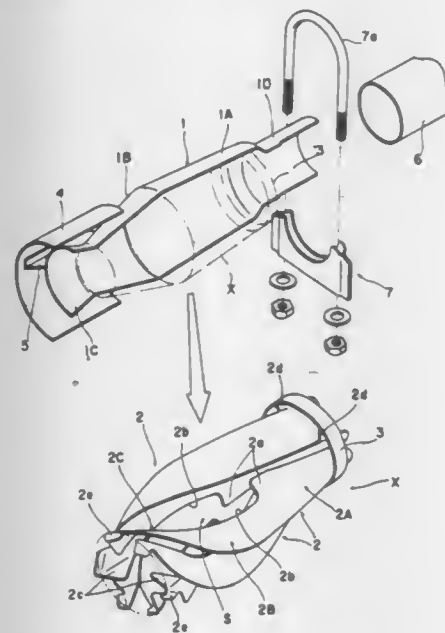
control valve operable to bypass excess exhaust flow from said exhaust port of the positive displacement pump back to said intake port to maintain a substantially constant pressure differential across said fuel control means, said control valve including first and second bypass ports; a first bypass conduit extending from said first bypass port to said intake port of the positive displacement pump; and a second bypass conduit extending from said second bypass port to said turbine for delivering motive flow thereto.

**4,339,918**  
**MEANS FOR ACCELERATING THE DISCHARGE OF EXHAUST GAS FROM AN INTERNAL COMBUSTION ENGINE**

Hirokuni Michikawa, 1-115, Minamieguchi-cho, Higashi-yodogawa-ku, Osaka-shi, Osaka-fu, Japan  
Filed Sep. 11, 1980, Ser. No. 186,035  
Int. Cl.<sup>3</sup> F02B 35/00

U.S. Cl. 60—316

7 Claims

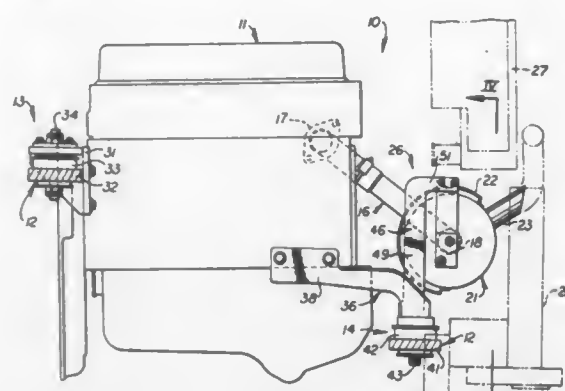


1. Means for accelerating the discharge of exhaust gas from an internal combustion engine comprising:  
a tubular member (1) adapted to be communicatingly connected to an engine exhaust pipe (6) and having a first tubular portion (1A) of which diameter is gradually widened in the exhaust gas flow direction along the axial direction of said tubular member (1), a second tubular portion (1B) gradually tapering in the exhaust gas flow direction and a trumpet-shaped tubular portion (1C) of which diameter is suddenly widened from the smallest diameter portion of said second tubular portion (1B); and a plurality of circumferentially disposed spiral blades (2) made of thin plate for spirally flowing and guiding exhaust gas and defining a space adjacent the axial center of said tubular member (1), said spiral blade (2) disposed in said tubular member (1) between said first tubular portion (1A) and said second tubular portion (1B) thereof, each of said spiral blades (2) having an arcuate or substantially arcuate section in the widthwise direction of the spiral blade plate at right angle to the spiral direction thereof, each of said spiral blades (2) having, at that part of its inner edge located at the slightly upstream side of exhaust gas flow with respect to the largest portion of said first tubular portion (1A), a tongue piece (2a) for guiding exhaust gas flowing toward said part, to the exhaust gas downstream side in the radially external direction of said tubular member (1), each of said spiral blades (2) further having, at its end adjacent to the smallest diameter portion of said second tubular portion (1B), a steeply inclined tongue piece (2c) for imparting a rapid swirling force to spirally flowing exhaust gas, thereby to guide the exhaust gas into said trumpet-shaped tubular portion (1C).

**4,339,919**  
**FLEXIBLE MUFFLER MOUNTING**  
Lancelot A. Jobling, Mentor; Charles J. Sabec, Pepper Pike, and Ronald C. Stump, Mentor, all of Ohio, assignors to Towmotor Corporation, Mentor, Ohio  
Filed Mar. 24, 1980, Ser. No. 135,961  
Int. Cl.<sup>3</sup> F01N 7/08

U.S. Cl. 60—322

9 Claims

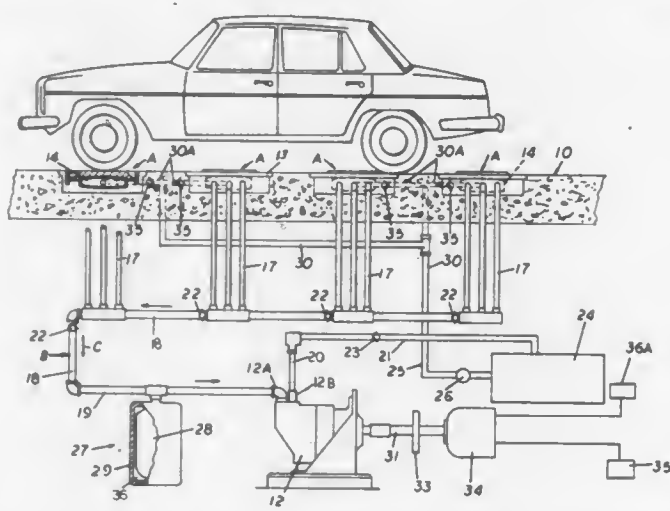


1. In an engine and exhaust system (10) having a frame (12), an internal combustion engine (11) resiliently mounted (13,14) on said frame (12), a muffler (21) spaced from said engine (11), a rigid exhaust pipe (16) rigidly connected at one end (17) to said engine (11) and at the other end (19) to said muffler (21), the improvement comprising:  
a rigid muffler support bracket (46) connected to said engine (11),  
a flexible, generally vertical, metal hanger (52) having a first end (54), and a second end (58) and being connected at the first end (54) to said muffler support bracket (46) and at the second end (58) to said muffler (21), said second end (58) being connected to said muffler (21) at a location (24) on said muffler (21) spaced a substantial distance from the connection of said exhaust pipe (16) to said muffler (21).

**4,339,920**  
**METHOD AND APPARATUS UTILIZING THE WEIGHT OF MOVING TRAFFIC TO PRODUCE USEFUL WORK**  
Wayne P. Le Van, 310 E. 44th St., New York, N.Y. 10017  
Filed Jun. 27, 1980, Ser. No. 163,936  
Int. Cl.<sup>3</sup> F03G 5/00

U.S. Cl. 60—533

3 Claims



1. An apparatus for translating the energy of moving traffic into useful work comprising:  
a plurality of chamber, each having a fluid inlet and outlet, and each having a flexible wall portion disposed in the path of moving traffic at spaced apart intervals,  
a circuit means,  
each of said, chambers being connected into communication with said circuit means,

said circuit means defining a closed circuit, said chambers and connected circuit means being filled with a non-compressible fluid,  
said circuit means including a reservoir for containing a supply of said non-compressible fluid, means connecting said reservoir in circuit with each of said chambers,  
a fluid motor,  
said motor having a fluid inlet and a fluid outlet connected in circuit to said closed circuit, said motor outlet being connected in communication with said reservoir,  
unidirectional flow control means disposed in said closed circuit for directing the flow of fluid through said circuit in a unidirectional manner from each of said respective chambers, and toward and through said fluid motor,  
rectifying means connected in said circuit between the respective outlets of said chambers and the inlet to said motor whereby said rectifying means functions to rectify intermittent displacement of the fluid from said chambers to a generally uniform flow through said motor,  
said rectifying means including a flexible container to define an expandable chamber,  
said expandable chamber being connected in communication with said circuit means,  
a rigid housing encasing said flexible container in spaced relationship thereto so as to define a closed air space therebetween so that said rectifying means functions as a self pressurizing accumulator for said circuit whereby the intermittent displacement of the non-compressible fluid in said chamber is rectified into a generally uniform fluid flow through said motor, said housing including a frame disposed in the path of moving traffic defining a base plate for supporting each of said chambers, a hit plate disposed over each of said flexible chambers for movement toward and away from its respective base plate whereby said chamber is compressed by the weight of the moving traffic passing thereover to affect displacement of fluid therefrom, one of said plates having an inclined surface disposed contiguous to said surface, said inclined surface being inclined in the direction of said outlet so that when said surface is displaced relative to said chamber, the fluid therein is positively displaced in the direction of said outlet, retainer means for movably retaining said hit plate to said frame, and means adding make-up fluid to said circuit,  
and an electrical generator operatively connected to said fluid motor to be driven thereby.

**4,339,921**  
**BRAKE BOOSTER FOR AN AUTOMOTIVE VEHICLE**  
Johannes Schanz, Bad Homburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.  
Filed Jun. 18, 1979, Ser. No. 49,706  
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1978, 2830262

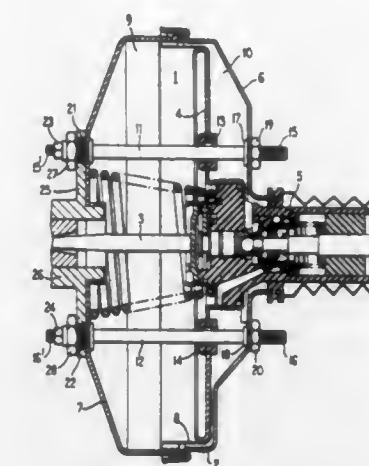
U.S. Cl. 60—547 R

Int. Cl.<sup>3</sup> B60T 13/00

6 Claims

1. A brake booster for an automotive vehicle utilizing a pressure differential between a vacuum and atmospheric pressure comprising:  
a vacuum casing having a control valve actuated by a brake pedal secured to one end wall thereof, a master cylinder push rod guided axially of said casing extending through the other end wall thereof and at least one movable wall disposed therein dividing said casing into a vacuum chamber and a working chamber and acting on said push rod;  
two bolts extending through said casing and said movable wall parallel to said push rod and connected to said one end wall and said other end wall to prevent deformation of said casing due to operating forces acting thereon; and  
two slide seals disposed in said movable wall each embracing a different one of said two bolts to prevent leaks between said vacuum and working chambers and to enable said movable wall to slide on said bolts;

said bolts being bolted to said one end wall and said other end wall;  
an end of each of said bolts adjacent said other end wall extending through an associated hollow screw secured to

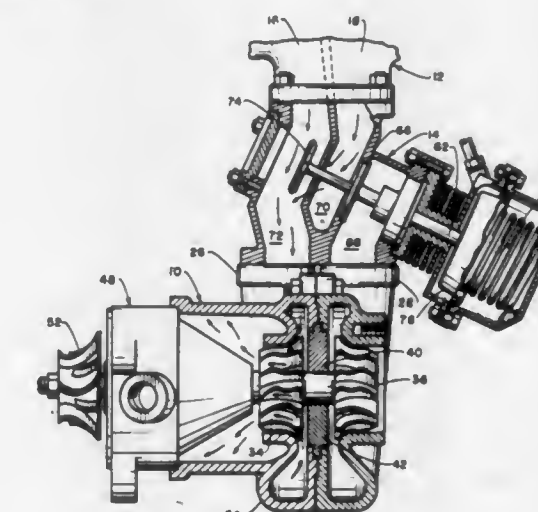


and extending through said other end wall in a sealed relationship, each of said bolts being sealed relative to the interior of said associated hollow screw to enable an adjustment of the axial length of said casing.

**4,339,922**  
**DUAL TURBINE TURBO-SUPERCHARGER**  
Bernard J. Navarro, 3252 E. Chevy Chase, Glendale, Calif. 91206  
Filed Jul. 9, 1979, Ser. No. 55,653  
Int. Cl.<sup>3</sup> F02B 37/12

U.S. Cl. 60—602

1 Claim



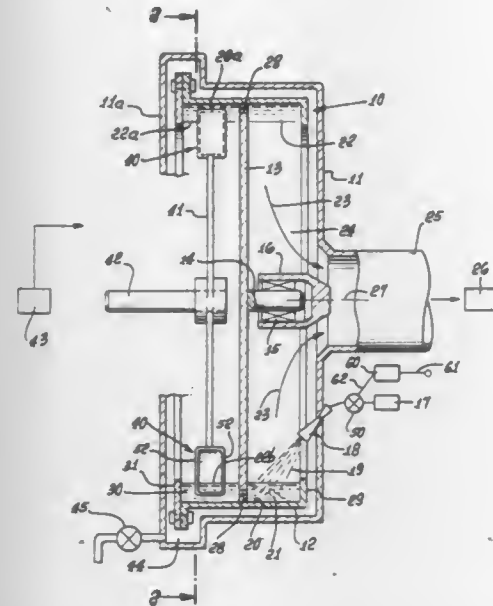
1. Turbocharger apparatus for use with a piston/cylinder internal combustion engine having an intake manifold and two totally discrete exhaust manifolds connected to and fed by respective two discrete groups of pistons/cylinders, comprising:  
a turbocharger having a first turbine, a second turbine and a compressor wheel connected by a common drive-train;  
first conduit means for connecting one of the exhaust manifolds to said first turbine;  
second conduit means for connecting the other of the exhaust manifolds to said second turbine;  
valving means communicating with said first and second conduit means for directing exhaust gas flow selectively from both of said conduit means to said first turbine or alternatively directing flow from said first conduit means to said first turbine and directing flow from said second conduit means to said second turbine; and  
third conduit means for connecting the output of said compressor wheel to the intake manifold of the engine.



**4,339,923**  
**SCOOP FOR REMOVING FLUID FROM ROTATING SURFACE OF TWO-PHASE REACTION TURBINE**  
 Lance G. Hays, Los Angeles; William E. Amend, Rolling Hills Estates, and Gustave J. Hokenson, Los Angeles, all of Calif., assignors to Biphas Energy Systems, Santa Monica, Calif.  
 Filed Apr. 1, 1980, Ser. No. 136,255  
 Int. Cl.<sup>3</sup> F01K 25/06

U.S. Cl. 60—673

12 Claims



1. In combination with a wheel providing a rotating peripheral surface with an annular body of liquid supported on said surface and rotating with the wheel, the improvement comprising

- (a) a scoop projecting partially into said rotating annular body of liquid,
- (b) means mounting the scoop for rotation about an axis and concentrically with said annular body of liquid, and in a forward direction in response to force transmission to the scoop from liquid entering the scoop,
- (c) the scoop having an interior surface to turn the entering liquid for discharge from the scoop in a relatively rearward direction,
- (d) substantially, the entirety of the scoop interior rearwardly of said interior surface being rearwardly open to the exterior,
- (e) the scoop interior surface having a lip and a "run-in" first portion that extends generally tangentially and flatly relative to the entering liquid and forwardly from said lip past which the liquid relatively enters the scoop,
- (f) the scoop interior surface having a second portion which merges with said first portion and then locally curves throughout approximately 180°,
- (g) the scoop interior surface having a "run-out" third portion which extends flatly and substantially parallel to said first portion, and merges with said curved second portion at a location closer to said axis than said first portion, said third portion having a lip past which the liquid relatively leaves the scoop in said rearward direction,
- (h) the scoop having laterally opposed, generally parallel side walls extending at substantially 90° to said first and third portions of the scoop interior surface.

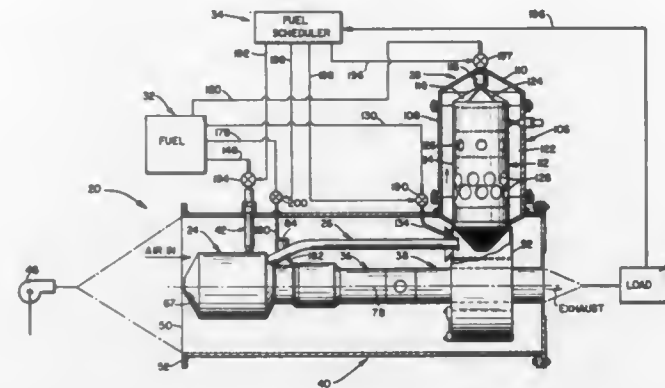
**4,339,924**  
**COMBUSTION SYSTEMS**  
 David J. White, San Diego, and Peter B. Roberts, Encinitas, both of Calif., assignors to Solar Turbines Incorporated, San Diego, Calif.  
 Filed Aug. 2, 1978, Ser. No. 930,249  
 Int. Cl.<sup>3</sup> F23R 3/30, 3/34, 3/44

U.S. Cl. 60—733

9 Claims

1. Combustion apparatus of the premix/fuel lean type, comprising: a main combustor means having a primary combustion zone therein; premixer means for forming a mixture of fuel and

primary air having an equivalence ratio of less than unity and for so introducing jets of said mixture into said main combustor means at intervals therearound and toward the axial centerline of said main combustor means at the upstream end thereof as to effect recirculation of fluid in said main combustor means at a volume rate exceeding that at which the fuel and primary air are introduced into said main combustor means, whereby the temperature and the concentration of oxygen in said primary combustion zone can be kept at levels that inhibit the formation



of NO<sub>x</sub>; a secondary combustor means downstream of and in fluid communication with said main combustor means; means for supplying fuel to said premixer means and to said secondary combustor means; and means for so controlling the flow of fuel to said secondary combustor means and to said premixer means as to effect a transfer of the combustion process stabilization function to said secondary combustor means under operating conditions below the lean extinction limit of the main combustor means.

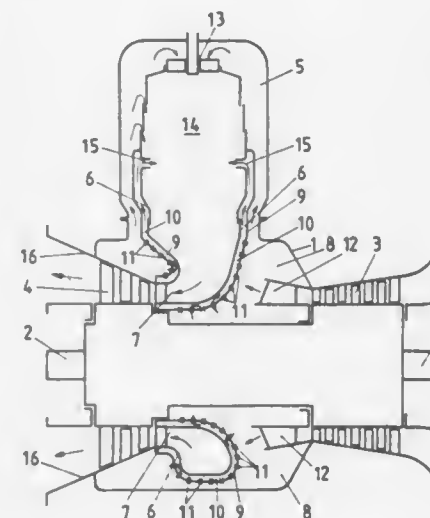
**4,339,925**  
**METHOD AND APPARATUS FOR COOLING HOT GAS CASINGS**  
 Jean Eggmann, Baden; Hans Graf, Untersiggenthal, and Tadeusz Zaba, Ennetbaden, all of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Switzerland  
 Filed Jul. 9, 1979, Ser. No. 55,808

Claims priority, application Switzerland, Aug. 3, 1978, 8262/78

Int. Cl.<sup>3</sup> F02C 7/18

U.S. Cl. 60—757

4 Claims



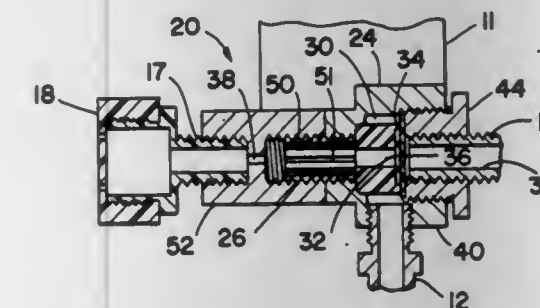
1. Apparatus for cooling a hot gas casing of a gas turbine power plant comprising:  
 a combustion chamber enclosing a combustion space;  
 a hot gas casing connected downstream of said combustion chamber;  
 guide means for guiding a stream of cooling air over an outer surface portion of said hot gas casing;  
 a compressor for supplying cooling air to said guide means;

a gas turbine which receives hot gas from said combustion chamber, said combustion chamber being fixed with respect to the gas turbine, said compressor and said gas turbine being mounted on a common shaft;  
 said guide means including  
 a shell which is spaced from and encompasses said hot gas casing to form a channel between the casing and the shell,  
 openings in the surface of the shell to permit cooling air to enter said channel,  
 separation means for separating air flowing into the channel from air flowing off the hot gas casing; and  
 said hot gas casing including means for inducing a film cooling of an inner surface portion of said hot gas casing.

**4,339,926**  
**VORTEX TUBE**  
 Anthony L. Moretti, San Rafael, and Lester W. Ferris, Tiburon, both of Calif., assignors to E. D. Bullard Company, Sausalito, Calif.  
 Filed Aug. 3, 1981, Ser. No. 289,534  
 Int. Cl.<sup>3</sup> F25B 9/02

U.S. Cl. 62—5

10 Claims



1. In a vortex tube having a generator portion defining a re-entrant cavity with right circular cylindrical sidewalls and planar end walls defining a right circular cylindrical volume within said cavity, nozzle means interposed between said volume and the remainder of said cavity and extending substantially tangential to said volume, an inlet coupling communicating with said cavity outside said volume, a first outlet passageway of given length and having a diameter smaller than the diameter of said volume communicating with said volume concentrically therewith through one end wall of said cavity, a second outlet passageway communicating with said volume concentrically therewith through an opening in the other end wall of said cavity having a diameter smaller than said diameter of said first outlet passageway, the improvement comprising a groove in the inner surface of said first outlet passageway extending longitudinally of said passageway from the distal end thereof.

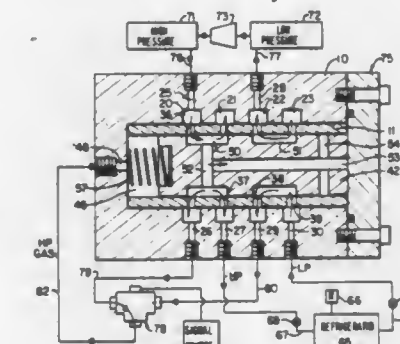
**4,339,927**  
**GAS-DRIVEN FLUID FLOW CONTROL VALVE AND CRYOPUMP INCORPORATING THE SAME**  
 Domenico S. Sarcia, Carlisle, Mass., assignor to Oerlikon-Bührle U.S.A. Inc., New York, N.Y.  
 Filed Jul. 6, 1981, Ser. No. 280,291  
 Int. Cl.<sup>3</sup> F25B 9/00

U.S. Cl. 62—6

13 Claims

1. A gas-driven fluid flow control valve, comprising in combination:  
 (a) a valve body with an internal cylindrical bore and having first, second, third and fourth spaced annular grooves in the wall defining said bore;  
 (b) a valve casing lining said wall of said bore, defining with said grooves first, second, third and fourth outer fluid manifolds and having cut therethrough a plurality of first second,

third and fourth radial passages communicating with said first second, third and fourth outer manifolds, respectively;  
 (c) first and second spaced radial passages from said first outer manifold, a third radial passage from said second outer manifold, fourth and fifth spaced radial passages from said third outer manifold and a sixth radial passage from said fourth outer manifold through said valve body, each of said radial passages being arranged for connection with separate fluid lines;  
 (d) a valve member slidable within said valve casing to define therein first and second fluid chambers of complementary variable volumes, said valve member having (1) annular grooves in the wall thereof to define with the internal wall of said casing first and second inner axially elongate fluid manifolds, (2) a central fluid passage and (3) first and second radial passages in fluid communication with said central fluid passage, said inner fluid manifolds being spaced and of such a length that when said first fluid chamber is at maxi-



mum volume said first and second outer manifolds are in fluid communication through said first and second plurality of passages, with said first inner manifold and said third and fourth outer manifolds are in fluid communication through said third and fourth plurality of passages with said second inner manifold, and when said second fluid chamber is at maximum volume said first outer manifold is in fluid communication through said first plurality of passages with said first inner manifold, said second and third outer manifolds are in fluid communication through said second and third plurality of passages with said second inner manifold, said fourth outer manifold is in fluid communication with said second radial passage thereby providing fluid communication between said fourth and first outer manifolds through said axial passage; and  
 (e) force applying means acting upon said valve members to maintain said first and second fluid chambers alternately at said maximum volumes.

**4,339,928**  
**FREEZING UNIT FOR PRE-COOKED FOOD PACKAGES**  
 Raul Guilbert, 10374 Summer Holly Cir., Los Angeles, Calif.  
 90024

Continuation-in-part of Ser. No. 97,787, Nov. 27, 1979, Pat. No. 4,307,286, which is a continuation-in-part of Ser. No. 971,381, Dec. 20, 1978, which is a division of Ser. No. 809,775, Jun. 24, 1977, Pat. No. 4,132,216, which is a continuation-in-part of Ser. No. 776,772, Mar. 11, 1977, Pat. No. 4,112,916, which is a continuation-in-part of Ser. No. 825,037, Aug. 16, 1977, Pat. No. 4,269,169. This application Nov. 14, 1980, Ser. No. 207,197  
 Int. Cl.<sup>3</sup> F25D 25/00

U.S. Cl. 62—62

20 Claims

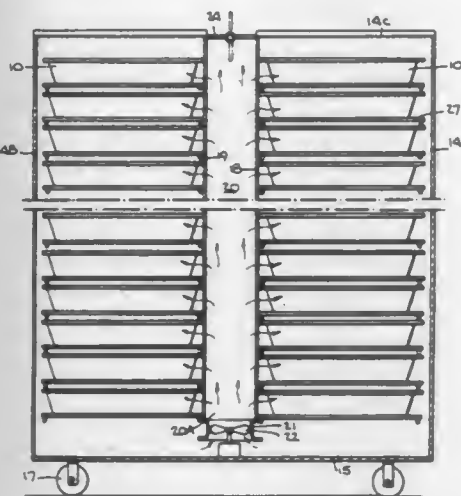
1. A freezer unit usable in a cold chamber having an atmosphere of cold air whose temperature is below the freezing point, the unit being adapted to freeze food packages and comprising:  
 A. an open frame;  
 B. a vertical plenum mounted within said frame, said plenum being provided with a perforated wall and having an input and a closeable output;  
 C. a rack within said frame adjacent said perforated wall to



receive a stack of food packages with horizontal spaces therebetween; and

D. means to draw cold air from the atmosphere of the chamber and to force the air into the input of the plenum to create a positive pressure therein when the plenum is closed whereby the air is projected at high velocity through the holes in the plenum wall into the spaces between the food packages to effect rapid cooling thereof.

15. The method of rapidly freezing a freezable organic product which initially is at a temperature well above the freezing point in a manner minimizing the formation of large ice crystals therein, the method comprising the steps of:



A. subjecting the product to a stream of fluid flowing at high velocity whose temperature is below the freezing point of the product;

B. periodically interrupting the flow to produce fluidic pulses separated by no-flow intervals to create a heat transfer pattern within the body of the product resulting in a reduction in temperature which becomes substantially uniform throughout the body at a level close to the freezing point whereby when freezing thereafter takes place in the body, it freezes almost in toto within a relatively short period to avoid the formation of large ice crystals.

4,339,929

## HEAT PIPE BAG SYSTEM

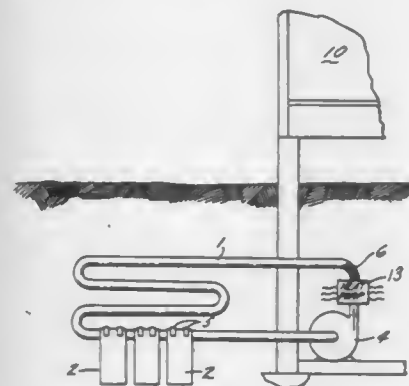
Peter R. Fitzpatrick; Russell G. Meyerand, Jr., both of Glastonbury, and Kenneth E. Shotwell, Stafford Springs, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 972,599, Dec. 22, 1978, Pat. No. 4,279,294. This application Apr. 10, 1981, Ser. No. 252,731

Int. Cl.<sup>3</sup> F25B 27/02

U.S. Cl. 62—79

17 Claims



1. A method of installing a heat pipe system comprising digging a narrow trench less than one foot wide and four to twelve feet deep in the ground, inserting at least one heat pipe bag for below-ground use, the interior of which is adapted to be combined in heat transfer communication with the exterior of a first heat transfer fluid conduit and to contain in sealed

fashion, a second heat transfer fluid, the heat pipe bag comprising a hollow, thin-walled bag having flexibility, puncture resistance, heat transfer fluid inertness, and prolonged below-ground exposure integrity, containing a wick material extending radially outward to the end of the bag from the intended location of the conduit along the anticipated path of principal heat transfer and including a plurality of spacers adjacent the wicks in the heat pipe bag, connecting the heat transfer fluid pipes of the heat pipe system to a heat pump-heat exchange system and refilling the trench.

2. A method of heating and cooling a building structure with a conventional heat pump-heat exchange system containing a heat transfer fluid, the improvement comprising heating or cooling the heat transfer fluid by passing it through a circulation pipe-heat pipe bag system comprising a heat pipe bag, the interior of which is combined in heat transfer communication with the exterior of a first heat transfer fluid conduit, said bag containing in sealed fashion a second heat transfer fluid, said bag comprising a hollow, thin-walled bag having flexibility, puncture resistance, heat transfer fluid inertness and prolonged below-ground exposure integrity and containing a wick material in heat transfer communication with the exterior of the first heat transfer fluid conduit and extending radially outward to the end of the bag from the intended location of the conduit along the anticipated path of principal heat transfer and including a plurality of spacers adjacent the wicks in the bag.

4,339,930

## CONTROL SYSTEM FOR SOLAR-ASSISTED HEAT PUMP SYSTEM

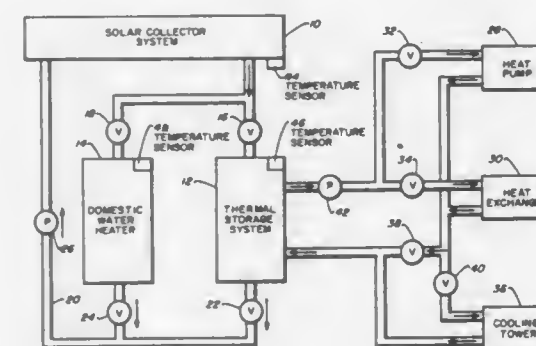
Richard E. Kirts, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 3, 1980, Ser. No. 165,817

Int. Cl.<sup>3</sup> F24J 3/02; F25B 29/00, 27/00

U.S. Cl. 62—235.1

10 Claims



1. In a solar-assisted heating and cooling system which includes a solar energy collection and storage system having a solar collector system, a thermal storage system, and a first pump means for circulating collector fluid between the solar collector system and the thermal storage system, and which includes a heating, ventilating, and air conditioning system having a fluid-to-air heat pump having a heating mode and a cooling mode of operation, a fluid-to-air heat exchanger, a second pump means for circulating a heat storage fluid from the thermal storage system to the heat pump or the heat exchanger, and valve means for directing the flow of the heat storage fluid to the heat pump or the heat exchanger, a fan means for circulating air in said heating and cooling system, and a thermostatic control for selecting either the heating mode or the cooling mode of operation of the system and for providing a signal indicating a demand for heating or cooling, a control system comprising:

- first temperature sensing means for sensing the temperature of the collector fluid at the outlet of the solar collector system;
- second temperature sensing means for sensing the temperature of the storage fluid in the thermal storage system;

c. means responsive to said first and second temperature sensing means for activating the first pump means when the temperature sensed by said first temperature sensing means is a preselected amount greater than the temperature sensed by said second temperature sensing means and for inactivating the first pump means when the temperature sensed by said first temperature sensing means is a second lesser preselected amount greater than the temperature sensed by said second temperature sensing means;

d. means for comparing the temperature sensed by said second temperature sensing means with a first preselected temperature, a second preselected temperature, and a third preselected temperature, the first preselected temperature being greater than the second preselected temperature, and the second preselected temperature being greater than the third preselected temperature, and providing a first output when the sensed temperature is greater than the first preselected temperature, a second output when the sensed temperature is less than or equal to the first preselected temperature and greater than the second preselected temperature, a third output when the sensed temperature is less than or equal to the second preselected temperature and greater than the third preselected temperature, and a fourth output when the sensed temperature is less than or equal to the third preselected temperature;

e. logic means responsive to said first, second, third, and fourth output signals from said means for comparing and responsive to the signals from the thermostatic control indicating the heating mode, the cooling mode, and demand for heating or cooling;

f. said logic means responsive to the combination of said heating mode signal, said demand for heating signal and said first or second output signal from said means for comparing for actuating the valve means to couple the thermal storage system to the heat exchanger, for activating the second pump means to circulate the heat storage fluid from the thermal storage system through the heat exchanger and for activating the fan for circulating air across the heat exchanger;

g. said logic means responsive to the combination of said heating mode signal, said demand for heating signal and said third signal from said means for comparing for actuating the valve means to couple the thermal storage system to the heat pump, for activating the second pump means for circulating the heat storage fluid from the thermal storage system through the heat pump, for activating the compressor of the heat pump and for activating the fan for circulating air through said heat pump;

h. said logic means responsive to the combination of said heating mode signal, said demand for heating signal, and said fourth signal from said means for comparing for activating said fan to circulate air to provide ventilation;

i. said logic means responsive to the combination of the cooling mode signal, the demand for cooling signal and the first signal or second signal from said means for comparing for activating the fan to circulate air to provide ventilation;

j. said logic means responsive to the combination of the cooling mode signal, the demand for cooling signal and the third signal from said means for comparing for actuating the valve means to couple the thermal storage system to the heat pump, for activating the compressor of the heat pump, for activating the fan for circulating air through the heat pump, and for activating the second pump means for circulating the heat storage fluid from the thermal storage system through the heat pump;

k. said logic means responsive to the combination of the cooling mode signal, the demand for cooling signal and the fourth signal for actuating the valve means to couple the thermal storage system to the heat exchanger, for activating the second pump means to circulate the heat storage fluid from the thermal storage system through the

heat exchanger, and for activating the fan for circulating air across the heat exchanger;

l. said heating, ventilating, and air conditioning system including a cooling means to reject heat from the storage fluid into the outside atmosphere and second valve means for directing the flow of the heat storage fluid from the heat pump or the heat exchanger to the cooling means and from the cooling means back to the thermal storage system, and said logic means of said control system being further responsive to said cooling mode signal or said first output signal from said means for comparing for actuating the second valve means for directing the flow of the heat storage fluid to the cooling means and activating the second circulating pump means for circulating the heat storage fluid.

4,339,931

## AXIALLY RETAINED HOMOKINETIC JOINT

Michel A. Orain, Conflans Ste Honorine, France, assignor to Glaenger Spicer, Poissy, France

Division of Ser. No. 929,816, Jul. 31, 1978, Pat. No. 4,229,871.

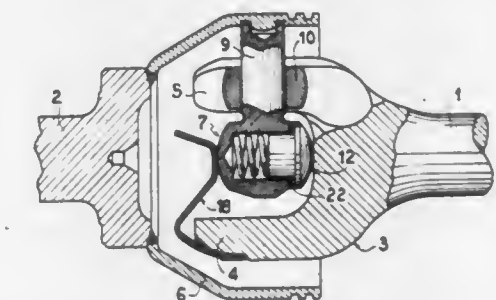
This application Jan. 22, 1980, Ser. No. 114,360

Claims priority, application France, Sep. 5, 1977, 77 26873

Int. Cl.<sup>3</sup> F16D 3/30

U.S. Cl. 464—111

5 Claims



1. A homokinetic joint comprising a tulip element defining raceways; a hub defining a radial bearing surface, trunnions extending from the hub, rollers rotatably and slidably mounted on the trunnions, axial retaining means between the tulip element and the hub and comprising at least one thrust member which is axially slidably mounted in the hub and has a radial shoulder in facing relation to the radial bearing surface of the hub, and a resiliently yieldable attachment fixed to an end of the tulip element, and a shim interposed between the radial shoulder of the thrust member and the adjacent radial bearing surface of the hub, the shim being formed by a resiliently yieldable ring in clipped relation to the thrust member and having an axial thickness which is slightly greater than the gap between the radial shoulder and the adjacent radial surface of the hub when the joint is in the position of angular alignment between the tulip element and the hub.

4,339,932

## MACHINE FOR KNITTING A TUBULAR FABRIC

Francesco Lonati, Via Valsorda, 28, Brescia, Italy

Filed Oct. 9, 1979, Ser. No. 83,129

Int. Cl.<sup>3</sup> D04B 9/06, 15/92

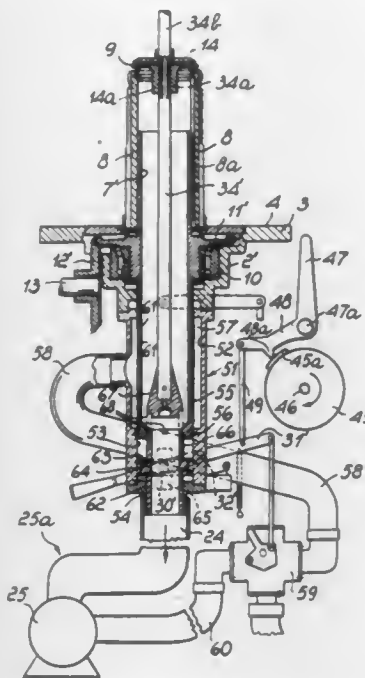
U.S. Cl. 66—28

4 Claims

1. A machine for knitting tubular fabrics, in particular stocking articles, of the type comprising a needle cylinder, a cylinder holder coaxial with said needle cylinder and rigid for rotation therewith about a vertical axis, a dial at the top of said needle cylinder at a predetermined distance away therefrom and rotatable about said vertical axis, a suction and discharge duct for a knitted tubular fabric, said suction and discharge duct being in fluid conducting communication on one side with the inside of said cylinder holder and on another side with a suction source, and means for driving said cylinder holder, the machine further comprising:

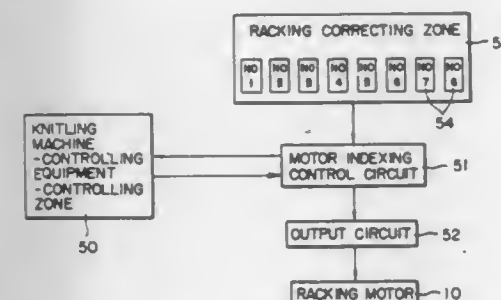


a tubular body coaxial and rigid with said cylinder holder below thereof;  
a shaft extending coaxially through said needle cylinder, said cylinder holder and said tubular body and defining with said cylinder holder an annular chamber, said shaft having a top portion rigid with said dial and being axially non-displaceable within said cylinder holder and said needle cylinder;  
an essentially tube-like body whereof at least a part is arranged coaxially within said tubular body and rotatable therewith, said tube-like body being displaceable axially between a first position whereat it is rigid for rotation with said shaft to cause rotation of said dial in synchronism with said needle cylinder, and a second position whereat it forms with said shaft at least one annular passage for communication between said annular chamber and said suction and discharge duct for said knitted tubular fabric;



control means of essentially lever-like type for axially displacing said tube-like body.

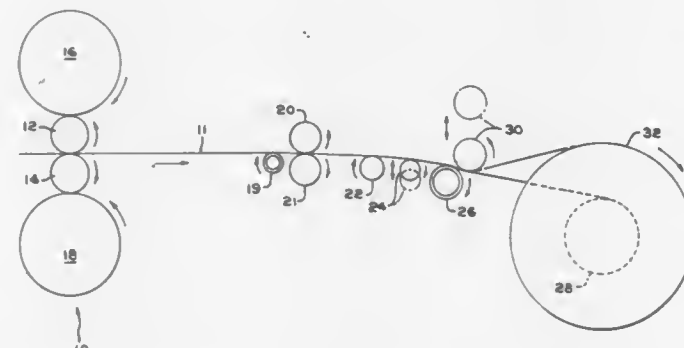
**4,339,933**  
**RACKING DEVICE FOR FLAT KNITTING MACHINE**  
Hideo Inoue, Wakayamashi, Japan, assignor to Shima Idea Center, Co., Ltd., Japan  
Filed Jul. 9, 1980, Ser. No. 167,387  
Claims priority, application Japan, Jul. 12, 1979, 54-88479  
Int. Cl.<sup>3</sup> D04B 7/00, 7/20  
U.S. Cl. 66—69 2 Claims



1. A racking device for a flat knitting machine, which comprises a needle bed slidably mounted on a frame of the machine body and moving in the lateral direction according to a rotation angle of a racking motor, a zone for controlling a knitting machine-controlling equipment for detecting memories which are stored in memory members, a racking-correcting zone which has a plurality of correction value setting devices for racking, in which different correction values are set respectively, a motor indexing control circuit in which signals of the instructions of the knitting machine-controlling equipment-controlling zone for driving the racking motor and correcting

the driving of the racking motor are put and which corrects the signals of the instructions for driving the racking motor according to the signal of the instructions for correcting the driving of the racking motor based on the correction value of the correction value setting device corresponding to said signals of the instructions for correcting the driving of the racking motor, an output circuit for amplifying the output of said motor indexing control circuit, and a racking motor having a power source circuit which is put on by the output of the output circuit.

**4,339,934**  
**STRIP SHAPE CONTROL**  
Randolph N. Mitchell, Rome, Italy, assignor to Reynolds Metals Company, Richmond, Va.  
Filed Nov. 28, 1980, Ser. No. 211,301  
Int. Cl.<sup>3</sup> B21B 37/04  
U.S. Cl. 72—17 5 Claims

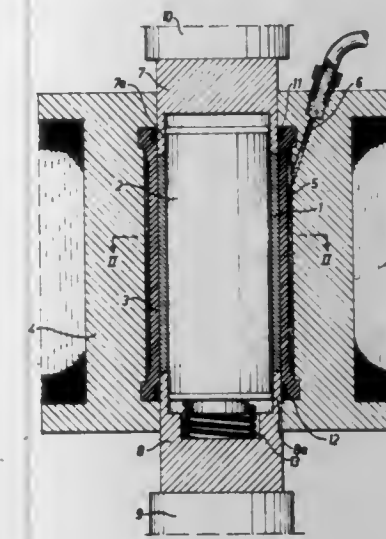


1. In a metallic strip rolling apparatus comprising a rolling mill, a tension take-up reel to receive strip rolled through said mill and strip shape sensing means mounted between said mill and said take-up reel and constructed and arranged to adjust said mill for automatic correction of the shape of said strip being rolled in said mill, the improvement comprising a roll mounted to press against said strip between said shape sensing means and said take-up reel, said shape sensing means and said roll being in contact with opposite faces of said strip, and means responsive to the amount of said strip on said take-up reel for controlling the vertical position of said roll relative to said shape sensing means.

**4,339,935**  
**METHOD FOR CALIBRATING TUBULAR ARTICLES**  
Björn O. A. Pettersson, Ystad, Sweden, assignor to AB Carbox, Ystad, Sweden  
Filed Apr. 10, 1981, Ser. No. 252,948  
Claims priority, application Sweden, Apr. 15, 1980, 8002833  
Int. Cl.<sup>3</sup> B21D 39/08  
U.S. Cl. 72—57 2 Claims

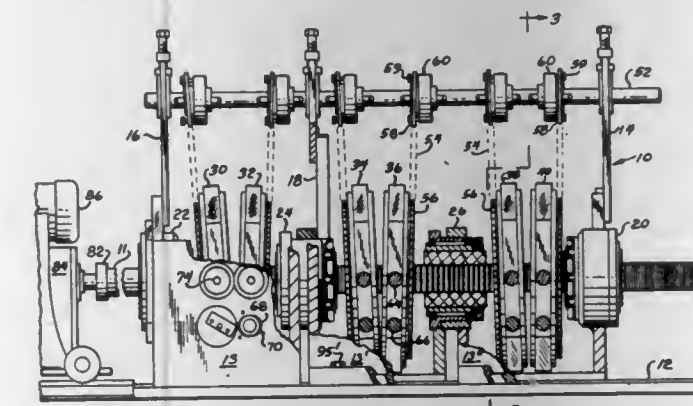
1. A method for calibrating a tubular article made of a pulverulent metallic material which has undergone isostatic pressing and a subsequent sintering operation, comprising the steps of:  
placing the article around a central mandrel in an isostatic press;  
subjecting the article first to a first press force directed radially inwardly of the article;

then applying to the article an axially oriented force acting to displace the article axially relative to the mandrel; and



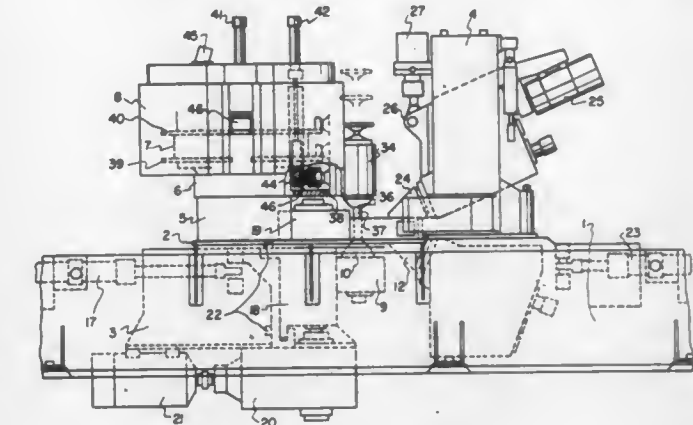
then again applying to the article a force directed radially inwardly and greater than said first press force to press the article against the mandrel.

**4,339,936**  
**ANNULAR CORRUGATOR**  
John R. Pressman, Northampton, England, assignor to UOP Inc., Des Plaines, Ill.  
Filed Nov. 3, 1980, Ser. No. 202,909  
Int. Cl.<sup>3</sup> B21D 15/04, 17/04  
U.S. Cl. 72—77 7 Claims



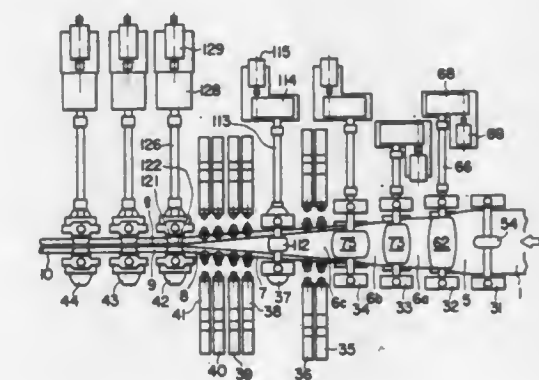
1. An apparatus for annularly corrugating metal tubing comprising:  
(a) a first annular die ring adapted to encompass the tubing, said first die ring including a helical internal ridge portion having a tapered lead-in portion and an inner diameter greater than the outer diameter of the tubing and extending circumferentially at a predetermined internal diameter for at least 360° around the interior wall of said first die and adapted to indentably bear on the exterior of said tubing in a substantially radial direction;  
(b) at least a second annular die ring adapted to encompass said tubing downstream of said first die ring, said second die ring including a tapered lead-in portion and a helical internal ridge which extends circumferentially for at least 360° at a predetermined internal diameter and which has an internal diameter which is greater than the outer diameter of the tubing which it is adapted to engage, the helical internal ridge in said second die ring having a smaller thread pitch than said first die ring;  
(c) means for incurring relative rotation between said tubing and said die rings whereby to axially displace said tubing continually through said dies while simultaneously forming annular corrugations therein; and  
(d) means for synchronizing the rotation of said die rings so that they rotate at the same angular speed.

**4,339,937**  
**RING ROLLING MILL**  
Alfred Strugala; Erich Dittich, both of Dortmund, and Helmut Siewert, Castrop-Rauxel, all of Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Fed. Rep. of Germany  
Filed Jun. 6, 1980, Ser. No. 156,927  
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 2923001  
Int. Cl.<sup>3</sup> B21H 1/06  
U.S. Cl. 72—110 10 Claims



1. A ring rolling mill comprising a rolling mill frame, a rolling platform mounted to the frame, a main roll movably mounted on the frame, a plurality of elongated mandrel rolls mountable laterally of said main roll, a plurality of upper mandrel roll bearing housings, each housing supporting one of the oppositely disposed ends of a mandrel roll, each mandrel roll and one bearing housing associated therewith being axially displaceable, a turret rotatably mounted on the frame at a spaced location above the main roll, carriage means for radially moving the main roll, a supporting arm rigidly connected to the frame and projecting into the space between said turret and said main roll, and said axial displaceable mandrel roll bearing housing being displaceable to engage with and bear upon said supporting arm for rolling a ring.

**4,339,938**  
**METHOD AND APPARATUS FOR FORMING METAL PIPES AND TUBES**  
Makoto Nakagawa, Chiba, and Takeshi Mori, Kitakyushu, both of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan  
Continuation of Ser. No. 33,221, Apr. 25, 1979, abandoned. This application Feb. 20, 1981, Ser. No. 236,304  
Claims priority, application Japan, May 2, 1978, 53-52281  
Int. Cl.<sup>3</sup> B21D 5/12  
U.S. Cl. 72—178 2 Claims



1. A method of forming metal pipes and tubes for a skelp by laterally bending the skelp, which method comprises:  
passing the skelp between convex and concave horizontal rolls for, while keeping the middle portion of the skelp substantially straight, edge-forming successively more



inward parts of the edge portion on each side of the skelp, which parts together extend inwardly up to a distance inward of the edge of from 12.5% to 25% of the width of the skelp and symmetrical to the pass line, for giving each part from 70 to 100% of the ultimate curvature thereof in the finished pipe;

forcing the edge-formed skelp through a plurality of cage roll passes disposed along and symmetrical to the pass line for intermediate forming the remaining portion of the skelp toward a round form symmetrical to the pass line; and

forcing the thus intermediate formed skelp through at least one finishing pass having a plurality of finishing rolls for shaping the skelp to the final shape and inserting the fin of a finned roll in the finishing pass into the gap between the skelp edges for finish-forming the skelp.

4,339,939

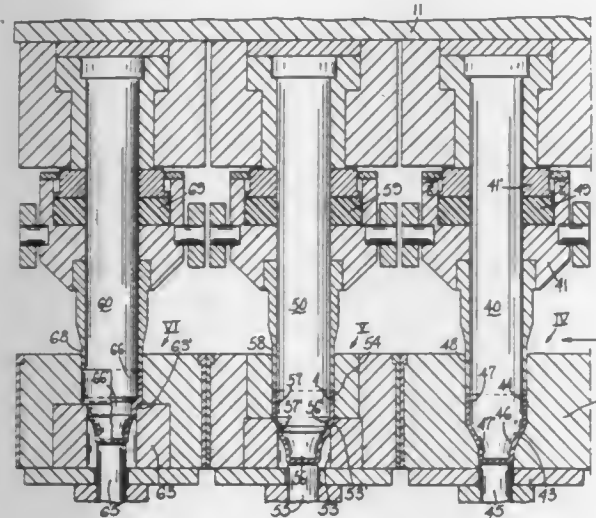
## DRAWING HEAVY WALLED PARTS

Walter R. Book, Bethlehem, and Anthony M. Putetti, Waterbury, both of Conn., assignors to Textron, Inc., Providence, R.I.

Continuation of Ser. No. 965,159, Nov. 30, 1978, abandoned, which is a division of Ser. No. 807,072, Jun. 16, 1977, Pat. No. 4,147,049. This application Jun. 15, 1981, Ser. No. 273,640 Int. Cl.<sup>3</sup> B21D 22/00

U.S. Cl. 72-349

2 Claims



1. The method of forming heavy walled cup shaped parts without annealing which includes:

providing a multiple station punch and die machine wherein a plurality of punches are associated with sleeves which are slightly movable relatively to their respective punches;

providing a disc-shaped blank;

transferring the blank to a first station and cupping the blank to form a workpiece, the dimensions of the workpiece bottom being established in the cupping operation;

transferring the cupped blank to a die having a die angle such that the die opening is no smaller than the diameter of the blank;

drawing the blank to reduce the cup diameter and increase its height;

transferring the workpiece to a redrawing station in which the punch has a sleeve mounted for slight movement relative to the punch;

bringing the sleeve to bear on the upper edge of the workpiece to maintain compression on the workpiece material during forming; and

reducing the diameter of the workpiece, while simultaneously extruding upward the wall material of the workpiece.

#### 4,339,940 MULTIPART DIE FOR ATTACHMENT OF A METAL CLIP

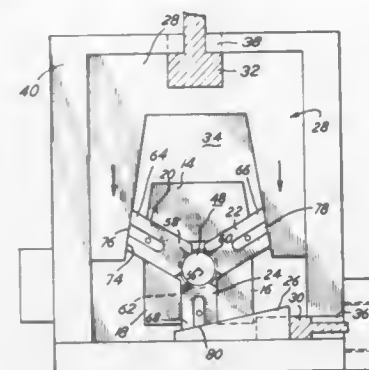
Frederic M. MacKay; Gordon R. Winders, both of Raleigh, and Thomas E. Whittlesey, Apex, all of N.C., assignors to Tipper Tie, Inc., Apex, N.C.

Filed Jun. 5, 1980, Ser. No. 156,762

Int. Cl.<sup>3</sup> B21D 7/00, 37/10

U.S. Cl. 72-402

5 Claims



1. In apparatus for attaching a metal clip to a workpiece, the improvement comprising, in combination:

a multipart die for forming the clip into a substantially fixed diameter, helical configuration on the workpiece, said die including more than two die members, each of the die members having an arcuate face segment opposed to the workpiece, each die member being translatable only in a radial direction toward and away from the center of a circle surrounding the workpiece, said center being intermediate all of the die members, each of the face segments of said die members including a segment of a circular clip channel, said channel being continuous when the die members are in the closed position, with the face segments forming a closed surface about the workpiece; and

means for simultaneously translating the die members in the radial direction only between an open position for positioning a metal clip between the die members on the workpiece and closed circle position for forming the metal clip into a circular configuration on the workpiece, said means including separate die passages for each die member, each die passage forming a radial passage for sliding movement of the associated die member.

4,339,941

#### METHOD AND APPARATUS FOR PRODUCING THICK WELDED STEEL PIPE

Tadaaki Taira; Toshio Ishihara; Hiromichi Itoshima, all of Fukuyama; Yutaka Mihara, Tokyo, and Takashi Kogawa, Kawasaki, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed May 9, 1980, Ser. No. 148,501

Claims priority, application Japan, May 22, 1979, 54-62244 Int. Cl.<sup>3</sup> B21D 37/10

U.S. Cl. 72-412

29 Claims

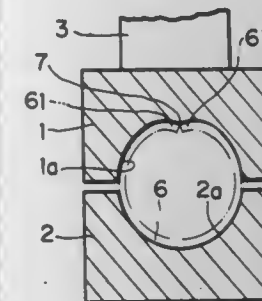
1. A process for producing steel pipe from thick plate material and for reducing the amount of peaking in the pipe during production thereof, comprising:

forming the thick plate into a pipe of generally O-shape by O-ing with a pair of O-ing dies, the O-shaped pipe having two longitudinally extending edges facing each other and forming a longitudinal edge groove therebetween;

locating an inwardly projecting member substantially at the center on an inner caliber of an O-ing die, said projecting member projecting inwardly of said caliber so as to bear on the longitudinally extending outer surfaces of said O-shaped pipe in the vicinity of said facing edges of said O-shaped pipe, said projecting member extending inwardly from the curvature of said caliber and longitudinally in the direction of said edge groove;

engaging said projecting member with said outer surface of

said O-shaped pipe in the vicinity of said facing edges of said O-shaped pipe in the vicinity of said edge groove of said O-shaped pipe; and



carrying out a further O-ing operation on said pipe with said projecting member in engagement with said outer surfaces of said O-shaped pipe in the vicinity of said edge groove so as to bring said edges together and to reduce peaking in the pipe.

4,339,942

#### HYDRAULICALLY OPERATED CRIMPING TOOL

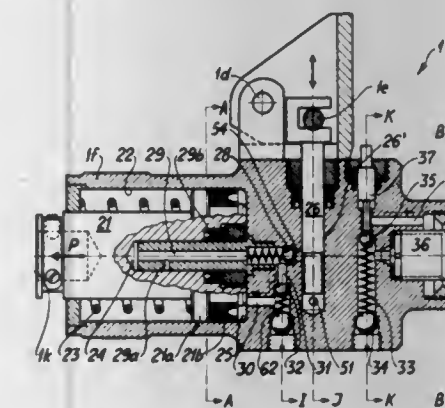
Uno Svensson, Porlabacken 5, 124 45 Bandhagen, Sweden

Filed Sep. 10, 1980, Ser. No. 185,688

Claims priority, application Sweden, Sep. 10, 1979, 7907468 Int. Cl.<sup>3</sup> B21D 7/06

U.S. Cl. 72-453.16

7 Claims



1. Hydraulically operated crimping tool (1) for attaching an electrical connector to an electrical conductor, consisting of a hydraulic oil reservoir (27), which is connected to a pump unit (26) which when operated will pump oil under pressure into an enclosed space (25), into which is introduced a pin (1k), said pin being so arranged as to move out of the space as pressure is applied, characterized in that upon the initial activation of the pump unit (26) oil is pumped into a small space (24) of small area and volume, where a small quantity of oil will produce large movement of the pin (1k), said movement likewise causing the other enclosed space (25) of greater area and of greater volume to be filled with oil, but as resistance begins to occur to the movement of the pin (1k) the pump unit (26) will pump the quantity of oil to the enclosed space (25) of greater area.

4,339,943

#### PRESSURE TRANSDUCER CROSS-CHECK SYSTEM

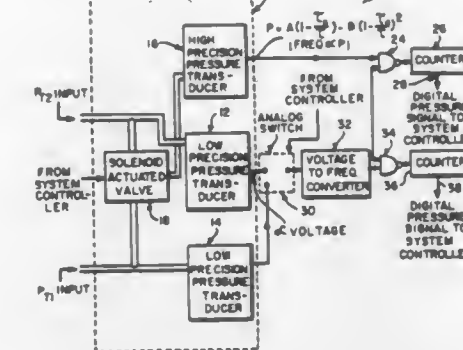
Geoffrey S. M. Hedrick, Malvern, Pa., assignor to Smiths Industries Limited, London, England

Filed Aug. 5, 1980, Ser. No. 175,425

Int. Cl.<sup>3</sup> G01L 27/00

U.S. Cl. 73-4 R

20 Claims



1. In an aircraft instrument system capable of receiving a pair of content related pressure responsive signals for providing input signals based thereon to a controller for said system, said system controller being capable of providing an aircraft instrument control signal responsive to said input signals provided thereto; the improvement comprising a pair of parameter input means; a pair of pressure transducers operatively connected between said parameter input means and said system controller, each of said pressure transducers being connected to a different parameter input means of said pair and being capable of detecting a predetermined parameter associated with said parameter input means for providing a pressure responsive parameter signal to said system controller in accordance with said detected parameter, said detected parameters being related to each other in content whereby said pair of provided parameter signals are related to each other in content, said pair of pressure transducers being operatively connected to said system controller for selectively providing said related parameter signals as said input signals thereto, each of said pair of pressure transducers being a relatively low precision pressure transducer; a common relatively high precision pressure transducer as compared with said low precision pressure transducers, said common high precision pressure transducer being selectively operatively connected between said system controller and one of said pair of parameter input means; and valve means operatively connected between said pair of parameter input means, said pair of low precision pressure transducers and said common high precision pressure transducer for alternately connecting one of said pair of low precision pressure transducers to one of said parameter input means while connecting said common high precision pressure transducer to the other of said parameter input means for selectively alternately providing one of said pair of parameter input signals as a high precision pressure responsive input signal to said system controller on alternate cycles of said low precision pressure transducer pair in accordance with the cycling of said valve means, whereby each of said low precision pressure transducers is alternately periodically calibrated during the operation of said aircraft instrument system dependent on said common high precision pressure responsive input signal.

4,339,944

#### ULTRASONIC PARTICULATE IDENTIFICATION

Leigh R. Abts, Providence, and Robert T. Beyer, East Providence, both of R.I., assignors to Micro Pure Systems, Inc., Smithfield, R.I.

Filed May 21, 1980, Ser. No. 151,834

Int. Cl.<sup>3</sup> G01N 29/02

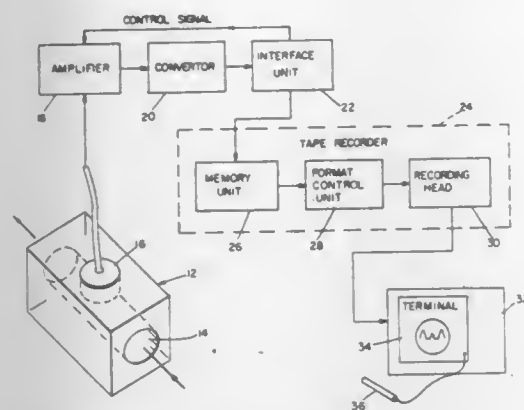
U.S. Cl. 73-19

7 Claims

1. A method of identifying and distinguishing different types of discontinuities in a flow comprising:



directing a transmitted pulse of short duration and rich in frequency components essentially transversely across the flow, detecting an ultrasonic pulse reflected from an unknown discontinuity in the flow, which reflected pulse need not have any frequency change due to discontinuity movement,

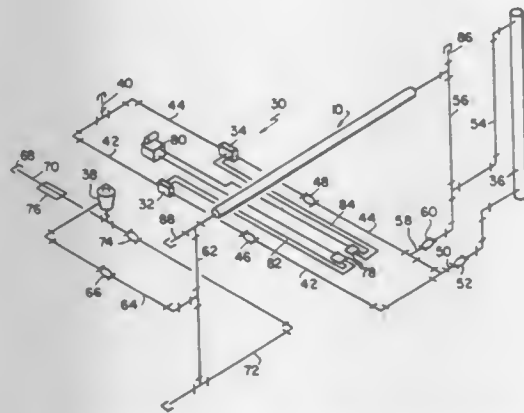


transforming said reflected pulse into a multi-component frequency spectrum, in which certain of the frequency components of said reflected pulse are enhanced because of the type of discontinuity reflecting said pulse, and comparing said frequency spectrum with the frequency spectra of known discontinuities, in which spectra different frequency components are enhanced, until a matching frequency spectrum is found.

**4,339,945**  
**PROCESS AND APPARATUS FOR TESTING FLUIDS FOR FOULING**  
James G. Knudsen, Corvallis, Oreg., and Nicholas J. Brindak, Morris Plains, N.J., assignors to Drew Chemical Corporation, Boonton, N.J.

Filed Oct. 30, 1980, Ser. No. 202,351  
Int. Cl.<sup>3</sup> G01N 17/00  
U.S. Cl. 73—61.2

18 Claims



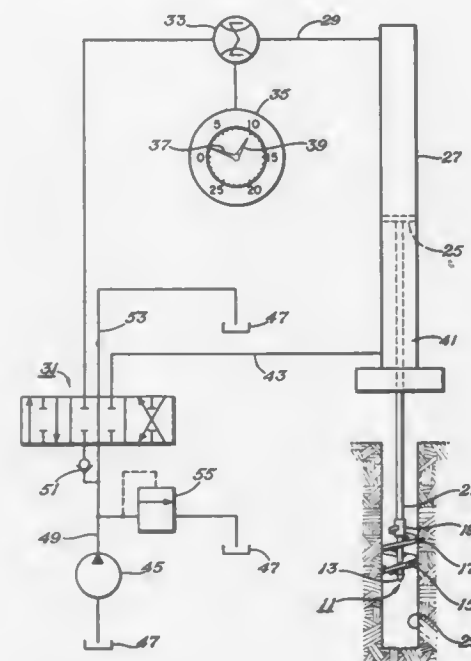
1. An apparatus for testing a fluid to monitor and record fouling data together with other parameters which comprises: a piping assembly including fluid inlet and outlet means and a heat transfer test assembly, said heat transfer test assembly including a heating member including a heating element disposed within a conduit means having a passage-way for said fluid; means for measuring temperature of said fluid entering said heat transfer test assembly; means for supplying electrical energy of a preselect quantity to said heating element; means for measuring a wall temperature of said heating element; flow means for measuring velocity of said fluid through said conduit means; means for measuring a parameter selected from the group consisting of corrosion, pH and conductivity; and means for simultaneously recording said preselect quantity

of electrical energy to said heating element, said measured temperature of said fluid, said measured wall temperature of said heating member, said measured velocity of said fluid through said piping assembly and said measured parameter.

**4,339,946**  
**HYDRAULIC DEPTH INDICATOR FOR HYDRAULIC DRILLING MACHINES**  
Thomas F. Cole, Vancouver, Wash., assignor to Hughes Tool Company, Houston, Tex.

Filed Dec. 5, 1979, Ser. No. 100,597  
Int. Cl.<sup>3</sup> E21B 47/04  
U.S. Cl. 73—151

3 Claims



1. A depth determining apparatus for an earth boring machine of the type having a cylinder, a piston carried in the cylinder, a rotatable drive kelly connected with the piston and adapted to support a drilling tool, the improvement which comprises in combination:

- a fluid source;
- a hydraulic line connecting the fluid source with the hydraulic cylinder;
- a pump connected with the hydraulic line to provide pressurized fluid to the hydraulic cylinder;
- valve means between the pump and the hydraulic cylinder in the hydraulic line to control fluid flow to the cylinder;
- a flowmeter in the hydraulic line between the valve and the hydraulic cylinder to measure fluid flow through the line;
- indicator means connected with the flowmeter, calibrated in terms of depth of hole reached by the drilling tool.

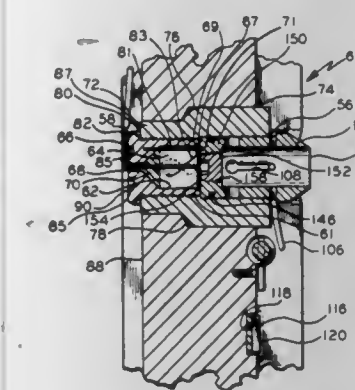
**4,339,947**  
**DOWNHOLE SAMPLING METHOD AND APPARATUS**  
Bruce F. Wiley, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 14, 1980, Ser. No. 177,957  
Int. Cl.<sup>3</sup> E21B 49/04  
U.S. Cl. 73—151

19 Claims

1. Apparatus comprising:
- (a) a sample-taking projectile having a sidewall which defines
    - (i) a sample chamber
    - (ii) an opening at one end of said projectile leading axially into said sample chamber
    - (iii) a pair of opposed longitudinally elongated apertures

leading through said sidewall radially into said sample chamber;

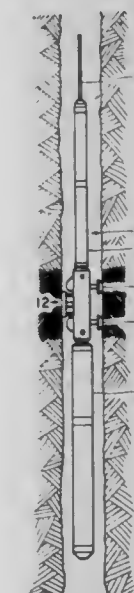


- (b) a flexible means for tethering the projectile extending through the opposed, longitudinally elongated apertures; and
- (c) a means for anchoring the tethering means.

**4,339,948**  
**WELL FORMATION TEST-TREAT-TEST APPARATUS AND METHOD**  
Bobby J. Hallmark, Fort Worth, Tex., assignor to Gearhart Industries, Inc., Fort Worth, Tex.

Filed Apr. 25, 1980, Ser. No. 143,779  
Int. Cl.<sup>3</sup> E21B 49/00  
U.S. Cl. 73—155

10 Claims



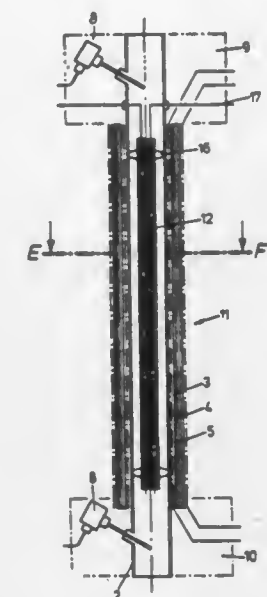
1. In the method for testing, then treating, then testing the same sealed off region of a well earth formation, the steps comprising:

- (a) isolating a wall region of the earth formation to be tested;
- (b) opening a fluid sample chamber to drain a fluid sample from the isolated region of earth formation while sensing the pressure build up of the fluids drawn into said chamber;
- (c) expelling a formation treating fluid from a treating fluid chamber into said isolated region of earth formation; and
- (d) again opening a sample chamber to draw a fluid sample from said isolated region of earth formation while sensing said pressure build up.

**4,339,949**  
**PROCESS AND APPARATUS FOR THE THERMAL MEASUREMENT OF MASS FLOW**  
Friedrich Bahner, Rotenburg, and Harry Pleva, Horb, both of Fed. Rep. of Germany, assignors to Babcock-BSH AG, Krefeld, Fed. Rep. of Germany  
Filed Dec. 27, 1979, Ser. No. 107,653  
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856289

Int. Cl.<sup>3</sup> G01F 1/68  
U.S. Cl. 73—204

6 Claims

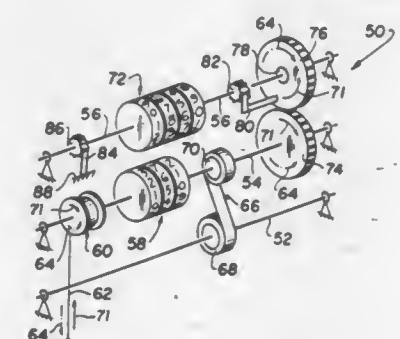


1. An apparatus for thermally measuring mass flow, comprising a hollow tube through which a gaseous, vaporous or liquid medium may be passed, temperature sensors disposed at the terminal areas of said tube, two concentric wire coils of a thermic resistance material wound around the outer periphery of said tube, a layer of predetermined thickness interposed between said coils and formed of a material of at most moderate heat conductivity, with at least part of the tube and wire coils surrounded by a cooling or heating device, whereby the mass flow may be measured by ascertaining the heat differential between said two wire coils and obtaining by means of these data and the data from the temperature sensors, the heat balance equation.

**4,339,950**  
**COUNTING MECHANISM ATTACHMENT FOR A FUEL TANK**  
Nicholas C. Lendino, 125 Rhode Island Ave., Massapequa, N.Y. 11758

Filed Feb. 19, 1980, Ser. No. 122,566  
Int. Cl.<sup>3</sup> G01F 23/08; G06M 1/08  
U.S. Cl. 73—310

5 Claims



1. A counting mechanism adapted for use as an attachment to a fuel tank so as to record the cumulative amount of fuel resulting from the successive filling of said tank and also to record the amount of fuel removed therefrom incident to heating use of said fuel following each said filling, said mechanism comprising:



nism comprising two counter-operating rotatable shafts, a first counter and a second counter respectively mounted on each said shaft so as to provide counting operation in response to shaft rotation, each said counter being of the type that adds in one shaft rotational direction and subtracts in the opposite shaft rotational direction, shaft rotation-powering means operatively connected to said shaft of said first counter and responsive to fuel level changes in said fuel tank so as to cause rotation in said shaft of said first counter such that said first counter adds from a selected starting reference number to a higher number in response to shaft rotation corresponding to a descending fuel level change so as to record the amount of fuel being consumed and subsequent thereto subtracts back to said selected starting reference numeral in response to opposite shaft rotation corresponding to an ascending fuel level change, a gear fixedly mounted on said first counter shaft and a cooperating second gear disposed in intermeshing relation therewith mounted on bearing means so as to be free wheeling relation on said second counter shaft such that said rotational movements in both rotational directions of said first counter shaft responsive to said fuel level changes are imparted to said free wheeling second gear, and a pawl on said second gear and a ratchet fixedly mounted on said second counter shaft disposed in cooperating operative relation with each other such that said pawl drivingly engages said ratchet to cause corresponding rotation in said second counter shaft in one rotational direction but not in said opposite rotational direction, whereby said second counter is adapted to add cumulatively in response to successive shaft rotations corresponding to ascending fuel level changes to provide a number record of the successive fuel tank fillings without there being any subtraction from such number during rotation of said second gear corresponding to a descending fuel level change.

4,339,951

#### TEMPERATURE MEASUREMENT AND DISPLAY OF INDICIA USING THERMOCHROMIC POLYACETYLENES

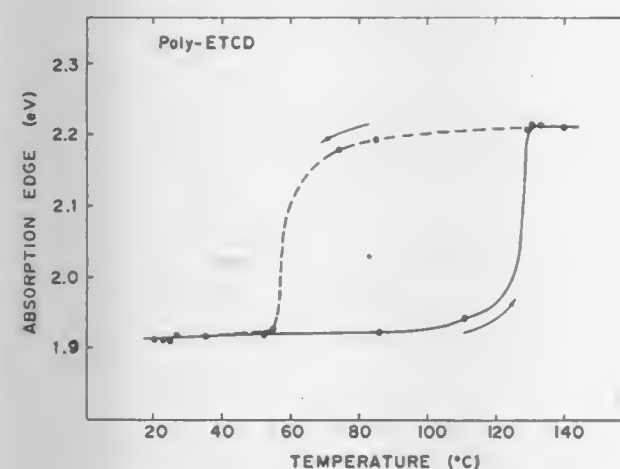
Kwok C. Yee, Randolph; Anthony F. Preziosi, Ledgewood; Gordhanbhai N. Patel; Ronald R. Chance, both of Morris Plains; Granville G. Miller, Morristown, and Ray H. Baughman, Morris Plains, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 839,678, Oct. 5, 1977, Pat. No. 4,215,208. This application Apr. 30, 1979, Ser. No. 34,112

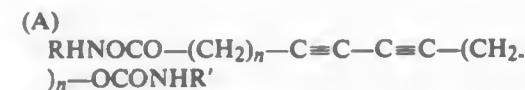
Int. Cl.<sup>3</sup> C01K 11/12

U.S. Cl. 374-162

5 Claims



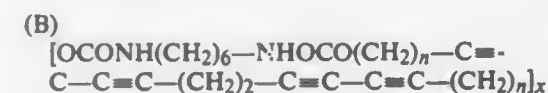
1. A device for measuring temperature comprising a substrate having deposited thereon at least one thermochromic polyacetylene being a 1,4 addition polymer of an acetylenic compound selected from the group consisting of  
(1) polydiacetylenes which are 1,4 addition polymers of monomers having the following formula:



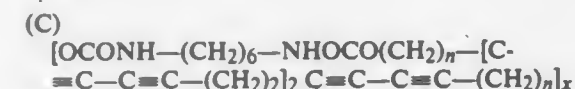
wherein

- (a) n is 4 and R and R' can be the same or different and are isopropyl, n-octadecyl, linear C<sub>1</sub>-C<sub>4</sub> alkoxy carbonylmethyl, linear C<sub>1</sub>-C<sub>4</sub> p- or m-alkylphenyl, o- or m-chlorophenyl or linear C<sub>1</sub>-C<sub>4</sub> monochloroalkyl;  
(b) n is 3 and R and R' can be the same or different and are linear C<sub>1</sub>-C<sub>4</sub> alkoxy carbonylmethyl, linear C<sub>1</sub>-C<sub>4</sub> m-alkylphenyl, m- or p-chlorophenyl;  
(c) n is 2 and R and R' can be the same or different and are linear C<sub>1</sub>-C<sub>4</sub> m-alkylphenyl, p-methoxyphenyl or linear C<sub>1</sub>-C<sub>4</sub> m-alkoxyphenyl;

- (2) polyacetylenic network polymers which are 1,4-addition products of crosslinking of polyacetylenes having the following formulas:

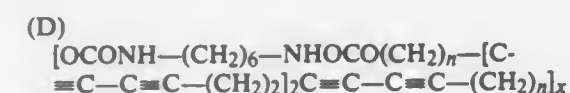


wherein x is large and n is 3; and copolymers formed of the above formulas (B), and (C) where n is an integer from 2 to 6;

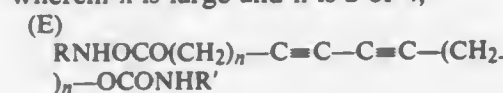


wherein x is large and n is 3; and copolymers formed of the above formulas (B), and (C) where n is 3;

- (3) partially polymerized acetylenic compounds containing from about 0.1 to about 50 weight percent of 1,4 addition polymers of acetylenic compositions having the following formulas:

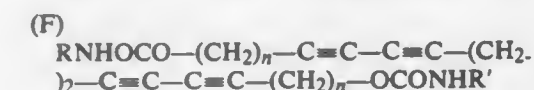


wherein x is large and n is 2 or 4;



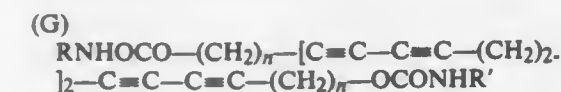
wherein

- (a) n is 4 and R and R' are p-chlorophenyl,  
(b) n is 3 and R and R' can be the same or different and are linear C<sub>4</sub>-C<sub>18</sub> alkyl, linear C<sub>1</sub>-C<sub>4</sub> o-alkoxyphenyl or linear C<sub>1</sub>-C<sub>4</sub> o-alkylphenyl;  
(c) n is 2 and R and R' can be the same or different and are linear C<sub>2</sub>-C<sub>18</sub> alkyl, linear C<sub>1</sub>-C<sub>4</sub> alkoxy carbonylmethyl or m-chlorophenyl;  
(d) n is 1 and R and R' can be the same or different and are linear C<sub>6</sub>-C<sub>18</sub> alkyl, p-chlorophenyl or o-nitrophenyl;



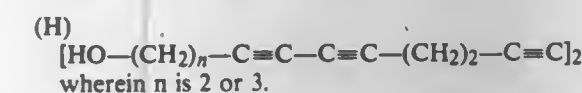
wherein

- (a) n is 4 and R and R' can be the same or different and are linear C<sub>1</sub>-C<sub>18</sub> alkyl;  
(b) n is 3 and R and R' can be the same or different and are linear C<sub>1</sub>-C<sub>18</sub> alkyl;  
(c) n is 2 and R and R' can be the same or different and are linear C<sub>2</sub>-C<sub>18</sub> alkyl;



wherein

- (a) n is 4 and R and R' can be the same or different and are linear C<sub>2</sub>-C<sub>18</sub> alkyl;  
(b) n is 3 and R and R' can be the same or different and are linear C<sub>1</sub>-C<sub>18</sub> alkyl;  
(c) n is 2 and R and R' can be the same or different and are linear C<sub>1</sub>-C<sub>18</sub> alkyl or phenyl; and



4,339,952

#### CYLINDRICAL TRANSDUCER ULTRASONIC SCANNER

Francis S. Foster, Toronto, Canada, assignor to Ontario Cancer Institute, Toronto, Canada

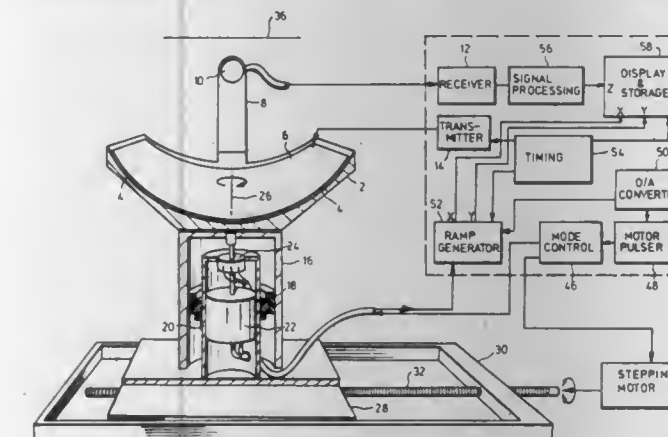
Filed Apr. 4, 1980, Ser. No. 137,414

Claims priority, application Canada, Apr. 26, 1979, 326460

Int. Cl.<sup>3</sup> G01N 29/04

U.S. Cl. 73-624

21 Claims



1. An ultrasonic imaging device, comprising transducer means for transmitting ultrasound pulses into a structure to be imaged and receiving ultrasound scattered by said structure and generating signals in response thereto, means to energize said transducer means to transmit said pulses, scanning means for progressively relating said transducer means to successive linear portions of said structure according to a scanning pattern, and receiver and signal processing means for assembling an image from said generated signals, wherein the transducer means comprises separate transmitting and receiving transducers, one of said transducers being a real or simulated cylindrical transducer having a line focus successively coincident with the axes of said linear structure portions, and the other of said transducers being in coaxial alignment with and aimed along said line focus, the scanning means being operative to move said line focus in relation to the structure to be imaged in accordance with said scanning pattern.

21. An ultrasonic examination method comprising transmitting ultrasound pulse from one transducer and receiving ultrasound scattered by a structure being examined at a second transducer to provide a signal for display, one of said transducers having a line focus in said structure from a lateral direction and the other being aligned with and aimed along said line focus.

4,339,953

#### POSITION SENSOR

Shinichiro Iwasaki, Auburn Heights, Mich., assignor to Aisin Selki Company, Ltd., Kariya, Japan

Filed Aug. 29, 1980, Ser. No. 182,842

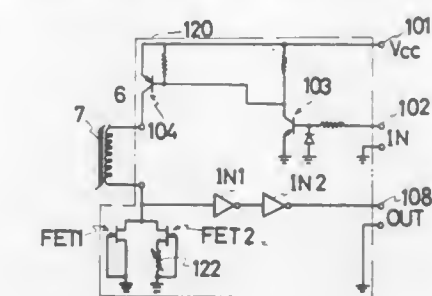
Int. Cl.<sup>3</sup> G01H 11/00

U.S. Cl. 73-654

6 Claims

1. A position sensor for detecting operational displacement of an operation means, comprising:  
a ferromagnetic member movable in response to displacement of said operation means;  
permanent magnet means for providing a magnetic field; core means including a magnetically soft material disposed

adjacent said ferromagnetic member and said permanent magnet means for forming a magnetic circuit therewith; at least one electrical coil disposed on said core means; detector means for detecting a change of intensity of magnetic flux produced in said core means by the magnetic field of said permanent magnet means in response to a



displacement of said strong ferromagnetic member, comprising means for applying a pulse voltage to said at least one coil; and means for measuring the time delay occurring from the application of said pulse voltage until saturation of said core means.

4,339,954

#### MEASUREMENT OF SMALL MOVEMENTS

Michael Anson; Shin-Ho Chung, both of London, England, and Alan G. Pettigrew, Homebush, Australia, assignors to National Research Development Corporation, London, England PCT No. PCT/GB79/00043, § 371 Date Nov. 9, 1979, § 102(e) Date Oct. 29, 1979, PCT Pub. No. WO79/00841, PCT Pub. Date Oct. 18, 1979

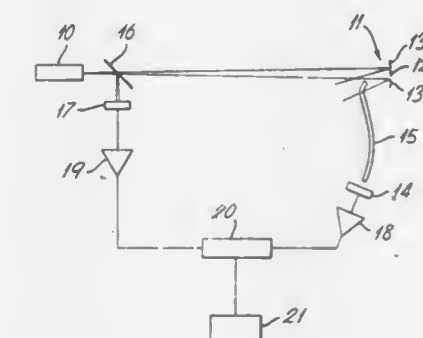
PCT Filed Mar. 9, 1979, Ser. No. 179,287

Claims priority, application United Kingdom, Mar. 9, 1978, 09398/78

Int. Cl.<sup>3</sup> G01B 9/02

U.S. Cl. 73-657

14 Claims



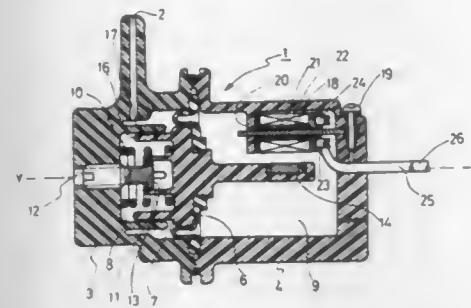
1. A method of measuring the out of plane movement of an oscillating irregular surface, comprising the steps of:  
illuminating the surface with coherent light, the reflexions and scattering of the coherent light from the surface forming a speckle pattern,  
detecting with a spatially integrating photodetector, variations caused by the out-of-plane movement in the speckle pattern and generating a photodetector signal indicative thereof and  
continuously detecting, from the photodetector signal, amplitude variations thereof at the frequency of the out-of-plane movement to represent such movement.



**4,339,955**  
**PRESSURE SENSOR**  
 Shinichiro Iwasaki, Auburn Heights, Mich., assignor to Aisin Seiki Company, Ltd., Kariya, Japan  
 Filed Aug. 29, 1980, Ser. No. 182,841  
 Int. Cl.<sup>3</sup> G01L 9/10

U.S. Cl. 73-728

13 Claims

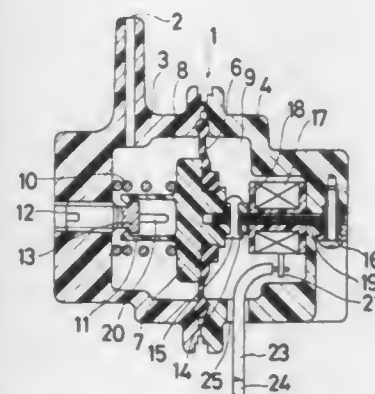


1. A pressure sensor comprising:  
 a casing defining an inner space;  
 a movable body dividing said inner space of said casing into a first space and a second space and movable within said inner space in response to pressure differential generated between said first and second spaces;  
 a fluid port communicating with the first space;  
 spring means for urging the movable body in a given direction to reduce the volume of the first space or to reduce the volume of the second space;  
 a permanent magnetic coupled to the movable body and movable therewith;  
 a core formed of at least one member consisting of a magnetically soft material magnetically coupled to said permanent magnet and disposed adjacent to a range of movement of the permanent magnet;  
 an electrical coil disposed on the at least one member of said core;  
 means for applying an electrical signal to said coil to saturate magnetically said core; and  
 means for producing a pressure output signal indicative of the pressure differential between said first and second spaces based on the amount of time between application of said electrical signal and saturation of said core.

**4,339,956**  
**PRESSURE SENSOR**  
 Shinichiro Iwasaki, Auburn Heights, Mich., assignor to Aisin Seiki Company, Ltd., Kariya, Japan  
 Filed Aug. 29, 1980, Ser. No. 182,848  
 Int. Cl.<sup>3</sup> G01L 9/10

U.S. Cl. 73-728

6 Claims



1. A pressure sensor comprising:  
 a casing;  
 a movable body located within said casing to divide the interior of the casing into a first space and a second space;  
 a fluid port disposed in communication with the first space;

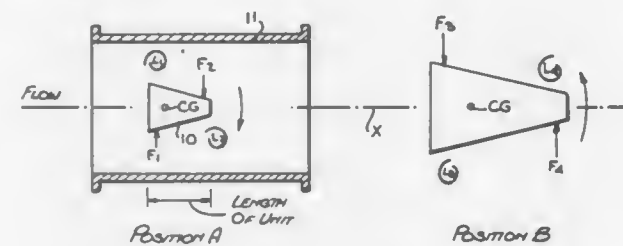
spring means for biasing the movable body in a direction opposite to a pressure applied through the fluid port;  
 a core comprising an amorphous, magnetically soft metal material connected to the movable body, the movable body acting to produce a stress in the core;  
 an electrical coil disposed on the core for detecting the stress produced therein; and  
 detection means for applying a predetermined pulse voltage to said electrical coil to saturate said core and for detecting changes in the permeability of said magnetically soft core material as a result of said stress acting on said magnetically soft core material, comprising means for producing an output signal indicative of the pressure applied through the fluid port based on the time between application of said pulse voltage and saturation of said core.

**4,339,957**  
**VORTEX-SHEDDING FLOWMETER WITH UNITARY SHEDDER/SENSOR**

Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Company, Warminster, Pa.  
 Continuation-in-part of Ser. No. 178,176, Aug. 14, 1980, which is a continuation-in-part of Ser. No. 37,532, May 10, 1979, Pat. No. 4,262,544, which is a continuation-in-part of Ser. No. 13,557, Feb. 21, 1979, Pat. No. 4,226,117, which is a continuation-in-part of Ser. No. 944,624, Sep. 21, 1978, Pat. No. 4,181,020. This application Sep. 30, 1980, Ser. No. 192,351  
 Int. Cl.<sup>3</sup> G01F 1/32

U.S. Cl. 73-861.24

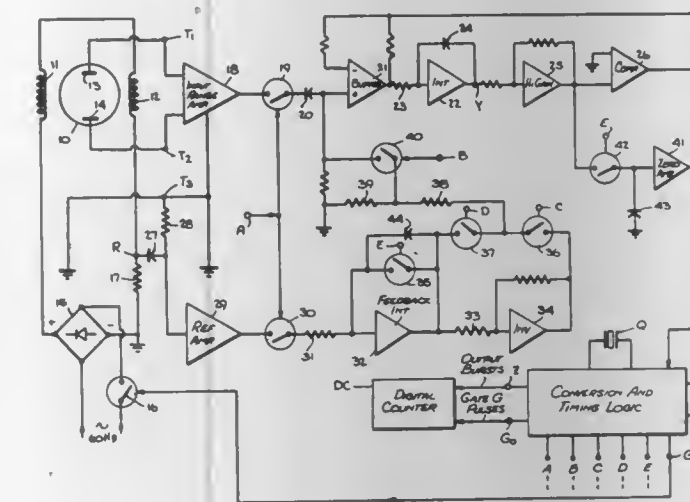
11 Claims



1. A vortex-shedding flowmeter capable of accurately measuring the flow rate of a fluid even under extreme conditions of temperature, the flowmeter comprising:  
 A. a flow pipe through which the fluid to be metered is conducted along a flow axis;  
 B. a shedder/sensor unit having a non-circular cross-sectional configuration torsionally supported in said flow pipe along a pivot axis which coincides with the center of gravity of the unit, which axis is at right angles to the flow axis, whereby said unit which is statically and dynamically balanced is intercepted by the fluid to shed vortices on alternate sides and is caused by said vortices to oscillate about said pivot axis at a rate proportional to flow, the support therefor including a relatively stiff torque tube whose base is received within a bore in said flow pipe and is joined thereto and whose tip is joined to one end of said unit to exclude said fluid from the interior of said tube, said support effectively restricting said oscillations to a microscopic movement to prevent an interaction between said movement and the shedding action;  
 C. a transducer external to said pipe to convert the unit oscillations into corresponding electrical signals; and  
 D. a link assembly coupling said unit to said transducer and including a main rod extending into the interior of said torque tube and joined to the tip thereof, whereby the motion of the tube is transmitted via the rod to said transducer.

**4,339,958**  
**ANALOG-TO-DIGITAL CONVERTER FOR ELECTROMAGNETIC FLOWMETER**  
 Herbert A. Shauger, Willow Grove, Pa., assignor to Fischer & Porter Co., Warminster, Pa.  
 Filed Feb. 21, 1980, Ser. No. 123,431  
 Int. Cl.<sup>3</sup> G01F 1/00; H03K 13/02  
 U.S. Cl. 73-861.17

2 Claims

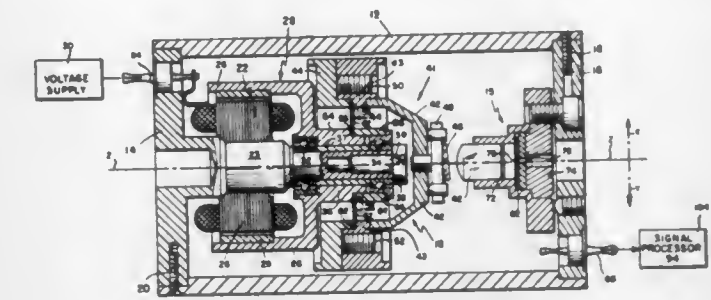


1. In combination, an electromagnetic flowmeter in which a fluid being metered passes through a flow tube to intersect a magnetic field, the voltage induced in the fluid being transferred to a pair of electrodes, the electromagnet being supplied with excitation current that is alternatively turned "on" and "off" at a low frequency rate, the resultant flow-induced signal being sampled for a predetermined interval in each "on" and "off" field period to provide a continuous train of samples, successive differences between the samples serving to develop an analog signal representing the flow rate, a reference voltage being derived from said excitation current whose magnitude depends on said current and is therefore indicative of said interval; said excitation current being supplied by a full wave rectifier coupled to a standard a-c power line through an electronic switch activated at a rate which is a sub-multiple of the line frequency to produce a flow induced electrode signal in the alternate "on" and off periods; and an analog-to-digital converter comprising:

- A. means to integrate each sample in the continuous train thereof during said interval to produce a sloped voltage extending from a base level to a peak level which depends on the amplitude of the sample and to then under the control of said reference voltage de-integrate the sample back to the base level in a time slot whose duration is directly proportional to the peak level; said integration and de-integration means including an integration amplifier, said electrode signal being applied to said amplifier through a second electronic switch which is activated during said predetermined interval in each of the alternate "on" and "off" periods whereby said amplifier integrates the resultant samples, the de-integration of said integration amplifier being controlled in accordance with said reference voltage;
- B. a stable source of high-frequency pulses; and
- C. means to extract a burst of pulses from said source during each time slot to produce a continuous train of pulse bursts, each of which has a count that depends on the duration of the related time slot, thereby providing the desired digital signal.

**4,339,959**  
**RATE GYROSCOPE HAVING AN OPTICAL SENSOR SYSTEM**  
 Benjamin Klaus, Jr., Lexington, and Gordon C. MacKenzie, North Billerica, both of Mass., assignors to Raytheon Company, Lexington, Mass.  
 Filed Oct. 3, 1979, Ser. No. 81,503  
 Int. Cl.<sup>3</sup> G01C 19/28  
 U.S. Cl. 74-5.6 A

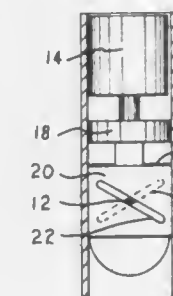
7 Claims



2. A two degree of freedom rate gyroscope comprising:  
 (a) a housing;  
 (b) a rotatable mass disposed within said housing; said mass having a longitudinal spin axis and two input angular rate axes mutually orthogonal to said spin axis  
 (c) optical sensor means to produce a sequence of electrical signal pulses representative of the angular rate orientation of the rotatable mass; and  
 (d) said system comprising a mirror rigidly attached to the rotatable mass; said mirror having a reflecting surface with a fixed oblique tilt angle with respect to the spin axis, an autocollimating lens, a fixed light source, a reticle having varying light transparency characteristics to modulate the light rays reflected from the spinning mirror, a light detector for converting the reflected modulated rays in accordance with the angular orientation of the mass into a modulated electrical signal and an electrical signal processor to provide output signal pulses varying in amplitude and time duration indicative of the sensed angular displacement of the gyroscope housing.

**4,339,960**  
**DRIVE MECHANISM FOR STIRLING ENGINE DISPLACER AND PISTON AND OTHER RECIPROCATING BODIES**  
 James R. Senft, Athens, Ohio, assignor to Sunpower, Inc., Athens, Ohio  
 Filed Jun. 30, 1980, Ser. No. 164,823  
 Int. Cl.<sup>3</sup> F02G 1/06; F16H 21/18  
 U.S. Cl. 74-50

11 Claims



2. A multiple yoke for drivingly linking a rotatable crank to two different reciprocating bodies so that said crank and said bodies all have periodic motion having the same period, said bodies having a selected phase angle between their respective periodic motions, said drive comprising:  
 at least two slotted yokes, each connected to a different one of said bodies and having the pin of said crank extending through their slots, said slots being transverse to each



other along their entire length at least one of said yokes having a portion including said slot which is angularly adjustable for adjustably selecting the relative angular orientation of said slots for adjusting the phase angle between the motion of said bodies.

4,339,961

# **PRESSURE-RESPONSIVE APPARATUS FOR ASSEMBLING TRACK LINKS OR THE LIKE**

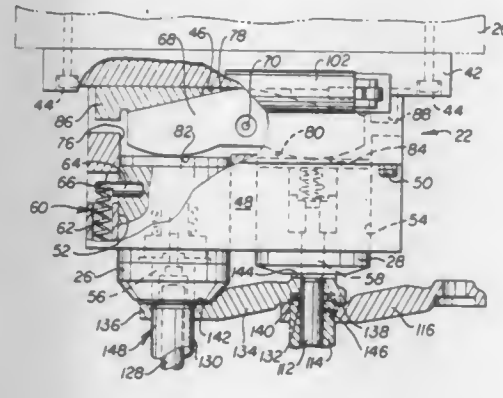
John W. Grillot, Washington, and Teddy R. Young, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill. PCT No. PCT/US79/01130, § 371 Date Dec. 26, 1979, § 102(e) Date Dec. 26, 1979, PCT Pub. No. WO81/01806, PCT Pub. Date Jul. 9, 1981

PCT Filed Dec. 26, 1979, Ser. No. 129,924

Int. Cl.<sup>3</sup> F16H 21/44; B21L 9/00

U.S. Cl. 74—110

11 Claims



1. An apparatus for selectively applying a pressure of a preselected level to first and second contact points (142,144) in response to a differential between a resistance force at each contact point (142,144) comprising:

a housing (48) including first and second laterally spaced and individually movable pressure heads (26,28) for registry with the first and second contact points (142,144), respectively;

means (42) for pressurizing the pressure heads (26,28); and means (68) for sensing the resistance force at each contact point (142,144), for compensating for the differential between the resistance forces at each contact point (142,144), and for directing an increased pressure to a preselected one of the contact points (142,144) in response to the differential between the resistance forces at the contact points (142,144).

4,339,962

# **SWITCHING DEVICE FOR VARIABLE SPEED GEARS IN MACHINE TOOLS**

Werner Babel, Pfronten-Meilingen, Fed. Rep. of Germany, assignor to Maho Werkzeugmaschinenbau Babel & Co., Pfronten-Meilingen, Fed. Rep. of Germany

Filed Aug. 8, 1979, Ser. No. 64,714

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1978, 2835303

Int. Cl.<sup>3</sup> F16H 57/00

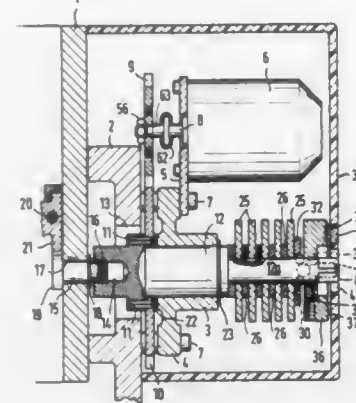
U.S. Cl. 74—335

8 Claims

1. In a machine tool having a plurality of sliding gear blocks and associated switching bars, a switching device for variable speed gears comprising:

motor means;  
a shaft driven by said motor means;  
a main drive shaft;  
a switching bar movable in response to rotation of said main drive shaft;  
a plurality of gears intermeshing to form a gear train mechanically linking said motor drive shaft with said main drive shaft, said gear train and said motor means being adapted for switching through individual gear stages;  
a shock absorber element disposed within said gear train

intermediate said shaft driven by said motor means and said switching bar;  
a plurality of rotatable, individually adjustable cam discs mounted in sequence axially along said main drive shaft;  
a plurality of switches, each one of said switches being actuable by rotation of an associated one of said cam discs;  
a plurality of non-rotatable, axially displaceable spacers mounted on said main drive shaft, one of said spacers



being disposed between adjacent ones of said cam discs; and clamping means comprising a spherical, key-bed transmission actuated by means of threaded bolts adapted to be tightened to exert axial pressure on said cam discs and said spacers to prevent said cam discs and said spacers from rotating on said main drive shaft and to be loosened to permit rotation of individual ones of said cam discs about said main drive shaft.

4,339,963

# **VISCOUS DAMPER**

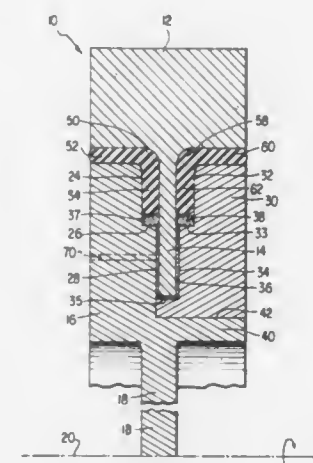
Robert C. Bremer, Jr., Brownsburg, Ind., assignor to Wallace Murray Corporation, New York, N.Y.

Filed Oct. 27, 1978, Ser. No. 955,209

Int. Cl.<sup>3</sup> F16F 15/10, 15/22

U.S. Cl. 74—574

3 Claims



1. A torsional vibration damper including,  
(a) an annular inertia ring,  
(b) a radially inwardly extending tongue carried by the inertia ring and integral therewith,  
(c) a pair of annular elastomer members having radially extending portions thereof which sandwich the tongue,  
(d) a two-piece annular hub,  
(e) the two-piece hub sandwiching the tongue and a portion of the elastomer members, the remaining portions of the elastomer members extending in a generally axial direction and being sandwiched by the two-piece hub and the inertia ring, the two elastomer members being in compression normal to their surfaces which are in surface contact with the hub and inertia ring,

(f) a radially innermost annular cavity in the hub, the radially innermost portion of said tongue extending into said radially innermost annular cavity,  
(f) said radially innermost annular cavity containing a viscous damping liquid, whereby the inertia ring tongue cooperates with the viscous liquid to damp torsional vibrations of the hub, and whereby the elastomer members cooperate with the inertia ring and hub to also damp torsional vibrations of the hub.

4,339,964

# **INTERNAL COMBUSTION ENGINE WITH COMBINED TRANSMISSION CASE AND CRANKSHAFT CASE, AND INTERMEDIATE SHAFT**

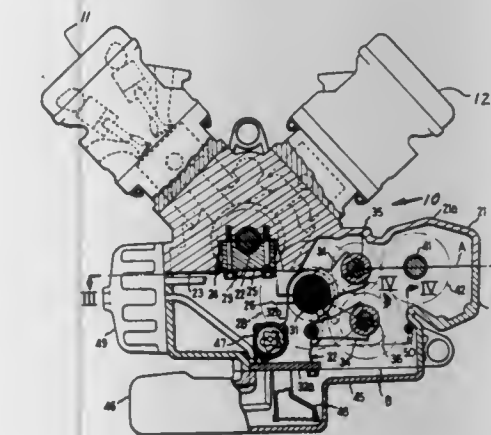
Yoshiharu Isaka, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 21, 1979, Ser. No. 96,382

Int. Cl.<sup>3</sup> F16H 57/02

U.S. Cl. 74—606 R

3 Claims



1. An internal combustion engine particularly suited for a motorcycle comprising:  
a single case having an internal cavity, said case comprising an upper and a lower portion jointed together at a joint plane;  
a crankshaft having an axis of rotation at an upper elevation in said cavity;  
a main shaft, and an output shaft geared to said main shaft, each having an axis;  
an intermediate shaft having an axis of rotation, the axis of rotation of said intermediate shaft being at an elevation lower than the axis of rotation of said crankshaft, said upper portion housing said crankshaft above said joint plane, said lower portion housing said intermediate shaft below said joint plane, said main shaft and output shaft being housed in said case with their axes of rotation on said joint plane, all of said shafts axes being parallel, said crankshaft being drivingly engaged to said intermediate shaft, and said intermediate shaft being drivingly engageable with said main shaft.

4,339,965

# **TRANSAXLE WITH BACK-UP FLANGE**

Hans Hauser, Fredericktown, and William J. Clayborne, Mount Vernon, both of Ohio, assignors to The J. B. Foote Foundry Co., Fredericktown, Ohio

Division of Ser. No. 849,011, Nov. 7, 1977, Pat. No. 4,232,569.

This application Nov. 19, 1979, Ser. No. 95,376

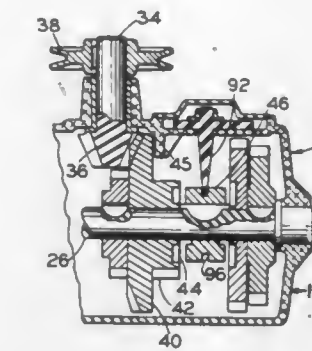
Int. Cl.<sup>3</sup> F16H 57/02

U.S. Cl. 74—607

1 Claim

1. A transaxle comprising a housing having an upper housing part and a lower housing part affixed together along a meeting line, an input shaft rotatably carried by both of said housing parts at the meeting line thereof, a driven bevel gear carried by said shaft, a drive shaft rotatably carried by said upper housing part, means outside said housing for rotating said drive shaft, a drive bevel gear affixed to said drive shaft in said housing and meshing with said driven bevel gear, and said housing having

a flange on one side of said drive shaft adjacent a portion of the side of said driven bevel gear opposite a portion of the side of said driven bevel gear which is engaged by said drive bevel



gear for supporting said driven bevel gear and reducing lateral deflection of said input shaft, said flange extending downwardly from an intermediate portion of said upper housing part.

4,339,966

# **INFINITELY VARIABLE TRANSMISSION DRIVE ARRANGEMENT ESPECIALLY FOR AUTOMOBILES**

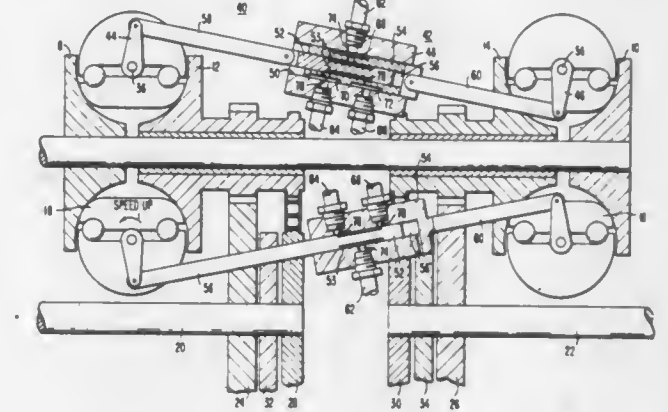
Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed May 30, 1980, Ser. No. 154,948

Int. Cl.<sup>3</sup> F16H 35/04, 15/08, 1/44

U.S. Cl. 74—650

4 Claims

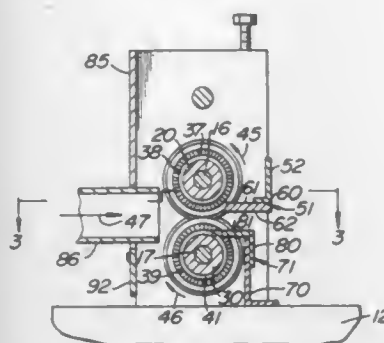


1. An infinitely variable traction roller transmission drive arrangement for driving different load members from a common power source, said arrangement comprising two traction roller transmissions with infinitely variable transmission ratios associated with a common input shaft, each having an output connected to one of said load members; each of said infinitely variable traction roller transmissions having oppositely disposed toric discs with motion transmitting traction rollers engaged between the opposite discs and supported by pivotal support shafts for transmitting motion between the discs with a variable transmission ratio depending on the angular position of said pivotal support shafts and including hydraulic transmission ratio control means for independently varying the transmission ratio of said transmissions and said arrangement further comprising a linkage interconnecting the corresponding pivotal support shafts of said two infinitely variable traction roller transmissions and having associated therewith a hydraulic valve structure controlling the pressurized fluid supply to said hydraulic transmission ratio control means so as to limit the difference in adjustment of their transmission ratios to a predetermined value.



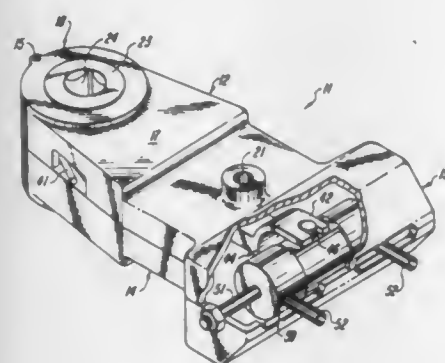
4,339,967  
**CABLE STRIPPER WITH PEELER**  
 William B. Greenberg, 211 Rock Hill Rd., Bala Cynwyd, Pa. 19004

Continuation-in-part of Ser. No. 75,323, Sep. 12, 1979, abandoned. This application Mar. 13, 1981, Ser. No. 243,528  
 Int. Cl.<sup>3</sup> H02G 1/12  
 U.S. Cl. 81—9.51 12 Claims



1. Apparatus for stripping sheath from cable, comprising upper and lower feeder wheels for engaging upper and lower sides of a cable to effect endwise cable feeding, said feeder wheels each being of decreasing diameter from opposite ends toward the middle to define a symmetrical peripheral concavity to laterally constrain the cable being fed, a circular cutter fixed coaxially on each of said feeder wheels at the minimum diameter of the peripheral concavity for cutting into diametrically opposite sides of the cable sheath, a sheath peeler located downstream of and in alignment with the cutter of the upper feeder wheel for entry through a cut in the upper side of said sheath to peel the sheath from the remainder of the cable, and a support upstream from said feeder wheels for supporting cable against gravity during feeding between said wheels to effect outward and upward cable feeding from between said wheels into sheath peeling engagement with said sheath peeler.

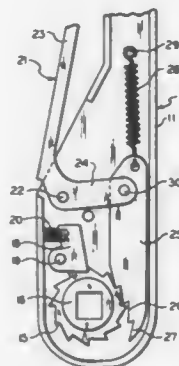
4,339,968  
**HYDRAULIC TORQUE MULTIPLIER WRENCH**  
 Willard Krieger, 3965 Cody St., Wheatridge, Colo. 80033  
 Filed Jul. 21, 1980, Ser. No. 170,623  
 Int. Cl.<sup>3</sup> B25B 13/46  
 U.S. Cl. 81—57.39 3 Claims



1. A wrench for rotating a work tool, comprising in combination:  
 a housing;  
 an output member rotationally connected to the housing and adapted to connect to said work tool;  
 a drive segment comprising an elongated member;  
 ratchet means operatively connecting one end of the elongated member to the output member, said ratchet means operatively converting pivotable oscillating motion of the elongated member into intermittent unidirectional rotating movement for the output member;  
 the other end of the elongated member having a slot formed therein;  
 a fluid piston and cylinder apparatus comprising a piston

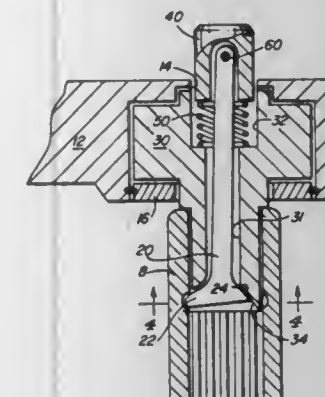
operatively connected in a substantially fixed position to the housing and a cylinder member reciprocally movable with respect to the fixed position piston, said cylinder member having at least one pin extending outward therefrom into the slot in the other end of the elongated member of the drive segment, the pin and slot operatively converting reciprocating movement of the cylinder member into pivoting oscillating movement for the elongated member.

4,339,969  
**RATCHET WRENCH**  
 Albert Hage, 3700 Roanoke Rd., Toledo, Ohio 43613  
 Filed Apr. 30, 1981, Ser. No. 258,897  
 Int. Cl.<sup>3</sup> B25B 13/46  
 U.S. Cl. 81—57.39 1 Claim



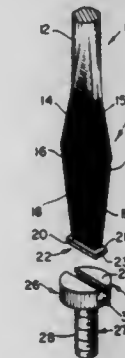
1. A ratchet wrench comprising:  
 (a) a housing of oblong form having an edge flange extending therearound provided with an elongate slot disposed along a portion of one side of the flange;  
 (b) a ratchet wheel rotatable in one end portion of said housing and having a toothed rim and a nut engaging opening concentric therewith;  
 (c) a spring-tensioned detent engaging said ratchet wheel for preventing rotative movement thereof in one direction;  
 (d) a bell crank operating lever pivoted in said housing and having one arm extending through the slot of the flange and projecting outside of said housing for manual step-by-step operation of said ratchet wheel and having its other arm disposed within said housing;  
 (e) a ratchet wheel operating arm having a plurality of successively arranged teeth at one end progressively engageable with the teeth of the toothed rim of said ratchet wheel;  
 (f) spring means interconnecting an end opposite the toothed end of said ratchet wheel operating arm and said housing effective for holding the toothed end of said operating arm in engagement with the teeth of the toothed rim of said ratchet wheel and retracting said operating arm and said bell crank operating lever to their original positions after release of said bell crank operating lever; and  
 (g) a pivotal connection between the other arm of said bell crank and said ratchet wheel operating arm, said pivotal connection being disposed between the toothed end and the opposite end of said operating arm, whereby upon rocking movement of said bell crank operating lever about said pivotal connection said operating arm is caused to move longitudinally of said housing and, lateral movement of the toothed end of said operating arm away from said ratchet wheel is prevented by the adjacent portion of said edge flange of said housing to effect turning movement of said ratchet wheel.

4,339,970  
**SERVICEABLE RELEASABLE SOCKET RETAINING RATCHET**  
 Rudolph J. Enstrom, 1520 M 69 Hwy., Crystal Falls, Mich. 49920  
 Filed Oct. 10, 1980, Ser. No. 195,744  
 Int. Cl.<sup>3</sup> B25B 13/46  
 U.S. Cl. 81—60 7 Claims



1. A serviceable, releasable socket retaining ratchet, comprising:  
 drive lug means for transmitting torque to said socket;  
 ratchet means for reversibly ratchetably rotating said drive lug means;  
 totally removable retaining means for selectively coupling said socket to said drive lug means;  
 said retaining means comprising latch means for biasing a nose against the interior of said socket;  
 said retaining means further comprising button means for releasing the bias upon said latch member;  
 said latch means including said drive means having a longitudinal internal aperture provided with a cam surface at an end proximal to said socket;  
 said latch means having a shank member passing through said internal aperture;  
 said shank member having a pivotal coupling to said button means; and  
 said shank member further having a head provided with said nose disposed to selectively contact said socket and also having a cam follower surface disposed to contact said cam follower surface when said button means is released so that said nose is biased toward said socket.

4,339,971  
**FASTENER AND DRIVING TOOL**  
 Alfredo E. Zatorre, One Crescent Dr., Salem, Mass. 01970  
 Continuation of Ser. No. 969,013, Dec. 13, 1978, abandoned.  
 This application Jan. 28, 1980, Ser. No. 115,956  
 Int. Cl.<sup>3</sup> B25B 15/02, 23/08  
 U.S. Cl. 81—436 9 Claims



1. Combination elongated member and driving tool for providing rotational motion to said elongated member, said elongated member comprising a shaft, a driving end on said shaft and a top surface on said driving end, a nick in the top surface of said driving end extending transversely to said shaft,

said nick comprising a horizontally disposed bottom defining a substantially rectangular shape of predetermined lesser width than the said top surface, spaced-apart sidewalls extending upwardly from said horizontally disposed bottom, an upper surface overhanging said bottom and extending from each said sidewall inwardly and toward each other, at a first predetermined angle relative to each sidewall, and parallel, spaced-apart walls extending vertically upwardly from the end of each said overhanging upper surface and terminating at said top surface thereby defining a substantially rectangular shaped opening of predetermined lesser width than said rectangular shaped bottom; and a driving tool comprising a shank having an operative end for association with the said elongated member and located in said nick, said operative end of the shank comprising a blade of generally an inverted T-shaped cross-section, said blade comprising a bit comprising a bottom surface defining a rectangular shape of predetermined lesser width than the width of the rectangular shaped opening in said elongated member whereby said driving tool can be inserted axially into the nick in the said elongated member, spaced-apart sidewalls extending upwardly from said bottom surface, and top surfaces extending inwardly toward one another from respective sidewalls at a second predetermined angle, the blade being further defined by planar faces and edges converging toward one another and terminating at said top surfaces of the bit, said top surfaces defining an area extending beyond said converging planar faces and edges and the second predetermined angle of said top surfaces being non-complementary with respect to the said first predetermined angle of the respective upper surfaces of the nick, the vertical dimensions of the bit with respect to the vertical location of the said overhanging upper surfaces being such as to permit diagonally opposite portions of the top surfaces of the bit, on operative association of the driving tool with the elongated member, to pass under and into jamming contact with the diagonally opposite, non-complementary, overhanging upper surfaces of the nick whereby the driving tool is temporarily interlocked with the said elongated member in wedging engagement and the elongated member can be presented to or withdrawn from a work piece in any desired orientation and without becoming accidentally separated from the driving tool.

4,339,972  
**METHOD AND APPARATUS FOR VOLUMETRIC PARTITIONING OF ROD-LIKE MATERIAL**  
 Joachim Wepner, Gevelsberg; Kurt Wengenroth, Wuppertal, and Jochen Zuhlke, Gevelsberg, all of Fed. Rep. of Germany, assignors to Rolf Peddinghaus, Ennepetal, Fed. Rep. of Germany  
 Filed Mar. 19, 1980, Ser. No. 131,770  
 Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911364  
 Int. Cl.<sup>3</sup> B26D 5/20  
 U.S. Cl. 83—13 10 Claims



1. A method for the volumetric subdivision of a lengthwise conveyed bar-shaped material comprising:  
 measuring the width of a notional cross-section of the bar-shaped material by a first caliper means having opposed sensors on the ends of each caliper jaw, by slidably advancing said first caliper means at a right angle to the direction of conveying said bar, so that the opposed sensors of the first caliper means are maintained in slidable



contact with mutually perpendicular opposite points on opposite sides of said bar, measuring the length of a notional cross-section of the bar-shaped material at a relatively inclined direction to the measurement of the width by a second caliper means having opposed sensors on the ends of each caliper jaw, by slidably advancing said second caliper means at a right angle to the direction of conveying said bar, so that the opposed sensors of the second caliper means are maintained in slidable contact with mutually perpendicular opposite points on opposite sides of said bar.

feeding the cross-sectional width measurements from the first caliper means and the cross-sectional length measurements from the second caliper means into a computer which is programmed to calculate a predetermined volume of said bar from the measured width and length of the notional cross-sections and a variable distance of lengthwise conveyance, and to generate a signal to a severing means and an end stop spaced a variable distance from said severing means,

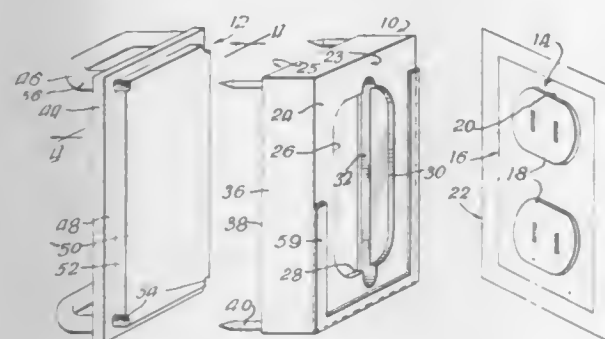
adjusting the end stop distance from the severing means by the generated computer signal so that the predetermined volume of said bar may be severed by said severing means, conveying said bar lengthwise until one end abuts the end stop, and

severing the bar at the computed length, whereby a subdivision of said bar-shaped material having the predetermined volume is produced.

**4,339,973**  
**METHOD AND APPARATUS FOR CUTTING ELECTRICAL OUTLET OPENINGS IN PANELS**  
Robert L. Lawrence, 54 Tim St., Pontiac, Mich. 48054  
Filed Apr. 28, 1980, Ser. No. 144,641  
Int. Cl.<sup>3</sup> G01B 3/14

U.S. Cl. 83—30

9 Claims



1. A method of marking locations for, and forming, holes in panels applied to walls in which electrical outlets are mounted, for the electrical outlets to be exposed through the holes, comprising the steps,

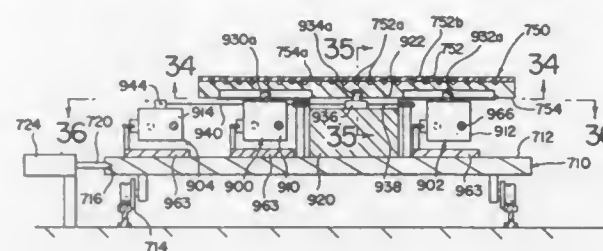
- placing a first cutting component having a peripheral shape complementary to the outlet on an outlet in a wall,
- placing a panel against the first cutting component,
- placing a second cutting component against the panel in register with the first cutting component, and
- forcing the second cutting component against the first cutting component and thereby cutting a hole in the panel.

**4,339,974**  
**SUPPORTING ANVIL FOR MOVABLE CUTTING PLATEN**

Kenneth O. Wood, Ellington, Conn., assignor to Gulf & Western Corporation, New York, N.Y.  
Continuation of Ser. No. 113,631, Jan. 21, 1980, abandoned, which is a division of Ser. No. 902,247, May 2, 1978, Pat. No. 4,261,374. This application Jul. 16, 1981, Ser. No. 283,987  
Int. Cl.<sup>3</sup> A24C 1/04

U.S. Cl. 83—100

1 Claim

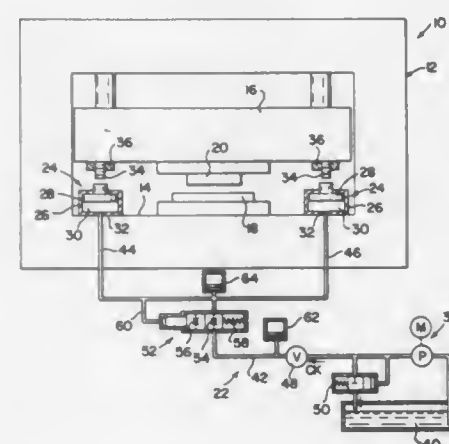


1. An apparatus for cutting a profile having a preselected peripheral shape from a sheet tobacco material at a given location, said apparatus comprising a thin cutting table having an upper generally flat, perforated and nonmetallic cutting surface and a lower generally flat support surface, said surface being generally parallel; vacuum means coextensive with said cutting surface for communicating a vacuum to said cutting surface for holding said tobacco material onto said cutting surface by vacuum; a cutter spaced from said cutting surface at a fixed position and having said preselected peripheral shape; means for moving said cutting table in a direction parallel to said surface until said cutter at said fixed position is aligned with said given location on said sheet tobacco material; means for forcing said cutter at said fixed position against said perforated cutting surface along an axis generally orthogonal to said surfaces; a fixed backup anvil having a flat force reaction surface parallel to and facing said flat support surface; means for fixing said anvil with said reaction surface in alignment with said cutting axis; and means for allowing said support surface to bear against said reaction surface when said cutter is forced against said perforated cutting surface, said reaction surface engaging and supporting said support surface as said table is being moved.

**4,339,975**  
**SHOCK DAMPENING SYSTEM FOR PRESSES**  
Louis F. Carrieri, LaGrange Park, Ill., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.  
Filed Oct. 20, 1980, Ser. No. 198,435  
Int. Cl.<sup>3</sup> B26D 5/12

U.S. Cl. 83—617

13 Claims



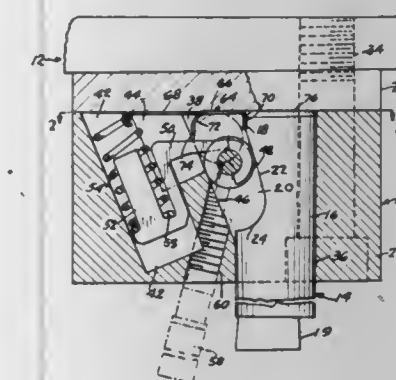
1. A hydraulic shock dampening system for a shearing press having frame means including bed means and supporting reciprocable slide means and wherein material is severed between

cooperable shearing means supported by said bed and slide means, said system including hydraulic fluid receiving variable volume chamber means between said bed means and slide means and connected to a source of hydraulic fluid under pressure, said chamber means being operable under compression in response to breakthrough of material being sheared by said shearing means supported by said slide means to restrain the resulting accelerated movement of said slide means, fluid flow responsive valve means in fluid flow communication with said chamber means for controlling fluid flow therefrom, said valve means having first and second flow controlling positions and including means providing first and second flow passageway means thereacross respectively in said first and second positions, each said passageway means having a fixed area and the area of said second passageway means being substantially less than the area of said first passageway means, means biasing said valve means toward said first position prior to said accelerated slide movement, and said valve means being displaced from said first to said second position by fluid flowing from said chamber means in response to said accelerated movement of said slide.

**4,339,976**  
**PUNCH RETAINER**  
Bernard J. Wallis, 25200 Trowbridge Ave., Dearborn, Mich. 48124  
Filed Aug. 11, 1980, Ser. No. 177,117  
Int. Cl.<sup>3</sup> B26D 7/26; B26F 1/14

U.S. Cl. 83—684

2 Claims



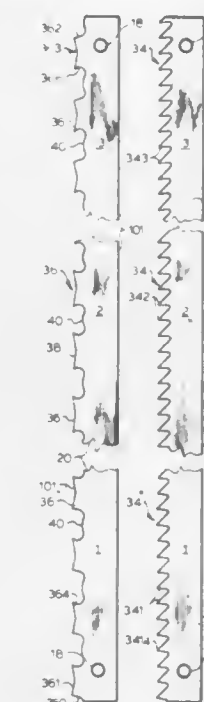
1. In combination a punch having a shank of circular cross section and provided with a punching end of non-circular cross section at its lower end, said shank having an indented side wall portion, a punch retainer having a vertically extending circular bore sized to receive said shank and abutment means against which the upper end of the shank is adapted to bottom when the punch is fully inserted in said bore, said retainer also having a socket therein opening radially into said bore, latch means in said socket resiliently engaging said indented side wall portion of the shank for releasably retaining the punch in said retainer with the upper end thereof engaging said abutment means, said shank having a flat side wall portion, said flat side wall portion having a predetermined circumferential angular relationship to said non-circular punching end, said retainer having a recess therein adjacent the upper end of said bore opening at one side thereof into said bore and provided at the opposite side thereof with a flat abutment face spaced radially from and lying in a plane extending transversely of the central vertical axis of said bore, a leaf spring in said recess having a central body portion and legs at opposite ends bent out of the plane of the central body portion, the free ends of said legs comprising parallel straight edges resiliently engaging the flat side wall of the punch shank and the abutment face of the recess, respectively, said free edges being resiliently displaceable toward each other, the upper end of the punch and the leg of the spring adjacent thereto being shaped such that when the punch is displaced upwardly with its flat side wall aligned generally parallel with said last-mentioned leg of the spring, said leg resiliently engages the flat side wall of the punch and rotates the punch to a position wherein the flat side

wall portion is accurately parallel to the free edge of the other leg of the spring.

**4,339,977**  
**BLADE RECIPROCATING SAWS**  
Jack V. Miller, 1917 E. Villa St., Pasadena, Calif. 91107  
Filed Jan. 22, 1980, Ser. No. 114,215  
Int. Cl.<sup>3</sup> B23D 57/00; B27B 33/02

U.S. Cl. 83—848

7 Claims



1. In a blade for a reciprocating saw having a cutting edge comprising a plurality of longitudinally aligned teeth, the improvement comprising said teeth having a negative rake angle near the leading end of the blade for reducing needed force for cutting at the beginning of a cutting stroke, increasing rake angle from the leading end of the blade including a transition through zero rake angle in the intermediate region of the blade, and a positive rake angle near the trailing end of the blade for increasing the force necessary for cutting toward the end of a cutting stroke to decelerate the saw during or at the end of a stroke, whereby cutting actions are related to expected blade speed at any given point on the saw and relatively constant muscular effort is required over the length of a stroke.

**4,339,978**  
**ELECTRONIC MUSICAL INSTRUMENT WITH PROGRAMMED ACCOMPANIMENT FUNCTION**  
Akio Imamura, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan  
Filed Aug. 7, 1980, Ser. No. 176,044  
Claims priority, application Japan, Aug. 7, 1979, 54-108742[U]

U.S. Cl. 84—1.03

Int. Cl.<sup>3</sup> G10F 1/00

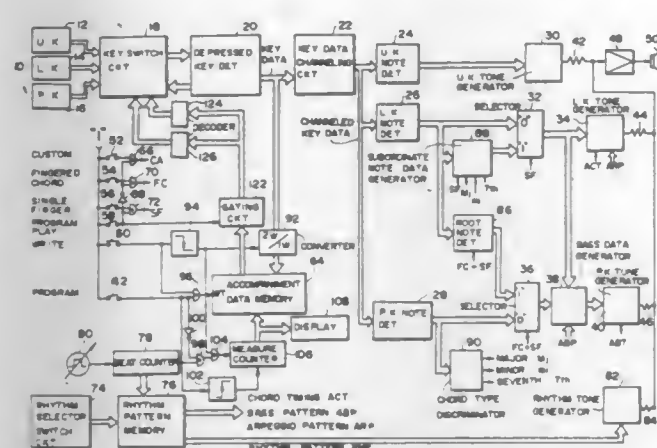
9 Claims

1. In an electronic musical instrument capable of providing an automatic accompaniment, in combination:

- keyboard means to be played on by the player;
- an accompaniment data memory;
- means for introducing a desired sequence of accompaniment data into the accompaniment data memory for storage therein using certain keys of said keyboard means for selection of said desired data;
- means for causing the accompaniment data memory to put out the accompaniment data in the desired sequence; and
- means for producing an accompaniment both in accor-



dance with the accompaniment data recovered from the accompaniment data memory and in response to the de-



pressing of ones of said certain keys on the keyboard means while said means for causing is operative.

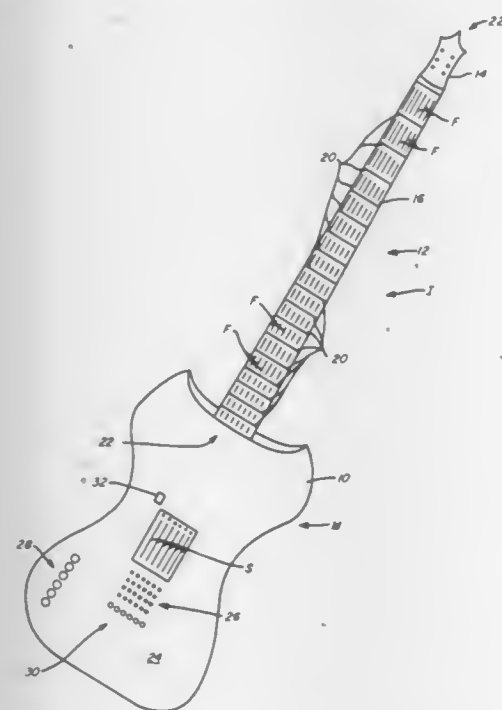
4,339,979

## ELECTRONIC MUSIC INSTRUMENT

Travis Norman, 2232 Shadow Dale, Houston, Tex. 77043  
Continuation-in-part of Ser. No. 971,855, Dec. 21, 1978,  
abandoned. This application Dec. 21, 1979, Ser. No. 105,972  
Int. Cl.<sup>3</sup> G10H 1/057, 1/08

U.S. Cl. 84—1.23

11 Claims



1. An electronic musical instrument for electrically forming output signals having at least one frequency component and an amplitude defining envelope to simulate musical notes and chords from a stringed musical instrument, comprising:

- (a) input means for receiving an indication from a user of the output signal to be formed, said input means comprising:
  - (1) a plurality of string touch pad means corresponding in number of the number of strings on the musical instrument being simulated, each of said string touch pad means representing one of the strings being simulated;
  - (2) touch circuit means individually associated with each of said string touch pad means for forming an electrical signal when the string touch pad means associated therewith is contacted;
  - (3) control input means for permitting the user to specify the envelope of the output signal being formed;
  - (4) input switch means for permitting the user to selectively form harmonic frequencies of notes being formed in the instrument;
  - (5) control knob means, equal in number to said string

- touch pad means, for permitting a user to indicate the level of the harmonic frequencies being formed;
- (b) oscillator means for forming a reference clock frequency pulse signal;
- (c) digital circuit means for forming digital count signals defining the frequency component of the output signal to be formed in response to receipt of electrical signals from said touch circuit means;
- (d) digital counter means responsive to the digital count signal from said digital circuit means for dividing the frequency of the reference clock frequency pulse signal to form the output signal frequency; and
- (e) envelope control circuit means for forming the envelope of the output signal in response to that specified by said control input means.

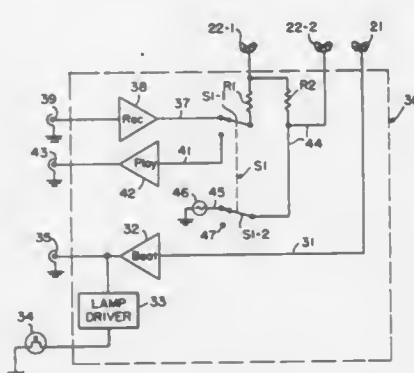
4,339,980

## LOOP TAPE RECORDER

Helen Hooke, 29 Glen Ave., Port Chester, N.Y. 10573, and  
David Lerner, 350 Bleecker St., New York, N.Y. 10014  
Filed Aug. 29, 1980, Ser. No. 182,773  
Int. Cl.<sup>3</sup> G10H 3/03

U.S. Cl. 84—1.28

11 Claims



1. A loop tape recording device, comprising  
a multi-track magnetic tape loop having recorded on one track thereof a predetermined number of spaced beat signals,

means for driving said tape loop in an endless path,  
means mounting a plurality of electronically operated recording heads adjacent said path with each of said heads being disposed in operative registry with a different track on said tape,

a first circuit connected to the head which registers with said one track, and operative when this first-name head is energized, to reproduce said predetermined beat signals at a first terminal upon each revolution of said tape loop, and  
a second circuit connected to a second one of said heads and operable, when said tape is driven and said second head is energized, selectively to record audio signals onto, and to reproduce recorded signals from, a second track on said tape loop,

said second circuit including a switch selectively operable instantly to switch said second head between its signal recording and signal reproducing modes, respectively.

10. A method of supplementing a live musical performance, comprising  
recording a plurality of beat signals on one track of a multi-track magnetic tape,  
utilizing said tape for repeatedly reproducing a predetermined series of said recorded beat signals at a first terminal,  
recording a series of audio signals on a second track on said tape during the reproduction of one of said predetermined series of signals at said first terminal, and  
without rewinding said tape, audibly reproducing said series of audio signals immediately following said reproduction of said one series of said predetermined signals at said first terminal, and including  
reproducing said predetermined series of signals audibly or

visually from said first terminal for use by a performer during the recording of said audio signals.

4,339,981

## SOFT BODY GUITAR

Walter E. Smith, P.O. Box 707, Weiser, Id. 83672  
Filed Apr. 11, 1980, Ser. No. 139,357  
Int. Cl.<sup>3</sup> G10D 1/08

U.S. Cl. 84—291

14 Claims



1. In a musical stringed instrument such as a guitar, the combination of: a soft support member having flexibility to conform to the contours of a human body in either standing or sitting position, said support member having internal soft structure for maintaining its overall shape and thickness, a stem mounted on said support member, and a bridge and a nut mounted at spaced locations on said stem defining a plane for strings.

11. In a guitar or similar stringed instrument having strings, and means for supporting the strings; a flexible support member for said means including sufficient internal flexible material for inherently controlling the shape of the support member while being yieldable to accommodate the contours of a human body or adjacent structure when the instrument is played while the flexible support member is in contact with the human body or adjacent structure.

4,339,982

## SNARE BED STRAINER FOR SNARE DRUM

Masao Hoshino, Owari Asahi, Japan, assignor to Hoshino Gakki Ten, Inc., Japan

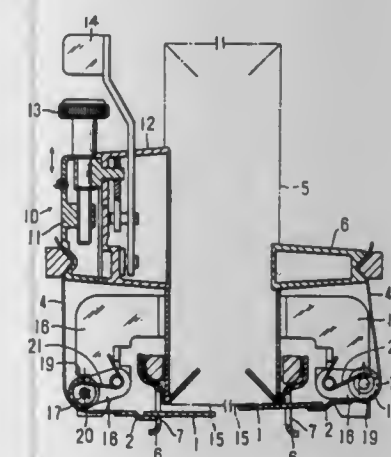
Filed Oct. 8, 1980, Ser. No. 194,982

Claims priority, application Japan, Nov. 20, 1979, 54-160592[U]

Int. Cl.<sup>3</sup> G10D 13/02

U.S. Cl. 84—415

5 Claims



1. A snare bed strainer, adapted for moving the snare bed of a snare drum selectively into and out of contact with a cooperating drum head, wherein the drum includes a shell, a drum head which is

adapted to vibrate and which is located toward an end of the shell, and a rim of the shell at that end of the shell, and wherein the snare bed comprises a plurality of strands for extending across the drum head and for contacting the surface of the drum head and comprises bands at the ends of the strands for supporting the strands to the drum shell, the snare bed strainer comprising:

first press means at a side of the drum shell for supporting one of the bands to the drum shell; second press means at a side of the drum shell, across the drum body from the first press means, for supporting the other band of the drum shell; at least one of the press means including tensioning means for tensioning the snare bed strands by pulling the bands between the press means;

at least one of the sides of the drum body and near the respective press means a pivotable link being journaled to the drum shell normally extending outwardly from the journal thereof away from the other press means to a snare engaging part and being pivotable around the journal thereof along a pathway for moving the snare bed selectively away from the drum head surface and to the drum head surface, and the snare bed passing over the link engaging part to be moved such that the snare bed may move away from the drum head and to the drum head as the link pivots; a spring for acting on the link for normally biasing it to pivot to move the snare bed away from the drum head in opposition to the force of the tensioning means on the snare bed, and the snare bed springs also being movable in opposition to their own biasing force to move the snare bed to the drum head;

such that upon a decrease in tension of the snare bed by the tensioning means, the springs lift the snare bed away from the drum head surface, and upon an increase in tension of the snare bed by the tensioning means beyond a predetermined tension, the tensioning means exert a tensioning force in opposition to and greater than the force which the springs exert on the snare bed, whereby the springs shift to permit the snare bed to move into contact with the drum head surface.

4,339,983

## CLAMPING DEVICE FOR CLAMPING PLATE-LIKE MEMBERS

Kotchi Okamura, Fukuoka; Susumu Kusakabe, Takatsuki; Masahiro Yoshida, Yokohama, and Fumio Hiraoka, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

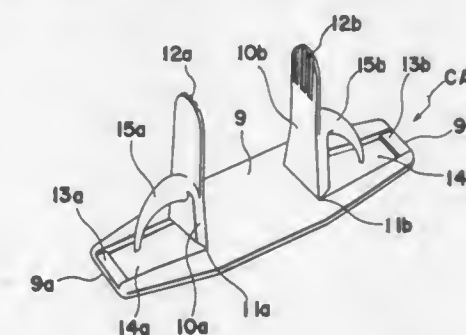
Filed Feb. 9, 1979, Ser. No. 10,981

Claims priority, application Japan, Feb. 13, 1978, 53/15532; Feb. 13, 1978, 53/15533

Int. Cl.<sup>3</sup> F16B 15/00

U.S. Cl. 41—466

8 Claims



1. A clamping device for clamping plate-like members together which comprises: a flat base portion of flexible material, a pair of flat pivotal members having thin hinge portions joining said pivotal members to said base portion, piercing members on the surfaces of said pivotal members which, when said pivotal members are pivoted away from one surface of said base portion, project toward said one surface, said base portion having openings therein in positions for allowing said piercing members to pass therethrough when said pivotal members are



pivoted into substantially coplanar relation with said one surface of said base plate, the free ends of each of said pivotal members having projecting portions having a thickness less than the thickness of said pivotal members and extending away from said hinge portions and coplanar with the surfaces of said pivotal members which are on the opposite sides thereof from the surfaces from which said piercing members project, and which, when said pivotal members are pivoted into substantially coplanar relation with said one surface of said base plate, are spaced from the level of the other surface of said base plate in the direction of said one surface of said base plate to leave a free space beneath said projections for enabling the finger of a user to be engaged with the projections to pivot said pivotal members away from said base plate.

#### 4,339,984 DRIVE, PARTICULARLY FOR AN INDUSTRIAL MANIPULATOR

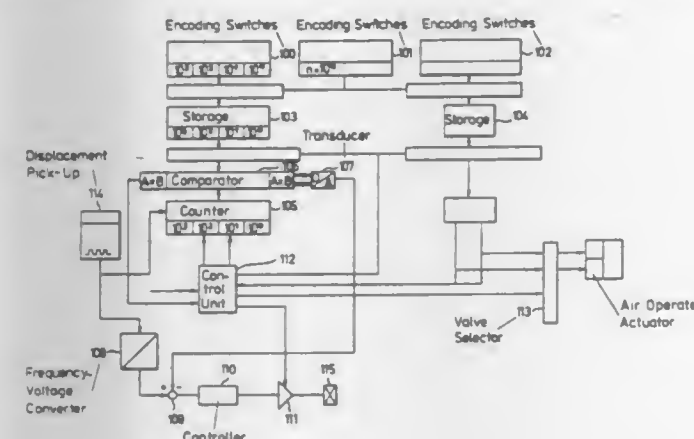
Gerd Hühne, Mörsch, Fed. Rep. of Germany, assignor to G. H. Pfaff Pietzsch Industrieroboter, Fed. Rep. of Germany  
Continuation of Ser. No. 812,773, Jul. 5, 1977, abandoned, which is a continuation of Ser. No. 469,757, May 14, 1974, abandoned.  
This application Nov. 1, 1979, Ser. No. 90,097

Claims priority, application Fed. Rep. of Germany, May 29, 1973, 2327387

Int. Cl.<sup>3</sup> F15B 15/26

U.S. Cl. 91—42

19 Claims



1. A drive, particularly for an industrial manipulator, comprising, in combination:

- an air-operated actuator having a driving element adapted for direct connection to a movable working member of a driven mechanism to displace the member when the actuator is activated, the actuator being constantly supplied with air at full operating pressure during both movement and non-movement of said driving element, whereby the air at full operating pressure is constantly available as a power reserve even when said driving element is not moving;
- a control valve connected to said actuator for controlling the constantly supplied air, said control valve having an open position and a closed position, the constantly supplied air of the actuator taking place with the control valve in the open position;
- an electromagnetic brake means connected to said driving element having a movable brake element engageable with said driving element, and selectively operable, when energized, to brake said driving element;
- a control system connected to said actuator and to said brake means and controlling the position and velocity of said driving element and energization of said brake means;
- said control system including control means controlling the position of said control valve for constantly supplying air at full operating pressure to said actuator when it is activated to move said driving element at a controlled initially relatively high velocity toward a preselected final position;
- said control means, when said driving element attains a

preselected position at a measurable distance in advance of the preselected final position, controllably energizing said brake means independently of the controlling of the position of said control valve, to decelerate said driving element to a velocity, at a position immediately in advance of the final position, which is a minor fraction of said initial velocity, while continuing supplying air at full operating pressure to said actuator, and then fully energizing said brake means to stop said driving element substantially at said final position with said actuator still supplied with air at full operating pressure to maintain said driving element stationary in said final position;

said actuator, due to still being supplied with air at full operating pressure with said driving element stationary, absorbing any load reaction in excess of that absorbable by said electromagnetic brake means, whereby said drive, due to the inclusion of said air-operated actuator constantly supplied with air at full operating pressure has the load-displacing and load-sustaining advantages of a purely pneumatic drive and, due to the inclusion of said electromagnetic brake means, has a continuous velocity control and accurate position control advantages of a purely electrical drive;

said control system including means deriving an error signal representing the difference between the actual position of said driving element and the desired final position thereof, said control means effecting quasi-continuous cut-off control of the energization of said electromagnetic brake to continuously control the velocity of said driving element as a function of the error signal until said driving element reaches said position immediately in advance of the final position at which its velocity has been reduced to a creep velocity which is a minor fraction of said initial velocity; said control means thereupon controlling said quasi-continuous cut-off control of the energization of said electromagnetic brake means for instantaneous full energization of said electromagnetic brake means to stop said driving element substantially at the final position;

said control system including measuring means operatively associated with said driving element to determine the actual position of said driving element; setting means operable to set the desired position of said driving element; position comparing means connected to said measuring means and to said setting means and producing an output displacement error signal corresponding to the difference between the actual and desired position of said driving element, means operable to measure the velocity of said driving element and to produce an output signal corresponding to the velocity of said driving element; comparator means having inputs connected to said position comparing means and to said velocity measuring means and comparing the displacement error signal with the velocity signal; and a controller having an input connected to the output of said comparator means and producing an output signal controlling energization of the electromagnetic brake means.

#### 4,339,985 AIR DRIVEN RECIPROCATING DEVICE

James K. Wilden, Yucaipa, Calif., assignor to Wilden Pump & Engineering Co., Inc., Colton, Calif.

Filed Apr. 21, 1980, Ser. No. 141,815

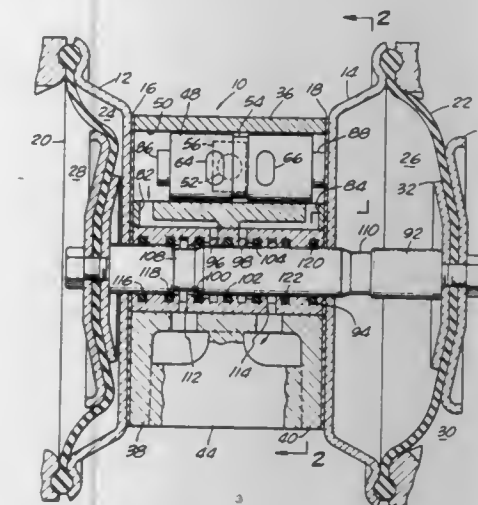
Int. Cl.<sup>3</sup> F01L 25/06

U.S. Cl. 91—307

3 Claims

1. An air driven reciprocating device having air chambers and diaphragms, a valve piston, a control rod having ends fixed to said diaphragms of the air driven reciprocating device, two axial passages in said control rod, and a housing having a cylinder closed at each end and enclosing said valve piston, a passageway through which said control rod extends, a first one of said air chambers of the reciprocating device being adjacent a first end of said control rod passageway and a second one of said air chambers of the reciprocating device being adjacent a

second end of said control rod passageway, an air inlet to said cylinder spaced from the ends of said cylinder, valve piston vent passages extending from the ends of said cylinder to said passageway, and control rod vent passages extending from said passageway to atmosphere, said control rod vent passages intersecting said passageway outwardly of said valve piston vent passages, said valve piston cooperating with said housing to include means for directing incoming air to the ends of said



valve piston and means for selectively directing incoming air to and exhausting outgoing air from said air chambers of the air driven reciprocating device, wherein the improvement comprises a seal in said passageway near each end thereof, said seals each being wider axially along said passageway than the length of each of said axial passages in said control rod, each said seal including two shaft sealing elements spaced axially along said passageway at a distance greater than the length of each said axial passage in said control rod.

#### 4,339,986 POWER STEERING APPARATUS

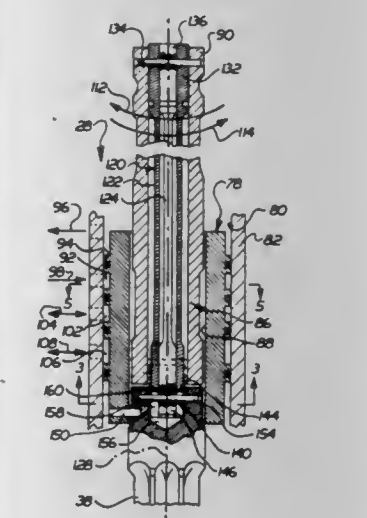
Rupert L. Atkin, St. Clair Shores, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Apr. 17, 1980, Ser. No. 140,451

Int. Cl.<sup>3</sup> F15B 9/10

U.S. Cl. 91—375 A

32 Claims



1. An apparatus for use in a power steering system to effect turning movement of a steerable vehicle wheel, said apparatus comprising a power steering motor adapted to be connected with the steerable vehicle wheel, said power steering motor including a first surface area against which fluid pressure is applied to effect turning movement of the steerable vehicle wheel in one direction and a second surface area against which fluid pressure is applied to effect turning movement of the steerable vehicle wheel in another direction, said first surface area being larger than said second surface area, valve means for porting fluid pressure to said power steering motor, said

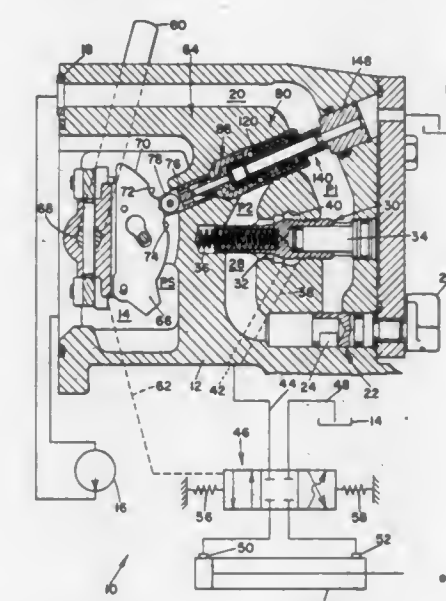
valve means being actuatable in a first direction from an initial condition to effect an increase in the fluid pressure applied to said first surface area and being actuatable in a second direction from the initial condition to effect an increase in the fluid pressure applied to said second surface area, and spring means for resisting actuation of said valve means in the first direction with a first spring force and for resisting actuation of said valve means in the second direction with a second spring force which is smaller than the first spring force, said spring means including first and second spring members which are deflected upon actuation of said valve means in the first direction from the initial condition to provide the first spring force, only said first spring member being deflected upon actuation of said valve means in the second direction from the initial condition to provide the second spring force.

#### 4,339,987 PRESSURE DETENT MECHANISM

Dwight B. Stephenson, Hudson, and David L. Koehler, Waterloo, both of Iowa, assignors to Deere & Company, Moline, Ill.  
Filed Nov. 3, 1980, Ser. No. 203,300  
Int. Cl.<sup>3</sup> F15B 13/04

U.S. Cl. 91—426

38 Claims



1. In a hydraulic system having a source of fluid pressure, a sump, a control valve having selected positions for controlling fluid communication between the source, the sump and a fluid motor, passage means for communicating fluid between the source and the control valve, detent means movable to a locking position for releasably holding the control valve in at least one of the selected positions, and hydromechanical means coupled to the detent means for urging the detent means to the locking position and for resisting movement of the control valve out of the at least one selected position, the hydromechanical means comprising:

- a housing defining a walled bore in communication with the passage means and the sump;
- a sleeve movably mounted in the bore; and
- a rod movably mounted in the bore, coupled to and received by the sleeve, and engageable with the detent means, the sleeve, the bore and the rod cooperating to define a first cavity communicated with the sump and a second cavity communicated with the passage means, the sleeve being movable in response to a differential pressure between the first and second cavities to urge the rod towards the detent means to thereby bias the detent means towards its locking position.



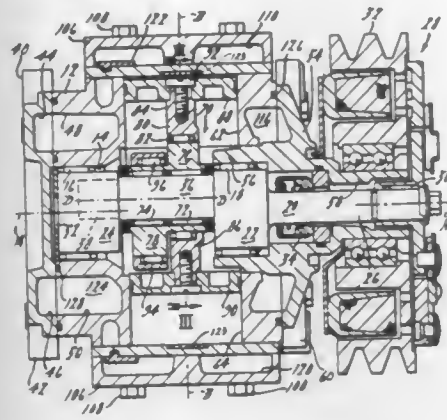
4,339,988  
**FREE ECCENTRIC RECIPROCATING PISTON DEVICE**  
 Duane F. Steele, Dundee, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 8, 1980, Ser. No. 138,387  
 Int. Cl.<sup>3</sup> F01B 1/06

U.S. Cl. 91—493

3 Claims 48916/78

U.S. Cl. 92—53



1. A reciprocating radial piston device comprising:
  - a housing formed of a single piece having an axially directed opening, a first pair of radially directed coaxial cylinder bores, a second pair of radially directed coaxial cylinder bores whose axis is axially displaced from and perpendicular to the axis of the first pair of cylinder bores;
  - a crankshaft journaled in the opening of the housing for rotation about its longitudinal axis;
  - a cylindrical crankpin mounted on said crankshaft and extending within the central opening having an axis directed parallel to the crankshaft axis and displaced radially therefrom;
  - an eccentric journaled on said crankpin including:
    - a first cylindrical surface whose axis is parallel to and eccentric of the axes of said crankshaft and said crankpin and intersects the axis of the first pair of cylinder bores, and;
    - a second cylindrical surface axially displaced from the first cylindrical surface whose axis is parallel to and eccentric of the axis of said crankshaft and said crankpin and intersects the axis of the second pair of cylindrical bores, the centers of the circles of the first and second cylindrical surfaces being located on a diameter of the crankpin equidistant from and on opposite sides of the crankpin axis;
  - first and second piston yokes journaled on the first and second cylindrical surfaces respectively of the eccentric assembly extending radially therefrom in substantial alignment respectively with the axes of the first and second pairs of cylindrical bores;
  - a first pair of pistons mounted on diametrically opposite ends of said first piston yoke for reciprocating movement within the first pair of cylinder bores;
  - a second pair of pistons mounted on diametrically opposite ends of said second piston yoke for reciprocating movement within the second pair of cylinder bores;
  - cylinder heads mounted on said housing at the outer end of the cylinder bores to seal the cylinder bores;
  - porting means formed within said housing for carrying fluid to and from the cylinder bores;
  - valve means for controlling the entry of fluid into and its exit from the cylinder bores;
  - end cover plates mounted on said housing for sealing the central opening;
  - whereby the pistons reciprocate within the cylinder bores to compress the fluid as the crankshaft is driven in rotation.

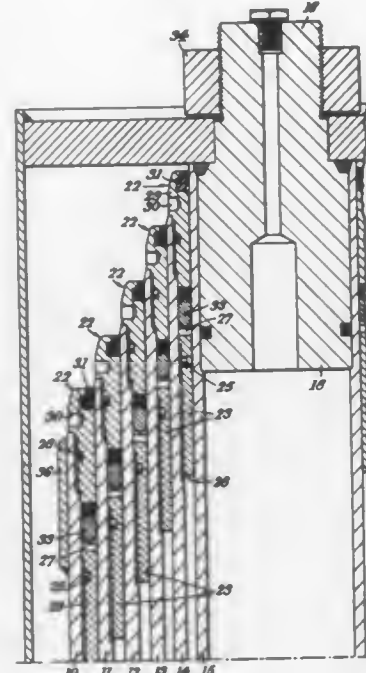
4,339,989  
**HYDRAULIC RAMS**  
 Raymond G. Webster, 10 Ravenswood Dr., Chorley New Road, Heaton, Bolton, Lancashire, England

Filed Dec. 6, 1979, Ser. No. 100,748

Claims priority, application United Kingdom, Dec. 18, 1978,

Int. Cl.<sup>3</sup> F01B 7/20

10 Claims



1. A multi-stage hydraulic ram, comprising:
  - a plurality of telescopic ram tubes extendable by a hydraulic fluid under pressure;
  - end formation means provided between each of said ram tubes and disposed at the exposed ends of said ram tubes for providing a working surface for the hydraulic fluid, each of said end formation means having a sliding surface on one longitudinal surface thereof for enabling a sliding movement of an adjacent ram tube of next higher diameter relative to an adjacent ram tube of next smaller diameter, each of said end formation means further including:
    - a removable end assembly means located at the exposed ends of said ram tubes, and located annularly between each of said ram tubes, said end assembly means including an annular member having an exterior surface, said exterior surface including a screw threaded portion in screw threaded engagement with a screw threaded portion of an interior surface of the associated ram tube, said annular member having an interior surface providing said sliding surface for the next adjacent ram tube of smaller diameter,
    - spacer means disposed annularly between each of said ram tubes, said spacer means providing said working surface for the hydraulic fluid, and
    - removable annular sealing means located longitudinally between the removable end assembly means and the spacer means and located annularly between each of the ram tubes for providing a hydraulic fluid tight seal between the end assembly means and the spacer means along said sliding surface thereof,
  - each of the end assembly means being dimensioned to enable one of the end assembly means and the sealing means associated therewith to be withdrawn in an axial direction without the need to remove the next adjacent end assembly means associated with the ram tube of the next smaller diameter.

4,339,990  
**MOVABLE WALL FOR A PNEUMATIC BOOSTER**  
 Peter Riedel, Schulstrasse 41, 6234 Hattersheim, Fed. Rep. of Germany

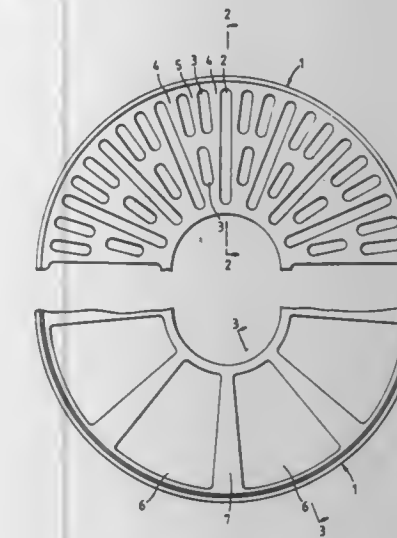
Filed Nov. 10, 1980, Ser. No. 205,550

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951372

Int. Cl.<sup>3</sup> F01B 19/00; F16J 3/02

U.S. Cl. 92—99

6 Claims



1. A movable wall for a vacuum brake booster operated on by a differential of pressure to provide an increased brake force comprising:
  - a rigid, non-flexible metallic diaphragm plate including a first portion extending in a first direction substantially parallel to a longitudinal axis of said booster having a first diameter, a second portion extending in a second direction opposite to said first direction substantially parallel to said axis having a second diameter greater than said first diameter and a third portion extending substantially radially between adjacent ends of said first and second portions, said third portion containing therein a plurality of openings for weight reduction and material savings;

- strap members disposed between said openings and extending in a radial direction to absorb forces acting on said movable wall;
- a flexible diaphragm disposed in a continuously abutting relationship with the outer surface of said first and second portions and a continuously parallel overlying relationship with one surface of said third portion covering said plurality of openings, said one surface of said third portion being a continuation of said outer surface of said first and second portions and said diaphragm is subjected to a higher of two pressures providing said differential of pressure directed only toward said one surface of said third portion; and
- means disposed between said one surface of said third portion and said diaphragm to prevent said diaphragm squeezing into said openings.

4,339,991  
**WIND CONTROL APPARATUS FOR AIR CONDITIONER**  
 Tetsumasa Asano, Mitsuhiro Fujimoto, and Ryuichi Mizukawa, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 4, 1980, Ser. No. 184,170

Claims priority, application Japan, Sep. 13, 1979, 54-118584

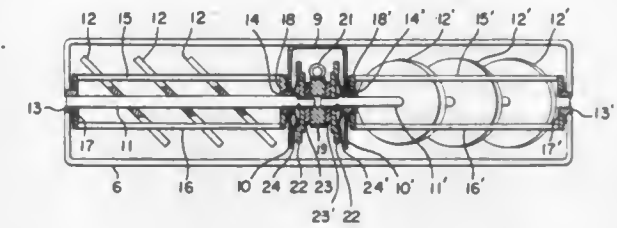
Int. Cl.<sup>3</sup> F24F 13/10

U.S. Cl. 98—40 VM

1 Claim

1. A wind control apparatus for an air conditioner which comprises a pair of first wind-deflection plates for changing the direction of wind in a first axial direction by manual operation independent each other; a pair of second wind-deflection plates for changing the direction of wind periodically in a second axial direction; a driving means; and a phase adjusting means placed between each of the second wind-deflection plates and

the driving means so as to selectively change the phase of wind direction by manual operation, wherein said phase adjusting means comprises drive transmission coupling means and means adapted for overriding said coupling means while said driving means is operating,



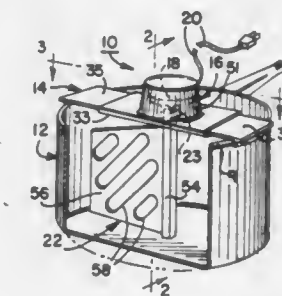
said drive transmission coupling means comprising a friction coupling and said means adapted for overriding comprising means for selectively moving one of said second wind deflection plates and said drive means while the other of said second wind deflection plates is held stationary.

4,339,992  
**STIRRING APPARATUS**  
 Elaine J. Kurland, 5711 S. Albany, Chicago, Ill. 60629  
 Filed Sep. 29, 1980, Ser. No. 191,891

Int. Cl.<sup>3</sup> B01F 7/16

U.S. Cl. 99—348

10 Claims



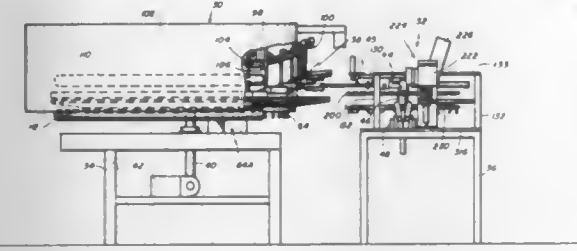
1. In stirring apparatus adapted to be mounted on an open-top container for dispersing materials contained therein, said container having a bottom wall, the arrangement comprising:
  - a support brace adapted to extend across the top portion of the container over its open top;
  - motive means fixedly mounted on said brace and having depending connector means drivingly attached thereto;
  - a downwardly depending paddle drivingly connected to said connector means of said motive means for extending into the interior of the container and revolving therewith, said paddle including an upright shaft portion attached to said connector means and extending directly downwardly into said container, said paddle further including a flat flexible blade, said blade extending downwardly from said connector means into engagement with the bottom wall of the container, said blade extending radially from said shaft portion; and
  - said support brace being adjustable longitudinally so that said brace can fit over different size container openings, said support brace further including securing means for attaching releasably said brace to said container, said support brace including a first central member having said motive means centrally disposed thereon, second and third rim engageable members connected telescopically to opposite ends of said first member to enable the length of said brace to be adjusted longitudinally, at least one of said members being a flat plate, said shaft portion of said blade being connected drivingly to said motive means to revolve the blade about the vertical axis of said shaft portion for dispersing the contents of the container and to sweep the bottom wall of the container.



**4,339,993**  
**FORTUNE COOKIE MACHINE**  
 Yongsik Lee, 162 Winter St., Weston, Mass. 02193  
 Filed Apr. 18, 1980, Ser. No. 141,371  
 Int. Cl.<sup>3</sup> A47J 37/00

U.S. Cl. 99—354

29 Claims

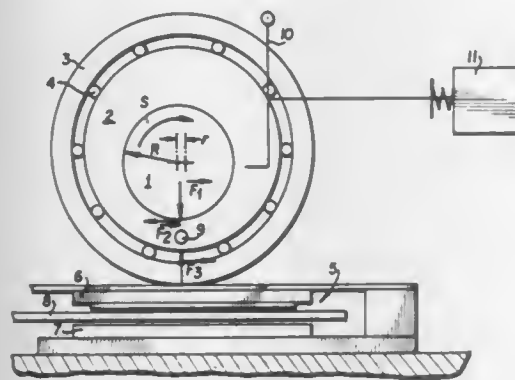


1. A machine for baking and forming fortune cookies comprising:  
 a rotatable turret carrying a plurality of griddles for baking a flat cookie blank,  
 means for rotating the turret to move each of the griddles through a plurality of stations, one of said stations being suitable for depositing batter in each griddle as each passes through said station, a second station having stripping means for removing the cookie blanks from the griddle, and baking means in the form of an oven for baking cookie blanks as the griddles move from the first to the second station,  
 a second turret having a plate with a plurality of cookie blank supports,  
 means for rotating said second turret to sequentially align the cookie blank supports with the stripping means so that each support may receive a cookie blank stripped from a griddle in the second station of the first recited turret,  
 a fortune paper slip depositing mechanism mounted adjacent the second turret for depositing a slip on each flat cookie on the cookie supports of the second turret,  
 fortune cookie forming means mounted adjacent the second turret for folding each cookie about the slip,  
 and means for removing the formed cookie from the second turret.

**4,339,994**  
**MACHINE FOR STAMPING LICENSE PLATES**  
 Serge Crasnianski, Meylan, and Louis Soriano, Seyssinet Pariset, both of France, assignors to KIS France, Frenoble, France  
 Filed Mar. 10, 1981, Ser. No. 242,170  
 Claims priority, application France, Sep. 21, 1979, 79 23563; European Pat. Off., Feb. 19, 1981, 814200226  
 Int. Cl.<sup>3</sup> B41F 1/07

U.S. Cl. 101—4

11 Claims



1. An automatic license plate stamping machine, comprising:  
 a frame;  
 a drive shaft mounted on the frame;  
 a motor connected to the drive shaft;  
 a set of punch and die stamping means; and

a clutch system connecting the drive shaft to the punch and die stamping means, said clutch system comprising:  
 a rotary system formed by a cam race mounted idle on the drive shaft and compressing the die stamping means in the course of its rotation due to its automatic locking onto the shaft.

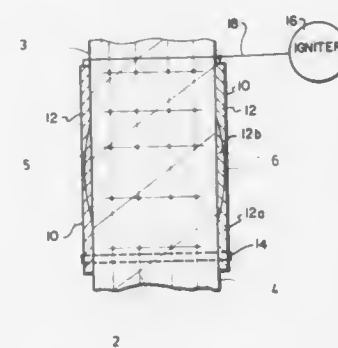
**4,339,995**  
**METHOD FOR DESTROYING STRUCTURES SUCH AS CONCRETE WALLS**  
 Ernst H. Jager, Schrobhausen, Fed. Rep. of Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Fed. Rep. of Germany

Filed Jan. 31, 1980, Ser. No. 117,097  
 Claims priority, application Fed. Rep. of Germany, Feb. 6, 1979, 2901338

U.S. Cl. 102—310

Int. Cl.<sup>3</sup> F42B 1/02

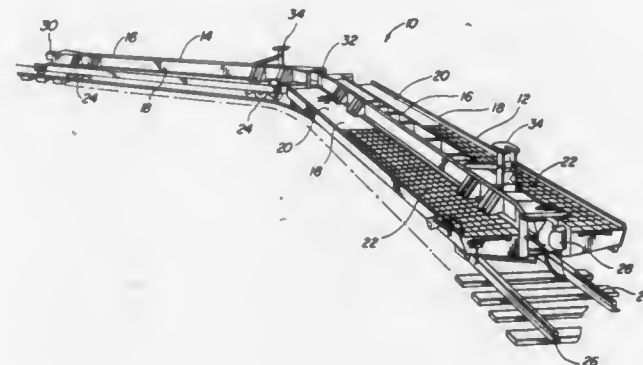
3 Claims



1. A method of explosively destroying a concrete wall comprising placing an explosive blast plate on each opposite side of the wall to be destroyed and arranging them in opposing relationship and directly opposite each other, and exploding the opposing plates sequentially in time with a predetermined time delay to cause the generation of shock waves penetrating into the wall from each side thereof, so that the shock waves collide in the interior of the wall whereby said shock waves collide at a location predetermined mainly by said time delay.

**4,339,996**  
**ARTICULATED RAILWAY CAR**  
 Rene H. Brodeur, 2108 Beechwood Ave., Wilmette, Ill. 60091; Boris S. Terlecky, 234 Lippencott La., Fox Lake, Ill. 60020; Ronald P. Sellberg, 5 S. 649 Wright, Naperville, Ill. 60540, and William R. Halliar, 942 Pearl St., Whiting, Ind. 46394  
 Filed Jul. 23, 1979, Ser. No. 59,773  
 Int. Cl.<sup>3</sup> B61D 17/00; B61F 1/02, 5/38; B61G 5/02  
 U.S. Cl. 105—3

7 Claims



1. An articulated rail car unit for transporting wheeled vehicular trailers comprising,  
 at least two car bodies having forward and rearward ends, each formed of a central spine and having outwardly directed tire support means and a fifth wheel mounted adjacent one end,  
 a semi-permanent coupling connecting the rearward end of

one of said car bodies to the forward end of another of said car bodies,  
 disengageable couplings respectively mounted on the forward end of the first of said car bodies and the rearward end of the last of said car bodies,  
 trucks at the forward and rearward ends of each said car body, each such truck comprising two wheels joined by a single axle, a frame supported on said wheels and axles and defining four spaced apart hanger flanges, each said truck including a pair of cross members parallel to the axle and supporting said car body, and pairs of hanger members directly connected between a pair of said hanger flanges and each one of said cross members.

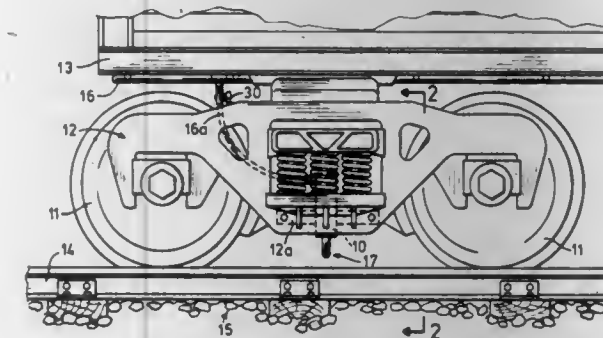
**4,339,997**  
**AUTOMATIC EMERGENCY ACTIVATED RAILWAY BRAKES**

David T. Chiles, 1270 E. Main, American Fork, Utah 84003  
 Filed Jun. 28, 1980, Ser. No. 155,137

Int. Cl.<sup>3</sup> B61H 11/02, 13/00; B61L 3/00

U.S. Cl. 105—216

10 Claims



1. A railroad car which will automatically stop a railroad train in which it is included upon derailment of the car, comprising in combination with a railroad car structure having wheel trucks and a train pipe for connection with the air brake train line of a railroad train, air release devices operatively connected with the train pipe and positioned in association with respective wheel trucks of the car structure, said air release devices including respective activators therefor normally positioned under the influence of pressure air at a safe rail-clearance level above the corresponding rail of a railroad track upon which the railroad train is adapted to run but so as to drop with any respectively relevant derailment-drop of the wheel truck to activating engagement with the corresponding rail of the railroad track, and including respective means for automatically raising said activators a sufficient distance above the normal running positions thereof to clear retarder devices in a railroad retarder yard when operating air pressure in the train pipe is lacking.

4. Apparatus for automatically stopping a railroad train upon derailment, comprising an air release device adapted to be operatively connected with the air brake train line of a potentially derailable car of the train and to be positioned in association with a set of the wheels at a side of a wheel truck of the car, said air release device being an air release valve including an activator therefor adapted to be normally positioned under the influence of air pressure in said train line at a safe rail-clearance level above the corresponding rail of the railroad track upon which the car is positioned but so as to drop with any relevant derailment-drop of a wheel of the said set of wheels to activating engagement with said corresponding rail of the railroad track, said air release valve comprising a valve body adapted to have its upper end connected to the train pipe in air flow communication therewith and to be secured to the wheel truck, said activator having a hollow valve stem whose upper end is closed and whose upper end portion is positioned in said valve body so as to be movable upwardly and downwardly therewithin, said valve stem having a laterally-positioned exhaust port adjacent to its closed upper end; an air-sealing piston slidable within the valve body on the upper portion of the

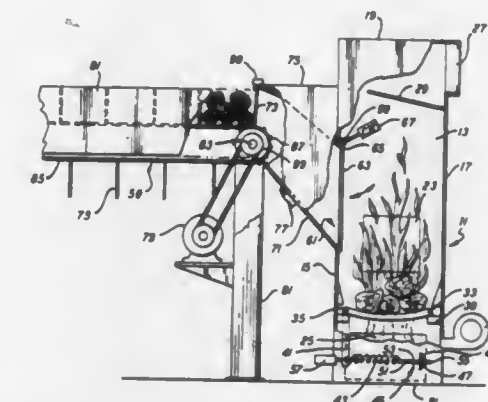
valve stem for closing said exhaust port when both piston and valve stem are forced down to normal travel positions by air pressure from the train pipe; and stop means within the valve body for limiting upward travel of the piston upon activation of said valve stem on derailment, so said valve stem will travel upwardly relative to said piston and expose said exhaust port for release of train pipe air, there being at least one exhaust port in the hollow stem outside of the valve body.

10. In combination with a railroad car having wheel trucks with sets of wheels at opposite sides thereof and a train pipe for connection with the air brake train line system of a railroad train, apparatus for stopping the train upon derailment of a wheel of a wheel truck of the railroad car, comprising an air release device adapted to be operatively connected with the air brake train line of a potentially derailable car of the train and to be positioned in association with a set of the wheels at a side of a wheel truck of the car, said air release device being an air release valve including an activator therefor adapted to be normally positioned under the influence of air pressure in said train line at a safe rail-clearance level above the corresponding rail of the railroad track upon which the car is positioned but so as to drop with any relevant derailment-drop of a wheel of the said set of wheels to activating engagement with said corresponding rail of the railroad track, said air release valve comprising a valve body adapted to have its upper end connected to the train pipe in air flow communication therewith and to be secured to the wheel truck, said activator having a hollow valve stem whose upper end is closed and whose upper end portion is positioned in said valve body so as to be movable upwardly and downwardly therewithin, said valve stem having a laterally-positioned exhaust port adjacent to its closed upper end; an air-sealing piston slidable within the valve body on the upper portion of the valve stem for closing said exhaust port when both piston and valve stem are forced down to normal travel positions by air pressure from the train pipe; and stop means within the valve body for limiting upward travel of the piston upon activation of said valve stem on derailment, so said valve stem will travel upwardly relative to said piston and expose said exhaust port for release of train pipe air, there being at least one exhaust port in the hollow stem outside of the valve body.

**4,339,998**  
**FUEL LEVEL INDICATOR**  
 James Finch, Roxbury, N.Y. 12474  
 Filed Apr. 25, 1980, Ser. No. 143,762  
 Int. Cl.<sup>3</sup> F23N 5/18

U.S. Cl. 110—186

2 Claims



1. A fuel level indicator for use in a heating unit for burning fuel, said fuel level indicator comprising:  
 a grate for supporting fuel, said grate having openings therein to permit the burnt fuel to pass through them;  
 an axle rotatably mounted in said heating unit and rigidly affixed to said grate along one edge of the grate, one end of said axle extending outside said heating unit;  
 a stop secured to said heating unit to support the edge of the grate opposite from the edge rigidly affixed to the axle;



an arm extending at right angles generally vertically downwardly from the end of said axle outside said heating unit; a mounting plate secured to the outside of said heating unit, said mounting plate having an opening therein; a tensioning rod with one end threaded and being slidably mounted in said opening; a spring generally horizontally oriented and connected at one end to the end of said arm remote from said axle and at the other end to said tensioning rod, said tensioning rod including means for increasing the tension in said spring; an electrical switch means mounted adjacent said arm and on the opposite side of said arm as said spring, said electrical switch means being open when said arm presses against said electrical switch means and being closed when said spring forces said arm away from said electrical switch means; electrical circuit means connected to said electrical switch means to provide an electrical signal when said electrical switch means is closed; and a conveyor means adjacent said heating unit for feeding fuel to said heating unit, said heating unit having an opening therein adjacent said conveyor means.

4,339,999

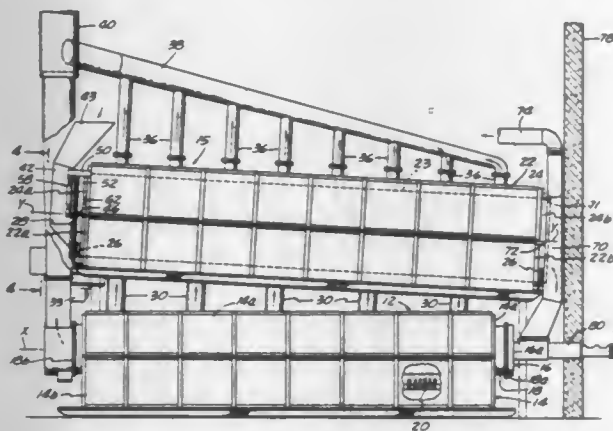
# COMBINATION REFUSE PYROLYSIS AND MOISTURE REDUCTION APPARATUS

William M. Fio Rito, 12650 Mantilla Rd., San Diego, Calif. 92128, and Ralph E. Kidd, 2042 Clark Ave., Long Beach, Calif. 90808

Filed May 13, 1981, Ser. No. 263,069  
Int. Cl.<sup>3</sup> F23G 5/06

U.S. Cl. 110—226

7 Claims



1. An apparatus for pre-treating and then controllably pyrolyzing waste materials and recovering useful energy producing materials and chemical by-products therefrom, comprising:
  - (a) a first housing;
  - (b) a combustion chamber including a body portion mounted within said housing and adapted for rotation about a first longitudinally extending axis, said body portion having a material inlet and a material outlet;
  - (c) burner means for controllably heating the interior of said first housing and said body portion of said combustion chamber;
  - (d) a second housing mounted above said first housing;
  - (e) a pre-treatment chamber adapted for rotation within said second housing about a second longitudinally extending axis, said pre-treatment chamber having a first end provided with a material inlet and a second end provided with a material outlet, said material outlet being operably interconnected with said material inlet of said body portion;
  - (f) heat transfer means interconnecting said interior of said first housing and said interior of said second housing for controllably transferring heat therebetween;
  - (g) a first fixed material receiving means disposed proximate the first end of said pre-treatment chamber, said means including a material inlet duct in communication with said material inlet of said rotatable pre-treatment chamber and further including first sealing means for sealably intercon-

- necting said material inlet duct and said material inlet of said pre-treatment chamber;
- (h) a fixed material transfer duct disposed proximate said second end of said rotatable pre-treatment chamber said transfer duct being in communication with said material outlet of said rotatable pre-treatment chamber and also being in communication with said material inlet of said combustion chamber; and
- (i) said first sealing means includes an end plate adapted to sealably engage said first end of said pre-treatment chamber, said first end plate having a central opening therein adapted to communicate with said material inlet of said pre-treatment chamber and said first sealing means further includes biasing means for continuously urging said end plate into sealable contact with said first end of said pre-treatment chamber.

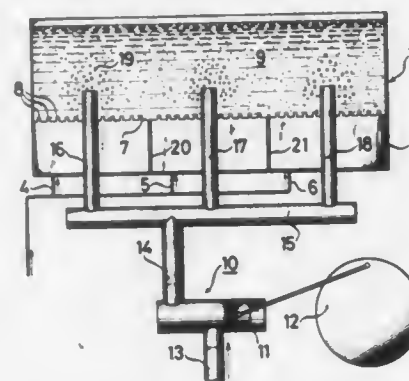
4,340,000

# FLUIDIZED BED FURNACE

Helmut Hein, Mulheim-Ruhr, Fed. Rep. of Germany, assignor to Steag AG, Essen, Fed. Rep. of Germany

Filed Mar. 30, 1979, Ser. No. 25,365

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1978, 2814239  
Int. Cl.<sup>3</sup> F27B 15/00; F23D 1/00; F23G 7/00; F23C 11/02  
U.S. Cl. 110—245 3 Claims



1. A fluidized bed furnace for coarse grained coal feed material comprising:
  - a vessel having heat resistant walls and an inflow plate extending between said walls to form a plenum extending entirely across the bottom of the vessel, said plenum and inflow plate being formed into a plurality of rows of adjacent rectilinear zones;
  - air nozzles in said inflow plate for providing an air feed to maintain a fluidized bed of comparatively inert material in said vessel above said plate;
  - a plurality of coal supply pipes extending through said inflow plate into said vessel beneath said fluidized bed and above said inflow plate, one of said coal supply pipes being located in each of said zones, said coal supply pipes being connected into zone groups so located on the inflow plate as to permit part load operation of the furnace while maintaining fluidized bed temperatures, said pipes terminating in the fluidized bed below its upper boundary, said pipes being sized to supply coarse grained coal to the fluidized bed; and
  - fuel supply means selectively communicating with said groups of coal supply pipes for forcing said coal through said pipes.

4,340,001

# SEWING MACHINE WITH WORK GUIDING DEVICE

Erich Willenbacher, Kaiserslautern, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

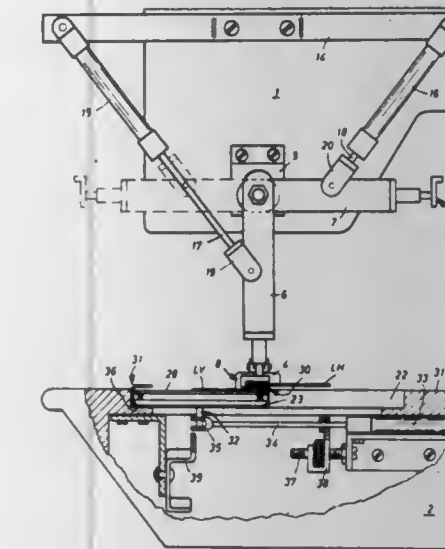
Filed Jun. 13, 1980, Ser. No. 159,394

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1979, 2926306

Int. Cl.<sup>3</sup> D05B 35/04

U.S. Cl. 112—143

8 Claims



1. A work guiding device for a sewing machine having a sewing needle for joining two overlapping work plies at border areas thereof and folding back at least one border of one work ply comprising, a movable support, first and second U-shaped edge guides connected to said support and facing opposite directions, support drive means connected to said support for moving one of said edge guides at a time into the vicinity of the needle, first and second guide rules each movable into the vicinity of the needle and each forming with each of said edge guides respectively a substantially closed channel for the work plies, and drive means connected to said first and second guide rules for selectively moving said guide rules into the vicinity of the needle.

4,340,002

# UPPER SHAFT PHASE DETECTING SYSTEM FOR SEWING MACHINES

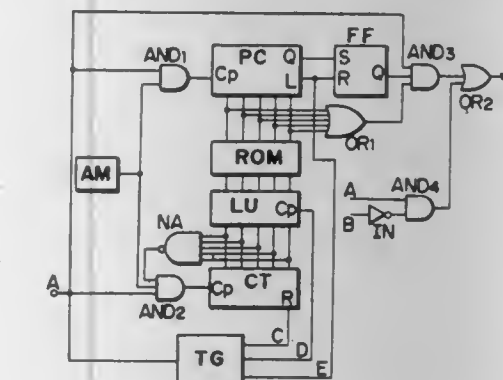
Susumu Hanyu, and Hideaki Takenoya, both of Hachioji, Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Aug. 28, 1980, Ser. No. 182,317

Claims priority, application Japan, Jun. 9, 1979, 54/113498  
Int. Cl.<sup>3</sup> D05B 3/02

U.S. Cl. 112—158 E

1 Claim



1. An upper shaft phase detecting system for a sewing machine having an electronic memory storing stitch control signals which are sequentially read out per rotation of the upper shaft of the sewing machine to control the stitch forming instrumentalities of the sewing machine, comprising means operated in synchronism with the upper shaft to detect the

rotation phases of the upper shaft in four divisions, means (AM, CT) for detecting the rotation speed of the upper shaft, and means (ROM, PC) operated in association with the rotation speed of the upper shaft to shift the rotation phase divisions of the upper shaft so as to control the operation of the stitch forming instrumentalities.

4,340,003

# LOCK STITCHING SEWING MACHINE WITH A THREAD TIGHTENING DEVICE

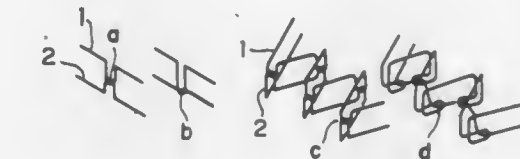
Susumu Hanyu, Hachioji; Kazumasa Hara, Tama, and Mikio Koike, Oume, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Jun. 12, 1980, Ser. No. 158,779

Claims priority, application Japan, Jun. 20, 1979, 54/76721  
Int. Cl.<sup>3</sup> D05B 57/08

U.S. Cl. 112—191

7 Claims



1. In a sewing machine having a main shaft adapted to vertically reciprocate a needle bar with a needle carrying an upper thread and arranged to penetrate a fabric to be sewn, a loop taker carrying a lower thread, a drive shaft operatively connected to the main shaft for driving the loop taker, a feed dog disposed above said loop taker, and a thread tightening device, the combination comprising a group of pattern cams operatively connected to the main shaft for rotation at a reduced speed; pattern cam selecting means including at least one follower adapted to engage with a selected one of said pattern cams; means for operatively connecting the selected pattern cam to the needle bar; means including a rockingly movable shaft for reciprocating the feed dog in a horizontal plane; means for controlling the vertical movement of the feed dog, said controlling means including a control cam and a rotatable shaft operatively connected to the main shaft, said control cam being axially slidably mounted on said rotatable shaft but prevented from relative rotation thereto; lower thread tightening means including an element arranged for vertical reciprocating movement in a timed relation with the feed dog by said rotatable shaft, said element engaging the lower thread during the stitching operation of the sewing machine to draw a predetermined amount of the lower thread and tighten the stitch to be formed in accordance with the axial position thereof; thread tension adjusting means including an adjusting cam with parts corresponding to said pattern cams and operatively connected with said pattern cam selecting means, a dial to positively set in a timed relation said adjusting cam with the selected pattern cam and transmission means including a follower engaging said adjusting cam, links operatively connected to said control cam, said links displacing said control cam axially relatively to said rockingly movable shaft in response to a set position of said adjusting cam.

4,340,004

# HIGH-SPEED SHIP

Yutaka Kanel, 15-3, Tsushimaenishi-machi, Neyagawa, Osaka, Japan (572)

Filed Mar. 28, 1978, Ser. No. 891,120

Claims priority, application Japan, Mar. 30, 1977, 52-36778; Nov. 26, 1977, 52-141908

Int. Cl.<sup>3</sup> B63B 1/34

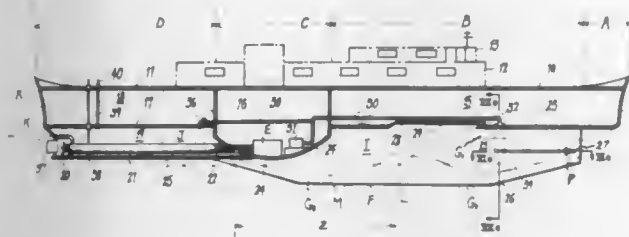
U.S. Cl. 114—67 A

9 Claims

1. A modified hull for a high speed ship, reducing drag and enabling travel at increased speeds, said ship's hull comprising: a front bottom plating;



a rear bottom plating positioned at a lower level relative to the waterline of the hull than said front bottom plating; an intermediate bottom plating connecting said front and rear bottom platings; side plates which are secured to opposite sides of said front bottom plating, said side plates extending vertically downward therefrom to a position slightly lower than said rear bottom plating, said side plates cooperating for forming a water flow passage therebetween; a water dividing member which is secured to and extends transversely between said opposite side plates in the front portion of said flow passage for dividing the water flowing through said passage during navigation into an upper and a lower stream;



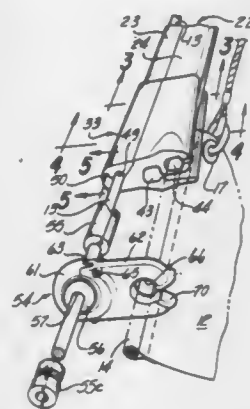
a compressor mounted within said hull; and an air duct extending throughout the length of and within said ship hull, said air duct being connected to said compressor, being supplied with compressed air, and having air supply outlets in the bottom of said ship hull along said front bottom plating and within the rear portion of said dividing member for creating a high pressure air front holding space between said upper and lower streams and an intermediate high pressure air holding space between said front bottom plating and said upper stream, and a ballast tank in a rear portion of said hull for dischargably containing water for keeping said ship in balance when the buoyancy of said front portion of said hull is increased by air in and intermediate high pressure air holding spaces.

#### 4,340,005 LUFF FEEDER ASSEMBLY FOR GROOVED JIBSTAY FOILS

Rolf E. Lagerquist, 1505 S. Oak, Lake City, Minn. 55978  
Filed Sep. 5, 1980, Ser. No. 184,574  
Int. Cl.<sup>3</sup> B63H 9/04

U.S. Cl. 114—105

18 Claims



9. A luff feeder adapted to be attached to the lower end of a grooved foil for a sailboat, the combination of a body member and a cover member removably assembled together by sliding movement in one direction and cooperating at an assembled position to define a funnel having an opening for receiving the luff of a sail readily therein, the funnel opening extending upwardly through the funnel for sliding passage of the luff and terminating at an upper end adapted to be aligned with the lower end of an opening in the grooved foil, said members also defining an upwardly opening recess for snugly receiving a lower end portion of the grooved foil, said members having

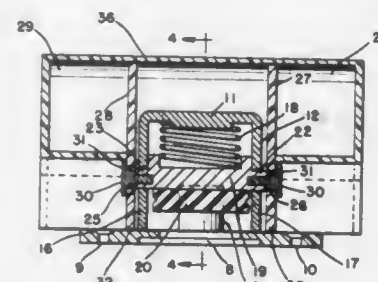
parallel mating guideways extending in said direction, said guideways meeting in mutually supporting sliding relationship for guiding said relative sliding movement in said direction and including separate pairs of parallel portions abutting at the assembled position for limiting relative movement of the members in orthogonal second and third directions respectively normal to said one direction, said members also having spline means interfitting at the assembled position for limiting relative movement of the members in directions opposite said second and third directions, and means passing through said recess and interengaging said members at the assembled position for interlocking the members against relative movement in either said one direction or the opposite.

#### 4,340,006 SEMI-AUTOMATIC BAILER PLUG

William C. Patriarca, 10232 Prince Pl., T-2, and Leonard J. McGraw, 10247 Prince Pl., T-3, both of Largo, Md.  
Continuation-in-part of Ser. No. 8,576, Feb. 1, 1979, Pat. No. 4,198,918. This application Feb. 12, 1980, Ser. No. 120,845  
Int. Cl.<sup>3</sup> B63B 13/00

U.S. Cl. 114—197

5 Claims



1. A bailer plug control assembly for boat transoms having a bail hole for discharging bilge water from a boat comprising: support means for mounting said bailer plug assembly in alignment with a boat transom bail hole; a bail plug guide means connected to said support means; a bail plug mounted in said bail plug guide means for movement between a closed position in which said bail plug seals said bail hole and an open position in which said bail plug permits the discharge of bilge water through said bail hole; spring means coupled to said bail plug for driving said bail plug along said guide means toward said closed position to seal said bail hole; locking means for holding said bail plug in said open position against the driving action of said spring means when said boat transom is out of the water; and float means responsive to water contact accompanying the launching of the boat transom for releasing said locking means to permit said spring means to drive said bail plug into said closed position to seal said bail hole, said float means being pivotally mounted with respect to said support means and pivotable in response to said water contact to release said locking means.

#### 4,340,007 PORTABLE LOCKING AND ALARM SYSTEM

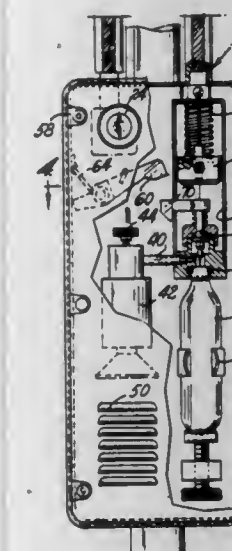
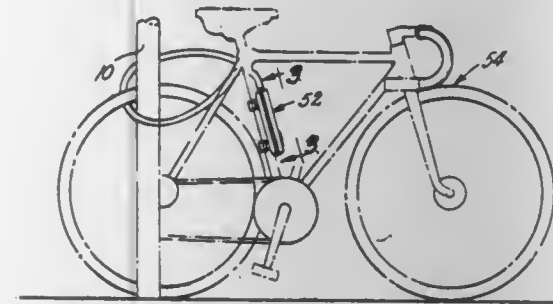
Paul Hogan, 26 Buckwalter Rd., Phoenixville, Pa. 19460  
Filed Apr. 18, 1980, Ser. No. 141,385  
Int. Cl.<sup>3</sup> G08B 13/12, 13/22

U.S. Cl. 116—81

3 Claims

1. A combination lock and alarm assembly comprising a casing, an elongated flexible cable including a core member detachably secured at one end to the casing by locking means and securely mounted at its other end to the casing, an alarm system in the casing including a reservoir for a fluid under pressure normally sealed by a diaphragm, means adapted to pierce the diaphragm in response to predetermined tampering conditions, a fluid actuated audio alarm and means connecting said audio alarm to said pressurized fluid reservoir whereby

upon puncturing of said diaphragm, pressurized fluid is discharged to actuate said audio alarm, said casing comprising two pivotally mounted sections and including a hammer pivot-



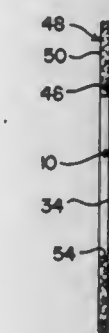
ally mounted in one of said sections and engageable with the other of said sections and including spring biasing means operable to pivot said hammer upon disengagement from said other casing section to actuate said piercing member.

#### 4,340,008 TILT INDICATOR FOR SHIPPING CONTAINERS

Ralph R. Mendelson, 3137 Fairmount Blvd., Cleveland Heights, Ohio 44118  
Filed Sep. 22, 1980, Ser. No. 189,797  
Int. Cl.<sup>3</sup> G08B 5/00

U.S. Cl. 116—215

19 Claims



1. A tilt indicator mountable on an upright wall of a shipping container comprising, a sheet of stainable material having opposite sides and peripheral edge means, receptacle means on one of said sides of said sheet and spaced inwardly from said edge means, said receptacle means being separate from said sheet and having an upper end and inner and outer receptacle walls with respect to said one side of said sheet, means fastening said inner receptacle wall to said one side of said sheet for said receptacle means to be mounted on said sheet outwardly adjacent said one side, a flowable material in said receptacle means capable of staining said sheet, said receptacle means including means to provide an outlet at said upper end through which said flowable material can flow onto said sheet upon tilting said shipping container, and enclosure means of a trans-

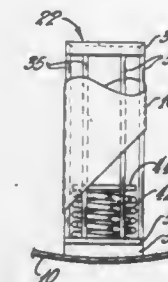
parent plastic film of material removably receiving and completely surrounding and enclosing said sheet and receptacle means, said enclosure means confining said flowable material therein and being mountable on said upright container wall to support said sheet and receptacle means thereon.

#### 4,340,009 MEANS FOR PROTECTING UNDERGROUND TANKS FROM DAMAGE BY DIPSTICKS

Gerald G. Greaves, Jr., Houston, Tex., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio  
Filed Sep. 18, 1980, Ser. No. 188,196  
Int. Cl.<sup>3</sup> G01F 23/00

U.S. Cl. 116—227

10 Claims



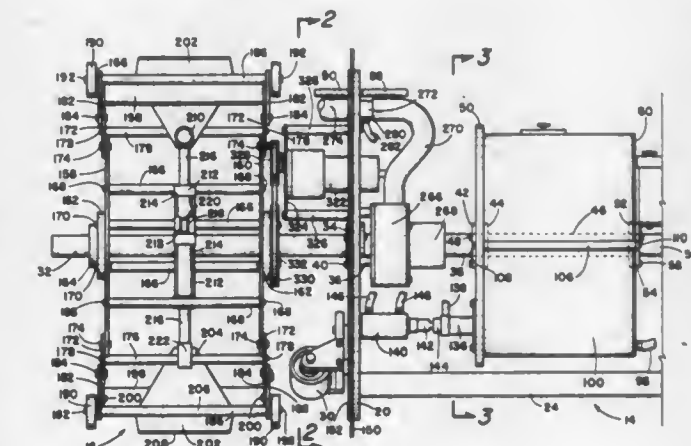
1. For use with a cylindrical underground storage tank (10) having an opening in an upper wall portion thereof and an inner fill tube (16) in communication with the opening, the inner fill tube extending downwardly from the opening for a greater portion of the length of an inside diameter of the tank and having a lower end portion spaced from a lower wall portion of the tank, means (22, 24, 26, 28) for protecting the lower wall portion of the tank from damage by a dipstick (20), said protecting means being adapted to be dropped down the inner fill tube into a position wherein it is supported by the lower wall portion of the tank and comprising an open-top, generally cylindrical housing including a bottom plate (30, 34, 35, 36, 38, 40), a resilient member (42, 46) inside the housing adjacent the bottom plate, and a striking plate (44) disposed in the housing adjacent the resilient member and being reciprocable within the housing along with an upper end portion of the resilient member upon the striking of the plate by a dropped dipstick.

#### 4,340,010 INTERNAL GIRTH COATING APPARATUS

Robert J. Hart, Tulsa, Okla., assignor to Commercial Resins Company, Tulsa, Okla.  
Filed Apr. 13, 1981, Ser. No. 253,702  
Int. Cl.<sup>3</sup> B05C 7/02, 19/00

U.S. Cl. 118—306

5 Claims



1. An internal pipe coating apparatus for coating the interior surfaces of uncoated weld joints in an otherwise internally



coated pipeline comprising a frame, means for moving the frame longitudinally along the interior of said pipeline, said frame having a forward end constituting a coating section adapted to be disposed in the area of an uncoated weld joint, said coating section having a shaft adapted to be disposed generally along the longitudinal center line of the pipeline and for rotatably mounting a coating assembly thereon, a coating assembly comprising an arm means mounted for rotation on said shaft and extending radially outward from said shaft on opposite sides thereof and terminating in a pair of opposite ends, link means connected to each opposite end of said arm means, each link means having an inner end pivotally connected to an opposite end of said arm means and having an outer end to which is pivotally connected a triangularly shaped mounting means, each mounting means being in the shape of an obtuse isosceles triangle having a single obtuse angle and a pair of smaller acute angles, each mounting means being pivotally connected to said link means at the apex of the obtuse angle, a wheel mounted on each mounting means at the location of each acute angle thereof, a hollow powder applicator head operatively connected to each mounting means, each applicator head having a dispensing opening oriented in a direction away from said shaft, a hose connected to each applicator head for supplying an air-powder mixture to said applicator head, expansion means operatively connected between center of each link means and said arms means adjacent said shaft for urging said link means outwardly away from said shaft, and means for rotating said arm means about said shaft.

#### 4,340,011 FLOW DISTRIBUTOR FOR A LIQUID FILM DISCHARGING DEVICE

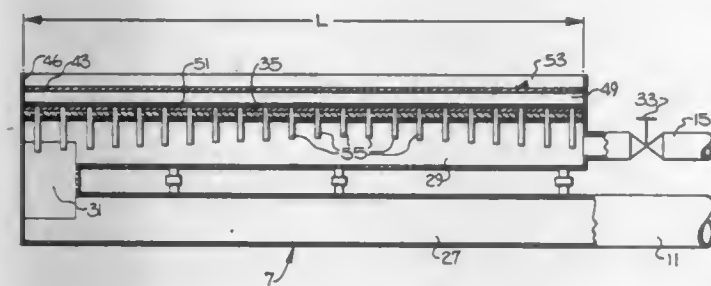
Douglas Wahren, Appleton, Wis., and Rolf A. L. Akesson, Karlstad, Sweden, assignors to Aktiebolaget Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed Dec. 9, 1980, Ser. No. 214,773

Claims priority, application Sweden, Dec. 17, 1979, 7910358  
Int. Cl.<sup>3</sup> B05C 3/18

U.S. Cl. 118—410

9 Claims



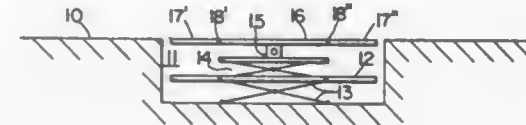
1. A flow distributor device for producing from an elongate outlet slot of substantially constant width along its length, a flowing film of liquid with a substantially uniform velocity over the length of the slot, said device comprising a supply duct extending substantially parallel to the elongate outlet slot, means for feeding a liquid at a constant but adjustable rate of flow to said supply duct, and a plurality of elongate passageways providing fluid communication between said supply duct and the outlet slot, said passageways being arranged in a row connected in parallel with each other and equidistantly spaced along the length of the supply duct, said passageways being located sufficiently close to each other to avoid unacceptable nonuniformity in the flow from the outlet slot, occasioned by local velocity gradients which arise from the passageways, said passageways being dimensioned so as to make the pressure drop across the row of passageways greater than the pressure drop across the slot, and wherein each of said elongate passageways has a uniform bore diameter along a length which is several times greater than the bore diameter, and wherein said elongate passageways have differing lengths along the length of the supply duct for providing a more uniform distribution of flow along the length of the elongate outlet slot.

#### 4,340,012 OPERATION TABLE FOR BIG ANIMALS

Erik E. Gustafson, Djurgårdsgatan 15, Mariefred, Sweden  
Filed Sep. 23, 1980, Ser. No. 189,767  
Claims priority, application Sweden, Sep. 25, 1979, 7907923  
Int. Cl.<sup>3</sup> A61D 3/00

U.S. Cl. 119—103

13 Claims



1. An operation table for big animals which is stored in a recess in a floor so as to be level with the floor comprising:  
a flat foundation of slightly smaller dimensions than the horizontal dimensions of the recess;  
a flat table intended for the surgical operation located above said foundation;  
a foundation moving means for moving said foundation at least from a lower position within the recess to an upper position substantially level with the floor; and  
a table moving means for selectively moving said table from a loading position substantially level with the floor where said foundation is in the lower position within the recess to an operating position which is adjusted to a convenient height for the operation where said foundation is in the upper position level with the floor,  
said foundation moving means comprising a hydraulically operated scissor device located below said foundation and said table moving means comprising a hydraulically operated scissor device located above said foundation.

#### 4,340,013 MEANS AND PROCEDURE FOR THE OPERATION OF COMBUSTION ENGINE

Olle B. Lindstrom, Lorensviksv 14, S-18363 Täby, Sweden  
Division of Ser. No. 885,324, Mar. 10, 1978, Pat. No. 4,244,328.

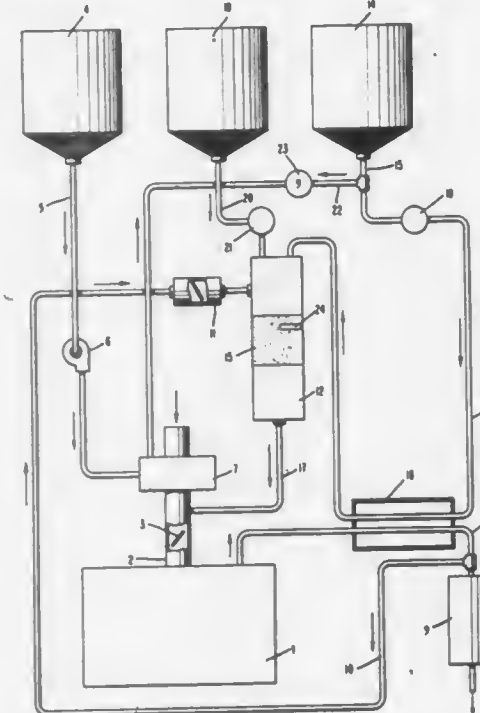
This application Sep. 8, 1980, Ser. No. 184,884

Claims priority, application Sweden, Mar. 17, 1977, 7703011

Int. Cl.<sup>3</sup> F02B 43/08

U.S. Cl. 123—3

6 Claims



1. In a combustion engine employing a fuel comprising gasoline and methanol and having exhaust gas recirculation, the improvement comprising:

(a) means for mixing a feed stream comprising methanol in a fixed amount selected from within the range of about 5 to 35 percent by volume based on the amount of gasoline supplied to the combustion engine with a water vapor-containing exhaust gas stream in a first zone;

(b) means within said first zone for catalytically steam reforming said methanol-containing feed stream in the presence of said exhaust gas stream to form a gaseous mixture comprising hydrogen and carbon monoxide, whereby at least a portion of the water vapor and energy required for said steam reforming is provided by said exhaust gas stream;  
(c) means disposed adjacent to said first zone for combining said gaseous mixture of hydrogen and carbon monoxide with a mixture of air and gasoline;  
(d) means operatively connected to said combining means for supplying the hydrogen/carbon monoxide/air/primary gasoline mixture to a combustion zone within said combustion engine;  
(e) means for combusting said mixture in said combustion zone to produce an exhaust gas comprising a reduced amount of noxious components and aldehydes.

#### 4,340,014 VENTILATION BLOWER FOR A NOISE-SUPPRESSING ENCAPSULATED INTERNAL COMBUSTION ENGINE

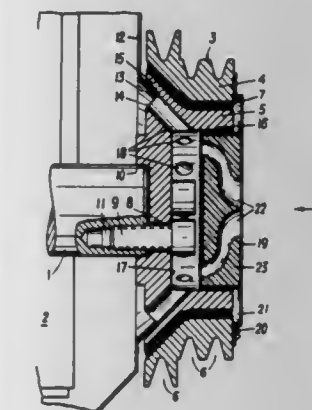
Karl Kirchweyer, Graz, Austria, assignor to Hans List, Graz, Austria

Filed Mar. 26, 1981, Ser. No. 247,746

Claims priority, application Austria, Apr. 18, 1980, 2115/80  
Int. Cl.<sup>3</sup> F01P 7/02

U.S. Cl. 123—41,63

5 Claims



1. An internal combustion engine having a noise-suppressing encapsulation and a blower for ventilation of said encapsulation, comprising a drive wheel for driving auxiliary units, said drive wheel being connected to said blower, driven by the crankshaft of the engine, and consisting of two concentric parts, an outer part of said concentric parts being connected via at least one elastic member to an inner part of said concentric parts and said inner part being connected to one end of said crankshaft, said drive wheel further being arranged outside of said encapsulation, covering an opening for said crankshaft in an encapsulation wall, and having cooling air ducts arranged in said inner part thereof, each one of said cooling air ducts being so arranged as to run from an inlet end on the side opposite said opening to an exit end on the side adjacent said opening, said exit end having a greater spacing from the axis of said crankshaft than said inlet end although still lying within said opening, and wherein a cover is arranged on the side opposite said opening, connected to said outer part and covering said inner part, said cover having sound-isolated suction openings.

#### 4,340,015 FRONT TRANSFER PORT SYSTEM

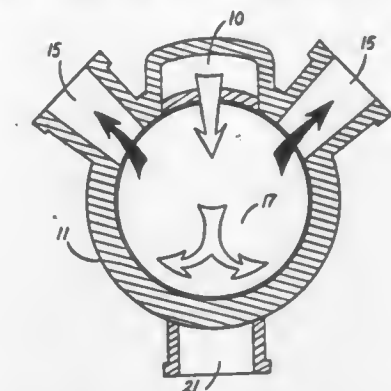
Fernando C. Gonzalez, 224 N. Myers St., Burbank, Calif. 91506  
Continuation-in-part of Ser. No. 749,067, Dec. 9, 1976,  
abandoned. This application Aug. 7, 1978, Ser. No. 931,617  
Int. Cl.<sup>3</sup> F02B 33/04

U.S. Cl. 123—73 R

3 Claims

1. In a two-cycle engine comprising:  
a crankcase; a cylinder; a piston reciprocable in said cylinder; an inlet to said crankcase; a transfer port from said crankcase to said cylinder; and a pair of exhaust ports

from said cylinder; the improvement wherein said transfer port and said exhaust ports are located on the same side of said cylinder, with said exhaust ports angularly spaced at opposite sides of said transfer port; said transfer port having a larger angular extent than said exhaust ports and



discharging gas onto said piston head between said exhaust ports; said exhaust ports being approximately at right angles and being defined by walls extending substantially parallel a distance at least equal to the width of the exhaust ports at the cylinder; said cylinder being unported at the side opposite to said transfer and exhaust ports.

#### 4,340,016 TWO-STROKE INTERNAL COMBUSTION ENGINE AND METHOD OF OPERATION THEREOF

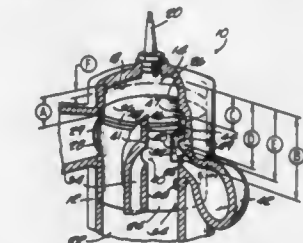
Josef Ehrlich, Near Berkhempsted, England, assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 5, 1980, Ser. No. 184,487

Int. Cl.<sup>3</sup> F02B 33/04

U.S. Cl. 123—73 R

11 Claims



5. An internal combustion engine including a combustion chamber, an auxiliary chamber, a piston movable relative to said combustion chamber between top dead center and bottom dead center positions and relative to first, second, third, and fourth positions respectively spaced from said top dead center position at respectively greater distances, a source of a pressurized fuel-air mixture, a source of a pressurized gas, means for establishing communication between said auxiliary chamber and said source of pressurized gas during piston travel from said first to said second position, whereby pressurized gas is introduced into said auxiliary chamber, means for isolating the pressurized gas introduced into said auxiliary chamber during piston travel from said second position to said third position, means for establishing communication between said auxiliary chamber and said combustion chamber during piston travel between said third position and said bottom dead center position, whereby the pressurized gas supplied to said auxiliary chamber flows into said combustion chamber, and means for establishing communication between said combustion chamber and said source of pressurized fuel-air mixture during piston travel between said fourth position and said bottom dead center position, whereby the pressurized fuel-air mixture flows into combustion chamber from said fuel-air mixture source.

7. A two-stroke internal combustion engine comprising a cylinder, a crankcase extending from said cylinder, an auxiliary chamber, a piston movable relative to said cylinder between top dead center and bottom dead center positions and relative to first, second, third, and fourth positions respectively spaced from said top dead center position at respectively greater distances, whereby said crankcase is subject to cyclical conditions of relatively high pressure and low pressure, means for



supplying a fuel-air mixture to said crankcase when said crankcase is subject to low pressure, a transfer passage communicating with said crankcase and communicable with said cylinder in response to said piston movement, means for igniting said fuel-air mixture in said cylinder when said piston is located generally adjacent to said top dead center position, whereby high pressure ignition gases are created within said cylinder above said piston, means for establishing communication between said auxiliary chamber and said cylinder during piston travel from said first position to said second position, whereby the high pressure ignition gases are introduced into said auxiliary chamber, means for isolating the high pressure ignition gases introduced into said auxiliary chamber during piston travel from said second position to said third position, means for reestablishing communication between said cylinder and said auxiliary chamber during piston travel between said third position and said bottom dead center position, whereby the high pressure ignition gases supplied to said auxiliary chamber flow into said cylinder, and means for establishing communication between said cylinder and said transfer passage during conditions of high pressure in said crankcase and during piston travel between said fourth position and said bottom dead center position, whereby the fuel-air mixture flows through said transfer passage into said cylinder.

4,340,017

#### STARTING DECOMPRESSION DEVICE FOR A FOUR CYCLE ENGINE

Yoshitaka Kato; Kiyotomi Maesaka, both of Wako; Selichi Matsui, Tokyo, and Yoshitoku Iizuka, Urawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

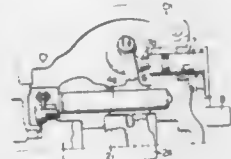
Filed Jun. 10, 1980, Ser. No. 158,163

Claims priority, application Japan, Jun. 19, 1979, 54/77299

Int. Cl.<sup>3</sup> F01L 13/08

U.S. Cl. 123—182

3 Claims



1. In a starting decompression device for a four-cycle engine including an inlet valve and an exhaust valve for respectively opening and closing an inlet port and an exhaust port which ports are in communication with a combustion chamber and a valve-operating mechanism having an intake rocker arm and an exhaust rocker arm for controllably opening and closing said valves, said starting decompression device comprising:

a decompression cam member disposed adjacent said exhaust rocker arm and being movable between an operative position wherein said exhaust valve is opened halfway and an inoperative position wherein said exhaust valve is closed; and

a return spring for urging said decompression cam member towards said inoperative position;

the improvement wherein said exhaust rocker arm has a cam follower for camming engagement with said decompression cam member, and said decompression cam member has a cam apex which is placed in a position past a contact point of said decompression cam member with said cam follower when said decompression cam member is in the operative position.

4,340,018

#### INTERNAL COMBUSTION ENGINE HAVING A WET-TYPE CYLINDER LINER AND PROCESS FOR MANUFACTURING SAME

J. David Kirk, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 26, 1979, Ser. No. 106,490

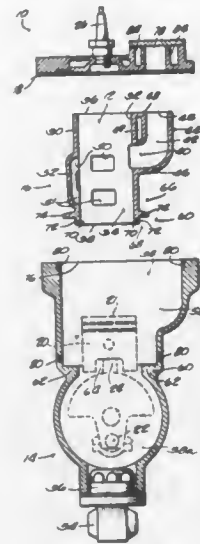
Int. Cl.<sup>3</sup> F02F 1/16

U.S. Cl. 123—193 C

17 Claims

2. An internal combustion engine comprising a liner includ-

ing a cylindrical sleeve including a sidewall defining a bore having oppositely spaced ends, said sidewall having therein an exhaust port, and means defining an exhaust passage extending from said sleeve and communicating with said bore through said exhaust port, said exhaust passage including an outlet end portion extending outwardly said sidewall and axially toward one of said bore ends, a block portion including means defining an interior chamber having a liner-receiving portion accommodating the placement of said liner substantially wholly within the confines of said liner-receiving portion of said interior chamber and adapted to be connected with a source of



liquid coolant, assemblage means on said liner and on said block portion for mounting said liner substantially wholly within the confines of said liner-receiving portion of said interior chamber and for sealing said interior bore from communication with said liner-receiving portion of said interior chamber, and a head portion mounted on said block portion, said head portion including means for defining a passage having one end communicating with the atmosphere and an opposite end communicating with said outlet end portion of said liner exhaust passage when said liner is mounted in said interior chamber.

4,340,019

#### INTERNAL COMBUSTION DIESEL ENGINE

Konrad Barnert, Wolfsburg, and Ingolf Löhner, Brunswick, both of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

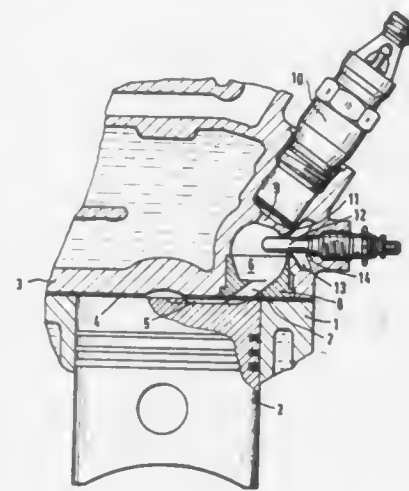
Continuation of Ser. No. 7,327, Jan. 29, 1979, abandoned. This application Dec. 23, 1980, Ser. No. 219,993

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1978, 2805133

Int. Cl.<sup>3</sup> F02B 3/02, 23/08

U.S. Cl. 123—256

7 Claims



1. In an internal combustion diesel engine having a piston sliding in a cylinder, said cylinder closed by a cylinder head forming a main combustion chamber, and having a pre-combustion chamber arranged in the cylinder head and communi-

cating by a connecting passage with the main combustion chamber, a fuel injection nozzle projecting into said pre-combustion chamber, and a glow plug projecting into said pre-combustion chamber, the improvement wherein said engine includes auxiliary chamber means for storing oxygen during the initial period of combustion comprising an auxiliary chamber which is smaller than said pre-combustion chamber and communication means between said auxiliary chamber and said pre-combustion chamber including a nozzle-shaped aperture for introducing air contained in said auxiliary chamber into said pre-combustion chamber through said aperture, wherein the stored oxygen is drawn out of said auxiliary chamber, after ignition of the fuel-air mixture in the pre-combustion chamber is initiated, for combustion with remaining unburned fuel in said pre-combustion chamber.

4,340,020

#### GOVERNOR MECHANISM

Laurence C. Caldicott, Watford; Alastair D. Cameron, and Georges N. Felton, both of London, all of England, assignors to Lucas Industries Limited, Birmingham, England

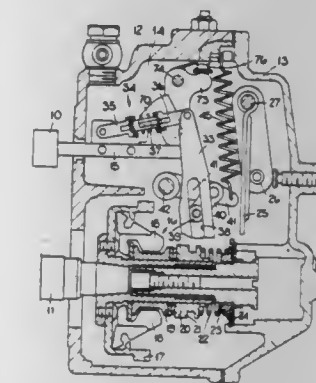
Filed Oct. 29, 1979, Ser. No. 88,837

Claims priority, application United Kingdom, Nov. 11, 1978, 44176/78

Int. Cl.<sup>3</sup> F02D 1/04

U.S. Cl. 123—374

8 Claims



1. A governor mechanism for use with or forming part of a fuel injection pumping apparatus for supplying fuel to an internal combustion engine, the mechanism comprising:

a centrifugal weight unit which in use, is driven at a speed proportional to the speed of the associated engine, a first resilient means acting against a member in opposition to the force exerted by said weight unit,

means for limiting the deflection of said first resilient means, a second preloaded resilient means which defines a reaction member for said first resilient means,

the preload of said second resilient means being substantially equal to the force required to deflect the first resilient means to its maximum permitted extent whereby with increasing engine speed said opposition member is moved continuously against the action of said first and second resilient means,

a first lever pivotally mounted intermediate its ends for coupling to said opposition member,

means coupling one end of the first lever to said opposition member, so that the first lever is pivoted about its pivot upon movement of said opposition member,

further means connecting the other end of the first lever to a control member of the pumping apparatus,

manually adjustable means for varying the position of said pivot, whereby for a given position of said opposition member below the maximum speed of the engine, when the pivot is moved in one direction, the first lever will pivot in a direction which effects an increase in the amount of fuel supplied to the engine, and when the pivot is moved to the other direction, the lever will pivot in a direction which effects a reduction in the amount of fuel supplied to the engine,

extra means for adjusting the preload of said second resilient means and linkage means coupled to said extra means, as well as to said manually adjustable means whereby, when

said linkage means is set to reduce the preload of said second resilient means, the pivot will be positioned such that said lever will be moved to a position to ensure a supply of fuel by the pumping apparatus, said linkage means being operable from the exterior of the governor mechanism to reduce the preload of said second resilient means when it is required to operate the engine at a reduced speed with a varying load.

4,340,021

IGNITION ADVANCE ANGLE CONTROLLING DEVICE  
Katsunori Oshige, and Mitsuhiro Ezoe, both of Yokosuka, Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

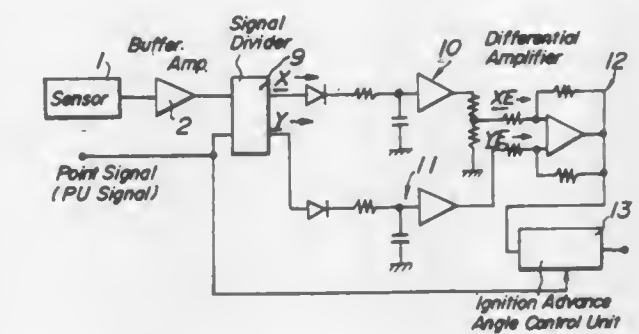
Filed May 21, 1980, Ser. No. 152,095

Claims priority, application Japan, May 25, 1979, 54-64624

Int. Cl.<sup>3</sup> F02P 5/04

U.S. Cl. 123—425

4 Claims



1. Apparatus for controlling the occurrence times of each ignition pulse of an internal combustion engine comprising a sensor for detecting vibration produced by said engine, said sensor deriving an output signal including a background portion and a knocking portion while the engine is knocking,

a signal splitter circuit for splitting the output signal of said sensor into a knocking portion signal and a background portion signal separate from the knocking portion signal, a first means responsive to said knocking portion signal for deriving a first signal having a value commensurate with the intensity of the knocking detected by the sensor, a second means responsive to said background portion signal for deriving a second signal having a value commensurate with the intensity of background vibrations detected by the sensor,

comparison means responsive to the first and second signals for deriving a comparison signal having a value commensurate with the relative magnitudes of the intensity of knocking detected by the sensor and of the intensity of background vibrations detected by the sensor, the signal splitter circuit including first and second switches for alternately coupling the output of the sensor to the first and second means in response to the sensor deriving the knock and background portions respectively, means for deriving an intermediate signal having an increasing magnitude as time progresses between each ignition pulse, the rate of increase of the intermediate signal being responsive to the time interval between adjacent ignition pulses so the rate of increase is an inverse function of the time interval, means responsive to the magnitude of the intermediate signal being in a first band between first and second predetermined amplitude levels for coupling the knock portion via the first switch to the first means while blocking coupling of the background portion via the second switch to the second means and responsive to the intermediate signal being in second bands outside of the first band for coupling the background portion via the second switch to the second means while blocking coupling of the knock portion via the first switch to the first means, and means for controlling the occurrence time of the ignition pulses in response to the value of the comparison signal.



4,340,022

## FUEL INJECTION DEVICE OF AN INTERNAL COMBUSTION ENGINE

Masakazu Ninomiya, Kariya; Hideo Kiuchi, Hoi; Atsushi Suzuki, Kariya, and Nobuyuki Kobayashi, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

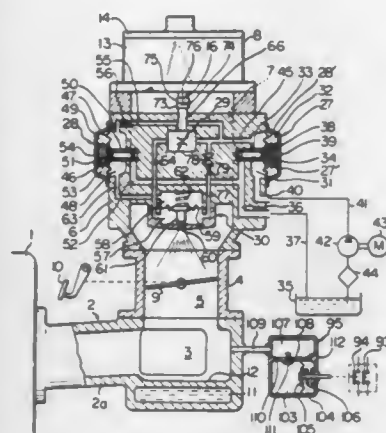
Filed Apr. 9, 1980, Ser. No. 138,734

Claims priority, application Japan, Jun. 7, 1979, 54-71962

Int. Cl.<sup>3</sup> F02M 59/32

U.S. Cl. 123—453

14 Claims



1. A fuel injection device of an internal combustion engine having an intake passage, said device comprising:

- a fuel reservoir;
- a fuel pump connected to said fuel reservoir;
- a fuel chamber having a fuel nozzle which opens into said intake passage;
- a fuel feed passage connecting said fuel pump to said fuel chamber;
- flow control means arranged in said fuel feed passage for controlling the flow of a fuel to feed the fuel into said fuel chamber in an amount which is directly proportional to the amount of sucked air flowing within said intake passage;
- first valve means having a constant pressure chamber arranged in said intake passage between said fuel pump and said flow control means for feeding the fuel at a constant pressure into said flow control means;
- detecting means for detecting an operating condition of the engine to produce a control signal when the engine is accelerated and before the completion of warm-up of the engine;
- a fuel bypass passage directly connecting said constant pressure chamber to said fuel chamber; and
- normally closed second valve means arranged in said fuel bypass passage for opening said fuel bypass passage in response to said control signal when the engine is accelerated and before the completion of warm-up of the engine.

4,340,023

## FUEL SUPPLY AND RETURN SYSTEM WITH BYPASS VALVE AND WATER PUMPOUT

John E. Creager, Linden, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 23, 1980, Ser. No. 162,005

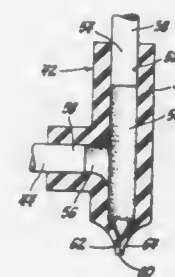
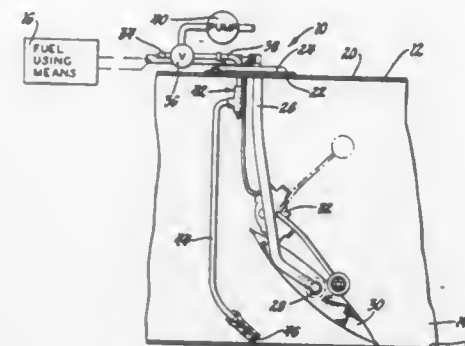
Int. Cl.<sup>3</sup> B67D 5/60

U.S. Cl. 123—510

3 Claims

1. In a fuel supply and return system having a fuel tank, a fuel supply line for removing fuel from the tank for use in an engine or the like, and a fuel return line for returning excess fuel to the tank, the fuel return line also being adapted to remove water from the fuel tank under certain operational conditions, said fuel return line including a first line section extending into the top of the fuel tank, a second line section extending from near the top of the fuel tank to a point adjacent the bottom of the fuel tank, and a valve assembly connecting said first and second line sections, the improvement comprising:

said valve assembly including a housing having a chamber formed therein, a first port continuously fluid connected with said first line section and continuously opening into said chamber, a second port continuously fluid connected with said second line section and continuously opening into said chamber, and a normally closed duckbill-like valve formed at least in part by said housing and so communicating with said chamber that said valve will open at a predetermined



positive pressure in said chamber to permit fuel flow from said chamber directly into the fuel tank when said second line section is sufficiently restricted to cause fuel returning to build up said predetermined positive pressure, and that said valve will remain closed with negative pressure in said chamber to permit water in the bottom of the tank to be removed through said second line section and said chamber and said first line section under said certain operational condition.

4,340,024

## INTERNAL COMBUSTION ENGINE

Suzuo Suzuki, Yokosuka; Yasuhiko Nakagawa, Kamakura; Hisamoto Aihara, Yokohama; Yasuo Matsumoto, Yokohama, and Yoji Sato, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Tokyo, Japan

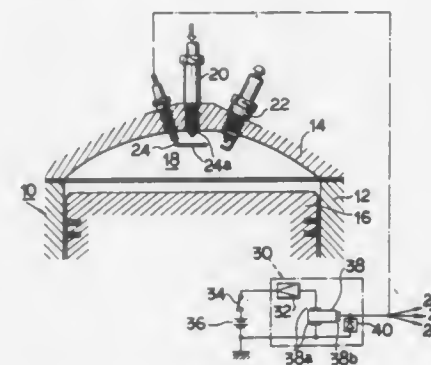
Filed Jun. 13, 1979, Ser. No. 48,176

Claims priority, application Japan, Oct. 13, 1978, 53/126589

Int. Cl.<sup>3</sup> F02B 33/00

U.S. Cl. 123—538

11 Claims



1. A direct injection type internal combustion engine including at least one combustion chamber fitted with a fuel injection valve for directly injecting fuel into the combustion chamber, the engine comprising a charging electrode disposed near the fuel injection valve within the combustion chamber, and a high voltage source for applying a high DC voltage to the charging

electrode to charge the fuel injected from the injection valve, said electrode and said high voltage source comprising means to charge the fuel with a polarity which is the opposite of said high DC voltage applied to said charging electrode.

4,340,025

## PULLEY FOR COMPOUND ARCHERY BOW

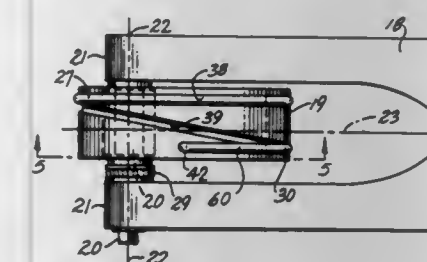
Joseph M. Caldwell, 2259 W. Big Tujunga Canyon, Tujunga, Calif. 91042

Filed Jan. 28, 1980, Ser. No. 115,954

Int. Cl.<sup>3</sup> F41B 5/00

U.S. Cl. 124—86

24 Claims



1. An eccentric pulley for a compound archery bow, the pulley including means defining an axis of rotation eccentric to a pulley rim surface which extends at least partially around the circumference of the pulley, the rim surface defining therein first and second grooves extending at least partially along the rim surface of the pulley, the first groove being defined entirely in a plane normal to said axis, the second groove being spaced from said plane with the amount of such spacing varying over at least a portion of the length of the second groove, and rigging cable passage means defined through the pulley from a first selected location on the first groove to a second selected location on the second groove spaced circumferentially along the rim surface from the first location.

4,340,026

## WOOD BURNING STOVE

James H. Smith, R.D. #1, Rte. 23, Narvon, Pa. 17555

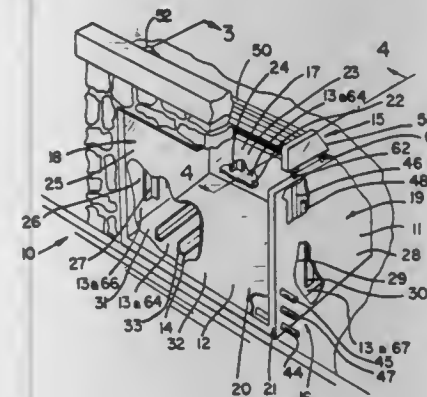
Division of Ser. No. 762,800, Jan. 26, 1977, Pat. No. 4,204,518.

This application Jan. 14, 1980, Ser. No. 111,732

Int. Cl.<sup>3</sup> F24B 9/04

U.S. Cl. 126—5

2 Claims



1. A wood burning heating unit having a combustion gas exit for use as a stove for space heating comprising:
- (a) a left side wall, a back side wall and a right side wall defining a combustion chamber, said walls having wall cavities therein for heating a liquid;
  - (b) a floor
  - (c) spaced baffle members extending vertically within said walls and shorter in length than said walls to divide said wall cavities to provide vertical directional liquid flow paths;
  - (d) a plurality of rows of spaced alternating horizontal tubes forming a maze with alternating tubes and spaces in each row positioned above said combustion chamber, a group

of said tubes providing a parallel path connected in series to a second group of said tubes providing a parallel path positioned between said left side wall and said right side wall

- (e) baffle means within said walls to provide said series continuous flow path through said groups of tubes having said parallel paths; and
- (f) inlet and outlet liquid conduit means communicating with said wall cavities.

4,340,027

## BARBECUE GRILL COVER

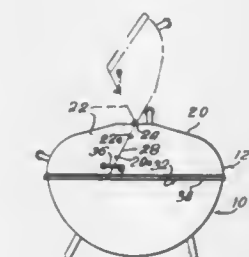
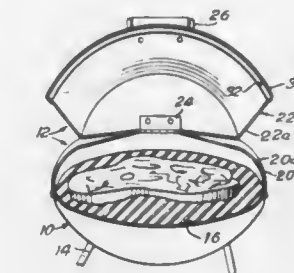
Gary Fuss, 535 Grove St., Mayville, Wis. 53050

Filed Apr. 28, 1980, Ser. No. 144,288

Int. Cl.<sup>3</sup> A47J 37/00; F24B 3/00; B65D 51/18

U.S. Cl. 126—25 R

8 Claims



1. A barbecue grill cover for use with a round kettle type grill having a base opening upwardly, and terminating in a circumferential upper edge, said cover being generally dome shape having two sections on opposite sides of a generally upright cut, said sections including a relatively stationary, fixed back section, and a front section forming a door, the door being hinged to the back section at the top, enabling the door to swing outwardly between a lower closed position and an upper open position, the stationary section and door together, when the door is in lower closed position, being continuous throughout the area of the cover, and the cover having a circumferential lower edge engaging and resting on the upper edge of the base, and the cover being rotatable on the base.

4,340,028

## OIL COMBUSTION TYPE INFRARED RAY GENERATING APPARATUS

Yoshio Hatta, and Shigeo Suzuki, both of Fukuroi, Japan, assignors to Shizuoka Selki Co., Ltd., Fukuroi, Japan

Filed May 12, 1980, Ser. No. 148,867

Claims priority, application Japan, May 11, 1979, 54-57831; May 11, 1979, 54-57832

Int. Cl.<sup>3</sup> F24C 3/04

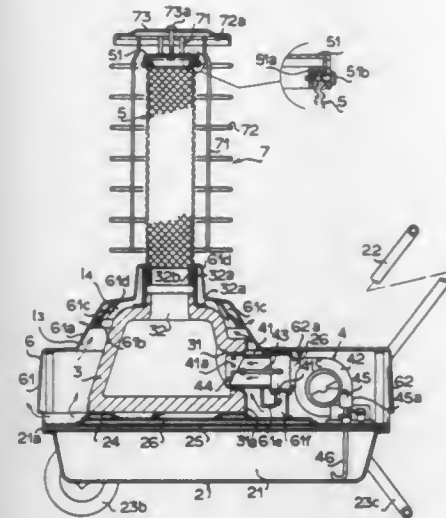
U.S. Cl. 126—92 R

11 Claims

11. An oil combustion type infrared ray generating apparatus comprising a fuel tank composed of a vessel having a flat upper surface, a frustoconical-shaped furnace body having an excellent heat insulating and refractory property and provided at its upper wall with an outlet opening and at its side wall with an inlet opening, a pressure oil jet burner provided with a blower and connected to said inlet opening in the side wall of said furnace body, said furnace body and pressure oil jet burner with said blower

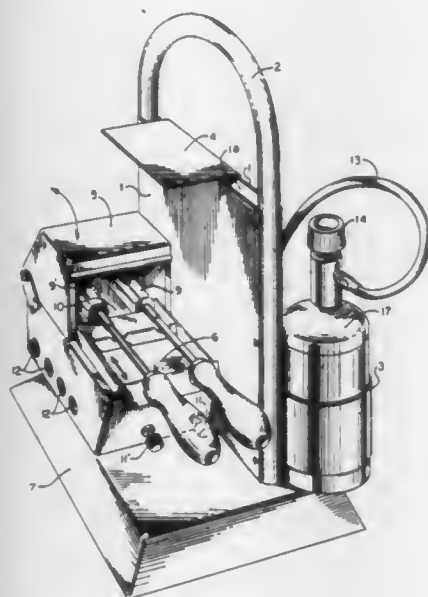


being mounted side by side on said flat upper surface of said fuel tank,  
a red heat cylindrical body erected vertically from an upper part of said furnace body and formed of refractory material, said red heat cylindrical body being permeable to gas and connected to said outlet opening in the upper wall of said furnace body,



said furnace body is covered with an incombustible cover with a gap formed therebetween and a part of the flow of compressed air delivered from the blower of the pressure oil jet burner flows through said gap so as to cool the surrounding of the furnace body, and  
said cover is high in rigidity and strength and vertically erect supporting poles are secured to said cover, an upper part of the red heat cylindrical body being engaged with and supported by said supporting poles.

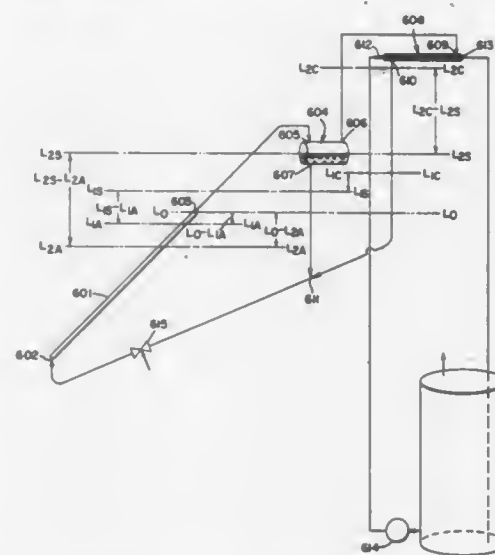
**4,340,029**  
**PORTABLE SOLDERING IRON HEATER SYSTEM**  
Thomas J. Kelly, Jr., Mandeville, La., assignor to Kel-Co Industries, Inc., Mandeville, La.  
Filed Aug. 20, 1980, Ser. No. 179,714  
Int. Cl.<sup>3</sup> F24C 3/00, 5/00  
U.S. Cl. 126—237  
14 Claims



1. A portable and self-contained heating device for heating soldering irons and the like, comprising:  
a support base;  
a fire box containing at least one burner forming a furnace to heat at least one soldering iron located on one side of said base;  
a replaceable fuel supply tank area located on a side of said base opposite from that of said fire box from which area fuel is supplied to said burner;  
laterally extending heat shield means associated with said

base between said fuel supply area and said fire box, said shield means comprising an upwardly extending member having an extended surface extending both laterally and upwardly, for separating physically the side-by-side configured fuel supply area and fire box and for protecting the fuel supply area from the radiated heat of said fire box; and  
a carrying handle attached to said base and positioned centrally for balance so that the unit may be readily carried with one hand.

**4,340,030**  
**SOLAR HEATING SYSTEM**  
Stephen Molivadas, 2800 Upton St., NW., Washington, D.C. 20008  
Continuation-in-part of Ser. No. 457,271, Apr. 2, 1974, Pat. No. 4,211,207. This application May 5, 1978, Ser. No. 902,950  
Int. Cl.<sup>3</sup> F24J 3/02  
U.S. Cl. 126—421  
112 Claims



1. An improved heating system for collecting radiant energy, and absorbing heat from a source of radiant energy, and for transferring the absorbed heat to a substance, of the type having a refrigerant and a principal refrigerant circuit within which the refrigerant is circulated by the net static head, in the principal refrigerant circuit, resulting solely from the source of radiant energy and the local gravitational field, which includes:

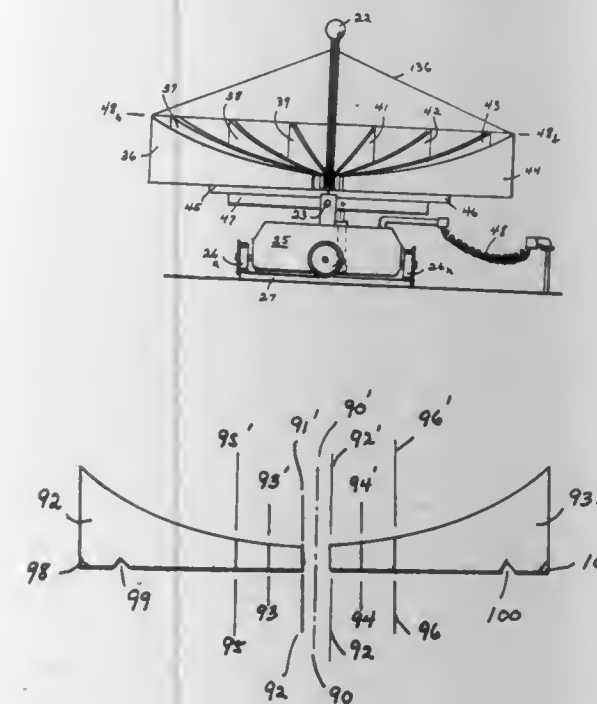
- (a) means for absorbing heat from the source of radiant energy, and for evaporating at least a portion of the liquid refrigerant entering said absorbing means, said absorbing means having one or more inlets, one or more outlets, and one or more refrigerant passageways connecting said one or more inlets of said absorbing means to said one or more outlets of said absorbing means;
- (b) means, having a refrigerant passage and a condensing surface, for condensing essentially all the evaporated portion of the refrigerant exiting said absorbing means and transferring the heat from the refrigerant to the substance, said condensing means having a refrigerant inlet and a refrigerant outlet;
- (c) means for transferring the refrigerant evaporated in said absorbing means to said condensing means; and
- (d) means for returning liquid refrigerant from said condensing means to said absorbing means;

wherein the improvement comprises:

- (a) means for separating the evaporated portion from the non-evaporated portion of the refrigerant exiting said absorbing means, for transferring the evaporated portion of the refrigerant to said condensing means, and for returning the non-evaporated portion of said refrigerant to said one or more inlets of said absorbing means; and
- (b) means for reducing, including stopping, the flow of liquid refrigerant into all said one or more inlets of said absorbing means whenever the pressure of the refrigerant, at a

selected location, including the location of said flow-reducing means, exceeds a preselected value.

**4,340,031**  
**HIGH RATIO SOLAR ENERGY CONCENTRATING COLLECTOR**  
William P. Niedermeyer, 1024 Mt. Mary Dr., Green Bay, Wis. 54301  
Filed Jul. 22, 1980, Ser. No. 171,097  
Int. Cl.<sup>3</sup> F24J 3/02; G02B 5/10  
U.S. Cl. 126—424  
15 Claims

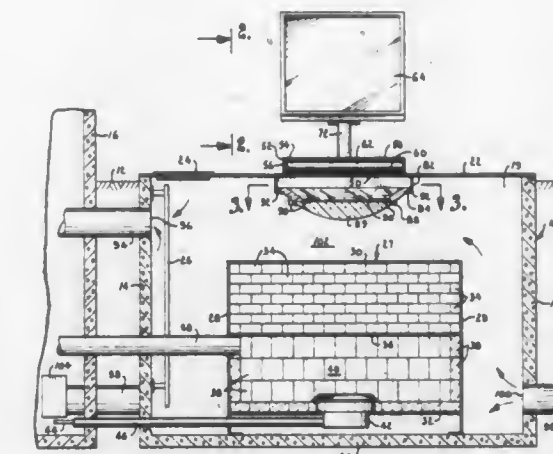


1. A concentrating solar energy collector comprising:  
a disc reflector, said reflector being a paraboloid of revolution;  
a heat absorbing means located at the focal point along the axis of the reflector and arranged for heat transfer to a fluid medium contained therein;  
a reflective disc support means whereby said disc reflector can be pivotally rotated about at least two axes that are perpendicular to each other;  
said disc reflector including a plurality of parabolic shaped supports arranged with planar surfaces parallel to the axis of revolution of said reflector,  
and a reflective surface installed on top of said supports wherein at least some of said shaped supports have a length measured along its major straight edge that is less than the width of the reflector, and wherein an abutment is disposed along said major straight edge, and wherein said abutment coacts with a circular member which is concentric about the axis of the paraboloid.

**4,340,032**  
**SOLAR HEATING SYSTEM**  
James Smith, 2503 Prospect, Kansas City, Mo. 64127  
Filed May 27, 1980, Ser. No. 153,178  
Int. Cl.<sup>3</sup> F24J 3/02  
U.S. Cl. 126—430  
8 Claims

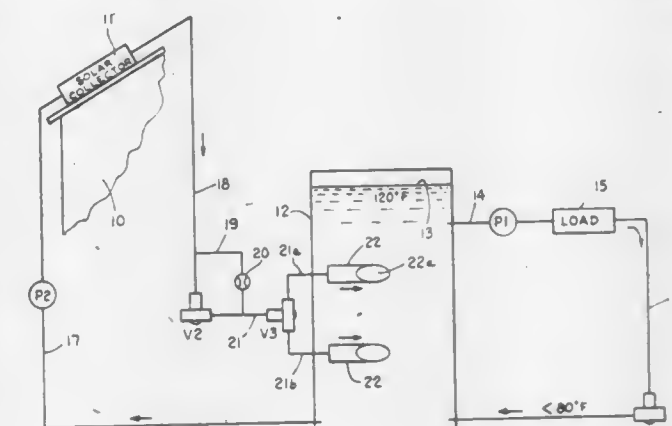
1. Heating apparatus comprising:  
a plurality of walls located beneath the ground surface and defining therebetween an enclosed chamber located remotely of an area to be heated;  
a substantially enclosed shell in said chamber spaced inwardly of said walls to provide a space in the chamber exteriorly of said shell for accommodating air to be heated;  
a plurality of heat retaining elements arranged in a mass in said shell, said elements being adapted to retain heat;

an air tight cavity located immediately beneath said heating retaining elements;  
a transparent panel on said chamber located to direct sun beams into the chamber;  
lens means for concentrating the sun beams passing through said panel onto said shell for heating of said heat retaining elements;  
a burner in said cavity operable to selectively apply supplemental heat to said shell to heat said heat retaining elements;



an exhaust conduit communicating with said cavity for exhausting the combustion gases of the burner;  
a cold air return conduit communicating at one end with the area to be heated and at the other end with said space to deliver return air thereto;  
a hot air delivery conduit communicating at one end with said space and at the other end with the area to be heated to deliver hot air thereto; and  
means for effecting passage of air through said return conduit and said space to said delivery conduit to direct hot air to the area to be heated.

**4,340,033**  
**HEAT COLLECTING, UTILIZING AND STORAGE APPARATUS AND METHOD**  
James M. Stewart, P.O. Box 6161, Greenville, S.C. 29606  
Filed Mar. 5, 1979, Ser. No. 17,410  
Int. Cl.<sup>3</sup> F24J 3/02  
U.S. Cl. 126—437  
6 Claims



1. Heat collecting, utilizing and storage apparatus comprising:  
a heat collector for heating a liquid;  
a liquid storage tank;  
means connecting said heat collector and storage tank for liquid flow therebetween;  
a first line carrying liquid from an upper portion of said liquid storage tank and delivering same to a load for utilization of the heat therein;  
a second line delivering liquid from said load to said liquid storage tank at a lower portion thereof;



a temperature operated valve interposed in said second line permitting such delivery of liquid to said liquid storage tank only when the temperature of the liquid utilized by the load is reduced below a predetermined value through heat exchange therein; and

said temperature operated valve being operable in response to the temperature of said liquid to allow said liquid to be reduced to its lowest possible temperature as required by said load prior to re-entering said tank at said lower portion and strata thereof;

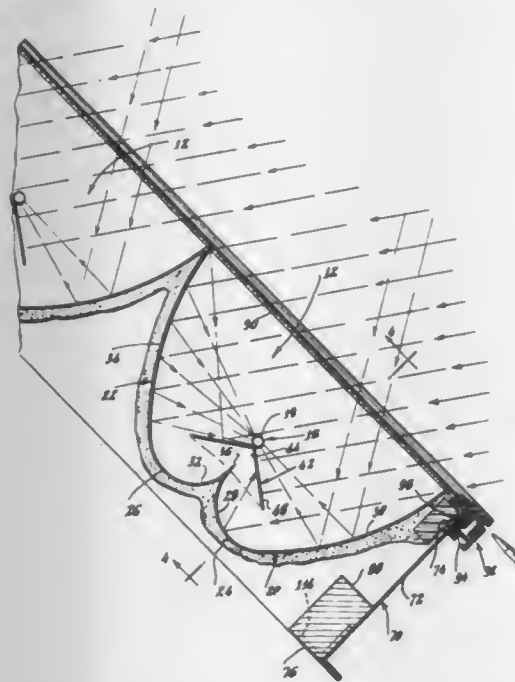
means pumping liquid from said lower portion of said storage tank to said heat collector;

whereby efficiency in the utilization of the heat collector is achieved through reducing the temperature of the liquid more efficiently prior to passage therethrough and thermal efficiency in the storage of said liquid is enhanced by efficient stratification of said liquid therein.

**4,340,034**  
**SOLAR ENERGY COLLECTING APPARATUS**  
 Thomas P. Hopper, Blue Hills Rd., Durham, Conn. 06422  
 Filed Sep. 17, 1979, Ser. No. 75,891  
 Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—438

18 Claims



1. An apparatus for collecting solar energy comprising: elongate reflector means defining an elongate focal region and having a reflective inner surface, which is generally parabolic in cross-section, for reflecting solar energy to said focal region, said inner surface further partially defining an enclosed space and being formed with an elongate peak which projects inwardly of said enclosed space and divides said inner surface into first and second portions extending in mutually parallel relation; and

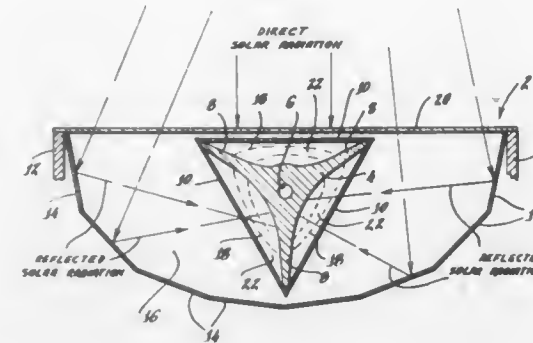
absorber means for receiving solar energy directly incident thereon and reflected thereto by said inner surface of said reflector means and from which heat generated by said received energy may be conducted, said absorber means being mounted in said focal region spaced from said reflector means and including vane means comprising a pair of vanes each having an elongate extreme free end and projecting to a position with said free end adjacent and spaced laterally from one side of said peak, said free ends of said vanes extending in generally mutually parallel relation to define a plane therebetween, said absorber means further being mounted in said focal region with said peak intersecting said plane whereby all straight line paths from the free end of one said vane to the free end of the other said vane are obstructed by said peak; whereby all straight line paths of energy reflected from one of said portions of said inner surface to the region between said peak and said absorber means toward the other of said

portions are also obstructed; and whereby such reflected energy is incident on said absorber means and prevented from being reflected out of said apparatus.

**4,340,035**  
**SOLAR COLLECTOR**  
 James A. Begun, 25 State St., Montpelier, Vt. 05602  
 Filed Apr. 24, 1980, Ser. No. 143,171  
 Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—438

11 Claims



11. In a solar energy collector of the type including an inner core for absorbing energy and a fluid flow passageway defined in said inner core through which fluids flow to receive heat energy transferred thereto from said inner core, the improvement comprising:

a triangular shaped glass housing enclosing said inner core and extending longitudinally therewith,

said glass housing reflecting infrared radiation directed thereon but transmitting visible wavelengths of energy inwardly therethrough towards said inner core,

said inner core having three outwardly extending projections that extend proximate to the inner surface of said glass housing for absorbing said visible wavelengths of energy transmitted through said glass housing, each of said three outwardly extending projections being directed towards a different corner of said triangular glass housing,

said inner core and said outwardly extending projections being coated with a material adapted to absorb said visible wavelengths of energy and emit a corresponding quantity of infrared energy,

a mirrored surface arranged for reflecting solar energy towards said triangular glass housing, and

a heat insulated outer chamber for enclosing said inner triangular glass housing and for providing insulation between said inner triangular glass housing and its surrounding environment to retard heat transfer from within said inner triangular glass housing to said surrounding environment, said outer chamber being defined between said mirrored surface and a sheet of glass above said inner glass housing,

whereby said infrared energy radiated by said inner core is maintained proximate to said inner core by the reflective effect of the inner surface of said glass housing so that a substantial portion of said infrared energy radiated by said inner core is transferred to fluid within said fluid flow passageway defined through said inner core.

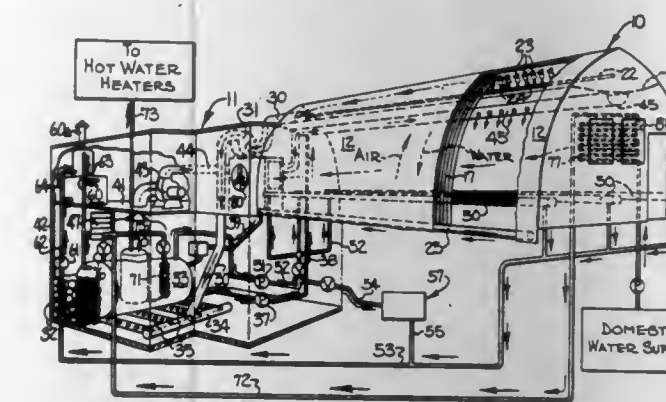
**4,340,036**  
**SOLAR HEATING SYSTEM FOR A GREENHOUSE OR OTHER BUILDING**  
 Robert H. Williams, Maggie Valley, N.C., assignor to Meadowbrook Resort, Inc., Maggie Valley, N.C.  
 Division of Ser. No. 85,380, Oct. 16, 1979, Pat. No. 4,289,116.  
 This application Mar. 18, 1981, Ser. No. 245,024  
 Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—452

4 Claims

1. A method for collecting solar heat radiation in a building,

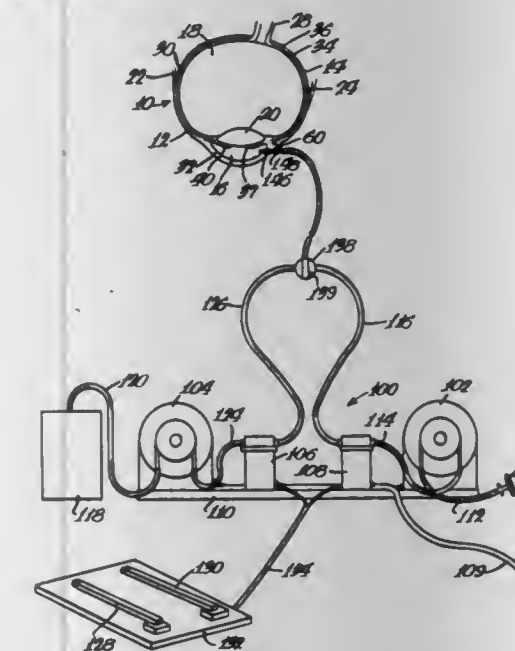
such as a greenhouse, having walls defining an enclosed interior with at least one of the walls having a light transmissive area for admitting light into the building, said method comprising positioning a plurality of elongate radiation absorptive, heat conductive strips beneath a light transmissive area of the wall of said building for receiving solar radiation and being heated thereby, with the heat conductive strips extending longitudinally downwardly and in laterally spaced relation



from one another for admitting light therebetween into the building while also partially shading the interior of the building, directing a stream of heat transfer liquid onto the surface of the strips for flowing downwardly therealong in contact with the strips for transferring heat therefrom, and receiving the heated liquid as it flows from the heat conductive strips and directing the liquid to a storage reservoir to permit subsequent utilization of the heat content thereof.

**4,340,037**  
**METHOD TO PREVENT COLLAPSE OF THE ANTERIOR CHAMBER UTILIZING A TERMINAL WITH EYE ENGAGING DETENTS**  
 Andrew O. Lewicky, 2716 Blackhawk Rd., Wilmette, Ill. 60091  
 Division of Ser. No. 163,518, Jun. 27, 1980. This application Jul. 17, 1981, Ser. No. 284,570  
 Int. Cl.<sup>3</sup> A61B 19/00; A61M 7/00  
 U.S. Cl. 128—1 R

6 Claims



1. A method of performing ophthalmic surgical procedures, comprising the steps of:

providing an infusion terminal with a shank and detent means extending radially outward from said shank,

making an incision into an eye to define an opening spanning a distance slightly greater than the maximum diametric span of said detent means and said shank,

inserting said infusion terminal into the opening of said eye, and

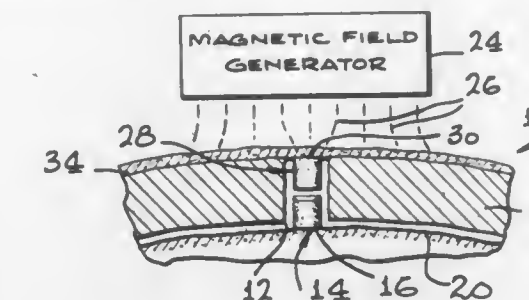
fitting said detent means into interlocking engagement with

said eye to detachably connect said infusion terminal to said eye.

**4,340,038**  
**MAGNETIC FIELD CONCENTRATION MEANS AND METHOD FOR AN IMPLANTED DEVICE**  
 Brian D. McKean, Sepulveda, Calif., assignor to Pacesetter Systems, Inc., Sylmar, Calif.  
 Filed Dec. 15, 1980, Ser. No. 216,540  
 Int. Cl.<sup>3</sup> A61B 5/02

U.S. Cl. 128—1.3

12 Claims

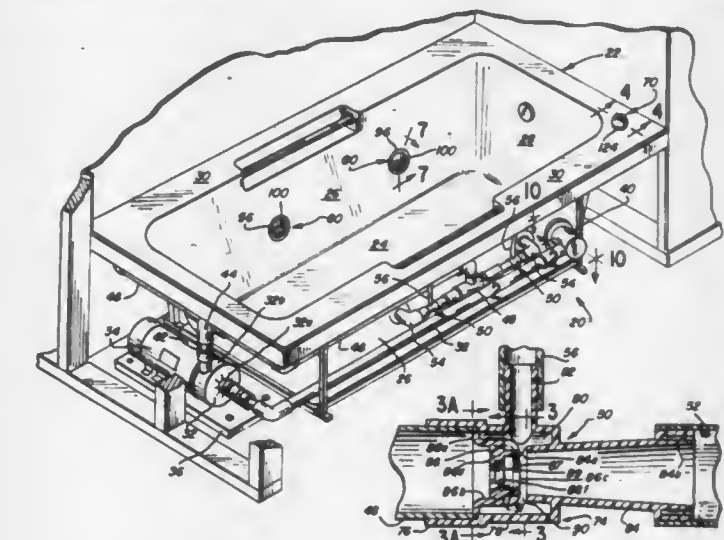


1. In a system including an implanted device having a magnetic field pick-up means for converting magnetic energy to electrical energy for energizing said implanted device, and an external magnetic field generator located so that magnetic lines of flux generated thereby intersect said pick-up means, a means for concentrating a portion of said magnetic lines of flux at said pick-up means comprising a metallic slug located between said generator and said pick-up means, thereby concentrating said magnetic lines of flux at said pick-up means.

**4,340,039**  
**HYDROMASSAGE APPARATUS**  
 Neil K. Hibbard, Waukesha; Cliff J. Kinsey, Burlington, and Clyde G. Belongia, Waterford, all of Wis., assignors to Sta-Rite Industries, Inc., Milwaukee, Wis.  
 Filed Jun. 19, 1980, Ser. No. 161,162  
 Int. Cl.<sup>3</sup> A61H 9/00

U.S. Cl. 128—66

7 Claims



1. In a hydromassage system, an air injector for introducing air into the flow of water:

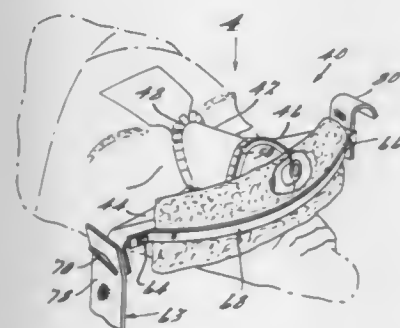
said injector comprising an elongated, tubular housing having an inlet end section for receiving a flow of water moving in an axial direction and an outlet end section for discharging a high velocity, turbulent flow of air and water;

said inlet end section having a substantially cylindrical body with a downstream end secured to an inner end portion of said outlet end section and defining an annular air chamber around said inner end portion;



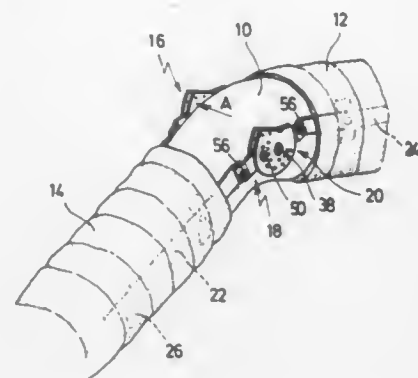
means for directing air into said annular air chamber; said outlet end section comprising a divergent nozzle structure in coaxial alignment with said cylindrical body and increasing in transverse dimension from an inlet end toward an outer end portion, said inlet end being adjacent and downstream of said annular air chamber; and nozzle insert means comprising an annular, outwardly extending radial flange secured at the outer periphery to said body, a cylindrical skirt wall secured to said flange and extending downstream, a wall segment extending radially from said skirt wall and secured thereto by arm segments, a center nozzle orifice in said wall segment that forms a primary, high velocity jet stream, an annular skirt wall secured to and extending downstream of said wall segment, said annular skirt wall being of a larger diameter than said nozzle orifice, an annular front end wall secured to and extending downstream of said annular skirt wall, said front end wall being of a larger diameter than said skirt wall such that said nozzle orifice, said annular skirt wall and said front end wall provide a stepped diameter orifice structure, and one or more outer passages formed around said primary jet stream adjacent to and upstream of said front end wall and adjacent to and downstream of said inlet end of said outlet end section for directing one or more secondary high velocity streams of water inwardly toward said primary jet stream for turbulent intermixing therewith, wherein said high velocity streams of water from said nozzle insert means entrains air from said annular air chamber into said high velocity streams by venturi action in a region between said front end wall and said inlet end of said inlet end section.

**4,340,040**  
**NOSE SPLINT**  
Richard E. Straith, 625 Hillcrest Dr., Bloomfield Hills, Mich. 48013  
Filed Jan. 2, 1981, Ser. No. 222,001  
Int. Cl.<sup>3</sup> A61F 5/08  
U.S. Cl. 128—76 C 10 Claims



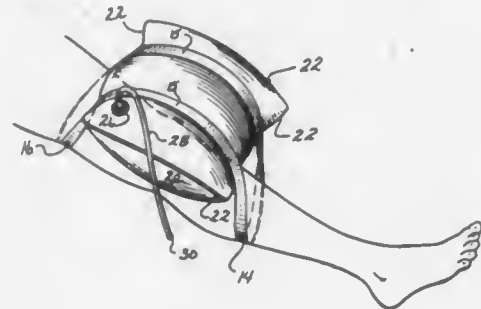
1. A surgical splint for effecting controlled support of the nasal pyramid incident to fracture or dorsal resection thereof, said splint comprising a bridge portion of pyramid configuration, an elongated wing on each side of said bridge portion extending laterally from the base thereof, and means at the ends of said wings for attaching an elastic member for exerting a bias on said wings thereby to contract said bridge portion so to reduce the base dimension of said pyramid, the attaching means on said wings being disposed on a reentrantly folded portion to facilitate adjustment thereof.

**4,340,041**  
**ARTICULATE SPLINT FOR SURGICAL PURPOSES**  
Friedhelm Frank, Karlsruhe-Durlach, Fed. Rep. of Germany, assignor to Blanc GmbH & Co., Oberderdingen, Fed. Rep. of Germany  
PCT No. PCT/DE80/00008, § 371 Date Sep. 24, 1980, § 102(e) Date Sep. 17, 1980  
PCT Filed Jan. 24, 1980, Ser. No. 207,971  
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1979, 7901783[U]  
Int. Cl.<sup>3</sup> A61F 3/00  
U.S. Cl. 128—80 C 7 Claims



1. An articulated surgical splint comprising two anchor bars and a joint, said joint including a pair of plates, means securing said plates to each other in spaced parallel relationship, a first stub having a portion received between said plates whereby said first stub is guided thereby, means connecting said first stub to said plates for pivotal movement around an axis perpendicular to the planes of the plates, a second stub secured to said plates, a series of apertures in at least one of said plates and stop means adapted to be set into said apertures for adjusting the relative angular position of said stubs and means for detachably connecting said anchor bars to said stubs.

**4,340,042**  
**INFLATABLE SPLINT**  
Dennis M. Smith, South Bend, Ind., assignor to B.A.G., Inc., South Bend, Ind.  
Filed Aug. 11, 1980, Ser. No. 176,989  
Int. Cl.<sup>3</sup> A61B 17/18; A61F 5/04  
U.S. Cl. 128—87 R 2 Claims



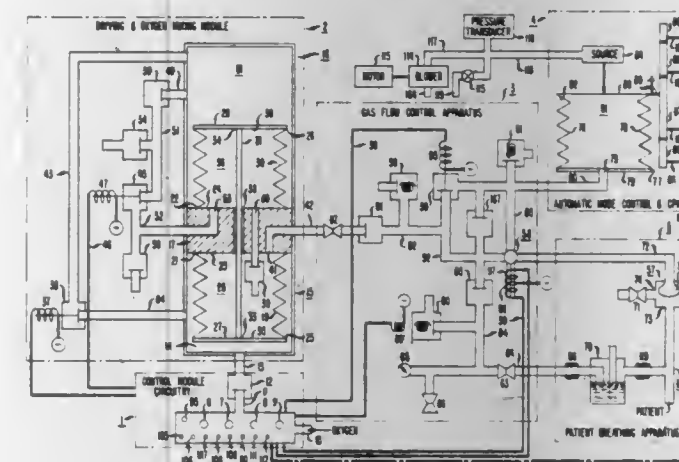
1. An inflatable splint comprising a body and a strap; said strap including first and second interconnected strap loop parts; said body being of single piece form and composed of a fluidtight expandable material and including valve means for filling and emptying the body of a fluid; said body being defined by a front surface, a rear surface, and a peripheral edge having opposed portions; said first strap loop part being secured to said body front surface adjacent a portion of said peripheral edge and extending from said body; said second strap loop part being secured to said body front surface adjacent an opposed portion of said peripheral edge and extending from said body oppositely of said first strap loop part; said strap extending at two-spaced locations across said body front.

surface between said strap loop parts to form a resistance member when said body is inflated.

**4,340,043**  
**ADHESIVE-COATED SHEET MATERIAL INCORPORATING ANTI-BACTERIAL SUBSTANCES**  
Donald E. Seymour, Old Hatfield, England, assignor to Smith & Nephew Research Ltd., England  
PCT No. PCT/GB79/00188, § 371 Date Jul. 17, 1980, § 102(e) Date Jul. 11, 1980, PCT Pub. No. WO80/01041, PCT Pub. Date May 29, 1980  
PCT Filed Nov. 15, 1979, Ser. No. 198,106  
Claims priority, application United Kingdom, Nov. 17, 1978, 45058/78  
Int. Cl.<sup>3</sup> A61F 13/00; A61L 15/00  
U.S. Cl. 128—132 D 20 Claims

1. An adhesive-coated sheet material which is liquid-imperious but has a high moisture vapor permeability whereby it is suitable as a wound or burn dressing, surgical drape, or like wound-covering material, which comprises a suitable sheet having coated on one surface thereof a continuous layer of an adhesive which has incorporated therein a uniform known amount per unit area an amount of an antibacterial silver salt sufficient to kill bacteria in the wound and surrounding covered skin area.

**4,340,044**  
**VOLUME VENTILATOR**  
Donald Levy, River Vale, N.J., and Tibor Ruzs, Pittsfield, Mass., assignors to Berkshire Research Partners, New York, N.Y.  
Filed Mar. 20, 1980, Ser. No. 131,920  
Int. Cl.<sup>3</sup> A61M 16/00  
U.S. Cl. 128—204.21 30 Claims



1. A volume ventilator for artificial ventilation of a patient during inspiration and expiration cycles of the ventilator comprising patient breathing apparatus, gas flow control apparatus operably connected to said patient breathing apparatus for supplying a delivered air/oxygen gas mixture to said breathing apparatus, a driving and air/oxygen mixing means operably connected to said flow control apparatus and controllable for delivering a prescribed mixture of air/oxygen gas to said flow control apparatus, and control means operably connected to said flow control apparatus and said driving and air/oxygen mixing means including adjustment means cooperating with said flow control apparatus and said driving and air/oxygen mixing means for setting a prescribed minute volume, respiratory rate and inspiration-to-expiration ratio, said control means comprising control circuitry activated by settings of said adjustment means for furnishing control signals corresponding to said prescribed minute volume, respiratory rate and inspiration-to-expiration ratio for

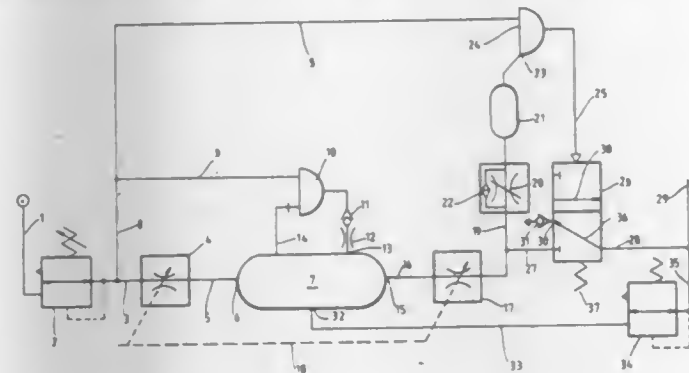
controlling the driving and air/oxygen mixing means to mix and deliver said air/oxygen gas mixture to said gas flow control apparatus and for controlling the operation of said gas flow control apparatus for supplying to said patient breathing apparatus said air/oxygen gas mixture at said prescribed minute volume, respiratory rate and inspiration-to-expiration and the air/oxygen concentration of said predetermined volume of air/oxygen gas mixture, said driving and air/oxygen mixing means comprises a driving chamber, said control means comprises a plurality of flow valve means actuatable for delivering oxygen gas from a source to said driving chamber, said control circuitry further comprises circuitry responsive to furnished ones of said control signals for actuating predetermined ones of said valve means for delivering said oxygen gas to said driving chamber during an inspiration cycle of said ventilator, and said driving and air/oxygen mixing means further comprises a driving chamber for receiving said oxygen under pressure during an inspiration cycle of the ventilator from said supplying means, a storing chamber for storing the oxygen receivable from said driving chamber, valve means controlled by said control circuitry during an expiration cycle of said ventilator for communicating the oxygen from said driving chamber to said storing chamber, a mixing bellows mounted within said storing chamber and having an interior bellows mixing chamber for storing an air/oxygen mixture, valve means controlled by said control circuitry during an inspiration cycle of said ventilator for communicating some or all of the oxygen from said storing chamber to said bellows mixing chamber, valve means actuatable during an inspiration cycle of said ventilator in response to differential pressures for exhausting oxygen in said storing chamber to the atmosphere and for mixingly admitting air into said bellows mixing chamber, a drive bellows mounted within said driving chamber and having an interior drive bellows chamber for storing an air/oxygen mixture, means operable during an expiration cycle of said ventilator for communicating the air/oxygen mixture from said bellows mixing chamber to said drive bellows chamber, means communicating the air/oxygen mixture in said drive bellows chamber to said gas flow control apparatus; a spacing member spaced between said driving and storing chambers and having first and second surfaces each of which is affixed to a fixed end of said mixing and driving bellows, plate members each of which is secured to a respective movable end of each respective said bellows for providing respective inner chambers, and a rigid rod extending through a bore in said spacing member and secured at ends of said rod to facing surfaces of said plate members.

**4,340,045**  
**LUNG VENTILATOR**  
Roger E. W. Manley, Farnham Common, England, assignor to Compair Maxam Limited, Cornwall, England  
Filed Aug. 13, 1980, Ser. No. 177,831  
Claims priority, application United Kingdom, Sep. 25, 1979, 7933238; Nov. 27, 1979, 7940968  
Int. Cl.<sup>3</sup> A61M 16/00  
U.S. Cl. 128—204.24 14 Claims

1. A lung ventilator including a reservoir, first and second inlets to said reservoir, an inlet connection communicating with said inlets for a supply of respirable gas to said reservoir, first and second outlets from said reservoir, a face mask con-

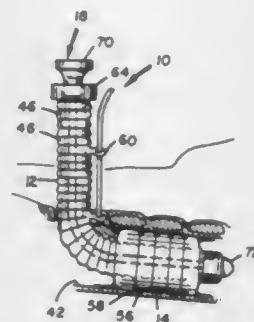


nection for a face mask having a face valve, means communicating said face mask connection with said first and second outlets, a first flow regulator connected between said first inlet and said inlet connection, said first flow regulator providing a predetermined minimum minute volume of gas flow for ventilation, a first valve device connected between said second inlet and said inlet connection, said first valve device being constructed to open when the pressure in said reservoir falls below a first predetermined value and to close when said pressure rises to a second predetermined value higher than said first predetermined value, a second flow regulator and a second valve device connected between said first outlet and said face mask connection, said second flow regulator providing an inspiratory flow rate which is greater than the flow rate pro-



vided by said first flow regulator, and said second valve device being downstream of said second flow regulator, timing means controlling said second valve device, said timing means being operative to cause said second valve device to provide an intermittent flow of gas for ventilation, a demand valve between said second outlet and said face mask connection, and means which is operative to prevent said second valve device from allowing any flow of gas from said first outlet to said face mask connection when the pressure in said reservoir is below a third predetermined value which is higher than said second predetermined value, and said means also being operative to cause said intermittent flow of gas through said second device to be resumed to provide ventilation when said pressure in said reservoir rises above a fourth predetermined value which is higher than said third predetermined value.

**4,340,046**  
**STATIC TRACHEOSTOMY TUBE**  
Everard F. Cox, 4510 Mt. Carmel Rd., Hampstead, Md. 21074  
Filed Dec. 8, 1980, Ser. No. 214,243  
Int. Cl.<sup>3</sup> A61M 25/02  
U.S. Cl. 128—207.17



1. A static tracheostomy tube for use in the trachea of respiratory patients, comprising:  
a flexible tube means, said flexible tube means having a first end and a second end, said flexible tube means having a first passageway therethrough, said flexible tube means being inserted into a trachea of a respiratory patient thereby defining a second passageway therebetween,  
an inflatable cuff means, said inflatable cuff means encircling the outside of said flexible tube means, said inflatable cuff means being spaced from said first end of said flexible tube means and being affixed thereto, said inflatable cuff means

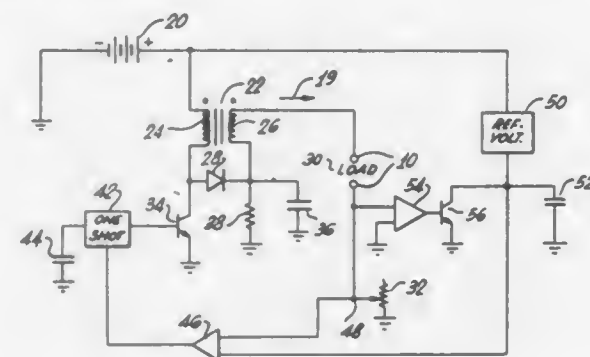
having a plurality of interfacing flutes, said flutes having a configuration of corrugated-like convoluted rings located around said inflatable cuff means, said corrugated-like convoluted rings being adjacent to each other in interface, said corrugated-like convoluted rings forming said flutes and providing a flexibility to prevent kinking, said inflatable cuff means having a plurality of constricting bands, said constricting bands being located around said inflatable cuff means, each of said constricting bands being located in the crease of a pair of adjoining and adjacent interfacing flutes;

an inflating means, said inflating means being connected to said inflatable cuff means and communicating internally therewith, said inflatable cuff means being capable of closing said second passageway in said trachea, of said respiratory patient, into which it is inserted and subsequently inflated by said inflating means;

an obturator means, said obturator means being malleable yet rigid, said obturator means being removably insertable in and through said first passageway in said flexible tube means; and

locking means capable of being removably closed around the outside of said flexible tube means and non-destructively and releasably locking thereto at any point thereon in association with said respiratory patient.

**4,340,047**  
**IONTOPHORETIC TREATMENT APPARATUS**  
Robert Tapper, 175 Acari Dr., Los Angeles, Calif. 90049, and Gordon F. Sweeley, Grants Pass, Oreg., assignors to Robert Tapper, Los Angeles, Calif.  
Division of Ser. No. 952,341, Oct. 18, 1978, Pat. No. 4,301,794.  
This application Feb. 8, 1980, Ser. No. 119,844  
Int. Cl.<sup>3</sup> A61N 1/30  
U.S. Cl. 128—207.21



1. An apparatus for applying an iontophoretic treatment to a living body, comprising:  
a pair of electrodes adapted to contact the skin of the body, in spaced relationship to each other;  
a supply capacitor coupled across the electrodes for supplying electrical current for conduction through the body, from one electrode to the other;  
switch means for charging the supply capacitor at regular intervals of time; and  
means for controllably adjusting the frequency at which the switch means operates to charge the supply capacitor, to adjust the magnitudes of the voltage on the capacitor and the electrical current supplied by the capacitor, correspondingly.

**4,340,048**  
**SELF-DRIVEN HYPODERMIC INJECTOR**  
James B. Eckenhoff, Los Altos, Calif., assignor to ALZA Corporation, Palo Alto, Calif.  
Filed Mar. 28, 1981, Ser. No. 246,595  
Int. Cl.<sup>3</sup> A61J 7/00  
U.S. Cl. 128—213 R

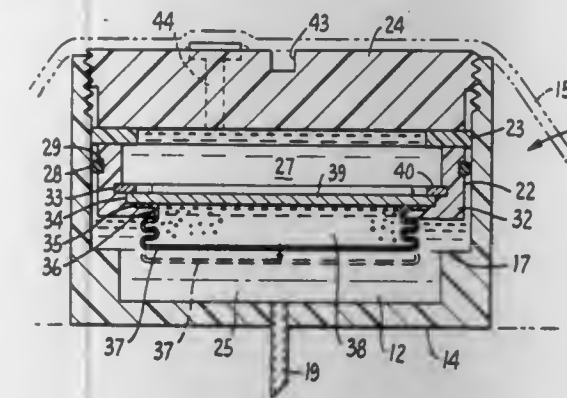
1. A self-driven hypodermic injector for injecting an injecta-

ble pharmaceutical preparation into a patient according to a controlled dosage regimen comprising

(a) a hollow closed rigid body;

(b) a water imbibing member mounted within the body that divides the lumen of the body into a first compartment adapted to hold the pharmaceutical preparation and a second compartment adapted to hold an aqueous liquid, the member comprising:

(i) a rigid semipermeable wall that faces the second compartment;

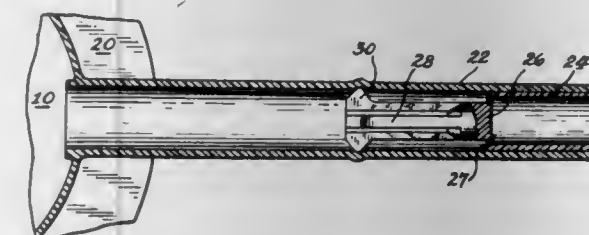


(ii) an expandable impermeable wall that faces the first compartment; and

(iii) a water imbibing composition contained between the rigid semipermeable wall and the expandable impermeable wall; and

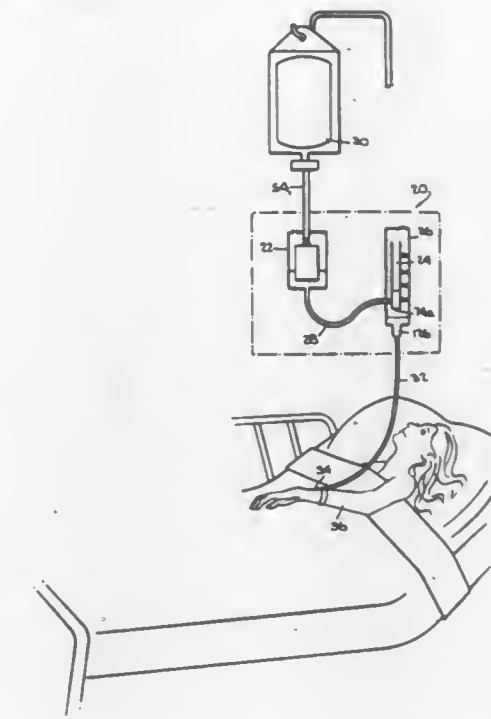
(c) a conduit that extends through the wall of the body, one end of which opens into the first compartment and the other end of which is adapted to pierce the skin of the patient.

**4,340,049**  
**BREAKAWAY VALVE**  
John M. Munsch, Libertyville, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.  
Filed Oct. 18, 1979, Ser. No. 86,102  
Int. Cl.<sup>3</sup> A61M 5/00, 1/00; F16K 13/04  
U.S. Cl. 128—214 R



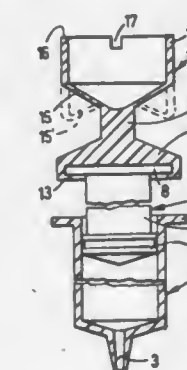
1. A valve inside a flexible tube which comprises:  
(a) a tubular portion having a closed end to prevent fluid flow in the tube;  
(b) a handle extending from and integral with the closed end of the tubular portion;  
(c) a zone of weakness positioned whereby at least a portion of the closed end is removable by manipulating the handle to separate said closed end from the tubular portion to permit fluid flow through the valve; and  
(d) projection means radially outwardly extending from the handle, said projection means having sufficient frictional contact with the interior surface of the flexible tube so that after separation of the handle from the tubular portion the handle can be moved away from the tubular portion and remain in any selected position in the tube, away from the tubular portion, to assure uninterrupted fluid flow.

**4,340,050**  
**MEDICAL FLUID FLOW RATE INDICATING/CONTROLLING DEVICE**  
Douglas G. Noiles, New Canaan, Conn., assignor to Delmed Inc., Canton, Mass.  
Filed Dec. 29, 1980, Ser. No. 220,831  
Int. Cl.<sup>3</sup> A61M 5/14  
U.S. Cl. 128—214 C



1. A liquid flow rate indicating/controlling device comprising:  
(a) a first chamber vented to the atmosphere and having a liquid inlet in fluid communication with a liquid supply, a liquid outlet, and means to maintain the height of liquid in the chamber essentially constant;  
(b) a second chamber vented to the atmosphere, in fluid communication with the liquid outlet of the first chamber for receiving liquid therefrom, and having a thin-wall orifice plate at a predetermined point, said plate having an orifice through which liquid received from the first chamber passes out of the second chamber, the height of liquid in the second chamber above the orifice indicating the flow rate through the orifice; and  
(c) means for setting the pressure on the liquid received from the first chamber just before the liquid passes through the orifice.

**4,340,051**  
**FINGER-PRESSURE CUSHIONING AND INDICATING DEVICE, AND SYRINGE INCLUDING SAME**  
Saul Leibinsohn, 11 Oley Hagardom, Rishon LeZion, Israel  
Filed Jan. 12, 1981, Ser. No. 224,109  
Int. Cl.<sup>3</sup> A61M 5/00  
U.S. Cl. 128—215



1. A device for application to a syringe, or other finger-pres-



sure actuated article which includes a displaceable pressure-applying element adapted to be displaced by the user's finger when actuating same, characterized in that said device includes a yieldable finger-engaging member comprising an attaching section at one end for attaching same to the displaceable pressure-applying element, a finger-engageable section at the opposite end for engagement by the user's finger, and an intermediate yielding section between the two end sections and adapted to soften the pressure transmitted from the user's finger to the displaceable pressure-applying element and to provide an indication to the user when a predetermined pressure has been applied.

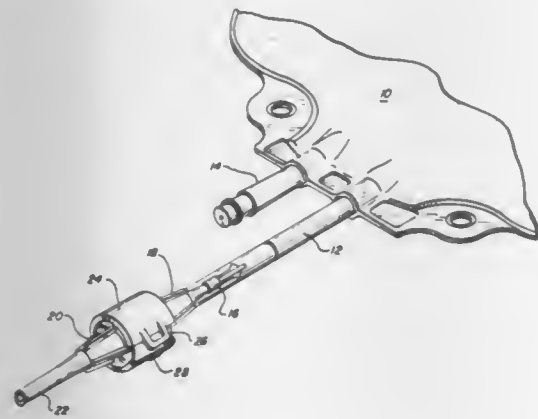
4,340,052

## CONNECTION SITE PROTECTOR

T. Michael Dennehey, Arlington Heights; Richard J. Greff, Ingleside, and Ludwig Wolf, Jr., Crystal Lake, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.  
Filed Oct. 7, 1980, Ser. No. 194,733  
Int. Cl.<sup>3</sup> A61M 3/00

U.S. Cl. 128—247

2 Claims



1. The combination of a connection site in contact with and covered by a material containing a sterilizing agent, and a manually openable and closable protector of generally cylindrical shape;  
said protector being hollow and open at each end when in the closed position;  
said protector comprising at least two hinged and generally semicircular segments, the inner wall of said segments adapted to surround and protect from contamination the covered connection site when said protector is in a closed position and surrounding said material containing a sterilizing agent.

4,340,053

## MOLDED BODY COMPRISING VEGETABLE OIL FOR GENERATING AEROSOL FOR TREATING ATHLETE'S FOOT

Kiichiro Sarui, 26-15 Takadanobaba 4-chome, Shinjuku-ku, Tokyo, Japan

Filed Oct. 22, 1980, Ser. No. 199,544

Claims priority, application Japan, Jun. 20, 1980, 55-82848  
Int. Cl.<sup>3</sup> A61F 7/00; A61K 9/70, 47/00; A61M 11/00

U.S. Cl. 128—260

10 Claims

1. A method for treating athlete's foot fungal infection which comprises contacting a portion of the skin afflicted with such fungus with an aerosol produced by heating a molded body comprising a vegetable oil containing composition which is solid at room temperature and which melts upon heating to generate said aerosol, said aerosol comprising an effective amount of oxidation products of such vegetable oil to destroy said fungus.

7. A molded body for treating athlete's foot comprising a vegetable oil containing composition which is solid at room temperature and which melts upon heating to form an aerosol

containing an effective amount of oxidized products of said vegetable oil to treat athlete's foot.

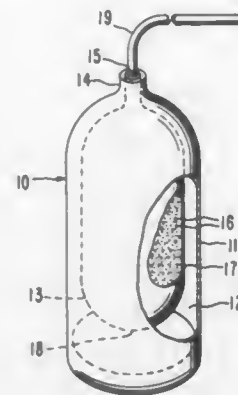
4,340,054

## DISPENSER FOR DELIVERING FLUIDS AND SOLIDS

Alan S. Michaels, San Francisco, Calif., assignor to ALZA Corporation, Palo Alto, Calif.  
Filed Dec. 29, 1980, Ser. No. 220,789  
Int. Cl.<sup>3</sup> A61M 7/00

U.S. Cl. 128—260

15 Claims



1. In an osmotically driven dispenser comprising an inner flexible container adapted to contain a useful agent, an intermediate layer of an osmotically effective solute at least partly covering the container, and an outer shape-retaining microporous membrane surrounding the layer of osmotically effective solute, said microporous membrane housing in its micropores a material permeable to the passage of fluid, and a port that extends from the interior of the container to the exterior of the dispenser through which agent may be charged into the container and dispensed from the container over time.

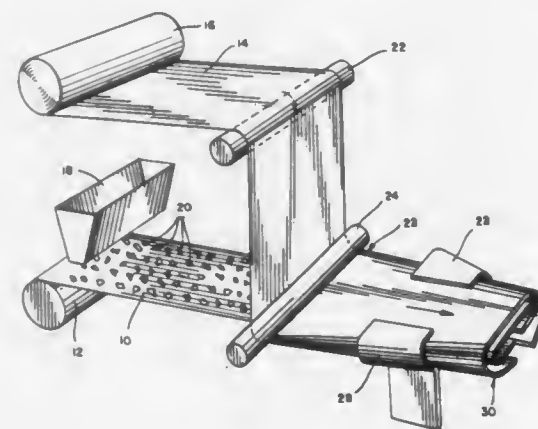
4,340,055

## IMPREGNATED TAMPON AND METHOD OF FABRICATING SAME

Vincent R. Sneider, 3422 Hallcrest Dr. NE., Atlanta, Ga. 30319  
Filed Oct. 1, 1980, Ser. No. 192,720  
Int. Cl.<sup>3</sup> A61F 13/20

U.S. Cl. 128—270

16 Claims



1. A method of fabricating a medicated tampon comprising the steps of:  
providing an absorbent corpus in sheet form;  
providing an overwrap in sheet form about said absorbent corpus, and  
disposing a medicament between said overwrap and the absorbent corpus and overlaying the sheets and forming said sheets into the desired shape of the tampon with the overwrap on the outside so that the medicament is disposed nearest the outside of the tampon when inserted into an anatomical cavity.

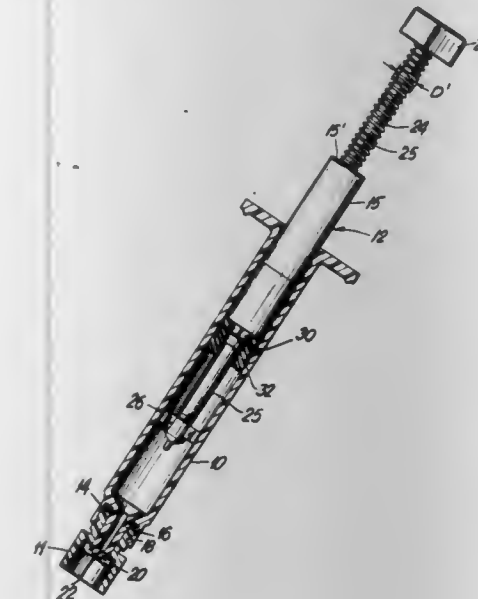
4,340,056

## NON-AIR-ENTRAINING MIXER/DISPENSER

Robert A. Erb, Valley Forge, Pa., assignor to The Franklin Institute, Philadelphia, Pa. and RSP Co., Stamford, Conn.  
Filed Feb. 2, 1981, Ser. No. 230,651  
Int. Cl.<sup>3</sup> A61J 1/00

U.S. Cl. 128—272.1

6 Claims



1. An apparatus for mixing and dispensing fluids without the occlusion of air comprising:  
a syringe-type cylindrical body having a reduced portion at one end;  
a cap having a hypodermic needle penetrable septum disposed in said cap;  
mating means between said reduced portion of said cylindrical body and said cap for hermetically sealing said septum to said reduced cylinder end;  
a plunger assembly insertable in the other end of said cylindrical body, said plunger assembly comprising a shaft, a mixing head disposed at one end of said shaft, a knob disposed at the other end of said shaft, a piston reciprocally riding said shaft between said head and knob for hermetically and slidably filling the spacing between said shaft and the cylinder walls, a spring disposed between said knob and said piston and urging said piston towards said mixing head; and  
spacer means adapted for insertion between said knob and said piston for locking the piston on said shaft, and converting the mixing function to a dispensing function.

4,340,057

## RADIATION INDUCED GRAFT POLYMERIZATION

Daniel R. Bloch; Charles N. Odders, and John R. Rogers, all of Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Dec. 24, 1980, Ser. No. 219,669

Int. Cl.<sup>3</sup> A61F 13/18

U.S. Cl. 128—284

21 Claims

1. Method of preparing moisture-swellaable absorbent material comprising:  
(a) treating a substrate capable of forming graft polymers with an acrylate salt under the influence of high energy ionizing radiation, with an aqueous monomer dispersion of  
(i) an acrylate salt selected from the group consisting of sodium acrylate, potassium acrylate, lithium acrylate, ammonium acrylate and mixtures thereof, and;  
(ii) a water-dispersible cross-linking monomer in amounts from about 2 percent to 10 percent by weight of said acrylate salt, said aqueous dispersion having sufficient acrylate salt and cross-linking monomer to form a reaction product with said substrate in amounts from about 60 percent to 200 percent by weight of the substrate; and  
(b) irradiating said treated substrate with high energy ioniz-

ing radiation having an energy of at least about 150,000 electron volts at a dose rate no greater than 90 megarads per second to provide a dosage from about 0.5 to 25 megarads, to thereby form a graft polymer on the surface of, and on interpenetrating network within, said substrate.

4,340,058

## SANITARY NAPKIN

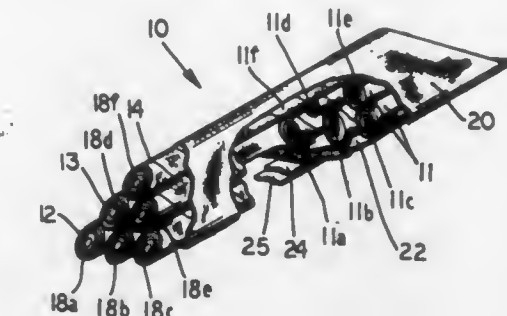
Larry L. Pierce, and June S. Pierce, both of 4120 Vansant Rd., Douglasville, Ga. 30135

Filed Dec. 5, 1980, Ser. No. 213,233

Int. Cl.<sup>3</sup> A61F 13/16

U.S. Cl. 128—287

13 Claims



1. A sanitary napkin comprising a plurality of elongate absorbent pads arranged parallel to one another and in a bundle generally triangular in cross-section with a first layer of pads arranged in side-by-side relationship, a second layer of pads arranged in side-by-side relationship and each pad of the second layer of pads overlying the pads of the first layer of pads at positions over the adjacent surfaces of the adjacent ones of the pads in the first layer, and a third layer of pads comprising at least one pad overlying the pads in the second layer, a liquid pervious material surrounding all of said pads for holding the pads in an uncompressed bundled relationship with the pads movable longitudinally with respect to one another, a sheet of liquid impervious material substantially covering the bottom portion of the first layer of pads, and a layer of adhesive material disposed on the bottom portion of said napkin for securing said napkin to an undergarment, as a result of the napkin not being compressed said napkin being characterized by being bendable along its length with portions of some of the pads movable longitudinally with respect to others of the pads as the napkin is bent along its length whereby the napkin is placed in external contact with the female human body with the third layer of pads in aligned contact with the labia and with the other pads holding the third layer of pads in contact with the labia and bending the napkin along its length as necessary to conform to the curvature of the external surfaces of the anatomy adjacent to the labia.

4,340,059

## RADIAL KERATOTOMY DEVICE

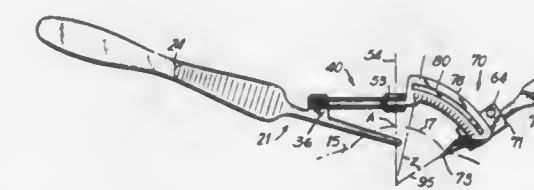
Gerald P. Marinoff, 8 Rockford Dr., West Nyack, N.Y. 10994

Filed Oct. 23, 1980, Ser. No. 199,693

Int. Cl.<sup>3</sup> A61B 17/32

U.S. Cl. 128—305

18 Claims



1. A hand-held surgical instrument for performing radial ophthalmological incisions comprising fixation means for supporting said instrument on the globe of an eye and adapted to be held in one hand of a surgeon; a linkage assembly connected



to said fixation means; a knife assembly connected to said linkage assembly including a knife blade holder and a knife blade removably carried therein for forming incisions in the eye of a patient; said knife assembly including a linkage arm pivotally connected to said linkage assembly at a pivot point for indexing movement thereabout; said linkage arm carrying a pair of spaced guide walls extending away from said pivot point, guide means formed in each of said walls along a curved path, support means carried by said knife blade holder and positioned to cooperate with said guide means in said walls to prevent swinging movement of said knife blade thereby supporting said knife blade holder between said walls for movement along a path toward and away from said pivot point, whereby when said surgical instrument is in an operative position and said blade is moved along said path, said blade will penetrate the eye to form an incision radially oriented with respect to the cornea when sufficient hand pressure is applied to said knife assembly.

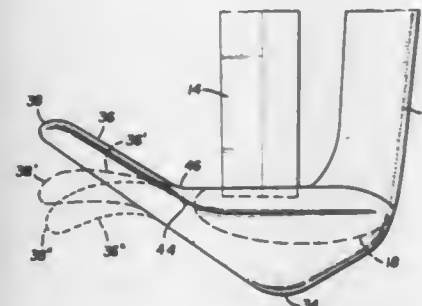
4,340,060

## FLEXIBLE CRANIOTOME FOOTPLATE

Joseph J. Berke, 3333 E. Jefferson, Detroit, Mich. 48207, and Eric L. Gay, Ann Arbor, Mich., assignors to Joseph J. Berke, Detroit, Mich.

Filed Jun. 16, 1980, Ser. No. 159,481  
Int. Cl.<sup>3</sup> A61B 17/14

U.S. Cl. 128—317



1. In combination with a craniotome having a handle, a downwardly depending blade, a support member extending downwardly from said handle substantially parallel to the blade, said support member terminating in a support foot generally perpendicular to the longitudinal axis of the blade, said blade bearing on said support foot intermediate the ends of said support foot, the improvement comprising:

- a flexible, elastomeric extension on said support foot, said elastomeric extension including a downwardly extending heel portion on the part of the support foot opposite to where the blade bears on said support foot;
- said flexible elastomeric extension further including a tip portion which extends forwardly and away from one end of said support foot opposite to where said support member terminates;
- said forwardly extending flexible elastomeric tip being essentially free of non-flexible material;
- such that upon normal use of the craniotome the tip flexes to negotiate bony prominences and also separates the dura from the underside of the skull and the downwardly extending heel depresses the dura to completely strip the dura from the skull.

4,340,061

## ANEURYSM CLIP

George Kees, Jr., Alexandria, Ky., and Set Shahbadian, Cincinnati, Ohio, assignors to Mayfield Education and Research Fund, Cincinnati, Ohio

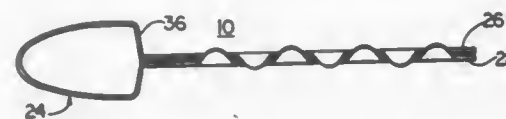
Filed Oct. 25, 1977, Ser. No. 845,295  
Int. Cl.<sup>3</sup> A61B 17/12

U.S. Cl. 128—325

2 Claims

1. An aneurysm clip which comprises a pair of elongated flat blades having elongated smooth edges for positioning adjacent a blood vessel, means urging the blades into gripping relation

with an aneurysm on the blood vessel, and teeth on edges of the blades spaced from the smooth edges thereof for engaging and gripping the aneurysm spaced from the blood vessel, the teeth on each blade extending through spaces between teeth on



the other blade into overlapping relationship with the other blade when the clip is closed, gripping faces of the blades being flat and the blades being urged into flatwise relation for gripping the aneurysm.

4,340,062

## BODY STIMULATOR HAVING SELECTABLE STIMULATION ENERGY LEVELS

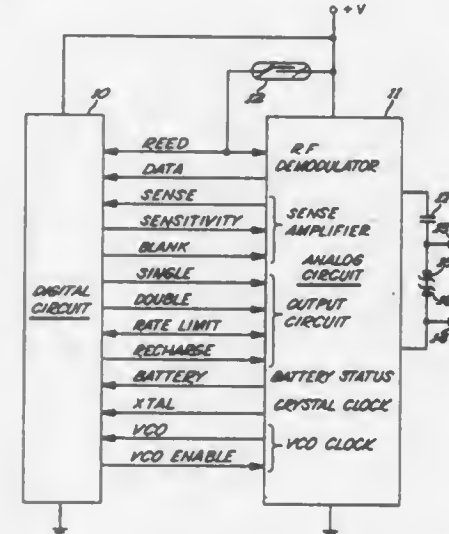
David L. Thompson, Fridley; Ray S. McDonald, St. Paul; Yan S. Lee, Plymouth, all of Minn., and Marc T. Stein, Tempe, Ariz., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 957,827, Nov. 6, 1978, abandoned. This application Aug. 29, 1980, Ser. No. 182,597

Int. Cl.<sup>3</sup> A61N 1/36

U.S. Cl. 128—419 PG

10 Claims



1. A body implantable stimulator which comprises means for alternatively and selectively providing a series of one of a predetermined plurality of independent output initiate signals and means providing stimulation signals in response to said output initiate signals including means for establishing the amplitude of said stimulation signals in accordance with the series of said output initiate signals that is provided.

4,340,063

## STIMULATION DEVICE

Donald D. Maurer, Anoka, Minn., assignor to EMPI, Inc., Fridley, Minn.

Continuation-in-part of Ser. No. 109,175, Jan. 2, 1980, abandoned. This application Feb. 14, 1980, Ser. No. 121,395  
Int. Cl.<sup>3</sup> A61N 1/36

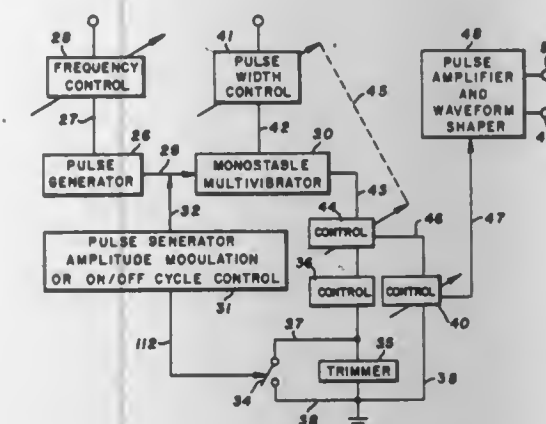
U.S. Cl. 128—421

23 Claims

1. A device for electrically stimulating living tissue comprising: pulse generator means for producing periodic electrical pulses, first control means for controlling the pulse width of said periodic electrical pulses, adjustable second control means for varying the intensity of said periodic electrical pulses, and means coupling said first and second control means to simultaneously adjust said first and second control means relative to each other whereby an adjustment of the first control means causes an adjustment of the second control means to change the intensity of the periodic electrical pulses as a function of a

change of the width of said pulses wherein the amplitude of stimulation intensity decreases with an increase in pulse width

signals for display in a format comprising a plurality of separate vertically displaced lines; and



and the amplitude of stimulation intensity increases with a decrease in pulse width, and means for carrying said pulses to tissue engaging electrodes.

4,340,064

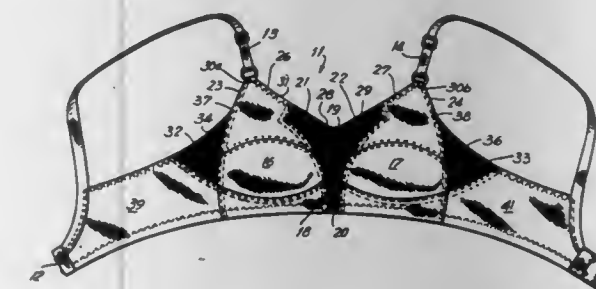
## BRASSIERE

Peter R. Vale, 1010 Fifth Ave., New York, N.Y. 10028, assignor to Peter R. Vale and Pearl R. Vale, both of New York, N.Y.  
Filed Dec. 3, 1979, Ser. No. 99,688

Int. Cl.<sup>3</sup> A41C 3/06

U.S. Cl. 128—496

7 Claims



1. In a brassiere including a pair of cups, releasable and adjustable rear fastening means and a pair of shoulder straps, the improvement comprising an upright Y-shaped insert of two-way stretch fabric in a single piece, said insert having side edges joined to each of said cups, said insert providing graduated stretch from a minimum at the bottom of said insert to a maximum at the upper portion of same while providing separation and freedom of motion to the wearer without causing irritation to the wearer.

4,340,065

## METHOD AND APPARATUS FOR DISPLAYING ELECTROCARDIOGRAM SIGNALS

Lawrence J. Gessman, 100 Haven Ave., Apartment 6D, New York, N.Y. 10032

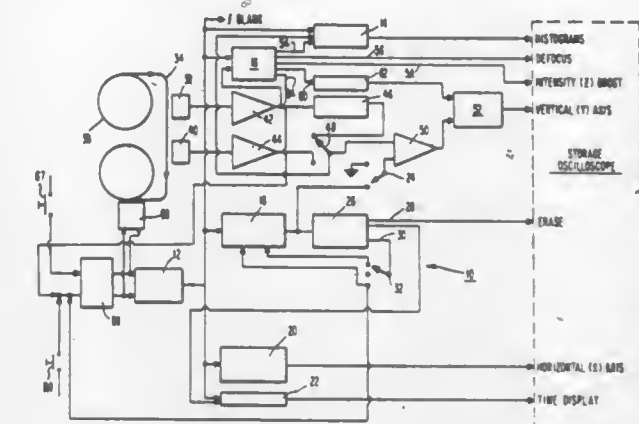
Filed Sep. 11, 1979, Ser. No. 74,475  
Int. Cl.<sup>3</sup> A61B 5/04

U.S. Cl. 128—712

16 Claims

1. A system displaying physiological signals, such as ECG signals, which signals are reproduced at greater than real time after being recorded in real time for the observation of portions of said signals representing certain cardiac events, said system comprising:

- (a) means for receiving said reproduced ECG signals;
- (b) means for processing, entirely in analog form, said ECG



(c) a storage oscilloscope for displaying said processed ECG signals in said format.

4,340,066

## MEDICAL DEVICE FOR COLLECTING A BODY SAMPLE

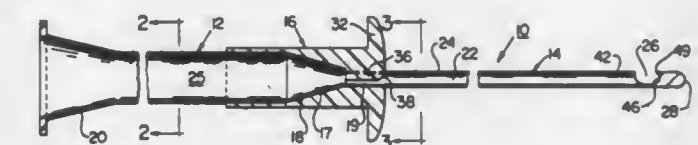
Nayan S. Shah, Chesterfield, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Feb. 1, 1980, Ser. No. 117,677

Int. Cl.<sup>3</sup> A61B 10/00

U.S. Cl. 128—749

10 Claims



1. A medical specimen collection device (10) comprising a handle (12) and an elongate sample collecting member (14, 14a) connected to said handle (12) for insertion into a body cavity for collecting sample material therefrom, at least a portion of said member (14, 14a) being hollow to provide a generally longitudinal chamber (22, 70) therein for receiving sample material and having a generally longitudinal slot (24, 72) through the sidewall thereof to said chamber (22, 70), said slot (24, 72) having opposed side edges extending generally parallel to the longitudinal axis of said member (14, 14a) when in a body cavity, and sample gathering means (36) mounted adjacent the handle (12) of the device for movement relative to said collecting member (14, 14a) and extending through said longitudinal slot (24, 72) and into said chamber (22, 70), said gathering means (36) being distally longitudinally slideable along said slot and chamber from an initial proximal position to a relatively distal position after said member is removed from the body cavity to move sample material collected in said chamber (22, 70) in a distal direction to gather the same.

4,340,067

## BLOOD COLLECTION SYRINGE

Christen C. Rattenborg, 1379 E. 55th Pl., Chicago, Ill. 60637

Filed Mar. 31, 1980, Ser. No. 135,314

Int. Cl.<sup>3</sup> A61B 5/14

U.S. Cl. 128—763

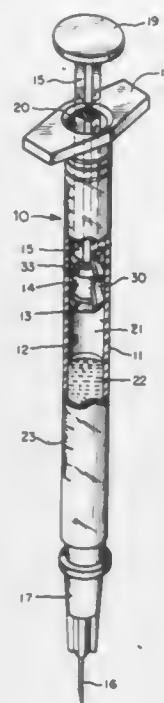
28 Claims

1. A fluid collection syringe, comprising, in combination: an elongated hollow housing having a sidewall defining a central bore, said housing being open at one end to the atmosphere;

a hollow needle member mounted on the other end of said



housing, said needle member having a central passageway in communication with said bore;  
 a plunger assembly including a plunger slidably mounted within said bore, said plunger assembly forming at least a partial sliding liquid and gas seal with said sidewall whereby said plunger assembly forms in conjunction with said other end of said housing a fluid receiving chamber within said bore having a volume dependent on the position of said plunger assembly; and  
 said plunger assembly including pressure relief means comprising a bypass element disposed between said plunger



and the inside surface of said sidewall for establishing a pressure relief passageway between said chamber and the atmosphere for air trapped in said chamber, said bypass element when dry allowing air to pass through said passageway to enable fluid entering said chamber through said needle member to displace air from said chamber through said passageway, and when wet blocking fluid from passing through said passageway, and remaining at least partially exposed to the interior of said chamber when said chamber is filled with fluid whereby said bypass element is wetted to prevent fluid from leaking from said chamber through said passageway.

#### 4,340,068 MULTIPLE SAMPLE NEEDLE WITH VEIN ENTRY INDICATOR

Joseph Kaufman, Emerson, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Jun. 18, 1980, Ser. No. 160,781

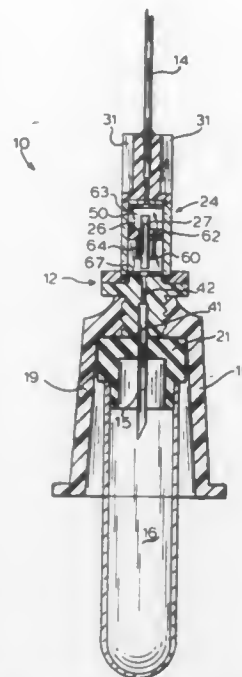
Int. Cl.<sup>3</sup> A61B 5/14

U.S. Cl. 128—766

11 Claims

1. A multiple sample needle assembly for determining vein entry when collecting blood samples from a patient into an evacuated container comprising:  
 a housing having a forward end, rearward end and a chamber within, said housing being translucent at least around the chamber so that said chamber can be viewed by a user of said assembly;  
 a first access opening through the forward end of said housing in fluid communication with said chamber;  
 a cannula extending outwardly from said first access opening in fluid communication with said chamber adapted for insertion into a patient;  
 a second access opening through the rearward end of said housing in fluid communication with said chamber;  
 an operable, resilient, normally closed one-way valve member positioned in said chamber including an operable

element adapted to open and close depending upon the pressure differential across said operable element; and  
 an air permeable, blood impermeable porous plug mounted in said valve member and associated with said operable element so that said element closes against said plug and operatively opens by moving away from said plug,



whereby when said cannula makes entry into the vein of a patient blood enters said chamber by forcing air therein through said porous plug, the blood in said chamber able to be viewed by the user through said translucent housing, with the blood adapted to remain in said chamber until said valve member opens under the influence of lower pressure at said second access opening.

#### 4,340,069 FORCE-SENSITIVE PROBE AND METHOD OF USE

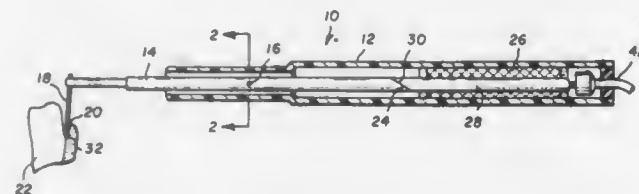
Ronald N. Yeaple, Middlesex, N.Y., assignor to Yeaple Corporation, Middlesex, N.Y.

Filed Oct. 17, 1979, Ser. No. 85,777

Int. Cl.<sup>3</sup> A61B 5/10

U.S. Cl. 128—776

28 Claims



1. A force responsive periodontal probe for manually applying a predetermined probing force to the floor of a periodontal pocket, and for measuring the depth of the pocket when said predetermined probing force is applied, comprising:

- a probe body;
- a magnetizable member mounted within said body;
- a movable lever mounted within said body and having a probe tip extending from said body which is insertable into the periodontal pocket, said probe tip having a periodontal pocket depth measuring scale placed thereon, said lever having a portion thereof formed from a magnetic material, and said lever further being movable between an engaged position in which said lever portion engages said member, and a disengaged position in which said lever portion is disengaged from said member; and
- means for magnetizing said magnetizable member for attracting and releasably holding said lever portion in said engaged position with a preset magnetic force whereby when said probe tip is moved into engagement with the floor of the pocket, and the probing force, manually ap-

plied through said body and said probe tip to the floor of the pocket, is increased to said predetermined probing force, said preset magnetic force is overcome causing said lever to move relative to said body from said engaged position to said disengaged position whereupon the depth of said pocket can be observed on said scale on said probe tip at said predetermined probing force.

#### 4,340,070 ROLL-HOLDING MEANS FOR A CORN-HUSKING BED

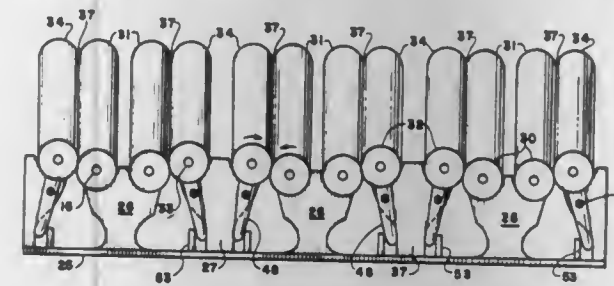
John Kettel, R.R. #1, Lyons, Ind. 47443

Filed Jul. 7, 1981, Ser. No. 281,057

Int. Cl.<sup>3</sup> A01F 11/06

U.S. Cl. 130—5 D

6 Claims



1. In a corn-husking bed comprised of a number of parallel sloped elongated rolls, some of which are in tangential abutment, and means associated with the uppermost extremities of said rolls for supporting said rolls by their axles and causing rotation thereof, improved roll-holding means adapted for use at the lowermost extremities of said rolls comprising:

- (a) an elongated rigid base,
- (b) a number of spaced apart yokes extending upwardly from said base, said yokes being of a first type and second type disposed in alternating relationship, both types having a center plane of symmetry perpendicular to said base,
- (c) said first type of yoke being provided with two fixed circular bearing means, the centers of which are equally spaced about said plane of symmetry and define a line parallel to said base,
- (d) said second type of yoke having two moveable circular bearing means, the centers of which are equally spaced about said plane of symmetry and define a line parallel to said base,
- (e) a lever pendantly associated with each moveable bearing means and attached by pivot means to said yoke,
- (f) adjustable tensioning means associated with each yoke of said second type and adapted to engage said levers below said pivot means,
- (g) whereby said moveable bearing means are urged toward said fixed bearing means, and the spaces between said yokes are capable of permitting passage therethrough of an ear of corn which may be in an upright position with respect to said rolls.

#### 4,340,071 CHANGE-A-BOWL PIPE

Robert L. Smith, Rte. 1, Box 412, Burgaw, N.C. 28425

Division of Ser. No. 87,046, Oct. 22, 1979, Pat. No. 4,290,437.

This application Jun. 15, 1981, Ser. No. 273,323

Int. Cl.<sup>3</sup> A24F 7/04

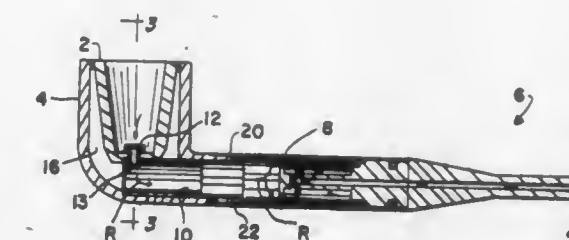
U.S. Cl. 131—202

8 Claims

- 1. A smoking pipe comprising:
  - (a) a bowl;
  - (b) a bit member;
  - (c) a tubular stem member for attaching said bit to said bowl and having forward and rearward ends and a main body portion;
  - (d) a generally cylindrical removable retroverted-flow filter being positioned over said bit and within said stem;
  - (e) said bit member having a rearwardly projecting mouth-piece first portion; a generally tubular second portion projecting forward of said first portion and fitting tele-

scopically within said stem, a bit third portion being coaxial with and extending forward from said second portion so as to form an annular shoulder, and a plug shaft cooperating with and extending forward of said third portion and having a forward end;

- (f) means associated with said third portion for spacing said filter forwardly from said shoulder;
- (g) said third portion and said plug shaft fitting telescopically within said filter;
- (h) said filter being open at both ends and including a forwardmost end;



- (i) the forward end of said plug shaft being a circular plate-like head wherein said plate-like head is in diameter essentially equal to the inside diameter of said filter and said plate-like head is essentially at said forwardmost end of said filter;
- (j) a smoke duct through said bit and ending short of said plate-like head; and
- (k) an outlet opening in said plug shaft cooperating with said smoke duct and being generally rearward of said plate-like head.

#### 4,340,072 SMOKEABLE DEVICE

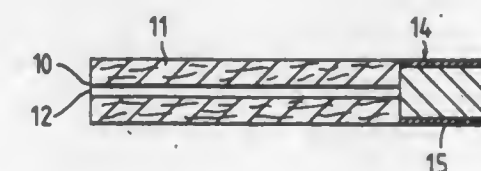
Anthony J. N. Bolt, and Brian C. Chard, both of Bristol, England, assignors to Imperial Group Limited, London, England

Filed Nov. 12, 1980, Ser. No. 206,068

Int. Cl.<sup>3</sup> A24D 1/00

U.S. Cl. 131—273

8 Claims



1. A cigarette-simulating smokeable device for releasing an aerosol into the mouth of a smoker comprising:

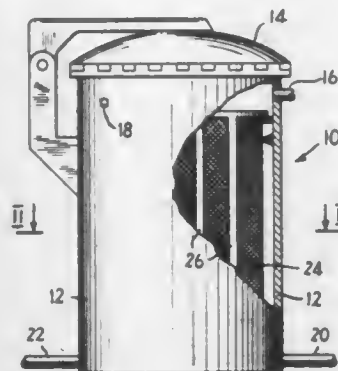
- (a) a rod of fuel having a longitudinally extending passage therethrough;
- (b) a chamber in gaseous communication with an end of the passage whereby during smoking hot gases from the burning fuel rod enter the chamber
- (c) inhalant material located in the chamber which, when contacted by the hot gases during smoking forms an aerosol for inhalation by the smoker,
- (d) the chamber having at an end remote from the fuel rod a mouth-end closure member which is permeable to the aerosol.



**4,340,073**  
**EXPANDING TOBACCO**  
 Roger Z. de la Burde, Powhatan, and Patrick E. Aument, Hopewell, both of Va., assignors to Philip Morris, Incorporated, New York, N.Y.

Filed Feb. 12, 1974, Ser. No. 441,767  
 Int. Cl.<sup>3</sup> A24B 3/18

U.S. Cl. 131—291

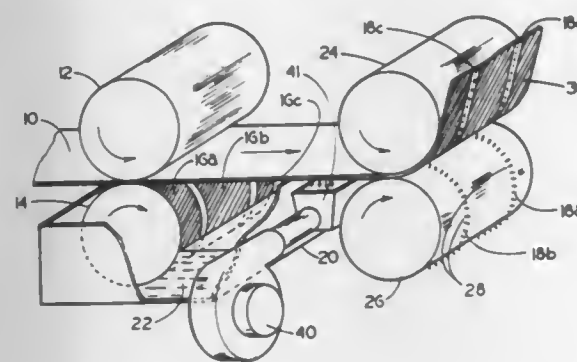


1. A process for expanding tobacco comprising the steps of (1) contacting tobacco with liquid carbon dioxide under conditions such that the temperature of the tobacco is maintained at a level no lower than about  $-2^{\circ}\text{C}$ . and such that substantially all of the liquid carbon dioxide is maintained in liquid form to impregnate the tobacco with the liquid carbon dioxide, (2) subjecting the liquid carbon dioxide-impregnated tobacco to conditions such that the liquid carbon dioxide is converted to solid carbon dioxide and (3) thereafter subjecting the solid carbon dioxide-containing tobacco to conditions whereby the solid carbon dioxide is vaporized to cause expansion of the tobacco.

**4,340,074**  
**CIGARETTE MATERIAL HAVING NON-LIPSTICKING PROPERTIES**

Thomas T. Tudor, Crestwood, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.  
 Division of Ser. No. 92,149, Nov. 7, 1979, abandoned. This application Jan. 16, 1981, Ser. No. 225,582

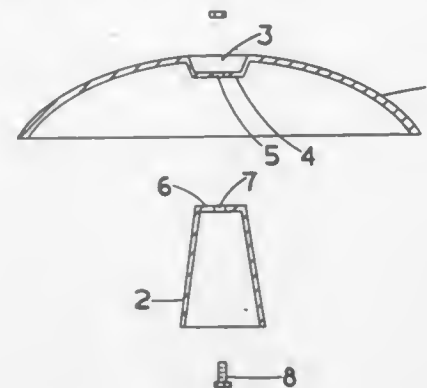
Int. Cl.<sup>3</sup> A24D 1/04, 3/00, 3/18  
 U.S. Cl. 131—362



1. A method of making a cigarette tipping material comprising the steps of:  
 (a) passing a sheet of tipping material through a means for adding a coating having non-lipsticking properties thereto in a preselected pattern, said means to add a coating including a pair of cooperating rollers, one of said rollers being a pressure roller, the other of said rollers being a rotogravure roller having an unengraved surface therein in preselected areas, said rollers being mounted in contacting relationship to receive said tipping material therebetween;  
 (b) drying the coating; and,

(c) passing the coated material through means to add perforations thereto.

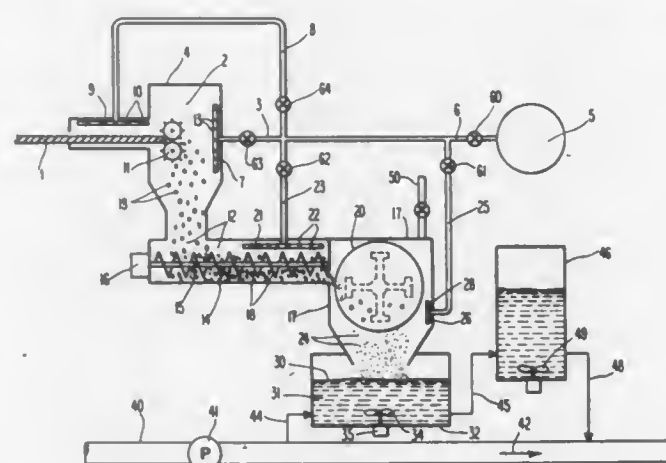
**4,340,075**  
**SPACE-SAVING MUSHROOM FORM SUPPORT**  
 John M. Medeiros, 244 Depot St., Bennington, Vt. 05201  
 Continuation of Ser. No. 24,471, Mar. 26, 1979. This application Feb. 9, 1981, Ser. No. 232,508  
 Int. Cl.<sup>3</sup> A45F 1/16; A01G 13/00  
 U.S. Cl. 135—15 PQ



1. A combination of two parts, the first part being a convex mushroom-cap-shaped head, provided with a recess in the top center and an opening through the center for receiving a threaded bolt, and the second part being a slightly tapered tumbler-shaped hollow stem, provided with an opening through the center for receiving a threaded bolt; and the two parts when attached by compression of a threaded bolt yielding a mushroom-form support which is fitted onto a pole and used to support film or fabric to make a temporary shelter for plants; and, each of the two said parts fitting partly inside the volume of another of the same part when said parts are disassembled and stacked in sets for packaging or shelving or shipping or storage.

**4,340,076**  
**DISSOLVING POLYMERS IN COMPATIBLE LIQUIDS AND USES THEREOF**  
 William Weitzen, Bethesda, Md., assignor to General Technology Applications, Inc., Arlington, Va.  
 Continuation-in-part of Ser. No. 15,680, Feb. 27, 1979, abandoned. This application Jan. 31, 1980, Ser. No. 117,235  
 Int. Cl.<sup>3</sup> F17D 1/16

U.S. Cl. 137—13



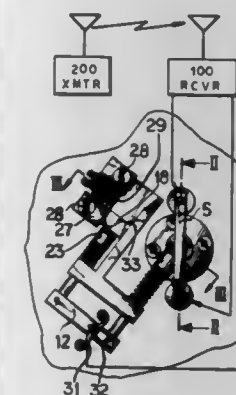
1. Process for dissolving a high molecular weight hydrocarbon polymer in liquid hydrocarbons which comprises chilling to cryogenic temperature said polymer, comminuting the chilled polymer at cryogenic temperature to form discrete particles displaying a high surface energy state and contacting the so-formed particles at or near cryogenic temperature and

while in said high surface energy state with liquid hydrocarbons whereby the polymer particles are dissolved therein.

**4,340,077**  
**METHOD OF AND APPARATUS FOR REMOTELY CONTROLLING ORIFICE-OPENING AND ORIFICE-CLOSING OPERATIONS**  
 Peter Schiffer, Aachen; Ernst Heinrichs, Wassenberg, and Manfred Helten, Titz-Müntz, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 198,130  
 Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942118

Int. Cl.<sup>3</sup> F16K 13/04  
 U.S. Cl. 137—68 A

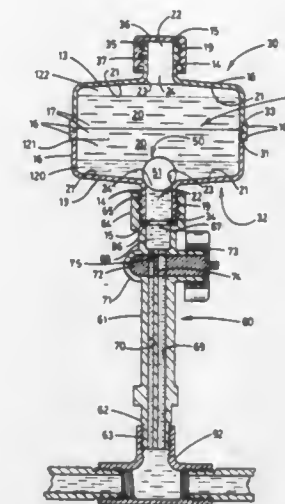


1. An unblocking and blocking device comprising: a support formed with an opening adapted to be unblocked and blocked by remote control: primary closure means blocking said opening and including: a primary closure element bearing on said support around said opening, first spring means bearing on said primary element and biasing same away from said support, at least one rod connected to said primary element and retaining same against said support, and a first ignitable means cooperating with said rod and firable by remote control to sever said rod and release said primary element from said support whereby said first spring means drives said primary element away from said opening, and secondary closure means including: a secondary closure element spaced from said opening, second spring means bearing upon said secondary element for urging same into alignment with said opening, remotely controlled second ignitable means retaining said secondary element out of alignment with said opening until fired, and a third spring means acting upon said secondary element for displacing same against said support around said opening to block the latter upon the firing of said second ignitable means.

**4,340,078**  
**TANK FOR A FLUID SYSTEM**  
 Harry M. Pasley, Fresno, Calif., assignor to Eaton Investment Company, Fresno, Calif., a part interest  
 Filed May 23, 1980, Ser. No. 152,640  
 Int. Cl.<sup>3</sup> B05B 7/30

U.S. Cl. 137—205.5  
 12 Claims  
 1. A tank for a fluid system which is pressurized in an operative mode and depressurized in an inoperative mode, the tank comprising a fluid tight vessel enclosing a chamber and having a substantially annular port communicating with the chamber; means for mounting the vessel in fluid transferring communication with the fluid system through the port and with said port disposed in substantially upwardly facing relation; and a substantially spherical flow control element captured in the cham-

ber of the vessel and dimensioned gravitationally to seat in said annular port to allow passage of fluid through the port when the fluid system is in said operative mode and to seal said annular port substantially to prevent the passage of fluid from the chamber through the port when the fluid system is in said

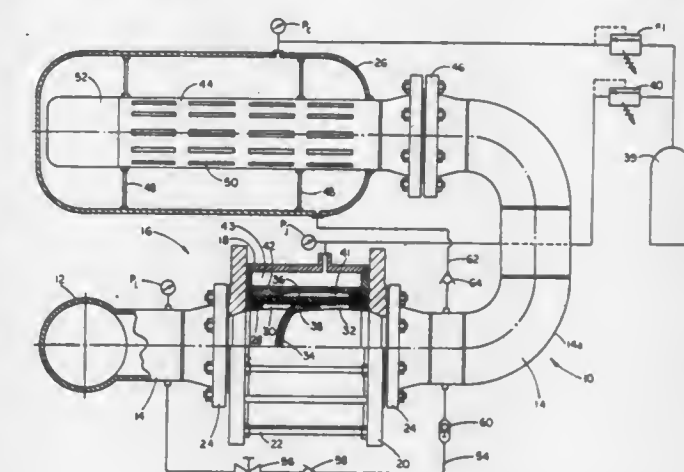


inoperative mode and wherein there is a variation in dimension between the substantially annular port and the fluid control element such that when said element is seated in the port, depressurization of the fluid system from said operative mode causes pressure to be purged from the chamber prior to sealing of the port in the inoperative mode.

**4,340,079**  
**ENERGY DISSIPATING PIPELINE SURGE RELIEF SYSTEM**

Bryan Smith, Rawdon; Andrew E. Keech, Roundhay, and Patricia A. Dawson, Gledhow, all of England, assignors to Grove Valve and Regulator Company, Oakland, Calif.  
 Continuation-in-part of Ser. No. 80,074, Sep. 28, 1979, abandoned. This application May 14, 1980, Ser. No. 149,701  
 Claims priority, application United Kingdom, Feb. 15, 1980, 80005189

Int. Cl.<sup>3</sup> G05D 11/13  
 U.S. Cl. 137—207



1. A closed pressure surge relief system for a liquid transporting pipeline comprising: a surge relief line adapted for connection at one end of a pipeline; a surge relief flow-blocking member in said relief line near the upstream end thereof; said member being conditioned to open quickly to large capacity flow when the pressure of fluid in said relief line reaches rises to a predetermined, fixed safe limit level above normal pipeline pressure and to close when said pressure drops to said safe level, thereby isolating a volumetric quantity of liquid from said pipeline;



means for modulating flow through said members; a closed receptacle connected to the other end of said relief line; said surge relief line and said closed receptacle being of sufficient volume to accommodate said isolated quantity of liquid; means in said receptacle to stop flow smoothly; a return line connected to said surge relief line and adapted for connection to said pipeline; and a valve in said return line.

#### 4,340,080 INFLATION VALVE

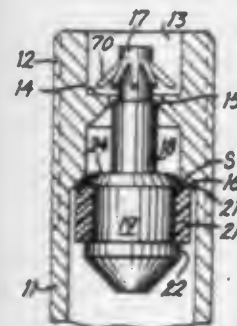
Jean Lefranc, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Division of Ser. No. 104,188, Dec. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 884,752, Mar. 9, 1978, abandoned. This application Jan. 9, 1981, Ser. No. 223,576

Int. Cl.<sup>3</sup> F16K 15/20

U.S. Cl. 137—223

1 Claim



1. An inflation valve comprising an outer tubule with a conical valve seat and a single inner movable unit, which unit includes a valve proper, a rod and a retaining head and is confined axially within the tubule, the valve proper having a conical stop for engagement of the conical stop and the valve proper with the conical valve seat when the inflation valve is in final valve-closed position, said valve being characterized by the fact that the head of the inner movable unit has a plurality of axially rigid and radially deformable elastic tongues which are integral with said retaining head and which are oriented in a conical pattern coaxial with the valve and open toward the valve seat.

#### 4,340,081 IRRIGATION VALVE APPARATUS

Wade B. Watson, 1256 W. Williams Field Rd., Suite 11, Chandler, Ariz. 85224

Filed Jun. 20, 1980, Ser. No. 161,278

Int. Cl.<sup>3</sup> F16K 31/122

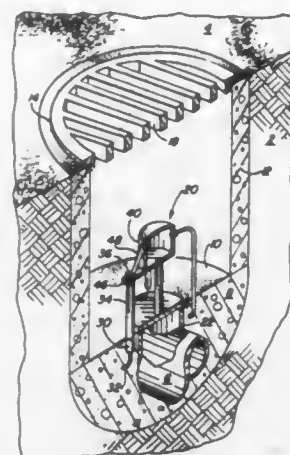
U.S. Cl. 137—364

4 Claims

1. Valve apparatus for controlling a flow of water, comprising, in combination:

- a water line providing a flow of water;
- a valve seat means secured to the water line;
- base means including a base secured to the water line and to the valve seat means and a pipe disposed on the base for receiving the flow of water from the water line;
- cylinder means disposed adjacent to the valve seat means and within the pipe, including
- a cylinder spaced apart from the valve seat means, and
- spacer means secured to the base and to the cylinder for supporting the cylinder spaced apart from the valve seat means within the pipe;
- a piston movable in the cylinder of the cylinder means;
- a rod connected to the piston;
- a valve plate disposed within the spacer means and secured to the rod remote from the piston and movable therewith from a closed position against the valve seat means to an

open position away from the valve seat means in response to the flow of water against the valve plate and in response to movement of the piston in the cylinder means; and



#### 4,340,082

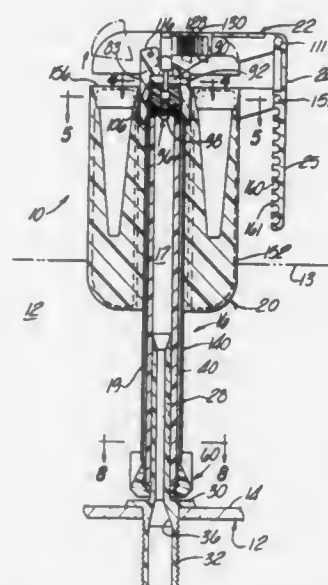
ADJUSTABLE BALLCOCK STANDPIPE ASSEMBLY  
Albert E. Straus, Erie, Pa., assignor to Hoover Universal, Inc., Saline, Mich.

Division of Ser. No. 36,399, May 7, 1979, Pat. No. 4,286,619. This application May 8, 1981, Ser. No. 261,779

Int. Cl.<sup>3</sup> F16K 31/26

U.S. Cl. 137—426

6 Claims



1. A ballcock assembly for controlling the supply of liquid to a liquid storage tank comprising:  
a standpipe for conveying liquid to said tank, valve means on said standpipe for controlling the delivery of liquid to said tank, said standpipe comprising aligned tubular members interfitted in a telescoping relationship enabling the positioning of said valve means at selected heights in said tank, and lock means to secure said interfitted tubular members in an adjusted relative position, said lock means comprising means forming an open-ended cavity in one end of the outer one of said interfitted tubular members, said cavity surrounding the inner one of said interfitted tubular members, an expandable and contractible ring member disposed in said cavity essentially surrounding said inner tubular member, a lock nut axially movable on and releasably secured to said one end of said outer tubular member, an elastomeric gasket member surrounding said inner tubular member and responsive to axial movement of said lock nut for axially engaging said

ring member through said open-ended cavity when said lock nut is axially mounted on and secured to said outer tubular member, and shoulder means in said cavity against which said ring member is urged when said lock nut is mounted onto said one end of said tubular member, the axial movement of said lock nut onto said outer tubular member contracting said ring member to secure said tubular members in fixed relative positions.

#### 4,340,083

##### DEFLECTABLE BEAM VALVE

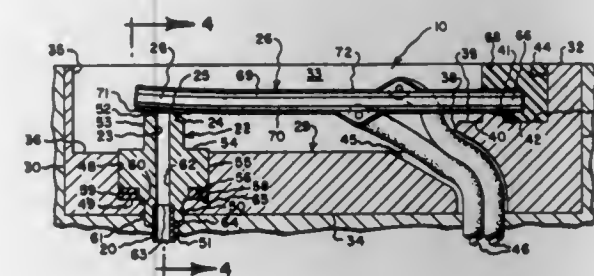
Richard D. Cummins, Orchard Park, N.Y., assignor to Carleton Controls Corporation, East Aurora, N.Y.

Continuation-in-part of Ser. No. 964,948, Nov. 30, 1978, abandoned. This application Feb. 11, 1980, Ser. No. 120,054

Int. Cl.<sup>3</sup> F16K 31/04, 17/30

U.S. Cl. 137—499

9 Claims



1. A valve, comprising:

- a member having a passageway therethrough and having a marginal end portion arranged to provide a valve seat about one end of said passageway;
- a piezoelectric beam arranged on the upstream side of said member and having a deflectable portion mounted for movement toward and away from said seat, said deflectable portion being selectively movable away from said seat toward an initially commanded position, the magnitude of the pressure differential across said member exerting a closing force which urges said deflectable portion to move away from said commanded position toward said seat, said beam having a spring rate such that said deflectable portion will move further away from said seat as said pressure differential decreases to permit a substantially constant flow of fluid through said passageway over a working range of differential pressure across said valve when said deflectable portion has been moved away from said seat; and

control means operatively arranged to supply an electrical signal to said beam for selectively causing said deflectable portion to move away from said seat; whereby the position of said deflectable portion relative to said seat may control a flow of fluid through said passageway.

#### 4,340,084

##### CHECK VALVE

John P. Snow, Sagamore Hills, Ohio, assignor to Houdaille Industries, Inc., Ft. Lauderdale, Fla.

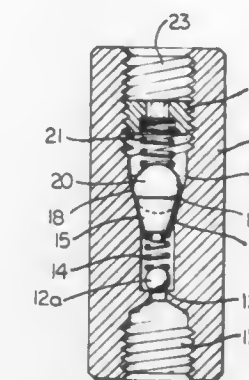
Filed Aug. 28, 1980, Ser. No. 182,235

Int. Cl.<sup>3</sup> F16K 15/04

U.S. Cl. 137—512

10 Claims

1. In a ball valve having a valve body with a passageway therethrough, the passageway including a circumferential restricting valve seat, and a ball spring urged against said seat to provide a seal, the improvement of said valve seat being a frustoconical seat, a frustoconical metallic back-up member having a large diameter axial end of greater diameter than the small diameter of the seat, and a small diameter axial end of smaller diameter than the large diameter of the seat and a large diameter axial end face, the large diameter axial end face having a central depression therein, and the ball being an elastomeric ball, the back-up member insertable into the seat and seatable therein and being axially movable with respect



#### 4,340,085

##### PRESSURE REGULATING DEVICE WITH DAMPING MEANS FOR PREVENTING VALVE CHATTER

Ronald H. Crawford, 21, Millard Close, Basingstoke, Hampshire, and Alan W. Kent, 9, Lakeland Dr., Frimley, Camberley, Surrey, both of England

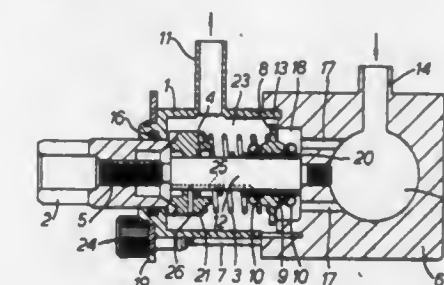
Filed Apr. 22, 1980, Ser. No. 142,843

Claims priority, application United Kingdom, May 1, 1979, 7915121

Int. Cl.<sup>3</sup> F16K 15/02

U.S. Cl. 137—514

10 Claims



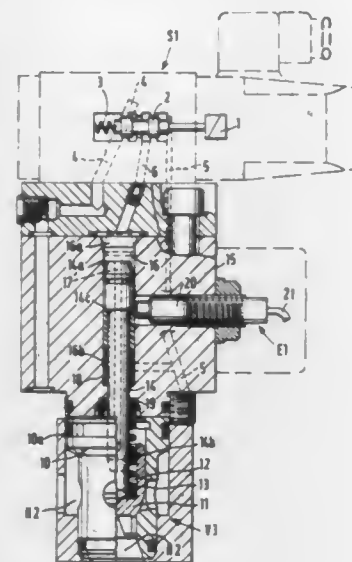
1. A pressure regulating device comprising  
a chamber for receiving a fluid under pressure;  
an outlet for the fluid; and  
a valve assembly disposed between said chamber and said outlet which opens automatically when the pressure in said chamber exceeds a predetermined value, said valve assembly comprising:  
a valve casing;  
a valve stem which is fixed in position within said valve casing;  
a bushing mounted about said valve stem for free axial sliding movement thereon;  
a valve disc mounted about said bushing for axial sliding movement thereon;  
a valve seat adjacent the end of said valve stem nearest said chamber;  
biasing means for urging said valve disc towards engagement with said valve seat against the pressure of fluid in said chamber; and  
a flexible and resilient coupling arrangement which interconnects said valve disc and said bushing so as to accommodate the axial sliding movement therebetween while also providing damping of the movement of said valve disc relative to said bushing to prevent valve chatter.



**4,340,086**  
**HYDRAULIC CONTROL VALVE UNIT**  
 Ansgar Hemm, Usingen, and Harald Deppner-Hiemesch, Bad Homburg von der Höhe, both of Fed. Rep. of Germany, assignors to Sperry Vickers, Division of Sperry GmbH, Bad Homburg von der Höhe, Fed. Rep. of Germany  
 Filed Apr. 17, 1980, Ser. No. 141,128  
 Claims priority, application Fed. Rep. of Germany, Apr. 19, 1979, 2915783

Int. Cl.<sup>3</sup> F16K 37/00, 15/18  
 U.S. Cl. 137—554

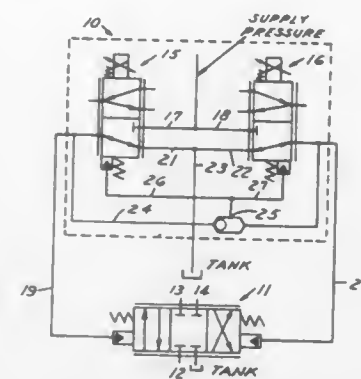
4 Claims



1. Valving apparatus comprising a main valve, said main valve including a main valve housing having a valve bore and inlet and outlet passages therein, a first differential piston as a closure member slidable in said bore, a valve spring engaging said closure member, said closure member having a first position for shutting said inlet and outlet passages and a second position for opening the same, a pilot valve, said pilot valve including a separate pilot valve housing, a valve spool, a first duct for supplying fluid under pressure, a second duct for venting fluid to a tank and a control duct, a control line, said control line connecting said control duct of said pilot valve to said closure member of said main valve and including a second differential piston slidable in a connecting bore, said second differential piston having a relatively larger piston area, a relatively smaller piston area and a longitudinal bore interconnecting both piston areas and forming a part of said control line, said relatively larger piston area facing said pilot valve, said relatively smaller piston area facing said main valve and cooperating with said closure member for following said first and second positions thereof and taking first and second positions, if there is fluid under pressure in the control line, and electric means for monitoring said positions of said second differential piston.

**4,340,087**  
**POWER TRANSMISSION**  
 Yehia El-Ibiary, Troy, Mich., assignor to Sperry Corporation, Troy, Mich.  
 Filed Aug. 21, 1980, Ser. No. 179,947  
 Int. Cl.<sup>3</sup> F15B 13/043  
 U.S. Cl. 137—625.64 20 Claims  
 11. A hydraulic remote controller for use in piloting the operation of a hydraulic control valve comprising

a pair of selectively operated three-way pressure control valves, each control valve having a supply pressure inlet and a controlled pressure outlet and being operable in the normal position to prevent flow from said supply inlet to said controlled pressure outlet and connect said outlet to tank, each said valve being operable to permit fluid to flow from the inlet to the controlled pressure outlet, the pressure at said



outlet being proportional to the force operating said valve and simultaneously permitting fluid to flow to tank, means responsive to the higher of the controlled pressures of the outlets of the two pressure controlled valves for applying the higher controlled pressure to the valve having the lower controlled pressure to operate the valve having the lower controlled pressure in direction increasing the passage of fluid through the other valve to tank.

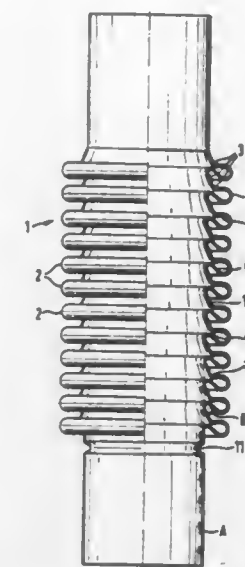
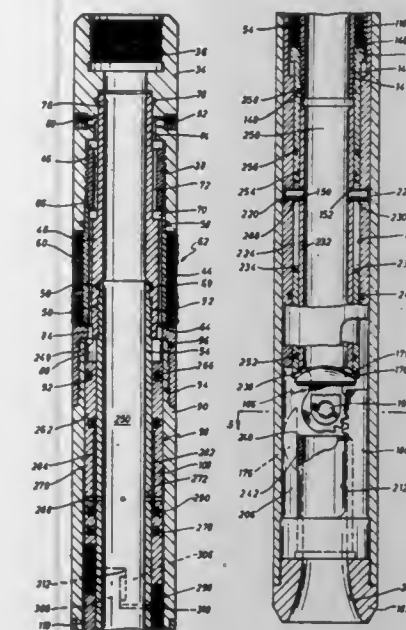
**4,340,088**  
**PRESSURE BALANCED SAFETY VALVE FOR WELLS AND FLOW LINES**  
 Bernard H. Geisow, Houston, Tex., assignor to Daniel Industries, Inc., Houston, Tex.  
 Filed Jun. 9, 1980, Ser. No. 157,377  
 Int. Cl.<sup>3</sup> E21B 43/12

U.S. Cl. 137—629

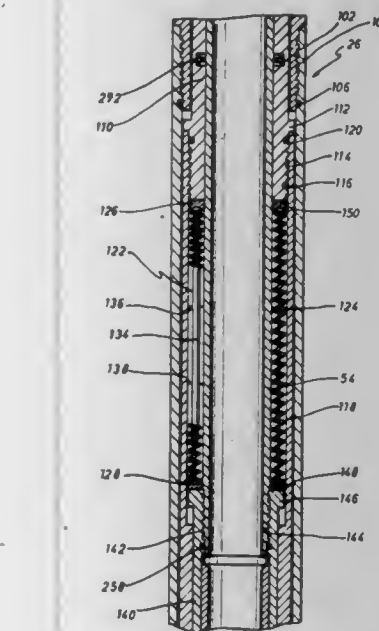
35 Claims

1. A safety valve mechanism for controlling fluid through a conduit, said safety valve mechanism comprising: a valve housing having a flow passage defined thereby, said valve housing defining a valve chamber and a protective receptacle in communication with said flow passage and valve chamber and located outwardly of said flow passage; valve seat means being located within said valve chamber about said flow passage and defining a seat surface; a valve element being movably positioned within said valve chamber and being linearly movable into seated engagement with said seat surface during closing movement thereof and being movable linearly away from said seat surface during opening movement thereof, said valve element being rotatably and linearly movable to a protected position within said protective receptacle and in said protected position being out of the flow path of fluid flowing through said valve mechanism; valve actuator means being contained within said valve housing, said valve actuator means being operatively interconnected with said valve element and inducing selective opening and closing movement of said valve element into and out of said seated engagement with said seat surface and inducing movement of said valve element into said protective receptacle during opening of said valve and causing movement of said valve element from said protective receptacle into said seated engagement with said seat surface during closing movement of said valve element, said valve actuator means communicating pressure from said valve chamber upstream of said valve element to the downstream portion of said valve element during initial opening movement of said valve actuator means and causing substantial dissipation of pressure induced resultant forces tending to maintain said valve element in the closed position thereof;

first actuator power means normally urging said valve element toward the closed position thereof; and each inner corrugation end being substantially conical and including a substantially flat portion, said flat portions together



forming a substantially smooth inner surface for guiding fluid flow in a predetermined direction.



second actuator power means being operative to overcome said first actuator power means and impart opening movement to said valve actuator means and valve element and to maintain said valve element in the open position thereof.

**4,340,089**  
**BELLOWS ELEMENT**  
 Dietlof Freiherr von Arnim, Karlsruhe, and Rolf Dahn, Bretten-Dürenbüchig, both of Fed. Rep. of Germany, assignors to IWK Regler und Kompensatoren GmbH, Strutensee, Fed. Rep. of Germany  
 Filed Sep. 24, 1980, Ser. No. 190,262  
 Claims priority, application Fed. Rep. of Germany, Nov. 29, 1979, 2948065

Int. Cl.<sup>3</sup> F16L 11/11

6 Claims

1. A tubular bellows element having a plurality of corrugations successively arranged in concentric fashion about the axis of said tubular element, each corrugation having an outer end, an inner end, and flanks connecting said outer and inner ends, adjacent corrugations being separated by substantially annular spaces which narrow adjacent said inner corrugation ends,

**4,340,090**  
**SILICONE COMPOSITIONS FOR THE TREATMENT OF GLASS FIBERS AND METHODS OF TREATMENT**  
 Takao Matsushita, Kisarazu, and Kazuo Hirai, Ichihara, both of Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan  
 Continuation-in-part of Ser. No. 146,555, May 5, 1980, abandoned. This application Aug. 21, 1981, Ser. No. 295,184  
 Claims priority, application Japan, May 16, 1979, 54-59088  
 Int. Cl.<sup>3</sup> D03D 43/00; B05D 3/02

U.S. Cl. 138—177

21 Claims

10. A method of treating glass fibers comprising (I) mixing the following ingredients to make a silicone composition (A) 100 parts by weight of a triorganosiloxy endblocked polydiorganosiloxane in which each organic group is selected from methyl, vinyl, and phenyl, there being at least two vinyl groups per molecule, there being no more than 20 mol percent phenyl groups based on the total number of moles or organic groups in the polydiorganosiloxane and said polyorganosiloxane having a viscosity of at least 0.1 m<sup>2</sup>/s measured at 25° C. (B) an amount of organohydrogenpolysiloxane sufficient to provide at least 1.5 silicon-bonded hydrogen atoms per vinyl group in (A), said organohydrogenpolysiloxane having at least two silicon-bonded hydrogen atoms per molecule, and the organohydrogensiloxane having organic groups selected from methyl and phenyl, (C) from 10 to 100 parts by weight of a silica filler having a relative surface area of at least 50 m<sup>2</sup>/g and having been treated with dimethyldichlorosilane for hydrophobicity, and (D) a catalytic amount of a platinum catalyst, (II) dispersing the silicone composition obtained in step (I) in an organic solvent to make a treatment solution, (III) coating glass fibers with the treatment solution obtained in step (II) to make treated glass fibers, and (IV) heating the treated glass fibers to cure the silicone composition 14. The method in accordance with claim 10 in which the glass fiber is in the form of glass sleeving. 20. A treated glass sleeving prepared by the method of claim 14.



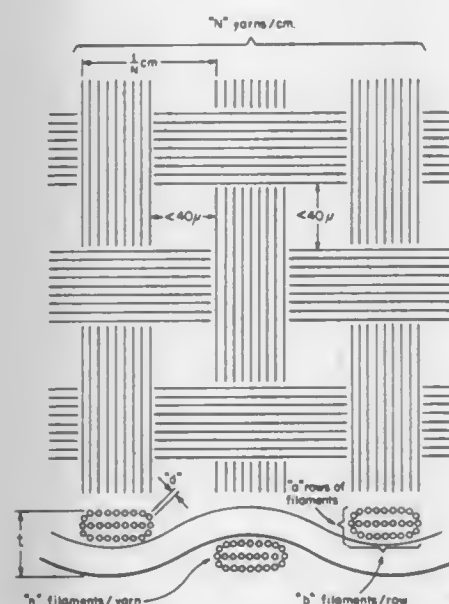
4,340,091

**ELASTOMERIC SHEET MATERIALS FOR HEART VALVE AND OTHER PROSTHETIC IMPLANTS**

John Skelton, Sharon, Mass.; Richard E. Clark, St. Louis, Mo., and Robert B. Davis, Framingham, Mass., assignors to Albany International Corp., Albany, N.Y. and Washington University, St. Louis, Mo.

Continuation-in-part of Ser. No. 901,085, Apr. 28, 1978, Pat. No. 4,191,218, which is a continuation-in-part of Ser. No. 790,442, Apr. 25, 1977, Pat. No. 4,192,020, which is a continuation-in-part of Ser. No. 771,359, Feb. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 575,438, May 7, 1975, abandoned. This application Feb. 27, 1980, Ser. No. 125,120

Int. Cl.<sup>3</sup> D03D 7/00, 3/02; A61F 1/22; D04C 1/00  
U.S. Cl. 139—383 R 11 Claims



1. A flexible and extensible textile sheet material for cardiovascular and prosthetic implants, said sheet material consisting of warp yarns and yarns interlaced therewith, said yarns comprising a synthetic elastomer and forming a fibrous reticular blood-contacting face wherein at least 50 percent of the superficial area contains a substantially uniform distribution of foramina having a maximum lateral aperture dimension of 40 microns, said yarns having an average tensile modulus up to a strain of 10% which is between 0.05 and 5.0 grams per denier.

4,340,092

**METHODS OF AND APPARATUS FOR STRAIGHTENING BACKPLANE-SUPPORTED PINS**

William M. Chisholm, Midlothian, Va., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Feb. 26, 1980, Ser. No. 124,662

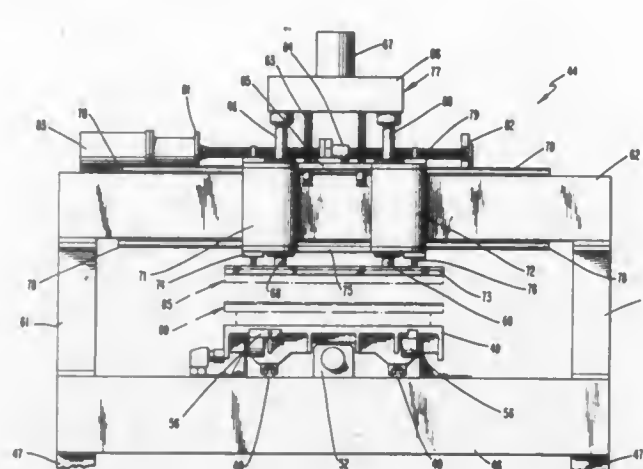
Int. Cl.<sup>3</sup> B21F 1/02

U.S. Cl. 140—147

25 Claims

1. A method of straightening pins supported in a backplane, which comprises the steps of:  
securing the backplane in a pin straightening assembly with the pins extending from the backplane and tips of the pins being fully exposed within the assembly;  
capturing the tips of the pins only within a first planar surface of the pin straightening assembly;  
providing relative reciprocating motion in a first direction between the first planar surface and the backplane to straighten the pins in the first direction;  
withdrawing the tips of the pins from within the first planar surface while the backplane remains secured within the pin straightening assembly to again fully expose the tips of the pins;  
capturing the tips of the pins only within a second planar surface of the pin straightening assembly which is recessed

planarly from the first planar surface in a direction away from the pins to be straightened; and



providing relative reciprocating motion in a second direction between the second planar surface and the backplane to straighten the pins in the second direction.

4,340,093

**METHOD OF STRAIGHTENING BACKPLANE-SUPPORTED PINS**

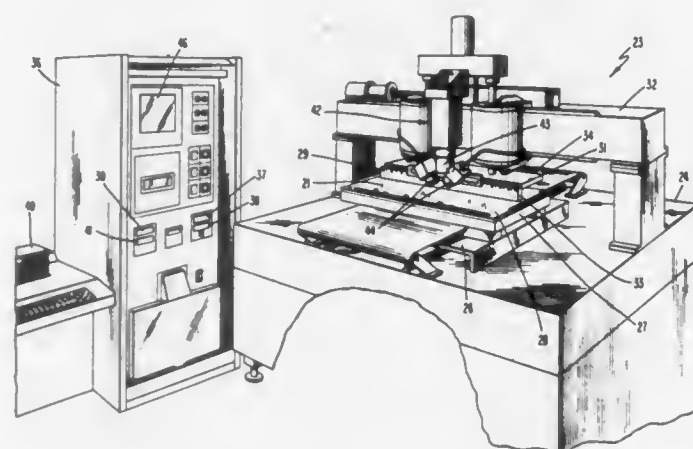
William M. Chisholm, Midlothian; George S. Davis, Richmond, and James C. Dougherty, Mechanicsville, all of Va., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Feb. 26, 1980, Ser. No. 124,677

Int. Cl.<sup>3</sup> B21F 1/02

U.S. Cl. 140—147

9 Claims



1. A method of straightening pins supported in a backplane, which comprises the steps of:  
establishing within a pin straightening apparatus a standard pin straightening amplitude between spaced values having opposite end limit settings selected from a scale of values which set the limits between which a pin straightening assembly travels within the apparatus;  
developing a table of values which represent selectable adjustment settings for at least one of the end limit settings where the values of the table are based on (1) a range of mean deviations from nominal of a statistical sample of the pins and (2) the end limit setting;  
processing the pins through a pin straightening operation using the standard pin straightening amplitude;  
measuring the centroids of a statistical sample of the pins to obtain measured data representing pin deviation from nominal;  
calculating a mean deviation from nominal by using the measured data;  
reviewing the table of values and selecting therefrom an adjustment setting based on the calculated mean deviation;  
automatically adjusting the straightening amplitude within

the pin straightening apparatus in accordance with the selected adjustment setting; and  
processing the pins through another pin straightening operation using the adjusted pin straightening amplitude.

4,340,094

**METHODS OF STRAIGHTENING BACKPLANE-SUPPORTED PINS**

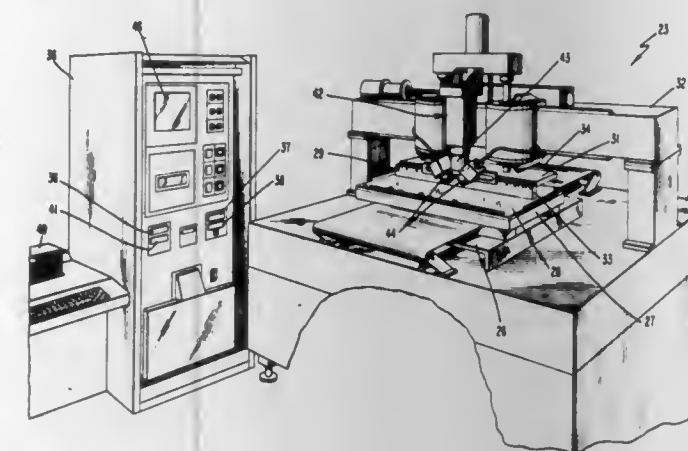
William M. Chisholm, Midlothian, and James C. Dougherty, Mechanicsville, both of Va., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Feb. 26, 1980, Ser. No. 124,683

Int. Cl.<sup>3</sup> B21F 1/02

U.S. Cl. 140—147

8 Claims



1. A method of straightening pins supported in a backplane, which comprises the steps of:  
processing the pins through a pin straightening operation using a selected pin straightening amplitude;  
measuring the centroids of a statistical sample of the pins to obtain measured data representing pin deviation from nominal;  
calculating a mean deviation from nominal by using the measured data;  
manually adjusting the straightening amplitude based on the calculated mean deviation; and  
processing the pins through another pin straightening operation using the adjusted pin straightening amplitude.

4,340,095

**MATERIAL TRANSFERRING APPARATUS**

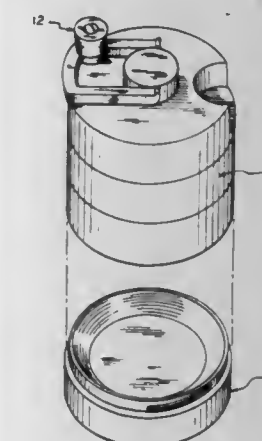
John D. Dale, 1211 W. Rovey, and David G. Knotter, 4634 N. 44th St., both of Phoenix, Ariz.

Filed Sep. 17, 1979, Ser. No. 76,072

Int. Cl.<sup>3</sup> B65B 1/06

U.S. Cl. 141—1

3 Claims



1. A method of transferring pulverized material from a pulverizer to a small jar comprising the following steps:

1020 O.G.—36

pulverizing a material in a pulverizer having a removably attached collecting plate;  
gathering said pulverized material in said collecting plate; detaching said collecting plate from said pulverizer; attaching said collecting plate to a funnel having a narrow end and a broad end, said collecting plate being attached to said broad end of said funnel; attaching the mouth of a jar to the narrow end of said funnel; inverting said funnel, said collecting plate, and said jar, thereby transferring said pulverized material from said collecting plate to said jar; removing said jar from said funnel; and attaching a cap to said jar.

4,340,096

**FEED DEVICE AND METHOD FOR SUPPLYING FREE-FLOWING MATERIAL TO A CONTAINER**

James R. Stoddard, Mold, Wales, assignor to J. Stoddard & Sons Limited, Clwyd, Wales

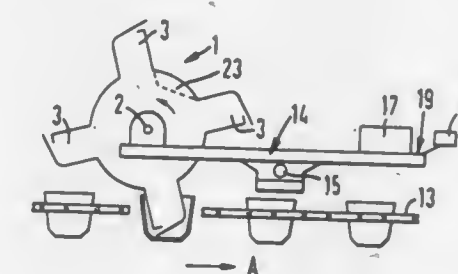
Filed Oct. 23, 1980, Ser. No. 199,827

Claims priority, application United Kingdom, Oct. 26, 1979, 7937159

Int. Cl.<sup>3</sup> B65B 1/04

U.S. Cl. 141—1

8 Claims



5. A method of supplying free-flowing material to a container comprising the steps of providing a rotatable feed device including at least one feed chamber having a feed outlet, supplying free-flowing material to the feed chamber, rotating the feed device so that the feed chamber passes into a container moving in synchronism relative to the feed device and dispensing free-flowing material from the feed chamber by providing the feed outlet with a feed direction transverse to the radius extending between the axis of the feed device and the feed outlet whereby material is not supplied to the container until the feed outlet is disposed within the container and whereby the feed outlet is closed by the material during filling.

4,340,097

**CONNECTOR MEMBER FOR SEALED CONDUITS**

David W. Ammann, Boulder, Colo., and Daniel B. Granzow, Ingleside, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 5,749, Jan. 23, 1979, Pat. No. 4,265,280. This application Jan. 5, 1981, Ser. No. 222,395

Int. Cl.<sup>3</sup> B65B 3/04

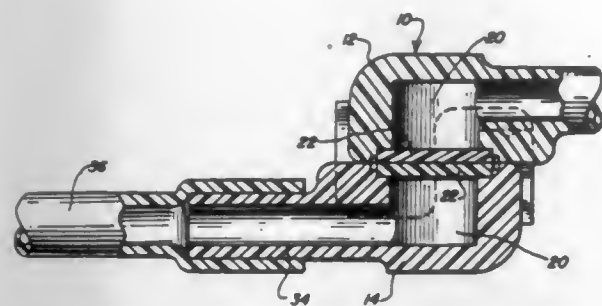
U.S. Cl. 141—98

18 Claims

2. A member for sealingly connecting the end portions of a pair of conduits, said member comprising housing means having transparent walls enclosing a hollow interior and including spaced first and second passage means each communicating with said hollow interior and each adapted for communication with a respective conduit end portion, and meltable opaque wall means extending across said hollow interior in the interval between said spaced first and second passage means and in a generally nonparallel direction relative to the axis of at least one of said first and second passage means, said opaque wall means being operative for normally blocking flow communication between said first and second passage means through said hollow interior.

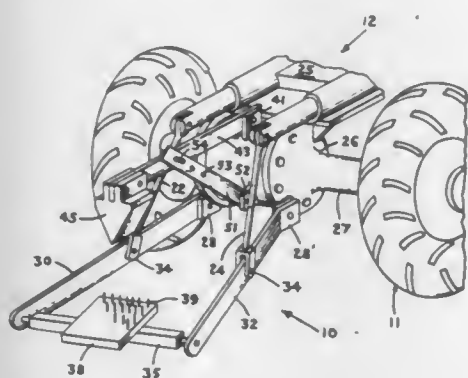


rior and for forming, in response to the subsequent application of radiant energy to melt said opaque wall means,



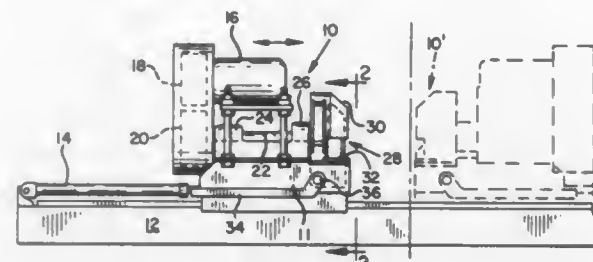
an opening establishing flow communication between said first and second passage means through said hollow interior.

**4,340,098**  
**LOG SPLITTER AND ATTACHMENT FOR TRACTOR**  
George K. Scott, 111 Rte. 306, Suffern, N.Y. 10901  
Filed Nov. 3, 1980, Ser. No. 203,599  
Int. Cl.<sup>3</sup> B27L 7/00  
U.S. Cl. 144—193 A 8 Claims



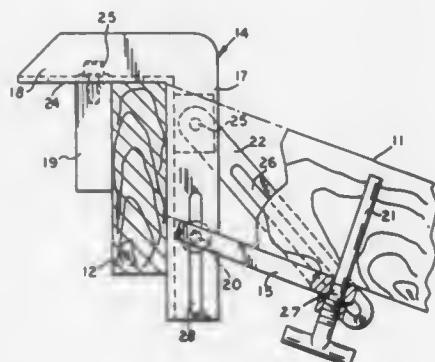
1. A log splitter adapted for removable attachment to the rear of a tractor or similar vehicle comprising:
  - (a) a first and a second hoist bar each mounted pivotably to the rear of said vehicle and extending outwardly therefrom in spaced apart relationship to one another;
  - (b) a draw bar attached fixedly between the outermost ends of said hoist bars, and having a base plate mounted thereto;
  - (c) a splitter bar mounted pivotably to the rear of said vehicle and extending outwardly therefrom, said splitter bar being essentially central to the hoist bars and having a splitter blade proximate to its outer end;
  - (d) a support rod mounted pivotably to the rear of said vehicle and extending outwardly therefrom, said rod adapted along its length for adjustable connection to the splitter bar so that the height of the splitter bar can be fixedly defined;
  - (e) means for preventing lateral movement of the splitter bar, and
  - (f) means for elevating the hoist bars, whereby a log vertically placed between the plate and the blade is split longitudinally by the application of an upward force against the stationary blade.

**4,340,099**  
**CHIPPER MACHINE**  
Joseph J. Lomnicki, Portland, and Donald A. Miller, Tigard, both of Oreg., assignors to Mainland Industries, Inc., Lake Oswego, Oreg.  
Filed Aug. 5, 1980, Ser. No. 175,527  
Int. Cl.<sup>3</sup> B27C 9/00  
U.S. Cl. 144—220 5 Claims



1. A chipper machine for simultaneously forming a flat surface on a workpiece and comminuting material removed from the workpiece, comprising:
  - (a) a rotatable mandrel having a tapered arbor;
  - (b) a rotary chipper head mounted on said tapered arbor, said chipper head having a plurality of individually removable chipper knives mounted thereon, and said chipper head also having a hub including a tapered socket for matingly fitting on said tapered arbor;
  - (c) anvil means for supporting a workpiece in position for being engaged by said chipper head, a drop front portion of said anvil means being movable between a first position, in which said drop front portion partially surrounds said chipper head preventing its removal from said arbor, and a second position providing sufficient clearance for removal of said chipper head from said arbor.

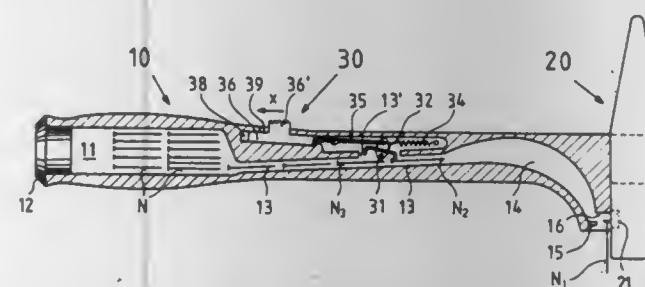
**4,340,100**  
**RAFTER SUPPORT JIG**  
George D. Anderson, II, 1004 Oregon Ave., Erie, Pa. 16505  
Filed Oct. 10, 1980, Ser. No. 195,882  
Int. Cl.<sup>3</sup> B27M 3/02  
U.S. Cl. 145—1 R 7 Claims



1. A jig (10) for holding a rafter (11) in place on a ridge pole (12) comprising a ridge pole bracket (14), a rafter support (15), and a brace (16), said ridge pole bracket having a first part (17) and a second part (18), said first part (17) and said second part (18) being rigidly fixed together and disposed generally at right angles to each other, said first part extending downwardly and being adapted to rest on one side of said ridge pole (12), said second part (18) being adapted to rest on top of said ridge pole, a third part (19) of said ridge pole bracket fixed to said second part and spaced from said first part (17) and extending downward generally parallel thereto, said first part (17) and said third part (18) receiving said ridge pole therebetween,

pivot means (20) swingably connecting said rafter support to said first part of said ridge pole bracket and a pin means (21) extending upwardly from said rafter support and adapted to engage one side of said rafter, and said brace (22) swingably connected to said first part of said ridge pole bracket and to said rafter support (15) for holding said ridge pole in predetermined position to said rafter bracket.

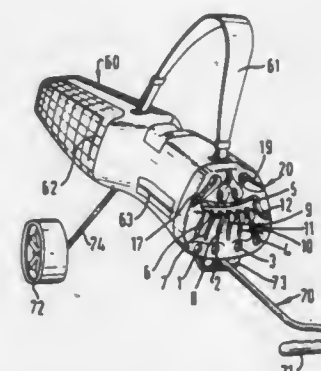
**4,340,101**  
**NAILING TOOL**  
Anton Schür, Schönenbergstrasse 42, CH-8820 Wädenswil, Switzerland  
PCT No. PCT/CH79/00120, § 371 Date May 8, 1980, § 102(e)  
Date May 2, 1980, PCT Pub. No. WO80/00547, PCT Pub. Date Apr. 3, 1980  
PCT Filed Sep. 6, 1979, Ser. No. 195,141  
Claims priority, application Switzerland, Sep. 8, 1978, 9450/78  
Int. Cl.<sup>3</sup> B25C 1/00 7 Claims



1. A magazine hammer comprising an elongated handle having a head fixedly attached to one end of said handle, an elongated guide passage disposed entirely within said handle, said guide passage including a first portion extending in the direction of elongation of said handle toward said head and a second portion which is adapted to reorient nails which have passed through the first portion of said guide passage, a supply of nails in communication with said guide passage, means for feeding nails from said supply through said guide passage toward said head, and a setting device located adjacent the downstream end of said second portion of said guide passage for use in setting a nail into a workpiece preliminary to its being driven into said workpiece by the head of said hammer; said supply comprising a cavity disposed entirely within said handle at the end of said handle remote from said head, said cavity being dimensioned to retain a plurality of nails therein which are oriented respectively in the direction of elongation of said handle and with the heads of said nails facing toward said remote end of said handle, said first portion of said guide passage communicating with said cavity and being dimensioned to admit only one nail at a time, in the direction of elongation of said nail, from said supply for passage under the influence of gravity toward said second portion of said guide passage; said feeding means comprising a member pivotally mounted within said handle adjacent said first portion of said guide passage and carrying thereon a pair of tongues which are spaced from one another in the direction of elongation of said handle, said tongues each extending toward said guide passage and being arranged so that one or the other of said tongues extends into and across said first portion of said guide passage in dependence upon the pivotal position of said member whereby, when the downstream one of said tongues extends across said first portion of said guide passage the movement of nails toward said second portion of said guide passage is blocked, and subsequent variation in the pivotal position of said member operates to displace the downstream one of said tongues out of said first portion of said guide passage to permit movement under the influence of gravity of a single nail past said downstream tongue toward said second portion of said guide passage while the upstream one of said tongues is simultaneously displaced into said first portion of said guide passage

to block movement of a next subsequent nail toward said second portion of said guide passage; said second portion of said guide passage comprising a curved cavity the upstream end of which communicates with the downstream end of said first portion of said guide passage, the downstream end of said curved cavity being open at a position adjacent to but rearward of the striking face of said head; said setting device comprising an auxiliary striking surface extending generally parallel to but rearward of and laterally displaced from the striking face of said head at a position adjacent to and laterally displaced from the downstream open end of said curved cavity, and a permanent magnet mounted in fixed stationary position relative to said handle and head adjacent said auxiliary striking surface and operative to laterally displace each nail after it has emerged under the influence of gravity from the downstream open end of said curved cavity into a position wherein the head of said nail is disposed in directly facing relation to said auxiliary striking surface.

**4,340,102**  
**GOLF CLUB BAGS**  
John R. Isabel, 15 Victoria Ave., Grays, Essex, England  
Filed Jan. 7, 1981; Ser. No. 223,106  
Claims priority, application United Kingdom, Jan. 7, 1980, 8000436  
Int. Cl.<sup>3</sup> A63B 55/00 24 Claims



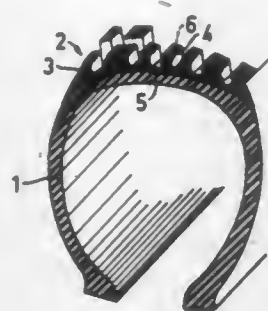
1. A golf club bag comprising a head defining apertures to accommodate a set of inverted golf clubs in a pre-arranged fashion, and a bottom comprising shaft-retaining means to hold the shaft of seven inverted irons in an arcuate fan-like arrangement, one of the apertures in the head being of curved elongate shape and being arranged to accommodate the seven inverted irons in a row and being disposed centrally of the other apertures in the head to provide a balanced weight distribution to said bag, the head also defining shaped elongate recesses extending transversely of the said curved elongate aperture to seat the blade of each of the seven irons in order to resist any rotational movement of each said iron.

**4,340,103**  
**POROUS TREAD AND METHOD OF MAKING SAME**  
Nils-Ake Nilsson, Erikslundsvägen 348, Täby, Sweden (S-183 44)  
PCT No. PCT/SE79/00151, § 371 Date Mar. 7, 1980, § 102(e)  
Date Mar. 7, 1980, PCT Pub. No. WO80/00233, PCT Pub. Date Feb. 21, 1980  
PCT Filed Jul. 10, 1979, Ser. No. 190,766  
Claims priority, application Sweden, Jul. 10, 1978, 7807694  
Int. Cl.<sup>3</sup> B60C 11/00; B29H 17/02 8 Claims

1. A vehicle tire having a road-contacting portion of tire material adapted for contact with a road surface, said road contacting portion comprising: granules of tire material wherein said granules are partially



fused together by vulcanization to leave interconnecting pores therebetween;



said interconnecting pores being operative to permit atmospheric air to flow through said interconnecting pores in said road contacting portion.

4,340,104

## DEFLATED TIRE LUBRICANT

Tiong H. Kuan, Stow, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

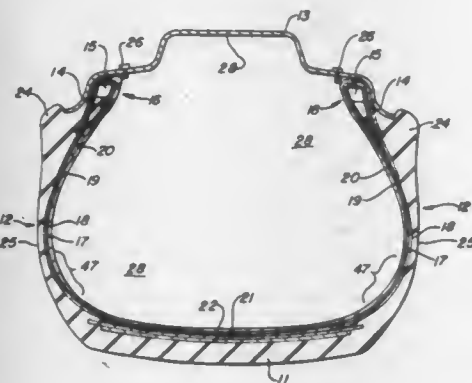
Continuation of Ser. No. 920,673, Jun. 30, 1978, abandoned.

This application Mar. 28, 1980, Ser. No. 134,832

Int. Cl.<sup>3</sup> B60C 17/00, 5/12

U.S. Cl. 152—330 L

4 Claims



1. A pneumatic tire having an interior surface mounted on a rim to define an inflation chamber, the rim having means to prevent the tire beads from becoming dislodged from the rim when the tire is operated in a deflated condition, wherein the improvement comprises:

a solid coating matrix on the interior surface of the tire selected from the group consisting of polyesters, polyureas, and polyurethanes which coating matrix does not begin to flow on the surface of the tire and adversely effect the balance of the tire until the heat generated by the tire running flat causes the tire to reach a temperature of between 65 degrees C. and 150 degrees C. and liquify the matrix.

4,340,105

## HEAVY LOAD TIRE WITH PLURAL PLY GROUPS OF DIFFERENT CORD DIAMETER

Masaru Abe, Sayama, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of Ser. No. 49,857, Jun. 19, 1979, abandoned. This application Feb. 27, 1981, Ser. No. 238,798

Claims priority, application Japan, Jun. 22, 1978, 53-75676

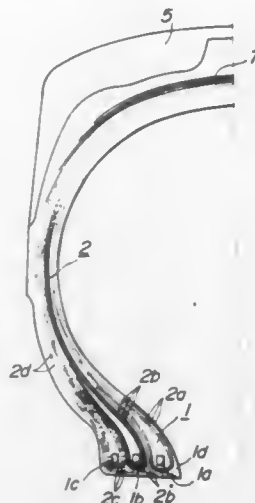
Int. Cl.<sup>3</sup> B60C 9/06, 15/00

U.S. Cl. 152—354 R

9 Claims

1. A pneumatic tire for off-road, industrial or heavy load vehicles offering improved resistance to cord breaking up failure comprising; a bias laid carcass body composed of a plurality of stacks of plies including at least three superimposed rubberized organic fiber cord ply groups which are different in cord diameter, each of said ply groups including a plurality of plies, the total number of plies at least 10, the cords of substantially one-half of said plies extending in an opposite direction to

the cords associated with the remainder of plies, said ply groups being composed and arranged such that the cord diameter of the outermost ply group is smaller than that of the ply group located adjacent to and inside said outermost ply group and at most equal to that of the innermost ply group and the cord diameter of the innermost carcass ply group is smaller than that of the ply group located adjacent to and outside said innermost carcass ply group, bead portions each having at least



two bead cores, further comprising an outermost stack of plies composed of at least two plies and extending along the lower surface of said bead cores and finally secured at its one end to the lower surface of said bead cores, wherein all of the boundary surfaces formed between adjacent ply groups different in cord diameter are located between inner plies of a stack of plies extending along the lower surface of said bead cores and secured at its one end to the lower surface of said bead cores.

4,340,106

## STRIP DOOR HANGING SYSTEM

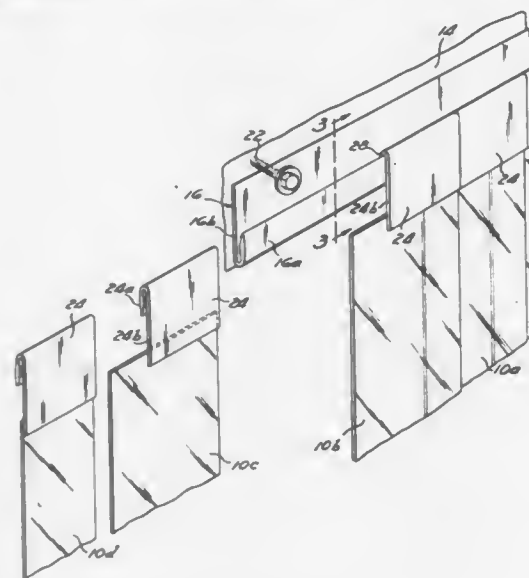
William E. Van Horn, II, Pomona, Calif., assignor to Cool Curtain, Inc., Pomona, Calif.

Filed Mar. 14, 1980, Ser. No. 130,460

Int. Cl.<sup>3</sup> A47H 1/00

U.S. Cl. 160—332

1 Claim



1. A strip door assembly comprising:

a plurality of flexible, elongated relatively heavy plastic strips, and means for supporting said strips from above in a side by side overlapping arrangement to form a door or curtain which provides a barrier across a doorway but yet permits passage therethrough by simply pushing through the strips, said supporting means includes an elongated support member for attachment to a wall or other supporting surface over the doorway, said support member hav-

4,340,108

## METHOD OF CASTING METAL IN SAND MOLD USING REDUCED PRESSURE

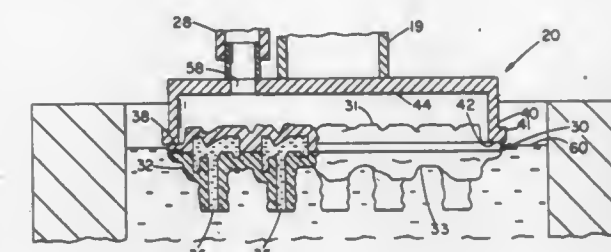
George D. Chandley, and Richard L. Sharkey, both of Amherst, N.H., assignors to Hitchiner Manufacturing Co., Inc., Milford, N.H.

Continuation-in-part of Ser. No. 75,169, Sep. 12, 1979, abandoned, which is a continuation-in-part of Ser. No. 947,621, Oct. 2, 1978, abandoned. This application May 29, 1980, Ser. No. 154,230

Int. Cl.<sup>3</sup> B22D 18/06

U.S. Cl. 164—63

17 Claims



ing a first, flat elongated leg that engages the supporting surface and extends across the doorway and a second flat elongated leg that is generally parallel to the first leg, and joined at its lower end to the first leg so that they form a generally U-shaped portion with an elongated slot between the legs opening upwardly, the first leg being considerably longer in the vertical direction than that of the second leg, and a support clip having a first leg attached to the upper end of each of said strips and a second leg shorter than the first clip leg, said clip legs forming an upper U-shaped portion having a slot which opens downwardly, said U-shaped portions fitting together so that the shorter leg of the U-shaped portion on said clip releasably fits into the slot of said U-shaped portion on said support member to thereby support the strip, and the shorter leg of the support member fits into the slot of the clip U-shaped portion, said U-shaped portions include laterally extending grooves on their inner surfaces, and the thicknesses and dimensions of the U-shaped portions are such that the clips must be pressed into engagement with the support member and said grooves help hold the clips in the engaged position, said clips and said support member being made of plastic and having an identical cross-section wherein they may be extruded in continuous lengths and cut to a desired length, the clips being inverted with respect to said support member when the U-shaped portions are engaged, the vertical depth of the slots of said U-shaped portions and the closeness of the fit being sufficient to prevent the clips from moving significantly when a force is applied to the strip in an inward or outward direction as a person passes through the strip door, the width of said clips being equal to the width of said strips minus the width of the strip that overlaps the adjacent strip, whereby the clips are in edge to edge relation in a completed door assembly.

1. A method of casting metal in a rigid, self supporting, gas permeable, low temperature bonded, sand grain mold having side surfaces extending between vertically spaced upper and lower surfaces with mold cavity means spaced therebetween and a plurality of horizontally spaced gate passages positioned generally in a horizontal plane, connected at one end to said mold cavity means and having their opposite open ends exposed to the lower surface of said mold, comprising:

submerging said lower surface and said open ends of said gate passages beneath an underlying surface of molten metal while maintaining said upper surface and at least a portion of said side surfaces thereabove; applying a reduced pressure to the upper surface of said mold to simultaneously fill said gate passages and said mold cavity means with molten metal; solidifying said molten metal throughout the transverse dimension of at least a portion of said gate passages; and thereafter removing said mold and the submerged open ends of said gate passages from contact with said underlying surface of said molten metal before said solidified metal in said gate passage portions remelts due to contact with said underlying surface of molten metal.

4,340,107

## CERAMIC SHELL MOLDING APPARATUS AND METHODS

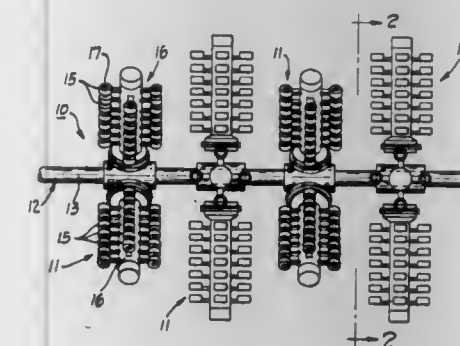
Timothy R. Bauer, Euclid, Ohio, assignor to Precision Metalsmiths, Inc., Cleveland, Ohio

Filed Apr. 20, 1978, Ser. No. 898,763

Int. Cl.<sup>3</sup> B22C 9/04, 13/08

U.S. Cl. 164—35

3 Claims



1. In the production of refractory molds by the lost pattern process, a method comprising the steps of forming a pattern set-up assembly by connecting a plurality of pattern set-ups each including sprue means and attached patterns to a main sprue forming member so that the axes of said sprue means are transverse to the longitudinal axis of said sprue forming member, surrounding the assembly with a refractory shell having a main body portion around said sprue forming member and laterally projecting arms in which said set-ups are embedded, opening up at least one end of said main body portion and the ends of said arms, removing said sprue means and said sprue forming member from said mold and melting said patterns, and thereafter closing the open ends of said arms so that molten metal can be poured into said mold.

4,340,109

## PROCESS OF DIE CASTING WITH A PARTICULATE INERT FILLER UNIFORMLY DISPERSED THROUGH THE CASTING

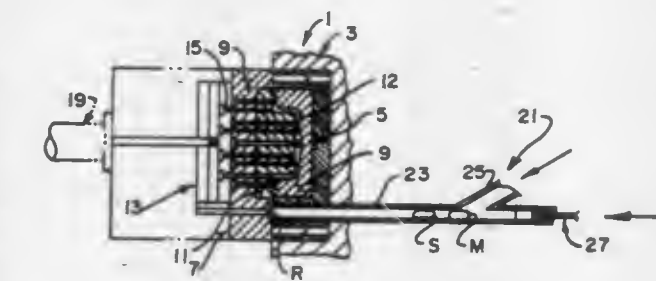
Joseph T. Roddy, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 25, 1980, Ser. No. 124,293

Int. Cl.<sup>3</sup> B22D 19/00

U.S. Cl. 164—97

11 Claims



1. A process of die casting a part formed of a metal alloy with an inert, particulate, filler material substantially uniformly distributed throughout the part thereby to decrease the amount of metal alloy required to cast the part, said process being carried out in die casting apparatus having a die cavity and



infused means for forcing molten metal and said filler material into said die cavity under pressure, said process consisting of the steps of:

preheating said filler material to a temperature sufficient to inhibit the premature solidification of the molten metal alloy on the filler material;

placing a predetermined amount of said preheated filler material in the infeed means of said die casting apparatus;

placing a predetermined amount of said molten metal alloy in said infeed means of said die casting apparatus;

forcing said predetermined quantity of molten metal and filler material into said die thereby to substantially uniformly mix said molten metal with said particulate filler material as the molten metal together with said particulate filler material flows into the die cavity of said die casting apparatus so as to form said part; and forming a skin on at least a substantial portion of said part, said skin consisting substantially of metal alloy with substantially none of said filler material visible from the exterior of the part.

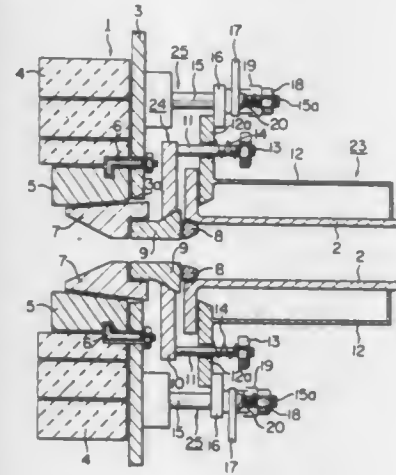
4,340,110  
APPARATUS FOR CONNECTING TUNDISH AND MOLD  
FOR HORIZONTAL CONTINUOUS CASTING OF  
METAL

**Akira Honda, Kamakura; Masaru Ishikawa, Fukuyama; Seishi Mizuoka, Fukuyama, and Katsunori Ono, Fukuyama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan**

Filed Jun. 18, 1980, Ser. No. 160,595  
Claims priority, application Japan, Jul. 10, 1979, 54-86497  
Int. Cl.<sup>3</sup> B22D 11/00

U.S. Cl. 164-435

### 3 Claims



1. In an apparatus for connecting a tundish and a mold for horizontal continuous casting of a metal, a mold having an inlet opening and a tundish having a molten metal outlet on a side wall thereof, which comprises:

- a break ring fitted to the inlet opening of a mold through a joint material;
- a front nozzle engaged in the molten metal outlet of the side wall of a tundish;
- a feed nozzle provided between said break ring and said front nozzle so that one end thereof is in contact with said break ring and the other end thereof is in contact with said front nozzle through respective joint materials; and

connecting means for connecting said tundish to said mold by tightening the side wall of said tundish to said mold; the improvement wherein said connecting means includes:

- a holding member;

first elasticity means coupled to said holding member and to said mold for elastically pushing said break ring against the inlet opening of said mold and for elastically pushing one end of said feed nozzle against said break ring via said holding member; and second elasticity means coupled to said tundish and to said mold for elastically pushing the other end of said feed nozzle against said front nozzle;

first tightening means for tightening said first elasticity

means for increasing the elastic pushing force between said feed nozzle and said break ring; and second tightening means for tightening said second elasticity means for increasing the elastic pushing force between said feed nozzle and said front nozzle.

4,340,111

**EVAPORATIVE COOLING OF CONTAINERS IN A  
PRESSURE VESSEL**

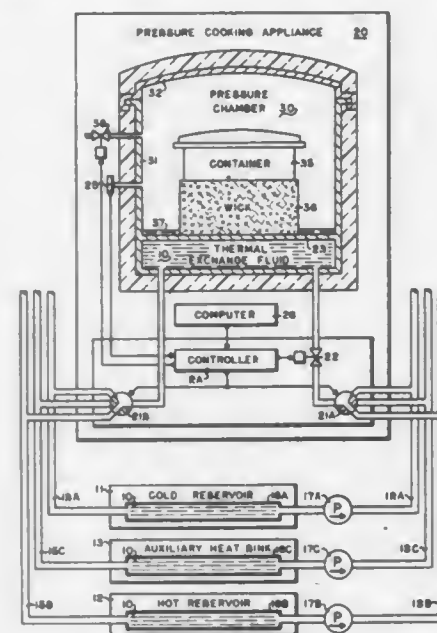
Stephen F. Skala, 3839 S. Wenonah Ave., Berwyn, Ill. 60402

Continuation-in-part of Ser. No. 299,294, Oct. 4, 1972, Pat. No. 3,888,303, and a continuation-in-part of Ser. No. 569,354, Apr. 18, 1975, abandoned, and a continuation-in-part of Ser. No. 769,389, Feb. 16, 1977, abandoned, and a continuation-in-part of Ser. No. 941,123, Sep. 11, 1978, Pat. No. 4,246,955. This application Apr. 15, 1980, Ser. No. 140,618

Int. Cl.<sup>3</sup> F25B 13/00

U.S. Cl. 165—2

## 40 Claims



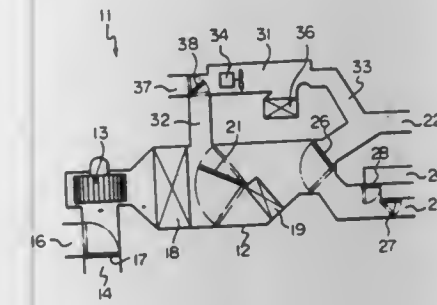
1. A process for cooling a food substance in a container which is within a pressure vessel, comprising the steps of: enclosing a food substance within a container having a removable cover, enclosing said container and a working fluid condensate within a pressure vessel having a securable lid and securing the lid, heating the container to a temperature sufficient to vaporize the working fluid and to process the food substance enclosed therein, cooling a surface within the pressure vessel to a temperature which is sufficiently low to condense vapors of the working fluid back to the working fluid condensate, transporting the working fluid condensate onto the container for vaporization therefrom for a time sufficient to cool the container and the food substance therein to a temperature below the atmospheric boiling point of water thereby enabling opening of the container at atmospheric pressure, and opening the securable lid of the pressure vessel, removing the container from the pressure vessel, removing the cover from the container, and removing the food substance from the container.

4,340,112

**VEHICLE AIR TEMPERATURE CONTROL APPARATUS**  
Shinji Sutoh; Seiji Sumikawa, both of Konan, and Toshizo Hara,  
Higashi Matsuyama, all of Japan, assignors to Diesel Kiki  
Company, Ltd., Tokyo, Japan

Filed Aug. 18, 1980, Ser. No. 179,313  
Claims priority, application Japan, Aug. 20, 1979, 54-105680  
Int. Cl.<sup>3</sup> F25B 29/00; F24F 3/14  
U.S. Cl. 165—16 8 Claims

## 8 Claims

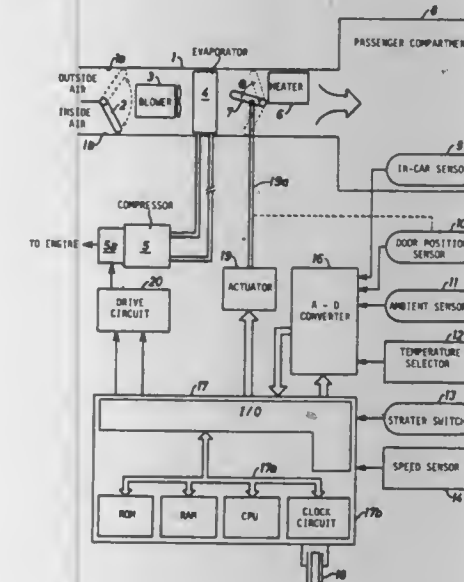


1. A temperature control apparatus comprising:  
main duct means having an upper outlet, a lower outlet and  
control door means for selecting one of the upper outlet  
and the lower outlet;  
heating means disposed in the main duct means;  
bypass duct means having an inlet which communicates with  
the main duct means upstream of the heating means and an  
outlet which communicates with the upper air outlet; and  
humidifier means disposed in the bypass duct means.

4,340,113  
ELECTRIC CONTROL METHOD AND APPARATUS FOR  
AUTOMOBILE AIR CONDITIONING SYSTEM  
Yasuhiro Iwata, Aichi; Kiyoshi Usami, Obu; Teiichi Nabeta,  
Okazaki; Masanori Naganoma, Kariya, and Yasuhumi  
Kojima, Gifu, all of Japan, assignors to Nippondenso Co.,  
Ltd., Kariya, Japan

Filed Jul. 17, 1979, Ser. No. 58,383  
Claims priority, application Japan, Jul. 18, 1978, 53-87908  
Int. Cl.<sup>3</sup> F28F 27/00; F25B 29/00; B60H 3/00  
U.S. Cl. 165—25 4 Claim

#### 4 Claims



1. An electric control apparatus for an automobile air conditioning system including an air duct for allowing the flow of air into a passenger compartment of the automobile, an evaporator connected with a refrigerant compressor and arranged within said air duct for cooling the air flowing therethrough, a heater arranged for warming a portion of the cooled air flowing from said evaporator into said compartment therethrough, an air-blend door arranged between said evaporator and said heater for controlling an amount of the cooled air flowing into said heater and controlling an amount of the cooled air directly flowing into said compartment, an electrically operated clutch

mechanism for connecting said compressor to a prime mover of the automobile upon energization thereof and for disconnecting said compressor from said prime mover upon deenergization thereof, and an actuator arranged to control the setting of said air-blend door so as to adjust the actual temperature of air in said compartment and maintain it at a desired value, said control apparatus comprising:

value, said control apparatus comprising:  
first means for producing a first electric binary signal indicative of the actual temperature of air in said compartment;  
second means for producing a second electric binary signal indicative of the actual temperature of air outside the automobile;  
third means for producing a third electric binary signal indicative of the setting of said air-blend door;  
a digital computer programmed to discriminate the setting of said air-blend door in relation to a predetermined value, the predetermined value being defined on a basis of a reference position of said air-blend door in which the cooled air from said evaporator is fully blocked from said heater, said computer producing a first control signal when a value of said third binary signal is above the predetermined value and a second control signal when a value of said third binary signal is below the predetermined value, said computer being further programmed to calculate a value indicative of optimum setting of said air-blend door maintaining the desired temperature of air in said compartment in relation to the actual temperatures of air in said compartment and outside the automobile, said computer producing a third control signal indicative of the calculated value to be applied to said actuator; and  
fourth means for deenergizing said clutch mechanism in response to said first control signal from said computer and for energizing said clutch mechanism in response to said second control signal from said computer.

4,340,114  
CONTROLLED PERFORMANCE HEAT EXCHANGER  
FOR EVAPORATIVE AND CONDENSING PROCESSES  
Marco Levy, Bal Harbor, Fla., assignor to Lambda Energy  
Products, Inc., Bal Harbor, Fla.

Filed Nov. 30, 1979, Ser. No. 98,730  
Int. Cl.<sup>3</sup> F28B 1/00

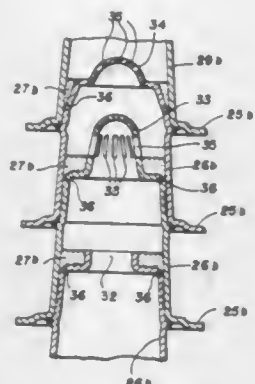
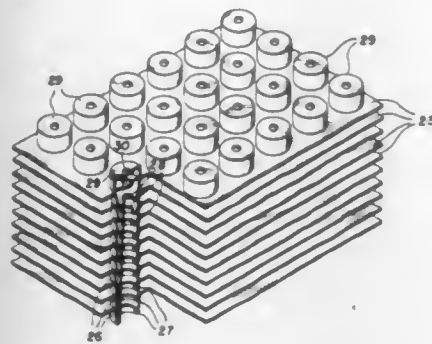
U.S. Cl. 165-110

#### 4 Claims

1. A heat exchanger structure particularly adapted for liquid-to-gas heat transfer comprising a multiplicity of spaced parallel heat transfer plates in fixed relationship and being in thermal contact with an external fluid medium, a multiplicity of spaced parallel axis tapered telescopically interfitted cup-like elements formed integrally on said plates and projecting from corresponding surfaces of the plates in coaxial relationship to form fixed parallel columns through the plates at right angles to the planes occupied by the plates and across the spaces between the plates, whereby such spaces surround the columns formed by the cup-like elements, coaxial spaced nozzle elements integral with the cup-like elements and projecting therefrom coaxially in spaced relationship and in one direction to form through the centers of said columns gas flow passages which are isolated from the spaces between said plates, portions of the cup-like elements surrounding said nozzle elements forming liquid traps in the columns, and gas pressure respon-



sive liquid delivery means at one end of each column operable to deliver liquid into the columns in counter-flow relationship



to the gas flow therethrough, whereby small amounts of the liquid can enter said traps and be held therein.

4,340,115

## WRAPPER FOR A HEAT EXCHANGE UNIT

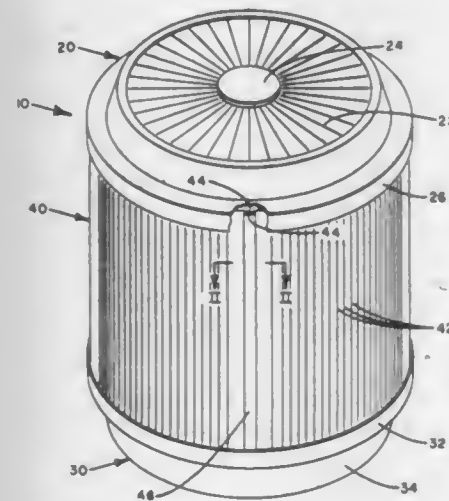
William E. Wright, E. Syracuse, and Fred V. Honnold, Jr., Fayetteville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 7, 1979, Ser. No. 18,204

Int. Cl.<sup>3</sup> F25D 17/06; F28F 11/00

U.S. Cl. 165—122

3 Claims



1. A cylindrical heat exchange unit for use with a refrigeration circuit having refrigerant flowing therethrough which comprises:

- a base pan for supporting the unit;
- a slit fin heat exchanger secured in a cylindrical configuration and supported by the base pan, said heat exchanger serving to transfer heat energy between refrigerant flowing through the heat exchanger and air flowing over the heat exchanger;
- a wrapper supported by the base pan for encasing the slit fin heat exchanger, said wrapper including vertically extending louver openings formed into groupings spaced about

the entire circumference of the unit with solid vertical portions located between the groupings for providing structural support between other portions of the heat exchange unit, said louver openings being formed to face opposite directions on opposing sides of the unit to enable the slit fin heat exchanger to be hidden from view while allowing air flow thereto, said wrapper additionally having closure means located at the ends thereof;

means for securing the ends of the wrapper to maintain the wrapper in position;

a top cover for encasing the top portion of the unit, said top cover being supported by the wrapper about the circumference of the unit and including air discharge openings; and

fan means for drawing air into the heat exchange unit through the louver openings in the wrapper, then through the slit fin heat exchanger and discharging said air from the unit through the top cover.

4,340,116

## SLIP DEPLOYMENT MECHANISM

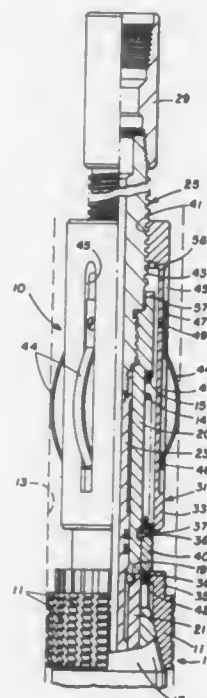
Stanley A. Weise, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 15, 1980, Ser. No. 187,000

Int. Cl.<sup>3</sup> E21B 23/00

U.S. Cl. 166—215

10 Claims



1. A slip deployment mechanism for use in a tubing string in conjunction with a well tool having a frusto-conical expander head for setting a plurality of slips segments against the interior wall of a well casing, said mechanism comprising means for connecting to the tubing string, a spring reaction surface extending laterally relative the longitudinal axis of said mechanism and connected with said connecting means, said slip segments being releasably secured to said connecting means and spaced longitudinally from said reaction surface, a slip retainer mounted on said connecting means for longitudinal movement relative to said reaction surface between a locked position in confining engagement with said slips segments and a release position freeing said slips segments to be set against the interior wall of the casing, interfitting means on said slips segments and said connecting means for coacting with said retainer to secure said slips segments in a locked position relative to said reaction surface when said retainer is in its locked position, and a longitudinally-acting spring mounted between said reaction surface and said slip segments and urging said segments toward an initially set position in engagement with both said expander head and the interior wall of the casing when said slip retainer is moved into its release position.

4,340,117

## UNDERWATER WELL INSTALLATIONS AND HANDLING STRING JOINT THEREFOR

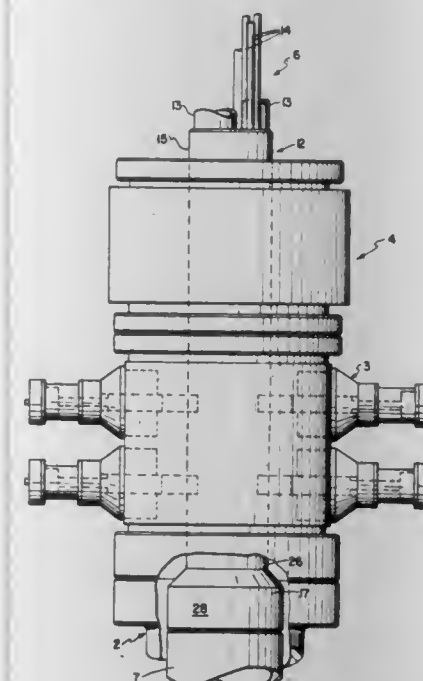
John E. Lawson, London, England, assignor to Armco Inc., Middletown, Ohio

Filed Feb. 11, 1980, Ser. No. 120,044

Int. Cl.<sup>3</sup> E21B 7/12

U.S. Cl. 166—341

3 Claims



1. In an underwater well apparatus, the combination of underwater wellhead means including

a wellhead upper body having an upright bore, and blowout protector means mounted on the wellhead upper body;

handling string means capable of extending from the wellhead upper body to an operational base at the surface of the body of water and including

a lowermost joint in the form of a single solid metal body having

a cylindrical outer surface of a length adequate to extend completely through the blowout protector means,

at least one larger diameter through bore, and

a plurality of smaller diameter through bores, the upper end of the at least one larger diameter through bore being formed with means for connection to a joint of handling string pipe, the upper ends of said smaller diameter through bores each being formed with means for connection to a small diameter flow conduit,

a string of pipe connected to the upper end of the lowermost joint in load-supporting relation therewith and in communication with the larger diameter through passage, and

a bundle of small diameter conduits extending beside the string of pipe with each conduit connected to and communicating with a different one of the smaller diameter through bores of the lowermost joint,

the transverse dimensions of the metal body of the lowermost joint being such that the body can be passed downwardly through the blowout protector means until the cylindrical outer surface of the body is presented for operative engagement by the blowout protector means;

a handling tool comprising

body means having an upper end and flow passage means opening upwardly therethrough, the body means being dimensioned to pass through the blowout protector means and enter the bore of the wellhead upper body,

the upper end portion of the handling tool body means having a transverse annular outwardly opening locking groove having a frustoconical upper side wall

which tapers downwardly and inwardly, and a cylindrical inner wall, and downwardly directed means for operative engagement with a well component;

the lower end portion of the metal body of said lowermost joint having a downwardly opening socket dimensioned to receive the upper end portion of the handling tool, the socket being defined by an annular dependent wall having a cylindrical inner surface,

the annular dependent wall being formed with an inwardly opening transverse annular locking groove having

a frustoconical upper side wall which tapers downwardly and inwardly at the same angle as does the upper side wall of said outwardly opening groove of the handling tool body,

a frustoconical lower side wall parallel to said upper side wall of the inwardly opening groove,

and

an outer wall; and

load-bearing coupling means interconnecting the upper end of the handling tool and the lower end of the lowermost joint of the handling string and comprising

a plurality of arcuate segments arranged in an annular series and slidably engaged between the upper and lower side walls of the inwardly opening groove in the annular dependent wall and projecting inwardly into said outwardly opening groove of the handling tool, the inner portions of said segments having upper frustoconical faces slidably engaged with the upper side wall of said outwardly opening groove, and

a plurality of segment adjusting screws operatively engaged in threaded bores which extend downwardly and inwardly through said annular dependent wall.

4,340,118

## SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7, Brüschental, Zug, Switzerland Division of Ser. No. 707,346, Jul. 21, 1976, Pat. No. 4,109,731.

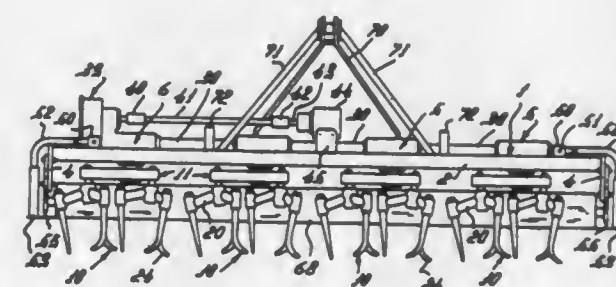
This application Jun. 19, 1978, Ser. No. 916,523

Claims priority, application Netherlands, Jul. 24, 1975, 7508821

Int. Cl.<sup>3</sup> A01B 33/06

U.S. Cl. 172—49.5

1 Claim



1. A soil cultivating implement comprising a frame and a plurality of soil working members arranged in a row and rotatably mounted along the length of a transverse, elongated portion of said frame, said members being in driven arrangement with each other and rotatable about upwardly extending axes defined by respective shafts and driving means connected to rotate said members, said driving means including an upper rotary shaft and a lower driving shaft that extend horizontally transverse to the direction of implement travel, said rotary shaft having an outer lateral end that engages said driving shaft through a change speed gear arrangement, said driving shaft including a coaxial shaft segment that drives an outer one of said members, said driving shaft comprising a common driving shaft for the remaining soil working members that extends in transverse alignment with said row, as seen in plan, and adjacent the respective upwardly extending shafts of said members, said speed gear arrangement comprising interchangeable gears



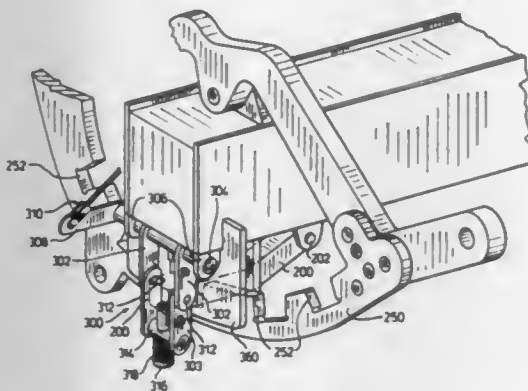
arranged one above the other in a gear box secured adjacent one lateral side of the frame portion, said rotary driving shafts being supported above the length of said elongated frame portion.

**4,340,119**  
**MOTOR GRADER WITH BAR LINKAGE BLADE POSITIONING APPARATUS**

Jack G. MacDonald, Goderich, Canada, assignor to Champion Road Machinery Limited, Goderich, Canada  
Continuation-in-part of Ser. No. 912,559, May 6, 1978, abandoned. This application Apr. 11, 1980, Ser. No. 139,249  
Int. Cl.<sup>2</sup> E02F 3/76

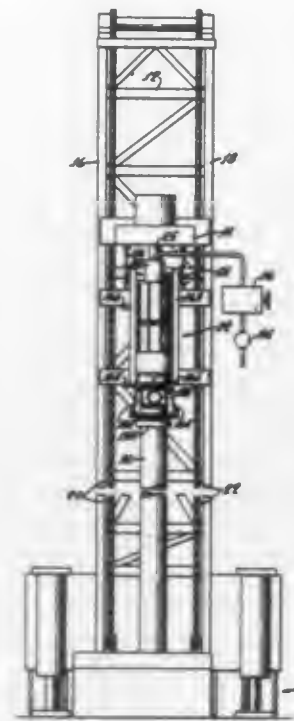
U.S. Cl. 172—789

8 Claims



1. In a motor grader having a support frame, a draw bar swivelled thereto adjacent its forward end and a scraper blade rotatably supported from said draw bar, a beam member transversing and centered on the top of said support frame and centrally pivoted to rotate about an axis extending in the fore and aft direction of the grader and secured to the upper surface of said support frame to adjusted positions, a link member removably fastened to said beam at points spaced at each side of said support frame such that said link and said beam encircle said support frame, the combination of said beam and said link member universally supporting outwardly to each side of said support frame a pair of hydraulically actuated lift cylinders, each cylinder extending downwardly to and universally connected to said draw bar, a double acting hydraulically actuated shift cylinder universally connecting the combination of said beam member and said link member to said draw bar for moving the aft portion of said draw bar to either side of said frame, an improved lock mechanism secured adjacent the lower surface of the grader frame for holding the combination of said beam member and said link member in selected adjusted positions and allowing the combination to be rotated to various adjusted positions when released, comprising a lock bar pivoted at one end to the lower surface of said frame for movement from a lock position to a clear position, said link member including a plurality of notches for receiving said lock bar and securing said beam at various adjusted positions, means for moving and maintaining said lock bar in the desired position and further including guide support means for transmitting forces applied to said bar lock by said link member to the grader frame, wherein said means for moving and maintaining said bar lock includes a bar linkage comprising a first link pivotally connected to said frame and a second link pivotally connected to said first link, and the opposite end of said second link secured to the free end of said bar lock, said linkage further including compensation means for allowing said linkage to pass through its fully extended position to an over-center position while still providing abutting contact of said bar lock in one of said notches in the over-center position and further including stop means for limiting the movement of said links after they have been passed through the over-center position.

**4,340,120**  
**ANNULAR CASING HAMMER**  
Ernest D. Hauk, Yucca Valley, and Jesse C. Kirkpatrick, Mission Viejo, both of Calif., assignors to Hawk Industries, Inc., Signal Hill, Calif.  
Continuation-in-part of Ser. No. 888,312, Mar. 20, 1978, Pat. No. 4,232,752. This application Jun. 23, 1980, Ser. No. 161,660  
Int. Cl.<sup>3</sup> B23B 45/16; B25D 9/00, 11/00, 13/00  
U.S. Cl. 173—131 14 Claims

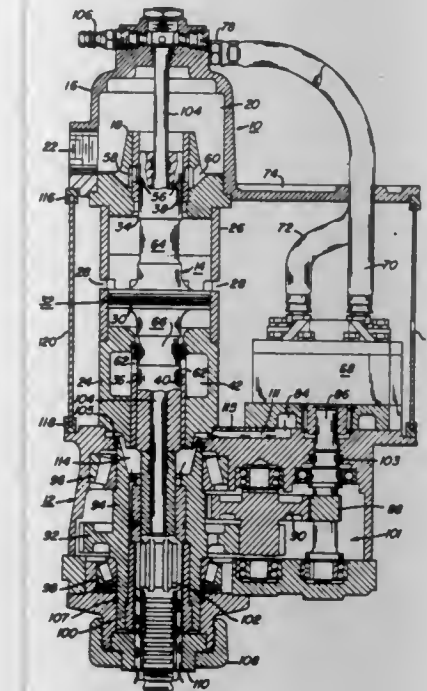


1. A pipe hammer comprising  
an end cap,  
an outer sleeve fixed to said end cap,  
an inner sleeve having a rear end rigidly fixed to said end cap, said inner sleeve being concentric with and in radially spaced relation to said outer sleeve to define an annular chamber closed at one end by said end cap, the front end of said inner sleeve being free of connection to said end cap,  
an annular piston slidably mounted in said chamber with a radial piston clearance between said piston and said chamber,  
an annular anvil slidably mounted in and sealing the other end of said chamber and having radial anvil clearance between said anvil and said chamber that is less than said piston clearance, said anvil clearance being sufficiently small to cause said anvil to radially position said sleeves relative to each other at said other end of the chamber to maintain concentricity of said sleeves and to stabilize the free front end of said inner sleeve,  
means for reciprocating said piston within said chamber to cause the piston to repetitively strike said anvil, and  
means for receiving blows from said anvil and transmitting such blows to a pipe to be driven.

**4,340,121**  
**PNEUMATIC ROCK DRILLS**  
Edward A. Bailey, Newport, and Louis H. LeBlanc, Jr., Claremont, both of N.H., assignors to Joy Manufacturing Company, Pittsburgh, Pa.  
Filed Jan. 9, 1980, Ser. No. 110,587  
Int. Cl.<sup>3</sup> B25D 9/18 4 Claims

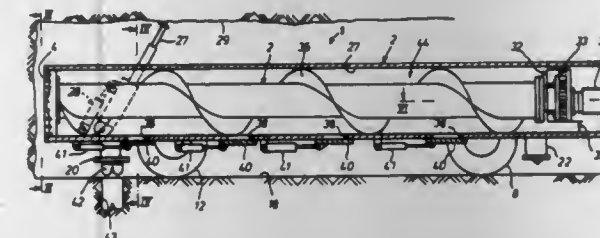
1. A pneumatic motor comprising a cylinder having exhaust ports therein, reduced-diameter cylinders coaxial with said first-mentioned cylinder at opposite ends thereof, receivers for fluid under pressure adjacent said reduced-diameter cylinders, inlet ports in said reduced-diameter cylinders for connecting the interior of each cylinder to its respective receiver, a hammer piston having an enlarged piston portion reciprocable

within said first-mentioned cylinder, reduced-diameter piston portions extending axially on opposite sides of said enlarged piston portion and reciprocable within said reduced-diameter cylinders, means on said reduced-diameter piston portions for alternately connecting the respective receivers through said inlet ports to one and then the other side of said first-mentioned



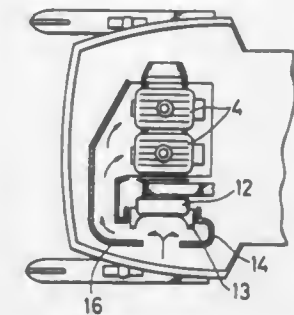
cylinder, conduit means external to said cylinders interconnecting said receivers and said conduit means comprises at least one tube interconnecting the respective receivers at a point radially offset with respect to said first-mentioned cylinder, and supply port means in communication with one said receiver for supplying motive fluid to said cylinder there-through.

**4,340,122**  
**MOUNTED DRILLING APPARATUS**  
Heinrich Mantel, Salzgitte, Fed. Rep. of Germany, assignor to Salzgitte Maschinen und Anlagen Aktiengesellschaft, Salzgitte, Fed. Rep. of Germany  
Filed Jul. 24, 1980, Ser. No. 172,846  
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931208  
Int. Cl.<sup>3</sup> E21C 1/10, 11/00, 27/20, 31/02  
U.S. Cl. 175—78 17 Claims



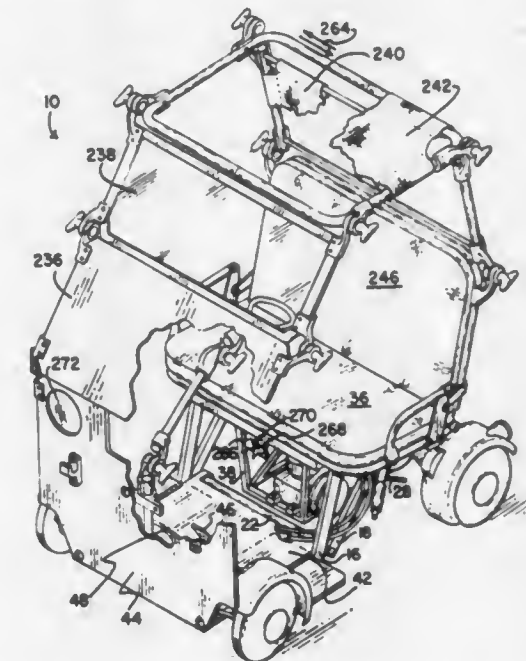
1. A drilling apparatus comprising a mount formed with a longitudinal passageway; a feeding mechanism at least partially arranged in said passageway; a rotary drive including means for holding at least one drill rod, said rotary drive being at least partially arranged in said passageway and coupled to said feeding mechanism for being longitudinally moved in said passageway; means provided on said mount for guiding said rotary drive in a fixed angular position during its longitudinal movement in said passageway and for intercepting the reaction moments generated in the course of the drilling operation, and wherein said mount is constituted by a cylindrical shell delimiting a passageway having an outward opening which extends in longitudinal direction over a major part of the shell.

**4,340,123**  
**APPARATUS FOR COOLING AN ENGINE**  
Tetsuzo Fujikawa, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan  
Filed Jun. 11, 1980, Ser. No. 158,440  
Claims priority, application Japan, Jun. 13, 1979, 54-74899  
Int. Cl.<sup>3</sup> F01P 7/02 2 Claims



1. Variable air supply apparatus for cooling an engine having a belt speed converter connected to an output shaft of the engine, the converter including a fixed sheave secured to the output shaft and a movable sheave axially movable relative to said fixed sheave and rotatable therewith, the sheaves forming a space therebetween that receives a belt, said apparatus comprising a fan adapted to be attached to said movable sheave and to produce positive air flow when said engine rotates, a casing around said fan and having an air inlet opening, and an air outlet duct communicating with said casing and mounted to convey air to cool the engine, said fan being movable within said casing to thereby produce varying amounts of air flow upon movement of said movable sheave, said casing having a recess formed therewithin displaced from said duct, said fan being retracted into said recess as said movable sheave moves toward said fixed sheave so that said fan produces a relatively small amount of air flow.

**4,340,124**  
**FOLDABLE MINICAR**  
Lloyd H. Leonard, 4414 Woodman Ave., Apt. 304, Sherman Oaks, Calif. 91413  
Filed Mar. 12, 1980, Ser. No. 129,781  
Int. Cl.<sup>3</sup> B62D 39/00 16 Claims

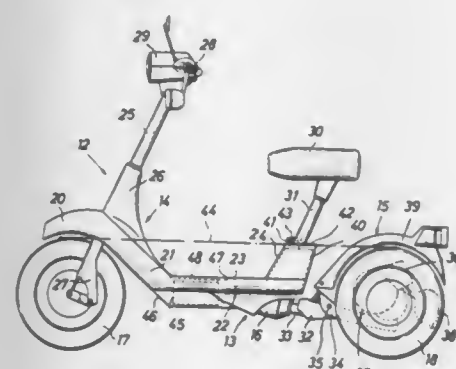


1. A foldable vehicle having a motor, a seat, a pair of spaced front wheels and a pair of spaced rear wheels, said foldable vehicle comprising:  
a first and a second frame, said front wheels being attached



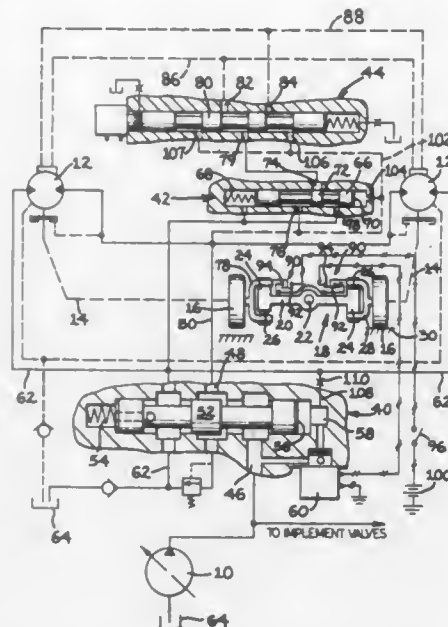
to said first frame and said rear wheels being attached to said second frame,  
said motor and said seat being supported by said second frame,  
said first frame being designed and arranged to support the feet of a person sitting in said seat, and,  
articulated linkage connecting said first and second frames and being capable of rotating said first and second frames with respect to each other between operating and folded positions while maintaining said first and second frames in substantially the same horizontal angular relationship with each other,  
wherein said foldable vehicle is designed and arranged to be folded and unfolded by applying a horizontal force on one of said frames in the opposite direction as a horizontal force being applied on the other of said frames.

**4,340,125**  
**STABILIZED MOTOR VEHICLE**  
Masaki Watanabe, Urawa; Hiroshi Shimoyama, Fujimi, and Keiji Suzuki, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan  
Filed Mar. 27, 1980, Ser. No. 134,570  
Claims priority, application Japan, Apr. 5, 1979, 54-41344; Apr. 6, 1979, 54-45384[U]  
Int. Cl.<sup>3</sup> B62D 61/08; B62K 5/02  
U.S. Cl. 180—215 7 Claims



7. A motor vehicle comprising:  
a vehicle body;  
a front wheel rotatably supported on and located forwardly of said vehicle body;  
at least one rear wheel rotatably supported on and located rearwardly of said vehicle body, there being defined a reference level tangential to said front and rear wheels at the upper edges thereof;  
a motor carried on said body and adjacent to said rear wheel and drivingly connected to said rear wheel;  
a fuel tank mounted on said vehicle body at a position below said reference level;  
said body including a floor located below said reference level and having a pair of laterally spaced footrests and a casing disposed between said footrests for accommodating therein said fuel tank, said floor being disposed substantially in horizontal alignment with the axes of said front and rear wheels;  
said floor having an opening between said footrests;  
said casing comprising a trough-shaped cover located below said opening and fixed to said footrests and a hood located over said opening;  
said fuel tank being interposed between said cover and said hood through said opening;  
said floor having a flange jointly defining said opening and extending upwardly into said hood; and  
said flange jointly supporting said fuel tank.

**4,340,126**  
**OVERSPEED CONTROL FOR A VEHICLE DRIVE SYSTEM**  
Donald J. Larson, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.  
PCT No. PCT/US79/00068, § 371 Date Feb. 8, 1979, § 102(e) Date Feb. 8, 1979, PCT Pub. No. WO80/01668, PCT Pub. Date Aug. 21, 1980  
PCT Filed Feb. 8, 1979, Ser. No. 73,410  
Int. Cl.<sup>3</sup> B60K 17/10  
U.S. Cl. 180—305 10 Claims

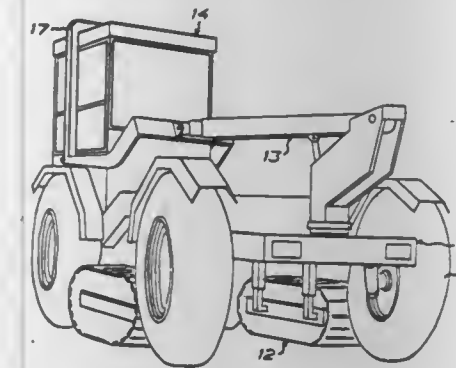


1. In a vehicle drive system including a wheel (16) to be driven, a suspension (18) having multiple relatively movable parts (20, 24, 26, 28) and mounting the wheel for rotation and translation on a vehicle frame, a hydraulic rotary output motor (12) connected to the wheel for driving the wheel, a hydraulic pump (10) for providing hydraulic fluid under pressure to the motor, a conduit (50, 50L, 50R) interconnecting the pump and the motor, and a flow control valve (40, 40L, 40R) in the conduit for controlling the flow of hydraulic fluid between the pump and motor, the improvement comprising:  
sensing means (90, 92, 94) associated with two of the relatively movable parts of the suspension for sensing relative movement therebetween indicative of the wheel losing contact with the underlying terrain on which it is adapted to ride; and  
valve operating means (54, 60, 60L, 60R) responsive to said sensing means for substantially immediately closing said valve and thereby halt the flow of hydraulic fluid between said pump and motor upon the wheel losing said contact to prevent overspeed of said motor.

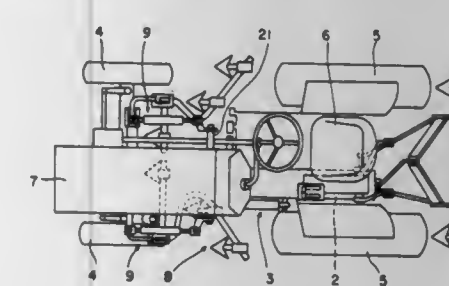
**4,340,127**  
**TRACTOR**  
Peter O. Broberg, Hamngatan 4, S-261 31 Landskrona, Sweden  
PCT No. PCT/SE78/00036, § 371 Date Apr. 30, 1979, § 102(e) Date Apr. 30, 1979, PCT Pub. No. WO79/00118, PCT Pub. Date Mar. 8, 1979  
PCT Filed Aug. 30, 1978, Ser. No. 47,651  
Int. Cl.<sup>3</sup> B60K 25/00  
U.S. Cl. 180—327 15 Claims

1. A tractor comprising  
a subframe provided with wheels for ground contact,  
a drive unit on said subframe for providing power to said wheels to propel said tractor,  
a telescoping arm having one end mounted on said subframe, a driver's cab having controls for controlling the tractor removably mountable on said subframe, and alternatively

removably mountable on the other end of said telescoping arm,



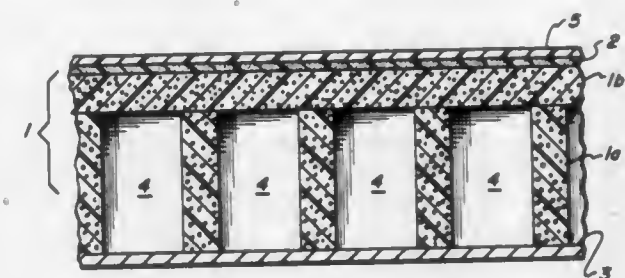
**4,340,128**  
**OFFSET TYPE TRACTOR**  
Yasunobu Yamaue, Izumi, and Tetsuo Ishioka, Wakayama, both of Japan, assignors to Kubota, Ltd., Japan  
Continuation of Ser. No. 891,764, Mar. 30, 1978, abandoned.  
This application May 16, 1980, Ser. No. 151,097  
Claims priority, application Japan, Jul. 15, 1977, 52/94626[U]; Oct. 27, 1977, 52/145466[U]  
Int. Cl.<sup>3</sup> B60K 17/00; B60D 1/10  
U.S. Cl. 180—900 7 Claims



1. An offset type tractor comprising a pair of left and right front wheels, a pair of left and right rear wheels, and front wheels and the rear wheels having a common longitudinal center line, a main frame unit offset to one lateral side of said longitudinal center line and having a prime mover assembly on a forward portion thereof and a transmission on a rearward portion thereof, an operator's seat mounted on a side of the main frame unit adjacent said longitudinal center line, a first working implement mounted between the front and rear wheels and offset relative to the main frame unit toward the longitudinal center line, and a second working implement mounted rearwardly of the rear wheels and offset relative to the main frame unit toward the longitudinal center line, front hydraulic means disposed on a longitudinal intermediate portion of the main frame unit and on a side thereof opposite the operator's seat,  
front rod means disposed on an upper and longitudinally intermediate portion of the main frame unit to extend transversely through left and right sides thereof and adapted to be rotatable by the action of said front hydraulic means,  
lift arm means connected to left and right ends of said front rod means for raising and lowering said first working implement,  
rear hydraulic means mounted in a cylinder housing disposed over said transmission,  
rear rod means disposed on an upper rearward portion of the main frame unit to extend transversely through the left and right sides thereof and adapted to be rotatable by the action of said rear hydraulic means,  
laterally inclined lift arm means connected to left and right

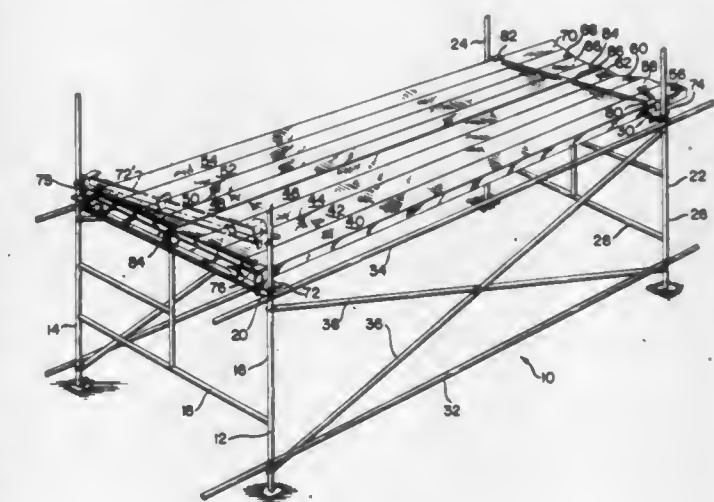
ends of said rear rod means for raising and lowering said second working implement, each of said lift arm means extending rearwardly and towards said center line, and raising and lowering operating means operable independently of said front and rear hydraulic means whereby said first and second working implements are separately operable.

**4,340,129**  
**ACOUSTICAL LAMINATE CONSTRUCTION AND ATTENUATED SYSTEMS COMPRISING SAME**  
Edward F. Salyers, Appollo, Pa., assignor to Cabot Corporation, Kokomo, Ind.  
Filed May 1, 1980, Ser. No. 145,422  
Int. Cl.<sup>3</sup> G10K 11/16; B32B 3/24, 3/26  
U.S. Cl. 181—200 11 Claims



1. An acoustic laminate construction comprising:  
(A) a first lamina having a thickness of at least 0.2 inch and being composed of an energy-absorbing flexible polymeric foam composition, said lamina having a loss factor,  $\eta$ , of at least 0.4 at 25° C. and 100 Hz excitation frequency;  
(B) a second lamina composed of a flexible polymeric weighted composition, said second lamina having a surface density of at least about 0.5 lb/ft<sup>2</sup>, said second lamina being of substantially less thickness than said first lamina; the natural resonant frequency of the overall laminate construction being no greater than about 1000 Hz.

**4,340,130**  
**SCAFFOLD FRAME HEADER**  
George E. Payne, Mission Viejo, and Richard G. Meehan, Laguna Niguel, both of Calif., assignors to Kwikform America, Inc., Fountain Valley, Calif.  
Filed Jul. 24, 1980, Ser. No. 171,957  
Int. Cl.<sup>3</sup> E04G 1/14, 1/15  
U.S. Cl. 182—179 27 Claims

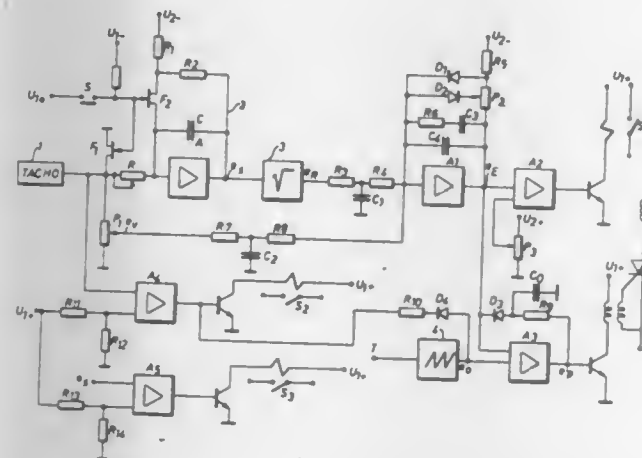


1. An assembly for converting a conventional scaffold mounting overlapping wood planks to a scaffold supporting plural hollow folded metal planks so that their adjacent juxtaposed ends are in the same plane to provide an even walkway surface comprising:



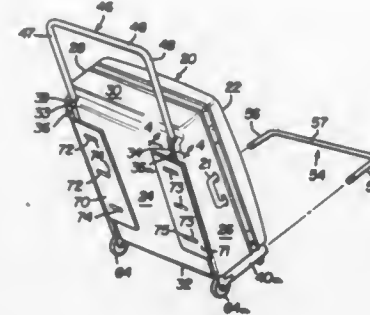
plank support means for providing an elongated shelf-like member for supporting the ends of said folded metal planks;  
 means for releasably mounting said plank support means to a conventional scaffold;  
 a plank hold-device shoulder, attached to said shelf-like member restraining one of said planks from vertical movement and transverse horizontal movement; and  
 a plank retainer lug vertically mounted on said shelf-like member for engaging a flange of said one plank for preventing longitudinal horizontal movement of said one plank relative to said plank support means so that said conventional scaffold is prevented from pulling away from said hollow folded metal planks mounted on said plank support means, said lug preventing upward vertical movement of said one plank.

**4,340,131**  
**OPERATIONAL CONTROL SYSTEM FOR LIFT AND ELEVATOR MACHINERY**  
 Arvid Eriksson, Stockholm, Sweden, assignor to Elevator GmbH, Baar, Switzerland  
 Filed Dec. 19, 1980, Ser. No. 218,080  
 Claims priority, application Sweden, Dec. 28, 1979, 7910738  
 Int. Cl.<sup>3</sup> B66B 1/32; H02P 3/26  
 U.S. Cl. 187—29 R **2 Claims**



1. Operational control system for electrodynamic braking of lift and elevator machinery, said machinery comprising a one-speed A.C. asynchronous motor of the short-circuit type equipped with a mechanical brake, characterized by means for sensing the speed of the lift, a D.C. source for feeding the field windings of the A.C. asynchronous motor to produce a rectified magnetic braking flow through the rotor of the said asynchronous motor to produce electrodynamic braking, and integrating means for integrating the output signal from the member sensing the number of rotations to generate a reference signal for the retardation distance, and converting means having a root-extracting function to linearize the reference signal for the retardation distance, first comparator means for comparing the output signal indicating the number of revolutions with the linearized signal for the retardation distance to produce a fault signal for controlling an electric control signal for said D.C. direct current source, second comparator means for comparing the fault signal with a reference level corresponding to the available maximum electrodynamic braking to produce a signal for activating existing mechanical brake in said machinery.

**4,340,132**  
**SUITCASE AND CART ASSEMBLY**  
 Juan F. Cerna, Miami, Fla., assignor to J.F.C. Investments, Inc., Miami, Fla.  
 Filed Jan. 12, 1981, Ser. No. 224,490  
 Int. Cl.<sup>3</sup> A45C 13/38; B62B 1/12  
 U.S. Cl. 190—18 A **3 Claims**

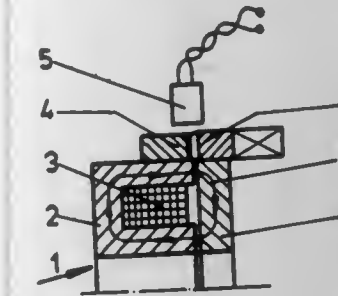


1. In combination:  
 a suitcase having a top wall, a bottom wall and two pairs of opposite side walls, said bottom wall presenting a pair of open channels which extend in close proximity to and parallel to one pair of opposite side walls;  
 a pair of substantially L-shaped tubular frame members, each having two legs adjoining each other at a corner, each of said frame members having one of its legs snugly seated in a corresponding channel in said bottom wall and slidably removable therefrom; the other leg of each of said frame members extending parallel to said one pair of opposite side walls adjacent a third of said side walls;  
 a generally U-shaped handle having parallel legs telescopically received respectively in said one legs of said frame members for manipulating said suitcase; said handle having a cross arm movable from a retracted position near the fourth of said side walls to an extended operating position spaced outward from said fourth side wall;  
 and a pair of closures adjustably mounted on said bottom wall for adjustment between respective first positions extending across said channels to retain said one legs of the frame members therein and respective second positions uncovering said channels to permit removal of said one legs of said frame members therefrom;  
 said closures comprising flat plates slidably mounted on the outside of said bottom wall between said channels, and further comprising means acting between said bottom wall and said plates for guiding said plates laterally of said channels when the plates are adjusted between said first and second positions thereof.

**4,340,133**  
**DEVICE FOR SENSING THE ENGAGEMENT POSITION OF A CLUTCH**  
 Arthur Biersch, Markdorf, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Fed. Rep. of Germany  
 Filed May 23, 1980, Ser. No. 152,814  
 Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2921032  
 Int. Cl.<sup>3</sup> F16D 27/02, 27/12, 43/20  
 U.S. Cl. 192—30 W **14 Claims**

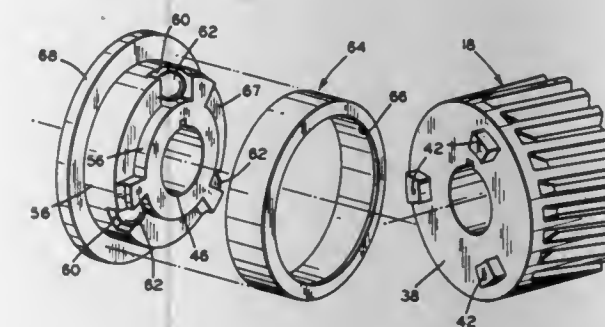
1. A device for sensing the engagement position of a clutch adapted to be engaged through the axial movement of a movable section of the clutch with an engagable section of the clutch, comprising a magnetic circuit adapted to be responsive to movement of the movable clutch section relative to the engagable clutch section, sensor means mounted in a predetermined position relative to the clutch sections and adapted to

respond to a leakage magnetic flux from the magnetic circuit, thereby to provide a sensing of the position of the movable



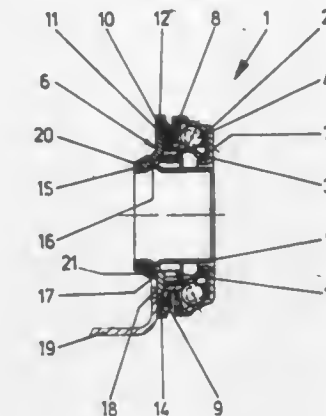
clutch section and sensing of the engagement position of the clutch.

**4,340,134**  
**BALL SHIFT MECHANISM**  
 Garry K. Reiss, Mt. Vernon, Ohio, assignor to The J. B. Foote Foundry Co., Fredericktown, Ohio  
 Filed Mar. 10, 1980, Ser. No. 128,451  
 Int. Cl.<sup>3</sup> F16D 11/10  
 U.S. Cl. 192—67 R **2 Claims**



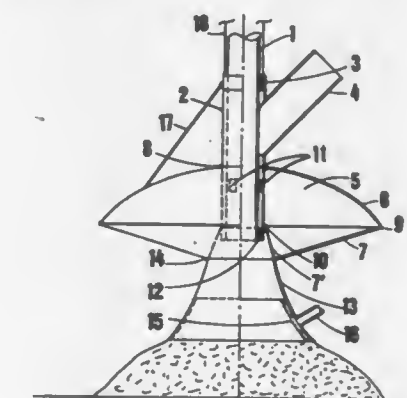
1. Shift mechanism for connecting a rotatable member with a shaft, to cause said member to rotate with said shaft, said mechanism comprising a clutch collar mounted on the shaft for rotatable movement therewith and for lineal movement with respect thereto, said clutch collar having at least one lug extending toward the rotatable member and the rotatable member having at least one lug extending toward said clutch collar, said clutch collar engaging the rotatable member when said collar is in an engaged position, and spaced from the rotatable member when said clutch collar is in a disengaged position, a ball, said lugs having straight surfaces extending substantially parallel to the axis of said shaft, with said straight surfaces contacting said ball at points on a line extending through the center of said ball when said clutch collar is in the engaged position, one of said clutch collar and said rotatable member having a recess for locating said ball adjacent the respective lug, with the other lug contacting said ball when said collar is in the engaged position and spaced from said ball when said collar is in the disengaged position, said one of said clutch collar and said rotatable member having said recess also forming a long shallow groove adjacent said recess to receive the other lug, said ball extending out of said recess above said groove by a distance exceeding the radius of said ball.

**4,340,135**  
**CLUTCH RELEASE DEVICE**  
 Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eusenheim; Lothar Walter, and Heinrich Kunkel, both of Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany  
 Filed Mar. 3, 1980, Ser. No. 126,437  
 Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 7910203[U]  
 Int. Cl.<sup>3</sup> F16D 23/14  
 U.S. Cl. 192—98 **7 Claims**



1. In a clutch release device including a pressure plate, a sliding sleeve extending into and connected to the pressure plate, and a clutch thrust bearing having a stationary bearing ring axially abutting the pressure plate, the stationary bearing ring being secured in the axial direction and against turning with respect to the pressure plate, and a clutch lever affixed to the pressure plate by means of corresponding interconnecting elements; the improvement wherein the sliding sleeve has a flange on the side thereof away from the stationary bearing ring, wherein a holding ring is provided between the flange of the sliding sleeve and the pressure plate, the holding ring having an elastic outer rim, the clutch lever having an aperture with radially opposite inwardly directed projections, the outer diameter of the holding ring being greater than the distance between the surfaces of the projections of the clutch lever that are directed toward one another, the clutch lever being held against said pressure plate by said holding ring.

**4,340,136**  
**APPARATUS FOR THE DUST-FREE HANDLING OF POWDER SUBSTANCES**  
 Jean-Pascal Hanrot, Aix-en-Provence, and Jacky Volpeltiere, Gardanne, both of France, assignors to Aluminum Pechiney, Lyons, France  
 Filed May 19, 1980, Ser. No. 151,380  
 Claims priority, application France, May 18, 1979, 79 13543  
 Int. Cl.<sup>3</sup> B65G 69/18, 11/20  
 U.S. Cl. 193—15 **13 Claims**



1. Apparatus for handling powder substance formed by a



central pipe for downward feed of the substance, an outer concentric pipe for the upward movement of dust, an axial corolla-like member which is open at its two ends and which flares outwardly downwardly and which is disposed below the two concentric pipes, and a suction means communicating with the outer concentric pipe whereby said pipe can be put under vacuum, comprising:

means gripping the upper portion of the outer concentric pipe onto the inner pipe,

the outer concentric pipe comprises communication openings provided with filter means,

a closed bell-like member is placed around the outer pipe which passes therethrough and to which it is connected sealingly at an upper level and at a lower level, said two levels being disposed on respective sides of the filter communicating openings of the outer pipe while said bell-like member is defined by an upper surface whose outer periphery delimits a constant area and by a lower deformable surface which is suspended between the outer periphery of the upper surface and the connection at the lower level of the bell-like member to the outer pipe,

said downwardly flared corolla-like member being coupled by the periphery of its upper opening to the lower surface of the bell-like member along a line intermediate between the outer pipe and the outer periphery of the upper surface and whose lower opening is smaller in section than the largest horizontal section of the bell-like member, said bell-like member being put under vacuum by the suction means, and

a means for vertically positioning of the whole of the apparatus.

4,340,137

**CANT MOVEMENT AND ALIGNING MECHANISM**

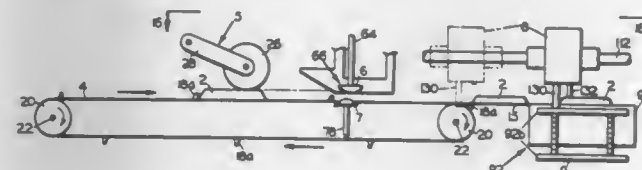
Theodore C. Foster, Eugene, Oreg., assignor to Opcon, Inc., Everett, Wash.

Continuation of Ser. No. 47,332, Jun. 11, 1979, abandoned, which is a division of Ser. No. 890,050, Mar. 27, 1978, Pat. No. 4,205,568. This application Dec. 11, 1980, Ser. No. 215,239

Int. Cl.<sup>3</sup> B27B 31/00; B65G 47/22

U.S. Cl. 198—457

16 Claims



1. A cant movement and aligning mechanism for transversely moving a cant from a delivery position to a position on a conveyor such that the cant is longitudinally aligned in a predetermined manner with cutters adapted to longitudinally cut the cant, said cant movement and aligning mechanism comprising:

overhead support means, overlying said delivery position and said conveyor for supporting at least two positioning heads for movement in a direction transverse to said longitudinal axis along which cants are to be cut;

at least two positioning heads mounted on said overhead support means for movement in a direction transverse to the longitudinal axis along which cants are to be cut;

positioning means connected to said at least two positioning heads for moving said at least two positioning heads between a position whereat at least a portion of said positioning heads lies beyond the edge of said cant remote from said conveyor when a cant is in said delivery position and a position whereat said at least two positioning heads generally overlie said conveyor;

at least two pairs of vertically oriented pins, one pin of each said pairs forming a pusher pin and the other pin of each of said pairs forming a hold down pin, one of said pairs being mounted in each of said positioning heads, such that

the pusher pin is mounted in the portion of the positioning head movable to a position beyond the edge of a cant remote from said conveyor when a cant is in said delivery position and the hold down pin is mounted in the positioning head between the pusher pin and the conveyor;

extension and retraction means connected to said pusher and hold down pins for vertically extending and retracting said pusher and hold down pins; and,

control means connected to said positioning means and said extension and retraction means for:

moving said at least two positioning heads, with said pusher and hold down pins retracted, to a position such that said pusher pins lie beyond the edge of a cant remote from said conveyor when a cant is in said delivery position;

extending said pusher and hold down pins such that the lower end of said pusher pins lie below the upper surface of a cant at said delivery position and the lower end of said hold down pins lie atop the upper surface of a cant at said delivery position; and,

moving said at least two positioning heads toward said conveyor so that said pusher pins impinge on the edge of a cant remote from said conveyor and move said cant towards said conveyor until said cant reaches a predetermined position above said conveyor, said predetermined position being such that said cant is longitudinally aligned in a predetermined manner with said cutters.

4,340,138

**MULTIPLE COMPARTMENT MULTIPLE SEAL CONTAINER**

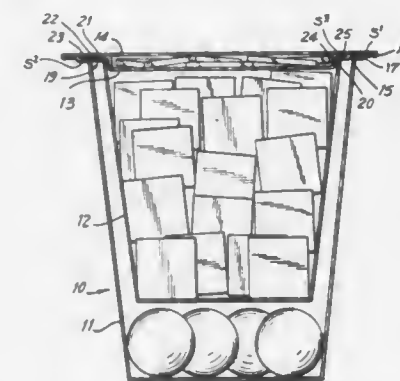
Daniel Bernhardt, P.O. Box 681, Rutland, Vt. 05701

Continuation-in-part of Ser. No. 175,367, Aug. 5, 1980. This application Sep. 15, 1980, Ser. No. 187,464

Int. Cl.<sup>3</sup> B65D 21/00, 85/62

U.S. Cl. 206—216

2 Claims



1. A multiple compartment package for foods or the like comprising a first container having a bottom, side walls defining a mouth, and a planar flange extending laterally outwardly beyond said mouth, a continuous recess interposed between said flange and said mouth, a second, separable container mounted in said first container, said second container having a mouth and a laterally directed perimetral flange seated in said recess of said first container and defining a closure therefor, a lid disposed in sealing position of said second container and including a skirt portion disposed within said second container and forming a frictional interfit with said second container adjacent said mouth and a perimetral shoulder portion overlying the mouth of said second container and in substantial coplanar alignment with said flange of said first container, a membrane disposed in covering relation of said first container, and a continuous seal connection defined between said film and the upper surface of said flange of said first container, said membrane functioning to maintain said second container and said lid in closing relation of the mouth of said first container and the mouth of said second container, respectively.

4,340,139

**BLOW MOLDED CARRYING CASE**

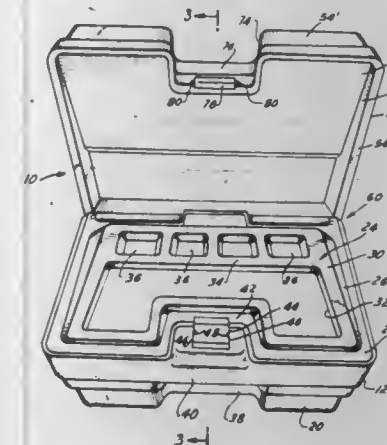
Donald G. Wilcox, Seymour, and Nobile Zambrano, Branford, both of Conn., assignors to Show-Pak, Incorporated, New Haven, Conn.

Filed Feb. 19, 1981, Ser. No. 236,049

Int. Cl.<sup>3</sup> B65D 51/04, 25/18, 71/00

U.S. Cl. 206—349

10 Claims



1. A carrying case comprising a base and a cover for the base, said base being formed of one-piece blow molded construction including a bottom wall, peripheral side walls extending therefrom and a top wall, said top wall extending along one of said side walls to define the rear wall of the case and having an opening formed thereon along the opposite wall whereby access is provided to the interior of said base below the top wall, said cover being blow molded and having side walls generally complementary in plan to the side walls of said base, said cover and base having first cooperating means defining an interrupted hinge for pivotally connecting said cover to said base and second cooperating means for latching said cover to the base in a closed position; said base having an upwardly extending inwardly inclined surface formed adjacent said side walls and inwardly therefrom said cover having a complementary inclined surface formed therein, said inclined surface mating with each other in said closed position to form an interference fit which resists lateral movement of said base and cover with respect to each other.

4,340,140

**PACKAGE CONSTRUCTION**

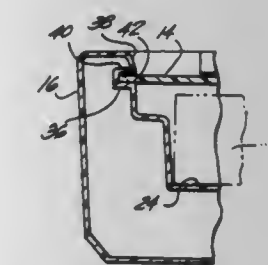
Donald G. Wilcox, Seymour, and Nobile Zambrano, Branford, both of Conn., assignors to Show-Pak, Incorporated, New Haven, Conn.

Filed Aug. 18, 1980, Ser. No. 178,754

Int. Cl.<sup>3</sup> B65D 1/24, 43/12

U.S. Cl. 206—373

12 Claims



1. A package comprising a base having a plurality of sides defining an open top, said sides each having a top edge, with the top edge of one of said sides being at a lower level than the top edges of the remainder of said sides, said sides each including a support shoulder for a package cover located on the interior of the package below the top edge of said one side and means associated with and spaced from at least some of said shoulders for resisting vertical removal of a cover supported

on said shoulders; and a cover slidable across the top edge of said one side along the shoulders of at least some of the other sides, said cover having a periphery which is generally complementary to the periphery of said opened top whereby when the cover is slid into position over said shoulders it rests on the shoulders below the level of the top edge of said one sidewall which resists withdrawal of the cover from the package; said base having an article support panel formed therein extending between said sides below the level of said shoulders; and panels having recesses of predetermined shape formed therein to support articles of predetermined shape such that the upper surfaces of the supported articles all lie in substantially the same plane as said shoulders for retention in said recesses by said cover.

4,340,141

**UNIT DOSE DRUG CONTROL PACKAGE**

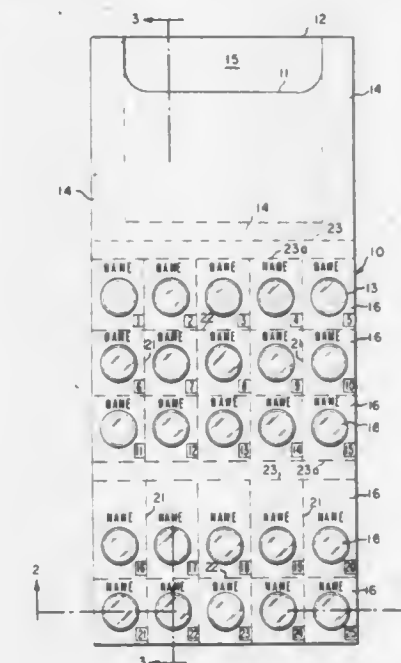
Arthur Fischer, Stamford, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 23, 1981, Ser. No. 237,458

Int. Cl.<sup>3</sup> B65D 21/02, 75/36, 83/04

U.S. Cl. 206—531

2 Claims



1. A drug control package laminate comprising, in combination:

(1) a pair of semi-rigid backing sheets, each sheet having a plurality of aligned holes therein at one end, said holes in said backing sheets superimposed, and said sheets secured at the edges at the end opposite the holes to form a pocket therebetween;

(2) a continuous sheet of flexible, clear film having a plurality of hollow blisters therein with a planar section between the blisters, said blisters superimposed with the holes in said backing sheets and extended through the holes in one of said backing sheets, the planar section secured to the underside of the first backing sheet;

(3) a continuous sheet of rupturable material covering the blister hollows so as to close the blisters, said rupturable sheet placed between and secured to the underside of said blister sheet and to the underside of said second backing sheet;

(4) a unit drug dose in each closed blister; said laminate being scored along predetermined lines:

(a) to form a plurality of individually removable unit dose packages corresponding to each of the closed blisters, each unit dose package being identified with product name and a sequential dose number; and

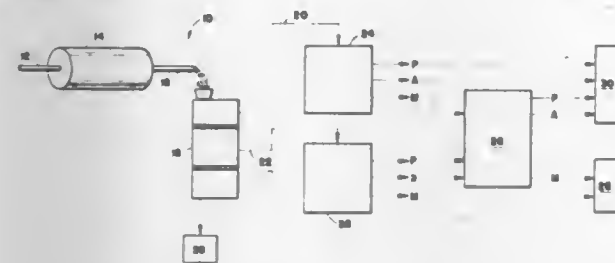
(b) to be foldable transversely into a compact package wherein the blisters interlock to form a single layer.



**4,340,142**  
**TOBACCO RECOVERY FROM STEMMERY DISCARDS**  
 Roger Z. de la Burde, Powhatan; Russell B. Mait, Richmond,  
 and Francis V. Utsch, Midlothian, all of Va., assignors to  
 Philip Morris Incorporated, New York, N.Y.  
 Filed Aug. 7, 1980, Ser. No. 176,228  
 Int. Cl.<sup>3</sup> B03B 1/02

U.S. Cl. 209—11

2 Claims

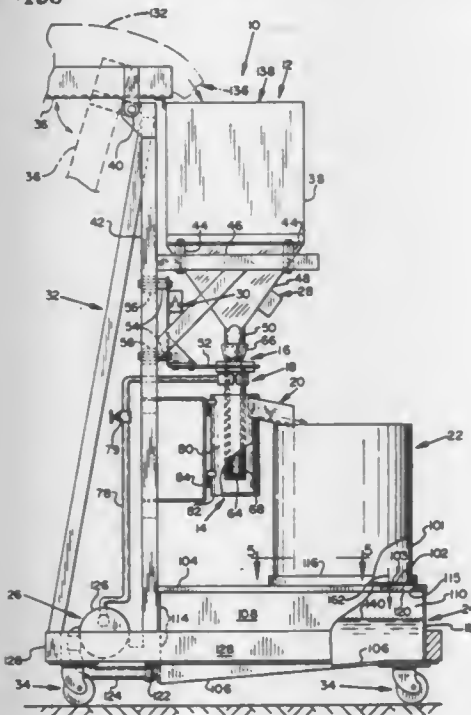


1. A method of separating a tobacco and sand mixture having a high sand content comprising:
  - a. Drying said tobacco and sand to 1 to 5 percent moisture to reduce the adhesive forces between said tobacco and sand;
  - b. [m]Mechanically agitating said dried tobacco and sand to disrupt mechanical bonds between said tobacco and sand;
  - c. [p]Passing said dried and agitated tobacco and sand through an electrostatic separator wherein said electrostatic separator operates at a voltage range of approximately 9 to 15 kilovolts[,] and separates said tobacco and sand into three fractions, a fraction that is pinned to a rotating drum in said separator, a middling fraction, and a fraction that is deflected away from the drum; and
  - d. Discarding said middling group and collecting said pinned and deflected groups.

**4,340,143**  
**HYDRAULIC BEAN CLEANING PROCESS AND APPARATUS**  
 Jerome F. Moshofsky, Portland, and Jerry Trout, Bridal Veil,  
 both of Oreg., assignors to Russell E. Waddle, Portland, Oreg.  
 Filed Jan. 2, 1980, Ser. No. 109,176  
 Int. Cl.<sup>3</sup> B03B 5/62

U.S. Cl. 209—158

12 Claims



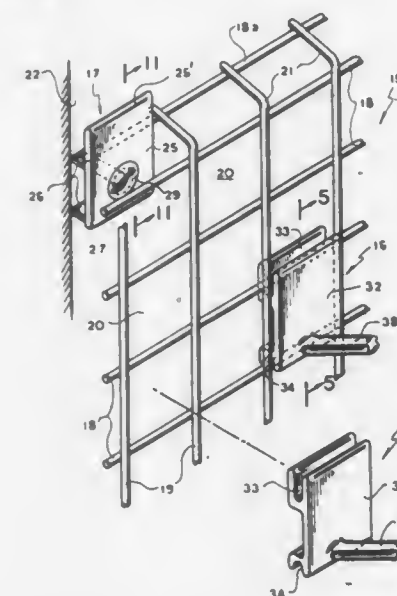
10. A method of separating objects having slightly differing specific gravities, comprising:
  - discharging a feed stock of said objects in a continuous column downwardly from a first outlet into a lower portion of a tank having a closed bottom and containing a single liquid separating medium having a specific gravity less than the specific gravity of said objects;
  - discharging additional said medium from a second outlet into said lower portion at the level of said first outlet in a

continuous downward flow closely surrounding and parallel to said column of feed stock to entrain said objects in the downward flow of said medium;  
 reversing said downward flow to establish an upward flow of said medium around said column; and  
 controlling the rate of discharge of said medium to produce a high velocity turbulent downflow such that said objects are agitated and drawn downwardly and laterally away from said first outlet and objects of a lesser specific gravity are borne upwardly by the medium while objects of greater specific gravity sink to the bottom against said upward flow.

**4,340,144**  
**ARTICLE SUPPORT ARRANGEMENT**  
 Morison S. Cousins, New York, N.Y., assignor to Heller Designs, Inc., New York, N.Y.  
 Filed Jun. 20, 1980, Ser. No. 161,243  
 Int. Cl.<sup>3</sup> A47F 5/08

U.S. Cl. 211—87

12 Claims



1. An article support arrangement comprising:
  - (a) a grid adapted to be mounted on a wall, the grid having a plurality of non-circular openings,
  - (b) a plurality of article support elements adapted to be mounted on the grid, each element having a non-circular base and a projection extending from the base for engaging an article to be supported, the base fitting into any selected one of the plurality of openings in the grid,
  - (c) the base having means for holding opposite edges of a grid opening so as to prevent the article support element, once accommodated within a grid opening, from being pulled directly out of the plane of the grid, the preventing means including two grooves in the base of the article support element, the grooves opening in opposite directions and being capable of accommodating two opposite edges of a grid opening, and
  - (d) a protuberance projecting into one of the two grooves from one side of the groove to at least partially reduce the size of the opening into that groove.

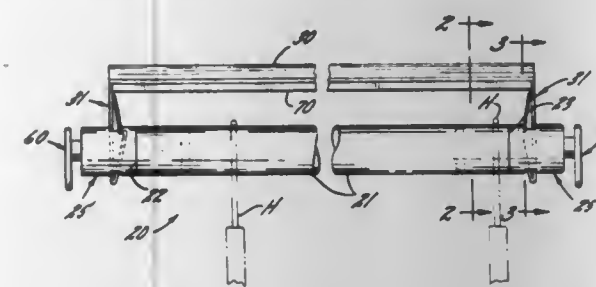
**4,340,145**  
**CADDY FOR GARMENT HANGERS**  
 Anson W. Cameron, 3109 Walden La., Wilmette, Ill. 60091  
 Filed Jul. 18, 1980, Ser. No. 170,190  
 Int. Cl.<sup>3</sup> A47H 13/00

U.S. Cl. 211—124

4 Claims

1. A caddy for garment hangers comprising, in combination, a thin walled hollow tube having a longitudinally extending internal bead, a pair of end plugs of hollow cylindrical shape fitted in the respective ends thereof, the end plugs having an inserted portion providing a press fit with respect to the tube and having an outwardly extending portion having a pair of transversely aligned openings formed therein, each end plug

having a shoulder midway along its length and which serves as a stop to limit the degree of insertion, the inserted portion of each end plug having a longitudinal groove to provide mated clearance for the bead on the tube and to insure that the end caps are oriented so that the openings therein face precisely in the same direction, a hanger clamping member extending between the openings parallel to the tube, the clamping member having rectangularly secured at the respective ends thereof

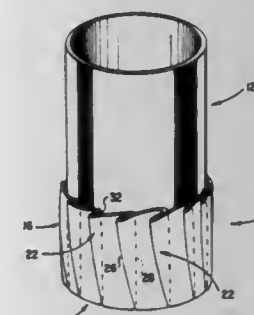


and registering with the aligned openings a pair of latching members in the form of leaf springs each having a straight portion and a reversely bent end portion carrying a latch surface at the side thereof, the reversely bent portions being laterally sprung so that each latch surface engages a land surface on the inner wall of the associated end plug when the clamping member is in an outwardly spaced hanger-receiving position and engages a land surface on the outer wall of the end plug when the clamping member is in an inwardly pressed clamping position.

**4,340,146**  
**DISPOSABLE COASTER**  
 John R. Stratton, 6735 Churchill Way, Dallas, Tex. 75230  
 Filed Dec. 10, 1979, Ser. No. 101,487  
 Int. Cl.<sup>3</sup> B65D 23/06

U.S. Cl. 215—100.5

1 Claim



1. A disposable coaster for use with a beverage container comprising a substrate of moisture absorbent material, said substrate having a base panel and a pleated sidewall joined to the base panel thereby forming a shell having an open end, with the moisture absorbent substrate forming the inside surface of the shell, and a sealing film deposit applied to the outside surface of the shell, said pleated sidewall including folded, vertically overlapping major and minor fold segments which define a vertically extending reservoir for accumulating moisture, the major and minor fold segments being partitioned by an inwardly disposed upright crease and an outwardly projecting inclined crease, respectively, said outwardly projected inclined crease sloping upwardly and outwardly from said base panel whereby said outwardly projecting crease is inclined with respect to and extends transverse to said inwardly disposed upright crease, thereby defining a reservoir space into which condensate can flow by capillary action.

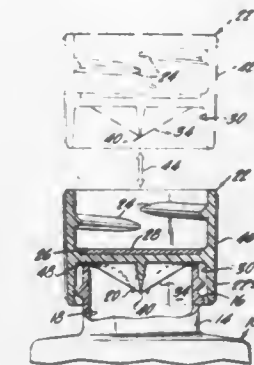
**4,340,147**  
**CAP WITH BUILT IN PIERCING DEVICE**  
 James A. McIntosh, Montclair, N.J., assignor to Mack-Wayne Plastics Company, Wayne, N.J.  
 Filed Nov. 3, 1980, Ser. No. 203,357  
 Int. Cl.<sup>3</sup> B65D 51/24

U.S. Cl. 215—226

5 Claims

1. A dual function cap for a container having a sealed dis-

charge opening, said cap being of generally elongated tubular configuration and having a dividing wall therebetween defining a pair of open ended cup-like cap portions, means on the inner periphery of the sidewalls of one of said cap portions for detachably mounting over the discharge opening of the container, piercing element contained in the other cap portion

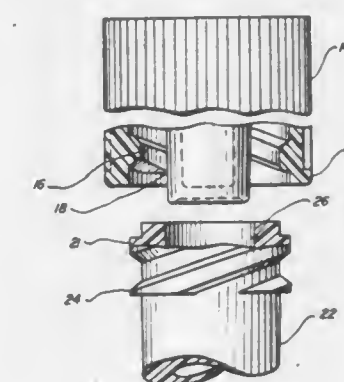


projecting from the dividing wall toward the open end of said other cap portion, tapered sidewalls within the other cap portion of regressive conical configuration extending a predetermined distance beyond all portions of the piercing element functioning to centrally guide the piercing element onto the sealed discharge opening of the container.

**4,340,148**  
**LUER CAP**  
 David S. Beckham, Fox Lake, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.  
 Filed Oct. 14, 1980, Ser. No. 196,988  
 Int. Cl.<sup>3</sup> B65D 41/04, 41/34

U.S. Cl. 215—329

13 Claims



1. In a medical device having a port comprising an annular wall, an axial bore defined within said annular wall, and thread engaging means carried by said annular wall, the improvement comprising, in combination: a cap mounted on said port, said cap comprising a circular sidewall having an inside wall surface;
  - a hollow tubular portion disposed interior of said sidewall and defining an internal port-receiving cavity between said tubular portion and the inside surface of said sidewall for receiving said annular wall of said port, said hollow tubular portion of said cap being disposed within the bore of said port when said annular wall of said port is received within said port-receiving cavity;
  - said hollow tubular portion being closed at one end by an end wall and open to the atmosphere at the opposite end; and
  - the inside surface of said cap sidewall carrying threads for engagement with the thread engaging means of said annular wall of said port.



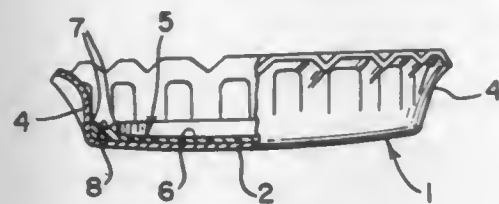
4,340,149

## LINED CLOSURE

Fumio Mori, Yokohama; Gunji Matsuda, Isehara; Toshihiko Yoshida, and Shigeru Nagashima, both of Hiratsuka, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan  
Continuation of Ser. No. 59,196, Jul. 20, 1979, abandoned. This application Oct. 28, 1980, Ser. No. 201,608  
Claims priority, application Japan, Jul. 22, 1978, 53-88954  
Int. Cl.<sup>3</sup> B65D 53/06

U.S. Cl. 215—343

5 Claims



1. A vessel closure which comprises an aluminum shell, the inner face of which is lined with an olefin resin which has been press-molded in situ onto said inner face, the difference ( $I_o^P - I_o^C$ ) between the in-plane orientation index ( $I_o^P$ ) of the peripheral portion of the press-molded olefin resin liner and the in-plane orientation index ( $I_o^C$ ) of the central portion of the press-molded olefin resin liner being less than 0.37, said in-plane orientation index ( $I_o$ ) being represented by the following formula:

$$I_o = l + m$$

wherein  $l$  represents the orientation coefficient in the radial direction of the liner and  $m$  represents the orientation coefficient in the circumferential direction of the liner.

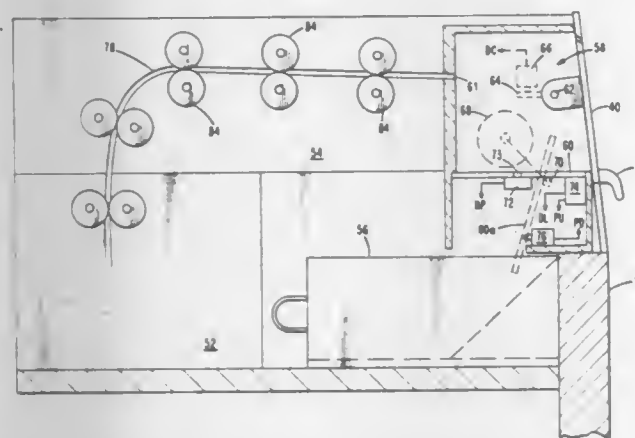
4,340,150

## AUTOMATIC NOTE DISPENSER WITH PURGE CONTROL

Ronald D. Guibord, Boylston; Neil W. Harman, and Richard E. Hennessy, both of Marlborough, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.  
Continuation of Ser. No. 103,655, Dec. 14, 1979, abandoned. This application Apr. 16, 1981, Ser. No. 255,002  
Int. Cl.<sup>3</sup> G07F 11/00

U.S. Cl. 221—21

21 Claims



1. A note dispensing system comprising, in combination: means for requesting a note dispensing operation; a dispensing chamber having an access door by which an operator can gain access to said chamber; means for dispensing at least one note into said chamber in response to a dispensing operation request; security means for locking said access door during a note dispensing operation and for unlocking said door upon completion of said operation to permit said operator to open said door to remove said note; and purge means for discharging said dispensed note from said chamber if said door is not opened within a set period of

time following the unlocking of said door by said security means; said dispensing chamber comprising fixed top, rear and side walls, one of said fixed walls being formed with a narrow slot for receiving notes from said means for dispensing, said means for dispensing being blocked from an opening covered by said access door by said fixed walls, said dispensing chamber further comprising a bottom wall tiltable about a shaft, said purge means comprising means for tilting said bottom wall about said shaft for purging only when said access door is closed whereby said bottom wall coacts with said top, rear and side walls to prevent access to said means for dispensing through the opening covered by said access door.

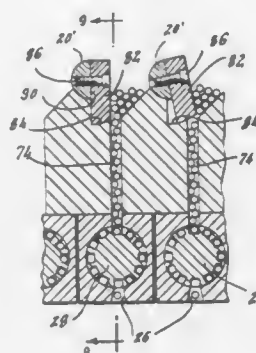
4,340,151

## STICK FEEDING APPARATUS

Edward D. Cottrell, Cattaraugus, N.Y., assignor to Champion International Corporation, Stamford, Conn.  
Continuation of Ser. No. 913,532, Jun. 8, 1978, Pat. No. 4,209,112, and Ser. No. 151,913, May 21, 1980, abandoned. This application Aug. 8, 1980, Ser. No. 176,556  
Int. Cl.<sup>3</sup> B65H 3/44

U.S. Cl. 221—93

4 Claims



1. An apparatus for delivering sticks to a predetermined position at a controlled rate comprising: a hopper having converging sidewalls defining an entry to a delivery chute, said chute being wide enough to accept only one stick at a time; a delivery roller aligned with said delivery chute, said roller including a plurality of equiangularly spaced recesses extending along the length of said roller for receiving sticks from the delivery chute; a housing surrounding said delivery roller and having a first opening aligned with said delivery chute and a second opening adjacent the predetermined position, said housing acting to retain each stick in the roller recesses at positions intermediate the first and second openings; drive means for rotating said roller at a predetermined rate to cause sticks to be delivered to the second opening at the controlled rate, said drive means including means for driving said roller through predetermined angular increments of movement, said increments being equal to or integral submultiples of the circumferential spacing of the recesses in said roller, with said drive means further including: (a) a ratchet mechanism including a ratchet wheel secured to and rotatable with said delivery roller and a pawl intermittently engageable with said ratchet wheel to drive said delivery roller through the predetermined angular increment of movement; and (b) hydraulic drive means for reciprocating said pawl along an arcuate path; and a crank member freely rotatable about the delivery roller axis of rotation, said crank member being pivotally connected to said pawl at a first point and to said drive means at a second point, said drive means comprising a recipro-

cable hydraulically-driven rod for intermittently moving said crank member through a predetermined arc; and an agitating member mounted within said hopper adjacent the entry to the delivery chute for agitating the sticks to reduce the chances of jamming, said agitating member comprising a leaf plate; and means for oscillating said leaf plate.

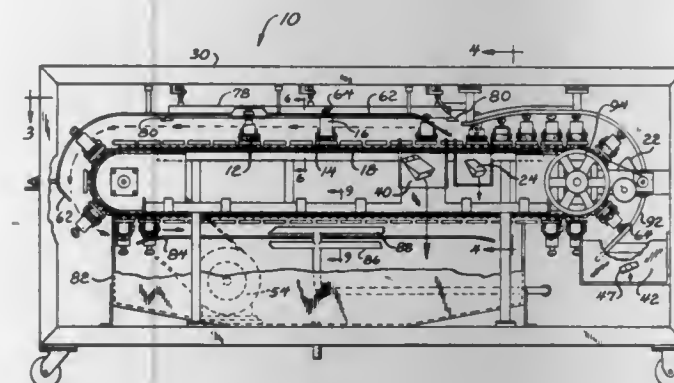
4,340,152

## METHOD AND APPARATUS FOR REMOVING THE CONTENTS OF FLEXIBLE OR COLLAPSIBLE CONTAINERS

Carl R. Ekholm, Jr., Elgin, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.  
Filed Aug. 8, 1980, Ser. No. 176,548  
Int. Cl.<sup>3</sup> B67B 7/00

U.S. Cl. 222—1

26 Claims



1. Apparatus for removing the contents of a compressible container comprising: compression means including a pair of relatively movable plates defining a container receiving space therebetween; continuous conveyor means for carrying said plates between first and second locations; means for moving said plates between an open spaced-apart position at said first location to receive a container, and a closed adjacent position at said second location to compress said container to discharge the contents thereof; and retention means cooperatively associated with said plates to retain a container therebetween during said compression.  
22. A method for removing the contents of a compressible container comprising: positioning said container between a pair of relatively movable plates which define a container receiving space therebetween; moving said plates together during said transporting of said plates between said first and second locations so as to compress the container to discharge the contents of said container through one end thereof; retaining said container between said plates during compression of the container to prevent accidental dislocation of the container from between said plates.

4,340,153

## METHOD AND APPARATUS FOR MEDICATION DISPENSING

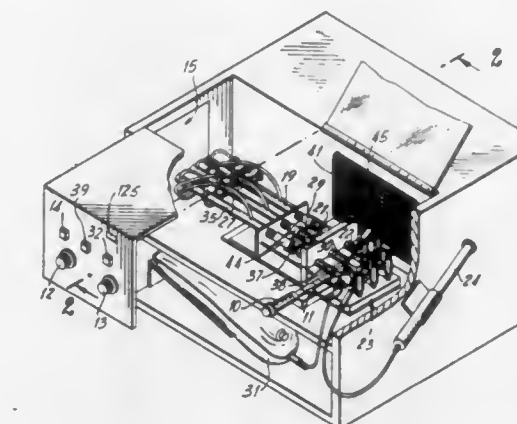
David L. Spivey, 11000 SW. 174th Ter., Miami, Fla. 33157  
Filed Nov. 28, 1980, Ser. No. 211,310  
Int. Cl.<sup>3</sup> B67B 7/00; B67D 5/60

U.S. Cl. 222—1

9 Claims

1. A device for automatic mixing and dispensing of preselected quantities of liquids in an aseptic environment, comprising: a source of said liquids, a plurality of selection means for inputting said preselections, a plurality of cylinders, each containing a piston which

moves longitudinally within said cylinder, and each of said cylinders corresponding to a particular one of said selection means, a plurality of syringes, each containing a plunger, and each of said syringes corresponding to a particular one of said cylinders, a plurality of adjustable connectors, each of said connectors corresponding to a particular one of said cylinders and connecting said corresponding syringe plunger to said corresponding piston, so that longitudinal movement by said piston within said cylinder causes longitudinal movement of said plunger within said syringe, a manifold for directing the output of each of said syringes into a common output, supply means for supplying each of said syringes with one of said liquids from said source,



a plurality of valve means, each of said valve means corresponding to one of said cylinders and connected thereto for introducing and exhausting pressurized fluid from external source to said cylinder so as to cause said piston and said corresponding plunger to be longitudinally moved, control means interconnecting said valve means and said selection means for sequentially and repetitively activating each of said valve means for a determined time period a number of times correlated to said preselection inputted into said corresponding selection means, an enclosure to contain said cylinders, syringes, manifold, connecting, supply means, valve means, and control means, and filter and blower means whereby ambient air is filtered to remove infectious bodies and drawn into said enclosure thereby providing a positive pressure of aseptic air.

4,340,154

## CAULKER FOR DISPENSING TWO VISCOUS COMPONENTS

Dick T. VanManen, Canandaigua, N.Y., assignor to Voplex Corporation, Pittsford, N.Y.  
Continuation-in-part of Ser. No. 200,474, Oct. 24, 1980, abandoned. This application Nov. 14, 1980, Ser. No. 206,886  
Int. Cl.<sup>3</sup> B65D 35/22, 35/30

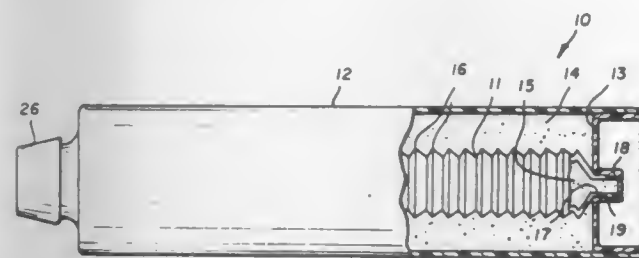
U.S. Cl. 222—94

14 Claims

1. A caulk dispenser for dispensing two viscous components, said caulk dispenser comprising: a generally cylindrical outer chamber, open at its rear end, formed of molded resin for holding one of said components; a collapsible inner chamber formed of molded resin and arranged within said outer chamber for holding the other of said components; said inner chamber being formed with accordion pleats for folding in a predetermined accordion collapse when said inner chamber is axially compressed; said inner chamber having a rear end filling opening; a molded resin plunger;



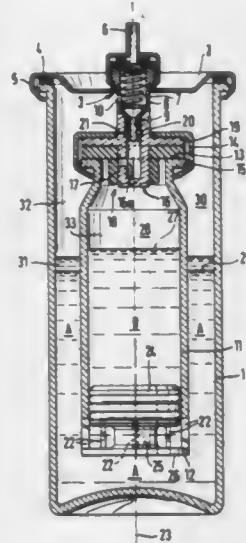
- f. means for securing said plunger to the rear end of said inner chamber;  
 g. said plunger being shaped to fit closely within said outer chamber;  
 h. means for joining a forward region of said inner chamber to a forward region of said outer chamber;  
 i. passageways from each of said chambers merging at the forward end of said caulk;  
 j. an openable barrier for sealing the forward end of said inner chamber passageway;



- k. a removable closure element for sealing the forward end of said outer chamber passageway; and  
 l. a static mixer and nozzle joinable to the forward end of said outer chamber in place of said removable closure element to communicate with said passageways after opening said barrier and removing said closure element so that said plunger can advance within said outer chamber while collapsing said inner chamber to force both of said components from said chambers and through said passageways, said static mixer, and said nozzle.

**4,340,155**  
**TWO-COMPARTMENT PACK**  
 Gerhard Obrist, Kaiseraugst, Switzerland, assignor to Aerosol Service AG, Möhlin, Switzerland  
 Filed Aug. 13, 1980, Ser. No. 177,640  
 Claims priority, application Switzerland, Aug. 24, 1979, 7701/79

Int. Cl.<sup>3</sup> B65D 83/00  
 U.S. Cl. 222—135



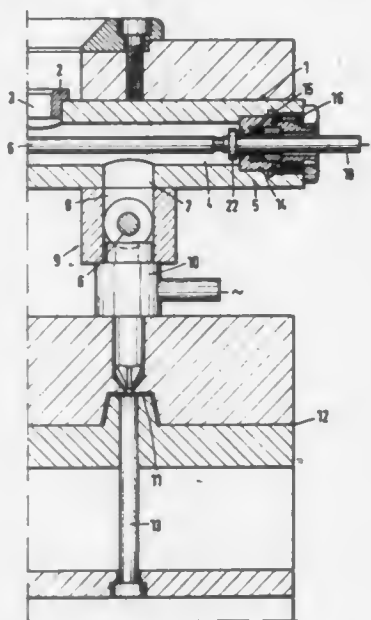
1. A two-compartment pack comprising an outer container, of substantially stable shape and provided with a dispensing valve, for a first component of the package material, an inner container, located in the outer container, for a second component of the package material, and means for mixing the two components of the package material and dispensing them conjointly, wherein the inner container is elongate and is open at one end, a plunger which can slide sealingly between two terminal positions is located in the inner container and in its inner terminal position, more remote from the open end of the inner container, separates said open end from the internal chamber of said inner container and in its outer terminal position, closer to said open end, opens a passage orifice between

the internal chamber of the inner container and the internal chamber of the outer container, said inner container has a gas inlet which communicates with the internal chamber of the outer container and comprises a non-return valve which leads into the internal chamber of the inner container, which internal chamber is sealed by the plunger in its inner terminal position, and the outer and the inner container each contain a cushion of a gas under superatmospheric pressure.

**4,340,156**  
**ARRANGEMENT FOR SUPPLYING MOLTEN PLASTIC MATERIAL**

Walter Müller, Battenberg, Fed. Rep. of Germany, assignor to Ewikon Entwicklung und Konstruktion GmbH & Co. KG, Herford, Fed. Rep. of Germany

Filed Sep. 25, 1980, Ser. No. 190,825  
 Claims priority, application Fed. Rep. of Germany, Sep. 26, 1979, 2938832  
 Int. Cl.<sup>3</sup> B29F 1/03; B67D 5/00; H05B 3/20  
 U.S. Cl. 222—146 HE



1. A hot runner injection manifold assembly having a single injection inlet and plural injection outlet nozzle suitable for coupling with a plural injection mold, comprising:  
 a first manifold member having an injection inlet connection and having plural apertures, each communicating with a passage of an elongated conduit member having at least one outlet nozzle suitable for coupling with the injection mold inlet, manifold said manifold member having an elongated flow passage substantially therethrough and a substantially straight rod-shaped elongated heating element extending completely therethrough and projecting therefrom at each end of said manifold member.

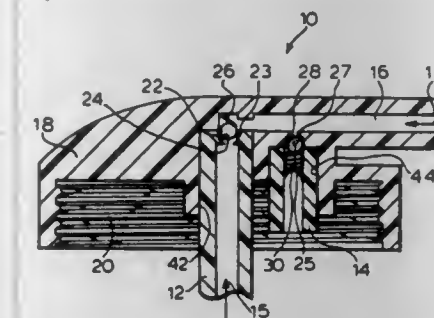
**4,340,157**  
**SELF-SEALING CLOSURE DISPENSER FOR PLASTIC STAIN BOTTLES**

James C. Darner, Shrewsbury, Pa., assignor to Becton, Dickinson & Company, Paramus, N.J.  
 Filed Nov. 20, 1980, Ser. No. 208,750

Int. Cl.<sup>3</sup> B65D 37/00  
 U.S. Cl. 222—211

1. A dispensing cap for dispensing materials contained in containers having flexible walls, comprising  
 (a) a cap body;  
 (b) an outlet passage in said body;  
 (c) a feed tube in flow communication with said outlet passage for extending into a container connected to said body for engaging material therein;  
 (d) container connection means on said body;  
 (e) a return tube in flow communication with said outlet passage;

- the improvement characterized by  
 (f) first valve means in said outlet passage positioned between said feed tube and said outlet passage;  
 (g) first means biasing said first valve means against flow from said feed tube to said outlet passage;  
 (h) whereby squeezing the flexible walls of a container attached to said body forces material therein up said feed tube overcoming said first biasing means;



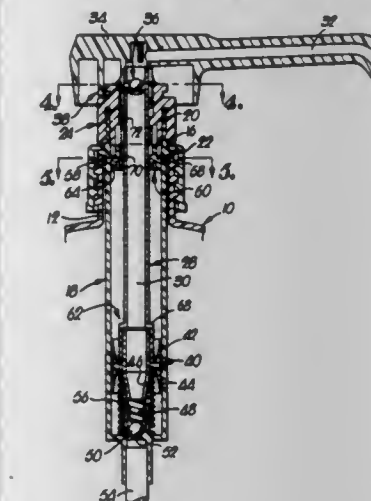
- (i) second valve means in said outlet passage positioned between said outlet passage and said return tube; and  
 (j) second means biasing said second valve means against flow from said outlet passage to said return tube;  
 (k) whereby removing pressure from the flexible walls of a container attached to said body causes a reduction of pressure thereon so that ambient pressure forces open said second valve means against said second biasing means and closes said first valve means.

**4,340,158**  
**VENT-SEALING, DOWN-LOCKED PUMP DISPENSER**  
 John M. B. Ford, Lee's Summit, Mo.; Wallace F. Magers, Leawood, Kans., and John J. Palmisano, Gladstone, Mo., assignors to Realex Corporation, Kansas City, Mo.

Filed Jun. 13, 1980, Ser. No. 159,286  
 Int. Cl.<sup>3</sup> B05B 11/00

U.S. Cl. 222—321

8 Claims



1. In a dispensing pump having a tubular plunger that is reciprocable within a hollow barrel of the pump between extended and depressed positions for drawing liquid into the barrel during extension strokes and for discharging liquid from the barrel during depression strokes, the improvement comprising:

vent means associated with said barrel and adapted to communicate the interior of the latter with the interior of a container with which the pump is operably associated;  
 lock means operably associated with said plunger for releasably holding the latter in a locked position inwardly beyond said depressed position when the plunger is selectively moved to said locked position; a valve operable within said barrel between an open position exposing said vent means and a closed position sealably covering said vent means and precluding liquid flow into the barrel; and structure operably associated with said plunger for opening

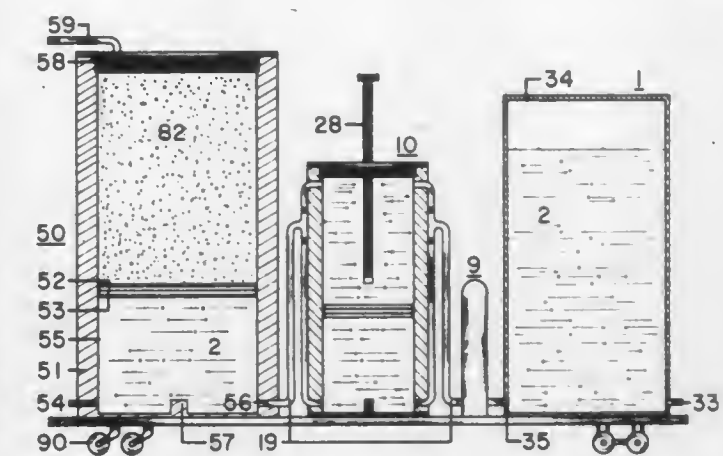
said valve during reciprocation of the plunger between said depressed and extended positions, and for closing the valve during holding of the plunger at said locked position.

**4,340,159**  
**APPORTIONING CONTROL APPARATUS TO CONTROL MEASURED DISPENSING**

Arthur E. Garrett, P.O. Box 204, Caldwell, Id. 83605  
 Filed Jul. 28, 1980, Ser. No. 172,699

Int. Cl.<sup>3</sup> G01F 11/06, 13/00  
 U.S. Cl. 222—389

2 Claims



1. Apportioning control apparatus comprising:  
 a substantially cylindrical apportioner housing sealed at one end and having a removable sealing member at an opposing end and having an internal bore operable to receive a piston and including at least one inlet port and at least one outlet port, vertically spaced and in fluid communication with the bore;  
 a free-floating piston engaging the internal wall of the bore and adapted for reciprocal movement therein;  
 an adjustable piston stop mounted at one end of said housing and operable to stop said piston at a preselected distance from the end whereby a measured volume of working liquid may be discharged from the bore;  
 a plurality of valves operable to selectively open and close said ports, permitting infusion of working liquid into the bore above or below said piston and a simultaneous draining of a working liquid from the bore on the opposing side of said piston;  
 switch means operable to control said valves;  
 a working liquid source in fluid communication with the inlet ports of said apportioner housing;  
 pump means operable to force working liquid from said source through the inlet ports; and  
 food dispensing means in fluid communication with the outlet ports of said apportioner housing, said food dispensing means operable to dispense food in a volume equal to the volume of working liquid received from said outlet ports of said apportioner housing.

**4,340,160**  
**OVERFLOW SYSTEM HAVING PNEUMATIC PRESSURE CONTROL**  
 Jacobus N. C. van Geel, Retie; Frans M. Dobbels, Dessel, and Walther A. H. Theunissen, Hamont, all of Belgium, assignors to Deutsche Gesellschaft für Wiederaufarbeitung, Fed. Rep. of Germany

Filed Feb. 25, 1980, Ser. No. 124,297  
 Claims priority, application United Kingdom, Feb. 27, 1979, 7906813

Int. Cl.<sup>3</sup> B22D 39/06  
 U.S. Cl. 222—595

4 Claims

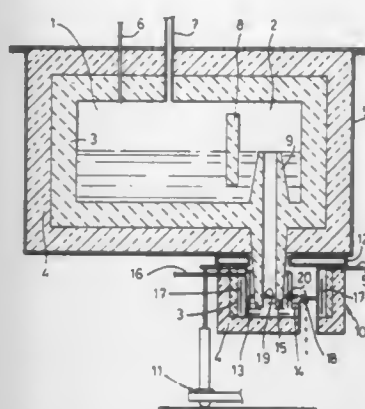
1. Device suitable for controlling the discharge of a molten material from a melter, characterized in that it comprises:



a melting vessel for molten material, comprising a tubular overflow outlet having an inlet at the surface of the molten material and an outlet end therebeneath for molten material;

an overflow discharge unit provided under said outlet and comprising:

- (a) an overflow chamber provided with at least one outlet nozzle at its overflow level(s), and



- (b) an annular pressure chamber surrounding said outlet end of said tubular overflow outlet, said tubular overflow outlet extending into said overflow chamber below said overflow level, said pressure chamber provided with pressure regulation means and communicating with said overflow chamber.

4,340,161

## WALLPAPER PREPARATION BOARD

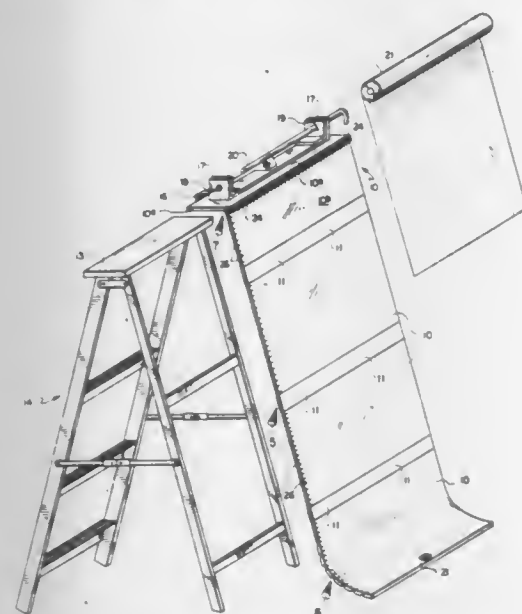
William G. Stafford, 2584 Dublin Dr., Salt Lake City, Utah 84119

Continuation of Ser. No. 49,738, Jun. 18, 1979, abandoned. This application Dec. 8, 1980, Ser. No. 214,125

Int. Cl.<sup>3</sup> B26F 3/02

U.S. Cl. 225—18

12 Claims



1. A wallpaper preparation board comprising a plurality of substantially flat, rigid panels of sheet material, said panels being hingedly attached end-to-end to form an elongate wallpaper preparation board which can be folded in accordion style into a compact unit, with the panels being adapted to be folded back and forth so that adjacent panels lie face-to-face in the folded unit and the folded unit has an outer perimeter substantially the same as that of the component panels; means for supporting a roll of wallpaper near the upper end of the elongate preparation board so that lengths of wallpaper can be withdrawn from the roll along the preparation board; and a knife edge extending across the preparation board near the

means for supporting the roll of wallpaper to aid in cutting the lengths of wallpaper which are withdrawn from the roll.

4,340,162

## ROLL DISPENSER CARTON

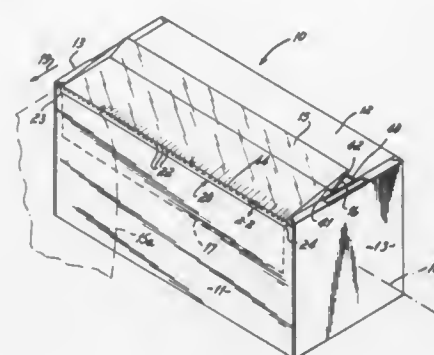
Joseph L. Heiman, Loveland, and Bernard S. Reckseit, Cincinnati, both of Ohio, assignors to The Nivison-Welskopf Co., Cincinnati, Ohio

Filed Sep. 2, 1980, Ser. No. 183,155

Int. Cl.<sup>3</sup> B26D 1/02

U.S. Cl. 225—48

8 Claims



1. A roll dispenser carton comprising at least three panels joined one to the other in carton configuration, said carton being sized to receive a roll of sheet material therein, and said sheet material being withdrawable from said carton in a discharge direction, and a cutting edge structure connected to at least one panel of said carton, said cutting edge structure comprising a series of buds extending outwardly from said panel, each of said buds comprising at least two petals adapted to engage sheet material unwrapped from said roll for tearing a desired length of sheet material off said roll, said plural buds being positioned along at least one phantom line disposed generally perpendicular to the discharge direction of said sheet material from said carton, each of said buds defining an axis about which said petals are positioned, and at least some petals of at least some of said buds being flared inwardly relative to the axes of those buds, thereby minimizing scratching type hazards to the user of said carton.

4,340,163

## APPARATUS FOR REMOVAL OF INTERNAL FLASH FROM ELECTRIC-WELDED PIPES

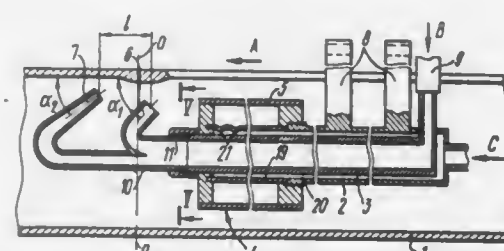
Alexandr A. Romashov, ulitsa Rossiiskaya, 222, kv. 136; Genady E. Levinsky, ulitsa Voroshilova, 3, kv. 15; Vladimir Y. Ivantsov, prospekt Lenina, 62, kv. 2, all of Chelyabinsk; Igor A. Astakhov, ulitsa Zavodskaya, 6, kv. 29, Taganrog, and Vladimir A. Kuznetsov, ulitsa Lenina, 9, kv. 38, Pervomayskiy Sverdlovskoi oblasti, all of U.S.S.R.

Filed Jun. 17, 1980, Ser. No. 160,229

Int. Cl.<sup>3</sup> B23K 7/06, 31/10

U.S. Cl. 228—19

8 Claims



1. An apparatus for removal of internal flash from electric-welded pipes, comprising: a hollow supporting bar inserted

into a pipe being welded; an oxygen duct incorporated in said hollow supporting bar; a ferrite-holder mounted on said hollow supporting bar; a main oxygen nozzle of said oxygen duct; an additional oxygen nozzle placed downstream of the main nozzle with respect to the direction of pipe welding; an oxygen conduit serving as a conduit common to said main and additional nozzles mounted on said oxygen duct and communicating therewith; an oval outlet of said main nozzle; an oval outlet of said additional nozzle, the outlets of the main and the additional nozzles having different sized openings; said main and additional nozzles being arranged in a single plane passing through pipe axis and weld; said main and additional nozzles being set in said plane at different acute angles with respect to the weld.

4,340,165

## PRINTER ARM

James E. Bellinger, Melbourne, Fla., assignor to Florida Data Corporation, Melbourne, Fla.

Division of Ser. No. 29,658, Apr. 13, 1979, Pat. No. 4,248,540, which is a continuation of Ser. No. 621,526, Oct. 10, 1975, abandoned, which is a division of Ser. No. 865,006, Dec. 27, 1977, Pat. No. 4,206,266. This application Apr. 28, 1980, Ser. No. 145,062

Int. Cl.<sup>3</sup> B23K 33/00; B23P 15/00

U.S. Cl. 228—173 C

4 Claims



1. The method of fabricating an arm and stylus structure comprising the steps of providing a flat, thin blank for forming the arm having two generally rectangular regions with short and long dimensions and an integral web portion positioned therebetween and having short and long dimensions, said web region having its long dimensions each juxtaposed to a short dimension of a different one of said rectangular sections, said blank also including four generally triangular regions each of which is integrally associated with a different long dimension of said rectangular regions, said triangular regions each tapering from a maximum outward extension from an adjacent rectangular region remote from said web portion to a minimum extension adjacent said web portion; bending said four triangular regions along said rectangular region long dimensions to position said triangular regions at right angles to said rectangular regions with all of said triangular regions extending normal to one side of said rectangular regions; bending said blank about a stylus such that the web forms a generally semicylindrical member having a longitudinal axis generally parallel to said long dimension of said web, said web substantially circling at least one-half of the stylus such that opposed pairs of said triangular regions are in overlapping relationship to one another; bonding said overlapping triangular regions one to the other; and, securing said stylus to said web.

4,340,164

## MASK FOR AN ATTACHABLE, CIRCUIT-TERMINATING, CIRCUIT BOARD EDGE MEMBER

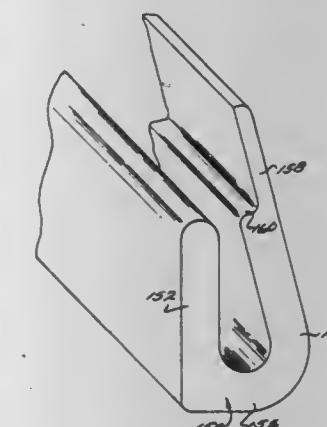
Salvatore P. Rizzo, Foxboro, and William J. LaPlante, Rehoboth, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 29, 1980, Ser. No. 154,269

Int. Cl.<sup>3</sup> B23K 37/00; H05K 3/34

U.S. Cl. 228—57

2 Claims



1. A mask for use with an attachable, circuit-terminating circuit board edge member having an elongated body with a tongue having a selected thickness and a front and back depending from the edge member along its length, a plurality of pairs of contact elements, one of each pair disposed on the front of the tongue and the other of each pair disposed on the back of the tongue, each of the contact elements formed with a solderable pin end which extends from the edge member, comprising an elongated, generally U-shaped mask formed of flexible material, the mask having first and second legs of approximately the same length extending from a bight portion to respective free distal end portions, the legs having a length at least as long as the distance the tongue extends from the body and having an inner surface, an extension formed on the first leg, the extension extending generally in the same direction as the first leg but offset from the inner surface of the first leg to form a shelf which extends along the length of the mask, the legs being spaced from one another at their bight a distance of slightly more than the said selected thickness of the tongue and at their distal end portions a distance approximately one half the said selected thickness of the tongue.

4,340,166

## HIGH SPEED WIRE BONDING METHOD

Glenn B. Billane, Huntington Valley; Lawrence M. Rubin, Coatesville; Albert Soffa, Wynnewood, and Dan Vilenski, Hatboro, all of Pa., assignors to Kulicke & Soffa Industries, Inc., Horsham, Pa.

Division of Ser. No. 962,916, Nov. 22, 1978, Pat. No. 4,266,710.

This application May 4, 1981, Ser. No. 260,352

Int. Cl.<sup>3</sup> B23K 31/02

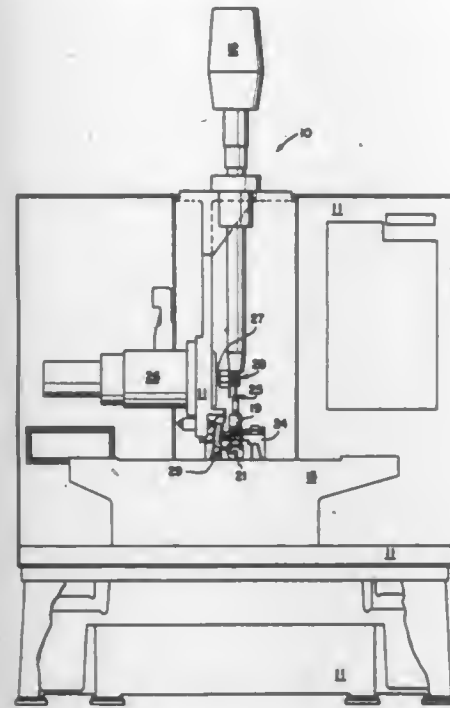
U.S. Cl. 228—179

3 Claims

1. A method for high speed bonding fine wire to a semiconductor device comprising the step of: moving a bonding tool to a position opposite an electrode on a semiconductor device, accelerating said bonding tool toward said electrode, terminating said acceleration of said bonding tool before engaging said semiconductor device, further moving said bonding tool toward said semiconductor device at a substantially linear velocity, engaging said semiconductor device with said bonding tool at said linear velocity to impart controlled kinetic energy to said fine wire as a first bonding force, applying a second predetermined preload bonding force to



said first bonding force at the time of engagement of said bonding tool with said semiconductor device, and



applying a third and final bonding force to said bonding tool after the termination of said first bonding force.

**4,340,167**  
**COATED PRINTED CIRCUIT WIRING BOARD AND METHOD OF SOLDERING**  
Marvin Packer, Broomall, Pa., and Otis D. Black, Willingboro, N.J., assignors to RCA Corporation, New York, N.Y.  
Division of Ser. No. 864,624, Dec. 27, 1977, Pat. No. 4,215,025.  
This application Oct. 26, 1979, Ser. No. 88,556  
Int. Cl.<sup>3</sup> B23K 1/02; H05K 3/34

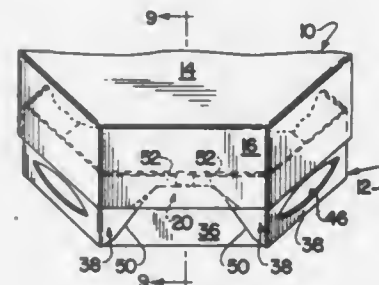
U.S. Cl. 228—180 R **9 Claims**  
1. A method of soldering components to printed circuit boards which comprises the ordered steps of:

- coating a first side of a printed circuit board with a mixture comprised of 100 parts by weight of a water soluble polymeric compound or mixture of compounds which can be dissolved in water to give greater than about a 45% by weight solids content and a viscosity range of about 8 to about 12 poises at about 25° C., about 10 to about 40 parts by weight of isopropyl alcohol, about 10 to about 40 parts by weight of water, about 1 to about 4 parts by weight of a nonionic wetting agent, and about 0.1 to about 6 parts by weight of a water soluble organic acid having a keto-oxygen group within 4 carbon atoms of the carboxylic acid group;
- drying the coated printed circuit board to remove a sufficient amount of the water and isopropyl alcohol to convert the applied mixture into a dry transparent, non-flowing, water soluble film on the first surface;
- activating the film with a blend of alcohol and water so as to make the film tacky;
- adhering the components to the tacky film on the first side of said printed circuit board;
- fluxing the opposite side of the printed circuit board;
- soldering the fluxed side of the printed circuit board; and
- rinsing the film from the first surface of the printed circuit board.

6. A printed circuit board capable of having electronic components adhered thereto during soldering operations comprising a printed circuit board, and a transparent non-flowing water soluble film on a side of said printed circuit board upon which said components are to be adhered said film being obtained by coating said side with a mixture comprised of 100 parts by weight of a water-soluble polymeric compound or mixtures of compounds which can be dissolved in water to give a greater than about 45% by weight solids content, and a viscosity range of about 8 to about 12 poises at about 25° C.,

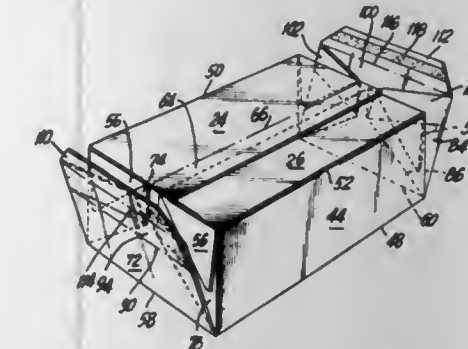
about 10 to about 40 parts by weight of isopropyl alcohol, about 10 to about 40 parts by weight of water, about 1 to about 4 parts by weight of a wetting agent, and about 0.1 to about 6 parts by weight of a water soluble organic acid having a keto oxygen group within 4 carbon atoms of the carboxylic acid group and thereafter drying said coating to remove sufficient water and alcohol to form said transparent non-flowing water soluble film on said side.

**4,340,168**  
**CARTON WITH LOCKING MECHANISM FOR SLIDABLE TOP AND BOTTOM**  
George Webinger, Robbinsdale, Minn., assignor to Champion International Corporation, Stamford, Conn.  
Continuation-in-part of Ser. No. 102,898, Dec. 12, 1979, Pat. No. 4,277,014. This application Oct. 22, 1980, Ser. No. 199,581  
Int. Cl.<sup>3</sup> B65D 5/32; A61L 9/04  
U.S. Cl. 229—23 BT **4 Claims**



1. A paperboard carton comprising:
- an upper unit including a regular polygonal top wall having a plurality of side walls with one of said side walls being coupled to and depending from each edge of said top wall;
  - a lower unit telescopingly slidably movable in said upper unit along a common longitudinal axis, said lower unit including a regular polygonal bottom wall complimentary in shape to said top wall, said bottom wall having a plurality of side walls with one of said side walls being coupled to and depending from each edge of said bottom wall, said lower unit side walls being inwardly adjacent to said upper unit side walls;
  - said upper unit being axially slidable with respect to said lower unit between a closed position and an open position;
  - access means in at least one of said upper and lower units for opening the interior of said carton to ambient surroundings only when said upper unit is in said open position; and
  - cooperating locking means on said upper and said lower units to preclude complete removal of said upper unit from said lower unit when said upper unit is moved to said open position, said locking means comprising: a plurality of locking flaps hingedly coupled to distal edges of a plurality of said side walls of one of said upper and lower units, said locking flaps being folded against said side walls to provide a plurality of locking surfaces; and a plurality of stop tabs folded against comparable side walls on the other of said upper and lower units to provide a plurality of stop surfaces, said locking surfaces, and said stop surfaces being axially spaced apart when said upper unit is in said closed position, and said locking surfaces and said stop surfaces being in abutting contact when said upper unit is in said open position to preclude complete separation of said upper unit from said lower unit.

**4,340,169**  
**COLLAPSIBLE TRAY**  
George P. Webinger, Robbinsdale, Minn., assignor to Champion International Corporation, Stamford, Conn.  
Filed Mar. 4, 1981, Ser. No. 240,572  
Int. Cl.<sup>3</sup> B65D 5/24, 5/46  
U.S. Cl. 229—31 R **11 Claims**

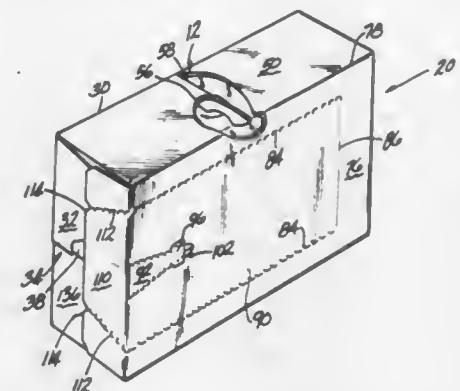


1. A collapsible tray comprising:
- a generally rectangular bottom wall having a rectangular center panel and first and second rectangular bottom panels hingedly connected to opposed side edges of said center panel;
  - first and second upstanding end panels hingedly connected to the side edges of said bottom panels opposed to the hinged connections to said center panel;
  - first and second upstanding side panels hingedly connected to the remaining opposed side edges of said bottom wall, with the adjacent side edges of said end panels and said side panels being respectively hingedly connected to define a continuous side panel structure, each said side panel having a center section disposed co-extensive with and hingedly connected to the adjacent side edge of said center panel and with each said side panel further including first and second side sections hingedly connected to the opposed side edges of the associated center section and disposed co-extensive with and hingedly connected to the adjacent side edges of the first and second bottom panels, each said side section of said side panels including a diagonal fold line extending from the intersection between said side section and said center panel of said bottom wall; and
  - a pair of handle flanges, respectively hingedly connected to the opposed side edges of said side panels, each said handle flange capable of being rotated at an angle relative to said side panel and extending away from the interior of said tray, said handle flanges thereby providing a means for carrying said tray and for rigidifying said tray, said tray being collapsible into an enclosed carton by upwardly folding said bottom panels of said bottom wall relative to said center panel thereof such that said bottom panels define side walls of said enclosed carton and said end panels cooperate to define a continuous top wall, and with each said side section being folded inwardly about said diagonal fold line such that said side sections and said center section of each said side panel overlap to define a triple ply end wall structure, whereby an enclosed carton is defined.

**4,340,170**  
**ARTICLE CARRIER AND A BLANK FOR FORMING THE SAME**  
James Montealegre, St. Paul, Minn., assignor to Champion International Corporation, Stamford, Conn.  
Filed Sep. 25, 1980, Ser. No. 190,493  
Int. Cl.<sup>3</sup> B65D 25/30  
U.S. Cl. 229—52 B **1 Claim**

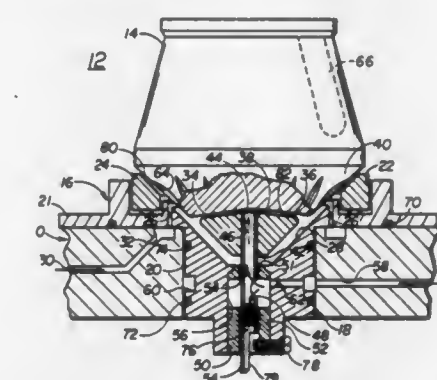
1. An article carrier with an integral handle comprising:
- a pair of opposed top and bottom panels;
  - a pair of opposed first and second side panels, with said top, bottom and side panels alternatively hingedly connected to form a generally rectangular tubular configuration said

second side panel being formed with an inner and an outer panel which partially overlap and are adhesively connected to form a reinforcing strip for increasing the structural rigidity of the carrier; and handle means, said handle means being defined by a cut line, said cut line having a generally arcuate portion disposed in aid top panel and extending between the opposed side edges of said top panel adjacent said side panels, with the arcuate portion of said cut line defining a handle tab, said cut line additionally having a pair of portions which extend a short distance beyond the side edges of said top plane and into the opposed side panels, each of said portions extending at an



angle of approximately 30° to the vertical, said handle means further including a pair of stress relieving, generally elliptical, apertures respectively disposed in the opposed side panels, said apertures being contiguous with the distal ends of the associated portions of said cut line, said handle tab being foldable out of the plane of said top panel along a hinge line extending between the intersections of said arcuate cut line and said opposed side edges of said top panel, such that an opening is created in said top panel for the carrying of said carton, whereby said stress relieving apertures function to reduce the likelihood of tearing adjacent the opposed ends of said cut line.

**4,340,171**  
**AIR DRIVEN CENTRIFUGE ADJUSTABLE ROTOR SEAT**  
George N. Hein, Jr., San Carlos, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.  
Filed Aug. 29, 1980, Ser. No. 182,726  
Int. Cl.<sup>3</sup> B04B 9/14  
U.S. Cl. 233—23 R **9 Claims**



1. An air drive centrifuge apparatus comprising:
- a housing;
  - a rotor chamber within said housing;
  - a rotor positioned in said rotor chamber;
  - a rotor seat for receipt of said rotor;
  - means for driving said rotor;
  - means for supplying supporting air to said rotor during deceleration when said driving means is not operating; and
  - means responsive to said supporting air supply means for



automatically and continually self-adjusting the position of said rotor seat relative to said rotor so that said rotor will decelerate in a stable manner.

**4,340,172**  
**INTERNAL COMBUSTION ENGINE AIR INTAKE CONTROL SYSTEMS**

Edward C. Poore, Hedge End, England, assignor to General Motors Limited, Dunstable, England

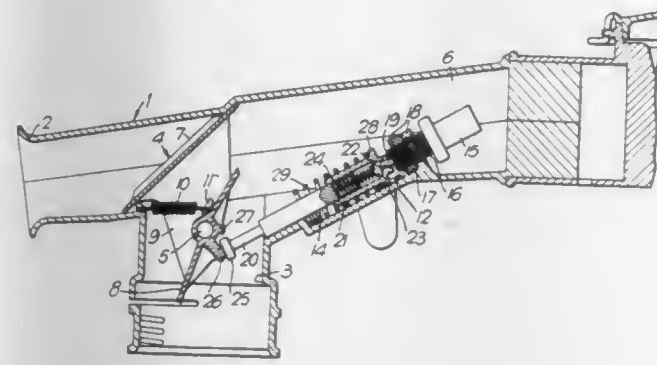
Filed Feb. 27, 1981, Ser. No. 238,973

Claims priority, application United Kingdom, Mar. 10, 1980, 8008045

Int. Cl.<sup>3</sup> G05N 23/13

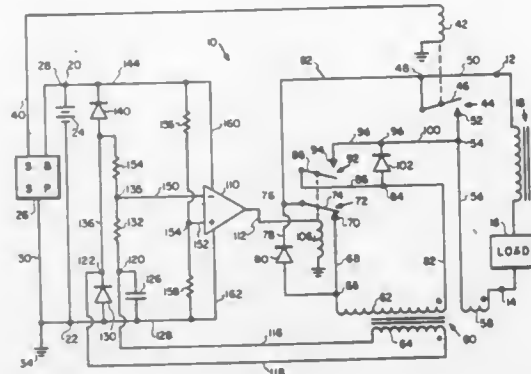
U.S. Cl. 236—13

3 Claims



1. An internal combustion engine air intake temperature control system in which a pivotal valve is movable between two extreme positions of angular movement to open one and close the other of a cold air inlet and a warm air inlet to an engine air intake passage, said valve being biased in a direction to close said cold air inlet, and a thermo-responsive device in said intake passage includes an actuator constructed so as, in response to increasing temperature in said intake passage, to engage said valve and move it against said bias to open said cold air inlet and close said warm air inlet, said valve also being movable to open said cold air inlet, against said bias, in response to a predetermined pressure differential across said valve, irrespective of the valve position determined by the thermo-responsive device, and said thermo-responsive device including a stop member constructed so that, when the temperature sensed by said thermo-responsive device is below a predetermined value, the stop member is positioned so as to prevent complete closure of said warm air inlet by said valve under said pressure differential, in which said thermo-responsive device further includes a wax-pellet power element, in which the expansion of a body of micro-crystalline wax in a housing, as the wax changes from the solid to the liquid state within a predetermined temperature range, effects the extension from the housing of a pin slidably sealed in the housing, the pin engaging one end of said actuator, which is slidably mounted on the wall of the intake passage, one end of said actuator being spring-biased into engagement with the pin of the thermo-responsive device, and the other end of the actuator being engageable with the valve to move it from the open to the closed position with respect to the warm air inlet, the valve and the said other end of the actuator having cooperating formations which, in positions of the actuator corresponding to temperatures below a predetermined value, engage to prevent full closure of the warm air inlet upon movement of the valve from the open position thereof relative to the warm air inlet, towards the closed position thereof, said cooperating formation portion of said actuator forming said stop member, in which said actuator includes a further spring which transmits the movement of said pin to effect movement of the actuator against said spring bias, but which yields when, under high temperature conditions, the extension of said pin is greater than that required to effect full closure of said warm air inlet by said valve.

**4,340,173**  
**LOW VOLTAGE POWER SUPPLY**  
Arlon D. Kompellen, Richfield, Minn., assignor to Honeywell Inc., Minneapolis, Minn.  
Filed May 4, 1981, Ser. No. 260,662  
Int. Cl.<sup>3</sup> H02J 7/00; F23N 5/20  
U.S. Cl. 236—46 R  
13 Claims



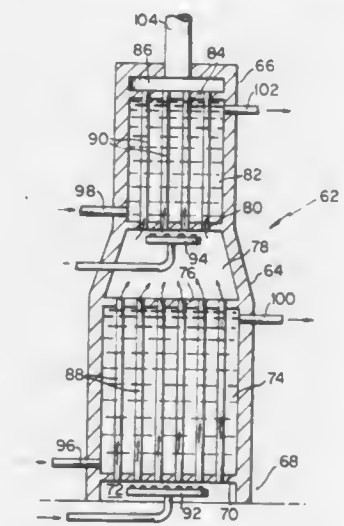
1. A circuit for use with a condition sensor having an input connected to a rechargeable direct current source and an output which changes from a first value to a second value when the condition reaches a predetermined value comprising: first and second power input terminals for connection to an alternating current source and a load device to be activated by the condition sensor; comparator means having first and second input terminals and output means, the comparator operable to produce a change of signal from a first value to a second value at the output means when the voltage at the first input terminal of the comparator exceeds the voltage at the second input terminal of the comparator; means connecting the second input terminal of the comparator to a source of voltage of predetermined magnitude; storage means connected to the first input terminal of the comparator and operable to supply a voltage to the first input terminal of the comparator of magnitude which is a function of the voltage of the storage means and which may vary above and below the predetermined voltage; first switch means connected to the output means of the comparator, the first switch means having an "on" condition when the signal at the output means is of the first value and having an "off" condition when the signal at the output means is of the second value; second switch means connected to the output means of the comparator, the second switch means having an "off" condition when the signal at the output means is of the first value and having an "on" condition when the signal at the output means is of the second value; third switch means connected to receive the output of the condition sensor and having an "off" condition when the output is of the first value and having an "on" condition when the output is of the second value; a transformer having a low impedance primary winding, a high impedance primary winding and a secondary winding; means connecting the secondary winding to the storage means and to the rechargeable direct current source so as to increase the voltage at the storage means whenever current of a first sense is generated at the secondary winding and to charge the rechargeable direct current source whenever current of a second sense is generated at the secondary winding; means connecting the first switch means when in an "on" condition in a first series circuit with the high impedance primary winding and the low impedance primary winding between the first and second power input terminals so that current of the first sense is generated at the secondary winding whenever the signal at the power input terminals is of a first polarity for a time sufficient to increase the voltage at the first input terminal of the comparator to a value above the predetermined voltage at the end of

which time the output of the comparator changes from the first value to the second value and the first switch means changes to an "off" condition interrupting the first series circuit to stop the generation of the current of the first sense in the secondary winding; means connecting the second switch means when in an "on" condition in a second series circuit with the high impedance primary winding and the low impedance primary winding between the first and second power input terminals so that current of the second sense is generated in the secondary winding whenever the signal at the power input terminals is of a second polarity for a time sufficient to decrease the voltage at the first input terminal of the comparator to a value below the predetermined value during which time the rechargeable direct current source is charged and at the end of which time the output of the comparator changes from the second value to the first value and the second switch means changes to an "off" condition interrupting the second series circuit to stop the generation of current of the second sense in the secondary winding; and means connecting the third switch means when in an "on" condition in a third series circuit with the low impedance primary between the power input terminals, connecting the third switch means when in an "on" condition in a fourth series circuit with the first switch means when in an "on" condition across the high impedance primary and connecting the third switch means when in an "on" condition in a fifth series circuit with the second switch means when in an "on" condition across the high impedance primary, the current in the low impedance primary generating a current of the first sense in the secondary when the signal at the power input terminals is of the first polarity until the signal at the output means of the comparator changes from the first value to the second value at which time the second switch means changes to an "on" condition and the fifth series circuit provides a shunt across the high impedance primary stopping the current of the first source in the secondary, the current in the low impedance primary generating current of the second sense in the secondary when the signal at the power input terminals is of the second polarity until the signal at the output means of the comparator changes from the second value to the first value at which time the first switch means changes to an "on" condition and the fourth series circuit produces a shunt across the high impedance primary stopping the current of the second sense in the secondary.

**4,340,174**  
**WATER HEATING APPARATUS, WATER AND HEATING SYSTEM AND IMPROVED BOILER**  
James Regan, 115 Lawton/4A, Yonkers, N.Y. 10705  
Filed Jun. 2, 1980, Ser. No. 155,438  
Int. Cl.<sup>3</sup> F24D 3/08; F24H 1/22  
U.S. Cl. 237—19  
5 Claims

1. A heating and hot water system comprising:  
(a) a substantially vertical chamber having an upper end and a lower end;  
(b) a lower support plate mounted inside the chamber near the lower end having a lower gas chamber below the support plate and a lower water chamber above the plate;  
(c) a first median support plate mounted inside the vertical chamber between the upper and lower chamber ends having a median gas chamber above the plate and the lower water chamber below the plate;  
(d) a second median support plate mounted inside the vertical chamber between the upper and lower chamber ends and above the first median support plate, having the median gas chamber below the support plate and an upper water chamber above the plate;  
(e) an upper support plate mounted inside the vertical chamber near the upper chamber end having an upper gas

chamber above the plate and the upper water chamber below the plate;  
(f) a first set of substantially vertical tubes passing through the lower water chamber, each tube mounted to the lower plate and first median support plate at the tube ends and the interior of each tube in fluid communication with the respective gas chamber above and below the plates;  
(g) a second set of substantially vertical tubes passing through the upper water chamber, each tube mounted to the upper plate and the second median support plate at tube ends, and the interior of each tube in fluid communication with the respective gas chamber above and below the plates;  
(h) a first heat source in the lower gas chamber and a second heat source in the median gas chamber, each heat source producing heated gases in the respective chambers;  
(i) a water inlet means to each water chamber for introducing water into the respective water chamber;



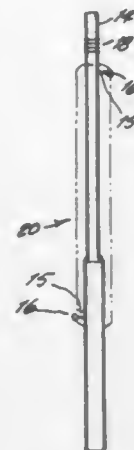
(j) a water outlet means from each water chamber for removing water from the respective water chamber;  
(k) a hot water line in fluid communication with the outlet means of the upper water chamber and space heaters in fluid communication with the outlet means of the lower water chamber; and  
(l) activation means for independently activating the first and second heat sources, whereby when the demand for hot water and heat is required the first heat source is activated and the second heat source is not activated providing heated gases which pass through the first set of tubes and the second set of tubes, and when there is no demand for heat but demand for hot water the first heat source is not activated and the second heat source is activated providing heated gases which only pass through the second set of tubes.

**4,340,175**  
**MECHANICAL STRAW PENCIL**  
Ladislav Danek, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007  
Filed Apr. 17, 1980, Ser. No. 141,044  
Int. Cl.<sup>3</sup> A47G 21/18  
U.S. Cl. 239—33  
3 Claims

1. A mechanical straw pencil shaped holder, comprising in combination, a tubular case open at each end, an extensible straw axially slidably mounted in said case said straw being outwardly slidable from said opposite ends of said case to



provide a mouthpiece at one end and an inlet at the opposite end for insertion into liquid, including means for retaining the



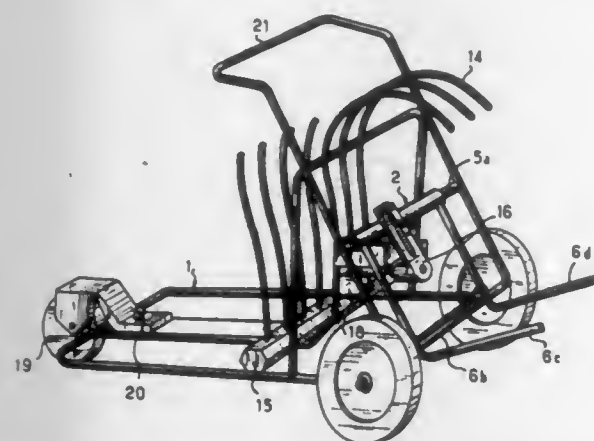
straw fully within the case when not in use and for retaining the straw in extended position.

**4,340,176**  
**ALL-PURPOSE MOBILE SCOURING MACHINE**  
Jacques Bernard, Lamorley, France, assignor to Asnets, Paris, France

Filed Apr. 14, 1980, Ser. No. 140,112  
Claims priority, application France, Apr. 18, 1979, 79 09700;  
Mar. 7, 1980, 80 05125

Int. Cl.<sup>3</sup> B05B 3/14  
U.S. Cl. 239—102

16 Claims



1. An all purpose scouring machine comprising: a travelling carriage having a median plane;  
at least one horizontal axle mounted on said carriage and extending transverse to said median plane;  
a slider movably mounted on each said axle;  
at least one nozzle holder apron mounted on said slider, each said apron comprising at least two cross members;  
a plurality of parallel nozzles pivotally fixed to said cross members of each said nozzle holder apron;  
means for supplying said nozzles with high pressure fluid;  
motor means on said carriage; and  
drive means connected between said motor means and each said nozzle holder apron for reciprocally moving each said nozzle holder apron along a respective said axle, whereby the reciprocal movement of each said slider reciprocates said parallel nozzles in transverse motion on either side of said median plane.

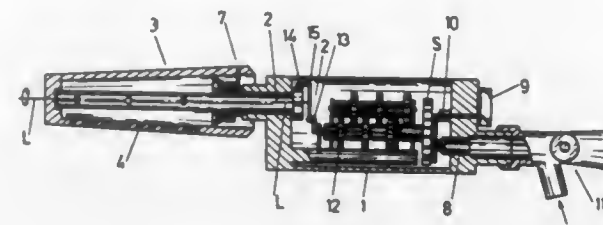
**4,340,177**  
**SHOWER DEVICE**

Markus Huber, Österreich, Fed. Rep. of Germany, assignor to Firma Friedrich Grobe Armaturenfabrik GmbH, Fed. Rep. of Germany

Filed Feb. 5, 1980, Ser. No. 118,383  
Claims priority, application Austria, Feb. 7, 1979, 898/79  
Int. Cl.<sup>3</sup> B05B 3/16

U.S. Cl. 239—242

5 Claims



1. A hand-held shower apparatus comprising a handle for said shower including an elongated housing connected to a water supply at one end and an elongated shower head mounted on the other end of said housing in longitudinal alignment therewith, wherein said shower head is carried by a connecting pipe oscillating about its axis in said housing and concentric with the shower head, wherein said connecting pipe oscillates by means of eccentric driving means.

**4,340,178**

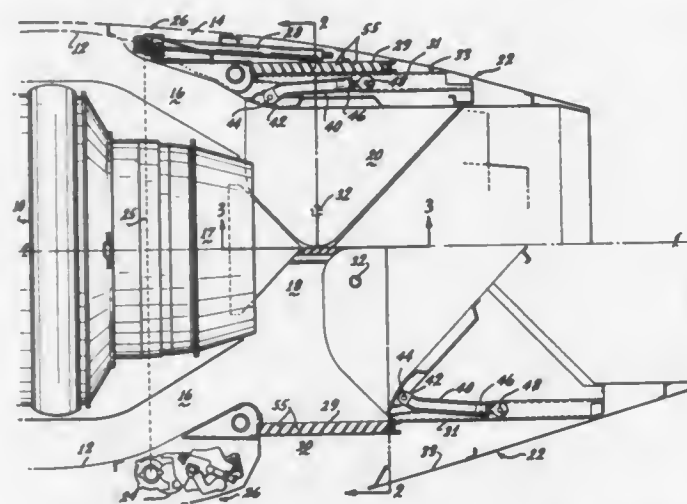
**THRUST REVERSER - CASCADE TYPE**

Dale W. R. Lawson, Bonita, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed May 5, 1980, Ser. No. 146,509  
Int. Cl.<sup>3</sup> B64D 33/04

U.S. Cl. 239—265.31

5 Claims



1. In a fan jet engine having a primary nozzle for the rearward passage of primary gases and a fan concentric therewith, thrust reverser mechanism comprising:  
a cowl surrounding said fan and spaced from said primary nozzle to form a fan nozzle for the passage of fan gases, said cowl having a fixed forward section and a translatable aft section, when stowed the aft section forms with the fixed forward cowl section a continuous inner and outer flow surface and when the aft section is translated rearward to its deployed position an opening is provided between said cowl sections;  
a pair of blocker doors are rotatably connected to said forward cowl section by translatable pivots;  
bias means for biasing said pivots toward a maximum forward position;  
link means pivotally attached between said blocker doors and the aft cowl section for rotating said blocker doors from a stowed position into the stream of said gases and redirecting their flow through said opening and translating said pivots to a maximum aft position against said bias

means when said aft cowl section is translated aft and allowing said bias means to return said pivots to a maximum forward position and then rotating said blocker doors out of the gas stream as said aft section is translated in a forward direction to its stowed position; and means for translating said aft cowl section between stowed and deployed positions.

**4,340,179**

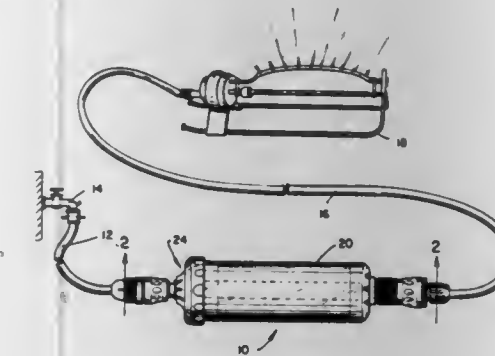
**LAWN AND GARDEN FEEDING APPARATUS**

Philip B. Knapp, 40 Reym Rd., Lynbrook, N.Y. 11563

Filed Apr. 29, 1980, Ser. No. 144,851  
Int. Cl.<sup>3</sup> A62C 5/02

U.S. Cl. 239—310

12 Claims



1. A lawn and garden feeding apparatus for use with a source of water and with water discharge means, said feeding apparatus comprising  
a container having a water inlet opening and a water outlet opening, means for connecting said inlet opening to said source of water, and means for connecting said outlet opening to said water discharge means,  
a removable cartridge disposed within said container, said cartridge comprising a molded stable solid body of water insoluble but permeable hydrophilic gel containing a saturated solution of water soluble plant support reagent and a suspension of undissolved water soluble plant support reagent in solid form, and having a through unobstructed longitudinal bore communicating at one end with said inlet opening and at the other end with said outlet opening, whereby water flows through said longitudinal bore from said inlet opening to said outlet opening, said gel being adapted to release minute amounts of said plant support reagent into the water flowing through said longitudinal bore.

**4,340,180**

**NOZZLE MIXING LINE BURNER**

James L. Belknap, Parker City, and William P. Coppin, Muncie, both of Ind., assignors to Maxon Corporation, Muncie, Ind.

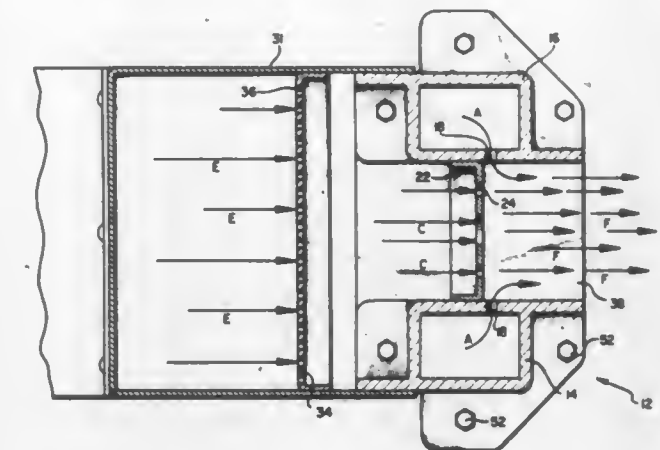
Filed Dec. 3, 1980, Ser. No. 212,346  
Int. Cl.<sup>3</sup> B05B 7/08

U.S. Cl. 239—422

14 Claims

1. An improved nozzle mixing line burner for automatically increasing available oxygen for increased fuel gas flow rates, said burner comprising:  
a pair of fuel gas manifolds oppositely disposed and in spaced relationship, each said fuel gas manifold extending longitudinally along the line of the burner, and each said fuel gas manifold having a plurality of fuel gas ports discharging laterally and toward the opposite manifold to provide streams of fuel gas;  
means connected to said fuel gas manifolds for supplying a fuel gas thereto;  
an orifice plate extending longitudinally along the line of the burner between said pair of fuel gas manifolds and upstream said fuel gas manifolds and having air orifices therein for providing streams of air transverse to said fuel

gas streams directed laterally from said fuel gas manifold ports;  
said air orifices comprising at least two rows of relatively smaller air orifices extending longitudinally along the line of the burner and relatively proximate each said fuel gas manifold, and further comprising at least one row of rela-



tively larger air orifices longitudinally extending between said rows of relatively smaller air orifices, whereby as the velocity of the fuel gas flow is increased the laterally and internally directed streams thereof extend to the vicinity of said relatively larger air orifices to provide proportionately increased oxygen for the combustion of the increased fuel gas flow.

**4,340,181**

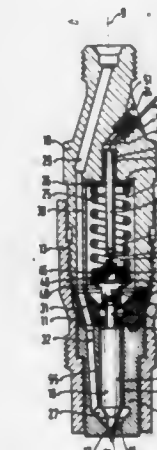
**FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES**

Gerhard Stumpp; Ewald Eblen, both of Stuttgart; Karl Hofmann, Remseck; Nestor R. Amaya, Stuttgart; Josef Schlagenhauf, Esslingen, and Odon Kopse, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 13, 1980, Ser. No. 149,365  
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925187

Int. Cl.<sup>3</sup> B05B 1/32  
U.S. Cl. 239—533.3

10 Claims



1. A fuel injection nozzle for internal combustion engines having a valve seat in a nozzle body of electrically conductive material, a valve needle of electrically conductive material arranged to be lifted from the valve seat as a result of the pressure of the fuel and counter to the force of a first compression spring said valve seat forming an electric switch with said valve needle; a compression member arranged between the compression spring and said valve needle and held against said valve needle by a compression force of said first compression spring, a bore in said nozzle body, a spring-elastic conductive element coaxially disposed within said compression spring and



conductively connected to said compression member and said valve needle through said compression member, an insulated electrical attachment piece secured in said bore and conductively connected to said spring-elastic conductive element, characterized in that the connection of said spring-elastic conductive element to said valve needle forms an axially spring-elastic conductive element inside said compression spring and that said spring-elastic conductive element has one end which is connected unreleasably to said attachment piece while an other end is in force-locking contact with said compression member.

4,340,182

## MANURE SPREADING APPARATUS

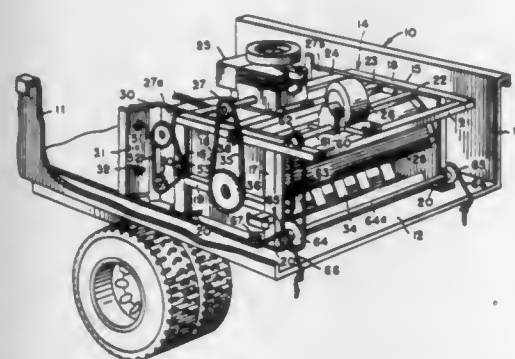
Patrick P. Parke, Manhattan, Kans.; Brady G. Bauer; Kenneth G. Meitl, both of Peoria, Ill.; Wayne L. Thompson, Great Falls, Mont., and Thomas J. Voegeli, Peoria, Ill., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Mar. 19, 1980, Ser. No. 131,799

Int. Cl.<sup>3</sup> A01C 19/00

U.S. Cl. 239—680

17 Claims



1. A manure spreading apparatus comprising a frame adapted to be movably supported upon the bed of a truck for forward and rearward movement between the front and rear ends of such bed; driving means for progressively and selectively moving said apparatus forwardly and rearwardly upon such bed; an impeller assembly comprising an impeller having a transverse horizontal shaft rotatably mounted upon said frame and a plurality of impeller blades fixed to said shaft, and power means for rotating said impeller; top and side shields secured to said frame about said impeller to define an impeller chamber; said top shield having a transverse front edge spaced above the lower limits of said side shields to define an entrance to said chamber and having a transverse rear edge spaced above the lower limits of said side shields to define a discharge opening for said chamber; feeding means supported by said frame in front of said impeller for feeding manure into the entrance for said chamber when said apparatus is moved forwardly into engagement with a load of manure disposed on said bed; and a deflector plate spaced beneath the rear edge of said top shield and extending rearwardly and upwardly from beneath said impeller for directing manure contacted by the blades of said impeller upwardly and rearwardly through said discharge opening.

4,340,183

## CORNER SYSTEM ADDITION FOR A CENTER PIVOT IRRIGATION SYSTEM

Richard L. Kegel, Bellevue; Burton J. Pugh, Ellensburg, and Thomas R. Steury, Bellevue, all of Wash., assignors to Sargent Mfg. Co., Inc., Othello, Wash.

Filed May 16, 1980, Ser. No. 150,554

Int. Cl.<sup>3</sup> B05B 3/12

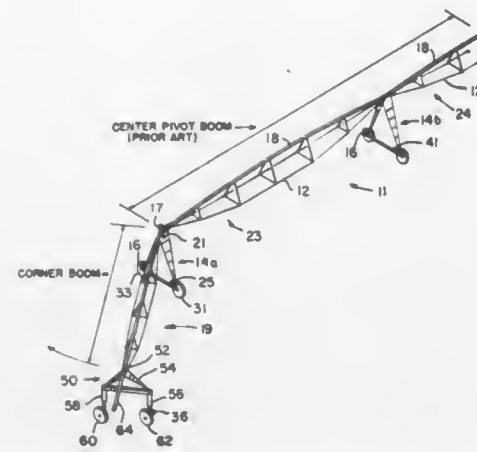
U.S. Cl. 239—710

26 Claims

2. An apparatus which is useful with an irrigation system having a center pivot boom which includes a primary water conduit and which in operation moves about a center pivot point, the center pivot boom being divided into a plurality of

sections which pivot relative to each other, the apparatus comprising:

corner boom means, which includes a secondary water conduit, joined to the outermost end of said center pivot boom in a pivoting relationship thereto; means supporting said corner boom means; means for moving said supporting means and hence said corner boom means about the outermost end of said center pivot boom in response to a signal command; first means for determining the angle between (a) an imaginary reference line, which is a straight line connecting the



center pivot point and the outermost end of the center pivot boom, and (b) a fixed reference line having a known position relative to the irrigation area over which the center pivot boom moves; second means for determining the angle of said corner boom means relative to the imaginary reference line; means using the information from said first and second angle determining means to determine the position of said corner boom means relative to the irrigation area; and means supplying signal commands to said moving means when said corner boom means is in a selected position relative to the irrigation area.

4,340,184

## APPARATUS FOR MECHANICAL SEPARATION OF A COMBINATION OF MEAT AND BONE INTO USEFUL FRACTIONS

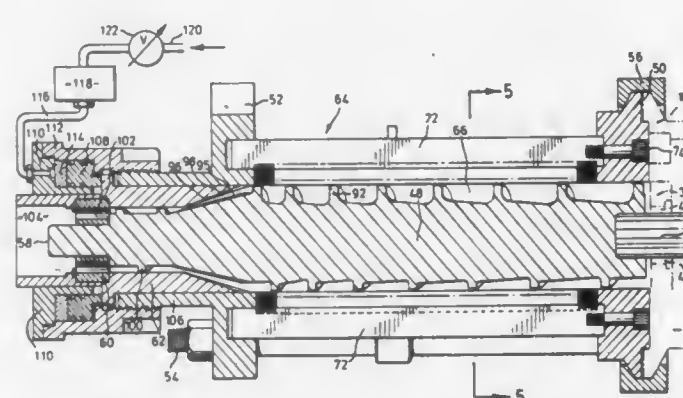
Werner Poss, Oakville, Canada, assignor to Poss Design Limited, Hamilton, Canada

Filed Dec. 3, 1979, Ser. No. 99,350

Int. Cl.<sup>3</sup> A22C 17/00; B02C 23/16

U.S. Cl. 241—82.3

8 Claims



1. Apparatus for the mechanical separation of meat and bone into separate fractions thereof comprising:

- a cylindrical conduit having an inlet end and an outlet end and containing a feed screw rotatable about a longitudinal axis,
- the feed screw comprising a plurality of successive lands and upon rotation about its axis moving a meat and bone

combination to be separated along the conduit from the inlet to the outlet end and applying radially outwardly operative pressure to the combination pressing it against the conduit wall,

- at least part of the conduit wall comprising a separator screen whereby the pressure of the combination against the screen part forces the meat fraction through the screen while the bone fraction is retained thereby and moved through the conduit to the outlet end,
- the said feed screw being of circular transverse cross-section with the centre of the cross-section displaced from the longitudinal axis about which the screw rotates, the said cross-section centre describing a helical path about the said longitudinal axis along the length of the screw so that the said rotation of the screw applies a radially outwardly pulsating pressure force to the combination.

4,340,186

## FLYER-TYPE COIL WINDING MACHINE

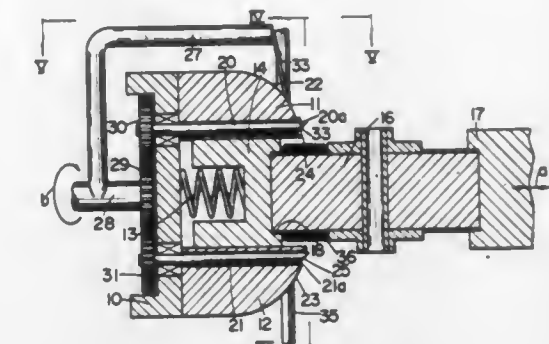
Sachio Shimada, and Yoshiaki Ohwada, both of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,480

Claims priority, application Japan, Nov. 30, 1978, 53/148420 Int. Cl.<sup>3</sup> H02K 15/09

U.S. Cl. 242—7.05 B

11 Claims



4,340,185

## ROLL CRUSHER FOR CRUSHING LUMPY MATERIAL

Ernst Braun, and Gert Braun, both of Essen-Heisingen, Fed. Rep. of Germany, assignors to Halbach & Braun, Fed. Rep. of Germany

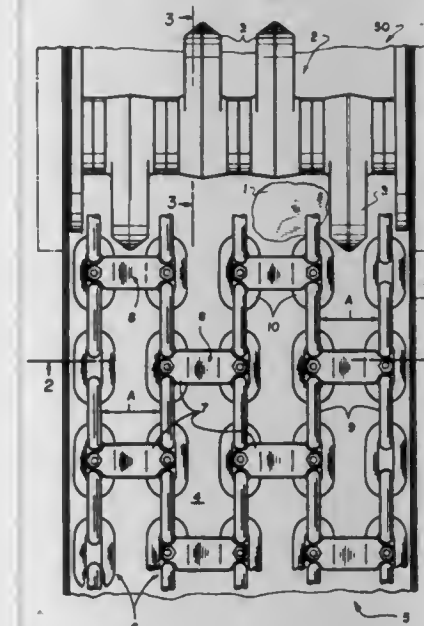
Filed Mar. 17, 1980, Ser. No. 131,127

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1979, 2912979

Int. Cl.<sup>3</sup> B02C 13/286

U.S. Cl. 241—186 R

8 Claims



1. A single-roll crusher for fragmenting coarse-grained material, particularly coal and other minerals, comprising a housing, a shaft mounted to said housing for rotation, striking tools mounted on said shaft for rotation therewith through a path of rotary motion, a conveyor trough having a crusher plate extended at a predetermined distance vertically below said striking tools, a chain mesh mat mounted intermediate said crusher plate and said striking tools, said chain mesh mat comprising a multiplicity of chain strands extending side by side and horizontally spaced from each other by a predetermined lateral distance not greater than a desired maximum grain size, and pushers connecting adjacent chain strand, each of said chain strands comprising interconnected links alternate ones of which are vertical and horizontal, said chain mesh mat being aligned with the path of rotary motion of respective striking tools so that the tools project and rotate centrally between adjacent chain strands, and each of said pushers having in the zone between adjacent chain strands a trough-like recess having a depth extending below the top of said vertical chain links.

4,340,187

## BOBBIN CHANGING APPARATUS

Heinz Schippers, Remscheid; Norbert Hufer, Radevormwald; Gerd Münnekehoff, Remscheid, and Udo Teich, Sprockhövel, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik, Remscheid, Fed. Rep. of Germany

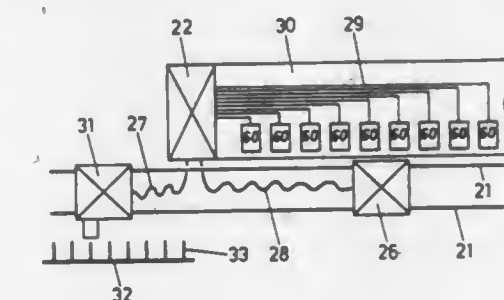
Filed Sep. 26, 1980, Ser. No. 191,350

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939675

Int. Cl.<sup>3</sup> B65H 54/26, 67/04

U.S. Cl. 242—35.5 A

18 Claims



1. A bobbin changing apparatus adapted for use with a textile yarn processing machine having a plurality of yarn winding stations aligned along at least one side thereof and with the winding stations each having a bobbin mounting means, said apparatus comprising trackway means adapted to be disposed along at least said one side of said textile yarn processing machine, a thread operating carriage mounted for movement along said trackway means and to a position adjacent each wind-



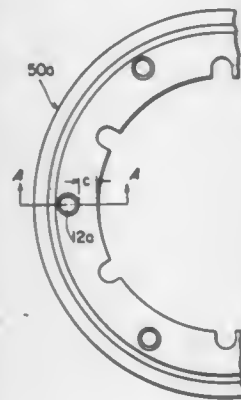
ing station, and including means for severing and withdrawing the yarn being processed at an adjacent winding station, and for returning the yarn to its winding path when an empty bobbin has been positioned on the mounting means of such winding station, and

a doffing carriage mounted for movement along said trackway means independently of said thread operating carriage and to a position adjacent each winding station, and including means for receiving a full bobbin from the mounting means of such adjacent winding station, and control means adapted for operatively interconnecting each winding station with each of said thread operating carriage and said doffing carriage, and for effecting movement of said thread operating carriage and doffing carriage to each winding station upon receipt of a signal, and for operatively actuating each of said thread operating carriage and doffing carriage upon being positioned adjacent such winding station.

**4,340,188**  
**WINDING HUB FOR MATERIALS IN STRIP FORM**  
 Walter Derendorf, Heidelberg, and Manfred Huber, Oberkirch, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany  
 Continuation of Ser. No. 20,459, Mar. 14, 1979, abandoned. This application Oct. 1, 1980, Ser. No. 192,700  
 Claims priority, application Fed. Rep. of Germany, Apr. 6, 1978, 7810193[U]

Int. Cl.<sup>3</sup> B65H 75/18  
 U.S. Cl. 242—68.5

4 Claims



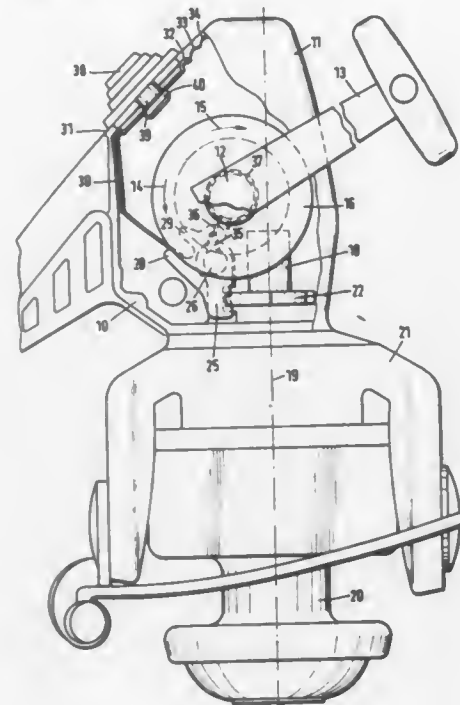
1. An annular flangeless winding hub for magnetic tape, comprising a substantially cylindrical ring having an outer peripheral surface, an inner peripheral surface, and lateral surfaces, the outer peripheral surface serving as the winding surface for the tape and the lateral surfaces being configured to provide for the interlocking of a plurality of winding hubs of similar construction when stacked upon each other, wherein the median plane of the annular portion of said cylindrical ring immediately adjacent said inner peripheral surface is laterally spaced from the median plane of said winding surface so that one of the co-planar lateral faces of said portion forms a projection while the other face forms a generally complementary depression, said co-planar faces forming respective inner ledges extending flat over their entire circumference in planes parallel to said median planes, to facilitate the mounting of said winding hub for rotation and said projection on one winding hub cooperating with said depression on another winding hub to provide for said interlocking when said hubs are stacked one upon the other, and wherein in the radially outer regions of said portion protrusions and recesses are provided to prevent the rotation of two or more stacked winding hubs relatively to each other.

**4,340,189**  
**RETURN FEED LOCKING MECHANISM FOR FISHING REELS**

Bernd Volkert, and Klaus Dörbandt, both of Berlin, Fed. Rep. of Germany, assignors to Deutsche Angelgeräte Manufaktur (DAM) Hellmuth Kuntze Gesellschaft & Co. KG, Berlin, Fed. Rep. of Germany

Filed Apr. 14, 1981, Ser. No. 254,031  
 Int. Cl.<sup>3</sup> A01K 89/02; F16D 63/00  
 U.S. Cl. 242—84.1 R

3 Claims



1. A return feed locking mechanism for a fishing reel, comprising:  
 a housing;  
 a drive shaft rotatably mounted in said housing;  
 a driven shaft rotatably mounted in said housing and operatively coupled to said drive shaft for effecting rotation thereof;  
 a ratchet wheel mounted on said driven shaft;  
 a resilient adjustment member displaceably mounted in said housing which member is arrestable in a first end position, a central position, and a second end position, said adjustment member having an actuating arm;  
 a stationary pin mounted in said housing disposed parallel to said drive shaft;  
 a bolt having two ends pivotably mounted on said pin for movement between two end positions in which one end thereof is moved into, and out of, an arresting and release position, respectively, with respect to said ratchet wheel, the other end of said bolt being forked to define a pair of spaced-apart shanks between which said actuating arm of said adjustment member engages, said shanks defining a width therebetween which is about at least equal to the path of said actuating arm as it moves away from said pin and toward said drive shaft during movement of said adjustment member between said end positions thereof, said bolt also having a slot formed therein disposed between said pin and said drive shaft;  
 a spring ring frictionally mounted on said drive shaft having a bent end which engages said slot of said bolt when said drive shaft is rotated in a reeling-in direction and which has a spring force which is lower than that of said resilient adjustment member; and  
 wherein in the first end position of said adjustment member, said adjustment member pushes the bolt into its arresting end position due to its spring force, wherein in the center position of the adjustment member, said adjustment member is free from tension and said spring ring pushes said bolt into said release end position thereof when said drive shaft is rotated in a reeling-in direction and into the arresting position thereof when said drive shaft is rotated in a

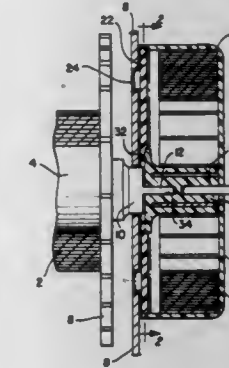
line-releasing direction and wherein in the second end position of said adjustment member, said adjustment member acts on the other shank of said fork due to its spring force, and pushes the bolt into the release position, whereby the spring force of the spring ring is overcome during such releasing movement.

**4,340,190**  
**SEAT BELT RETRACTOR SPRING ASSEMBLY**  
 Robert J. Zavatkay, Torrington, Conn., assignor to Barnes Group Inc., Bristol, Conn.

Filed May 20, 1980, Ser. No. 151,614  
 Int. Cl.<sup>3</sup> A62B 35/00; B65H 75/48

U.S. Cl. 242—107

1 Claim



1. A spring operated seat belt retractor device, comprising:  
 (a) a frame,  
 (b) a casing adapted to be connected to the frame and comprising:  
 (i) a cylindrical cup having a peripheral wall, a bottom wall and an open side,  
 (ii) a substantially planar cover connected to the cup and entirely closing its open side and having outer and inner surfaces,  
 (c) a shaft rotatably mounted concentrically within the casing with its one end within and closely adjacent the bottom wall of the cup,  
 (d) a spiral spring within the casing having its ends connected to the periphery of the cup and to the shaft, and  
 (e) means for releasably locking the spring to the casing in any predetermined prewound condition, comprising:  
 (i) spaced holes in the bottom wall of the cup which are positioned on opposite sides of the position of the axis of the shaft,  
 (ii) spaced elongated holes in the shaft extending from the said one end surface of the shaft in the direction of the axis of the shaft and being spaced equally to the holes in the bottom wall of the cup and being so positioned that they may be aligned with the holes in the bottom wall of the cup on rotation of the shaft with respect to the casing, and  
 (iii) a U-shaped wire clip the legs of which are spaced equally to the spacing of the holes in the bottom wall of the cup and the holes in the shaft, said clip being positioned with its legs within the holes in the bottom wall of the cup and the holes in the shaft thereby to releasably connect the shaft to the casing.

**4,340,191**  
**SEAT BELT RETRACTOR SPRING ASSEMBLY**  
 Robert J. Zavatkay, Torrington, Conn., assignor to Barnes Group Inc., Bristol, Conn.

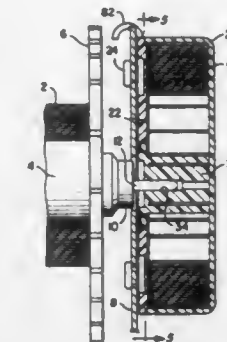
Filed Sep. 26, 1980, Ser. No. 190,977  
 Int. Cl.<sup>3</sup> A62B 35/00; B65H 75/48

U.S. Cl. 242—107

1 Claim

1. A spring operated seat belt retractor device, comprising:  
 (a) a frame,  
 (b) a casing adapted to be connected to the frame and comprising:

i. a cylindrical cup, and  
 ii. a substantially planar cover connected to the cup and closing it and having a central opening therein,  
 (c) a shaft rotatably mounted in the opening in the cover,  
 (d) a spiral spring within the casing having its ends connected to the periphery of the cup and to the shaft, and  
 (e) means for releasably locking the spring to the casing in any predetermined prewound condition, comprising:  
 i. a passage formed in the general plane of the cover having an opening in the periphery of the cover,

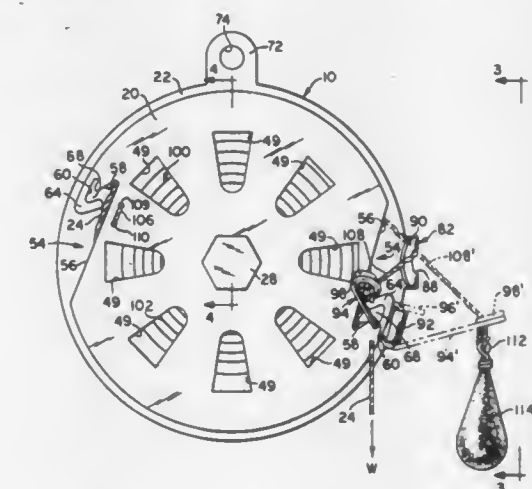


ii. a passage formed in the shaft in the plane of the cover,  
 iii. the passages in the cover and shaft being positioned to be longitudinally aligned on rotation of the shaft, and  
 iv. a pin slidably mounted in the aligned passages with its outer end accessible from outside the periphery of the cover whereby when the casing is connected to the frame the outer end of the pin may be manually grasped to insert the pin into the aligned openings to lock the shaft to the casing or withdrawn to release the shaft from the casing.

**4,340,192**  
**REEL FOR ANCHORING WILD FOWL DECOYS**  
 James O. Burris, III, 251 Clark, Clarksdale, Miss. 38614  
 Filed Mar. 14, 1980, Ser. No. 130,252  
 Int. Cl.<sup>3</sup> B65H 75/48

U.S. Cl. 242—107.6

9 Claims



1. A reel for the winding and unwinding of cord about the reel, for use in anchoring floating animal decoys, the reel comprising:  
 (a) a first hub having an eyelet for receiving cord there-through;  
 (b) a second hub mounted to rotate relative to the first hub;  
 (c) means for biasing the second hub rotatably relative to the first hub;  
 (d) a spool-like support structure located between the first and second hubs for mounting a wound cord, said spool-like structure connected to the second hub to rotate therewith;  
 (e) a lock pin pivotally mounted to the first hub to pivot

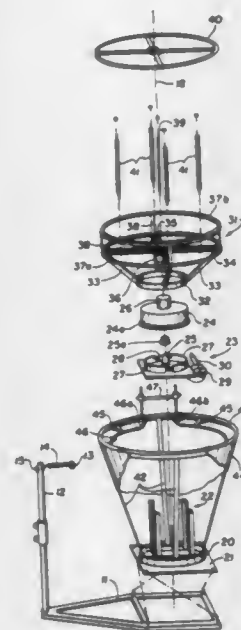


about its axis in a plane substantially co-planar with the plane of the first hub, so that the pin can pivot towards the second hub for engagement with the second hub, and pivot away from the second hub, the lock pin having a loop for receiving the cord which extends from the eyelet with the pin extending across the spool-like structure when the pin is engaged to the second hub; and

(f) means for locking the first hub to the second hub with the lock pin, comprising: the second hub having an outer edge, the second hub having a notch with a wall extending inwardly from the second hub outer edge so that the notch opens towards the outer edge of the second hub; and a tab projecting from the outer edge of the second hub towards the interior of the second hub to partially block the notch opening with the tab projecting in a direction from the outer edge of the second hub into the notch to form a slot between the tab and the notch wall, said slot sized to allow passage of the lock pin, so that when the lock pin is pivoted towards the second hub to be positioned within the notch to lock against rotary movement of the second hub relative to the first hub, the tab obstructs movement of the pin out of the notch.

**4,340,193**  
**VARIABLE CAPACITY FEED REEL FOR COILED WIRE**  
George E. Zitzman, 131 Tanners Pond Rd., Garden City, N.Y. 11530

Filed Jul. 24, 1980, Ser. No. 171,663  
Int. Cl.<sup>3</sup> B65H 49/00  
U.S. Cl. 242—129.72



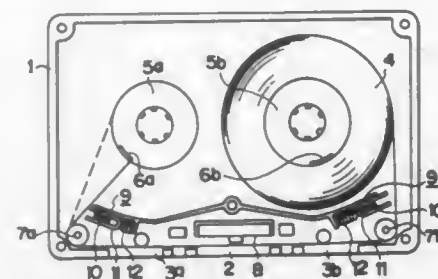
1. A reel assembly for feeding coiled wire material to a processing machine comprising a vertical axis rotatable support to receive the coil, means to secure the coil coaxially therein, guide means to control the wire passing from the coil to a processing station, and a stationary circular housing concentric with respect to the axis of rotation and having downwardly converging walls to define a section of an inverted cone having an upper portion containing the rotatable support.

**4,340,194**  
**TAPE CASSETTE**  
Sinichi Saitou, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan  
Filed Aug. 6, 1980, Ser. No. 175,712  
Claims priority, application Japan, Aug. 7, 1979, 54-108708[U]

Int. Cl.<sup>3</sup> G03B 1/04; G11B 15/32, 23/04  
U.S. Cl. 242—199

5 Claims  
1. A tape cassette comprising: a window means for enabling operative engagement in said cassette of magnetic head means and capstan means; a pair of hubs arranged in said cassette; a

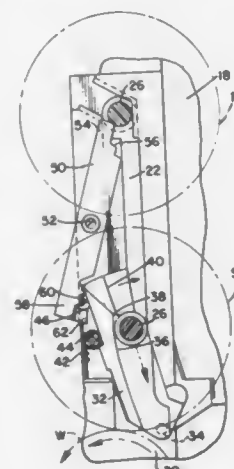
tape wound between said hubs guided along said window means for operative engagement by said magnetic head means; and tape end detector means for detecting when unwinding of said tape from either of said hubs is completed; said tape end detector means comprising a fixed bar set in said cassette, a



slide bar adapted to be engaged by said tape upon termination of the unwinding thereof from one of said hubs, said slide bar being thereby slidably moved relative to said fixed bar, and spring means urging said slide bar against movement imparted thereto by engagement with said tape.

**4,340,195**  
**DISPENSER FOR ROLLED FLEXIBLE SHEET MATERIAL**  
Raymond F. DeLuca, Stamford, Conn., assignor to Georgia-Pacific Corporation, Portland, Oreg.  
Continuation-in-part of Ser. No. 58,867, Jul. 19, 1979, Pat. No. 4,307,639, which is a continuation of Ser. No. 897,431, Apr. 18, 1978, abandoned. This application Oct. 16, 1980, Ser. No. 197,524

Int. Cl.<sup>3</sup> B65H 19/04, 17/42  
U.S. Cl. 242—55.3



1. A dispenser for wound rolls of flexible sheet material that have supporting spindles projecting outwardly from the roll core ends comprising:

a dispenser housing to receive the rolls to be dispensed having inwardly facing tracks on the opposite inner side-walls of said housing for the rolls to move downwardly within said housing along said tracks;

movably mounted roll driving guide means positioned adjacent the lower end of each said track, each said guide means providing a friction surface to engage the periphery of a source roll spindle within the track and promote source roll rotation during said downward movement of the roll;

means biasing each said guide means toward the center of the track with which it is associated;

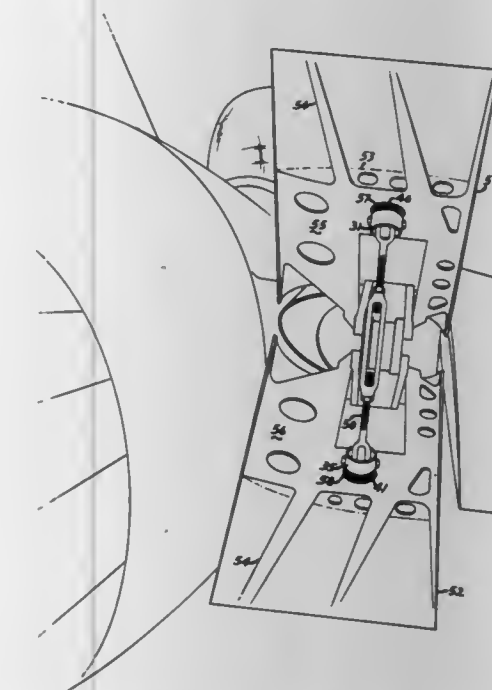
a movably mounted reserve roll segregating device associated with each track having an upper portion to engage a reserve roll spindle within the track to retain the reserve roll adjacent the upper ends of said tracks, said device having a lower portion pressing against said guide means to augment said biasing means in urging said friction

surface against the periphery of the source roll spindle within the track; and  
a feed roller rotatably mounted within said housing adjacent the lower ends of said tracks to drivingly engage with the periphery of the source roll.

**4,340,196**  
**MAINTENANCE LOCK FOR AIRCRAFT SPEED BRAKE**  
Thomas W. Eldred, 298 6th St., Hill AFB, Utah 84056  
Filed May 6, 1980, Ser. No. 147,426  
Int. Cl.<sup>3</sup> B64D 47/00

U.S. Cl. 244—1 R

2 Claims



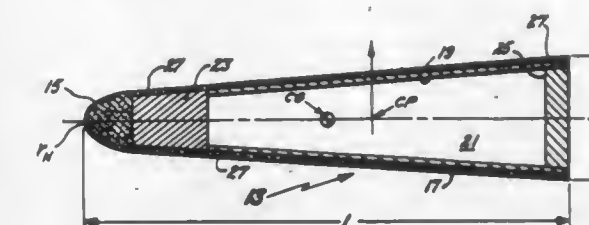
1. A lock mechanism for holding open opposed upper and lower doors of an aircraft speed brake, said upper and lower doors each having a surface sheet and each having an internal stiffening structure with at least a lightening hole in said upper door stiffening structure opposed a lightening hole in said lower-door stiffening structure, said lock mechanism comprising:

- a turnbuckle type member having a first end with left-hand threads and a second end with right-hand threads;
- a first yoke member threadably engaging in adjustable relationship said first end of said turnbuckle type member;
- a first locking means cooperating with said first yoke member and said turnbuckle type member for locking the adjustment of said first yoke member with respect to said turnbuckle type member;
- a second yoke member threadably engaging in adjustable relationship said second end of said turnbuckle type member;
- a second locking means cooperating with said second yoke member and said turnbuckle type member for locking the adjustment of said yoke member with respect to said turnbuckle type member;
- a first tubular member for engaging said upper door surface sheet and being of a size for receipt in said lightening hole in said upper door stiffening structure, said first tubular member also being pivotably attached to said first yoke member;
- a second tubular member for engaging said lower door surface sheet and being of a size for receipt in said lightening hole in said lower door stiffening structure, said second tubular member also being pivotably attached to said second yoke member; and
- a resilient covering extending over the surface of each of said first and second tubular members for contacting said surface sheet and said stiffening structure of said respective upper and lower speed brake doors through said respective lightening holes therein.

**4,340,197**  
**DECOY MISSILE**  
George S. Campbell, Storrs, Conn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.  
Filed Feb. 15, 1966, Ser. No. 529,182  
Int. Cl.<sup>3</sup> B64G 1/00

U.S. Cl. 244—3.1

4 Claims

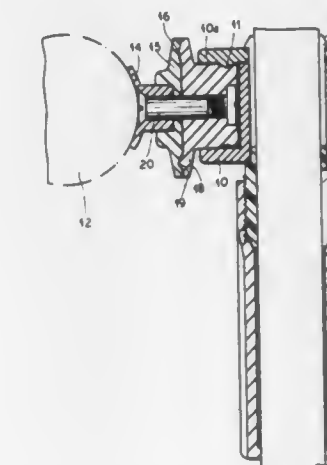


1. A decoy missile for simulating the characteristics of a ballistic missile nose cone during reentry into the earth's atmosphere, said decoy missile comprising a rounded nose portion having a hollow elongated body portion extending rearwardly therefrom, said decoy missile being symmetrical about its longitudinal axis, and means for reducing the natural oscillation frequency of said decoy, said means including a front ballast disposed in the forward section of said body portion immediately adjacent to said nose portion and a rear ballast disposed in the rearwardmost base section of said body portion, thereby providing a high moment of inertia and reducing the natural oscillation frequency of said decoy to match that of the ballistic missile nose cone.

**4,340,198**  
**STAND FOR A PROJECTION SCREEN**  
Helmut Meinunger, Radevormwald, Fed. Rep. of Germany, assignor to Mechanische Weberei GmbH, Bad Lippspringe, Fed. Rep. of Germany  
Filed May 9, 1980, Ser. No. 148,123  
Claims priority, application Fed. Rep. of Germany, May 11, 1979, 2919170

Int. Cl.<sup>3</sup> B61L 25/00  
U.S. Cl. 248—122

6 Claims

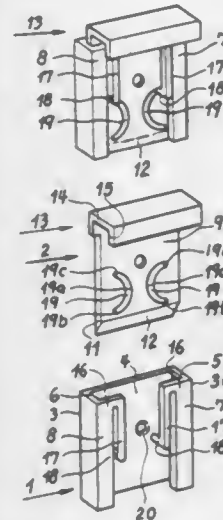


1. A projection screen assembly which comprises:  
a post;  
a holder mounted on said post and formed with a dovetail-like slot;  
a head of generally dovetail-like profile removably receivable in said slot; and  
a projection screen tube mounted on said head whereby said tube can be removed with said head from said post, said holder being mounted on a slotted sleeve, said slotted sleeve being provided with a male thread at one end having a frustoconical portion at said end, said assembly further comprising a locking sleeve having a female thread engageable with said male thread and a frustoconical



cal portion adapted to clamp said slotted sleeve against said post, said sleeve surrounding said post and being slidable with said holders thereon.

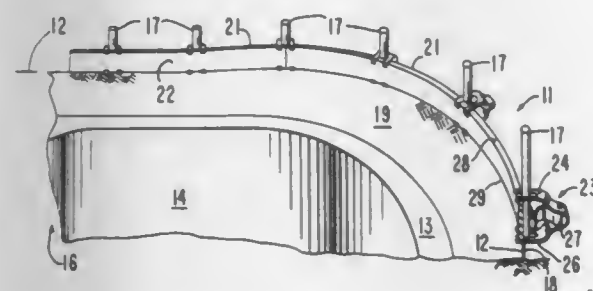
**4,340,199**  
**HANGING DEVICE OR CATCH**  
 Rita Brock, 4815 Schloss-Holte, Stuckenbrock, Asterhweg 12, Fed. Rep. of Germany  
 Filed Oct. 1, 1979, Ser. No. 80,575  
 Claims priority, application Fed. Rep. of Germany, May 8, 1979, 7913186[U]  
 Int. Cl.<sup>3</sup> A47G 1/16  
 U.S. Cl. 248—544



1. Hanging device comprising at least two parts guided for displacement one on the other and made of spring-elastic plastic, having a first part (1) which includes at least one leaf spring (17) which is provided at its free end with a projection (18) for engagement in a guiding groove (19) which is disposed in a second part (2) at an angle to the leaf spring, the guiding groove (19) being curved and forming an arc of a circle, said arc having an apex and two end portions; said second part (2) further comprises a base plate (9) in which the guiding grooves (19) and an elongated hole (20a) are disposed and which is provided with a fastening means (14, 15) having a hooked portion with a lip (15), said hooked portion lying outside of the first part (1), and a resilient tongue (24) protruding at an angle from the plane of the second part (2) is disposed opposite the lip (15) of the hook portion; said resilient tongue (24) is formed on a shank (26) lying in the plane of the second part (2) and extending into said elongated hole (20a).

**4,340,200**  
**SPRING CLIP AND MOLDING FORM UTILIZING SAME**  
 William J. Stegmeyer, 2525 E. Prince Rd., Apt. 72, Tucson, Ariz. 85716

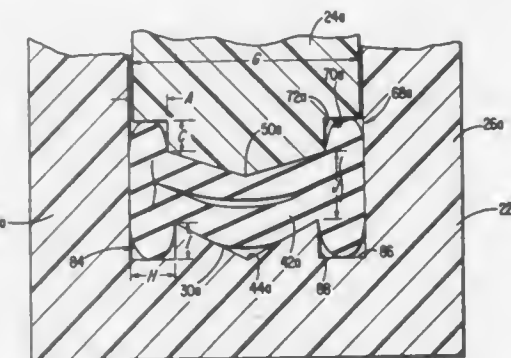
Filed Nov. 26, 1979, Ser. No. 97,375  
 Int. Cl.<sup>3</sup> E04G 17/00  
 U.S. Cl. 249—3



1. A spring clip for holding a form board in position relative to a support stake comprising:  
 a pair of spaced flat arms, each arm having a free end and an opposite end and defining an aperture in the plane of said

arm proximate said free end, the apertures of the arms in registration and of a size to allow the support stake to pass through the pair of arms;  
 a hook latch at the free end of each arm for holding the form board;  
 a web joined to the opposite ends of the pair of arms to join them together; and  
 a flat spring having at least one bend in its length the flat spring having one end pivotally mounted to the arms proximate the web and extending to an opposite free end so that said flat spring passes between the spaced arms and has a segment defining a load bearing surface in the plane of said flat spring passes between the spaced arms and has a segment defining a load bearing surface in the plane of said flat spring proximate the free end, that extends transverse to said arms, said flat spring having an unstressed span from its pivot end to the load bearing surface so that when said flat spring is positioned between the arms with the form board adjacent the hook latches and the support stake passing through the apertures it can be stressed to have said load bearing surface bearing against the support stake with sufficient spring force in a direction transverse to said support stake to hold said form board firmly against the adjacent hook latches and in place relative to said support stake.

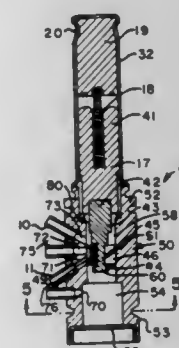
**4,340,201**  
**INTRAVENOUS TUBING CLAMPING DEVICE**  
 Karl E. Becker, Jr., 275 S. Pershing Ave., Wichita, Kans. 67218  
 Continuation-in-part of Ser. No. 893,263, Apr. 5, 1978, abandoned. This application Dec. 10, 1979, Ser. No. 102,112  
 Int. Cl.<sup>3</sup> F16L 55/14  
 U.S. Cl. 251—6



1. An intravenous tubing clamping device for controlling fluid flow through compressible tubing comprising:  
 an elongated body member adapted to receive said tubing having a proximal end and a distal end;  
 said body member including a generally V-shaped bottom wall defining two planar supporting surfaces for said tubing extending longitudinally of said body member and having a substantially constant width and an apex angle of about 60° to 165°; and  
 a roller mounted on said body member for movement longitudinally of said body member about an axis of rotation extending transversely of said body member for defining a clamping area between said roller and said supporting surfaces which decreases the cross-sectional area of the lumen of the tubing as said roller moves from said proximal end of said body member toward said distal end, said roller defining grooves extending circumferentially around opposite sides of the outer circumference of said roller, said roller grooves defining spaces adapted to receive the sides of a tubing clamped in said clamping area, said roller grooves being defined by (1) walls on said body member extending substantially parallel to said longitudinal roller movement on opposite sides of said roller, (2) first surfaces formed circumferentially on said roller adjacent to and on opposite sides of said clamping area and (3) second surfaces formed circumferentially on said roller substantially perpendicular to said body member walls

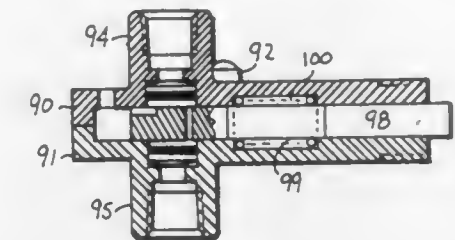
and each extending substantially parallel to said axis of rotation between a respective first surface and body member wall, said roller grooves cooperating with said body member to clamp the sides of said tubing in a direction transverse of said body member with said tubing being compressively engaged between said body member walls and said first surfaces and said tubing being positively engaged by said second surfaces so that a lumen is defined in a central portion of the tubing through which flows substantially all of the fluid, said roller having a circumference with a generally V-shape with the apex of the V-shape centrally located on the roller and its distal ends merging with said roller grooves, the apex having an angle of about 60° to 180°, the roller cooperating with the planar supporting surfaces of said body member to define a generally V-shaped lumen in the clamped tubing.

**4,340,202**  
**FOUR WAY VALVE**  
 David P. Hargraves; Jude A. Pauli, and Steven E. Williams, all of St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.  
 Continuation of Ser. No. 840,299, Oct. 7, 1977, Pat. No. 4,202,373. This application Jan. 4, 1980, Ser. No. 109,673  
 The portion of the term of this patent subsequent to May 13, 1997, has been disclaimed.  
 Int. Cl.<sup>3</sup> F16K 11/06, 31/06  
 U.S. Cl. 251—31



1. In a valve assembly for a system employing relatively high pressure, the valve assembly having a main valve housing, a main valve member movable in said valve housing, said valve member having ends which cooperate with said housing to define a pair of opposed chambers in said housing, and a pilot control system for alternating the application of high pressure to the opposed chambers in said housing to position said main valve member, said pilot control system including a pilot body mounted to said valve housing and a solenoid actuated mechanism having a plunger mounted for movement in a first direction with respect to said pilot body, the improvement comprising a pilot slide intermounted with said plunger for movement in said first direction and being loosely movable with respect to said plunger to permit at least relative reciprocal movement in a second direction between said slide and said plunger, said relative reciprocal movement enabling said slide to compensate for part assembly tolerances in the manufacture of said valve, and means for applying the high pressure of said system to said pilot slide to maintain the position of said pilot slide with respect to said plunger along with relative reciprocal movement direction, said high pressure being the sole means for biasing said pilot slide so as to position the pilot slide with respect to said plunger along said relative reciprocal movement direction regardless of the movement of said plunger in said first direction.

**4,340,203**  
**THREE WAY SLIDE VALVE WITH CENTER RETURN**  
 Verne P. Donner, Palatine, Ill., assignor to Deltrol Corp., Bellwood, Ill.  
 Filed Oct. 14, 1980, Ser. No. 196,372  
 Int. Cl.<sup>3</sup> F16K 3/02; F15B 13/04  
 U.S. Cl. 251—322



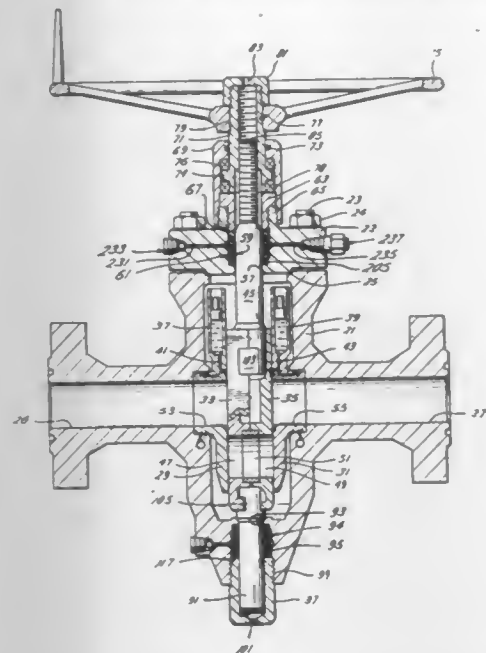
1. In a valve mechanism, a valve housing formed of two moulded housing parts joined together, said housing parts defining a slide valve chamber, a slide valve member in said chamber, operating means for the slide valve member extending through one end of said housing, a threaded mounting stud for the housing through which said operating means extends, a portion of said stud being formed on one housing part and another portion of the stud being formed on the other housing part, said housing parts being separable and joined together after installation of the slide valve member.  
 4. In a valve mechanism, a valve housing having a slide valve chamber and an adjoining spring chamber of larger cross-section than the slide valve chamber providing a shoulder at the junction of the spring chamber with the slide valve chamber, slide valve member means movably mounted in the slide valve chamber and having a rectangular portion adjacent to the spring chamber, said valve housing being formed of two parts contacting opposite faces of the slide valve member means, said housing parts having elongated mating surfaces and cooperating to form the slide valve chamber said valve housing being formed with at least one valve port controlled by the slide valve member means, said valve housing also being formed with an opening at one end leading from the slide valve chamber to the outside of the housing, and the slide valve member means including operating means passing through said opening for operating the slide valve member means from outside the housing, spring means in the spring chamber arranged to engage the rectangular portion of the slide valve member means and said shoulder, said spring means urging the slide valve means in a predetermined direction and being stopped by the shoulder, said spring chamber being located in the housing between the valve port and the opening for the operating means.

**4,340,204**  
**HIGH PRESSURE GATE VALVE WITH PRELOADED, STACKED, SOLID LUBRICATED STEM SEALS**  
 David P. Herd, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.  
 Continuation-in-part of Ser. No. 655,693, Feb. 6, 1976, abandoned. This application Sep. 15, 1977, Ser. No. 833,684  
 Int. Cl.<sup>3</sup> F16K 41/04; B65D 53/02  
 U.S. Cl. 251—327

1. A valve including a hollow body having a flow path therethrough and a port, stem gate means in the body moving to control fluid flow through the body and including an actuator and a stem extending through the port in the body from the inside thereof, there being an annular stuffing box in the body around the stem, stem seal means in the stuffing box, and a packing gland engageable with the stem seal means for compressing the stem seal means, the stem seal means including at least one seal assembly having four metal back-up rings and one seal ring, the seal ring having grooves on its outer periphery adjacent to each of the metal back-up rings and the seal

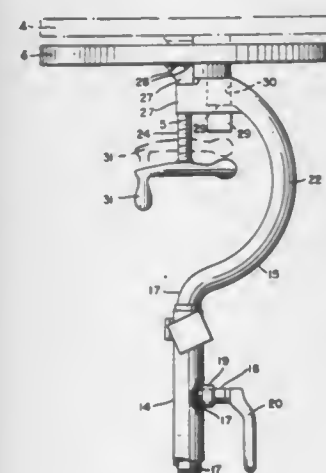


ring being made of a more compliant material than the metal back-up rings, the stem seal means further including a second



seal assembly and a first metal ring, the metal ring being sandwiched between the first and second seal assemblies.

**4,340,205**  
**LIFTING JACK**  
Max L. Leezer, 615 N. G. St., Monmouth, Ill. 61462  
Filed Jun. 24, 1980, Ser. No. 162,527  
Int. Cl.<sup>3</sup> E04G 1/00  
U.S. Cl. 254—98



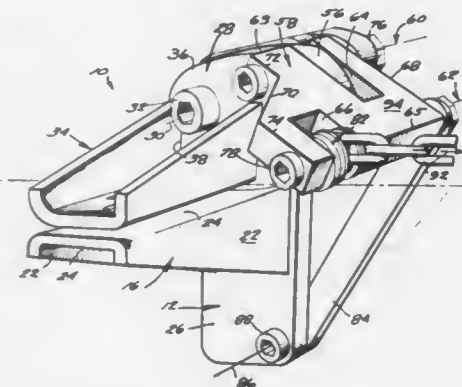
1. A lifting jack comprising
  - a. a base,
  - b. an elongated standard having
    - (1) an elongated, substantially straight, tubular lower end portion,
    - (2) an elongated, upper end portion having a lower end slidably mounted in the upper end of said lower end portion for vertical adjustment of said upper end portion relative to said lower end portion, and
    - (3) an abutment member threaded into said lower end portion and abuttingly engaged with said upper end portion for holding said upper and lower end portions in vertically adjusted position to each other,
  - c. said upper end portion also having
    - (1) an upper end, and
    - (2) an intermediate portion disposed between said upper and lower ends of said upper end portion and curved arcuately and offset laterally from said upper end and said lower end,
  - d. an elongated feed screw extending through said upper end of said upper end portion,

- e. said feed screw having
  - (1) an upper end disposed above said upper end of said upper end portion,
  - (2) a lower end disposed below said upper end of said upper end portion, and
  - (3) an intermediate portion
    - (a) disposed between said upper and lower ends thereof, and
    - (b) threadably engaged with said upper end of said upper end portion,
- f. a platform mounted on and rotatably connected to said upper end of said feed screw, and
- g. means on said lower end of said feed screw for rotating said feed screw relative to said upper end of said upper end portion and within said curved arcuately intermediate portion and thereby moving said feed screw and platform relative to said standard, and
- h. said feed screw, said upper and lower ends of said upper end portion, and said lower end portion being disposed in substantially axial alignment therewith.

**4,340,206**  
**CLAMP FOR REPAIR OF SEPARATION IN CONVEYOR BELT**

Howard P. McKunkin, Jr., Charleston, W. Va., assignor to McKunkin Corporation, Charleston, W. Va.  
Filed Oct. 20, 1980, Ser. No. 198,810  
Int. Cl.<sup>3</sup> B25B 25/00  
U.S. Cl. 254—199

5 Claims

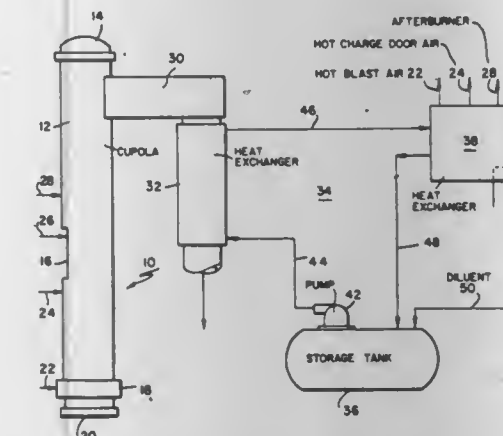


1. In a self-setting belt repair edge clamp of the type having a first jaw fixed on a bracket, a second jaw fixed on a crank link, there being means pivotally securing the second jaw on the bracket, and a pair of operator links having proximal ends pivotally secured together on an anchor point axis, with the distal end of one being pivotally secured to the bracket and the distal end of the other being pivotally secured to the crank link with such an offset from where the second jaw is pivotally secured to the bracket, that when a pulling force is applied to the anchor point axis in a sense to pull the anchor point axis away from the bracket, the second jaw is moved into confronting, clamping relation with the first jaw so that a thickness of conveyor belt or the like inserted between the jaws prior to exertion of said pulling force becomes clamped tightly between the jaws,
- the improvement wherein:
- said jaws are extensive laterally of the bracket so as to provide a clamping footprint of substantial width;
- said other operator link extending laterally in a substantial distance and including an anchor point constructed and arranged for the attachment for means for exerting said pulling force, and anchor point being disposed substantially laterally midway along said jaws, so that said pulling force may be exerted effectively centrally of the clamping footprint; and
- said other operator link including a guide slot and said crank link includes a lobe snugly received in the guide slot when the second jaw is in confronting clamping relation

with the first jaw, for lobe-in-slot cooperation to prevent bending of the clamp as said pulling force is exerted.

**4,340,207**  
**WASTE HEAT RECOVERY APPARATUS**  
Alfred Bruhn, East Chester, N.Y., and William Bernard, Winnetka, Ill., assignors to Dravo Corporation, Pittsburgh, Pa.  
Continuation-in-part of Ser. No. 768,087, Feb. 14, 1977, abandoned. This application Dec. 3, 1979, Ser. No. 99,336  
Int. Cl.<sup>3</sup> F27B 1/22  
U.S. Cl. 266—155

4 Claims



1. An apparatus for recovering heat from an exhaust gas having a temperature of about 500° to 2500° F. produced during the operation of a cupola cycling between a melt mode and an idling mode which comprises:
  - a first heat exchanger means for passing said exhaust gas in indirect heat transfer relationship to an intermediate heat transfer medium to thereby cool said exhaust gas and heat said heat transfer medium;
  - a second heat exchanger means for passing at least a portion of said heated heat transfer medium in indirect heat transfer relationship to an air stream, said second heat exchanger including pipe means for passing said preheated air stream to said cupola as combustion air, blast air, and charge door air;
  - a first conduit means for passing said heated heat transfer medium from said first heat exchanger means to said second heat exchanger means;
  - a storage zone for receiving heat transfer medium from said second heat exchanger means and for passing heat transfer medium to said first heat exchanger means;
  - a second conduit means for passing said heat transfer medium from said second heat exchanger means to said storage zone;
  - a third conduit means for passing heat transfer medium to said first heat exchanger means from said storage zone; and
  - pump means for passing said heat transfer medium through said heat exchanger means and said storage zone.

**4,340,208**  
**REFRACTORY PIECE PERMEABLE TO GASES**  
Pierre Vayssiere; Charles Roederer; Jean-Claude Grosjean; Roland Grave, all of Metz, France; F. Schleimer; F. Goedert, both of Dudelange, Luxembourg; R. Henrion, Esch, Luxembourg; L. Lorang, Differdange, Luxembourg, and J. Colling, Luxembourg, Luxembourg, assignors to Institut de Recherches de la Siderurgie Francaise, Saint-Germain-en-Laye, France  
Filed Apr. 24, 1980, Ser. No. 143,306  
Claims priority, application France, Apr. 25, 1979, 79 10445; Luxembourg, Apr. 30, 1979, 81208; France, Feb. 8, 1980, 80 02905

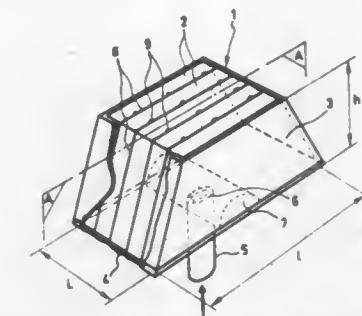
Int. Cl.<sup>3</sup> C21C 5/48

U.S. Cl. 266—220

27 Claims

1. For use in a metallurgical container having an inner refractory lining and containing a bath of molten metal, a com-

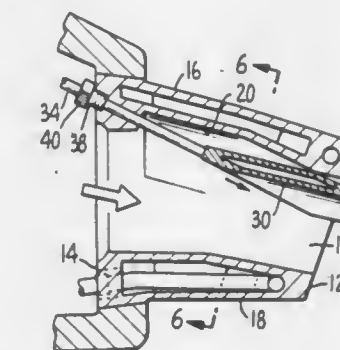
posite refractory member permeable to gas adapted to be incorporated in the refractory lining of the container below the surface of the bath so that one of the faces of the composite member is in contact with the molten metal, said composite refractory member consisting essentially of an assembly of



non-porous refractory elements juxtaposed without seals between the same in order to provide a plurality of discontinuities extending throughout the height of the composite member between the face in contact with the molten metal and an opposite face; and means for feeding a gas under pressure against said opposite face.

**4,340,209**  
**ADJUSTABLE TUYERE**  
David J. Abascal, Riverside, Calif., assignor to Kaiser Steel Corporation, Oakland, Calif.  
Filed Apr. 13, 1981, Ser. No. 253,572  
Int. Cl.<sup>3</sup> C21B 7/16  
U.S. Cl. 266—266

4 Claims



1. A blast furnace tuyere assembly comprising, a tuyere of cast metal of high heat conductivity copper having communicating passages therein for circulating cooling liquids throughout the cast body, said tuyere having a generally frusto-conical shape and being adapted to be located within the walls of a blast furnace, said tuyere having a generally uniform internal diameter for the flow of hot blast gases there through except for a recessed portion in one arcuate area thereof which recessed out portion extends along the length of said tuyere, choke means having a generally flat longitudinal cross section conforming in contour to said recessed arcuate portion, and which when emplaced therein provides an internal passage of generally uniform diameter, said choke means being adjustable to move forward from said emplaced position, and having sufficient cross-section to narrow the width of the orifice diameter of said tuyere as it moves into the forward position.

**4,340,210**  
**PILE DRIVER CUSHION**  
Peter Townsend, Forked River, N.J., assignor to Metex Corporation, Edison, N.J.  
Filed Jan. 25, 1980, Ser. No. 115,342  
Int. Cl.<sup>3</sup> F16F 7/00

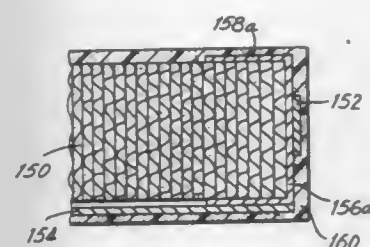
U.S. Cl. 267—137

4 Claims

1. A pile driver cushion for effecting the controlled transfer energy from a pile driver ram to a pile during the operation of

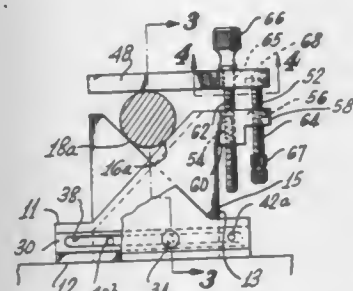


a pile driver comprising a pad formed from knitted wire mesh compressed into a flexible strip of substantially uniform density wound upon itself into a spiral having a preselected diameter



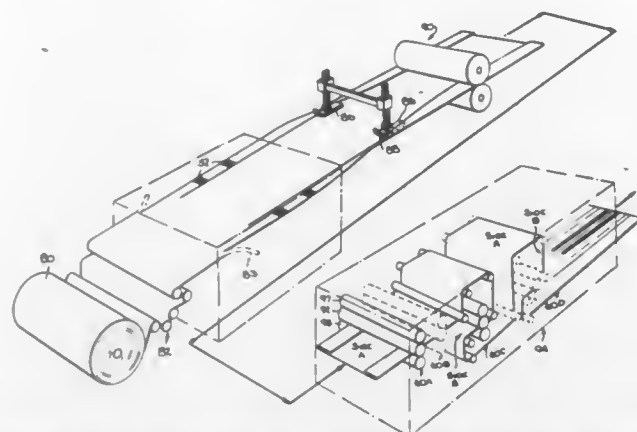
and secured to retain its structural integrity while effecting the controlled transfer of energy from a pile driver ram to a pile during a pile driver operation.

**4,340,211**  
**ADJUSTABLE VEE BLOCK CLAMP**  
Pietro Chiappetti, 5341 Hawley Ave., Los Angeles, Calif. 90042  
Continuation-in-part of Ser. No. 19,094, Mar. 9, 1979,  
abandoned. This application Jul. 24, 1980, Ser. No. 171,727  
Int. Cl.<sup>3</sup> B25B 1/20, 1/24  
U.S. Cl. 269—110 20 Claims



- Adjustable vee blocks for holding a workpiece comprising,
  - a central block extending in a longitudinal direction with forward and rear ends having, flat, parallel side surfaces extending in a vertically and longitudinally extending plane,
  - a horizontal, longitudinally extending base edge,
  - a work supporting edge spaced above said base edge extending longitudinally in an upward and rearward direction,
  - a longitudinally extending horizontal slot adjacent and parallel to said base edge extending transversely through said central block;
- two side blocks positioned on opposite sides of said central block, each said side block having,
  - a flat side surface in abutting contact with the adjacent side surface of said central block,
  - a horizontal, longitudinally extending base edge disposed in the same plane as the base of said central block,
  - a work engaging edge spaced above said base edge, said work engaging edge extending longitudinally in an upward and forward direction at an inclination generally opposed to the inclination of the work supporting edge of said central block to define a vee relative thereto;
- said side blocks having transversely aligned bores therein aligned with the slot in said central block,
- fastening means extending through said bores and said slot for releasably clamping said blocks together; and
- tongue and groove sliding surfaces on said central block and each of said side blocks for preventing relative rotational motion of said blocks around said fastening means and for enabling relative sliding motion between said blocks in a longitudinal direction upon loosening of said fastening means.

**4,340,212**  
**METHOD AND APPARATUS FOR PRODUCING SHEET-LIKE PRINTED PRODUCTS HAVING A FOLDED PORTION**  
Walter A. Simson, 230 Beverly Rd., Scarsdale, N.Y. 10583  
Filed Sep. 24, 1979, Ser. No. 78,431  
Int. Cl.<sup>3</sup> B41F 13/58  
U.S. Cl. 270—5 31 Claims



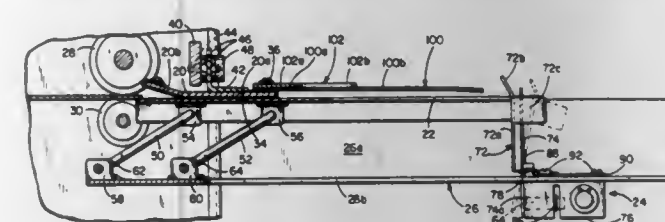
- Apparatus for producing printed sheet paper products from paper stock, each of the paper products including a folded portion at an end of the product, the apparatus being conditioned to operate in conjunction with a printing press utilizing opposed rotating cylindrical surfaces for printing on paper stock, the printing press in a direction transverse to a path of travel of paper stock through the printing press having a predetermined width which fixes the maximum width of paper stock that can be printed, the apparatus comprising:
  - means for folding at least one edge portion of paper stock having an original width greater than the predetermined width of the printing press along a fold line offset from the midpoint of the original width to provide folded paper stock of a folded width which is less than the predetermined width of the printing press with at least one folded edge portion overlying only a fraction of the remaining width of paper stock; and
  - means for advancing the folded paper stock to the printing press for printing while the paper stock is folded with the at least one folded edge portion overlying only a fraction of the remaining width of paper stock.
- A method for continuously producing printed sheet-like paper products each of which includes a folded portion at each end of the product utilizing printing apparatus having a predetermined width and which utilizes opposed rotating cylindrical surfaces for printing on paper stock, the method comprising the steps of:
  - providing paper stock having an original unfolded width which exceeds said predetermined width;
  - folding the edge portions of the paper stock along fold lines offset from the midpoint of the original unfolded width to provide folded paper stock having a folded width up to the predetermined width with each of the edge portions overlying only a fraction of the remaining width of paper stock; and
  - printing on selected portions of the folded paper stock including at least one edge portion and at least part of the unfolded width of the stock.

**4,340,213**  
**PRINT STACKING APPARATUS WITH PRINT DEFLECTING FLAP**  
Gerald A. Jensen, Plymouth, Minn., assignor to Pako Corporation, Minneapolis, Minn.  
Filed Dec. 10, 1979, Ser. No. 101,477  
Int. Cl.<sup>3</sup> B65H 31/10  
U.S. Cl. 271—219 6 Claims

- In photographic print stacking apparatus having a discharge end from which photographic prints are discharged, the photographic prints having a leading edge and a trailing

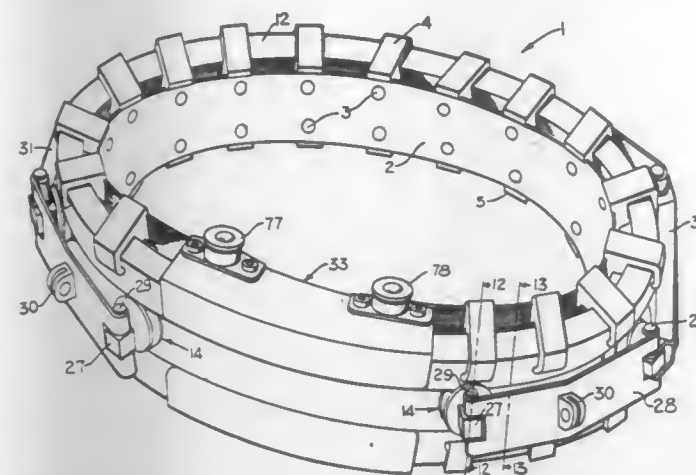
edge and a front side edge and a rear side edge; first and second print receiving elements positioned proximate the discharge end to receive and hold the prints therebetween; and stop means for stopping prints as they are deposited between the first and second print receiving element, the stop means having an upper edge; the improvement comprising:

deflecting means for deflecting the leading edge of the photographic print toward a portion of the stop means below the upper edge and connected to the first print receiving element and extending generally parallel to and along a rear edge of the second print receiving element from the first print receiving element toward the stop means, wherein the deflecting means includes a stiffening member and a flapper member made of a flexible material, wherein



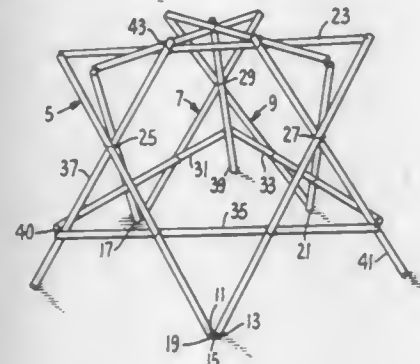


mate each end of the tubular member, a series of cables, and one of each cable operatively associated with the equipment



and extending around the sheave for connection with the crossarm.

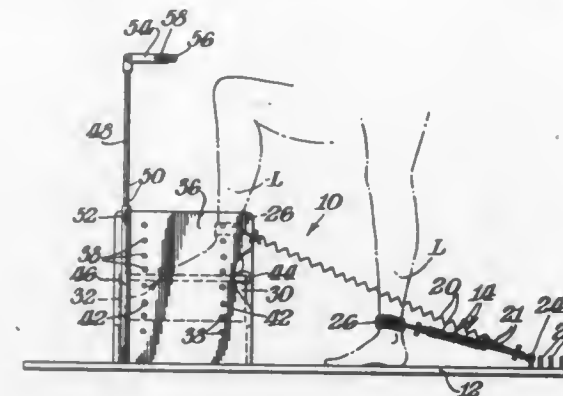
**4,340,217**  
**MONKEY MAZE**  
Robert E. Gillis, P.O. Box 67, Aptos, Calif. 95003  
Filed Dec. 22, 1980, Ser. No. 218,571  
Int. Cl.<sup>3</sup> A63B 9/00  
U.S. Cl. 272-113



1. A climbing maze for children normally resting on a plane surface such as the ground comprising in combination:
  - a. three triangular members of substantially equilateral configuration formed of poles joined at the apices,
  - b. each of said triangular members being arranged with one of the apices down, resting on the ground and equally spaced from each other, with the opposite sides to said apices substantially forming an imaginary horizontal plane parallel to the ground,
  - c. each of said triangular members having its top apices intermeshed with those of a neighbor, forming a plurality of first crossings,
  - d. a fourth triangular member extending in a horizontal plane around said three triangles, forming a second series of crossings therewith,
  - e. three straight members, each lying inside and engaging one of the apices of said fourth triangle and extending upward onto the plane formed by the bases of said three triangles and down to the ground to form a third series of crossings and
  - f. binding means binding the members together at each of said crossings.

**4,340,218**  
**RESILIENT TYPE EXERCISER FOR SIMULATING CLIMBING**

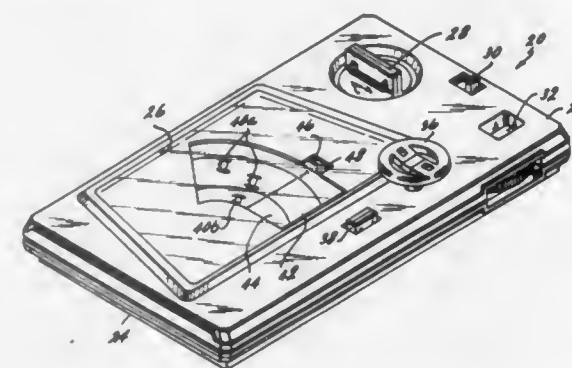
William T. Wilkinson, P.O. Box 3567, Greenville, Del. 19807  
Filed Feb. 17, 1981, Ser. No. 235,419  
Int. Cl.<sup>3</sup> A63B 21/04  
U.S. Cl. 272-136 18 Claims



1. An exercising device for simulating the action of climbing comprising a base, resisting means secured to said base having means for attachment to the legs of the user to provide a force resisting movement of the user away from said resisting means, a step on said base spaced generally within a normal stride distance from said resisting means so as to receive the foot of a user during an action against said resistance means, said step including an upper platform and downwardly depending side walls, and vertical adjusting means cooperating with said side walls for vertically adjusting the height of said platform above said base.

15. A method of simulating climbing comprising the steps of vertically adjusting a platform a selected distance above a base, securing the platform in position, mounting resilient resistance means to the base, attaching the resistance means to the ankles of the user, stepping up on to the platform one foot at a time in opposition to the force of the resilient resistance means, stepping down from the platform one foot at a time, and repeating the stepping up and stepping down.

**4,340,219**  
**TOY WITH INTERLOCKING OBJECT AND OBSTACLE**  
Isamu Saito, and Hiroyuki Watanabe, both c/o 9-10 Tateishi, 7-Chome, Katsushika-Ku, Tokyo, Japan  
Filed Nov. 4, 1980, Ser. No. 203,879  
Claims priority, application Japan, Oct. 17, 1980, 55-147975  
Int. Cl.<sup>3</sup> A63F 9/14  
U.S. Cl. 273-1 GA 12 Claims



1. A toy which comprises:
  - a housing at least one support means rotatably mounted on said housing, said support means having a plurality of obstacle means located on it and movable with it;
  - a drive means located on said housing, said drive means including a clutch means, said clutch means having an engagement position and a non-engagement position, said

drive means capable of rotating said support means on said housing when said clutch is in said engagement position; a movable means movably mounted on said housing and positioned in association with said support means, said movable means capable of moving with respect to said support means, said movement of said movable means resulting in said movable means having the capacity to both avoid contacting each of said plurality of said obstacle means, and to contact each of said plurality of said obstacle means, when said movable means contacts any one of said plurality of said obstacle means said movable means capable of interlocking with said individual obstacle means contacted, said interlocking of said movable means with any of said plurality of said obstacle means stopping the rotation of said support means and causing said clutch means to shift from said engagement position to said non-engagement position and being maintained in said non-engagement position for as long as said movable means is interlocked with said obstacle means; reset means associated with said movable means and capable of disrupting said interlockment between said movable means and any of said plurality of said obstacle means and allowing said clutch means to shift from said non-engagement position to said engagement position.

**4,340,220**  
**AMUSEMENT DEVICE**  
John W. Dunavant, 388 1/2 N. Saginaw St., Pontiac, Mich. 48058  
Filed Dec. 18, 1980, Ser. No. 217,691  
Int. Cl.<sup>3</sup> A63H 33/00; A63F 9/06  
U.S. Cl. 273-1 GF 6 Claims

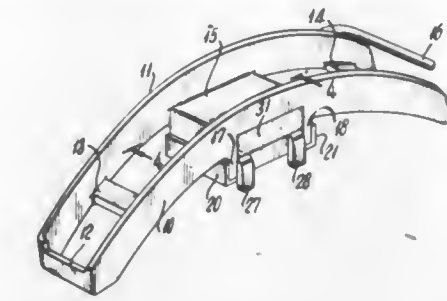


1. An amusement device comprising a first elongated member of substantially circular cross-section, said member having near an end thereof an enlarged portion and at said end a non-planar surface, and first and second belt-balancing-hook members, each of said members having passing therethrough in a portion thereof distal from a hook portion of said member a bore of such dimensions as to permit said member to be fitted snugly over said first elongated member.

**4,340,221**  
**PIN GUIDE ARM**  
Thomas M. Camilleri, 277 Avenue W, Brooklyn, N.Y. 11223  
Continuation-in-part of Ser. No. 877,119, Feb. 13, 1978, abandoned. This application Jun. 5, 1980, Ser. No. 156,738  
Int. Cl.<sup>3</sup> A63D 5/02  
U.S. Cl. 273-43 E 7 Claims

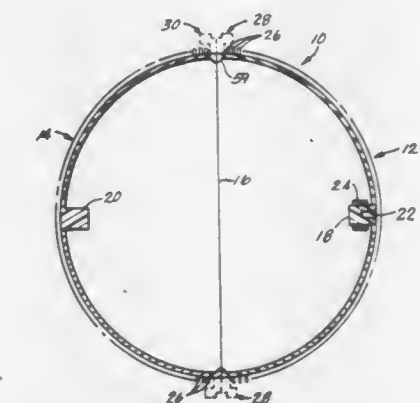
1. A pin guide arm for an automatic pin-setter bowling machine, the pin guide arm adapted to cooperate with the pin wheel to support a bowling pin during a part of the distance the pin is raised by the pin wheel to a turnaround pan, the pin guide arm comprising two rails, each rail providing a bearing surface for the bowling pin, the bearing surface of one rail being higher than the bearing surface of the other rail and the

higher rail being provided with guide means at about the end of the pin guide arm closest to the turnaround pan, the pin



guide arm being attached to a support by a mounting bracket permitting the pin guide arm to pitch, roll and yaw.

**4,340,222**  
**GAME BALL**  
Darle L. Kerkenbush, Diamond Bar, and Peter P. Blaszcak, Jr., Sierra Madre, both of Calif., assignors to Wham-O Mfg. Co., San Gabriel, Calif.  
Filed Jun. 30, 1980, Ser. No. 164,280  
Int. Cl.<sup>3</sup> A63B 41/10, 39/08  
U.S. Cl. 273-61 R 7 Claims



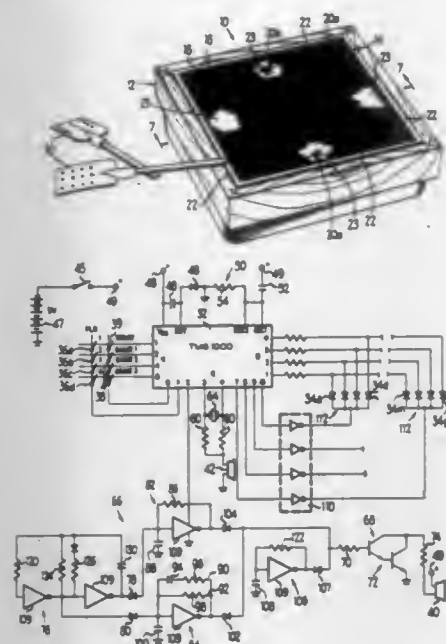
1. A hollow, spherical ball comprising:
  - a flexible thermoplastic spherical envelope having an interior surface and an exterior surface;
  - a constriction valve integrally formed in the interior surface of the ball, the constriction valve comprising a molded plug of solid material having a passage extending through the plug for providing a path for the introduction of an inflating gas with the interior of the ball;
  - a collar disposed about the plug, the collar having a traverse dimension smaller than the plug for compressing and constricting the plug and the gas introduction path to prevent the escape of gas introduced therein; and
  - a plurality of upstanding fingers raised from the exterior surface of the ball and covering a substantial portion of the entire surface thereof.

**4,340,223**  
**MICROCOMPUTER CONTROLLED REACTION GAME**  
Wayne A. Kuna, Oak Park, and Christian H. Oberth, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

- Filed Jan. 30, 1981, Ser. No. 229,921  
Int. Cl.<sup>3</sup> A63B 71/04  
U.S. Cl. 273-1 GC 13 Claims
1. A microcomputer controlled game device comprising:
    - a housing having a playing surface means for moving said playing surface;
    - a plurality of light emitting elements spaced across said surface;
    - means for sequentially illuminating said elements in an erratic path;
    - a manually actuatable switch on said housing means for pro-

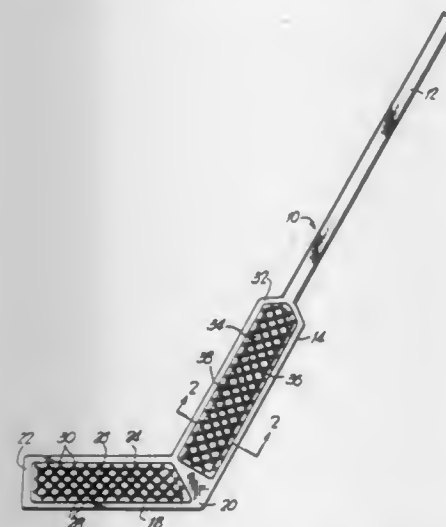


viding coaction between said switch and said playing surface and means for establishing a predetermined time period;  
and  
means for controlling the sequence of operation of said



illuminating means, said controlling means including means for monitoring said switch and means for determining whether said switch is actuated coincident with an illuminated light emitting element within a predetermined time period after said selected light emitting element is illuminated.

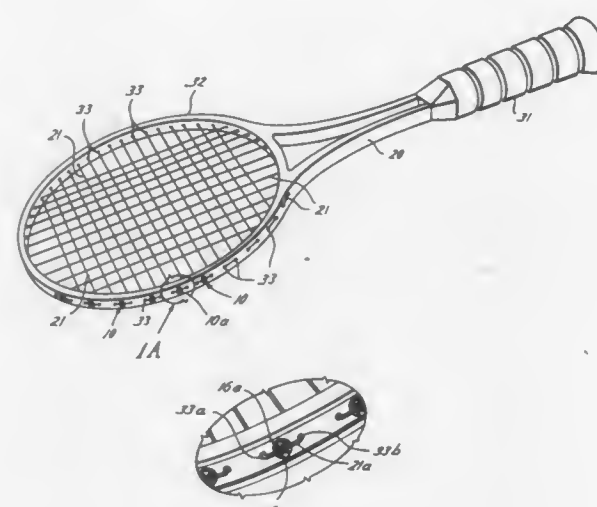
**4,340,224**  
**GOALKEEPER'S HOCKEY STICK**  
Hilton S. Staats, R.R. #6, Hagersville, Ontario N0H 1H0, Canada  
Filed Sep. 18, 1980, Ser. No. 188,423  
Claims priority, application Canada, Jul. 16, 1980, 356282  
Int. Cl.<sup>3</sup> A63B 59/12  
U.S. Cl. 273-67 A 1 Claim



1. A goalkeeper's hockey stick comprising an elongated stick-like handle portion having a longitudinal axis, a flat shaft portion extending from a lower end of the handle portion and aligned with the longitudinal axis thereof, said flat shaft portion being wider than the handle portion and having opposed longitudinally-extending straight sides parallel to said longitudinal axis, and a flat blade portion extending from a lower end of and inclined to the flat shaft portion, said blade portion having parallel upper and lower straight edges extending from respective sides of the shaft portion, with the shaft portion and handle portion being inclined to the horizontal away from the blade portion when the upper and lower edges of the blade portion are horizontal, the shaft portion and the blade portion

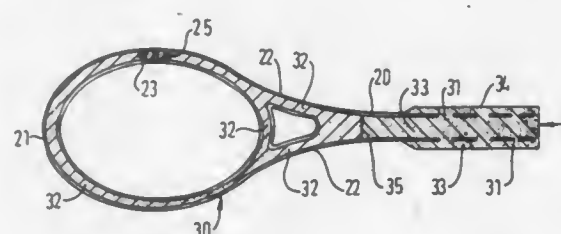
each having a continuous perimeter frame defining an open blade area and an open shaft area respectively, said blade area and said shaft area each being open to both sides of said hockey stick, and a resilient mesh formation in each area secured to the perimeter frame thereof and operable to absorb the force of a hockey puck striking the respective area.

**4,340,225**  
**GAME RACKET AND APPARATUS FOR ADJUSTING THE TENSION IN THE STRINGS OF A GAME RACKET**  
Craig R. Wilson, 9550 Ella Lee La., Apt. 2001, Houston, Harris County, Tex. 77063  
Filed Apr. 13, 1979, Ser. No. 29,717  
Int. Cl.<sup>3</sup> A63B 51/12  
U.S. Cl. 273-73 E 2 Claims



1. A racket having, a head comprising a closed frame having a plurality of coplanar holes therethrough at spaced intervals, a handle connected to the head, a string passing through the holes of the head and across the closed frame to form a striking surface, a plurality of tensioning screws, each screw positioned between a single pair of the coplanar holes of the closed frame, each tensioning screw having a head having at least one shallow notch extending thereacross for releasably holding the string and an engaging means exposed to the interior of the closed frame for turning the screw, and the string passing over and contacting the head of the screw so that turning the screw one way increases the tension on the string and turning it the other way decreases the tension on the string.

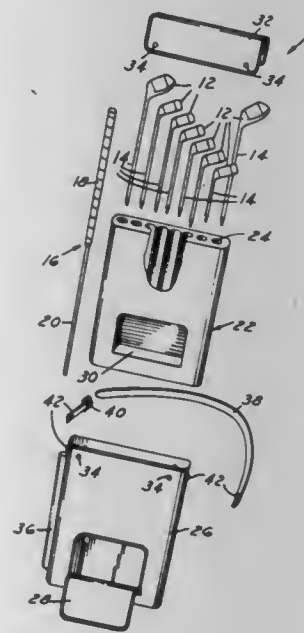
**4,340,226**  
**GAMES RACKET**  
Robert C. Haines, Huddersfield, England, assignor to Dunlop Limited, London, England  
Filed Aug. 12, 1980, Ser. No. 177,394  
Claims priority, application United Kingdom, Aug. 24, 1979, 7929589  
Int. Cl.<sup>3</sup> A63B 49/10  
U.S. Cl. 273-73 F 13 Claims



1. A games racket comprising:  
A head and a shaft, the head being of hollow tubular cross

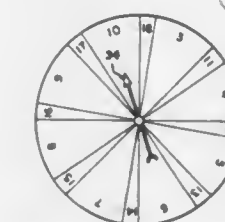
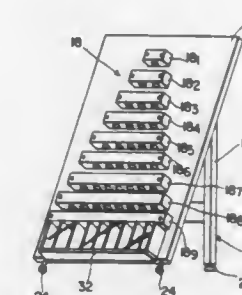
section over a majority of its perimeter, the shaft having a hollow tubular cross section in communication with the hollow tubular cross section of the head so that both said hollow tubular cross sections may be filled with foam material injected from the distal end of said shaft, a first foam material of polyurethane foam of density from 0.10 to 0.25 g/c.c., filling at least the hollow cross section of said head, a second foam material of rigid polyurethane foam of density from 0.30 to 0.50 g/c.c., filling the entire remaining hollow portion of said shaft from an interface with said first foam, said second foam material also covering the outer surface of the shaft adjacent the distal end thereof so as to form a handle thereon of a larger diameter than said shaft which is integral with the second foam material inside said hollow cross section of said shaft.

**4,340,227**  
**GOLF CLUB SET AND CARRYING CASE**  
William J. Dopkowski, Brighton, Mich., assignor to B.P.A. Enterprises, Inc., Detroit, Mich.  
Filed Dec. 1, 1980, Ser. No. 211,691  
Int. Cl.<sup>3</sup> A63B 53/02, 55/00  
U.S. Cl. 273-77 R 6 Claims



1. A golf club set comprising a plurality of differing club heads with individually differing alphanumeric designations, each said club head having an attached shank of predetermined length extending from the associated club head, said predetermined lengths differing in correspondence with said differing alphanumeric designations of said club heads, a golf club handle of predetermined fixed length, means associated with each said club head and with said handle for releasably attaching each of said golf club heads individually to said golf club handle so as to form a golf club having a predetermined overall length which varies with said alphanumeric designations, a rectangular hollow carrying case having an open end, a zippered closure in one side wall of said case comprising a rectangular flap attached to said case along an edge remote from said open end and zipper means extending around the three remaining edges of said flap and around an opposing surface of said case, a rectangular one-piece insert of foam rubber construction received in and filling the interior of said hollow case with an insert surface adjacent to said open case end, said insert having a plurality of blind tubular openings extending from said surface on parallel spaced opening axes and a blind rectangular recess opening in alignment with said zippered closure for storage of accessories, said tubular openings being adapted to receive said head shanks one in each of said openings such that said club heads rest upon said surface in a spaced array corresponding to said opening array, a tubular holster mounted externally of said case and extending lengthwise along one side wall of said case parallel to said opening axes for removably

**4,340,228**  
**NUMBER GENERATING DEVICE AND GAMING APPARATUS INCORPORATING SAME**  
Edward L. Robbins, 542 Marilyn Dr., Mandeville, La. 70448, and Robert S. Forster, 22 Wisteria La., Tchefuncta Estates, Covington, La. 70433  
Filed May 5, 1981, Ser. No. 260,833  
Int. Cl.<sup>3</sup> A63F 5/02; G09B 23/02  
U.S. Cl. 273-138 R 7 Claims



1. A gaming device for use with a plurality of spheroidal objects comprising a generally planar support member which is positioned, in use, in an angle with respect to the horizontal, a plurality screening elements which are mounted on said support member and through which the spheroidal objects pass, each of said screening elements comprising an elongate block member having at least one transverse aperture extending therethrough, each said block members being disposed on said support member such that, in use, the longitudinal axis thereof extends parallel to horizontal and being spaced from each other vertically along said support member, the number of said apertures in said block members being a function of the vertical positions thereof, and increasing by one from level to level beginning from the top, said apertures in the blocks at various vertical levels being arranged relative to the apertures in blocks at other levels such that a spheroidal object passing through a first aperture in a block member at a one level has an even chance of passing through one or the other of two apertures of the block at a level directly below said one level, means, located below the lowermost block and having a number of collecting chambers therein equal to the number of apertures in the lowermost block, for collecting in respective ones of said chambers the spheroidal objects which fall through said apertures in said lowermost block, and means for adjusting the angle of inclination of said support member.

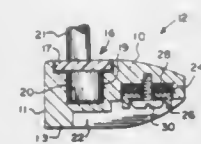
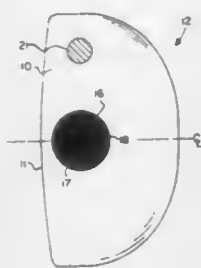
**4,340,229**  
**GOLF CLUB INCLUDING ALIGNMENT DEVICE**  
Alfred O. Stuff, Jr., 1603 Camerbur St., Orlando, Fla. 32805  
Filed Feb. 6, 1981, Ser. No. 231,981  
Int. Cl.<sup>3</sup> A63B 69/36, 53/08  
U.S. Cl. 273-164 3 Claims

1. A golf putter head comprising:  
an elongate ball-striking face having a ball striking area, said head having a horizontal plane normal to said face;  
sighting means disposed in a top surface of said head for visually determining when said horizontal plane is parallel



with the putting surface, said sighting means having an index adjacent said ball-striking area, said sight means including a cylindrical sighting cavity recessed in said head and having a closed lower end and an open upper end;

- a first sighting spot centrally disposed in said open upper end and said first sighting spot being a circular spot disposed concentric with said cylindrical cavity on a transparent lens concentrically disposed in said upper end, said transparent lens having reticle lines to permit the user to hold said head at a predetermined offset from a parallel position with respect to the surface of the ground;
- a second complimentary sighting spot disposed on said



closed lower end wherein an imaginary line through said first spot and said second spot is normal to said horizontal plane, said second spot being circular and concentric with said cylindrical cavity and having a diameter essentially equal to the diameter of said first spot whereby coincidence of said first and second spots causes said second spot to disappear, whereby a user looking along a line of sight vertical with respect to the putting surface will observe coincidence of said first and second spots when said horizontal plane is parallel with the putting surface; and said first spot being of a dark color and said second spot being of a light color surrounded by said dark color thereby providing visual contrast when said first and second spots are not in coincidence as seen by the viewer.

4,340,230

## WEIGHTED GOLF IRON

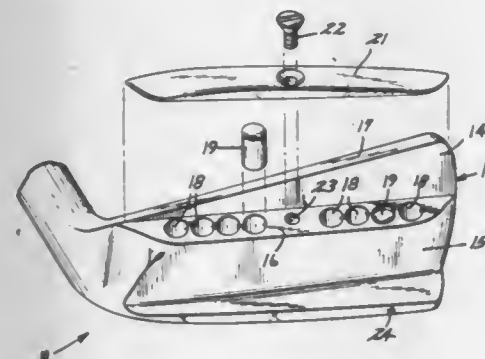
Roy A. Churchward, 6444 Nineteenth Ave. South, Minneapolis, Minn. 55432

Filed Feb. 6, 1981, Ser. No. 232,115

Int. Cl.<sup>3</sup> A63B 53/04

U.S. Cl. 273-171

9 Claims



5. A golf club iron comprising a blade-like club head including a club face and a shaft including a grip portion, said blade-like club head having an upper edge, said club head having a weight-receiving matrix with a plurality of vertically oriented openings disposed to the rear of said club head, a plurality of slidable weights removably disposed in selected of said openings, a cap closing said openings to prevent dislodgement of

said weights, said cap being entirely located lower than said upper edge in a protected position to the rear of said club head.

4,340,231

## RANDOM SELECTION WORD GAME

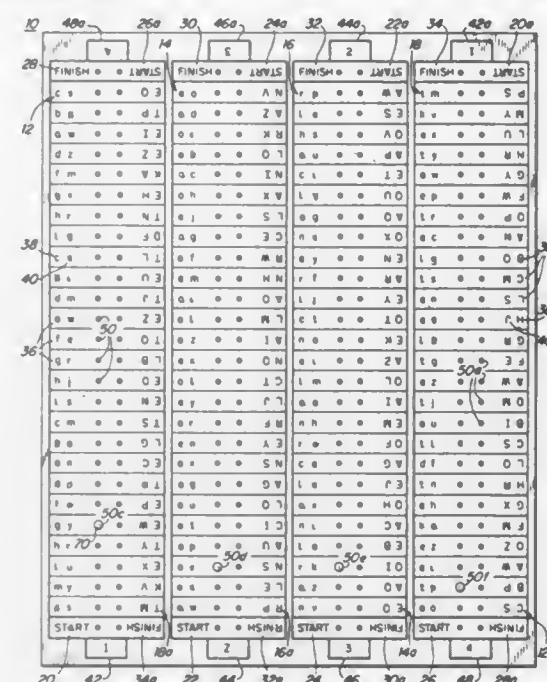
Joseph G. Cammarata, 90 Bartlett Ave., Arlington, Mass. 02174

Filed Feb. 19, 1980, Ser. No. 122,735

Int. Cl.<sup>3</sup> A63F 3/00

U.S. Cl. 273-243

10 Claims



LETTER POINTS	LETTER POINTS
1 2 3 4	1 2 3 4
5 6 7 8	5 6 7 8
9 10 11 12	9 10 11 12
13 14 15 16	13 14 15 16
17 18 19 20	17 18 19 20
21 22 23 24	21 22 23 24
25 26 27 28	25 26 27 28
29 30 31 32	29 30 31 32
33 34 35 36	33 34 35 36
37 38 39 40	37 38 39 40
41 42 43 44	41 42 43 44
45 46 47 48	45 46 47 48
49 50 51 52	49 50 51 52
53 54 55 56	53 54 55 56
57 58 59 60	57 58 59 60
61 62 63 64	61 62 63 64
65 66 67 68	65 66 67 68
69 70 71 72	69 70 71 72
73 74 75 76	73 74 75 76
77 78 79 80	77 78 79 80
81 82 83 84	81 82 83 84
85 86 87 88	85 86 87 88
89 90 91 92	89 90 91 92
93 94 95 96	93 94 95 96
97 98 99 100	97 98 99 100

1. A word game utilizing random selection of predetermined letters comprising:

a game board having a plurality of sets of letters arranged in successive positions in a path from a start to a finish; each position including at least one letter; each set having a distinctive designation;

means for marking selected positions along each path;

a die associated with each set and having on each of its faces the distinctive designation of its associated set; each die also containing on each face indicia representing an increment along the positions in a path for advancing said means for marking along each set of letters in correspondence with the indicia increment showing on the face of the die which bears the designation of that set for randomly choosing a plurality of letters from which to construct words; and

a scoreboard having a column corresponding to each set and bearing the designation associated with that set, having a space for receiving each letter appearing at a selected

position of the associated set, and having a plurality of rows associated with the columns for recording words constructed from the letters in each column; the letters in each set having a different numerical weight than those in other sets; and the scoreboard including a representation of the numerical weight of each set at the column associated with that set.

4,340,232

## ABACUS CHESS GAME

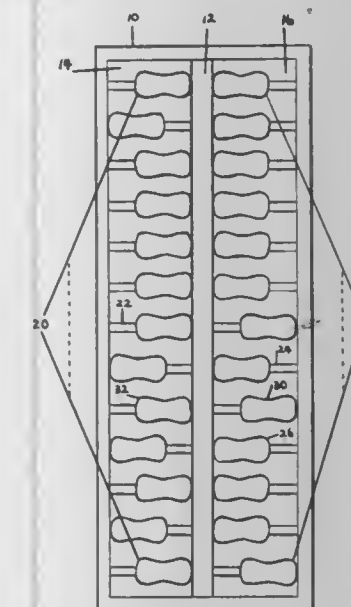
James K. Shaw, 4916 Erie St., Annandale, Va. 22003

Filed Jul. 10, 1979, Ser. No. 56,371

Int. Cl.<sup>3</sup> A63F 3/00

U.S. Cl. 273-260

11 Claims



1. A method for playing a game of skill on an apparatus having a frame, a central area enclosed by said frame, a plurality of guide means in said frame, said guide means divided into opposing portions associated with opposing players by said central area, a plurality of sets of playing pieces guided by said portions of said guide means, the method comprising the steps of:

- initially arranging the plural sets of playing pieces so that each player has a first predetermined non-zero number of sets in an active position adjacent the central area and a second predetermined non-zero number of sets in an open position having playing pieces thereof withdrawn from said central area;
- each player, in turn, interchanging members of an open set and an active set by guiding the playing pieces associated therewith on portions of said guiding means associated with the player; and
- removing at least one of an opposing player's playing pieces from an active position to an open position in accordance with indicia provided for said playing pieces.

4,340,233

## FERROFLUID SEAL APPARATUS

Akira Yamamura, Framingham, Mass., and Kuldip Raj, Merrimack, N.H., assignors to Ferrofluidics Corporation, Nashua, N.H.

Filed Nov. 19, 1980, Ser. No. 208,438

Int. Cl.<sup>3</sup> F16J 15/40, 15/54

U.S. Cl. 277-1

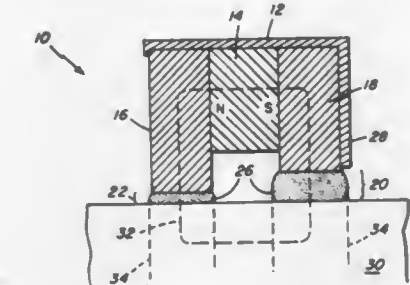
17 Claims

9. In a method for extending the seal life of a ferrofluid, rotary-shaft seal apparatus, which, in sealing a rotary shaft, comprises:

- surrounding the rotary shaft with an annular permanent magnet having one end and another end and having poles of opposite polarity at each end;
- surrounding the rotary shaft with first and second, magnetically permeable, pole-piece elements in a magnetic-flux relationship with one and the other ends of the perma-

nent magnet, each pole piece having a one end and another end;

- extending the one end of each pole piece into a close, noncontacting relationship with the surface of the rotary shaft, to form first and second gaps therebetween of defined length; and
- retaining magnetically, in the first and second gaps, a ferrofluid to form at least two liquid O-ring seals on the surface of the rotary shaft, to effect sealing of the rotary shaft, the improvement which comprises



preferentially evaporating ferrofluid from one of the gap lengths by changing the defined gap lengths, to provide for unequal first and second gap lengths, whereby the ferrofluid will evaporate preferentially from the smallest gap length, while the ferrofluid in the largest gap length will provide a seal of extended seal life, in comparison to a seal wherein the gap lengths are smaller and equal.

4,340,234

## FLOW REGULATING VALVE AND FLUID FEEDING APPARATUS USING SAME

Yoji Ise, Tokyo, Japan, assignor to Myotoku Ltd., Tokyo, Japan

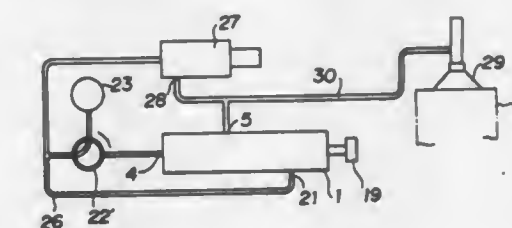
Filed Apr. 29, 1980, Ser. No. 144,879

Claims priority, application Japan, May 1, 1979, 54-53644

Int. Cl.<sup>3</sup> B23B 31/30; F16K 31/122

U.S. Cl. 279-3

6 Claims

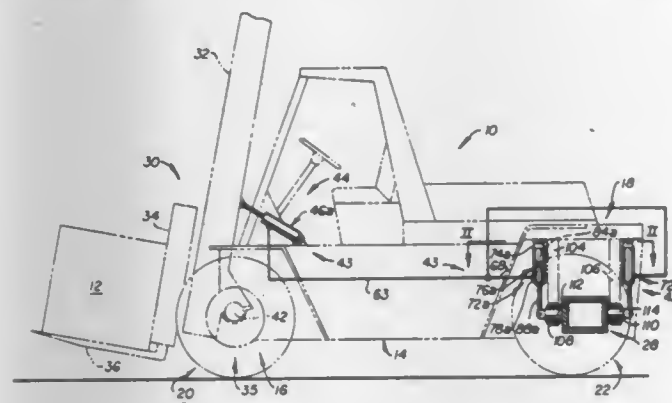


2. An apparatus for feeding fluid for a predetermined time interval comprising: a housing having a valve chamber and a piston chamber disposed lengthwise and adjacent to each other, said valve chamber having a fluid inlet port on one end and a fluid outlet port on the other end, said fluid outlet port having a valve seat inside thereof; a valve movably fitted within said valve chamber and dimensioned to form a suitable gap between it and the inside surface of said valve chamber; a piston slidably fitted within said piston chamber; a connecting rod, said valve and piston being connected together with said connecting rod; and a flow regulating valve having one flow direction for rapid flow and another flow direction for control flow provided on the outer end of said piston chamber to control discharge flow of fluid in said piston chamber when the fluid is being pushed by said piston; a flow path change valve; and fluid conduits for alternately connecting an outlet port of said flow regulating valve and said inlet port of said valve chamber to communicate with a fluid supplying source through said change valve, wherein a fluid introduced from the source into said valve chamber through said inlet port is discharged by passing through said gap and from said outlet port while said valve is being forced by said fluid from the source and moving to engage with said valve seat with a speed adjusted by controlling the flow of the fluid in said piston



chamber by means of the fluid flowing through said flow regulating valve in said another flow direction until said valve engages said valve seat, and wherein fluid introduced from the source into said flow regulating valve outlet port flows rapidly through said one flow direction and forces said piston to move toward said valve chamber and to rapidly move said valve off said valve seat to create a suction at said valve chamber outlet port and to expell fluid within said valve chamber through said valve chamber inlet port.

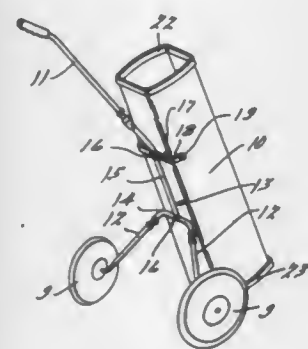
**4,340,235**  
**LOAD RESPONSIVE DAMPING SYSTEM**  
 Norman D. Thompson, Dallas, Oreg., assignor to Towmotor Corporation, Mentor, Ohio  
 PCT No. PCT/US79/00820, § 371 Date Oct. 4, 1979, § 102(e) Date Oct. 4, 1979  
 PCT Filed Oct. 4, 1979, Ser. No. 91,675  
 Int. Cl.<sup>3</sup> B66F 9/22  
 U.S. Cl. 280—6 H 12 Claims



1. In a vehicle (10) of the load carrying type including a horizontally disposed frame (14) having first (16) and second (18) end portions, an axle (28 or 28') mounted to said frame second end portion (18), and a load carrying device (30) being connected to said frame first end portion (16), an improvement comprising:

sensing means (44) for sensing a variable load (12) imposed on said load carrying device (30) and communicating a variable signal in response to said variable load; and, damping means (45 or 45') for receiving said variable signal communicated by said sensing means (44) and responsively moving said axle (28, 28') and said frame second end portion (18) in directions vertically and relative to each other in response to said variable signal.

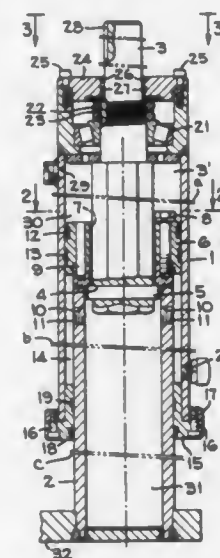
**4,340,236**  
**PULLABLE GOLF CLUB RECEPTACLE**  
 Paul F. Seibold, 1760 N. Woodward, Bloomfield Hills, Mich. 48013, and Alfred H. Haberstump, 400 Southfield, Birmingham, Mich. 48009  
 Filed Apr. 30, 1979, Ser. No. 34,282  
 Int. Cl.<sup>3</sup> B62B 1/12  
 U.S. Cl. 280—38 8 Claims



1. A supporting element for a handle and a pair of wheel

supporting arms which includes a unit fixedly attachable to a golf club bag and providing three outwardly extending tubular members having generally U-shaped ends of substantially similar size, a handle, a pair of wheel supporting arms, and pivot means securing said handle and arms in pivoted relation to said ends for collapsing the wheels and handle, said handle and arms being of generally cylindrical tubular shape and of substantially the same diameter, and being adapted to be disposed within said U-shaped ends, said handle and arms having locking tubular sections thereon, movable so as to partially overlay said U-shaped ends.

**4,340,237**  
**LIFTING AND STEERING SYSTEM FOR A VEHICLE AND A VEHICLE USING THE SAME**  
 Franklin P. Orlando, Morgan Hill, Calif., assignor to FMC Corporation, Chicago, Ill.  
 Filed Jun. 26, 1980, Ser. No. 163,257  
 Int. Cl.<sup>3</sup> B62D 7/06  
 U.S. Cl. 280—92 14 Claims



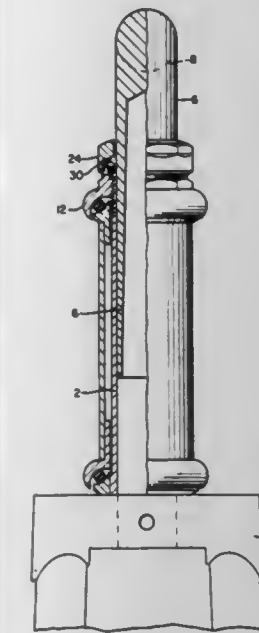
1. Lifting and steering system for a vehicle, characterized by comprising a main cylinder having a first closed end, a piston slidably and rotatably received within the cylinder to define a pressure chamber between said piston and said first end of the cylinder, means for introducing and withdrawing pressure fluid from the said pressure chamber, piston rod means fixed to said piston and having one end projected through the other end of the cylinder, piston rotation means having one end projected through the said first closed end of the cylinder, and means being provided to prevent relative rotation and yet allow axial movement between said piston rotation means and the piston itself.

**4,340,238**  
**SIMULTANEOUS CONNECTION BETWEEN HANDLEBAR AND STEERING FORK OF BICYCLES**  
 Maximino R. Cabeza, Calle Central 709, Miramar, Santurce, P.R. 00907  
 Filed Oct. 23, 1979, Ser. No. 87,497  
 Claims priority, application Spain, May 16, 1979, 239.028  
 Int. Cl.<sup>3</sup> B62K 21/18  
 U.S. Cl. 280—279 2 Claims

1. In combination with the upwardly extending hollow un-slotted cylindrical stem of the steering fork of the front wheels of a bicycle, and the downwardly extending un-slotted cylindrical handlebar stem which is positioned within the fork stem, means for connecting the two stems comprising:

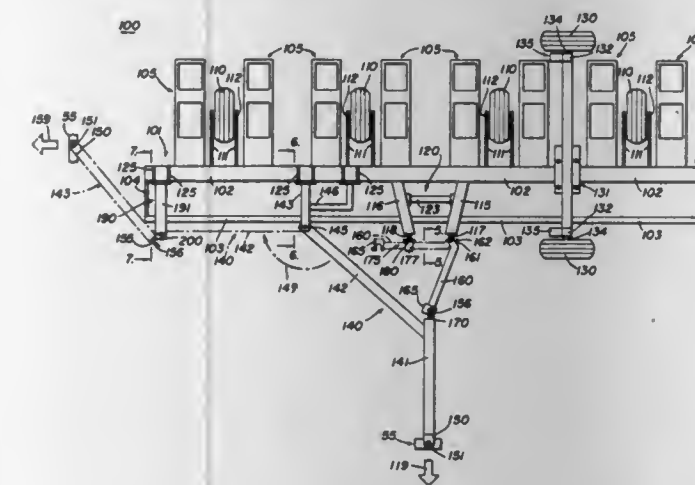
a. a split ring having a lower part surrounding the upper end of the fork stem and an upper part surrounding the adjacent part of the handlebar stem, and having on its upper part a conical external surface,

b. the upper part of the split ring having an annular series of radial cuts,  
 c. a race housing surrounding and connected to the steering fork and having a fixed abutment engaging the lower end of the split ring,  
 d. a nut surrounding the split ring and threaded to the race



housing for movement toward and away from the split ring,  
 e. the nut having a conical internal surface engaging the conical external surface of the split ring whereby movement of the nut toward the race housing contracts the upper part of the split ring into engagement with the fork stem and the handlebar stem to connect them.

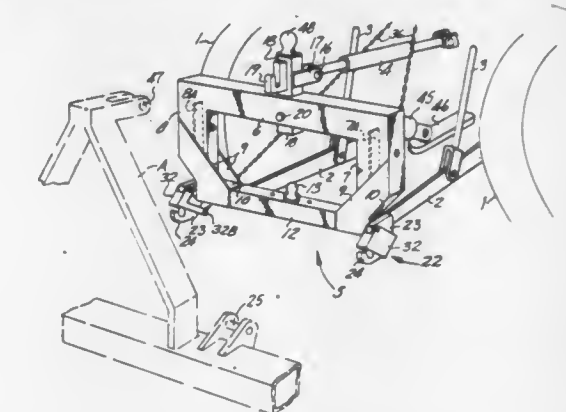
**4,340,239**  
**FARM IMPLEMENT WITH TWO-WAY HITCH**  
 Kenneth E. Shoup, P.O. Box 121, Bonfield, Ill. 60913  
 Filed May 5, 1980, Ser. No. 146,428  
 Int. Cl.<sup>3</sup> B60D 1/14; B62D 53/04  
 U.S. Cl. 280—415 R 9 Claims



1. A farm implement for attachment to a draft vehicle comprising an elongated frame for mounting farm tools to be drawn through a field in a field direction normal to the longitudinal axis of said frame and to be drawn along a highway in a transport direction parallel to the longitudinal axis of said frame, a single set of wheels shiftable mounted upon said frame adjacent to one end thereof for rotation about a common axis disposed normal to the longitudinal axis of said frame, means for shifting said wheels between an upper field position out of contact with the underlying surface and a lower transport position in contact with the underlying surface, a tongue including a draft section having a draft connection at one end thereof for connection to a three point hitch of a draft vehicle and a connecting section at the other end thereof disposed at an

obtuse angle with respect to said draft section, said tongue having a field position wherein the draft section is disposed normal to the longitudinal axis of said frame at the midpoint thereof and having a transport position wherein said draft connection lies on a line parallel to the longitudinal axis of said frame about midway between said wheels, the free end of said connecting section of said tongue being pivotally connected to said frame at a point disposed a substantial distance from the longitudinal midpoint of said frame toward the other end of said frame to accommodate pivotal movement of said tongue between the field and transport positions thereof, said connecting section of said tongue being adapted to be in communication with said frame at a point disposed between the longitudinal midpoint of said frame and said one end of said frame when said tongue is in the field position thereof, and latch mechanism providing the connection for the cooperating structure and a pivot providing the communication between said tongue and said frame, whereby when said tongue is held in the field position thereof by engagement of said latch mechanism and said single set of wheels is held in the upper position thereof by said shifting means said implement can be drawn by the associated draft vehicle in the field direction and when said tongue is released to the transport position thereof by disengagement of said latch mechanism and said single set of wheels is held in the lower position by said shifting means said implement is solely supported by said single set of wheels and the three point hitch of the associated draft vehicle and can be drawn by the associated draft vehicle in the transport direction.

**4,340,240**  
**THREE POINT HITCH ADAPTOR FOR A TRACTOR**  
 Ernest L. Anderson, 85115 Florence Rd., Eugene, Oreg. 97405  
 Filed Feb. 4, 1980, Ser. No. 118,110  
 Int. Cl.<sup>3</sup> B60D 1/00  
 U.S. Cl. 280—461 A 2 Claims



1. An adaptor for attachment to the three point hitch mechanism of a tractor enabling hitch support of various implements, said adaptor comprising,  
 a base member including aligned tubular segments and adapted for coupling both to the hitch arms and top link of the three point hitch mechanism, and  
 first coupling means carried within each of said segments at the opposite lower sides of said base member and extensible therefrom for adjustable locking engagement with an implement, second coupling means adjustably disposed centrally on said base member above the first mentioned coupling means for implement engagement, said first coupling means removably mounted in said tubular segments, said base member defining upright sockets, lift fork arms each having an upright portion adapted for mounting in a removable manner within one of said sockets, means for locking each lift fork portion to said base member.

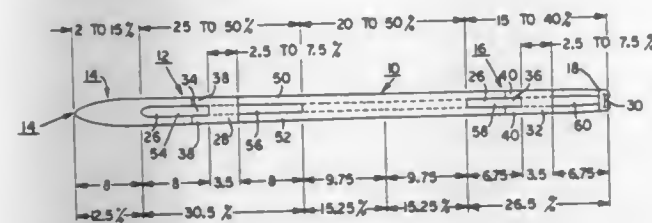


4,340,241  
SKI

Daniel E. Crocket, 1334 Whites Rd., Kalamazoo, Mich. 49008  
Filed Apr. 14, 1980, Ser. No. 139,746  
Int. Cl.<sup>3</sup> A63C 5/04

U.S. Cl. 280—609

20 Claims



1. A ski having a tip portion bent up to form the ski shovel, a tail portion, a boot platform portion positioned to support and distribute the weight of the skier, a forward portion extending forwardly from said boot platform portion through said tip portion, and a rearward portion extending rearwardly from said boot platform portion through said tail portion, which ski comprises:

a pair of parallel runners separated from each other a distance equal to about 30 percent to about 50 percent of the mean width of said ski and being rigidly and unitarily joined together at spaced intervals which include said tip portion, said tail portion, and said boot platform portion, thereby forming a running surface separated by a longitudinal channel running from said tip portion through said tail portion, which channel extends all the way through said ski in the areas where said runners are not joined together, to form open channel portions; said open channel portions extending, in said forward portion, forward from said boot platform portion and rearward from said tip portion, and, in said rearward portion, rearward from said boot platform portion and forward from said tail portion, and, in said forward portion, constituting at least about 50 percent thereof and, in the rearward portion, constituting at least about 60 percent thereof.

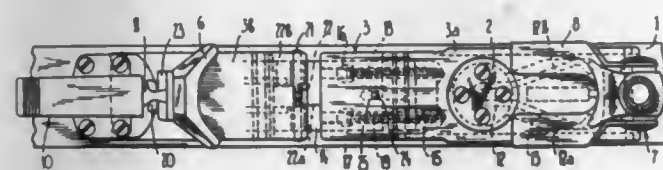
4,340,242  
SAFETY SKI BINDING

Ulrich E. Gertsch, Interlaken, Switzerland, assignor to Egs-Skisport Gesellschaft für Forschung und Entwicklung mbH, Munich, Fed. Rep. of Germany  
Filed Apr. 9, 1980, Ser. No. 138,753  
Claims priority, application Switzerland, Apr. 10, 1979, 3369/79

Int. Cl.<sup>3</sup> A63C 9/08

U.S. Cl. 280—618

13 Claims



1. A safety ski binding comprising a releasing plate mounted on an associated ski for lateral pivoting in opposite directions, said releasing plate being formed of components adjustably movable with respect to each other in the lateral direction of the ski, a lateral release mechanism for releasably retaining said releasing plate in its skiing position, ski boot sole retaining means and a heel retaining mechanism associated with said releasing plate for releasably holding a ski boot and for releasing the ski boot upon the skier falling forwardly, one of said retaining means and said retaining mechanism being adapted to be movable away from the other upon said releasing plate being pivoted upon release thereof in a lateral direction, and

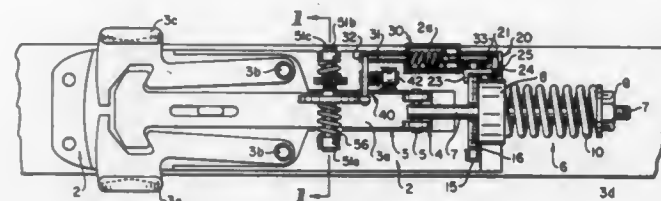
restoring means for restoring said releasing plate to its skiing position, the movable one of said ski boot sole retaining means and said heel retaining mechanism being upwardly pivotable from a normal position thereof upon a lateral release motion thereof.

4,340,243  
RELEASABLE SKI BINDING WITH MECHANICAL TIME INTEGRATOR

Richard G. Spademan, Box 6410, Incline Village, Nev. 89450  
Filed Feb. 1, 1980, Ser. No. 117,390  
Int. Cl.<sup>3</sup> A63C 9/08

U.S. Cl. 280—624

14 Claims



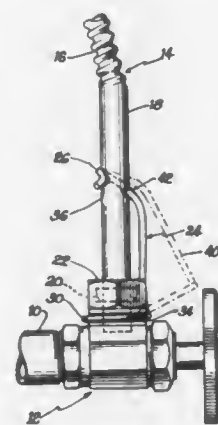
1. A releasable ski binding comprising: separable binding parts for releasably securing a ski boot to a ski at a location on the ski boot rearwardly of the toe and forwardly of the rear of the heel; mechanical means including a pair of relatively shiftable first and second releasing members; first means biasing the second member into frictional engagement with the first member; second means coupled with the first member for biasing the same for movement relative to the second member responsive to a predetermined force applied to said binding parts for a predetermined period of time, said first member being operable for separating said binding parts when said first member moves relative to the second member under the influence of said second means; and means coupled with the second member for adjusting the bias force of said first means.

4,340,244  
CLIP FOR SLIP-JOINT TUBE CONNECTIONS

Kenneth W. Scott, 601 Ninth St., Coronado, Calif. 92118  
Filed Sep. 22, 1980, Ser. No. 189,377  
Int. Cl.<sup>3</sup> F16L 33/20

U.S. Cl. 285—8

1 Claim



1. A clip for coupling a tube in a slip-joint retained by a compression nut on a neck without requiring dismantling of the slip-joint comprising:

a resilient unitary wire body defining a first open loop of effective diametric dimension slightly smaller than said tube to cause deformation of said tube in use, and a second open loop of diameter slightly greater than said neck and less than that of said nut, the axis of said first loop passing eccentrically of said second loop, whereby said first loop can be engaged on said tube coaxially and angled to grip said tube when said second loop is engaged on said neck by said nut;

said loops being open in substantially parallel directions and the opening of said second open loop is resilient and narrower than the diameter of said neck to permit engaging said first loop around said tube and snapping said second loop around said neck subsequent to assembly of said tube and slip-joint to positively retain said clip on said neck.

4,340,245  
INSULATED PRESTRESSED CONDUIT STRING FOR HEATED FLUIDS

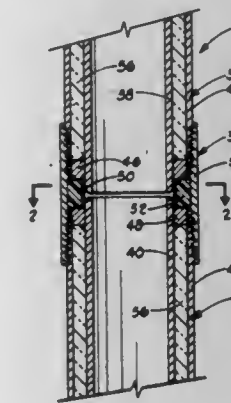
John L. Stalder, Ventura, Calif., assignor to Conoco Inc., Ponca City, Okla.

Filed Jul. 24, 1980, Ser. No. 171,765

Int. Cl.<sup>3</sup> F16L 59/16

U.S. Cl. 285—53

10 Claims



1. An improved prestressed conduit string for conducting heated fluids through a well bore, said conduit string being comprised of:

a plurality of connected-together conduit sections, each conduit section comprising:

an elongated large diameter outer tube positioned around a smaller diameter conductor tube, said outer tube being shorter than said conductor tube and being positioned with respect thereto whereby the ends of said conductor tube extend beyond the ends of said outer tube short equal distances; and

bushing means positioned at the ends of said outer tube between said outer tube and said conductor tube, said bushing means being fixedly attached to said outer tube and to said conductor tube whereby said conductor tube is in tension prestress and said outer tube is in compression prestress;

said conduit sections being connected together in end-to-end relationship to thereby form said conduit string by connector means, each of said conductor means comprising: annular resilient seal means positioned around axially aligned adjacent extending ends of said conductor tubes and between adjacent bushing means of adjacent conduit sections; and

coupling means positioned around said seal means and connected to the outer tubes of said adjacent conduit sections thereby rigidly connecting said conduit sections together and compressing said seal means against the sides of said adjacent extending ends of said conductor tubes and between said bushing means of said conduit sections thereby forming a heat insulated sealed joint between said adjacent conduit sections.

4,340,246  
LATCH ASSEMBLY

Larry K. Johnson, Sterling, Ill., assignor to Lawrence Brothers, Inc., Sterling, Ill.

Filed Apr. 14, 1980, Ser. No. 139,781

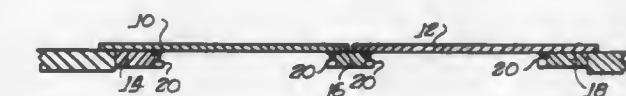
Int. Cl.<sup>3</sup> E05C 5/02

U.S. Cl. 292—113

6 Claims

1. A latch assembly for drawing a free hanging door up to engagement with a support member and holding the door there against, said latch adapted to be mounted on said support

member and comprising: a base member for mounting to the support member and including a raised portion having a latch recess formed therein, and actuating member pivotally mounted to said base member about a pivot point, said actuating member being of an integral construction including an upper actuating portion on one side of said pivot and a handle portion on the other side of said pivot; and hook means carried by said actuating portion and arranged for engaging the door; said handle portion including a transversely extending projecting portion terminating in a latch projection, said latch projection being arranged to enter said latch recess upon rotation of said actuating member to a position wherein the door is drawn



against the support member and for retaining said actuating member and door in a locked position; and biasing means at said pivot point urging said actuating member against said base member, which biasing means permits the entire actuating member to move laterally of said base member such that the latch projection may be disposed within the latch recess with the force of said biasing means serving to retain the latch projection in said latch recess and also providing frictional engagement between said actuating member and said base member capable of retaining said actuating member in an unlocked position substantially in line with the support member.

4,340,247  
GRIPPER UNIT FOR CLAMPING AND ALIGNING A LAYER OF CONCRETE PAVING BRICKS WITH COMPOUND ELEMENTS FOR FORMING A STRETCHER BOND OF THE BRICKS INTO A SETTING UNIT

Egon Schnler, Höfen, Fed. Rep. of Germany, assignor to Oldenburger Betonsteinwerke GmbH, Wardenburg, Fed. Rep. of Germany

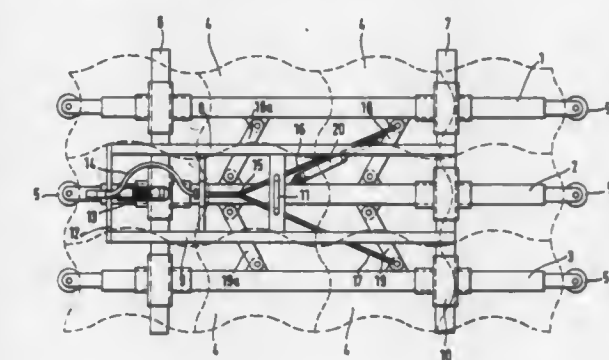
Filed Dec. 3, 1979, Ser. No. 99,354

Claims priority, application Fed. Rep. of Germany, May 5, 1979, 2918232

Int. Cl.<sup>3</sup> B66C 1/44

U.S. Cl. 294—63 R

3 Claims



1. In a gripper unit for clamping and aligning a layer of concrete paving bricks with combined compound elements for forming a stretcher bond of the bricks in the form of a setting unit of the type including a plurality of generally parallel clamping bars, each having clamping means at the longitudinal ends thereof for clamping a row of bricks therebetween, and a frame-like support element on which said clamping bars are slidably coupled by means of a guide cross bushing for simultaneous longitudinal and lateral displacement with respect to one another, the improvement comprising:

said clamping bars disposed adjacent to one another being pivotally coupled together by at least one common pivot-



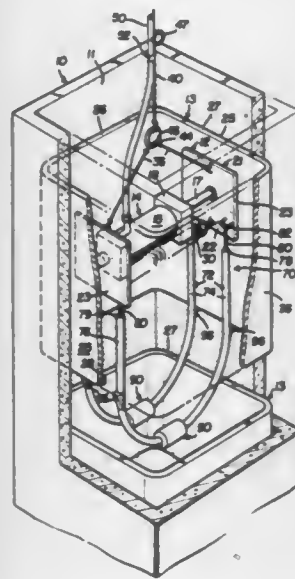
able lever for permitting movement of said adjacent clamping bars while maintaining them in a parallel relationship with respect to one another during such movement; and  
actuating means coupled to said common lever for effecting pivotable movement of said common lever in at least a first direction, said actuating means comprising at least one actuatable Bowden cable and an operating cylinder which is coupled to and activates said cable.

**4,340,248**  
**DEVICE FOR LOWERING CERAMIC LINERS INTO A CHIMNEY**

Irving Riutta, R.D. #1, Box 293, Houghton, Mich. 49931  
Filed Nov. 3, 1980, Ser. No. 202,986  
Int. Cl.<sup>3</sup> B66C 1/54

U.S. Cl. 294—93

4 Claims



1. An apparatus for lowering rectangular cored liners into an existing flue passage, said apparatus comprising in combination:

- a fluid actuated piston and support cylinder adapted to be positioned cross-wise within a liner core with the cylinder principal axis substantially normal to the liner walls;
- said cylinder having a piston rod extending on the cylinder axis exterior of one end of said cylinder for reciprocal movement relative to said one end, and a rod extending on said principal axis from the opposite end of said cylinder;
- a pressure pad member supported on the outer free end of each said rod;
- a holding line consisting of a holding cable, a flexible fluid supply hose, and means for coupling said holding cable to said hose;
- means to regulate the flow of fluid from said hose into said cylinder to extend said piston rod between a retracted position and an extended position, whereby said pressure pad members engage the opposite core walls to releasably clamp said cylinder to the liner;
- spring biasing means interconnecting said pressure pad members operative for returning said piston rod to its retracted position upon said regulating means causing the fluid pressure in the cylinder to fall below a predetermined value;
- sliding means connecting said pressure pad members with one end of said holding cable;
- said holding cable formed with a plurality of uniformly spaced closed loops disposed at predetermined intervals to enable the user to grasp the holding cable for controlling the gravity descent of the liner and cylinder; and
- wherein said loops provide gauge means enabling the user to readily compute the vertical descent of the liner within the flue passage, said loops operative for securing said holding cable to a support for anchoring the liner and support cylinder at predetermined intervals within the flue passage;

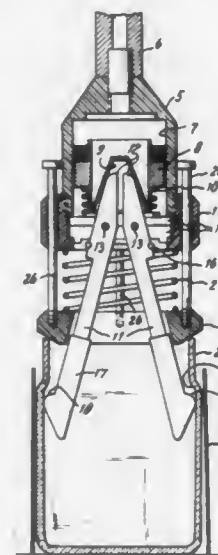
a pair of fail-safe U-shaped pendants adapted for suspension from said pressure members within the liner core; each said U-shaped pendant having a pair of upwardly extending arms defining first ends, flexible strap means suspending each said arm first end from an associated pressure pad member; each said U-shaped pendant having its bight portion in the form of spaced opposed second ends telescopically received in a tubular coupler through bore, said coupler through bore having resilient means therein operative to urge said pendant second ends outwardly such that the pendant arms are normally biased to press on the two opposite core walls, respectively, of the liner; each said pendant arm having a projection thereon adapted to abut the liner bottom edge to positively support a suspended liner upon the pressure pad members releasing the liner; and said arm projections including cam means adapted upon contact by a subjacent positioned liner to telescope said pendant second ends inwardly whereby said projections are received within the liner core enabling said cylinder and pendants to be freely hoisted from the flue passage upon the retraction of said piston rod by said regulating means.

**4,340,249**  
**JAR STABILIZER FOR PICK-UP ASSEMBLY**  
Leonard E. Bucklew, Houston, Tex., assignor to General Foods Corporation, White Plains, N.Y.

Filed Sep. 12, 1980, Ser. No. 186,374  
Int. Cl.<sup>3</sup> B66C 1/54

U.S. Cl. 294—95

7 Claims

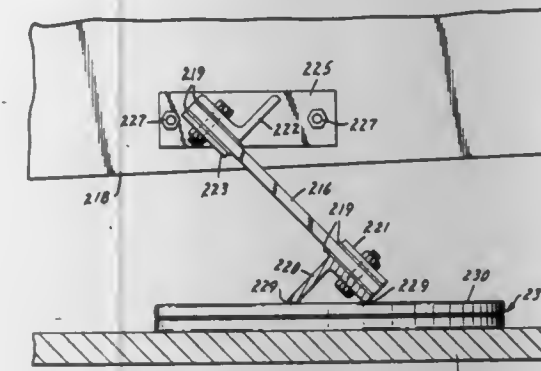


1. A jar pick-up assembly adaptable for use with case unloading apparatus and operable for gripping and holding upon mouth jars while being lifted from a case and transferred to another location, said assembly including a shell type housing movable vertically relative to a jar to be picked up and having an actuator reciprocally operable therein, a plurality of elongate opposed finger-like members pivotally attached to and depending from said housing, said members being actuatable by said actuator to rock the lower portions thereof from a closed abutting position to an open expended position, said lower portions when closed being transportable through the mouth of a jar by the movement of said housing and when expanded within a jar being urged into bearing contact with opposed interior surface areas thereof, and an annular stabilizing member carried by said housing and disposed around the lower extremities of said finger-like members in a horizontal plane to yieldingly engage an external surface area of said jar while said finger-like members are engaging said interior surface thereof, said finger-like members and said stabilizing member coacting to grip said jar there-between and provide stability therefor while being lifted and transferred by said assembly from one location to another, said stabilizing member being supported by a plurality of headed pins slide fitted in said housing and

yieldingly extended relative thereto by a spring fitted therebetween.

**4,340,250**  
**PLATFORM ROCKING CHAIR SPRINGS**  
Gene R. Ward, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.  
Division of Ser. No. 786,487, Apr. 11, 1977, Pat. No. 4,141,530, which is a continuation-in-part of Ser. No. 727,650, Sep. 29, 1976, abandoned. This application Feb. 5, 1979, Ser. No. 9,420  
Int. Cl.<sup>3</sup> A45D 19/04; A47C 3/02  
U.S. Cl. 297—264

6 Claims



1. A platform rocking chair comprising:  
(a) a floor engaging base for supporting a seat box,  
(b) first angle iron means mounted apex uppermost on said base transversely to the rocking path,  
(c) second angle iron means mounted apex downwardly across the underside of the seat box above, rearwardly and in parallel to said first angle iron means, with the rearward surface of the second angle iron means disposed in a plane generally parallel to the forward surface of the first angle iron means and displaced forwardly therefrom a slight distance,  
(d) a pair of straight flat coplanar fiber-reinforced plastic springs of a thickness corresponding to said distance extending between the rearward surface of the second angle iron means and the forward surface of the first angle iron means, and  
(e) means affixing the opposite ends of said plastic springs to said rearward and forward surfaces of the angle iron means.

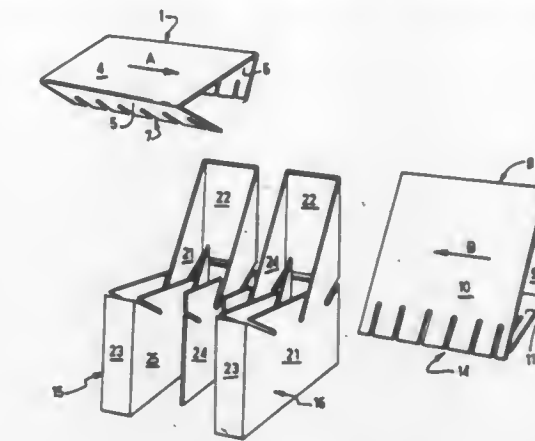
**4,340,251**  
**KNOCKDOWN SEATS OF FOLDED SHEET MATERIAL**  
Vincent Geoffroy-Dechaume, 5 Enclos de l'Abbaye, 78300 Poissy, France  
Division of Ser. No. 93,146, Nov. 9, 1979. This application Jun. 8, 1981, Ser. No. 271,540  
Claims priority, application France, Nov. 10, 1978, 78 31826  
Int. Cl.<sup>3</sup> A47C 7/00

U.S. Cl. 297—440

3 Claims

1. A knockdown seat in the form of a chair having a back comprising a seat member, a back member and a base member; said seat and back members being adapted to be supported by said base member and said base member being adapted to bear on the ground when said seat is assembled; said back and seat members each being formed of a single foldable semi-rigid sheet material element having complementary cutouts defining parts of joints for assembling said seat, each said single sheet material element comprising two parallel transverse hinges defining a central panel between two side flaps adapted to be folded toward each other to form a triangular prism; said base member comprising two side supports, each comprising a single foldable semi-rigid sheet material element adapted to bear edgewise and divided by four transverse hinges into five panels or flaps which are adapted to be folded spirally, said

sheet material elements for said side supports having slots adapted to receive said flaps of said sheet material elements for

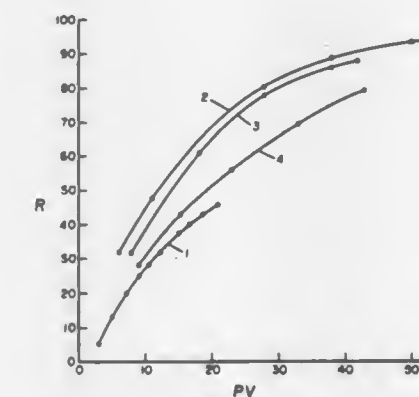


said seat and back members to define said joints for interlocking said members together.

**4,340,252**  
**PROCESS FOR THE IN-SITU LEACHING OF URANIUM**  
Wilton F. Espenscheid, De Soto, Tex., and Tsoung-yuan Yan, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.  
Filed May 7, 1979, Ser. No. 36,627  
Int. Cl.<sup>3</sup> E21C 41/14

U.S. Cl. 299—4

6 Claims



1. In the recovery of uranium from a subterranean uranium-containing deposit penetrated by injection and production systems, the method comprising:  
(a) introducing into said deposit via said injection system an aqueous lixiviant containing an oxidizing agent, sulfuric acid, and carbon dioxide and having a pH within the range of 1.0-2.5,  
(b) displacing said lixiviant through said subterranean deposit to solubilize uranium therein,  
(c) producing pregnant lixiviant containing uranium from said production system, and  
(d) treating said pregnant lixiviant to recover uranium therefrom.

**4,340,253**  
**PREFLUSH-LIXIVANT PROCESS FOR SOLUTION MINING OF URANIUM ORE BEDS**  
William M. Breland; Terry R. Guillinger, and Robert S. Schechter, all of Austin, Tex., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.  
Filed Jul. 10, 1980, Ser. No. 168,816  
Int. Cl.<sup>3</sup> E21B 43/28

U.S. Cl. 299—5

9 Claims

1. A process for the in-situ mining of subterranean uranium ore deposits containing cations which form carbonate precipitates, comprising the steps of:



- (a) pretreating the subterranean deposit by injecting aqueous inorganic chloride solution into said deposit to substantially saturate said deposit, whereby said cations are displaced from said deposit into said chloride solution;
- (b) injecting a first aqueous alkaline lixiviant solution into said deposit to flush said cation-containing chloride solution therefrom;
- (c) injecting a second aqueous alkaline lixiviant solution containing an oxidant into said deposit to leach uranium values from said deposit; and
- (d) recovering the uranium containing lixiviant solution.

4,340,254

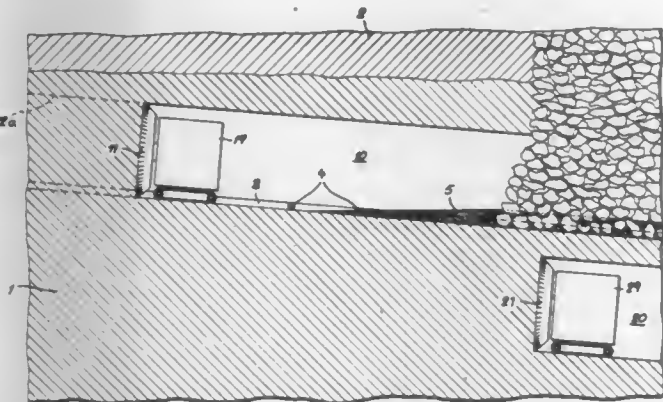
# METHOD OF MINING HEAVY COAL SEAMS IN TWO OR MORE BENCHES

Karoly Barsi; Laszlo Dörömbözi; Istvan Forisek; Gyula Kuburzik, and György Stuber, all of Tatabánya, Hungary, assignors to Tatabányai Szénbányák, Tatabánya, Hungary  
Filed Feb. 13, 1980, Ser. No. 121,046

Claims priority, application Hungary, Feb. 14, 1979, TA 1509  
Int. Cl.<sup>3</sup> E21C 41/00; E21F 15/00

U.S. Cl. 299—11

11 Claims



1. A method of mining heavy coal seams to be excavated in a plurality of benches at different levels, comprising the steps of:

- (a) excavating an upper bench with formation of a stope in the wake of excavation while supporting the roof of the stope so formed by temporary props;
- (b) introducing a cementitious slurry into said stope in a minimum amount of substantially 10% of the stope volume, said slurry comprising an aqueous suspension of calcareous matter in a proportion of substantially 10 to 60% by weight, to form a pool of said slurry at the bottom of the stope;
- (c) withdrawing the roof-supporting props at a certain distance behind an advancing face of the excavation to enable a cave-in of overburden above the stope whereby fragmented waste rock from said overburden accumulates at the bottom of the stope and is engulfed by the slurry of said pool;
- (d) allowing said slurry and said waste rock to harden into a solid layer;
- (e) excavating a next-lower bench under the solid layer thus formed; and
- (f) repeating steps (b), (c) and (d) with every stope to be undermined by a further excavation at a lower level.

4,340,255

# RESONANTLY DRIVEN VERTICAL IMPACT SYSTEM

Raymond A. Gurries, Reno, Nev., assignor to Resonant Technology Company, Sparks, Nev.  
Filed Jun. 5, 1980, Ser. No. 157,138

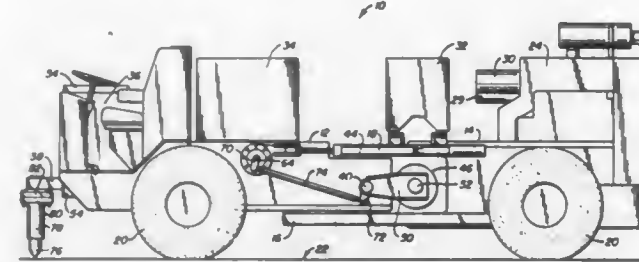
Int. Cl.<sup>3</sup> E01C 23/09

U.S. Cl. 299—37

11 Claims

1. A surface impact system comprising: a mobile carrier vehicle; a beam having a resonant frequency with a pair of nodes spaced from the ends of the beam and anti-nodes at each

end comprising input and output ends respectively and at the center of the beam;  
an oscillator fixed to the input end of the beam to vibrate the beam at at least near its resonant frequency;  
means for mounting the beam to the carrier vehicle substantially at the node near the input end of the beam;  
a weight superimposed over the beam at the node near the output end and having a bearing surface adapted to bear downwardly against the beam at said node;



means for coupling the weight to the vehicle to control the vertical position of the weight, said means for coupling the weight being arranged so that upward forces caused by the tool striking the surface are not transferred to the vehicle; and a tool depending from the output end of the beam and adapted to strike the surface underlying the vehicle at the vibration frequency of the beam as the tool vibrates responsively to vibrations of the beam, generating a reaction force which is substantially absorbed by the weight and not transmitted to the vehicle.

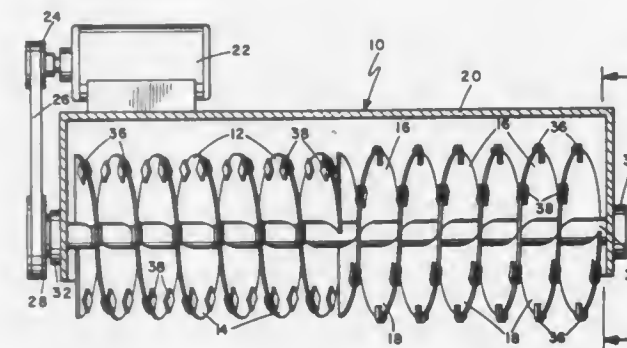
4,340,256

# DIAMOND PLANAR CUTTER

Jacque M. Hart, 3444 Garrison, San Diego, Calif. 92106  
Continuation-in-part of Ser. No. 820,081, Jul. 29, 1977, abandoned. This application Jun. 11, 1979, Ser. No. 47,253  
Int. Cl.<sup>3</sup> E01C 23/09

U.S. Cl. 299—87

24 Claims



1. A planar cutter assembly for planing of generally flat surfaces comprising:

- abrasive cutting means,
- cutter support structure constructed to be mounted for rotation about a rotational axis parallel to said generally flat surface and to position said cutting means to engage said generally flat surface upon rotation of said cutter support structure, and
- cutter mounting means on said support structure for positioning and retaining said cutting means on said support structure,
- said mounting means being arranged on said support structure to define a cylindrical surface having an axis generally coincident to said rotational axis,
- said support structure being constructed to retain said mounting means in at least a pair of continuous helical patterns wound in opposite directions from a coterminal central position and having a symmetrical relationship to each other and to the coterminal central positions and having displaced terminations at the coterminal central position,

the cutter support structure being constructed to support the cutting surfaces of the cutting means in essentially perpendicular relationship to the generally flat surface at the positions of contact between the cutting means and the generally flat surface.

4,340,257

# HYDRAULIC BRAKE SYSTEM

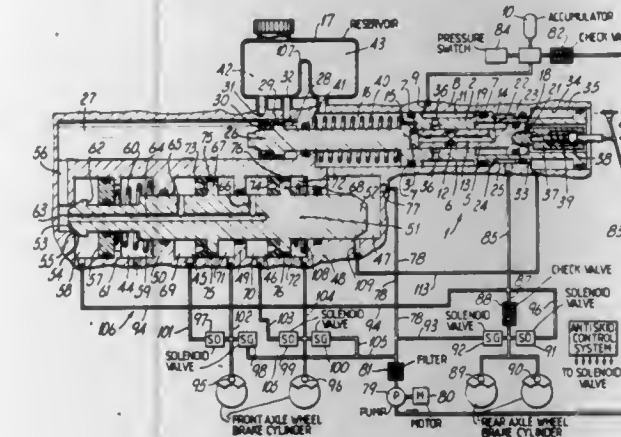
Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,499

Int. Cl.<sup>3</sup> B60T 8/02

U.S. Cl. 303—114

47 Claims



1. A hydraulic brake system comprising: a master brake cylinder having a pressure chamber and a master cylinder piston; a brake booster having a booster piston coupled to said master cylinder piston to pressurize said pressure chamber; wheel brake cylinders; antiskid control apparatus including solenoid valves coupled to said wheel cylinders to control, in the event of an imminent locked condition of a wheel, the pressure in an associated one of said wheel cylinders independently of the pressure in said pressure chamber; a valve device coupled to said pressure chamber, said brake booster, certain ones of said solenoid valves and certain ones of said wheel cylinders, said valve device being opened dependent on a differential of pressure between the pressure in said pressure chamber and said certain ones of said wheel cylinders, the pressure in said certain ones of said wheel cylinders being lower than the pressure in said pressure chamber by a predetermined amount, said valve device interrupting a fluid connection between a fluid chamber associated with one end of said booster piston and an unpressurized fluid reservoir, when said valve device is opened, said fluid chamber being disposed relative to said one end of said booster piston such that said booster piston reduces the volume of said fluid chamber when moved in an actuating direction.

4,340,258

# HYDRAULIC ANTI-SKID BRAKING SYSTEMS FOR VEHICLES

Glyn P. R. Farr, Warwickshire, England, assignor to Lucas Industries Limited, Birmingham, England

Continuation of Ser. No. 67,936, Aug. 20, 1979, abandoned. This application Nov. 20, 1980, Ser. No. 208,642

Claims priority, application United Kingdom, Aug. 18, 1978, 33788/78

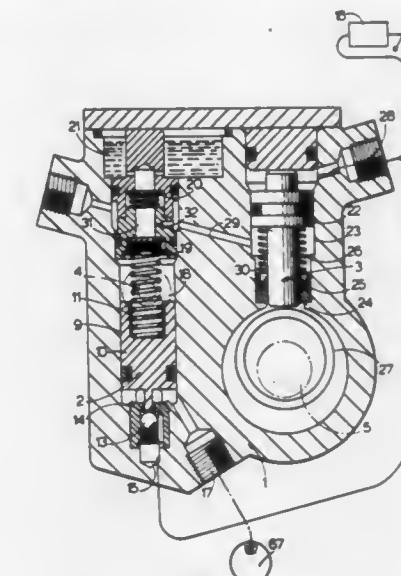
Int. Cl.<sup>3</sup> B60T 8/02

U.S. Cl. 303—115

24 Claims

1. An hydraulic anti-skid braking system for a vehicle comprising a vehicle brake, a supply of operating fluid for applying said brake, skid sensing means for producing skid signals, a modulator assembly for modulating said supply of operating fluid to said brake in accordance with said skid signals from

said skid sensing means, said modulator assembly incorporating an expansion chamber, an hydraulic pump incorporating a plunger working in a bore having a working chamber which is connected to said expansion chamber, a reservoir for fluid, positive drive means for urging said pump plunger in a first direction to draw fluid from said reservoir into said working chamber during a suction stroke, and pump operating means for applying a force to said plunger to urge said plunger in a second opposite direction to pump fluid from said working chamber into said expansion chamber during a delivery stroke, a dump valve disposed between said expansion chamber and said reservoir for fluid, the dump valve being movable by said skid-sensing means between a normally closed position in which said expansion chamber is pressurised so that said modu-



lator assembly is held in a first position permitting operating fluid to be supplied to said brake and an open position when the skid signal is received whereby the pressure in said expansion chamber is reduced so that the modulator assembly can move into a second position to cut-off communication between said supply and said brake and subsequently reduce the pressure of fluid supplied to said brake, pressurisation of said expansion chamber following correction of a skid with said dump valve in said closed position being limited by said force applied to said plunger by said pump operating means whereafter said plunger is adapted to be held disabled during the subsequent delivery stroke by a volume of fluid trapped between said modulator assembly and said plunger, whereby said pump is operable only to repressurise said expansion chamber following correction of a skid.

4,340,259

# WEAR BUSHING

James R. Green, 3823 Ridgelake, Apt. 223, Metairie, La. 70002  
Filed Nov. 24, 1980, Ser. No. 209,718

Int. Cl.<sup>3</sup> F16C 31/02

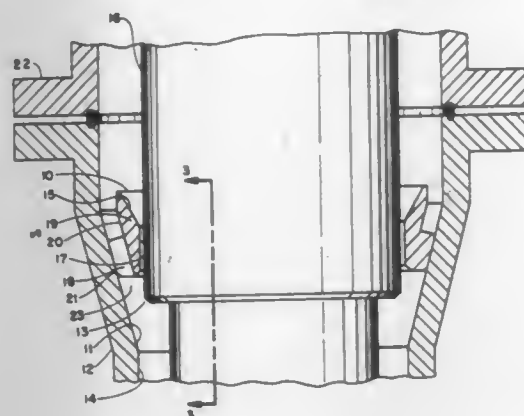
U.S. Cl. 308—4 A

6 Claims

1. A wear bushing for use within the downwardly and inwardly tapering inner surface of a bowl section of a casing head bore during the drilling of an oilwell, comprising: a ring of metal or the like; the ring having a bore sufficient to pass drill string members therethrough; the ring bore being small enough to prevent the drill string members from contacting the casing head bore immediately below the ring; three or more lug members mounted on the periphery of the ring, said lug members defining a contact surface so constructed and arranged so as to cooperate with the tapering inner surface of the



bowl section of the bore of the casing head for the purpose of supporting and centering the ring within the casing head bore;



the accumulative width of the lugs being less than one half of the outer circumference of the ring.

4,340,260

## MAGNETIC SUSPENSION BEARING

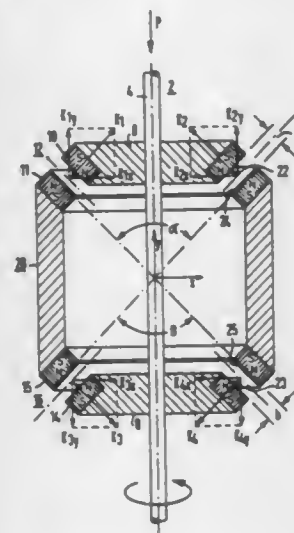
Helmut Forster, Neunkirchen; Paul Hini, Kosbach, and Gerd Stransky, Alzenau, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany  
Filed Sep. 5, 1980, Ser. No. 184,474

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1979, 2938809

Int. Cl.<sup>3</sup> F16C 39/06

U.S. Cl. 308—10

4 Claims



1. A magnetic suspension bearing for a rotating body having an axis of rotation, the bearing having at least first and second magnet systems which are arranged sequentially along the axis of rotation, each magnet system having two annular, coaxially arranged, permanent magnets which are magnetically poled so as to repel one another, one permanent magnet of each magnet system being affixed to the rotating body, and the other to a stator, the magnetic suspension bearing being CHARACTERIZED IN THAT the permanent magnets are each provided with a pole surface which forms a truncated cone having an axis which coincides with the axis of rotation of the rotating body.

4,340,261

## MAGNETIC BEARING ARRANGEMENT

Heinz Wehde, Rothenberg, Fed. Rep. of Germany, assignor to Teldix GmbH, Heidelberg, Fed. Rep. of Germany  
PCT No. PCT/DE79/00047, § 371 Date Dec. 21, 1979, § 102(e)  
Date Dec. 21, 1979, PCT Pub. No. WO79/00987, PCT Pub. Date Nov. 29, 1979

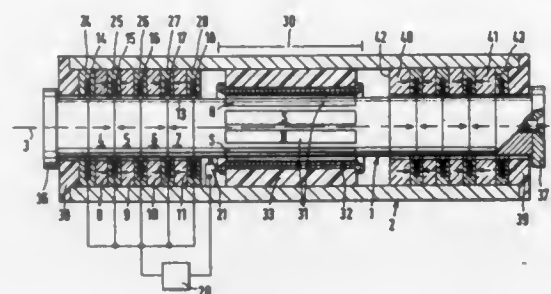
PCT Filed Apr. 25, 1979, Ser. No. 191,243

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1978, 2818255

Int. Cl.<sup>3</sup> F16C 39/00

U.S. Cl. 308—10

8 Claims



1. A magnetic bearing arrangement comprising:  
an elongated hollow cylindrical stator having an inner surface and a longitudinal axis;  
an elongated rotor having an outer circumferential surface separated from the inner surface of said stator by an annular air gap, said rotor being disposed within said stator for rotation about said longitudinal axis;  
a first set of adjacent annular permanent magnet members secured to the circumferential surface of said rotor, said permanent magnet members being axially distributed along said rotor;  
a second set of adjacent annular permanent magnet members secured to the inner surface of said stator, each of said second set of annular permanent magnet members being arranged in axial juxtaposition with a corresponding member of said first set so as to generate repelling magnetic forces for stabilizing movement of said rotor in a radial plane transverse to said longitudinal axis;  
a plurality of annular windings, one of said windings being interposed between adjacent permanent magnet members of said second set;  
a sensor located within said stator and adjacent said rotor for monitoring the axial position thereof; and  
a control device coupling the output of said sensor to said plurality of annular windings for controlling the current through said windings in accordance with the deviation of said rotor from a predetermined position, said annular windings generating a magnetic force for stabilizing movement of said rotor in the axial direction.

4,340,262

## SPINDLE BEARING AND LUBRICATION SYSTEM

Clyde J. Rugh, and John L. King, Jr., both of Owosso, Mich., assignors to MWA Company, Owosso, Mich.

Filed Aug. 5, 1980, Ser. No. 175,557

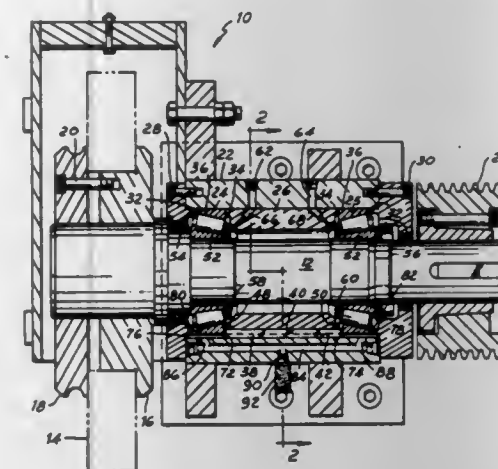
Int. Cl.<sup>3</sup> F16C 33/66

U.S. Cl. 308—187

8 Claims

1. A spindle bearing and lubrication system comprising a housing, a pair of bearings in said housing rotatably supporting a shaft, means for axially locating said bearings in said housing in spaced relation to one another, said locating means including spacer means between and engaging the adjacent ends of said bearings, and retainer means engaging the remote ends of said bearings, said spacer means cooperating with each bearing to define an inner lubricant cavity, said retainer means cooperating with each bearing to define an outer lubricant cavity, said housing and locating means having lubricant inlet passages leading to at least one cavity associated with each bearing for the lubrication of each bearing and for the flow of lubricant

through each bearing to the other cavity associated therewith, said housing having lubricant outlet passage means, connecting passage means providing communication between each of said other cavities and said lubricant outlet passage means, and a



key, said housing and said bearings having slots in which said key is received to prevent said bearings from rotating relative to said housing, portions of said slot in said housing comprising portions of said connecting passage means.

4,340,263

## MACHINE FOR CHILLING DRINKING GLASSES

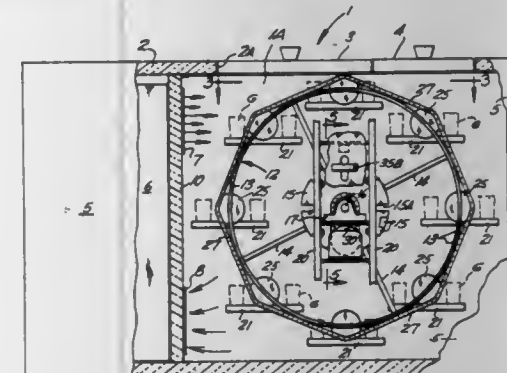
Lloyd E. Webb, P.O. Box 361, Florence, Oreg. 97439

Filed Feb. 21, 1979, Ser. No. 13,182

Int. Cl.<sup>3</sup> A47B 49/00, 77/16

U.S. Cl. 312—266

4 Claims



1. In a machine having a circular frame rotatably supported for travel about a horizontal axis, a series of horizontally disposed load receiving supports pivotally depending from points spaced about said circular frame, said supports adapted to receive articles, the improvement comprising,

a continuous flexible member spaced outwardly from the circular frame.

sprocket means fixed to each of said supports in movable engagement with and supporting said flexible member, said sprocket means and said supports rotatable relative the circular frame during frame rotation, and said continuous flexible member interconnecting each of said sprocket means of each of said supports with one another whereby all of said supports are maintained in a horizontal position regardless of some of said supports being asymmetrically loaded relative the supports center of gravity.

4,340,264

## MANUFACTURE OF GLASS BASE LAMP

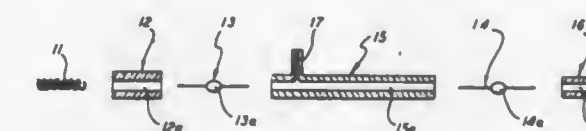
Carl J. Hottes, Danbury, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation of Ser. No. 54,731, Jul. 5, 1979, abandoned. This application Apr. 6, 1981, Ser. No. 251,687

Int. Cl.<sup>3</sup> H01J 9/26

U.S. Cl. 316—19

12 Claims



1. A method of manufacturing a lamp, comprising the steps forming a tubular glass envelope having a bore therethrough, forming a glass base having a bore therethrough, pretreating said bore of said base with a glass composition for enhancing the adhesion between glass and tungsten, fixing a first tungsten wire in said bore at one end of said base so that said first tungsten wire extends half into and out of said glass base, soldering an axially compressible conducting element into the other end of said bore of said base so that one end of said conducting element makes electrical contact with said first tungsten wire and the other end of said conducting element freely protrudes from said other end of said bore of said base and is compressed when said other end of said bore of said base is abutted against an object, fusing said one end of said base to one end of said envelope such that said first tungsten wire extends into said bore of said envelope, said fusing step forming an airtight seal between said base and said one end of said envelope, forming an airtight seal at the other end of said envelope, evacuating said bore of said envelope, inserting a predetermined amount of vaporizable metal in said bore of said envelope.

4,340,265

## MULTI-COAXIAL/POWER PIN CONNECTOR

## ASSEMBLY HAVING INTEGRAL GROUND

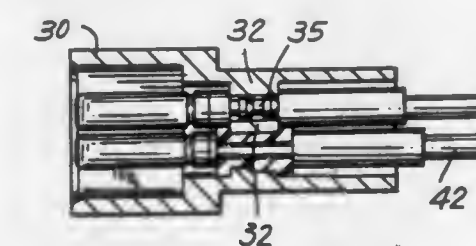
Conrad L. Ott, Lake Grove, and George E. Ris, East Northport, both of N.Y., assignors to Automatic Connector, Inc., Commack, N.Y.

Filed May 2, 1980, Ser. No. 146,022

Int. Cl.<sup>3</sup> H01R 4/66, 23/06

U.S. Cl. 339—14 R

4 Claims



1. A multi-coaxial/power pin connector assembly carrying coaxial cables and power leads comprising

a molded male shell assembly formed of an electrically conductive material into which said coaxial cables and power leads are assembled to form a male plug, a molded female shell assembly formed of an electrically conductive material into which said coaxial cables and power leads are assembled to form a female receptacle into which said male plug is inserted, said molded male and female shells being in electrical contact with each other and each comprising an integral



molded connector panel formed of said conductive material and having a plurality of apertures adapted to directly frictionally engage the outer conductors of said coaxial cables inserted in respective ones of said apertures to make electrical contact between the shell and outer conductors of said coaxial cables, wherein at least one of said molded connector panels comprises an additional aperture, and a common ground wire directly fitting into, frictionally engaging and making electrical contact with said additional aperture to directly connect said common ground with said coaxial outer conductors and to ground each of said shells.

4,340,266

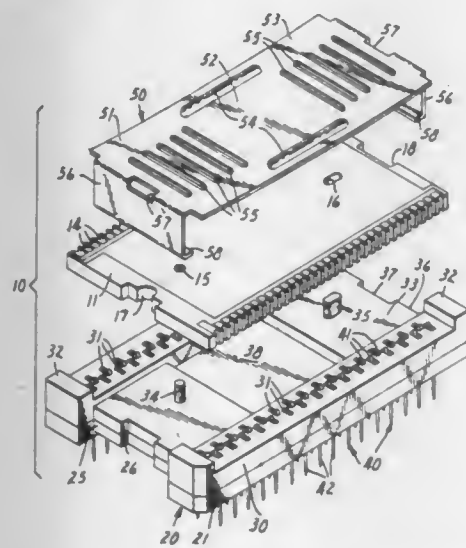
## CONNECTOR SYSTEM

Steven L. Grovender, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.  
Continuation of Ser. No. 908,152, May 22, 1978, abandoned.  
This application Jan. 21, 1980, Ser. No. 113,728

Int. Cl.<sup>3</sup> H01R 23/72

U.S. Cl. 339—17 CF

7 Claims



1. A connector system for connection of leadless large scale integrated circuit devices to a printed circuit board and in situ electrical measurement at any contact point while said circuit device is in operation comprising a reduced size, high pin count leadless ceramic carrier, a leadless socket having contact elements enclosed therewithin and a cover member, said leadless ceramic carrier being elongate and having closely spaced contact pads on one surface in two staggered rows along each of its longitudinal edges on 50 mil centers, the individual contact pads in each row being on 100 mil centers, which contact pads are replicated onto the other surface as probing contacts in a single row along each of its longitudinal edges on 50 mil centers, said leadless socket comprising interengaging elongate perimetrical equal top and bottom elements housing contact elements therewithin, said top element having a recess in its upper face to receive said leadless ceramic carrier, said top element having cavities therein in alignment with the staggered contact pads on said leadless ceramic carrier and being longitudinally grooved in its lower face for accommodation of the central portion of said contact elements, said bottom element having cavities therein in alignment with the corresponding cavities in said top element for insertion of said contact elements therein, said contact elements having a leg portion, a central portion connected at one end to said leg portion and at its other end to a spring beam member, and a contact area joined to said spring beam member, said contact area adapted to make wiping contact with said contact pads on said carrier, and said cover member being elongate with a length substantially equal to the length of said carrier and a width just sufficiently narrower than said carrier to thereby expose said single rows of probing contacts along each longitudinal edge of said carrier and having a substantially flat central portion adapted to intimately contact the underlying surface of said leadless ceramic carrier and end portions which are

slightly outwardly upwardly angled and joined to depending end walls having an intumed lip at its free ends, said lip adapted to engage an edge of said bottom element to thereby latch said cover member to said leadless socket.

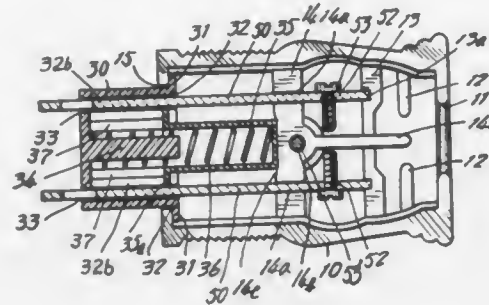
4,340,267

## SAFETY ELECTRICAL PLUG

Tokuji Nukaga, Fukazawa 1-2-5, Setagaya-ku, Tokyo, Japan  
Filed Jun. 13, 1980, Ser. No. 159,008  
Int. Cl.<sup>3</sup> H01R 13/44

U.S. Cl. 339—42

5 Claims



1. In a safety electrical plug comprising a casing formed by a pair of identical casing portions, each casing portion including cord insertion opening means at one end, a rib, rib-blade support means and second opening means at the other end, a pair of parallel and spaced plug blades supported on said rib-blade support means and extending out of said second opening means, a blade covering member slidably received in said second opening means and receiving said blades, said blade covering member having a pair of vertically elongated openings through which said blades extend, and a spring is interposed between said rib-blade support means and blade covering member to normally bias said blade covering member to the extended position; characterized in that a cylindrical spring housing receives the casing end of said spring and is open at one end to allow said spring to extend into said blade covering member, and has a pair of oppositely extending projections at said open end; and said blade covering member further has a circular opening between said vertically elongated openings for receiving said open end of the spring housing, a pair of horizontal grooves in communication with said circular opening for receiving said projections of the spring housing and a circular projection extending in the axial direction of the covering member to receive said spring on the projection.

4,340,268

## SNEAK CURRENT PROTECTOR MODULE

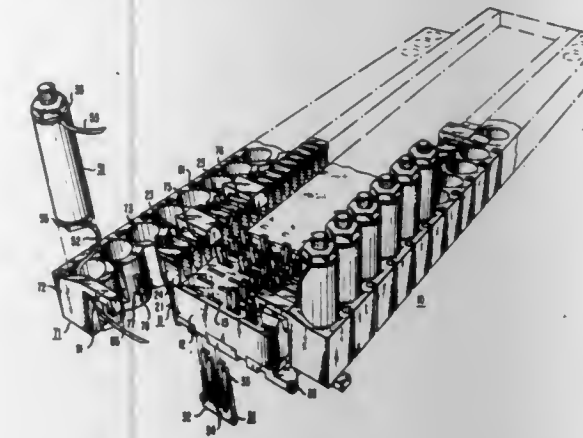
Michael Scalera, Randolph, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Jun. 30, 1980, Ser. No. 164,601  
Int. Cl.<sup>3</sup> H01R 25/00

U.S. Cl. 339—18 R

11 Claims

1. A sneak current protector module (10) comprising:  
an insulative base (11) having a plurality of apertures (12) therein;  
a plurality of slotted beam electrical contact pairs (31) mounted in said plurality of apertures in said base;  
a plurality of fuse elements (51), each of said fuse elements having means (52,53) at opposite ends (55,56) thereof for effecting an electrical connection to electrically isolated contacts (33) in different ones of said contact pairs; char-

acterized in that said sneak current protector module further includes



means (71), slidably affixed to said insulative base, for mounting said plurality of fuse elements along an edge (21) of said base.

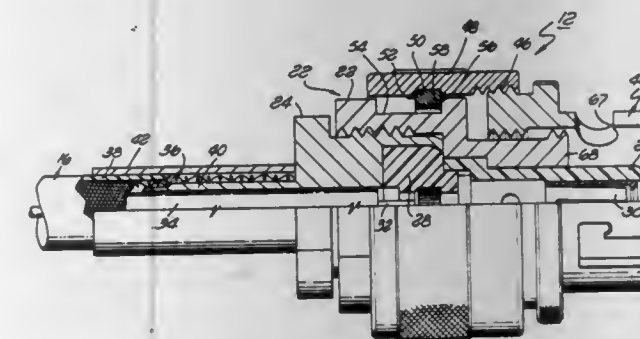
4,340,269

## COAXIAL ELECTRICAL CONNECTOR

Peter G. McGeary, Burbank, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.  
Filed May 5, 1980, Ser. No. 146,284  
Int. Cl.<sup>3</sup> H01R 13/625, 13/639

U.S. Cl. 339—90 C

4 Claims



1. An electrical connector member for a coaxial cable having inner and outer conductors comprising:  
a conductive shell having a forward mating end and a rear termination end adapted to be connected to the outer conductor of the cable;  
an insulator in said shell containing a center contact adapted to be connected to the inner conductor of the cable;  
a ring rotatably mounted on said shell, said ring embodying a forwardly facing shoulder engaging a rearwardly facing shoulder on said shell;  
a rotatable bayonet coupling nut in front of said ring; and said ring and nut having a threaded connection therebetween whereby rotation of said ring in one direction will cause said shell and nut to move axially toward each other after said nut is coupled to a mating connector member.

4,340,270

## ELECTRICAL TERMINAL UNIT

Manfred Wilmes, and Karl Marienfeld, both of Detmold, Fed. Rep. of Germany, assignors to C. A. Weidmuller KG, Detmold, Fed. Rep. of Germany  
Filed Jan. 4, 1980, Ser. No. 109,726  
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1979, 2902536

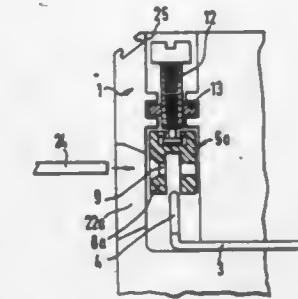
Int. Cl.<sup>3</sup> H01R 11/20

U.S. Cl. 339—95 D

13 Claims

1. An electrical terminal unit comprising an insulating housing and terminals therein for connection of electrical conductors, and in which at least one said terminal comprises a metal

member within said housing with a conductor receptor shaped to receive an insulated conductor and provided with at least one cutting edge for penetrating the insulation of and making electrical contact with the conductive core of an insulated conductor, and an actuating member of electrically insulating material which member is movable relative to said metal member and has guiding means within said housing adapted to receive an electrical conductor and to entrain the latter when



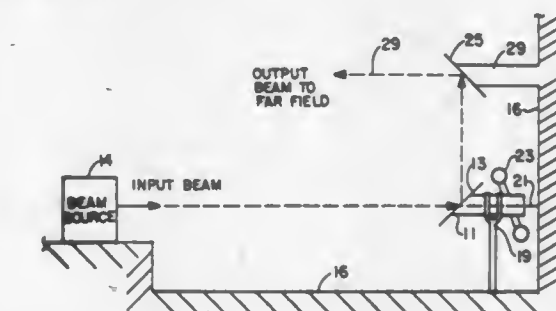
said actuating member is moved, whereby a conductor entrained by said actuating member will be moved into and out of engagement with said conductor receptor of the associated metal members, and in which said actuating member is provided with a bifurcated head, the fork arms of which are situated respectively on opposite sides of said conductor receptor with said metal member and have therein insertion bores which are in alignment with each other and function as entrainment guides for said conductor.

4,340,271

INTERNAL BODY MOUNTED SYSTEM FOR ISOLATION OF, IN ONE DEGREE OF FREEDOM, A BEAM PROJECTED FROM AN OPTICAL SYSTEM WHICH IS SUBJECT TO ROTATIONAL VIBRATION  
Curtiss W. Robinson, and Wilbur D. Clingman, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.  
Filed Apr. 4, 1980, Ser. No. 137,530  
Int. Cl.<sup>3</sup> G02B 23/00

U.S. Cl. 350—16

4 Claims



1. An apparatus, for use with an optical system which is supported by a base system such as an aircraft frame, and which generates and transmits a light beam to the far field or receives a light beam from the far field, for compensating, in one degree of freedom, for the effect on the light beam by a rotational vibration which affects the base system and the optical system, said apparatus comprising:  
a. inertial body means, upon which is mounted a first mirror means at an angle of 45° relative to the path of the light beam, which is incident thereon;  
b. means connected to the base system, and hence subject to the rotational vibration, for supporting said inertial body means for rotation about a support axis which is coincident with the path of the light beam incident on said first mirror means and which is orthogonal to the axis about which the rotational vibration occurs; and  
c. second mirror means positioned relative to said first mirror means such that a light beam reflected off said first mirror means will be reflected off said second mirror means to the far field, wherein in operation said mirror body, with said first mirror means, rotates about the sup-



port axis in response to the rotational vibration, resulting in the beam reflected from said first mirror means rotating in a plane normal to said support axis, the amount of rotation being determined by the distribution of the mass of the inertial body selected to compensate for the rotational vibration, so that the beam reflected from said second mirror means remains steady in the far field.

#### 4,340,272 LIGHT INTENSITY MODULATOR IN AN INTEGRATED OPTICAL CIRCUIT WITH FEEDBACK MEANS

Michel Papuchon, and Claude Puech, both of Paris, France, assignors to Thomson-CSF, Paris, France

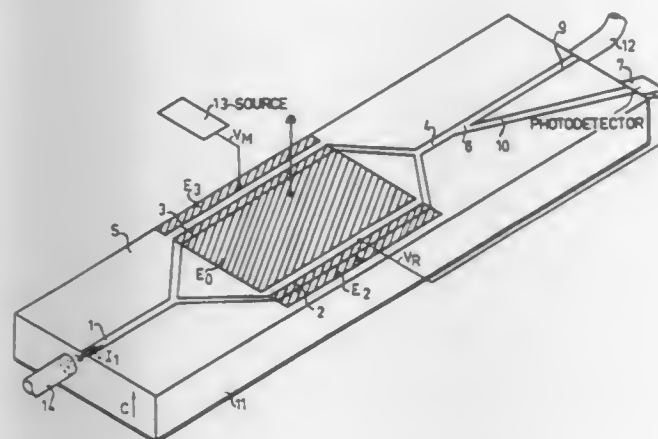
Filed Apr. 2, 1980, Ser. No. 136,474

Claims priority, application France, Apr. 3, 1979, 79 08372

Int. Cl.<sup>3</sup> G02B 5/174

U.S. Cl. 350—96.14

11 Claims



1. A light intensity modulator comprising, on the surface S of a substrate having electro-optical properties, an interferometer with two arms forming monomode guides connected to a monomode input guide intended to receive an incident optical radiation, the radiation fractions propagated in the two arms combining at the outlet of the interferometer in a monomode output guide, the intensity of the emerging radiation depending on the phase shift introduced into the interferometer by a modulating electric field applied to at least one of the arms, wherein there is further provided a light energy separator interposed on the output guide, for extracting a part of the emerging intensity to couple it to a photodetector supplying a feedback modulating electric field to at least the other of said arms, whereby the linear range of the output light intensity is improved.

#### 4,340,273 RETRO-REFLECTING SHEET MATERIAL

Stanton E. Jack, and Robert O. Dark, both of Kingston, Canada, assignors to Alcan Research & Development Limited, Montreal, Canada

Division of Ser. No. 75,007, Sep. 13, 1979, Pat. No. 4,265,938.

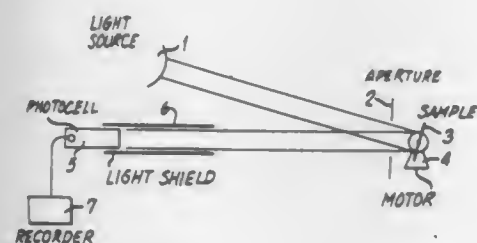
This application Oct. 27, 1980, Ser. No. 201,156

Claims priority, application Canada, Sep. 21, 1978, 311780

Int. Cl.<sup>3</sup> G02B 5/128

U.S. Cl. 350—105

5 Claims



1. A retro-reflector comprising an indentable metal sub- from a projector so as to provide viewing angles that are

strate, transparent material overlying a surface of the substrate, and a mono-layer of glass beads of high refractive index adhered to said transparent material and separated from said substrate by a layer of said transparent material, said surface of the substrate having indentations conforming to the adjacent glass beads and the separation of the glass beads from the substrate surface by said layer of transparent material being suitable for retro-reflection.

#### 4,340,274 VISUAL DISPLAY APPARATUS

Archer M. Spooner, Orlando, Fla., assignor to Redifon Simulation Limited, Sussex, England

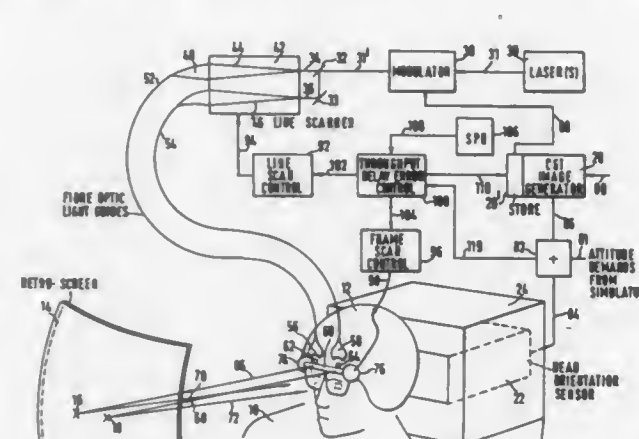
Filed Jan. 11, 1980, Ser. No. 111,281

Claims priority, application United Kingdom, Jan. 11, 1979, 7901012

U.S. Cl. 350—128

Int. Cl.<sup>3</sup> G03B 21/60

5 Claims



1. In projection apparatus in which an image is projected upon a retro-reflective screen along a line which is not coincident with a viewer's line of view, a screen comprising a rear retro-reflective surface of characteristic such that the axis of a reflected beam of light is colinear with or along the line of incidence of an incident light beam and a diffraction grating, positioned adjacent said rear retro-reflective surface, having a refractive index other than unity and a grooved surface whereby said screen is provided with a retro-reflective characteristic such that the axis of a reflected beam of light differs by a small angle from the line of incidence of the incident light beam.

#### 4,340,275 REAR PROJECTION SCREEN WITH PATTERNED LENTICULAR PRISMATIC STRUCTURE

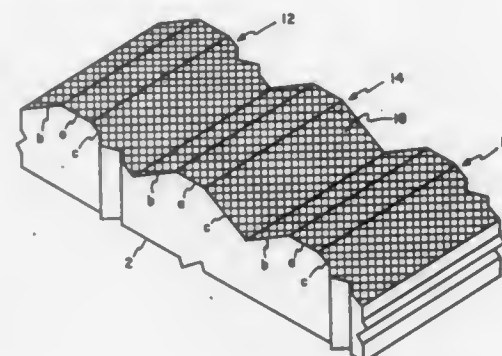
John L. Henkes, Latham, N.Y., assignor to General Electric Company, Portsmouth, Va.

Filed Jun. 9, 1980, Ser. No. 158,026

U.S. Cl. 350—128

Int. Cl.<sup>3</sup> G03B 21/62

6 Claims



1. A rear projection screen for transmitting incident light from a projector so as to provide viewing angles that are

substantially greater in the horizontal direction than in the vertical direction, comprising:

- a relatively thin translucent plastic sheet member having an output surface on which are contoured a series of vertical prismatic lenticules sufficiently closely spaced in the horizontal direction so that their structure is not resolvable by the naked eye at normal viewing distances,
- said prismatic lenticules each including a flat surface portion and two adjacent inclined surfaces, said inclined surfaces forming an obtuse angle with respect to each other,
- the prismatically contoured output surface containing uniformly arranged light diffusing lenslets that provide a relatively high brightness gain diffusion of the transmitted light, said light diffusing lenslets coating with said prismatic lenticules to provide an asymmetrical viewing field of superior optical properties.

#### 4,340,276 METHOD OF PRODUCING A MICROSTRUCTURED SURFACE AND THE ARTICLE PRODUCED THEREBY

Kent N. Maffitt, Minneapolis, Minn., and Richard F. Willson, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 957,022, Nov. 1, 1978, abandoned. This application Oct. 10, 1979, Ser. No. 80,530

U.S. Cl. 350—164



1. A method for forming a microstructured surface having antireflective characteristics comprising
  - selecting a substantially transparent, polymeric substrate having a predetermined rate of sputter etching under a given set of sputtering conditions;
  - applying onto said substrate discontinuous microislands of a material selected from the group consisting of metal oxides, refractory metals, and noble metals, having a rate of sputter etching lower than said predetermined rate under said given set of sputtering conditions to form a composite surface on which portions of the underlying substrate are exposed between the discontinuities of said microislands, said material being applied in an average thickness in the range of 0.1 to 10 nm; and
  - sputter etching said composite surface under said given set of sputtering conditions in a partial atmosphere of a reactive gas to promote the formation of a top layer on said microislands having a desirably low sputtering rate and to preferentially etch the exposed portions of the substrate, while said discontinuous microislands are etched at a lower rate, resulting in a random topography of micropedestals which vary in height within a range of approximately 0.01 to 0.2  $\mu\text{m}$ , and are separated from adjacent micropedestals a distance within a range of approximately 0.05 to 0.5  $\mu\text{m}$  and which exhibit substantially decreased specular reflectance without an attendant increase in diffuse scattering.
2. An optical article having a microstructured surface thereon exhibiting antireflective characteristics, said article comprising
  - a substantially transparent, polymeric substrate characterized by a predetermined rate of sputter etching under a given set of sputtering conditions and having thereon a random topography of discrete micropedestals varying in height within a range of approximately 0.01 and 0.2  $\mu\text{m}$ , randomly separated

from adjacent micropedestals a distance within a range of approximately 0.05 to 0.5  $\mu\text{m}$ , wherein said micropedestals have associated therewith a generally detectable material comprising metal oxides, noble metals, and mixtures and alloys thereof, said material having a rate of sputter etching lower than said predetermined rate under said given set of sputtering conditions, and wherein said topography results in a said microstructured surface which exhibits substantially decreased specular reflectance without an attendant increase in diffuse scattering resulting in enhanced transmissivity.

#### 4,340,277 LIQUID CRYSTAL DISPLAY AND METHOD OF MAKING

Meinolph Kaufmann, Fislisbach, Switzerland, and Allan R. Kmetz, Chatham, N.J., assignors to BBC Brown, Boveri, & Company, Limited, Baden, Switzerland

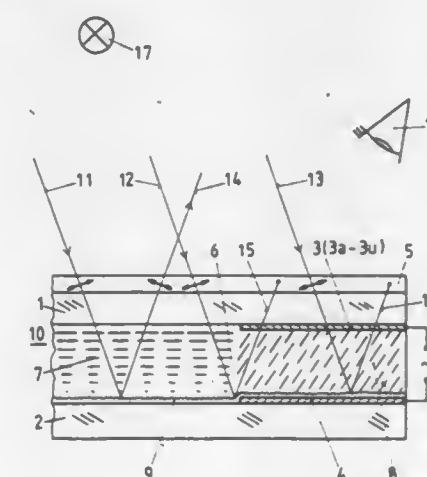
Filed Sep. 6, 1979, Ser. No. 72,997

Claims priority, application Switzerland, Dec. 12, 1978, 12626/78

U.S. Cl. 350—347 E

Int. Cl.<sup>3</sup> G02F 1/133

2 Claims



1. A method of operating a liquid crystal display including: providing a cell formed by front and rear plane parallel plates having electrode films formed on the inner surfaces thereof, at least the front plate having a transparent and segmented electrode film, wherein a polarizer is provided at the front plate but not at the rear plate, the cell having a reflector at the rear plate, wherein a liquid crystal of positive dielectric anisotropy is disposed within the cell between the plates, the liquid crystal molecules exhibiting preferred directions at the inner surfaces of the front and rear plates, with the preferred directions rotated by about 90° to one another, the reflector being formed on the inner side surface of the rear cell plate between the front and rear cell plates and exhibiting a structure determining the preferred direction of the neighboring liquid crystals molecules, the front electrode segments being holohedral; and applying an operating voltage lying between 1.3 and 2.5 times the Fredericksz threshold voltage ( $V_{th}$ ) across the electrodes formed on the front and rear cell plates such that the liquid crystal between the electrodes having the operating voltage applied thereacross retains an ability to rotate the polarization plane of light traversing the liquid crystal in some directions and has substantially no influence on light traversing the liquid crystal in other directions.



4,340,278

## ELECTROCHROMIC DEVICE

Gerardo Beni, Westfield; Catherine E. Rice, Middletown, and Joseph L. Shay, Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed May 19, 1980, Ser. No. 151,443  
Int. Cl.<sup>3</sup> G02F 1/17

U.S. Cl. 350—357

10 Claims

1. An electrochromic device comprising an electrochromic iridium oxide electrode, a counterelectrode, an electrolyte in intimate contact with said electrochromic electrode and said counterelectrode and means for applying a voltage between said electrochromic electrode and said counterelectrode CHARACTERIZED IN THAT said electrolyte is a source of an anion of formula weight in the range 18 to 33 that is capable of being injected into and extracted from said electrochromic electrode under the influence of said applied voltage.

4,340,279

## REAR ATTACHMENT LENS

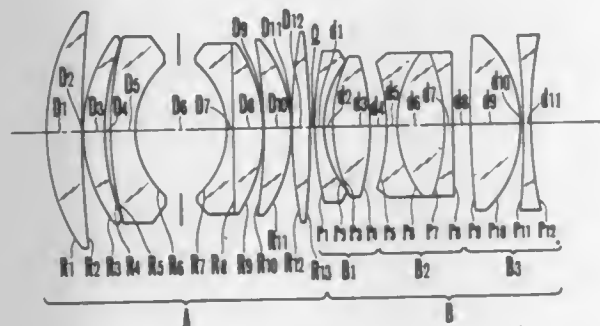
Keiji Ikemori, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan  
Filed Jan. 2, 1980, Ser. No. 109,172

Claims priority, application Japan, Jan. 11, 1979, 54-1920

Int. Cl.<sup>3</sup> G02B 9/60, 15/02

U.S. Cl. 350—422

8 Claims



1. An attachment lens for use at the rear of a master lens, comprising:

- a first lens group of positive power including a negative meniscus lens means and a positive lens means with a diverging air lens between said negative meniscus lens means and said positive lens means;
- a second lens group arranged rearwardly of said first lens group, having a negative power, and including two pairs of diverging cemented surfaces whose radii of curvature are of opposite sign to each other; and
- a third lens group arranged rearwardly of said second lens group, having a positive power and having a positive lens means and a negative lens means, the compound power of said first, said second, and said third lens groups being negative.

4,340,280

## DRIVE CONNECTION MECHANISM FOR ADJUSTABLE LENS SYSTEM

Takashi Isobe, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1980, Ser. No. 131,194

Claims priority, application Japan, Mar. 24, 1979, 54-38148[U]

Int. Cl.<sup>3</sup> G02B 7/04, 7/10

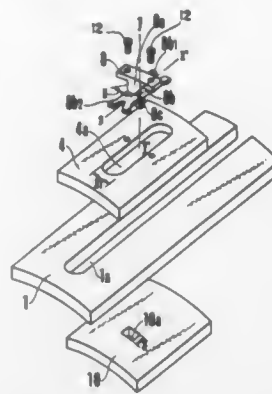
U.S. Cl. 350—429

5 Claims

1. A mounting assembly for a lens system comprising:
- a lens mounting member having a hole therein;
  - a stationary lens barrel having a guide slot therein;
  - an actuating member for actuating said lens mounting member;
  - an intermediate member having a slot formed therein and being arranged between said stationary lens barrel and said actuating member, said intermediate member being

movable together with said actuating member in a direction along the optical axis of said lens system; and

a plurality of connecting members for connecting said lens mounting member to said intermediate member, each of said connecting members comprising a penetration portion extending through said slot in said intermediate member in a direction toward said lens mounting member fixing said connecting member in said intermediate member.



ber, a slidable contact portion having an elastic member fitted into said guide slot of said stationary lens barrel and extending in a direction parallel to the optical axis of said lens system to exert an engaging portion engageable with said hole provided in said lens mounting member; each of said connecting members being made entirely of synthetic resin material and arranged equally spaced around the optical axis of said lens system to mount said lens mounting member in said stationary lens barrel.

4,340,281

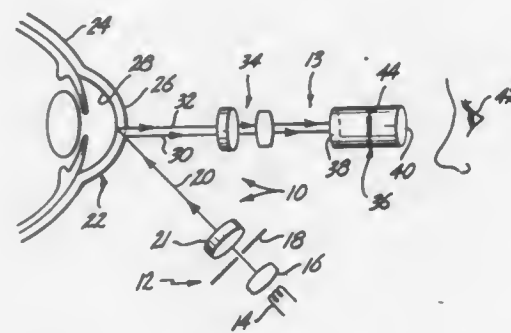
## METHOD AND APPARATUS FOR ESTIMATING THE ENDOTHELIAL CELL DENSITY

David J. McIntyre, 1920 116th Ave. NE., Bellevue, Wash. 98004  
Filed Apr. 8, 1980, Ser. No. 138,366

Int. Cl.<sup>3</sup> A61B 3/10

U.S. Cl. 351—6

11 Claims



1. A method for estimating the endothelial cell count comprising:
- positioning the specular image of the endothelium at a predetermined magnification adjacent the image of a set of grids having a plurality of apertures therein, each grid in said set having a plurality of closely spaced apertures of predetermined size corresponding to a predetermined cell density at said predetermined magnification, and
  - comparing the cell pattern of said image with each grid in said set to determine which grid most closely corresponds to the cell spacing in said cell pattern.

4,340,282

## LENS SECURING DEVICE

Mamoru Murakami, 8-40, Murakuni 2 chome, Takefu, Fukui, Japan

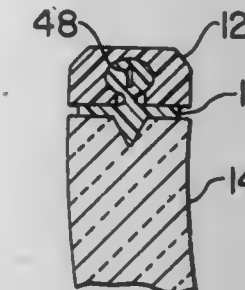
Continuation-in-part of Ser. No. 167,120, Jul. 9, 1980. This application Nov. 12, 1980, Ser. No. 205,892

Claims priority, application Japan, Oct. 13, 1979, 54-141963; United Kingdom, Oct. 2, 1980, 8031760

Int. Cl.<sup>3</sup> G02C 5/00, 1/00

U.S. Cl. 351—154

5 Claims



1. A spectacle or sunglass lens securing device for holding a lens in an opening of a frame, comprising:

- (a) a groove carvedly provided on the inner peripheral surface of the frame, said groove being substantially circular in cross-section;
- (b) a groove carvedly provided on the outer peripheral surface of the lens; and
- (c) a strip member interposed between the frame and the lens, said strip member comprising:
  - a first ridge to be inserted into said groove on the inner peripheral surface of the frame, said first ridge further being substantially circular in cross-section with an axial hole therethrough;
  - a second ridge to be inserted into said groove on the outer peripheral surface of the lens; and
  - a thin plate portion clamped between the inner peripheral surface of the frame and the outer peripheral surface of the lens;

whereby said thin plate portion performs the shock absorbing function to protect the lens and the frame from colliding with each other, and said first and second ridges prevent the lens from falling off.

4,340,283

## PHASE SHIFT MULTIFOCAL ZONE PLATE

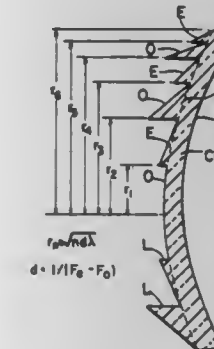
Allen L. Cohen, 10108 Windsong Ter., Richmond, Va. 23233  
Continuation-in-part of Ser. No. 970,751, Dec. 18, 1978, Pat. No. 4,210,391. This application Dec. 17, 1979, Ser. No. 98,771

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> G02B 3/08, 5/18; G02C 7/04

U.S. Cl. 351—161

9 Claims



1. A multiple focal power optical device comprising: body means having a plurality of alternating odd and even, annular, concentric zones, bounded on the outside by radii

$r_n$ , with  $n=1,3,5,\dots$ , for the odd zones and  $n=2,4,6,\dots$ , for the even zones;

first focal power means within at least some of the odd zones for directing incident parallel light to a first focal point;

second focal power means within at least some of the even zones for directing incident parallel light to a second focal point different from said first focal point;

wherein the radii  $r_n$  of said odd and even zones are substantially proportional to the square root of  $n$ ;

and wherein the absolute value of  $r_1$  is set equal to  $\sqrt{\lambda d}$ , with  $\lambda$  equal to the wavelength under consideration, and  $d$  is substantially equal to the reciprocal of the absolute value of the difference between the first and second focal powers.

4,340,284

## TEMPERATURE-COMPENSATED SIGNAL TRANSMITTING DEVICE

Yoshiaki Ohtsubo, Kawasaki, and Sakuji Watanabe, Warabi, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 138,980, Apr. 10, 1980, abandoned.

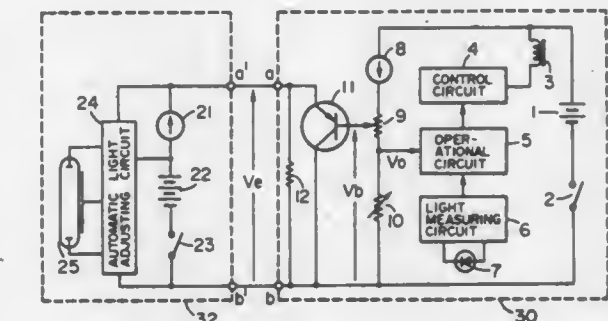
This application May 29, 1981, Ser. No. 268,561

Claims priority, application Japan, May 1, 1979, 54/52473

Int. Cl.<sup>3</sup> G03B 7/083, 15/03

U.S. Cl. 354—50

9 Claims



1. A camera having means for arbitrarily selecting the exposure condition of a film thereby to generate a signal based on said selection, said signal representing exposure information and having a temperature coefficient, and exposure time determining means for determining the opening time of the shutter of the camera on the basis of said signal, said exposure information being produced for a speed light during photography using said speed light, the improvement comprising:
- signal transmitting means for receiving the signal of said exposure information as input and transmitting said exposure information to said speed light, said signal transmitting means having a transfer function including a temperature coefficient opposite in polarity to said temperature coefficient of said signal representing exposure information.

4,340,285

## RECEPTACLE ATTACHMENT FOR CAMERAS

George A. Clarke, 4413 Valerie, Houston, Tex. 77401

Filed Jul. 17, 1980, Ser. No. 169,872

Int. Cl.<sup>3</sup> G03B 3/00, 17/52

U.S. Cl. 354—75

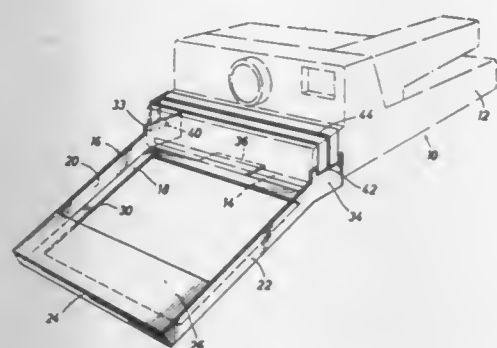
7 Claims

1. A photograph receiving receptacle attachment for releasable assembly with conventional motorized cameras that transport individual self-developing photographic film units to a presented position subsequent to exposure, said photograph receiving receptacle comprising:

a generally rectangular framework defining a photograph receptacle of sufficient dimension to receive a plurality of self-developing photograph units in stacked manner therein, said framework defining an inlet opening adapted to be positioned in registry with the outlet opening of a camera;

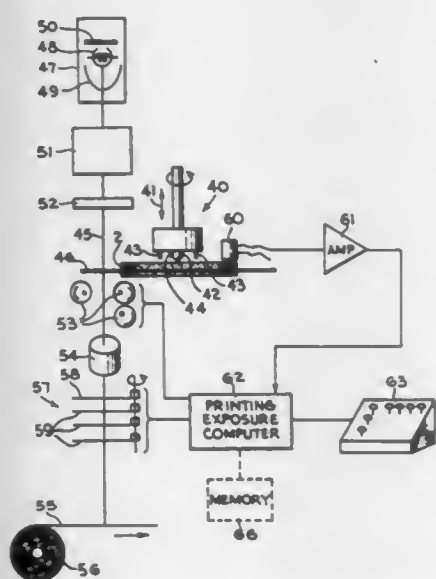


a pair of spaced positioning plate elements being provided on opposed sides of said framework and adapted to receive one end portion of said camera therebetween, a transverse positioning tab extending in angular relation from said framework and adapted to establish surface to surface engagement with a bottom surface portion of said camera, said spaced positioning elements and said transverse positioning element cooperating to stabilize and



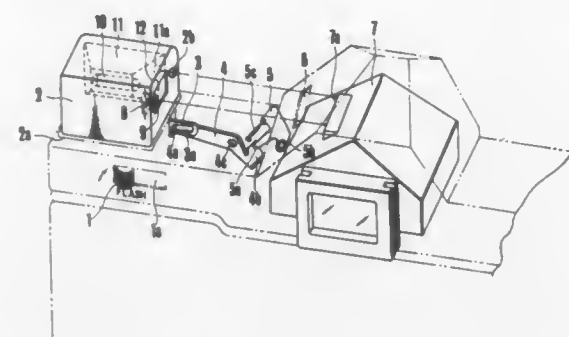
orient said rectangular framework in outwardly and downwardly inclined relation with respect to said camera so that said film units will descend by gravity into said receptacle; and  
an elastic retainer band being interconnected with said framework and adapted to extend about a portion of said camera and establish retaining engagement with said camera and releasably secure said framework in assembly with said camera.

**4,340,286**  
**PHOTOGRAPHIC FILM UNIT**  
David L. Carr, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
Continuation of Ser. No. 931,060, Aug. 4, 1978, abandoned. This application Feb. 23, 1981, Ser. No. 237,172  
Int. Cl.<sup>3</sup> G03B 21/50  
U.S. Cl. 354—105 7 Claims



1. A photographic film unit adapted for use in photographic apparatus, comprising:  
a planar photosensitive film disk having an unexposed area for receiving images;  
a molded hub attached to said film disk for rigidly supporting and rotatably positioning said film disk in photographic apparatus; and  
magnetic means uniformly dispersed within said molded hub for magnetically recording information on said hub relating to the images.

**4,340,287**  
**CAMERA SYSTEM USING STROBOSCOPE**  
Hiroshi Yamamoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan  
Filed Sep. 16, 1980, Ser. No. 187,741  
Claims priority, application Japan, Sep. 18, 1979, 54-119636  
Int. Cl.<sup>3</sup> G03B 15/05  
U.S. Cl. 354—128 8 Claims

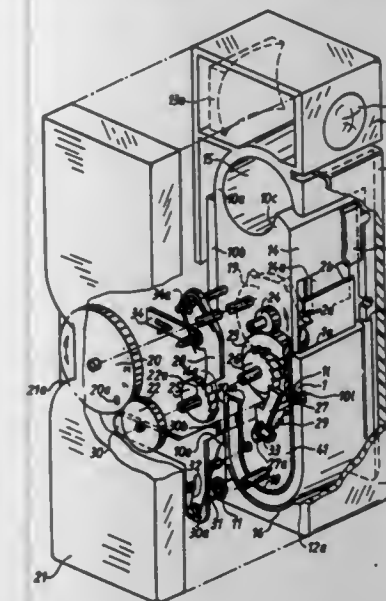


1. A single lens reflex camera including:  
(a) a strobo unit, said unit when not in use assuming a first position relative to a camera body, and when in use assuming a second position, said unit including a discharge tube in a casing and being provided with a window formed in a portion of that of the side panels of said casing which faces a pentaprism housing of said camera through which window said strobo unit projects strobo information bearing light;  
(b) a pentaprism provided with a strobo information entrance opening in the opposite side surface to said strobo unit, said entrance opening being located in alignment to said window so that the strobo information bearing light from said window is directed through said entrance opening to the interior of said pentaprism; and  
(c) blind means cooperating with said strobo unit, said means light-shielding said entrance opening when said strobo unit lies in the first position, and releasing the light shield when in the second position.

**4,340,288**  
**FILM CASSETTE AND METHOD OF MAKING THE SAME**  
Otto Stemme, Munich; Frank Staudacher, Haan; Peter Lermann, Naring; Justus Danhäuser, Leverkusen; Dieter Engelsmann, Unterhaching, and Karl Wagner, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Filed Jan. 10, 1980, Ser. No. 110,856  
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1979, 2901104; Mar. 7, 1979, 2908814; Mar. 7, 1979, 2908815; Mar. 7, 1979, 2908816; May 25, 1979, 2921348  
Int. Cl.<sup>3</sup> G03B 1/12, 1/00, 17/26  
U.S. Cl. 354—171 114 Claims

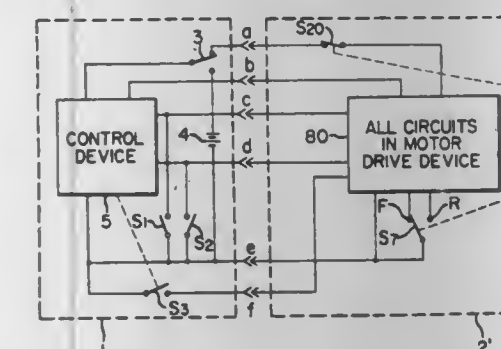
1. A film cassette for a multi-exposure film strip, comprising a light-impermeable elongated flat pocket having a length corresponding at least to the length of a film strip to be accommodated therewithin and being provided with at least one opening extending transverse to the elongation of the pocket for passage of the film strip therethrough; means for sealing the opening against the entry of light into the pocket; said pocket having two major walls in part bounding said compartment; spacing means in said compartment for preventing said major walls from moving into contact with one another and thus blocking said compartment; said spacing means comprising

spacing elements located in said compartment laterally of the path of film strip movement therethrough; and wherein said



spacing elements are lateral guides for longitudinally extending edge portions of the film strip.

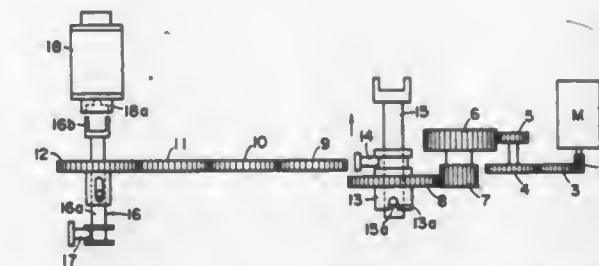
**4,340,289**  
**ERRONEOUS EXPOSURE PREVENTING DEVICE**  
Osamu Maeda, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan  
Filed Mar. 3, 1980, Ser. No. 126,351  
Claims priority, application Japan, Mar. 8, 1979, 54-26096  
Int. Cl.<sup>3</sup> G03B 1/00, 17/38  
U.S. Cl. 354—173 4 Claims



1. In a camera including a shutter curtain which is capable of opening an aperture for exposure during the movement from a shutter charged position to a shutter released position, a shutter starting device for displacing the shutter curtain from the shutter charged position to the shutter released position by a shutter release operation, and a film transport mechanism for alternatively effecting film wind-up and film rewind operations, the wind-up operation including the feeding of unexposed film in a film supply chamber to a film receiving chamber after an exposure operation and the rewind operation including the transport of the exposed film in the film receiving chamber to the film supply chamber, and having a change-over device for the selection operation, the improvement comprising:

means for preventing the operation of said shutter starting device in response to the operation of said change-over device for selecting the operation of said film transport mechanism in film rewind condition, and  
a power supply circuit for said shutter starting device and wherein said preventing means includes a switch which is capable of preventing the supply of energy from said power supply circuit.

**4,340,290**  
**ELECTRIC REWIND DEVICE FOR A CAMERA**  
Nobuo Matsukawa, and Kenji Sekine, both of Kawasaki, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan  
Filed Jan. 30, 1981, Ser. No. 229,936  
Claims priority, application Japan, Feb. 5, 1980, 55-12444[U]  
Int. Cl.<sup>3</sup> G03B 1/18  
U.S. Cl. 354—173 5 Claims



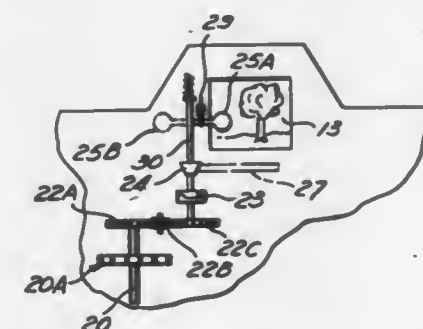
1. An electric rewind device for a camera having a clutch device for causing a sprocket operatively associated with a wind-up mechanism for feeding a roll film wound on a spool in a film magazine to be disconnected from said wind-up mechanism and in which a rewind coupling capable of being coupled to said spool is driven by a motor to effect film rewind operation, said electric rewind device comprising:

a first operating member engageable with said clutch device and movable between a first position for connecting said wind-up mechanism and said sprocket and a second position for breaking the connection;

a second operating member operatively associated with said rewind coupling and movable between a third position for disengaging said rewind coupling from said spool and a fourth position for engaging said rewind coupling to said spool; and

means for blocking the movement of said second operating member to said fourth position in response to the movement of said first operating member to said first position and for releasing said blocking in response to the movement of said first operating member to said second position.

**4,340,291**  
**WARNING INDICATOR FOR A CAMERA**  
Floyd L. Berg, 24391 Wagon Wheel Ln., Lake Elsinore, Calif. 92530  
Filed Nov. 13, 1979, Ser. No. 93,307  
Int. Cl.<sup>3</sup> G03B 1/00, 17/20  
U.S. Cl. 354—215 8 Claims



7. In a camera having a body with a viewfinder, means for temporarily receiving a roll of film and means for advancing the film from said roll, the improvement comprising: an assembly provided independently of the film advancing means and operatively in contact with the film for movement in response to advancement of the film and for non-movement in response to non-advancement of the film; a flag moveably disposed in a given position within the field of view of said viewfinder; and means for moving said flag out of same given position in response to the movement of said assembly.



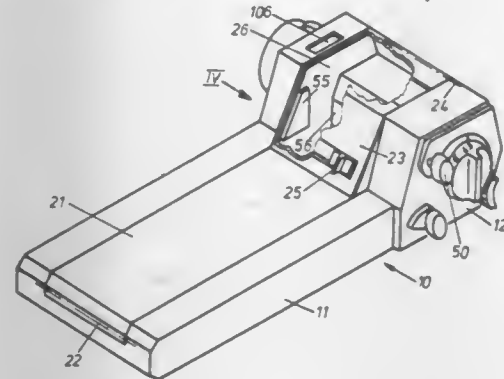
# 4,340,292 PHOTOGRAPHIC APPARATUS FOR USING ROLL FILMS

Carl Koch, Im Santenbühl, Stetten; Rolf Meyer, Schaffhausen, and Richard Zehnder, Eschenz, all of Switzerland, assignors to Carl Koch, Stetten, Switzerland

Filed May 20, 1981, Ser. No. 265,612

Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019563

Int. Cl.<sup>3</sup> G03B 17/26, 1/04  
U.S. Cl. 354—275



10. A roll film unit for use in a photographic apparatus, comprising a rotatable supply spool with unexposed roll film stock, and a rotatable take-up spool for taking up the roll film stock after exposure, light-tight sleeve means for rotatably mounting said supply spool, an opening defined in said sleeve means for the axial insertion and withdrawal of said supply spool, a lid for closing said opening and being mounted on the sleeve means for pivotal movement about a hinge spindle, said sleeve means having a circumferential wall including a slot for the passage of the film, the spindle being arranged at a side of the sleeve means generally diametrically opposite the slot, said slot having an open end adjoining the opening of the sleeve means, and spring means secured to the sleeve means for resiliently biasing the lid to its position closing the opening of the sleeve means.

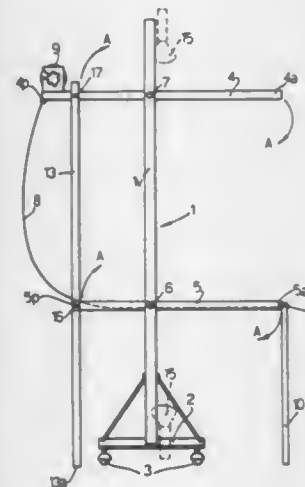
# 4,340,293 FOLDABLE SUPPORT FOR CONTINUOUS BACKGROUND FOR USE IN PHOTOGRAPHING OBJECTS

Enzo Russotti, Via Giovanni Cantoni, 6, 20100 Milano, Italy

Filed Apr. 16, 1981, Ser. No. 275,011

Claims priority, application Italy, May 8, 1980, 21894 A/80

Int. Cl.<sup>3</sup> G03B 15/00  
U.S. Cl. 354—291



1. A foldable support for a continuous background for use in photographing objects, characterized by comprising a main substantially vertical rigid frame mounted on a base; two superimposed movable frames, both rotating about parallel horizontal axes formed of pairs of hinges provided on the vertical sides of said rigid frame, so as to make up two articulated parallelograms, a continuous sheet being secured between the front edge of the lower movable frame and the rear edge of the upper movable frame.

zontal axes formed of pairs of hinges provided on the vertical sides of said rigid frame, so as to make up two articulated parallelograms, a continuous sheet being secured between the front edge of the lower movable frame and the rear edge of the upper movable frame.

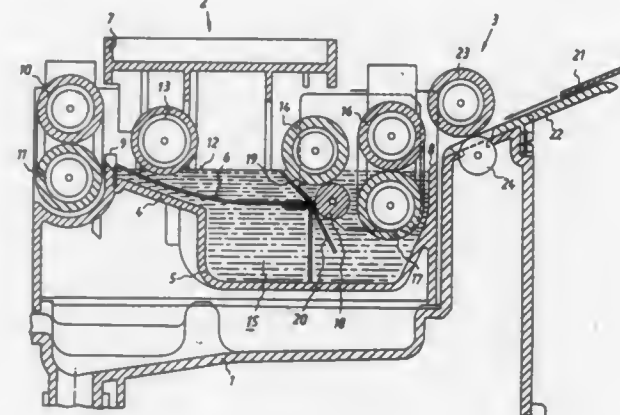
# 4,340,294 DEVELOPING APPARATUS

Avelino Fernandez, Gauting; Josef Glass, Ottobrunn, and Viktor Osegowitsch, Taufkirchen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 804,848, Jun. 8, 1977, Pat. No. 4,248,515. This application Aug. 11, 1980, Ser. No. 177,464

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 2626447

Int. Cl.<sup>3</sup> G03D 3/13  
U.S. Cl. 354—321



1. An improvement to a developing machine for developing color paper susceptible to pressure sensitization while being processed, which has a series of fluid-containing chambers through which the color paper passes along a generally horizontal path, the improvement comprising: a rotatable submerging roller guiding the color paper beneath an upper surface of fluid in a chamber; and a rotatable counterpressure roller located beneath the submerging roller and pressing the color paper uniformly against the submerging roller while the color paper passes along said path, so that the sensitization of the color paper is minimized not by decrease of pressure, but instead by placing the color paper under the uniform pressure.

# 4,340,295 COMPOSITE INFORMATION RECORDING DEVICE

Hiroya Nakamura, Kunitachi, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

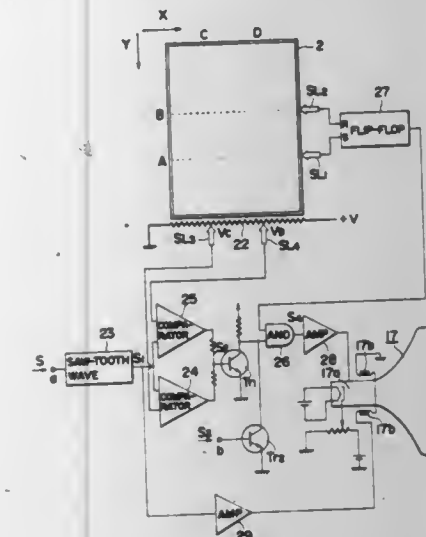
Filed Jan. 5, 1981, Ser. No. 222,303

Claims priority, application Japan, Jan. 14, 1980, 55/2119

Int. Cl.<sup>3</sup> G03G 15/00  
U.S. Cl. 355—14 R

1. A composite information recording device comprising: a first electrostatic image forming means adapted to scan the image of an original on a copy board and to form the original image as a latent image on an image forming member; a second electrostatic image forming means adapted to form the image of an information supplied externally in the form of an electric signal as a latent image on the image forming member; original position appointing means movable along the side edge of the copy board in the image scanning direction; means for switching the recording mode from one mode in which the latent image is formed by one of the latent image forming means to another mode in which the latent image is formed by the other latent image forming means when the original position appointing means provides its output; masking position appointing means movable along the side edge of the copy board perpendicular to the direction of scanning of the image; and

controlling means adapted to control the second electrostatic latent image forming means in accordance with the masking



signals delivered by the masking position appointing means during the formation of the electrostatic latent image by the first electrostatic latent image forming means.

# 4,340,296 ELECTROPHOTOGRAPHIC APPARATUS

Katsunobu Ohara; Keiji Tanaka, both of Kawasaki; Yujiro Ando, Yokohama, and Inao Moriyama, Ebina, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 771,309, Feb. 23, 1977, which is a continuation of Ser. No. 480,280, Jun. 17, 1974, abandoned. This application Jun. 24, 1980, Ser. No. 162,532

Claims priority, application Japan, Jun. 19, 1973, 48-69343; Aug. 1, 1973, 48-87068; Aug. 1, 1973, 48-87069; Aug. 1, 1973, 48-87070; Nov. 2, 1973, 48-123670; Jan. 29, 1974, 49-12412

Int. Cl.<sup>3</sup> G03G 15/22  
U.S. Cl. 355—35 C

1. An electrophotographic image reproduction apparatus comprising:

a photosensitive perforate screen including an electrically conductive base having a plurality of fine openings, a photoconductive layer formed on said base, and an insulating layer, capable of supporting an electric charge, formed on said photoconductive layer, wherein one side of said screen includes a conductive outer surface while said insulating layer defines the outer surface at least on the opposite side of said screen and extends continuously therefrom to the inside peripheries of the screen openings, and wherein said insulating layer is capable of retaining electric charges of opposite polarities on the opposite sides thereof, even when exposed to light;

primary electrostatic latent image forming means including electric charging means for providing a uniform charge on said screen and an image irradiation means for illuminating an original image to be reproduced on said screen; secondary electrostatic latent image forming means including another electric charging means disposed at said one side of said photosensitive screen for projecting corona ions; and

means for applying an electric field between said screen and a recording material capable of sustaining the electric charge applied thereto and which is disposed at said opposite side of said screen.

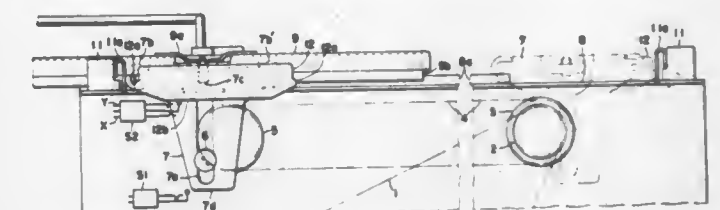
# 4,340,297 DEVICE FOR DRIVING COPY BOARD OF A COPYING MACHINE

Takashi Tamura, Higashimine, and Yasuyuki Iwai, Hachioji, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1980, Ser. No. 123,372

Claims priority, application Japan, Feb. 21, 1979, 54/18424

Int. Cl.<sup>3</sup> G03B 27/48  
U.S. Cl. 355—50



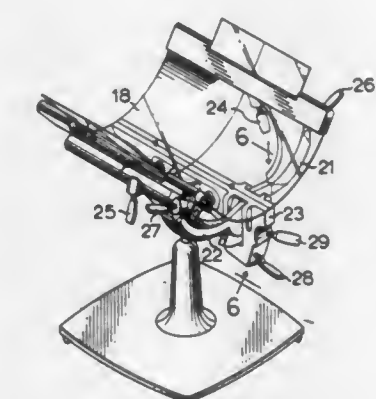
1. A device for driving a copy board of a copying machine comprising: a driving member adapted to perform a reciprocating movement during the copying operation; a copy board; releasable engagement means whereby said copy board is releasably engaged with said driving member so as to be reciprocally moved along a path of travel by said driving member; said releasable engagement means being responsive to a force greater than a predetermined level of force applied to said copy board in the direction of reciprocation to effect disengagement of said copy board and said driving member; stopper means adapted to contact and stop the motion of said copy board when the latter has been moved to the limits of its path of travel by said driving member; said releasable engagement means being further operable to effect reengagement of said copy board and said driving member when said copy board is at a limit of its path of travel and said driving member arrives at such position and control means including switch means to detect whether or not the copy board has been disengaged from the driving member when the copy board and driving member are in the vicinity of their starting position for reciprocating movement.

# 4,340,298 COPYHOLDER

John J. Toby, 6810 W. Fitzwater Dr., Brecksville, Ohio 44141

Filed Sep. 15, 1980, Ser. No. 187,593

Int. Cl.<sup>3</sup> G03B 27/62, 27/68  
U.S. Cl. 355—75



1. A copyholder for Photostat reproduction camera work comprising a top surface sheet of generally square shape and attached to a center arm unit, a flexible plastic top surface sheet provides a carrier base for opaque copy material, said material being adhered to a paper contour size duplicate of the plastic top surface sheet of slight undersize for ease of movement and having two imprinted cross-lines on its surface with two end extensions functioning in end slotted-center bars for free movement of the plastic top surface sheet, the two slotted-center bars are enjoined by an axle rod to two swivel arms that tra-



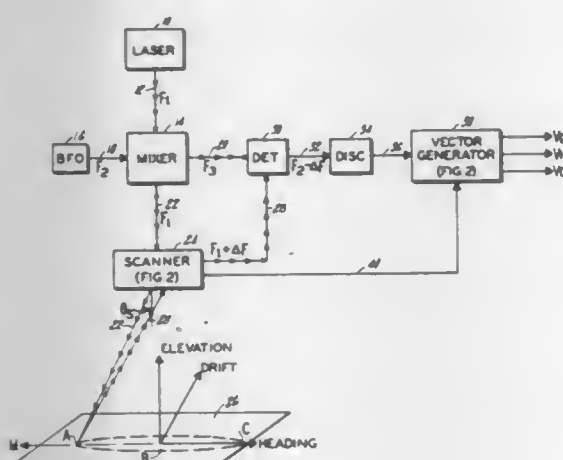
verse side by side, independently of each other, in a forward channel housing of the center arm unit pivoting at the top by means of an axle pin insert, a concave surface curvature is manually formed by elevating the right and the left swivel arms which function independently of each other above the horizontal plane with 0- to 30-degrees of adjustment, said swivel arms are locked into position by two frontal-lock screws and by two forward-angled, side lock screws, a top surface sheet is attached on the center by two flat-head screws to the center arm unit for additional pivotal manual adjustments of the top surface sheet on a horizontal 360-degree turning, last said mentioned means are attached to the standards being the rod and the base of the invention.

4,340,299  
OPTICAL DOPPLER RADAR SYSTEM USING A  
CONICALLY SCANNED LASER BEAM

Robert J. Mongeon, Longmeadow, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 13, 1980, Ser. No. 129,947

U.S. Cl. 356—28.5 3 Claims



1. A method for generating indicia of movement relative to a surface at a position above the surface comprising the steps:  
scanning a first laser beam and synchronously receiving, during the scan, the first laser beam scattered from the surface to produce a return laser beam,  
generating a frequency difference electrical signal from the frequency difference between the return laser beam and the first laser beam after mixing it with a reference frequency,  
generating movement signals that indicate electrical movement and horizontal movement in selected horizontal directions by splitting said frequency difference signal into its components that vary in proportion to movement in selected directions and that component which varies independently of the position of the scan, characterized by:  
generating a scan position signal indicative of the position of the scan from a reference position,  
comparing the phase of said scan position signal with the phases of said frequency difference signals at quadrature phase angles the correspond to the quadrature angular positions of the scan to produce indicia of horizontal movements in selected directions resulting in signals proportional to the phase differences,  
producing an indicia of elevational movement comprising a signal whose magnitude is proportional to the average level of the frequency difference signal.

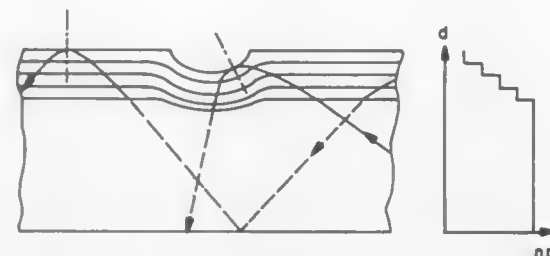
4,340,300  
INPUT SENSOR UNIT FOR A FINGERPRINT  
IDENTIFICATION SYSTEM

Hartwig Ruell, Mount Laurel, N.J., assignor to Siemens Corporation, Iselin, N.J.

Filed Aug. 11, 1980. Ser. No. 176,696

Int. Cl.<sup>3</sup> G06K 9/00, 9/20

U.S. Cl. 356—71 3 Claims



1. An input sensor unit for a fingerprint verification system, comprising  
 a sensor plate of transparent pressure-sensitive material having first and second parallel planar surfaces and edge surfaces, the plate deforming when a finger is pressed onto the first surface in such a manner that the parallelism between the first and second surfaces is disturbed in accordance with the contour of the topographic relief of the finger, the sensor plate being composed of a material having an index of refraction which varies in a direction perpendicular to the first and second surfaces in dependence upon the depth of penetration of light; and  
 illuminating means for directing light into the plate through an edge surface, so that the light strikes the undisturbed regions of the first and second surfaces at angles which cause total internal reflection and strikes the disturbed regions of the first and second surfaces at angles which cause light to be transmitted out of the plate through the second surface, whereby the light transmitted through the second surface takes the form of a light beam modulated by the topographic relief of the finger.

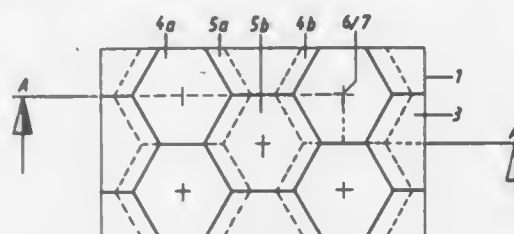
4,340,301  
RETROREFLECTOR PLATE AND A METHOD FOR ITS  
MANUFACTURE

**Kurt Schwab, Mils, Austria, assignor to D. Swarovski & Co.,  
Wattens, Austria**

**Filed Nov. 25, 1980, Ser. No. 210,231**

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1979, 2947719; Mar. 27, 1980, 3011955

U.S. Cl. 350—106      Int. Cl.<sup>3</sup> G02B 5/13      16 Claims



1. A retroreflector plate, comprising a transparent plate with a reflective rear side, the front side of which comprises adjacently disposed, curved light incidence surfaces, and the rear side of which comprises adjacently disposed, curved reflection surfaces, in which case the optical axis of each individual light incidence surface coincides with the optical axis of a respective reflection surface, wherein the outlines of said reflection surfaces and their respective light incidence surfaces in each case substantially comprise the same surface content, while having

4,340,303  
ARRANGEMENT FOR THE SPECTRAL ANALYSIS OF  
SUBSTANCES

**Ulrich Grisar, and Wilhelm Berstermann, both of Georgsmarienhütte, Fed. Rep. of Germany, assignors to Kloeckner-Werke AG, Duisburg, Fed. Rep. of Germany**

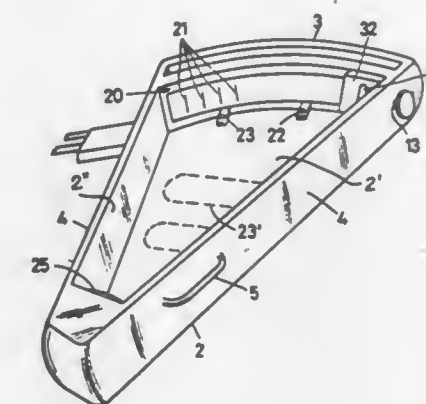
Continuation of Ser. No. 879,869, Feb. 21, 1978, abandoned,  
which is a continuation of Ser. No. 665,770, Mar. 10, 1976, Pat.  
No. 4,099,873. This application May 25, 1979, Ser. No. 42,713

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1975, 2513358

The portion of the term of this patent subsequent to Jul. 11, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> G01J 3/04, 3/38; G01N 21/67

U.S. Cl. 356—313 7 Claims



4,340,302  
ENDOSCOPE WITH SENSOR

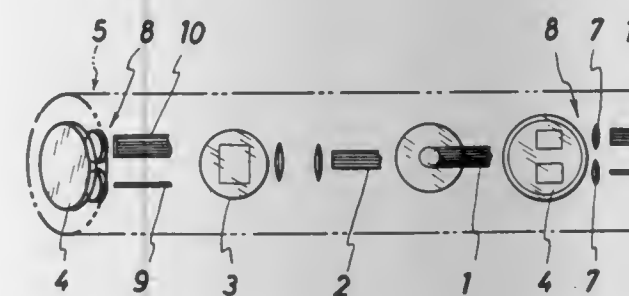
**Toshio Oku, Tokyo, Japan, assignor to Machida Endoscope Co., Ltd., Tokyo, Japan**

Filed Feb. 16, 1979, Ser. No. 12,612

Claims priority, application Japan, Feb. 28, 1978, 53-21649

Int. Cl.<sup>3</sup> G01M 21/00

U.S. Cl. 356-241 2 Claims



1. An endoscope for inspecting a wall surface of an industrial apparatus, said endoscope comprising  
a distal forward end adapted to inspect said wall surface,  
a rear end,  
a fiber optic bundle located in said endoscope between said distal forward end and said rear end,  
said fiber optic bundle comprising a light-transmitting optic bundle and a light-receiving optic bundle, said endoscope further comprising a light source for supplying light to said light transmitting optical bundle toward said wall surface, said light-receiving optical bundle optically coupled to carry light reflected from said wall surface to said rear end of said endoscope,  
optical measurement means located at said distal end being optically coupled to said transmitting and light-receiving optical bundles to sense the distance between said optical means and said wall surface,  
said optical measurement means comprising a common optical lens and at least one transmitting optical lens optically located between said common optical lens and said light transmitting optic bundle and at least one receiving optical lens optically located between common optical lens and said light-receiving optic bundle, said common lens and said transmitting and receiving optical lenses optically coupled to said fiber optic bundle for receiving reflected light from said wall surface at varying positions on the common lens responsive to the distance of said optical means from said wall surface for thereby varying the refraction angle of said transmitted light,  
means for sensing the refracted light and providing a display as a function of the angle of refraction to thereby indicate said distance.

4,340,304  
INTERFEROMETRIC METHOD AND SYSTEM

**INTERFEROMETRIC METHOD AND SYSTEM**  
Norbert A. Massie, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 11, 1978, Ser. No. 933,011

Int. Cl.<sup>3</sup> G01B 9/02

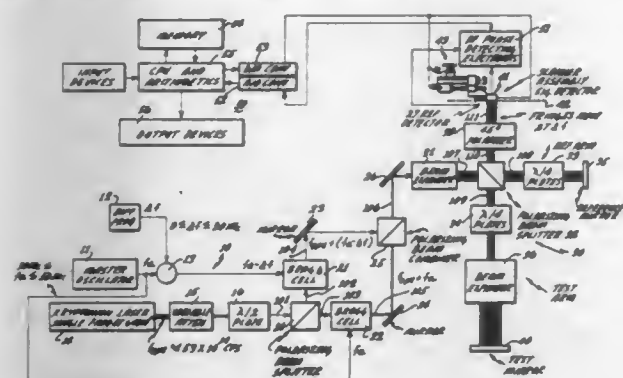
U.S. Cl. 356-351 4 Claims

1. Interferometer for measuring optical properties of a test object definable as local optical path length differences, such as the surface contour of a test mirror or the homogeneities of medium, comprising:

means for producing a beam of monochromatic radiation



having two components, having perpendicular polarizations; means disposed for receiving the beam and separating the two components or portions thereof, and having an orientation to direct one of the separated components into a test branch which includes the test object, the other one to a reference mirror, the test branch and the reference mirror reflecting the respective components, the means for receiving also recombining the reflected components into a composite beam; means disposed in a path of the composite beam for extracting from each component thereof a portion of similar



polarization so that these portions, as leaving the means for extracting, are permitted to, and do, interfere; first detection means disposed for intercepting the interfering beam portions for photoelectrically detecting a distribution of radiation intensities of the two interfering beam portions, separately at different points in a plane; second detection means disposed for bypassing the means for extracting, for detecting the intensity of each component of said composite beam and as it would be effective in each of said points but for the interference; and means connected to the first and second detection means, for deriving therefrom a distribution of optical path length differences of the two interfering beams.

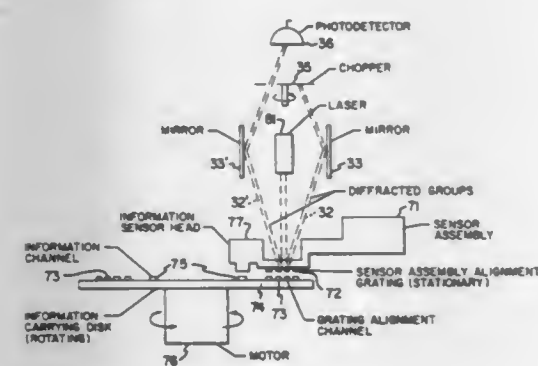
#### 4,340,305 PLATE ALIGNING

Henry I. Smith, Sudbury, Mass.; Stewart S. Austin, Marlboro, N.J., and Dale C. Flanders, Lexington, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass. Continuation-in-part of Ser. No. 793,259, May 3, 1977, Pat. No. 4,200,395. This application Dec. 26, 1979, Ser. No. 106,842. The portion of the term of this patent subsequent to Apr. 29, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> G01B 11/26

U.S. Cl. 356—356

3 Claims



1. Alignment apparatus comprising: first and second relatively movable plates each having diffraction grating means of the same period for diffracting incident wave energy; a source of substantially monochromatic wave energy; means for illuminating with said wave energy the diffraction grating means on said second plate through the diffraction

grating means on said first plate to produce at least one pair of diffracted beams of wave energy; detecting means for detecting the relative intensities of said at least one pair of diffracted beams; means for carrying an information channel; means for scanning said information channel; one of said diffraction grating means being supported in fixed relationship to said means for scanning said information channel; the other of said diffraction grating means being maintained in fixed relationship with said means for carrying said information channel that is movable relative to said scanning means in a first scanning direction and in a second direction, orthogonal to said first direction; whereby said one and said other diffraction grating means may be brought into a predetermined relative position representative of said first and second plates being in predetermined alignment.

#### 4,340,306 OPTICAL SYSTEM FOR SURFACE TOPOGRAPHY MEASUREMENT

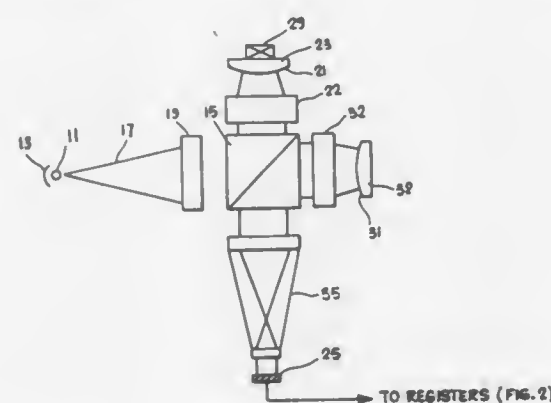
N. Balasubramanian, 20361 Chalet La., Saratoga, Calif. 95070

Filed Feb. 4, 1980, Ser. No. 117,855

Int. Cl.<sup>3</sup> G01B 11/24

U.S. Cl. 356—360

15 Claims



1. A non-contacting method for measuring deviations between a reference wavefront representing a reference surface and a test wavefront representing a test surface comprising, establishing a white light interference pattern on a detector between two wavefronts, one wavefront from at least one point on a reference surface of known topography and another wavefront from a corresponding point on a test surface of unknown topography, determining positions of maximum fringe contrast of the white light interference pattern thereby establishing zero optical path differences between said wavefronts, repeatedly translating one of the wavefronts from said surfaces by known incremental distances relative to the detector and establishing other white light interference patterns while establishing zero optical path differences between wavefronts from points on the reference surface and corresponding points on the test surface of unknown topography, recording the positions in each interference pattern of maximum fringe contrast and the corresponding step of incremental distance of surface translation relative to the starting point for each interference pattern, whereby the points of maximum fringe contrast at a given step represent points, the locus of which defines contours for which there is zero optical path difference between the test surface and the reference surface.

#### 4,340,307 BICHROMATIC SPECTROPHOTOMETER WITH WAVELENGTH REVERSAL

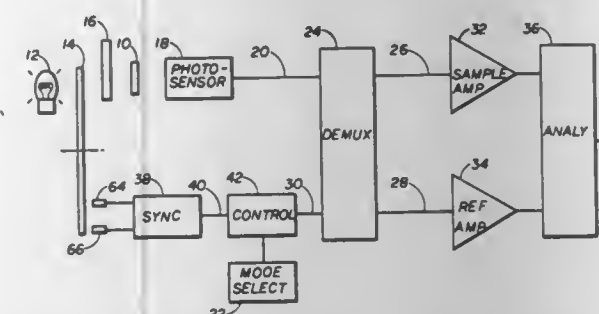
Allen M. Diamond, Huntington Beach, and Richard D. Ratz, Irvine, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 7, 1980, Ser. No. 166,654

Int. Cl.<sup>3</sup> G01J 3/50; G01N 21/31

U.S. Cl. 356—418

8 Claims



1. A spectrophotometer which analyzes a sample by measuring the relative extents to which light at first and second wavelengths is transmitted through, or absorbed by, the sample comprising:

means for producing a multiplexed electrical signal having a value which alternately represents the relative extents to which light at the first and second wavelengths is transmitted through, or absorbed by, the sample;

control means for producing a control signal having first and second values, the control means having normal and reverse modes of operation such that in the normal mode the control signal has its first and second values when the multiplexed signal represents transmission or absorption at the first and second wavelengths, respectively, and in the reverse mode the control signal has its first and second values when the multiplexed signal represents transmission or absorption at the second and first wavelengths, respectively; and

a demultiplexer circuit for producing a first output signal proportional to the multiplexed electrical signal during time periods when the control signal has its first value and a second output signal proportional to the multiplexed electrical signal during time periods when the control signal has its second value.

#### 4,340,308 METHOD AND APPARATUS FOR PRODUCING FLUIDIZED LIME

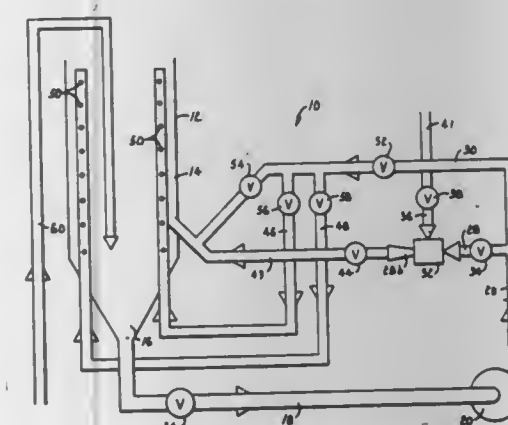
Billy J. Tharp, 514 E. 8th St., Trenton, Mo. 64683

Filed Aug. 1, 1980, Ser. No. 174,351

Int. Cl.<sup>3</sup> B01F 5/10

U.S. Cl. 366—2

6 Claims



1. A method of producing fluidized lime comprising the steps of providing a tank and first and second closed fluid paths each

leading from one portion of the tank to another portion thereof; inserting a fluid medium into the tank; opening said first path and closing said second path; pumping the fluid medium through said first path in a manner to effect thorough mixing thereof; closing said first path and opening said second path; connecting a lime delivery line with a source of powdered lime and with said second path at a preselected location thereon; thereafter pumping the fluid medium through said second path in a manner to induce flow of powdered lime through said delivery line to said second path, thereby mixing the powdered lime with the fluid medium to produce fluidized lime which is discharged from said second path into the tank; opening said first path and closing said second path; thereafter pumping the fluidized lime through said first path to effect thorough mixing thereof; closing said first path; closing said second path downstream from said preselected location and opening said second path upstream of said preselected location; disconnecting said lime delivery line from said second path; connecting a fluid line with a delivery vehicle and with said second path at said preselected location; and thereafter pumping the fluidized lime through said second path to said preselected location and from said preselected location through the fluid line to the delivery vehicle.

#### 4,340,309 TRAILER TRANSIT MIXER

Evan S. Prichard, Newport Beach, Calif., assignor to Challenge-Cook Bros., Incorporated, Industry, Calif.

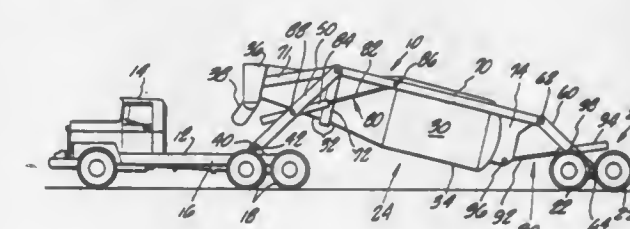
Continuation-in-part of Ser. No. 57,650, Jul. 16, 1979, Pat. No. 4,243,328. This application Jun. 25, 1980, Ser. No. 162,918

The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> B28C 5/20, 5/42

U.S. Cl. 366—62

12 Claims



1. In a trailer transit mixer for use with a truck having a fifth wheel assembly, the improvement comprising, a mixer drum assembly including a rotatable mixer drum with an open end, a trailer wheel assembly having means supporting one end of said mixer drum assembly, means supporting the other end of said mixer drum assembly on the truck fifth wheel assembly, at least one of said supporting means selectively operable to shift the longitudinal position of said drum forward and rearward relative to the truck, the selective operation of said supporting means to the forward position causing the said open end of said mixer drum to be elevated substantially for allowing discharge of the contents of said mixer drum while permitting forward, rearward and turning movement of the truck in all directions.

#### 4,340,310 CONTROL MECHANISM FOR A GRAIN BIN STIRRING APPARATUS

Donald Y. Clark, R.R. #1, Central City, Nebr. 68826

Filed Aug. 19, 1981, Ser. No. 294,270

Int. Cl.<sup>3</sup> B01F 7/24, 7/30

U.S. Cl. 366—261

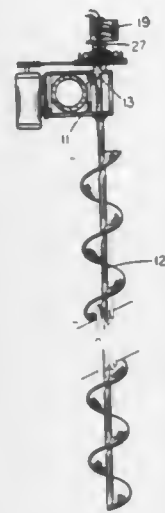
8 Claims

1. In a grain bin stirring apparatus having a radially extended



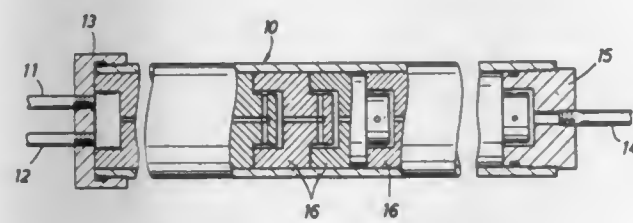
horizontal down auger support member for arcuate movement about the bin center, a mechanism for controlling said movement, comprising:

- a mercury switch connected in series with the motor which supplies power for said arcuate movement;
- a carrier for fixedly holding said switch having a first end pivotally attached to the structure to which an auger is journaled and a second end extending over and past the center of the pulley of said auger;
- a weight slidably and radially mounted atop said pulley between its center and its periphery, its end adjacent the center of said pulley sloped to face upwardly;



means connected to said weight for biasing it against centrifugal force when said pulley revolves; and  
a vertically oriented link having a lower end resting on said sloped end of said weight and an upper end supporting said carrier at an attitude with respect to the horizontal which will not allow current to flow through said motor unless said auger pulley revolves above a pre-determined rate, the vertical orientation of said link being maintained by means attached to said structure to which the auger is journaled for slidable support, whereby the current will be interrupted even though said pulley is revolving above said rate if the structure to which the auger is journaled, itself, is tipped beyond a predetermined angle.

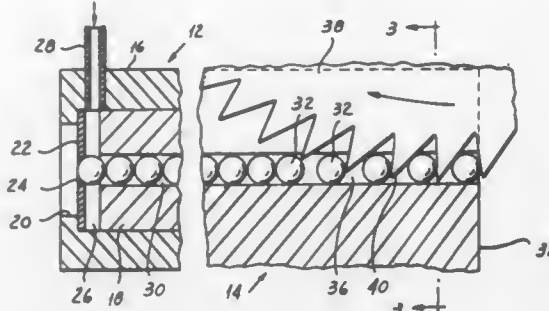
**4,340,311**  
**INTERFACIAL SURFACE GENERATOR MIXER**  
Edwin L. Crandal, Houston, Tex., assignor to Zebron Corporation, Tualatin, Oreg.  
Filed Sep. 26, 1980, Ser. No. 191,255  
Int. Cl.<sup>3</sup> B01F 5/06  
U.S. Cl. 366—336



1. An interfacial surface generator mixer comprising a housing having an inlet and an outlet and a plurality of mixing elements in end-to-end relationship in the housing, each member having a cavity in one end and a protuberance on the opposite end that extends into the cavity in the adjacent member to form a passageway between the outside surface of the protuberance and the cavity and a passageway between the end of the protuberance and the bottom of the cavity, a central blind end passageway along the longitudinal axis of each member having one end connected to the space between the end of the protuberance and the cavity and a plurality of equally spaced, radially extending passageways connecting the central

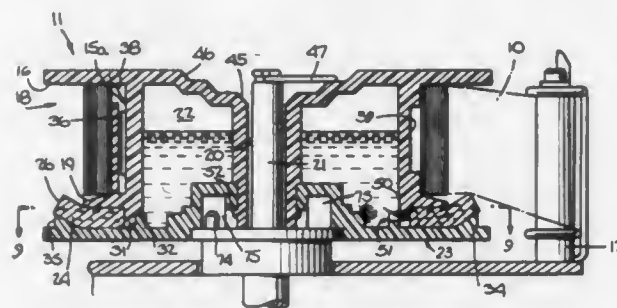
passageway adjacent its blind end to the passageway between the outside surface of the protuberance and the cavity.

**4,340,312**  
**BARRELLESS GUN FOR MICROBALLISTIC PRINTER**  
Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Valhalla, N.Y.  
Filed Sep. 24, 1980, Ser. No. 190,368  
Int. Cl.<sup>3</sup> B41J 3/02  
U.S. Cl. 400—118



5. In a microballistic printer for firing solid balls toward a printing medium, apparatus including means forming a resilient breech for releasably holding a ball, means for feeding a ball to said breech from one side thereof, means for forming a pressurized region on said side of said breech to exert a force on said ball tending to urge said ball through said breech, said breech so oriented that said force is directed toward said medium, and means for overcoming the releasable holding action of said breech to allow pressure from said region to propel said ball toward said medium, the space immediately on the other side of said breech being open and extending to said medium so that no element of structure affects the flight of a ball leaving said breech.

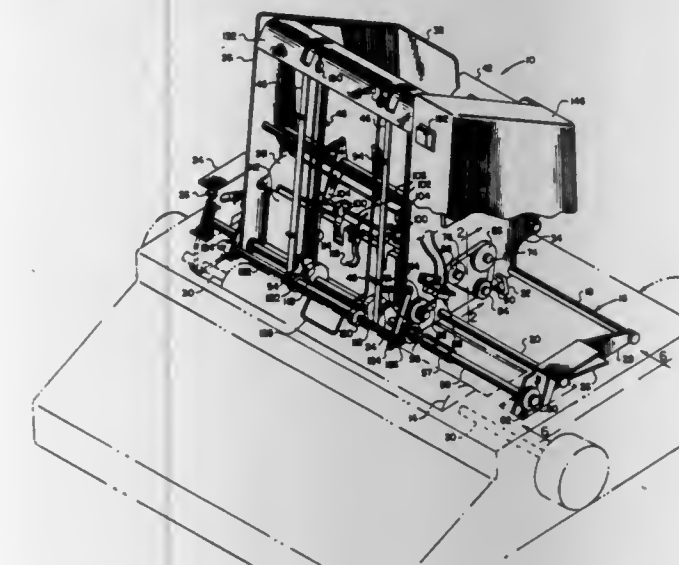
**4,340,313**  
**BUSINESS MACHINE PRINTING RIBBON SPOOL APPARATUS AND METHOD OF INKING THE TYPE SLUG IMPACT PORTION OF PRINTING RIBBONS**  
John W. H. Bishop, Milltown, N.J., assignor to Itek Inking Systems Corp., Edison, N.J.  
Continuation-in-part of Ser. No. 703,261, Jul. 2, 1976, abandoned. This application Dec. 20, 1978, Ser. No. 971,324  
Int. Cl.<sup>3</sup> A41J 31/14  
U.S. Cl. 400—202.1



1. A printing ribbon spool comprising a spool body, said spool body having a hub with an ink reservoir and spaced flange portions extending radially outwardly from said hub, said hub being between said spaced flange portions and having a surface to receive a ribbon wound thereon between said spaced flange portions to define a zone of ribbon wrap, said ribbon advancing from said zone of ribbon wrap when said spool is unwound, one of said flange portions being defined as an upper flange portion when said spool is in an operating position about a vertical axis and another of said flange portions being defined as a lower flange portion with respect to said upper flange portion when said spool is in said operating position, said ribbon having an upper portion corresponding to the upper flange portion and a lower portion corresponding to

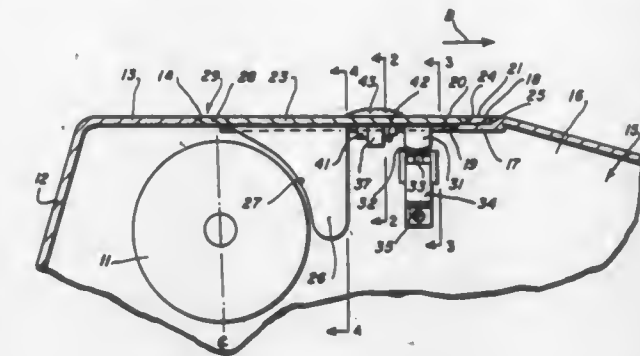
the lower flange portion, an ink delivery pad at said lower flange portion as the sole ink delivery means for said spool, said ink delivery pad having an exposed portion in the path of the advancing ribbon to contact said lower portion of said ribbon as said ribbon advances therepast, said lower flange portion being disposed below the zone of ribbon wrap on the spool, said lower flange portion including support means for supporting said exposed portion of the ink delivery pad in the path of ribbon advance, said ink delivery pad communicating in ink receiving relation with the ink reservoir to receive ink from said ink reservoir when said spool is in said operating position and convey the ink to said exposed portion of the ink delivery pad, said spool further including an ink impervious member disposed above said ink delivery pad, said ink impervious member being disposed between said ink delivery pad and the ink reservoir whereby said ink impervious member isolates said ink delivery pad from ink in the ink reservoir, said ink impervious member having at least one opening there through to permit ink to pass therethrough from the ink reservoir to said ink delivery pad.

**4,340,314**  
**ENVELOPE FEEDING APPARATUS**  
Michael A. Berger, Richardson, Tex., assignor to Datamarc, Inc., Richardson, Tex.  
Filed Jun. 24, 1980, Ser. No. 162,590  
Int. Cl.<sup>3</sup> B41J 11/58  
U.S. Cl. 400—625



1. A feeding apparatus for discrete pieces of sheet material such as envelopes for use in connection with a printer having an independently operable rotating platen, said feeding apparatus comprising:  
magazine means for holding a plurality of stacked envelopes and including an outlet through which said envelopes may be serially dispensed along a feed path leading to said platen;  
means engageable with an envelope in said magazine means for dispensing said envelope from said magazine means along a first portion of said feed path;  
holding means defining a part of said feed path for holding said envelope dispensed from said magazine means;  
feed means operable in time relationship to the rotation of said platen for feeding said envelope along a second portion of said feed path, said feed means including means for positively engaging said envelope held by said holding means to feed said envelope to said platen and releasing engagement with said envelope when said envelope becomes engaged by said platen; and  
control means for actuating said dispensing means in timed relation to the operation of said feed means for dispensing an envelope from said magazine means to said holding means.

**4,340,315**  
**PRINTING AREA COVER PLATE FOR TYPEWRITERS OR LIKE MACHINES**  
Friedrich Teichmann, Feucht, and Karl Wenderoth, Bad Vilbel, both of Fed. Rep. of Germany, assignors to Adlerwerke vorm Heinrich Kleyer A.G., Frankfurt, Fed. Rep. of Germany  
Filed Oct. 9, 1980, Ser. No. 195,398  
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3009001  
Int. Cl.<sup>3</sup> B41J 29/08, 29/38  
U.S. Cl. 400—690.4



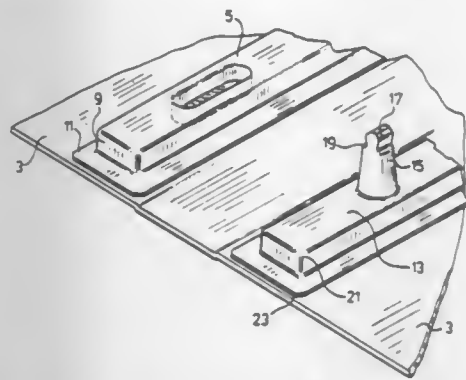
1. In a typewriter or like machine having a platen and a top casing defining an access opening to the printing area forward of said platen,  
said top casing having side walls supporting a power on-off switch and detent structure,  
a cover plate removably mounted on said top casing for closing said access opening except for a paper exit slot substantially opposite the vertical center line of said platen,  
said cover plate having detent structure depending therefrom complimentary to the detent structure on said top casing,  
said mounted cover plate being slidably movable relative to said top casing between a detented locked position and an unlocked removable position,  
said complimentary detent structures on said top casing and said cover plate being engaged and disengaged when said cover plate is moved from unlocked to locked position and from locked to unlocked position respectively,  
said cover plate including means for facilitating sliding movement of said cover plate between locked and unlocked positions,  
said cover plate having switch actuating means depending therefrom for slidably engaging and actuating said power on-off switch to on position incident to movement of said mounted cover plate to locked position, and to off position incident to movement of said cover plate to unlocked position,  
said cover plate further having on its underside a plurality of depending paper hold down guides spaced along the axis of said platen extending from said exit slot forwardly of said platen in planes perpendicular to said platen and having edges facing and spaced from said platen whose curvature follows the curvature of said platen, and  
said cover plate at the edge thereof defining said exit slot having an acute angle.

**4,340,316**  
**BINDING SYSTEM**  
Gerhard Jahn, 896 Queen St. West, Toronto, Ontario, Canada (M6J 1G6)  
Filed Aug. 4, 1980, Ser. No. 162,445  
Int. Cl.<sup>3</sup> B42F 13/12  
U.S. Cl. 402—68

1. A binding system comprising a post provided with a head projecting from one side of said system and an opening having a blind ended mouth surrounded by opposing sidewalls and endwalls for releasably securing the head of said post at the



other side of said system, said mouth being narrow and elongated relative to said head, said head being stiff for forceably opening said mouth during insertion therein and removal therefrom and having a base which is undercut only at its sides for receiving said sidewalls of said mouth when locked therein,



the arrangement being adapted to provide outward lateral flexing of said sidewalls as said head is forced therethrough, with said endwalls of said mouth resisting the outward lateral flexing for inward lateral rebounding of said sidewalls at the undercut base of said head as said head clears beyond said sidewalls and is releasably secured within said opening.

4,340,317

## SPLINELESS COUPLING MEANS

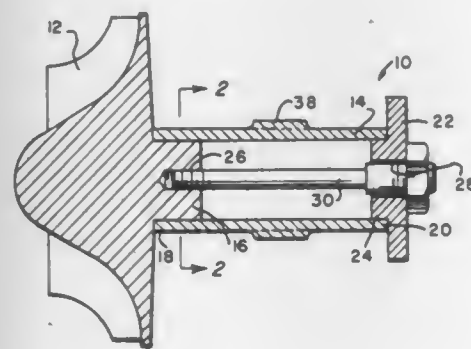
Arnold M. Heitmann, Swampscott, and Richard E. Lord, Jr., Randolph, both of Mass., assignors to Northern Research & Engineering Corp., Woburn, Mass.

Filed May 7, 1981, Ser. No. 261,730

Int. Cl.<sup>3</sup> F16D 1/06; F16B 35/00

U.S. Cl. 403—25

3 Claims



1. In combination, splineless coupling means, comprising: an imperforate first member, rotatable about an axis, engageable with a second member for transmission of rotation therebetween from one of said members to the other thereof; wherein said first member has a prominent structure, defining a boss or hub or the like; said structure is of non-circular cross-section, and has a peripheral surface, circumjacent said axis; and a second member, also rotatable about said axis, engageable with said first member for transmission of rotation therebetween, as aforesaid; wherein said second member has a void formed therein defined by an inner surface of a circumscribing wall; and said inner surface has a non-circular conformation, corresponding to said non-circular cross-section, for defining an intimately-interfaced coupling engagement thereof with said cross-section; and means for securing said wall and structure together in fast coupled engagement; wherein said second member is an elongate element; said element is hollow fully throughout the length thereof; said structure has a threaded bore formed therein; said securing means comprises (a) an apertured thrust collar for engaging a first end of said second member and (b) a

headed bolt for penetrating and engaging said collar, extending through said hollow toward the opposite end of said second member, and threadedly engaging said bore; said collar has a substantially annular land formed thereon for engaging said first end of said second member; and said land is of non-circular cross-section, corresponding to said non-circular conformation of said inner surface of said second member to define an intimately-interfaced coupling engagement thereof with said inner surface.

4,340,318

## MECHANICAL END JOINT SYSTEM FOR STRUCTURAL COLUMN ELEMENTS

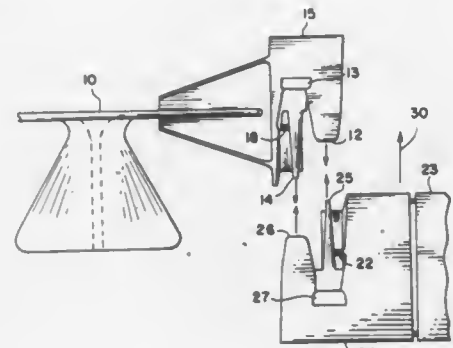
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Harold G. Bush, Yorktown, and Richard E. Wallsom, Newport News, both of Va.

Filed Dec. 5, 1979, Ser. No. 100,611

Int. Cl.<sup>3</sup> F16D 1/00, 3/00

U.S. Cl. 403—217

7 Claims



1. A mechanical end joint system for structural column elements comprising in combination:

- (a) a node element with a plurality of first joint halves extending therefrom, each of said first joint halves comprising an integral semicircular tongue and an integral semicircular groove;
- (b) a plurality of strut elements having second joint halves on the ends thereof adapted to mate with said first joint halves, each of said second joint halves also comprising an integral semicircular tongue and an integral semicircular groove;
- (c) said integral semicircular tongue and integral semicircular groove of each of said first joint halves of said node element corresponding to said integral semicircular tongue and integral semicircular groove of each of said second joint halves of said plurality of strut elements; and
- (d) locking means and lock retention means disposed on each of said first and said second joint halves;

whereby a force transverse to the axis of one of said plurality of strut elements joins said strut element to said node element by mating said integral semicircular tongue to one of said second joint halves of said strut element with said integral semicircular groove of one of said first joint halves of said node element, and by mating said integral semicircular groove of said one of said second joint halves of said strut element with said integral semicircular tongue of said one of said first joint halves of said node element, and locks said strut element to said node element by each of said locking means on one joint half serving to engage said lock retention means on the mating joint half.

4,340,319

## PAVEMENT MARKER

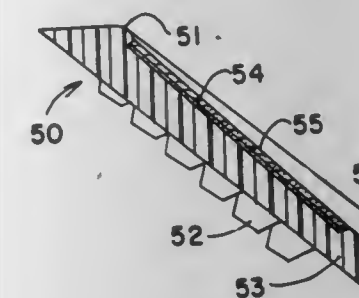
Glenn W. Johnson, Jr., Summit, N.J., and Sidney A. Heenan, Park Ridge, Ill., assignors to Amerace Corporation, New York, N.Y.

Continuation of Ser. No. 970,186, Dec. 18, 1978, Pat. No. 4,232,979, which is a continuation of Ser. No. 789,266, Apr. 20, 1977, abandoned, which is a continuation-in-part of Ser. No. 681,860, Apr. 30, 1976, abandoned. This application Nov. 10, 1980, Ser. No. 205,752

Int. Cl.<sup>3</sup> E01F 9/06

U.S. Cl. 404—16

3 Claims



1. In a pavement marker providing a marking on a roadway surface, the marking being visible from an oncoming vehicle on the roadway, the pavement marker including means to position the marker relative to the associated roadway surface, and including a lens member of light-transmitting synthetic resin having a front face inclined at an angle of at least 15 degrees to the associated roadway and a rear face having reflex reflective means on at least a portion thereof for reflecting light transmitted through said front face back toward the source thereof, the improvement comprising a thin sheet of untempered glass fixedly disposed on said front face of said lens member at least in a portion of the area thereof overlying at least part of the reflex reflective means on the rear face of said lens member, said glass sheet being in compression throughout the expected temperature range to which the pavement marker is exposed in use, said compression resulting from the difference in coefficients of thermal expansion between the lens material and glass sheet material, said glass sheet reducing the degradation of optical efficiency normally caused by abrasive tire contact on said lens member while allowing adequate cleaning of said pavement marker by tire wiping action, whereby the optical efficiency of said pavement marker is enhanced.

4,340,320

## DRIVE MECHANISM

Robert E. Moss, Yorkville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00904, § 371 Date Jul. 14, 1980, § 102(e) Date Jul. 14, 1980, PCT Pub. No. WO82/00309, PCT Pub. Date Feb. 4, 1982

PCT Filed Jul. 14, 1980, Ser. No. 261,231

Int. Cl.<sup>3</sup> E01C 19/26

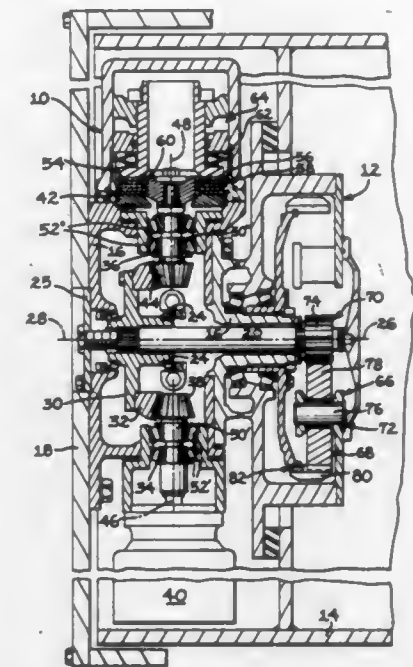
U.S. Cl. 404—122

11 Claims

8. Apparatus (10), comprising:

- a frame (18);
- a driven member (14) having an axis of rotation (28);
- a first element (20) having an axis of rotation (26) and being carried by and rotatable relative to said frame (18), said axis of rotation (26) of said first element (20) being substantially the same as said axis of rotation (28) of said driven member (14);
- a bevel gear (32) mounted on and rotatable with said first element (20) about said axis of rotation (26) of said first element (20);
- means (34) for engaging and rotating said bevel gear (32), said means (34) including a pinion gear (38) and being carried by said frame (18), said pinion gear (38) defining an axis of rotation (46) oriented perpendicular to said axis of

rotation (26) of said first element (20) and being positioned in engagement with said bevel gear (32); means (36) for engaging and controllably blocking from rotation said bevel gear (32), said means (36) including a different pinion gear (44) and being carried by said frame (18), said pinion gear (38) defining an axis of rotation (48)



oriented perpendicular to said axis of rotation (26) of said first element (20) and positioned in engagement with said bevel gear (32); and final drive means (66) for receiving rotational motion from said first element (20) and rotatably driving said driven member (14) in response to said rotational motion, said final drive means (66) having a preselected drive ratio.

4,340,321

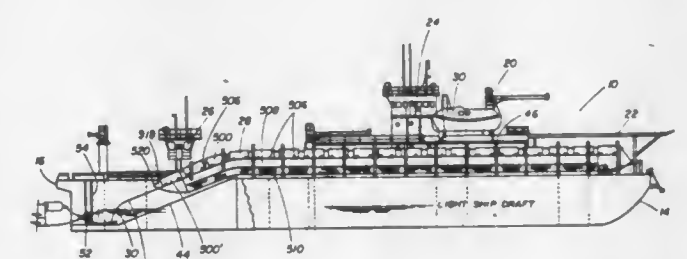
OIL BOOM FOR OPEN SEA SKIMMER BARGE  
Ashok K. Maheshwary, Houston, Tex., and William M. Ayers, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 19, 1980, Ser. No. 161,236

Int. Cl.<sup>3</sup> E02B 15/04

U.S. Cl. 405—66

17 Claims



1. An apparatus for collecting and containing oil and the like on the surface of the water, said apparatus comprising: a plurality of float means adapted to float on said surface of the water; float line means interconnecting said plurality of float means; support means secured to each float means of said plurality of float means; wheel means located on said support means; impermeable apron means having one edge thereof secured to said plurality of float means; permeable apron means having one edge thereof secured to another edge of said impermeable apron; and apron line means secured to another edge of said permeable apron.

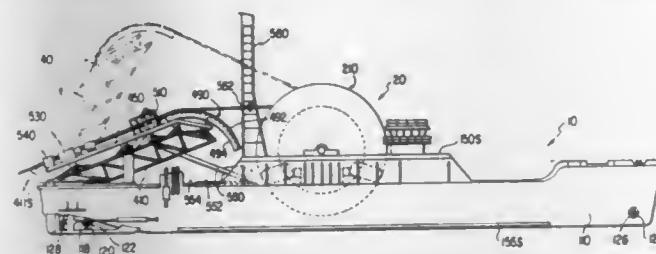


#### 4,340,322 SELF PROPELLED DYNAMICALLY POSITIONED REEL PIPE LAYING SHIP

Charles N. Springett, Santa Ana; Dan Abramovich, Mission Viejo; Stanley T. Uyeda, Orange, and E. John Radu, Fountain Valley, all of Calif., assignors to Santa Fe International Corporation, Orange, Calif.

Continuation of Ser. No. 142,887, Apr. 23, 1980, which is a division of Ser. No. 903,180, May 5, 1978; Pat. No. 4,230,421. This application Apr. 28, 1981, Ser. No. 258,325

Int. Cl.<sup>3</sup> F16L 1/00; B63B 35/04  
U.S. Cl. 405—168 30 Claims



1. A reel pipelaying vessel, comprising:  
a hull composed of a plurality of longitudinal port and starboard side primary structural members;  
port and starboard side reel support structures extending upwardly from said port and starboard side primary vessel structural members in the midship section thereof to increase the section modulus of the vessel in the midship section;  
a pipe-carrying reel;  
bearing means mounting the reel for rotation about a substantially horizontal axis across the vessel's beam; and  
bearing support means mounting the bearing means to the respective reel support structures and distributing the load of the reel downwardly and longitudinally outwardly through said reel support structures and primary ship structural members to maintain the stress on the vessel's primary structural members within the maximum allowable stress limits for the materials used in the construction of the vessel's primary structural members;  
wherein the distance (in feet) from the center of gravity of the vessel to its transverse metacenter is no greater than about  $0.00194B^2$ , where B is the beam (in feet) of the vessel; and  
wherein the GMT of the vessel lies within the shaded portion of the graph shown in FIG. 17 of the drawing,  
where GMT represents the vertical distance (in feet) from the center of gravity to the transverse metacenter of the vessel, and BEAM represents the beam or width of the vessel (in feet).

#### 4,340,323 DECELERATING AND REORIENTING ELONGATED MAGNETIC ARTICLES

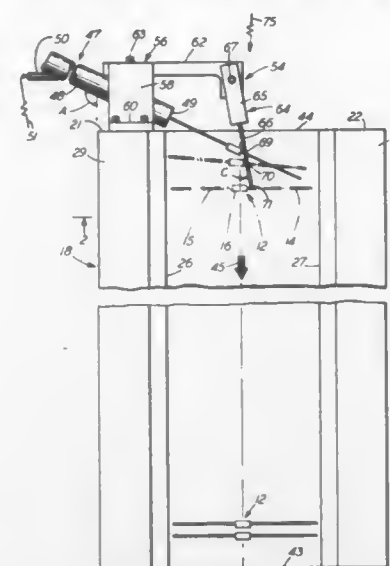
Kristen E. Banks, Reading; Donald M. Large, Temple, and Fred J. Reinhard, Whitfield Reading, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Oct. 30, 1980, Ser. No. 202,285

Int. Cl.<sup>3</sup> B65G 11/20  
U.S. Cl. 406—83 17 Claims

1. Apparatus for decelerating and reorienting an elongated magnetic article having an enlarged, generally central, body portion, which article is moving in a longitudinal direction, comprising:  
a bin assembly for holding at least one such article, having first and second ends and first and second sidewalls including magnetic means to orient the article transversely of the sidewalls;  
means for guiding the moving article in a longitudinal direction on a path forming a given angle with the first sidewall of the bin, a discharge end of such guiding means being disposed at the first sidewall such that the moving article is discharged therefrom toward the second sidewall; and  
deceleration means spaced from the discharge end of the guiding means, including a vertical bar with a row of

deceleration elements extending therefrom toward the first end of the bin, said row of elements forming a penetrable restraint such that a first portion of the moving article discharged from the guiding means penetrates



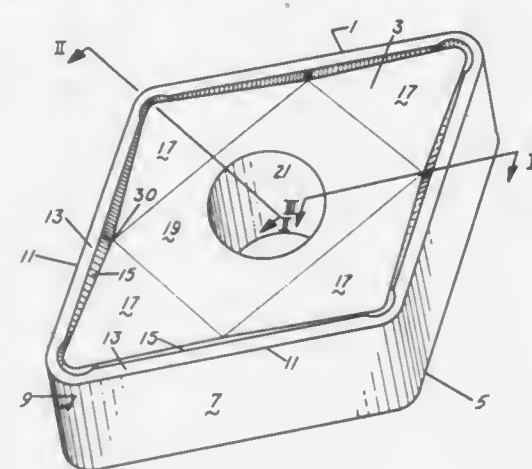
between the elements and the body is slidably restrained therealong as the article advances out of the elements and further into the bin, said article being rotated by the magnetic means to an orientation transversely of the bin.

#### 4,340,324 CUTTING INSERT

James F. McCreery, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Aug. 28, 1980, Ser. No. 181,965

Int. Cl.<sup>3</sup> B26D 1/00  
U.S. Cl. 407—114 11 Claims



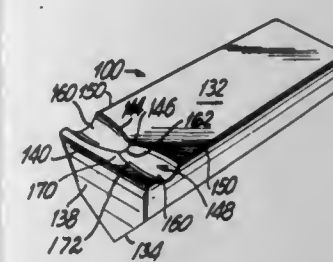
1. A cutting insert which comprises: a polygonal body having top and bottom faces and a peripheral wall with rounded corners joining said top and bottom faces; cutting edge means formed at the juncture of said peripheral wall and at least one of said top and bottom faces; said cutting edge means comprising at least two angularly related cutting edges defining a plane with said rounded corners joining said cutting edges to one another; a land area joining said cutting edge and extending inwardly of said polygonal body; a descending wall that extends away from, and is joined to said land area, forms a first acute included angle with the plane of said cutting edges and terminates in a sloping floor area that descends as said sloping floor extends inwardly of said body and forms a second acute included angle with said plane defined by said cutting edges, said first included angle being greater in said corner than in areas away from said corner, and the perpendicular distance from the plane of said cutting edges to the point where the descending wall joins the sloping floor being smallest in the corner and greatest intermediate the adjacent corners.

#### 4,340,325 CUTTING INSERT FOR DEEP GROOVING

Thomas W. Gowanlock, Rochester, Mich., assignor to General Electric Co., Detroit, Mich.

Filed Dec. 23, 1980, Ser. No. 220,244

Int. Cl.<sup>3</sup> B26D 1/00  
U.S. Cl. 407—116 7 Claims



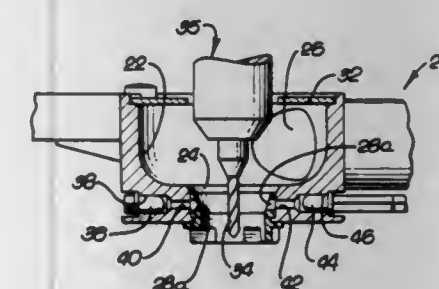
1. An improved cutting insert configured for controlling chips during a deep grooving operation, said insert being formed from an elongated, generally rectangular block of cutting material having a cutting end, said block including a straight cutting edge, disposed perpendicular to the longitudinal axis of said block and defined by the juncture between one side edge of said cutting end, and one longitudinally extending surface of said rectangular block, said one surface corresponding to the leading surface of said insert, said improvement comprising:  
a V-shaped ridge formed in said leading surface and spaced from said cutting edge, with an apex portion of said V-shaped ridge being disposed closest to said cutting edge;  
a groove formed in said leading surface contiguous with said V-shaped ridge and extending towards said cutting edge, a planar land area formed on said leading surface and disposed between and contiguous with said cutting edge and said groove;  
wherein said improvement is operative to reduce the length and width of chips during a grooving operation.

#### 4,340,326 BROKEN BIT DETECTOR

Andrew Buonauro, Mission Viejo, and Richard Warner, Laguna Hills, both of Calif., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Feb. 25, 1980, Ser. No. 124,456

Int. Cl.<sup>3</sup> B23B 47/24; B23C 9/00  
U.S. Cl. 408—16 9 Claims



1. A broken bit detector for use in a drilling machine that includes a drill spindle which carries a drill bit, comprising:  
a pressure foot adapted to be connected to the drill spindle, said pressure foot serving to clamp a workpiece into a fixed position with respect to the drill spindle and including a central opening through which a drill bit extends;  
a light emitting element having a surface positioned on one side of said opening;  
a light receiving element having a surface positioned on a side of said opening opposite from the light emitting element to receive a light beam therefrom, wherein a drill bit when in position lies in the path between the light emitting element and light receiving element and interception of

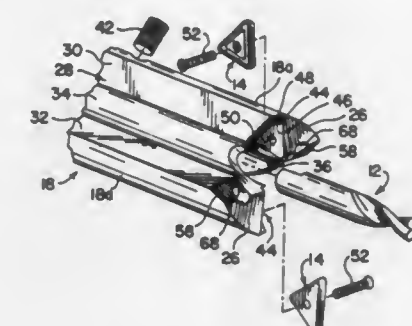
the light beam indicates the presence of an unbroken drill bit; and  
means for directing a fluid across the surfaces of the light emitting and light receiving elements to thereby shield said elements from abrasive debris created by a drilling operation.

#### 4,340,327 TOOL SUPPORT AND DRILLING TOOL

Jose Martins, New Bedford, Mass., assignor to Gulf & Western Manufacturing Co., Southfield, Mich.

Filed Jul. 1, 1980, Ser. No. 165,864

Int. Cl.<sup>3</sup> B23B 51/06, 51/08  
U.S. Cl. 408—59 9 Claims



1. A drill tool comprising:  
a tool support having an axis and coaxial mounting and body portions, said body portion extending from said mounting portion and having an outer end including a pair of end faces;  
a pair of diametrically opposed channels defined by said body portion and extending from said end faces towards said mounting portion;  
each channel including corresponding first and second walls extending radially of said axis and axially of said body portion;  
each of said first and second walls of said channels having radially inner and outer linear edges extending from said outer end toward said mounting portion and parallel to said axis;  
a pair of diametrically opposed third walls defined by said body portion and extending axially thereof, each of said third walls extending respectively between said radially inner edges of the corresponding first and second walls;  
a passageway within said body portion and coaxial with said axis;  
a drill bit mounted within said passageway and including a tip end extending beyond said end faces;  
means for releasably engaging said drill bit in said passageway against rotation relative to said body portion;  
means including a recess in said first wall of each of said channels for removably supporting a pair of cutter blades at said outer end of said body portion;  
a cutter blade mounted within each of said recesses, said cutter blades each having a polygonal shape and a plurality of cutting edges;  
said recesses each including shoulder means interengaging with the corresponding one of said cutter blades to axially position one of the cutting edge thereof forwardly adjacent to the corresponding one of said end faces;  
said cutter blades and said shoulder means including cooperating surfaces allowing said cutter blades to be indexable thereon so that any one of said cutting edges may be projected forwardly with respect to said end face;  
a portion of said cutter blades extending within the outside diameter of said drill bit;  
a pair of relief surfaces defined in said body portion, each inclined with respect to said axis and intersecting one of said end faces and said second and third walls of said corresponding channel; and  
a pair of lubricant passages extending through said body



portion and having respective outlets at said respective end faces.

4,340,328

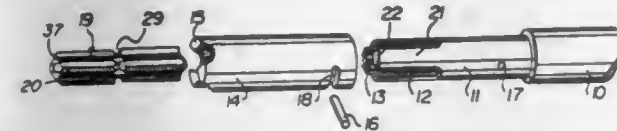
**ROTARY CUTTING TOOL AND TOOL DRIVER**

Sylvester E. Proulx, and Stanley A. Beneteau, both of Windsor, Canada, assignors to J. P. Tool, Ltd., Windsor, Canada  
Continuation of Ser. No. 28,725, Apr. 9, 1979, abandoned. This application Aug. 4, 1980, Ser. No. 175,290

Claims priority, application Canada, Mar. 16, 1979, 323670  
Int. Cl.<sup>3</sup> B23B 31/10, 31/44, 5/22

U.S. Cl. 408—239 A

45 Claims



1. A rotary cutting tool driver comprising a shank member having a cylindrical portion projecting axially from one end thereof, said cylindrical portion having at least two spline members projecting longitudinally from the end thereof remote from the shank, said spline members having curvilinear outer faces forming extensions of said cylindrical portion and projecting inwardly to provide a central axial gap and radial gaps therebetween, and a cylindrical sleeve member rotatably mounted on said cylindrical portion and splines, said sleeve member having at the outer end thereof inwardly projecting tab members adapted to engage notches in peripheral lands of a fluted cutting tool when mounted in the driver.

4,340,329

**LASHING DEVICE**

Sven O. Ericsson, Barkassväben 38, Onsala, Sweden (43034)

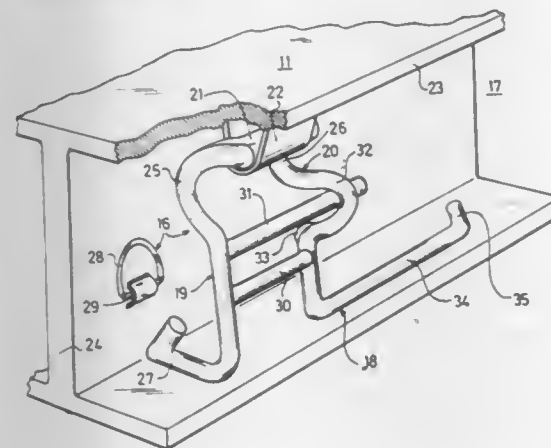
Filed Oct. 21, 1980, Ser. No. 199,259

Claims priority, application Sweden, Nov. 5, 1979, 7909127

Int. Cl.<sup>3</sup> A44B 21/00; B60P 7/08; B61D 45/00

U.S. Cl. 410—100

8 Claims



1. A device for securing a load to a platform and comprising a lever structure swingably mounted at said platform by means of a pivot parallel to a side of the platform,

said lever structure, in order to make possible the use of a strapping band, including two substantially parallel rods, spaced apart a distance at least corresponding to the breadth of the strapping band, and mounted at the pivot, two parallel bars carried by said rods, arranged parallel to the pivot at a distance from the latter, the bar, which in locking position will be the uppermost one, being attached to one of the rods only, and sidewardly extending past the other rod, said other rod, opposite to the passing free bar being formed with a bent portion, partly encircling the said bar for permitting a loop of the band to be slipped upon the bar from the free end thereof, and

locking means at said platform for retaining said lever structure in locked position.

4,340,330

**STRADDLING DOWEL**

Josef Reidel, Bodman-Ludwigshafen, Fed. Rep. of Germany, assignor to Tox-Dubel-Werk Richard W. Heckhausen KG, Bundesrepublik, Netherlands

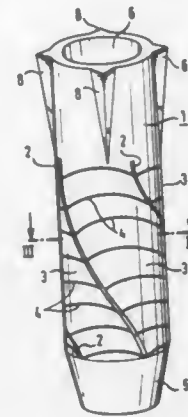
Filed Jan. 7, 1980, Ser. No. 109,765

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1979, 2901066

Int. Cl.<sup>3</sup> F16B 14/10, 13/14

U.S. Cl. 411—33

12 Claims



1. A straddling dowel, of plastic, including a body with a circular head portion and a circular foot portion, the body having a continuous longitudinal screw insertion hole, the body being comprised of several expansion segments arrayed around the body that are formed by longitudinal slits formed in the dowel body and each of which is integral from and extends from the circular head portion to the circular foot portion of the dowel, the insertion hole in the foot portion being shaped and sized so that a female thread can be cut in the portion by the inserted screw, thereby rendering axial contraction of the dowel body possible, each of the expansion segments being comprised of a longitudinal array of overlapping plates, each of the plates being separated from the next adjacent overlapping plates, and adjacent plates having engageable contact surfaces located longitudinally above and below the respective plates, each contact surface extending generally around the dowel body, the engageable contact surfaces each being directed to extend obliquely to the axis of the dowel and being near enough to the adjacent contact surfaces that radially applied force against the dowel body presses the adjacent contact surfaces into relatively movable engagement.

4,340,331

**STAPLE AND ANVILESS STAPLING APPARATUS THEREFOR**

Dominick J. Savino, 65 Buttonwood Rd., Staten Island, N.Y. 10304

Continuation-in-part of Ser. No. 115,066, Jan. 24, 1980, abandoned, which is a division of Ser. No. 23,827, Mar. 26, 1979, Pat. No. 4,206,863. This application May 19, 1980, Ser. No. 151,136

Int. Cl.<sup>3</sup> F16B 15/00

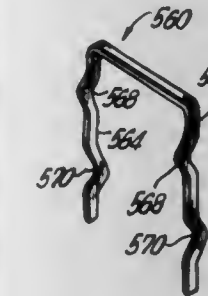
U.S. Cl. 411—457

6 Claims

1. A staple adapted for use in conjunction with an anviless stapling apparatus, said apparatus including a nosepiece including an elongated drive track of fixed configuration formed integrally therein and extending therethrough, said drive track having an outwardly open lower end disposed adjacent a workpiece into which the staple is driven, said drive track including an elongated crown receiving portion and a pair of elongated leg receiving grooves contiguous with said crown receiving portion and extending therefrom, the width of said leg receiving grooves, in a direction orthogonal to the plane of

the drive track, being greater than the width of the crown receiving portion adjacent said leg receiving grooves, the lower portions of said leg receiving grooves being disposed at an angle to the longitudinal axis of said drive track, and a driver element slidably mounted for reciprocal movement in the crown receiving portion of said drive track, said staple comprising:

a generally U-shaped, plan form configuration including a crown unitary with two depending legs extending perpendicular thereto, said crown portion having a cross section perpendicular to the legs substantially corresponding to the configuration of the cross section of the crown receiving portion of the anviless stapling apparatus, each staple leg including at least one V-shaped bend, said V-shaped



bend projecting out of the plane of the U-shaped plan form of the staple in an orthogonal direction so as to give each leg an effective width greater than the width of each end of the crown portion adjacent to said leg portion, the cross-sectional area of said crown portion being substantially equal to the cross-sectional area of the unbent portions of each said leg, said legs being slidably receivable within the leg receiving grooves in said anviless stapling apparatus such that upon downward actuation, said driver element bears upon the crown of the staple thereby causing the staple to move through the drive track towards the workpiece and simultaneously causing the legs of the staple to be guided into the angularly disposed portions of said leg receiving grooves to achieve clinching of the staple legs for binding the workpiece.

4,340,332

**BOAT CENTERING DEVICE**

Ernest L. Davies, 2 Russell St., Newtown, Geelong, Victoria, 3220, Australia

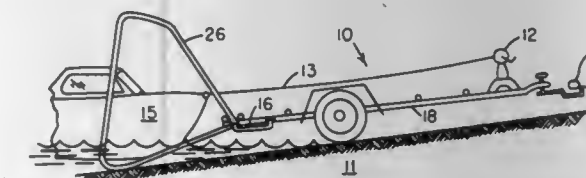
Filed Sep. 2, 1980, Ser. No. 183,445

Claims priority, application Australia, Sep. 26, 1979, PE0691

Int. Cl.<sup>3</sup> B60P 3/10

U.S. Cl. 414—467

8 Claims



7. A bracket for pivotally supporting a vertically swingable frame of a boat centering boom gate on the side of a boat trailer having side members during movement of said frame between a retracted forward road transport position alongside said trailer and a rearwardly extended docking position out over water and alongside a floating boat, said bracket being of U-shaped configuration and comprising two short arms connected by an elongate arm, the base of each short arm being adapted to be fixed to one said side member of said boat trailer, one short arm being an axle which provides pivotal support for a bearing member fixed transversely to said swingable frame at one corner thereof.

4,340,333

**CONCRETE PIPE HANDLING APPARATUS**

R. Kent Cashio, Rte. 6, Box 387, Baton Rouge, La. 70815

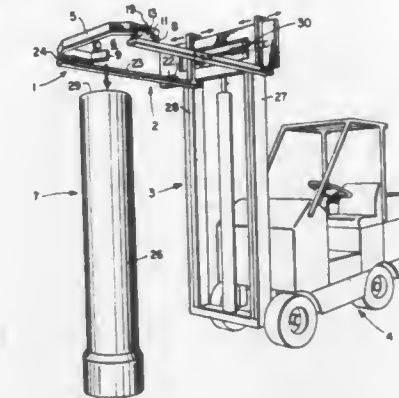
Continuation-in-part of Ser. No. 737,187, Nov. 1, 1976,

abandoned. This application Oct. 28, 1977, Ser. No. 846,547

Int. Cl.<sup>3</sup> B66F 9/12

U.S. Cl. 414—607

3 Claims



1. An apparatus for moving non-cured concrete pipe of particular diameter and attachable to a lifting means of a vehicle which comprises:

- (a) a frame assembly attached to said vehicle, and
- (b) an open ring plate pivotedly mounted to said frame assembly, said open ring plate formed by a single side member of said plate to form a center cavity having a diameter greater than said pipe and sufficient to pass over said pipe without contacting said pipe, said side member extending less than completely about said pipe but extending around said pipe to create an opening less than said pipe's diameter.

4,340,334

**TURBODRILL WITH RUBBER ROTOR BEARINGS**

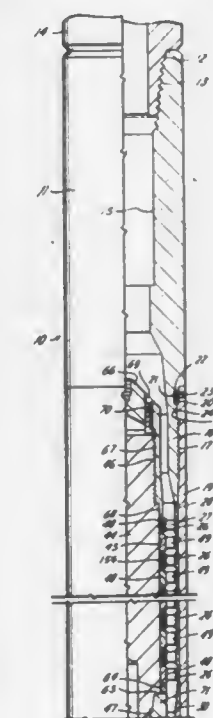
Jeddy D. Nixon, Houston, Tex., assignor to Maurer Engineering, Inc., Houston, Tex.

Filed Jan. 30, 1980, Ser. No. 116,913

Int. Cl.<sup>3</sup> F01D 25/16

U.S. Cl. 415—172 A

6 Claims



1. A turbodrill adapted for connection at one end to the lower end of a drill string and at the other end to a drill bit to be driven thereby, comprising a tubular housing having an upper stator portion and a lower bearing portion,



a stator comprising a plurality of fixed stator members in said stator portion,  
 said fixed stator members each comprising an outer and inner sleeve member with a stator blade extending radially therebetween,  
 a rotor shaft extending through said stator portion,  
 a plurality of rotor members, each comprising a sleeve member supported in a fixed position on said rotor shaft and having a turbine blade extending radially therefrom,  
 said turbine blades being cooperable with said stator blades whereby the flow of drilling fluid through said turbodrill housing is operable to rotate said rotor shaft,  
 said rotor sleeve members being supported one in each of said stator inner sleeves in rotary bearing relation therewith and forming a rotary bearing for rotation of said rotor shaft and said turbine blades,  
 at least one of said sleeve members in each of said rotary bearings having a peripheral recess in the surface thereof and a rubber bearing member supported in each such recess in bearing relation with the other of said sleeve members of such rotary bearing, and  
 said rubber bearing members each having passages in the bearing surfaces thereof operable to conduct drilling fluid into the space of rotary bearing contact to cool and lubricate the rotary bearing surfaces.

4,340,335

#### HELICOPTER TAIL ROTOR WITH PITCH CONTROL MECHANISM

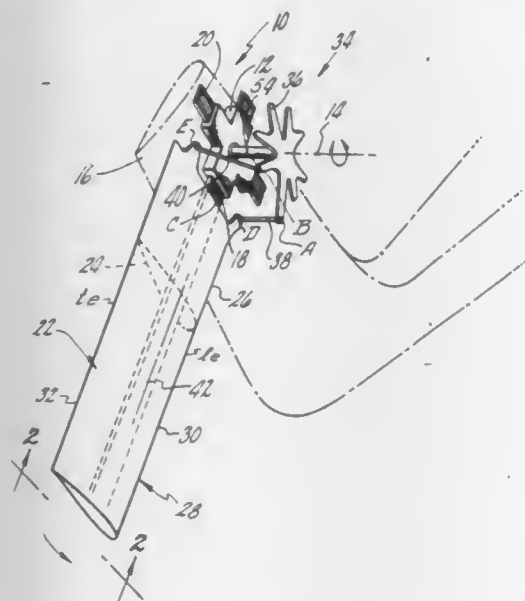
Marvin C. Cheney, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 17, 1979, Ser. No. 104,604

Int. Cl.<sup>3</sup> B64C 27/38, 27/78

U.S. Cl. 416—138

10 Claims



1. A helicopter anti-torque tail rotor rotatable about an axis of rotation and comprising:

- (A) a hub member adapted to be supported from a helicopter tail section for rotation about said axis of rotation,  
 (B) at least one helicopter blade extending radially from said hub for rotation therewith and including,

- (1) a torsionally flexible structural spar fabricated to have substantial tensile strength and high torsional flexibility and connected to said hub for rotation therewith and projected substantially radially therefrom,  
 (2) a blade airfoil section enveloping said spar and having a leading edge, a trailing edge, a tip end, and a root end,  
 (3) a hollow torque tube enveloping the spar in spaced relationship and forming the blade root end,  
 (4) means connecting said torque tube outer end to said flexible spar at a radial station therealong so that blade pitch motion between minimum pitch and maximum

pitch positions is permitted due to torsional flexure of the spar,

- (C) pitch control means mounted for rotation with said hub and including:

- (1) a control wheel member mounted for rotation concentrically about and extending perpendicular to said axis of rotation and positioned in spaced axial relationship to the torque tube inner end,  
 (2) first and second push-pull rods extending between and pivotally connected to said control wheel member at circumferentially spaced stations thereon and with the opposite ends of the first and second push-pull rods pivotally connected, respectively, to the leading edge and the trailing edge of the torque tube inner end at stations spaced a substantially greater distance than the circumferentially spacing of the push-pull rods on the control wheel members, said rods being oriented so that one of push-pull rods extends substantially parallel to said axis of rotation when the blade is in its minimum pitch position and so that the other of said push-pull rods forms a substantial angle with said axis of rotation, so that as the control wheel member is selectively caused to rotate relative to the hub, one of said push-pull rods will push said torque tube while the other push-pull rod pulls said torque tube so as to cause said flexible spar to twist and thereby selectively cause said blade to change pitch between its minimum pitch position and its maximum pitch position.

4,340,336

#### ASPIRATOR

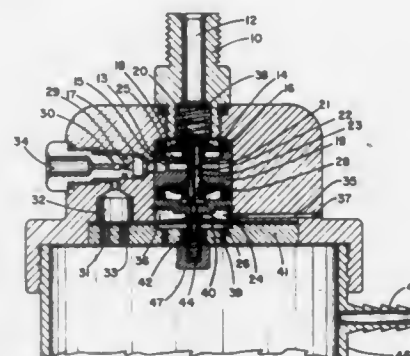
Thomas R. Clary, Yorba Linda, Calif., assignor to Hudson Oxygen Therapy Sales Company, Temecula, Calif.

Filed Mar. 17, 1980, Ser. No. 130,867

Int. Cl.<sup>3</sup> F04F 5/52

U.S. Cl. 417—189

8 Claims



1. An aspirator assembly for evacuating gas from a vacuum chamber comprising

- (a) a valve cavity having a gas inlet passageway and a gas outlet passageway;  
 (b) a valve stem, movable between a first and second position having a channel extending through the stem, said channel having an inlet port communicating with said gas inlet passageway, and an outlet port;  
 (c) a first diaphragm secured to said valve stem and extending across said valve cavity;  
 (d) a valve chamber communicating with said first diaphragm and said outlet port;  
 (e) a second diaphragm, having a bottom surface exposed to said vacuum chamber, a top surface exposed to an atmospheric chamber, and movable between a first and second position;  
 (f) a venturi assembly comprising a venturi tube, a suction chamber connecting said vacuum chamber with said venturi tube, and a conduit connecting said venturi tube with said gas outlet passageway;  
 (g) first sealing means cooperating with said second diaphragm for forming a gas tight seal between said atmospheric chamber and said valve chamber; and

- (h) second sealing means cooperating with said valve stem for forming a gas tight seal between said gas inlet passageway and said gas outlet passageway.

4,340,337

#### POSITIVE DISPLACEMENT PUMP SYSTEMS

Ian T. Bristow, Higham, and Nigel J. Petts, Rochester, both of England, assignors to Hobourn-Eaton Limited, Kent, England

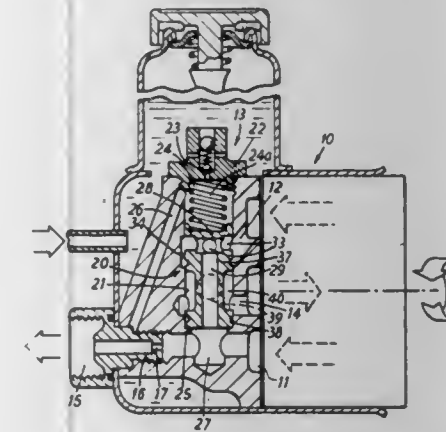
Filed Dec. 10, 1979, Ser. No. 101,790

Claims priority, application United Kingdom, Dec. 13, 1978, 48268/78

Int. Cl.<sup>3</sup> F04B 49/02, 49/08

U.S. Cl. 417—304

3 Claims



1. A positive displacement pump system having first and second delivery passages for pumped fluid, a main discharge passage connected to receive fluid from the first delivery passage and having a discharge orifice disposed therein, overflow porting, and a control valve for apportioning the flow from the second delivery passage between the first delivery passage and the overflow porting and controlling the by-passing of a proportion of the flow from the first delivery passage to the overflow porting, said control valve comprising a valve body having the overflow porting therein and a spring-loaded valve member adapted and arranged for movement against the spring force in dependence on the pressure drop across said discharge orifice, said valve member having a transfer passage for transferring fluid from the second to the first delivery passage and having passage means therein for respectively placing the first and second delivery passages in communication with the overflow porting, the passage means and the porting being positioned relative to each other for being opened to said second delivery passage as said pressure drop increases for causing an increasing proportion of the fluid from the second delivery passage to be passed to the overflow porting and as said pressure drop increases further, for being opened to said first delivery passage for causing an increasing proportion of the fluid from the first delivery passage to be passed to the overflow porting.

4,340,338

#### HYDRAULIC PRESSURE BIASED LINEAR MOTION THRUST BLOCK FOR HYDRAULIC PUMPS AND MOTORS

Gregory D. Lemke, Racine, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Division of Ser. No. 884,924, Mar. 9, 1978, Pat. No. 4,222,718.

This application Jun. 13, 1980, Ser. No. 159,015

Int. Cl.<sup>3</sup> F03C 2/00; F04C 15/04

U.S. Cl. 418—26

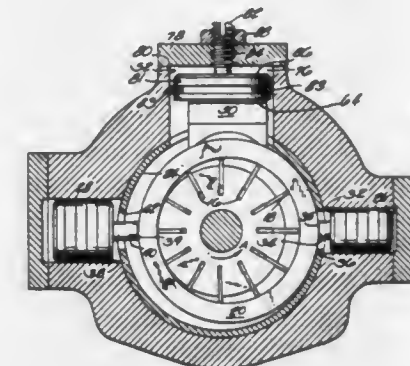
8 Claims

1. A thrust block assembly for a hydraulic pump or motor having a casing defining a chamber for receiving a rotor and a cam ring surrounding said rotor, said cam ring radially movable relative to the axis of said rotor in response to pressures generated within said pump or motor during the operation thereof, said casing further including a bore therethrough into said chamber, said bore being in fluid communication near its

outer end with the hydraulic system pressure of said pump or motor, said thrust block assembly comprising:

an outer block having an outer perimeter substantially identical to the perimeter of said bore and a planar, inner surface positioned generally parallel to a plane tangential to said rotor, said outer block freely disposed along the axis thereof in said bore and radially adjustable relative to said rotor axis during the operation of said pump or motor, adjusting means separate from said outer block for adjusting the radial position of said outer block relative to said rotor axis, said adjusting means attached to said casing to close said bore at its outer end and provide a threadably mounted portion having an outer end external to said pump or motor for rotation thereof during the operation of said pump or motor and an inner end disposed within said bore a distance determined by said external rotation of said threadably mounted portion in juxtaposition to said outer block, said inner end of said threadably mounted portion having an outer perimeter substantially less than the perimeter of said bore,

seal means carried by said outer block to form a sealed pressure chamber in fluid communication with the hydraulic system pressure of said pump or motor within said bore between said outer block and said adjusting means, whereby hydraulic pressure is created between said adjusting means and said outer block during the operation of



said pump or motor tending to separate said adjusting means and said outer block and facilitate said radial adjustment of said outer block during the operation of said pump or motor,

an inner block freely movable within said bore and interposed between said outer block and cam ring, said inner block having a planar, outer surface positioned generally parallel to a plane tangential to said rotor determined by said radial adjustment of said outer block and in sliding contact with said inner surface of said outer block and having an inner surface in contact adjustable during the operation of said pump or motor with the outer periphery of said cam ring to position said cam ring relative to said rotor axis in the directions parallel to the axis of said outer block, so that

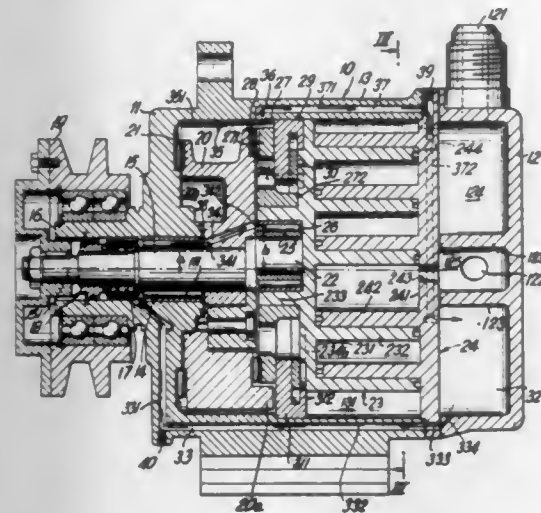
substantial movement of said cam ring relative to said rotor axis during the operation of said pump or motor is prevented in the direction of said thrust block by said contact between said inner block and cam ring and facilitated in the directions parallel to said planar surfaces of said inner and outer blocks by said sliding contact therebetween enabling said inner block to slide across said outer block when said cam ring moves in said parallel directions, and a substantially planar layer of antifriction material bonded to one of said planar surfaces of said inner and outer blocks to reduce the retarding effect on said sliding contact that friction would produce.



**4,340,339**  
**SCROLL TYPE COMPRESSOR WITH OIL**  
**PASSAGEWAYS THROUGH THE HOUSING**  
 Masaharu Hiraga, Honjo, and Kiyoshi Terauchi, Isesaki, both of Japan, assignors to Sankyo Electric Company Limited, Isesaki, Japan

Filed Feb. 13, 1980, Ser. No. 121,116  
 Claims priority, application Japan, Feb. 17, 1979, 54/16744  
 Int. Cl.<sup>3</sup> F04C 18/02, 29/02  
 U.S. Cl. 418—55

7 Claims

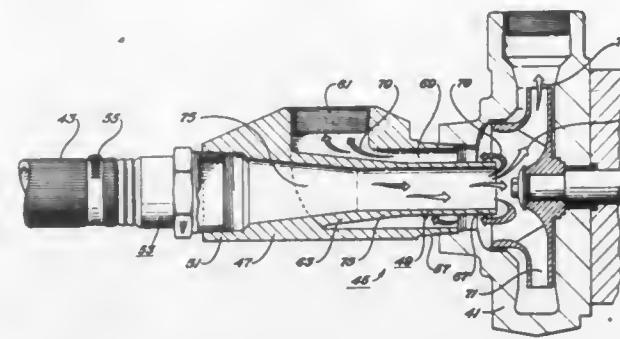


1. In a scroll type compressor unit including a compressor housing having a fluid inlet port and a fluid outlet port, a fixed scroll member fixedly disposed within said compressor housing and having first end plate means to which first wrap means are affixed, a first chamber defined by the inner surface of said compressor housing and said first end plate means of said fixed scroll member and containing said first wrap means therein, an orbiting scroll member orbitally disposed within said first chamber and having second end plate means to which second wrap means are affixed, and said first and second wrap means interfitting at an angular offset of 180° to make a plurality of line contacts to define at least one sealed off fluid pocket which moves with reduction of volume thereof by the orbital motion of said orbiting scroll member, thereby to compress the fluid in the pocket, the improvement which comprises a rear housing on said compressor housing disposed adjacent to said first end plate means and having a suction chamber and a discharge chamber communicating with said inlet port and outlet port, respectively, said first end plate means provided with a fluid intake hole for communicating between said first chamber and said suction chamber and with a fluid discharge port at a position corresponding to the center of said first wrap means for discharging the compressed fluid into said discharge chamber, first means including a drive shaft for imparting the orbital motion to said orbiting scroll member, a front housing on said compressor housing including a first opening for receiving said drive shaft, a shaft seal cavity disposed about a portion of said drive shaft, oil deflector means for directing oil flow along the inner surface of said compressor housing into an axial direction, an oil opening formed in the inner wall of said compressor housing adjacent to an end of said oil deflector means, a first oil passageway communicating between a lower portion of said suction chamber and said shaft seal cavity, and a second oil passageway communicating between said oil opening and said lower portion of said suction chamber, whereby the oil in said lower portion of said suction chamber flows into said first chamber through said first oil passageway, shaft seal cavity and said shaft receiving opening to lubricate moving parts in said first chamber and returns into said lower portion of said suction chamber through said oil deflector means, said oil opening and said second oil passageway.

**4,340,340**  
**VACUUM SYSTEM**  
 Glenn R. Brown, Euless, and James S. McMillan, Benbrook, both of Tex., assignors to Plastic Machinery Corporation, Fort Worth, Tex.

Filed Dec. 18, 1980, Ser. No. 217,573  
 Int. Cl.<sup>3</sup> B29F 3/03; B29C 25/00  
 U.S. Cl. 425—71

4 Claims



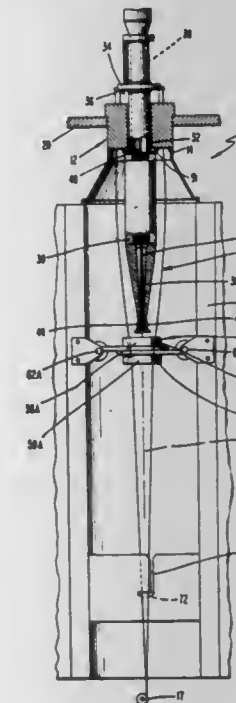
1. In a vacuum system for extruding plastic pipe, including:
  - a. plastic pipe extruding means for extruding hot extruded plastic pipe;
  - b. vacuum tank and cooling means for conforming the hot extruded plastic pipe to predetermined external dimensions and cooling the hot extruded plastic pipe to a solid plastic pipe;
  - c. plastic pipe mold for defining said predetermined dimensions of said plastic pipe; said plastic pipe mold being disposed adjacent said plastic pipe extruding means and interiorly of said vacuum tank;
  - d. cold water inlet means for supplying chilled cooling water for cooling said plastic pipe;
  - e. effluent water conduit connected with said vacuum tank for circulating the warmer water from said vacuum tank;
  - f. vacuum forming means for pulling a vacuum on said vacuum tank; said vacuum forming means being connected with said effluent water conduit and comprising a vacuum pump for pumping a gas and a centrifugal liquid pump having an impeller, an inlet suction port, and a peripheral discharge port for pumping the liquid water; the improvement comprising:
    - g. an outer housing having its first end connected with said effluent water conduit and its second end connected with said inlet suction port of said liquid pump and having intermediate its ends a vacuum port connected with said vacuum pump; and
    - h. an internal sleeve means for conducting liquid into said impeller directly; said internal sleeve means having its first end sealingly connected to the interior wall of said first end of said outer housing and extending directly toward the entrance to said impeller so as to conduct relatively high velocity liquid by inertia into said impeller; said internal sleeve means having its second end smaller in dimension than said second end of said outer housing so as to define an annular space therebetween for withdrawing gas from the incoming stream and conducting said gas to said vacuum pump via said vacuum port such that said vacuum pump is not flooded by liquid in operation.
3. Apparatus for pulling a vacuum on a system having a conduit for an effluent stream of both liquid and gas and having a gas pump means for pumping gas and a centrifugal liquid pump means having an impeller, an inlet suction port and a peripheral discharge port for pumping liquid therefrom, comprising:
  - a. an outer housing having its first end connected with said conduit of said effluent stream and having its second end connected with said inlet suction port of said liquid pump means and having intermediate its ends a vacuum port connected with said gas pump means; and
  - b. an internal sleeve means for conducting liquid into said liquid pump means; said internal sleeve means having its first end sealingly connected to the interior of said first

end and extending directly toward the entrance to said impeller of said liquid pump means so as to conduct liquid by inertia into said liquid pump means; said internal sleeve means having its second end smaller in dimension than said second end of said outer housing so as to define an annular space therebetween for withdrawing only gas from the incoming stream; said annular space conducting said gas to said vacuum port and thence to said gas pump means such that said gas pump means is not flooded by liquid.

**4,340,341**  
**APPARATUS FOR GUIDING FILAMENTS**  
 Max L. Cardell, Shelby, N.C., assignor to Fiber Industries, Inc., New York, N.Y.

Filed Oct. 21, 1980, Ser. No. 199,293  
 Int. Cl.<sup>3</sup> B29C 25/00  
 U.S. Cl. 425—72 S

6 Claims

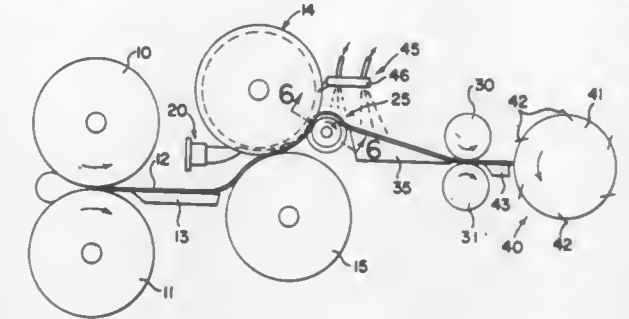


1. The combination of a spinneret for forming a group of filaments, and a guide disposed below the spinneret for guiding said group of filaments whereby such group forms a main longitudinal axis, said guide comprising:
  - a carrier movable forwardly toward and rearwardly away from a location where the filament group defines a first cross-sectional area,
  - a plurality of jaws movably mounted on said carrier for movement between:
    - an open position, and
    - a closed position in which said jaws close to form a through-passage which defines a second cross-sectional area smaller than said first cross-sectional area of the filament group and
- actuating means operatively connected to said carrier and jaws for:
  - displacing said carrier forwardly toward the filament group to a filament-capturing position with said jaws open,
  - closing said jaws around the group of filaments to converge all the filaments within said through-passage, with a longitudinal axis of said through-passage being spaced from said main longitudinal axis,
  - retracting said carrier and closed jaws rearwardly to an operational position to displace said longitudinal axis of said through-passage to a location substantially aligned with said main axis.

**4,340,342**  
**APPARATUS FOR PROCESSING ELASTOMERIC MATERIALS**  
 Heung T. Kim, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 16, 1981, Ser. No. 225,498  
 Int. Cl.<sup>3</sup> B29C 17/10  
 U.S. Cl. 425—72 R

5 Claims

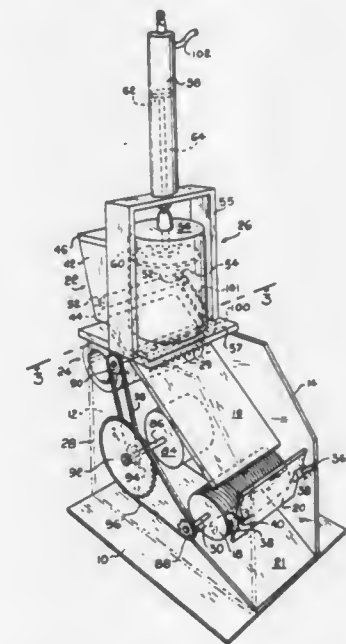


1. An apparatus for the cubing of thermoplastic materials having support means, a pair of rolls mounted on said support means, one of said rolls having a plurality of spaced formers cooperative with said other roll to form an undulating sheet having parallel strands interconnected by laterally extending and longitudinally extending thin web portions from a uniform thickness sheet of hot material passing therebetween, slitting means mounted on said support means and cooperative with said one roll to slit said undulating shapes along said longitudinally extending web portions into longitudinally extending strands, a cube cutter means mounted downstream of said pair of rolls for cutting said laterally extending webs of said plural strands into individual cubes, and cooling means mounted between said cube cutter and said slitting means for cooling said strands.

**4,340,343**  
**FOOD PREPARATION MACHINE**  
 Ugo Mancini, 334 Church St., Mountain View, Calif. 94041

Filed Aug. 10, 1981, Ser. No. 291,388  
 Int. Cl.<sup>3</sup> A21C 3/10, 9/08  
 U.S. Cl. 425—91

10 Claims



1. A food preparation machine comprising:
  - (a) a flouring ramp having an upper end, a lower end, an upper surface, and a lower surface;
  - (b) a roller located under said lower surface proximate said lower end of said flouring ramp;
  - (c) a deflection plate having a lower end spaced from said roller to provide a gap;
  - (d) means for depositing dough plugs on said upper surface of said ramp proximate said upper end, whereby said plugs may



roll and slide down and then off the end of said ramp, and come into abutment with said deflection plate and roller; and (e) means rotating said roller so that said plugs abutting said deflection plate and said roller are forced through said gap.

#### 4,340,344 APPARATUS FOR MANUFACTURE OF THERMOPLASTICS PIPE

William C. Aston, Halesowen, and Derek Walker, Wakefield, both of England, assignors to IMI Yorkshire Imperial Plastics Limited, Leeds, England

Filed Sep. 10, 1980, Ser. No. 185,926

Claims priority, application United Kingdom, Sep. 15, 1979, 7932064

Int. Cl.<sup>3</sup> B29C 17/07

U.S. Cl. 425—149

10 Claims



1. Apparatus for use in the manufacture of thermoplastic pipe by radial expansion of a pipe blank, comprising a mould having a cylindrical central mould portion and two mould end portions closing the ends of the cylindrical central mould portion at least one of the end portions being removable from the central portion; means for centrally locating a pipe blank at its ends in each of the mould end portions, said locating means in use extending internally of the blank; means for supplying heated fluid through one mould end portion into the space which in use occurs between the blank and the cylindrical walls of the central mould portion and means for removing said fluid through the other mould end portion; means for supplying heated fluid at a first pressure through the locating means into the interior of the blank, and means for removing said fluid through the other locating means; and means for supplying fluid into the interior of the blank under such a higher pressure as to cause the blank to expand radially into engagement with the interior of the mould.

#### 4,340,345 APPARATUS FOR PREPARING A PARISON AND TRANSFERRING IT TO A MOLDING MACHINE

Peter T. Schurman, Woodbridge, Conn., assignor to The Plastic Forming Company, Inc., Woodbridge, Conn.

Filed Jan. 28, 1980, Ser. No. 115,944

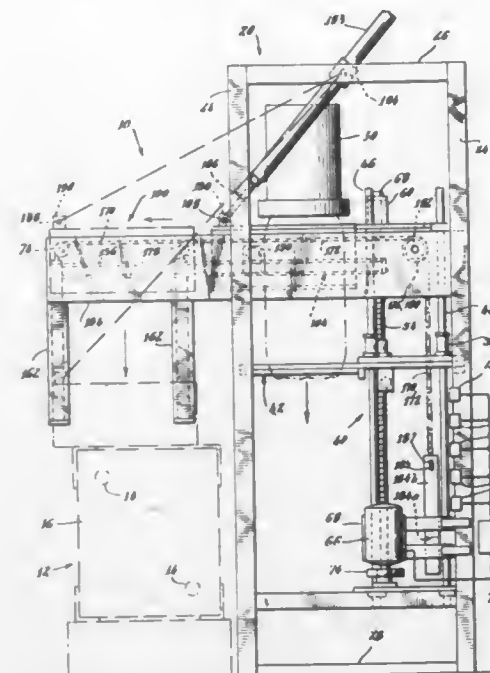
Int. Cl.<sup>3</sup> B29C 17/07, 17/16

U.S. Cl. 425—150

20 Claims

1. A molding apparatus comprising:  
A. an extrusion head, mounted in a stationary location, for continuously extruding a parison in an extrusion direction;  
B. a molding machine, mounted in another stationary location laterally displaced from and below said extrusion head, for molding sections of said parison into articles; and  
C. a mechanism for preparing a parison as it is extruded in said extrusion direction from said extrusion head and for transferring sections of said parison to said molding machine, said preparing and transferring mechanism including:  
(1) parison stretcher means mounted below said extrusion head for grasping and sealing said parison at one location on its length and for stretching said parison, while being extruded, in said extrusion direction at a controlled rate; and  
(2) parison transfer means mounted for movement between the region of said extrusion head and the region of said molding machine, and being operable for grasping and sealing said parison at a second location on its length intermediate said one location and said extrusion

head to thereby define a parison section; for severing said parison section from said parison after being stretched; for transferring said parison section trans-



versely to said extrusion direction away from said extrusion head; and subsequently for delivering said parison section, in a direction generally parallel to said extrusion direction, to said molding machine.

#### 4,340,346 MECHANICAL SAFETY COVER INTERLOCK FOR INJECTION MOLDING MACHINE

Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

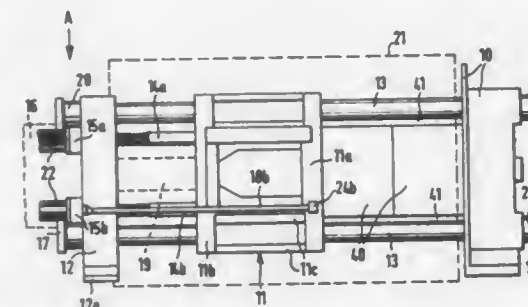
Filed Jul. 21, 1980, Ser. No. 170,920

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929676

Int. Cl.<sup>3</sup> B29F 1/00

U.S. Cl. 425—152

12 Claims



1. In the die closing unit of an injection molding machine which has a stationary die half mounted on a stationary die carrier member and a movable die half mounted on a movable die carrier member and a plurality of tie rods guiding the movable die carrier member for axial die opening and closing movements while forming a rigid connection between the stationary die carrier member and a stationary support member located axially behind the movable die carrier member and an axially rearwardly retractable safety cover enclosing at least a portion of the die closing unit, in said die closing unit, a mechanical safety cover interlock mechanism comprising in combination:  
at least one arresting rod attached to the movable die carrier member and extending axially rearwardly therefrom through the stationary support member;  
an arresting unit for each arresting rod mounted on the rear side of the stationary support member; and  
a control rod for each arresting unit attached on one extremity to the safety cover and extending axially rearwardly there-

from into cooperative engagement with the control unit; and wherein  
the arresting rod has a succession of transverse grooves on that portion of its length which extends rearwardly beyond the stationary support member in the open position of the movable die carrier member;  
the arresting unit includes two arresting jaws on diametrically opposite sides of the arresting rod with matching teeth engageable into the grooves of the arresting rod, the arresting jaws being guided for opposite transverse movements into and out of engagement with the arresting rod;  
the arresting unit further includes means for resiliently biasing the arresting jaws into engagement with the arresting rod; and  
the interlock mechanism further comprises control means defined by the control rod and the arresting unit for forcibly disengaging the arresting jaws from the arresting rod, in opposition to the jaw biasing means, when the safety cover is in the closed position, and for freeing the jaw biasing means to move the arresting jaws into engagement with the arresting rod, when the safety cover is retracted from the closed position.

#### 4,340,347 SCRAP RECOVERY SYSTEM

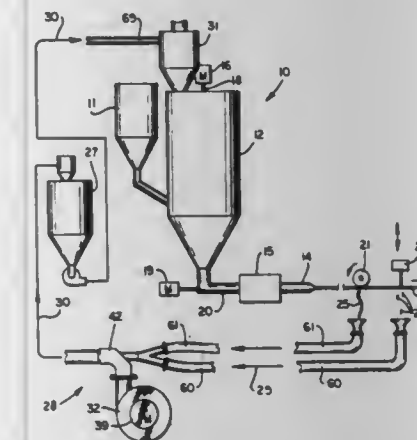
Joseph D. Robertson, 990 Swathmore Dr., NW., Atlanta, Ga. 30327

Filed Dec. 1, 1980, Ser. No. 211,751

Int. Cl.<sup>3</sup> B29F 3/02

U.S. Cl. 425—217

5 Claims



1. A scrap recovery apparatus for a processing system in which particulate plastic materials are moved from a supply hopper through a former and formed into a product, cutting means cuts the formed product, and the scrap from the cut product is moved progressively from the cutting means back to the supply hopper, the improvement therein of pneumatic conveying means including a blower having an exhaust opening, an approximately L-shaped induction conduit with a first leg including an induction air inlet in communication with said blower exhaust opening, a second leg angled with respect to said first leg and defining an outlet opening and formed with a section of progressively reduced cross-sectional area at its outlet opening, a third opening positioned generally between the inlet opening of said first leg and the outlet opening of said second leg, an adjustable feed nozzle extending through said third opening and defining an inlet opening outside said induction conduit and a discharge nozzle opening in said induction conduit aligned with the outlet opening of said induction conduit, said feed nozzle defining a rectilinear cylindrical passage-way extending therethrough for the movement of scrap in a straight path from outside said induction conduit, through said feed nozzle and into the second leg of said induction conduit, means for adjustably positioning the discharge opening of said feed nozzle to locate the discharge opening further into or out of the section of progressively reduced cross-sectional area of said induction conduit, whereby air from the blower is moved through the first leg of the induction conduit, then about the

feed nozzle and through the second leg of the induction conduit and through the progressively reduced cross-sectional area of the outlet opening of the induction conduit to induce a flow of air and scrap in a straight path from outside the induction conduit and on through the feed nozzle and the second leg of the induction conduit, for directing scrap from said cutting means to said induction conduit and directing scrap from the induction conduit to the supply hopper of the processing system.

#### 4,340,348 GLOVE MOLDING APPARATUS

Leonard D. Kurtz, Woodmere, N.Y., assignor to BioResearch Inc., Farmingdale, N.Y.

Division of Ser. No. 125,925, Feb. 29, 1980. This application Mar. 27, 1981, Ser. No. 248,540

Int. Cl.<sup>3</sup> B29H 3/042

U.S. Cl. 425—270

3 Claims



1. A molding device for molding gloves having a percentage elongation of at least 300%, said device including a tank containing a polymer, a pair of glove molds supported on a support arrangement adapted to be submerged in said tank so as to provide a coating of said polymer on said molds, each of said glove molds comprising a handshaped mold member including separate, spaced fingers and the tips of the fingers and the spaces between the fingers comprising non-rounded, non-horizontal inclined surfaces which are joined at an apex and define an included angle therebetween.

#### 4,340,349 APPARATUS FOR REPAIRING HOT SPOTS IN A REFRACTORY LINED WALL

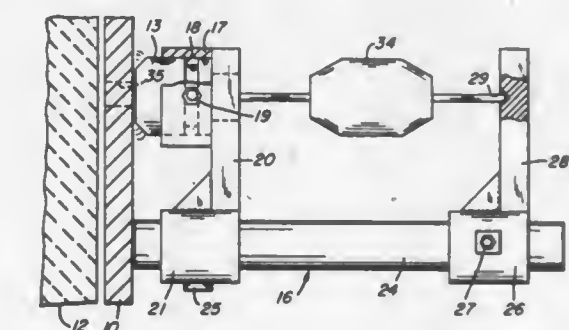
Larry R. Cary, 214 Brandt Pl., Hobart, Ind. 46342

Filed Jan. 11, 1980, Ser. No. 111,451

Int. Cl.<sup>3</sup> B28B 1/48

U.S. Cl. 425—290

4 Claims

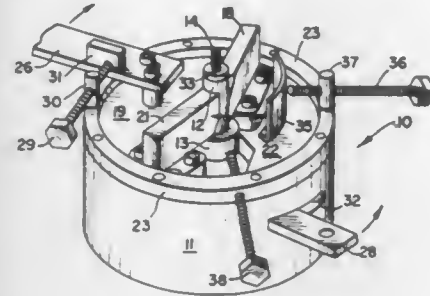


1. Apparatus for repairing hot spots in a wall which has a metal shell and a refractory lining, said apparatus comprising a plurality of relatively closely spaced couplings affixed in advance to said shell over a relatively large area, a jig adapted to be removably mounted on any of said couplings which overlies a hot spot, a drill adapted to be supported on said jig for drilling a hole through said shell at the coupling on which said jig is mounted whereby grouting material may be injected



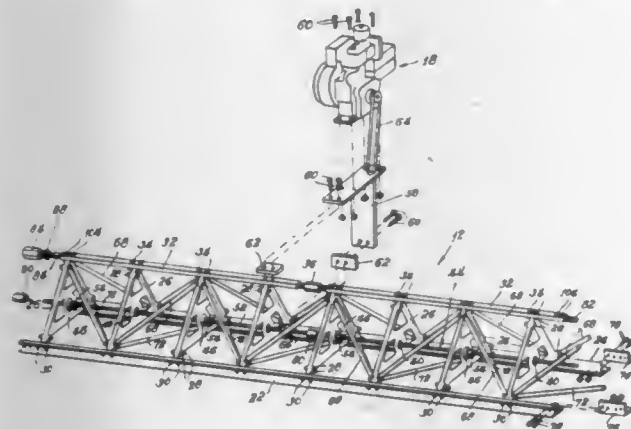
through said hole, and with said coupling being adapted for plugging after injection of grouting materials.

**4,340,350**  
**PROCESS AND APPARATUS FOR THE MANUFACTURE OF SINTERED TUNGSTEN CARBIDE TOOL TIPS**  
 Karl S. Springborn, Waverley, Australia, assignor to Austung Proprietary Limited, South Yarra, Australia  
 Division of Ser. No. 84,296, Oct. 12, 1979, Pat. No. 4,303,416.  
 This application Aug. 25, 1980, Ser. No. 180,942  
 Claims priority, application Australia, Oct. 20, 1978, PD6483  
 Int. Cl.<sup>3</sup> B29C 1/00, 3/00  
 U.S. Cl. 425—409 13 Claims



1. Apparatus for the manufacture of pressed blanks from particulate tungsten carbide for sintering and then fitment to cutting tool edges as inserts, said apparatus comprising a press assembly having a body, a forming pin which is centrally and vertically disposed within said body, a compression jaw and an ejection jaw forming a split-die which defines the sides of a cavity between said jaws and is adapted for limited, horizontal, angular reciprocation about said forming pin in sequential jaw-opening, carbide-filling, jaw-closing, blank pressing and blank ejection movements, and vertical and horizontal forming members for sealing said cavity formed by said jaws and said members against loss of said particulate tungsten carbide during said carbide-filling, jaw closing, and blank pressing movements.

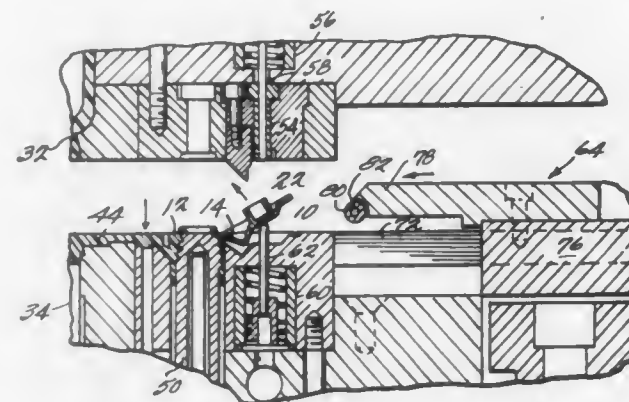
**4,340,351**  
**VIBRATORY CONCRETE SCREED WITH ECCENTRIC DRIVE SHAFT**  
 Joe M. Owens, 16 Pebblewood Trail, Naperville, Ill. 60540  
 Filed Feb. 13, 1981, Ser. No. 234,348  
 Int. Cl.<sup>3</sup> B28B 1/08; E01C 19/22, 19/30; B06B 1/16  
 U.S. Cl. 425—456 14 Claims



1. In a vibratory concrete screed having a pair of spaced apart elongate screed plates for working concrete as the screed is moved across the concrete and having vibratory means to impart uniform vibrations to the screed plates for tamping and leveling the concrete, the improvement comprising  
 a. a framework interconnecting said screed plates, said framework having a series of spaced, parallel, unitary frame members of triangular configuration having an integral, rigid cross support, the corners of the base of

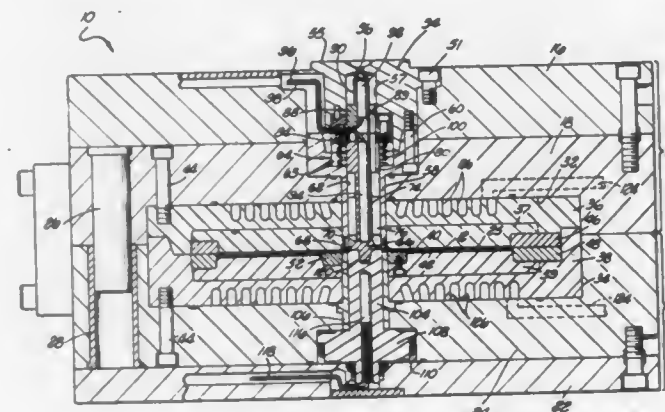
each said frame member including means attaching said frame member to said screed plates and maintaining said screed plates in spaced apart relationship, and  
 b. a plurality of side braces extending between said frame members, each side brace extending between the base of one said frame member and the apex of the next adjacent frame member.

**4,340,352**  
**HINGE EXERCISING MECHANISM**  
 Robert S. Hayberg, Pembroke Lakes, Fla., assignor to Global Precision Inc., Hollywood, Fla.  
 Filed Dec. 31, 1980, Ser. No. 221,918  
 Int. Cl.<sup>3</sup> B29C 27/12  
 U.S. Cl. 425—517 16 Claims



1. A device for closing a lid of a cap while in a mold for forming said cap, said lid being pivotally connected to said cap by a hinge, said device comprising:  
 a finger including a portion adapted for engagement with said cap;  
 means for slidably connecting said finger to said mold, said finger being able to slide transverse to the axis of said hinge, said connecting means being oriented to enable said finger portion to engage said lid and rotate said lid about said hinge as said finger slides; and  
 means for driving said finger.

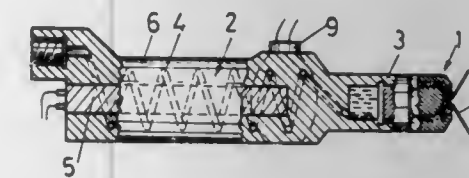
**4,340,353**  
**HOT SPRUE VALVE ASSEMBLY FOR AN INJECTION MOLDING MACHINE**  
 Bruno F. P. Mayer, Orange, Calif., assignor to Discovision Associates, Costa Mesa, Calif.  
 Filed Oct. 31, 1980, Ser. No. 202,838  
 Int. Cl.<sup>3</sup> B29D 17/00  
 U.S. Cl. 425—548 22 Claims



1. In an injection molding machine for producing centrally apertured record discs, a valve assembly for controlling flow of molten disc-forming material through a sprue bushing into a disc-shaped mold cavity, comprising:  
 a poppet valve positioned at the end of the sprue bushing adjacent the mold cavity and movable between an open position spaced from said end of the sprue bushing to allow flow of the molten disc-forming material through the sprue bushing into the mold cavity, and a closed position seated upon said end of the sprue bushing to prevent flow of the molten disc-forming material through the sprue bushing into the mold cavity.

position spaced from said end of the the sprue bushing to allow flow of the molten disc-forming material through the sprue bushing into the mold cavity, and a closed position seated upon said end of the sprue bushing to prevent flow of the molten disc-forming material through the sprue bushing into the mold cavity; and  
 ram means positioned on the side of the mold cavity generally opposite the sprue bushing for engaging said poppet valve and for positively moving said poppet valve from said open position to said closed position.

**4,340,354**  
**OIL BURNER**  
 Anton Schwarz, Hohenstrasse 24a, Innsbruck, Austria (A-6020)  
 Continuation of Ser. No. 851,478, Nov. 14, 1977, abandoned.  
 This application Nov. 1, 1979, Ser. No. 90,278  
 Claims priority, application Austria, Nov. 12, 1976, 8460/76;  
 Fed. Rep. of Germany, May 2, 1977, 2719573  
 Int. Cl.<sup>3</sup> F23N 1/00  
 U.S. Cl. 431—12 1 Claim

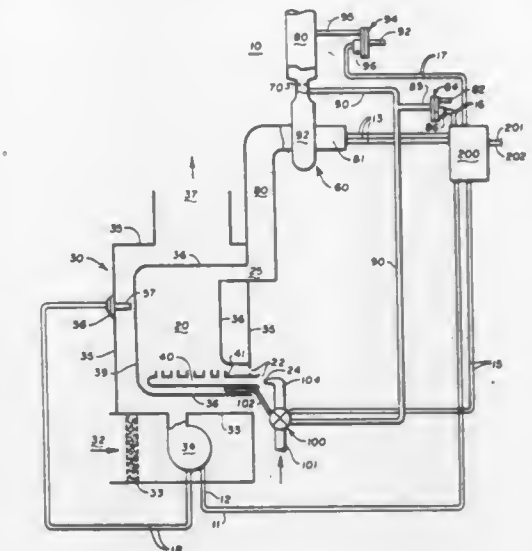


1. A method of controlling the heat output of an oil burner by having a first nominal heat output for a first flow rate and changing to a reduced second output for a second flow rate, the oil burner burning light fuel oil of up to 12 centistoke at 20° C. viscosity in the oil burner, the oil burner having an atomizing nozzle for atomizing the light fuel oil when it is supplied to the nozzle under pressure and for a heat capacity of less than 20,000 kcal/h, the nozzle being of the type which has a swirl chamber with an outlet bore for atomizing the light fuel oil into a conical spray with central air core and designed for flow rates of between 0.4 and 1.0 gal/h, the method comprising:  
 heating the light fuel oil at a location immediately upstream of the swirl chamber of the atomizing nozzle to a temperature between 100° C. and 150° C. and below the cracking and coking temperature of the oil to continuously reduce the viscosity and density thereof to less than 2 centistoke; feeding the heated light fuel oil through the atomizing nozzle under a pressure of between 2.5 and 12 atm; controlling the flow rate by weight of the light fuel oil by heating so that the flow rate by weight thereof is decreased by up to 60% to the second flow rate as compared with the first flow rate through the atomizing nozzle supplied with the unheated light fuel oil; and igniting the light fuel oil after it has passed through the atomizing nozzle.

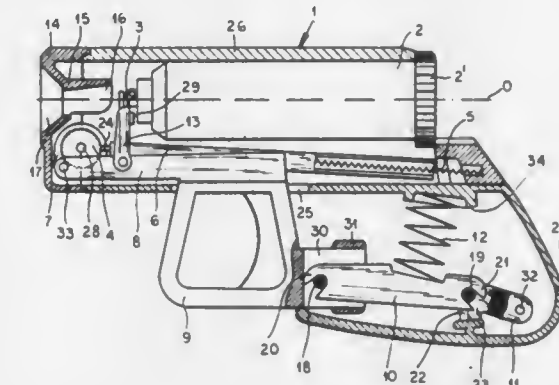
**4,340,355**  
**FURNACE CONTROL USING INDUCED DRAFT BLOWER, EXHAUST GAS FLOW RATE SENSING AND DENSITY COMPENSATION**  
 Lorne W. Nelson, Bloomington, and Ralph H. Torborg, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.  
 Filed May 5, 1980, Ser. No. 146,885  
 Int. Cl.<sup>3</sup> F23N 3/00  
 U.S. Cl. 431—20 18 Claims

1. In a heating system of the type having a combustion chamber with a fuel burner, an inlet for combustion air, and an exhaust stack for exhaust gas, the improvement comprising:  
 a blower connected to the exhaust stack for inducing exhaust gas flow through the exhaust stack and for drawing combustion air into the combustion chamber;  
 means for variably controlling the volume delivery rate of the blower such that volume flow of exhaust gas through

the exhaust stack and of combustion air into the combustion chamber are simultaneously regulated;  
 variable fuel supply control means responsive to the volume flow of exhaust gas through the exhaust stack for supplying fuel to the burner at a rate linearly proportional to the volume flow of exhaust gas and combustion air such that the furnace can operate at higher and lower firing rates; and



**4,340,356**  
**GAS LIGHTER**  
 Alfred Racek, Seitenbergstr. 54, 1160, Wien, Austria  
 Filed Mar. 3, 1980, Ser. No. 126,360  
 Int. Cl.<sup>3</sup> F23G 1/04, 7/12  
 U.S. Cl. 431—254 4 Claims



1. A gas lighter comprising:  
 a casing provided with a mouthpiece having an aperture;  
 a source of flammable gas in said casing aligned with said aperture and provided with a normally closed shut-off valve;  
 pyrophoric means in said casing for igniting gas issuing from said source upon the opening of said shut-off valve, said pyrophoric means including a flint holder and a striker wheel coaxing with a flint carried by said holder;  
 manual actuating means coupled with said shut-off valve for setting said striker wheel in rotation and concurrently opening said shut-off valve and for generating a gas flow ignited by sparks from said flint, said actuating means including a rotatable holder for said striker wheel centered on an axis of rotation and a slider linked with said rotatable holder at a location offset from said axis; and



a spring-loaded toggle joint in said casing linked with said actuating means for urging same into an unoperated position and opposing manual displacement thereof with a progressively decreasing force enabling rapid acceleration of said striker wheel, said toggle joint including a longer lever articulated to said slider at a first fulcrum and a shorter lever articulated to said casing at a second fulcrum substantially in the line of motion of said first fulcrum, said levers being hingedly interconnected at a pivot point, said toggle joint further including a spring bearing upon one of said levers in a sense tending to maintain a nearly aligned position of said levers.

4,340,357

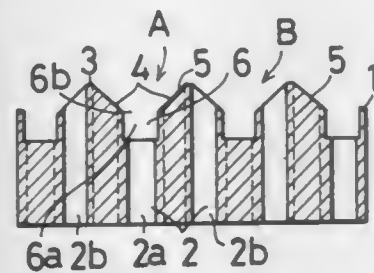
**INFRARED RADIATION GAS BURNER PLATE**  
Michimasa Kito, and Toshiyuki Nomura, both of Nagoya, Japan, assignors to Rinnai Kabushiki Kaisha Rinnai Corporation, Nagoya, Japan

Filed Sep. 25, 1979, Ser. No. 78,703

Claims priority, application Japan, Sep. 29, 1978, 53-119285  
Int. Cl.<sup>3</sup> F23D 13/12

U.S. Cl. 431-328

4 Claims



1. An infrared radiation gas burner plate of the type that a plate member composed chiefly of ceramic is provided with a large number of distributed burner holes made therethrough, characterized in that plural ribs, each of which is nearly V-shaped in section and comprises a linear ridge and a pair of slants on both sides of the ridge, are provided in parallel one with another on the obverse surface of the plate member, and each valley formed between mutually opposite slants of each adjacent pair of the ribs is formed into a groove of nearly channel-shaped in section, and the foregoing burner holes are arranged to be composed of plural central burner holes disposed in a line in each groove, and respective four peripheral burner holes surrounding each central burner hole and disposed in the opposite slant of both sides of the central burner hole, and these burner holes on both outsides of each ridge are so arranged as to be differentiated in phase.

4,340,358

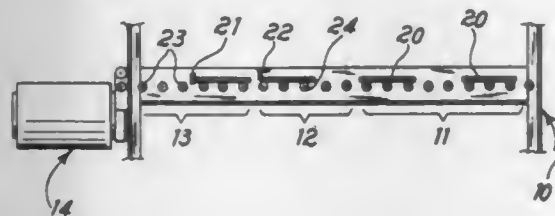
**APPARATUS AND PROCESS FOR DISCHARGING TILES FROM HIGH SPEED OVENS FOR THE PRODUCTION OF TILES**

Renato Bossetti, Novara, Italy, assignor to Societa' Impianti Termoelettrici Industriali (s.a.s.), Novara, Italy

Continuation-in-part of Ser. No. 155,114, May 30, 1980, abandoned, which is a continuation of Ser. No. 929,292, Jul. 28, 1978, abandoned. This application Jul. 8, 1980, Ser. No. 166,812  
Claims priority, application Italy, Jul. 28, 1977, 26234 A/77  
Int. Cl.<sup>3</sup> F27D 3/00; F27B 9/00

U.S. Cl. 432-11

11 Claims



1. A process for discharging fired tiles from firing ovens or

devices and/or conveyors located downstream thereof, said process comprising:

receiving plural generally transverse rows of said fired tiles at a first speed substantially equal to the travel speed of said tiles in an oven chamber, and conveying each said row of tiles at said first speed and in a direction of travel; increasing the speed of each said row of tiles to a second speed greater than said first speed, and thereby increasing the spacing between successive said rows of tiles, and conveying each said row of tiles at said second speed and in said direction of travel; subsequently further increasing the speed of each said row of tiles to a third speed greater than said second speed, and bringing each said row of tiles into engagement with an aligning device and thereby precisely aligning said row in a direction transverse to said direction of travel; subsequently discharging the thus aligned row of tiles at said third speed onto a discharge conveyor and conveying them to transport and/or storage devices.

4,340,359

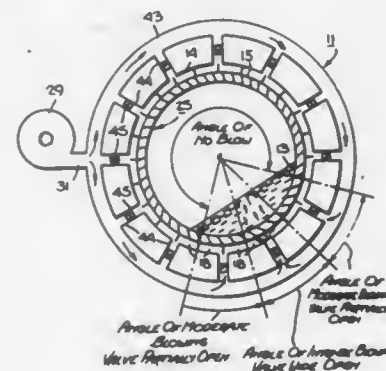
**APPARATUS AND METHOD OF HEATING PARTICULATE MATERIAL**

Holger Struckmann, 104 S. Alward Ave., Basking Ridge, N.J. 07920

Division of Ser. No. 8,268, Feb. 1, 1979, Pat. No. 4,266,931. This application Jan. 12, 1981, Ser. No. 224,030  
Int. Cl.<sup>3</sup> F21B 15/00

U.S. Cl. 432-14

8 Claims



1. A method of heat treating particulate material in a rotary drum, said method comprising the steps of placing a charge of particulate material in a rotary drum having a horizontally disposed longitudinal axis; rotating the drum about said axis to displace the charge of material towards one side of said drum to dispose the charge in a bed with a surface defining an angle to a horizontal plane, while cascading the material within said bed; and passing a flow of air upwardly at a predetermined fixed angle to the vertical and over a selectively variable angle of blow into the charge of material during rotation of the drum.

4,340,360

**FIRE BRICK FOR A ROTARY KILN**

Fritz Hoedl, Vienna, Austria; Morihiro Kimura, Tokyo, and Yoshio Yasuda, Bizen, both of Japan, assignors to Veltscher Magnesitwerke-Aktiengesellschaft, Vienna, Austria and Shinagawa Refractories Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1980, Ser. No. 217,536

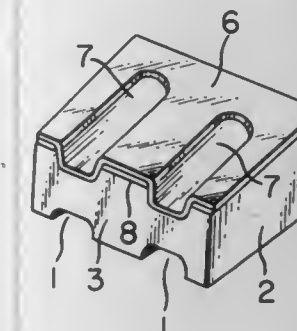
Claims priority, application Japan, Jun. 19, 1980, 55-84968[U]  
Int. Cl.<sup>3</sup> F27B 7/28

U.S. Cl. 432-119

2 Claims

1. A fire brick for a rotary kiln, said brick having a face which, when the brick is installed in a rotary kiln, faces the interior of the kiln, a pair of opposite large side surfaces extending away from said face, and an iron cladding end to which said large side surfaces extend and, when the brick is installed

in a rotary kiln, engages the iron cladding of the kiln, at least one of said side surfaces having at least one concavity extending in the radial direction of the kiln from said face, and a steel plate covering said side surface and having a portion complementary in shape to said concavity and extending to the bot-



tom of said concavity, said steel plate being bent to form a concavity complementary in shape to the concavity in said brick, the concavity in said plate being the sum of the depth of the concavity in said brick plus an expansion absorbing tolerance.

4,340,361

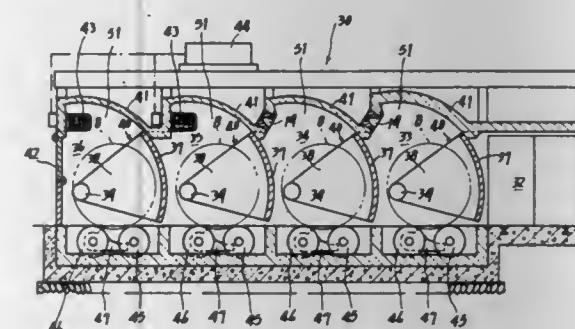
**APPARATUS FOR HEAT-TREATING CAST IRON PIPES**  
Yoshio Tanaka; Susumu Togawa, both of Takarazuka, and Akinori Sakoda, Amagasaki, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Jun. 10, 1980, Ser. No. 158,148

Claims priority, application Japan, Jun. 14, 1979, 54-75978  
Int. Cl.<sup>3</sup> F27B 9/02; F27D 19/00

U.S. Cl. 432-128

9 Claims



1. In a system for manufacturing cast iron pipes comprising a rotary mold of the stationary type included in a centrifugal casting machine and a heat-treating furnace, the improvement wherein:

the heat-treating furnace is disposed close to the rotary mold for receiving red-hot cast iron pipes directly therefrom; the furnace has a plurality of furnace chambers arranged side by side in parallel to the axis of the mold and partitioned by partition members provided between the chambers, each furnace chamber being adapted to accommodate and separately treat one cast iron pipe; rotating means is provided in each of the furnace chambers for supporting and positively rotating the pipe in a fixed position; and

means is provided for adjusting the temperature of the pipe accommodated in each of the furnace chambers, the temperature adjusting means comprising burners, disposed at least in the chamber for receiving a cast iron pipe from the mold, for emitting heat directly toward the top of the pipe.

4,340,362

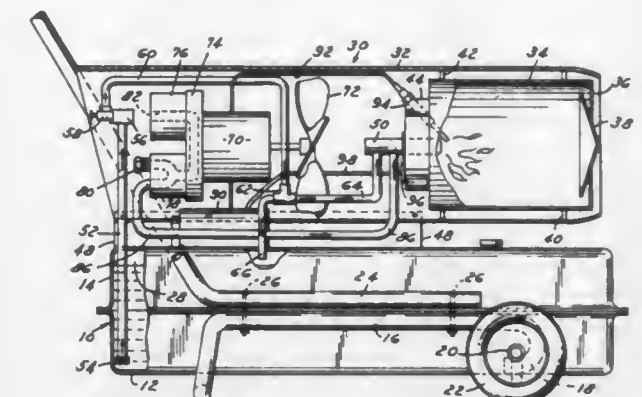
**FUEL FLOW MEANS FOR PORTABLE SPACE HEATERS**  
Clayton W. Chalupsky, and David A. Clemen, both of Cedar Rapids, Iowa, assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Feb. 23, 1981, Ser. No. 237,329

Int. Cl.<sup>3</sup> F24H 1/00; F23D 15/02

U.S. Cl. 432-222

6 Claims



1. A space heater apparatus having a fuel tank and support means, a combustion chamber means supported above said tank means including a combustion chamber, burner means, an aspirating nozzle means having a syphon line, motor driven fan, an air compressor and air line means connected to said nozzle means, an electrical control means and a fuel supply means wherein the improvement comprises

(a) a lift pipe means connecting fuel in said fuel tank, first stage pump means operative to supply a low pressure head of fuel to said aspirating nozzle means;  
(b) valve means for adjusting the flow of fuel in said fuel system;  
(c) fuel system means including said first stage pump means and a continuously open tank return fuel line in communication with said fuel tank and said aspirating nozzle to establish a pressure head source in communication with said syphon line for directing fuel to said aspirating nozzle means and wherein excess fuel is returned to said tank means;  
(d) said aspirating nozzle defining second stage pump means for drawing fuel from said low pressure source to produce a second stage pressure boost for supplying fuel under pressure to said combustion chamber.

4,340,363

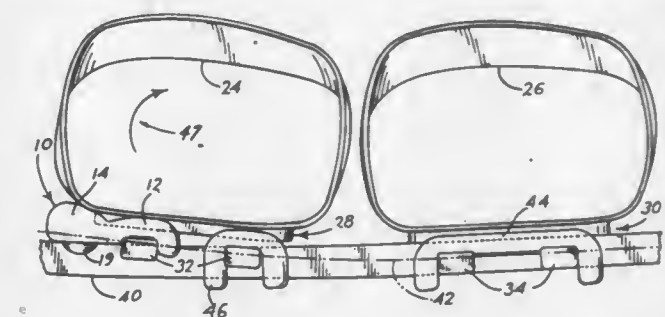
**ORTHODONTIC ROTATION WEDGE WITH TWIST-PREVENTING MOUNDS**

Paul E. Klein, Lake Oswego, and Roland M. Anderson, Portland, both of Oreg., assignors to Modcom, Inc., Canby, Oreg.

Continuation of Ser. No. 6,583, Jan. 26, 1979, abandoned. This application Jan. 29, 1981, Ser. No. 229,769  
Int. Cl.<sup>3</sup> A61C 3/00

U.S. Cl. 433-18

2 Claims



1. A mouth-fluid resistant elastomeric tooth rotation-effecting device in combination with a standard-twin-type orthodontic bracket or the like having at least one pair of ligation posts



disposed on opposite sides of and at least partially defining a path for receiving an orthodontic arch wire, said device comprising

- an attaching portion in the form of a substantially planar web of one cross-sectional thickness including, in the plane of the web, a pair of apertures releasably receiving and encircling such posts, said apertures, as so encircling such posts, inhibiting rotation of the device relative to such a bracket about an axis normal to the plane of said web,
- a displacing portion having a cross-sectional thickness greater than said one thickness joined to one side, and in the plane, of said web and being sized whereby, with said apertures releasably receiving and encircling the posts in the bracket, said displacing portion extends at least partially across the wire-receiving path in the bracket for the purpose of exerting a tooth-rotating force in a direction generally normal to said plane, and
- a pair of spaced projections joined to and projecting from one side of said displacing portion, adapted laterally to straddle an arch wire with the device in place with respect to such a wire and bracket, said projections, when so straddling an arch wire, being positioned to react, through direct lateral contact, with the arch wire thus to inhibit lateral shifting of said displacing portion relative to the arch wire, and to insure retention of the arch wire in the space between said projections.

4,340,364

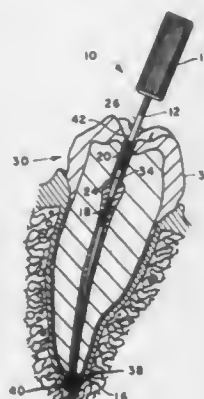
## ENDODONTIC TEST FILE

Milton G. Deemer, 3982 Hackberry Pl., Castro Valley, Calif. 94546

Filed Aug. 18, 1980, Ser. No. 179,052  
Int. Cl.<sup>3</sup> A61C 3/00, 5/02

U.S. Cl. 433—75

3 Claims



1. An endodontic test file for measuring the length of tooth between the apex of its root and the crown, said test file comprising:

- a smooth, strong, tapered, resilient, shank having a total length substantially greater than the estimated length of the tooth and a small diameter end smaller than that of the root canal of said tooth;
- a handle connected to the large diameter end of said shank for manually rotating said shank;
- a screw tip attached to said small diameter end of said shank, said tip having sharpened screw threads, said threads having a maximum diameter greater than the diameter of said small diameter end of said shank and a maximum length of approximately 1 mm, whereby rotation of said tip will draw said shank through said root canal to a point where said tip passes through the apex of said root canal; and
- measuring means marked on said shank for indicating distances along said shank between said screw tip and said handle, the indicated marking at the level of the tooth crown representing the length of the tooth between said apex and said crown.

4,340,365

## SPRAYING AND SUCTION CLEANSING DEVICE

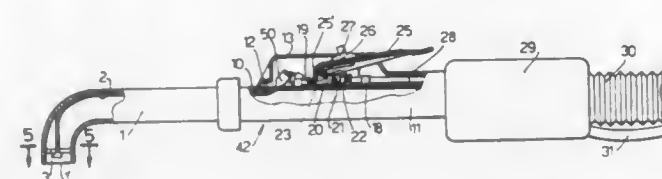
Antonio Pisanu, Corso Vittorio Emanuele, 108, 07010 Ittiri (Sassari), Italy

Filed May 6, 1980, Ser. No. 147,273

Claims priority, application Italy, May 8, 1979, 65011 A/79  
Int. Cl.<sup>3</sup> A61C 5/02, 17/04

U.S. Cl. 433—80

10 Claims



1. A spray and suction cleansing device comprising: means for defining an elongate housing having a suction pipe with a terminal suction opening at an end thereof; means for supplying negative pressure through said suction pipe to said terminal suction opening for removing materials from a surface being cleansed;
- a mixer supported by said housing having a mixer body and a liner in sealing contact with an outer circumferential surface of the mixer body, the mixer body having an axially extending bore with an inlet end and an outlet end, a circumferentially extending groove radially spaced from the bore, and a second groove formed in the circumferential surface interconnecting the circumferentially extending groove with a space adjacent the outlet end of said bore and having a decreasing cross sectional area in a direction extending towards the space;
- a first tube having an inlet connectable to a source of cleansing liquid and an outlet in fluid communication with said inlet end of said bore for supplying cleansing liquid to said mixer body;
- a second tube having an inlet connectable to a source of pressurized gas and an outlet in fluid communication with said circumferentially extending groove for supplying pressurized gas to said mixer body, the supplied gas flowing from the circumferentially extending groove through the second groove into the space adjacent the outlet end of said bore and pressurizing the cleansing liquid;
- lever means disposed intermediate the inlet and the outlet ends of said first and said second tubes for controlling the supply of pressurized gas and cleansing liquid to said mixer body; and
- a third tube extending between the space adjacent the outlet end of said bore and said terminal suction opening and having a terminal spraying opening for supplying pressurized cleansing liquid to the surface being cleansed so that the liquid loosens substances from the surface for removal by said means for supplying negative pressure, said third tube being encompassed by said suction pipe so that the portion of said suction pipe adjacent said terminal suction opening tends to prevent dispersion of said cleansing liquid thereby facilitating its removal from the surface being cleansed by said means for supplying negative pressure.

4,340,366

## WATER/AIR SPRAY SYSTEM FOR DENTAL HANDPIECE

Donald J. Heil, Lake Villa, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 23, 1981, Ser. No. 236,642  
Int. Cl.<sup>3</sup> A61C 1/12

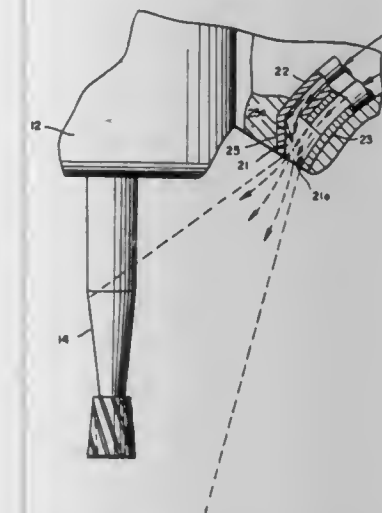
U.S. Cl. 433—82

4 Claims

1. A dental handpiece comprising a hollow handle having a proximal end portion adapted for connection to a supply hose containing conduits for the supply of air and water to said handle, an elongated body portion, and a neck portion termi-

nating at its distal end in a head assembly; said head assembly including a housing, an air turbine within said housing adapted to be driven by air supplied to said handle, and a chuck for operatively connecting a dental bur to said turbine; wherein the improvement comprises

said handle containing a spray tube assembly comprising a pair of tubes defining passages for conducting water and air from the proximal end of said handpiece to a nozzle disposed adjacent said head assembly; said spray tube assembly including a distal section along which said tubes have adjacent wall portions joined together; said adjacent



wall portions of said tubes being removed at said distal section to provide a cutout and to define a unitary nozzle chamber having a discharge orifice for directing a spray of water and chip air towards the cutting end of a dental bur; a portion of said waterconducting tube defining a wall portion of said nozzle chamber diametrically opposite from said cutout providing a deflecting surface aligned with the water passage and sloping inwardly and distally towards said orifice to deflect water from said water passage into the path of air discharged from said air passage and immediately prior to discharge of said spray from said orifice.

4,340,367

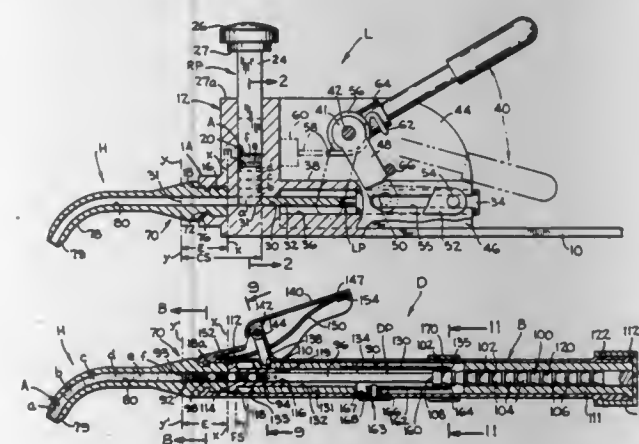
## LOADER AND DISPENSER FOR DENTAL AMALGAM

Leslie Vadas, 135 Riviera Dr., Los Gatos, Calif. 95030, and Bert M. Sabo, 19200 Bountiful Acres, Saratoga, Calif. 95070

Filed Dec. 15, 1980, Ser. No. 216,147  
Int. Cl.<sup>3</sup> A61C 5/04

U.S. Cl. 433—89

9 Claims



1. A dental amalgam dispensing instrument of the type having a discharge head formed with an amalgam passage, a hollow handle for said head, a plunger having a front amalgam dispensing tip slidable in the amalgam passage of the head and a rearward extension with ratchet teeth, plunger-advancing pawl means for said ratchet teeth and actuator means for said pawl means; the improvement wherein said plunger-advancing pawl means comprises a sleeve slidably mounted in a forward

portion of said handle, said sleeve surrounding said plunger, a cantilever spring projecting rearwardly from said sleeve and a pawl tooth at a rear portion of said spring.

3. A dental amalgam loading assembly of the type comprising an amalgam loader unit having a body formed with a loading passage, a loading plunger slidable in said loading passage, an amalgam reservoir passage formed in said loader body and intersecting said loading passage, a replenishing plunger slidable in said reservoir passage, means for advancing said loading plunger across said passage intersection for shearing off slugs of amalgam and means for detachably mounting an amalgam receiving member on said loader unit which member has a bore for receiving the slugs of amalgam; the improvement wherein said body has a bayonet joint breech projecting forwardly from a zone adjacent said passage intersection; said amalgam receiving member comprising an amalgam dispensing head having a through bore, a discharge tip at its front end and a bayonet joint breech portion at its rear end; said loader body breech detachably receiving said breech portion of the dispensing head, said loading plunger advancing means comprising means for advancing a forward portion of the loading plunger a predetermined distance past said passage intersection, into said loader body breech and into the bore of said dispensing head at the breech portion of said head.

4,340,368

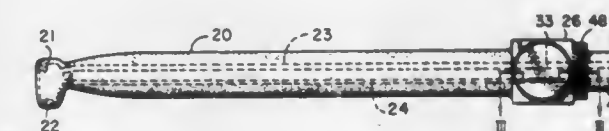
## DENTAL HANDPIECE OR THE LIKE

Michael P. Lococo, 4927 Victoria Ave., Niagara Falls, Ontario, Canada (L2E 1X1)

Filed Sep. 17, 1980, Ser. No. 188,025  
Int. Cl.<sup>3</sup> A61C 1/02

U.S. Cl. 433—99

23 Claims



1. A dental handpiece assembly of the type including:
  - (a) an elongate handle provided at one end thereof with dental burr mounting means for releasably securing a dental burr to said handle;
  - (b) burr drive means for rotating a burr secured in said mounting means;
  - (c) drive shut-off means for selectively shutting off rotary motion of a burr mounted in said mounting means;
  - (d) suspension engagement means for suspending said handle on a support and secured to said handle to form a generally integral unit therewith but being movable relative to the handle within predetermined limits of movement, said engagement means being adapted to move to one of said predetermined limits due to the weight of the suspended handle when the handpiece assembly is not in use;
  - (e) mode control means for selectively maintaining said shut-off means in one of its "on" or "off" modes;
  - (f) said mode control means being operatively associated with said engagement means such that the limits of movement of said engagement means corresponds to the respective modes of the mode control means, said "off" mode corresponding to the limits obtained on suspension of said handle.



4,340,369

**DENTAL ARTICULATING PAPER FORCEPS**

Artur Steiner, Postfach 65, 7707 Engen, Hegau, Fed. Rep. of Germany, and Howard G. Frank, 70 E. 10th St., New York, N.Y. 10003

Continuation of Ser. No. 938,758, Sep. 1, 1978, abandoned. This application Oct. 14, 1980, Ser. No. 196,741

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 7727100[U]

Int. Cl.<sup>3</sup> A61C 3/00

U.S. Cl. 433-162

6 Claims



1. In dental articulating paper forceps having a pair of aligned elongated jaws extending from interconnected spring arms and movable toward and away from one another with said spring arms resiliently holding said jaws together, said spring arms being the sole means holding said jaws together, the improvement where one of said jaws has a central ridge laterally recessed from the sides of the jaw and extending longitudinally substantially throughout its length and facing the other jaw, and the other of said jaws has a central longitudinally extending recess of a cross section matching said ridge and positioned to receive said ridge upon closure of said jaws, said central ridge having a cross section with four substantially sharp corners and also having lateral serrations extending thereacross throughout its length, each of said four substantially sharp corners of said central ridge abutting a mating substantially sharp corner of said central longitudinally extending recess so that when said spring arms are resiliently and solely holding said jaws together each of said four mated pairs of sharp corners is adapted to tightly engage thin dental articulating paper, whereby thin dental articulating paper when bit upon by a patient does not move between said jaws.

4,340,370

**LINEAR MOTION AND POP-UP TARGET TRAINING SYSTEM**

Albert H. Marshall, 9154 Bay Point Dr., Orlando, Fla. 32811; Bon F. Shaw, 419 Selkirk Dr., Winter Park, Fla. 32792; Paul D. Grimmer, 1250 S. Pennsylvania Ave., Winter Park, Fla. 32789; Herbert C. Towle, 206 Ranch Rd., Maitland, Fla. 32751, and Gary M. Bond, 305 E. Jersey St., Orlando, Fla. 32806

Filed Sep. 8, 1980, Ser. No. 185,047

Int. Cl.<sup>3</sup> F41G 3/26

U.S. Cl. 434-22

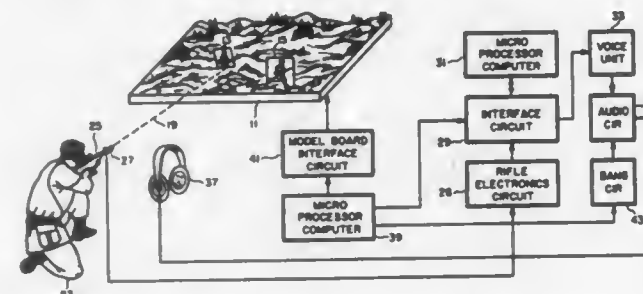
17 Claims

1. A weapons training system comprising, in combination: a modelboard having a terrain surface thereon, said terrain surface having a plurality of apertures, and a plurality of slots located therein; a plurality of pop-up targets, each of which has first and second inputs, each of which, when activated, pops up through one of the apertures located in the terrain surface of said modelboard, and each of which, when activated, emits therefrom a pulsed beam of infrared light; a plurality of linear motion targets, each of which has first, second, third, and fourth inputs, each of which, when activated, moves in either a first predetermined direction,

or a second predetermined direction upon the terrain surface of said modelboard, and each of which, when activated, emits therefrom a pulsed beam of infrared light; first computing means having a reset input, first, second, and third sequence select inputs, a plurality of target activate outputs, a target present output, and an audio output for providing digital logic signals at the target activate outputs thereof so as to effect the activation of each of said linear motion targets and said pop-up targets in a predetermined sequence in accordance with a computer program utilized thereby, for providing a target present signal at the target present output thereof whenever one of said linear motion targets, or one of said pop-up targets is activated thereby, and for providing a movement indicator signal at the audio output thereof whenever one of said linear motion targets or one of said pop-up targets is activated thereby;

first signal generating means having an output for providing at the output thereof a direct current voltage signal; switching means having a first input connected to the output of said first signal generating means, a second input connected to ground and an output connected to the reset input of said first computing means for passing therethrough the direct current voltage signal provided by said signal generating means so as to initialize the computer program utilized by said first computing means;

first gating means having a plurality of inputs, with the first input thereof connected to the output of said switching means, and the remaining inputs thereof respectively connected to the target activate outputs of said first computing means, a plurality of pop-up target activation out-



puts respectively connected to the first inputs of said pop-up targets, and a plurality of linear motion target activation outputs, one half of which are respectively connected to the first inputs of said linear motion targets, and the other half of which are respectively connected to the second inputs of said linear motion targets adapted for passing therethrough the digital logic signals provided by said first computing means only when said switching means is positioned such that the direct current voltage signal provided by said first signal generating means passes through said switching means to the first input thereof;

second signal generating means having an output for providing at the output thereof a clock signal having a predetermined frequency;

second gating means having a clock input connected to the output of said second signal generating means, a plurality of pop-up target activation inputs respectively connected to the pop-up target activation outputs of said first gating means, a plurality of linear motion target activation inputs respectively connected to the linear motion target activation outputs of said first gating means, a plurality of pop-up target light beam activation outputs respectively connected to the second inputs of said pop-up targets, and a plurality of linear motion target light beam target activation outputs, one half of which are respectively connected to the third inputs of said linear motion targets, and the other half of which are respectively connected to the fourth inputs of said linear motion targets adapted for passing therethrough, in response to the digital logic signals provided by said first computing means, the clock

4,340,372

**EDUCATIONAL AID**

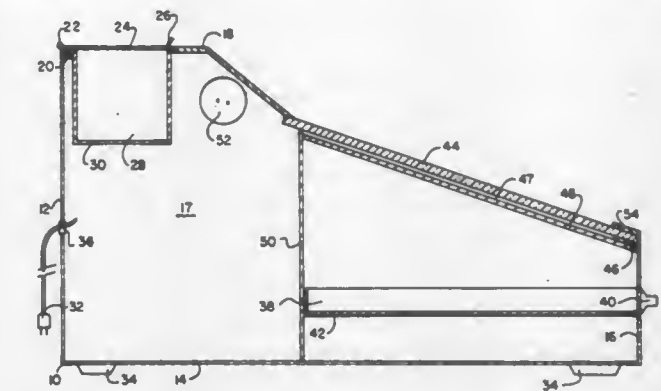
Robert L. Brassine, 3421 Glenn-Don, #2, Anchorage, Ak. 99504

Filed Apr. 17, 1980, Ser. No. 141,014

Int. Cl.<sup>3</sup> G09B 11/04

U.S. Cl. 434-88

2 Claims



1. A display device utilizing light as a display medium comprising:

a transparent panel having a first face, a second face, and a side wall and having the characteristic that light entering said panel through said side wall will be emitted through said first face at least when a foreign object is in contact with either of said faces, the longitudinal plane of said transparent panel being in line with a source of light such that said side wall of said transparent panel is permeated by light from said source;

a housing having a hole in one face thereof, said transparent panel being located within said housing in a position in relation to said hole that enables human access to said first face for writing or drawing on said first face;

a background plate located in said housing and spaced below said transparent panel such that a plate-shaped gap to receive materials to be illuminated by said device is formed between said background plate and said transparent panel, wherein said housing has a slit in the side thereof to receive said materials and;

a crayon container, said housing having a hole in the top thereof to receive said crayon container, said crayon container having upper lips extending therefrom to rest on said housing;

wherein said crayon container has a light-impervious lid rotatably attached to a substantially transparent body, said crayon container being located adjacent to said light source so that the walls of said crayon container are illuminated by said light source.

4,340,373

**SPELLING MACHINE**

Bruce M. D'Andrade, Whitehouse Station, N.J.; Kwok W. Tsui, and Sing C. J. Yuen, both of Hong Kong, Hong Kong, assignors to Arco Industries Ltd., Hong Kong, Hong Kong

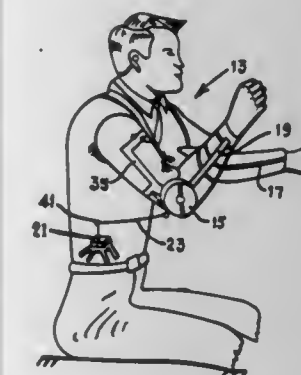
Filed Apr. 13, 1981, Ser. No. 253,892

Int. Cl.<sup>3</sup> G09B 1/20

U.S. Cl. 434-174

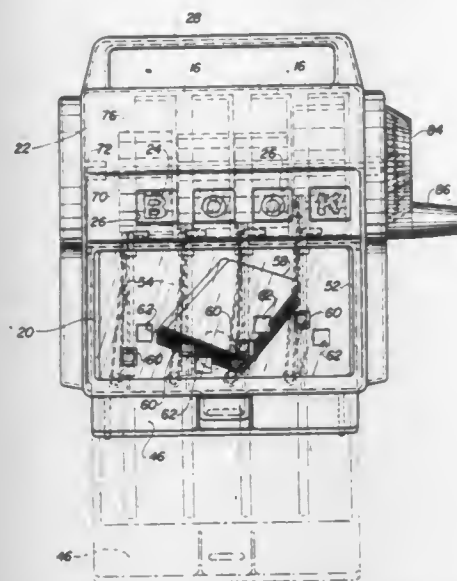
17 Claims

1. An apparatus for use with a flight suit to simulate the loads acting on the arms of an aircraft pilot under high G conditions comprising, a first torque motor of pancake-like configuration attached to the flight suit near the elbow, a plurality of plastic stays and struts positioned on the lower arm portion of the flight suit and operatively attached to said first torque motor, a second torque motor attached to the flight suit near the waistline, an upper arm strut positioned on the flight suit between the shoulder and elbow thereof, a tether line disposed between said second torque motor and the elbow of the flight suit, and a geared windlass operatively connected to said second torque motor whereby the energization of said second torque motor causes said tether line to wind around said geared windlass and thereby load the upper arm to create shoulder torque and retard forward movement of the elbow while the energization of said first torque motor through said plastic stays and struts produces torque at the elbow.





one end respectively engageable with said perforations in said cards when a card is slidably inserted in said machine, stop means on the opposite ends of said slides, and rotation limiting means on said drums corresponding to letters on said drums and engageable with said stop means on the opposite end portions of said slides to stop rotation of said drums respec-



tively with a letter on each drum which forms part of the word corresponding to the picture on the inserted card, means to rotate said drums upon said shaft in one direction to engage said rotation limiting means with said stop means on said slides, and means to rotate said drums in the opposite direction to starting position.

4,340,374

## ELECTRONIC LEARNING AID

Bobby G. Culley, Wylie, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

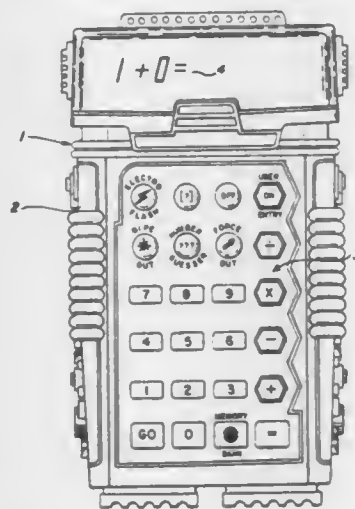
Continuation of Ser. No. 843,018, Oct. 17, 1977, abandoned.

This application Jan. 28, 1980, Ser. No. 115,840

Int. Cl.<sup>3</sup> G09B 7/02, 19/02

U.S. Cl. 434-201

21 Claims



1. An electronic learning aid comprising: problem posing means for posing a plurality of problems to an operator of the learning aid and for determining the correct solutions to the problems being posed; display means operably associated with said problem posing means for visually presenting to an operator of the learning aid problems posed by said problem posing means, said display means including a plurality of individually actuable segments visually observable when actuated to show at least the correct response to a problem as posed by said problem posing means; operator input means for receiving an input from an operator of the learning aid as a proposed solution by the operator

to the problem being posed as presented by said display means; digital logic means including comparator means coupled to said problem posing means, said operator input means and said display means for comparing the input received by said operator input means from the operator with the correct solution to the problem being posed and for providing a difference signal indicative of any differences therebetween; memory means for storing the number of problems posed to the operator as presented by said display means and the number of correct solutions provided by the input received by said operator input means as determined by said comparator means; and display presentation means operably associated with said actuable segments of said display means for selectively actuating segments of said display means in response to the number of correct solutions received by said operator input means from the operator as determined by said comparator means in relation to the number of problems posed by said problem posing means as presented by said display means to provide at least two different visually observable display presentations utilizing selectively actuated segments of said display means and indicative of the percentage of correct solutions entered by the operator at said operator input means with respect to the total number of problems posed, each of said different display presentations being a fanciful predetermined actuation of display segments and being capable of operator comprehension as individually related to the percentage of correct solutions entered by the operator at said operator input means.

4,340,375

## ELECTRONIC LEARNING AID

Takashi Sakaue, Nara; Koichi Hatta, Yamatokoriyama; Megumi Fukusaki, Osaka, and Yoshiro Kataoka, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 952,203, Oct. 17, 1978, abandoned.

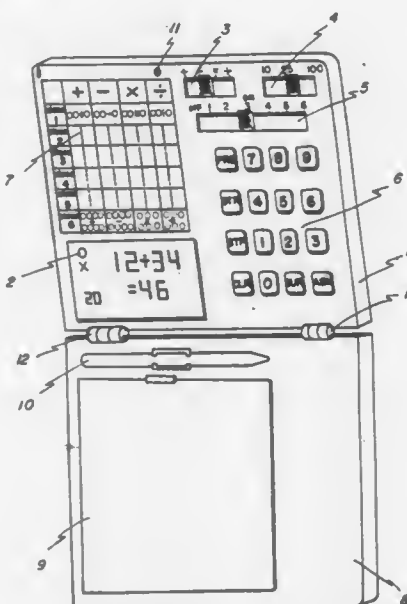
This application Sep. 19, 1980, Ser. No. 188,865

Claims priority, application Japan, Oct. 20, 1977, 52/126957

Int. Cl.<sup>3</sup> G09B 7/00

U.S. Cl. 434-201

14 Claims



1. An electronic learning aid for teaching addition, subtraction, multiplication, or division, comprising: means for automatically generating a multidigit problem having two operands; first display means for displaying said problems; input means for introducing an operator calculated answer for said problem; second display means for displaying information other than said problem including said calculated answer and a remainder of a division problem where present in said an-

swer, said second display means having a sufficient number of digits to display the calculated answer of a multiplication problem in which each operand contains at least two digits; determination means for detecting whether said calculated answer including remainder, if any, is the correct answer to said generated problem; clearing means for erasing said operator calculated answer from said second display means to allow the operator to introduce a new operator calculated answer for said problem; and means for disabling said clearing means when said determination means is enabled.

4,340,376

## SURFBOARD LOCKING DEVICE

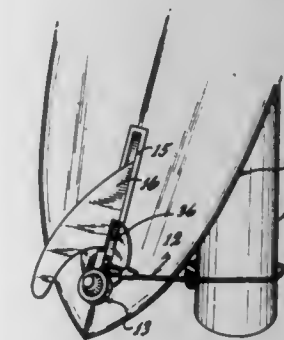
Warren S. Williams, 1084 Evergreen Dr., Encinitas, Calif. 92024

Filed Jul. 30, 1980, Ser. No. 173,855

Int. Cl.<sup>3</sup> A63C 15/00

U.S. Cl. 441-74

9 Claims



1. A locking device for surfboards equipped with fin holders wherein a fin retaining screw attaches the surfboard fin to a threaded retaining plate carried by the fin holder, comprising in combination:

- a padlock;
- an elongated flexible member having a loop or hole at each end thereof;
- attachment means for attaching to the surfboard at the base of the surfboard fin engaging the threaded retaining plate carried by the fin holder to provide a point of attachment for lockably connecting the surfboard to another object with the padlock and elongated flexible member; and
- means for lockably attaching to the attachment means with the padlock and cooperating with the structure of the surfboard to prevent the unauthorized removal of the attachment means from the surfboard.

4,340,377

## SPEED CHANGE DEVICE

Ted W. Johnson, 214 N. Fifth St., Griffin, Ga. 30223; William R. Hamilton, Cleveland, and Archie I. Hamilton, Atlanta, both of Ga., assignors to Hamilton Bros. Mfg. Co., Atlanta and Ted W. Johnson, Griffin, both of Ga., a part interest

Filed Jun. 23, 1980, Ser. No. 161,888

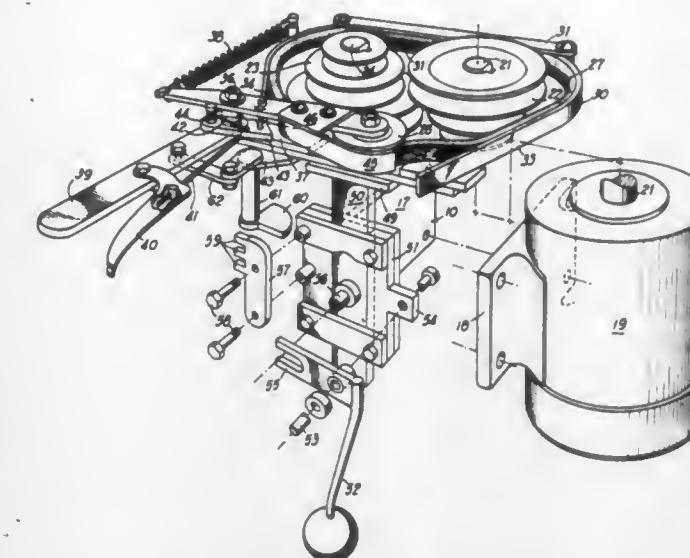
Int. Cl.<sup>3</sup> F16H 9/06, 7/12

U.S. Cl. 474-81

10 Claims

7. A speed change device comprising a support, a pair of spaced parallel axis oppositely tapering stepped pulleys on the support, rotational driving means for one stepped pulley on the support, a transmission belt engageable with both of said pulleys to transmit power from the driving pulley to the driven pulley at preselected different speeds, a linear slide means on the support movable on a path parallel to the rotational axes of said pulleys, and manually movable means on said slide means operable selectively to tension said belt and hold the belt in power transmitting engagement with said pulleys and to relax

the belt and compressively deform it to cause complete separation of the belt from said pulleys whereby the belt is shiftable



with the slide means relative to said pulleys into alignment with selected steps of said pulleys.

4,340,378

## V-BLOCK COMPONENT AND BELT

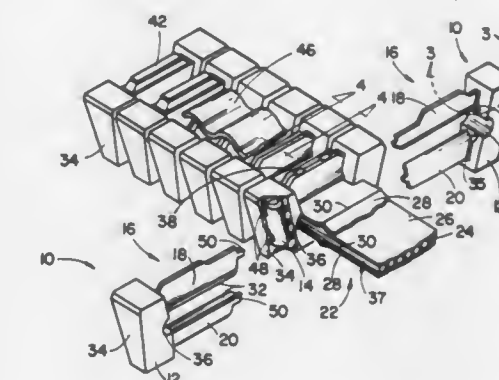
Paul E. Russ, Sr., Littleton, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Sep. 8, 1980, Ser. No. 184,713

Int. Cl.<sup>3</sup> F16G 5/20

U.S. Cl. 474-244

4 Claims



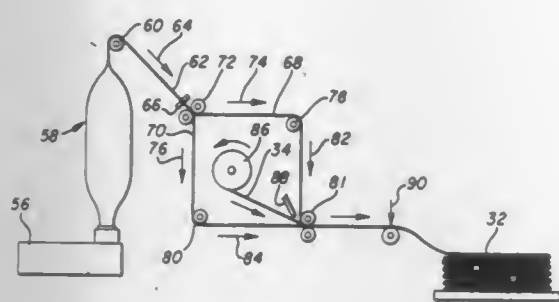
1. A block component for a V-block power transmission belt having a flat band load carrying member, the component comprising:

- a generally U-shaped reinforcement member including two spaced and substantially parallel leg members that each have means for engaging the load carrying member, the leg portions interconnected to and coextensive from a diagonal side member;
- and
- a polymeric block integrally molded around the diagonal side member and adjacent portions of the interconnected leg members, the block having a leg member receiving cavity molded juxtaposed and oriented with each of the two leg members, the two cavities extending to the diagonal side member and defining means for receiving and aligning leg members, and the block defining a friction drive surface juxtaposed the diagonal side member.



**4,340,379**  
**REINFORCED CONTAINER FOR BULK MATERIAL**  
 Robert R. Williamson, Dallas, Tex., assignor to Better Agricultural Goals Corporation, Dallas, Tex.  
 Division of Ser. No. 941,254, Sep. 11, 1978, Pat. No. 4,253,507, which is a continuation-in-part of Ser. No. 460,053, Apr. 11, 1974, Pat. No. 4,113,146. This application Aug. 18, 1980, Ser. No. 178,715  
 Int. Cl.<sup>3</sup> B31B 41/00, 39/00  
 U.S. Cl. 493—211

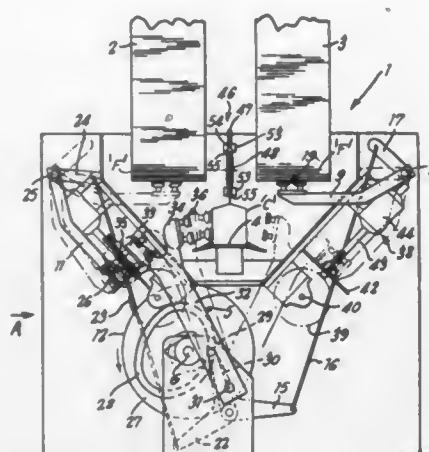
4 Claims



1. A method of forming a reinforced receptacle comprising the steps of:  
 coextruding a plastic multiple-ply cylinder having at least inner and outer cylinder walls;  
 positioning the multiple-ply cylinder on a mandrel;  
 folding and adhesively securing together one end of the inner and outer cylinder walls to close one end of the multiple-ply cylinder;  
 rotating the mandrel and applying an adhesive to the exterior of the multiple-ply cylinder;  
 wrapping and securing at least one sheet of reinforcing material about the exterior of the multiple-ply cylinder to form a reinforced receptacle; and  
 securing a cover sheet about the reinforcing material.

**4,340,380**  
**ARTICLE CARRIER ERECTING MECHANISM**  
 Rodney K. Calvert, Dunwoody, Ga., assignor to The Mead Corporation, Dayton, Ohio  
 Filed Jun. 23, 1980, Ser. No. 161,796  
 Int. Cl.<sup>3</sup> B31B 1/80  
 U.S. Cl. 493—316

10 Claims



1. A mechanism for erecting article carriers of the basket type from a collapsed to a set-up condition, which mechanism comprises an arm mounted for oscillatory movement between two carrier erecting locations, means at each of said erecting locations for holding a carrier during the carrier erecting procedure and wherein said arm includes attachment means for cooperation with each of said holding means to effect the erecting procedure, drive means being provided to continuously oscillate said arm from one of said carrier erecting locations to the other of said carrier erecting locations so that carriers are set up at each of said erecting locations alternately by cooperation between respective ones of said holding and said attachment means, characterized in that said holding means each comprises a pivotal leg having at its free end at least one suction element to extract a collapsed carrier from a supply when the leg is pivoted to a first position, and to hold said collapsed carrier during cooperation with said attachment means when the leg has been pivoted to a second position, each pivotal leg being actuated by said drive means so that one leg is in said first position while the other leg is in said second position.

## CHEMICAL

**4,340,381**  
**TEXTURED PILE FABRICS**  
 Frank E. Ehrenfeld, Jr., Morrisville, Pa., assignor to Congoleum Corporation, Kearny, N.J.  
 Continuation-in-part of Ser. No. 616,307, Sep. 24, 1975, abandoned, which is a continuation of Ser. No. 492,011, Jul. 26, 1974, abandoned, which is a continuation of Ser. No. 267,227, Jun. 28, 1972, abandoned, which is a continuation of Ser. No. 64,475, Aug. 17, 1970, abandoned. This application Feb. 26, 1979, Ser. No. 15,297  
 Int. Cl.<sup>3</sup> D06M 1/14

U.S. Cl. 8—114.5

4 Claims

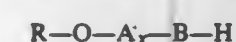
1. A process for producing an embossed effect on synthetic pile fabric that comprises applying to at least certain of the upstanding nylon fibers incorporated in the pile of said fabric, trifluoroacetic acid, and subjecting at least said fibers to an elevated temperature for a period sufficient to effect linear contraction thereof.

**4,340,382**  
**METHOD FOR TREATING AND PROCESSING TEXTILE MATERIALS**  
 Robert J. Morlino, Port Chester, N.Y.; Quintin W. Decker, St. Albans, and Erich Marcus, Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.  
 Filed Dec. 16, 1980, Ser. No. 216,980  
 Int. Cl.<sup>3</sup> B01F 17/42; D06M 13/18

U.S. Cl. 8—137

7 Claims

1. A method of treating and processing textile fibers and fabrics which comprise contacting said textile materials with an aqueous composition comprising at least about 0.01 percent by weight of a low-foaming, nonionic surface active agent having a block-random structure represented by the formula:



wherein R is a primary alkyl group having from 7 to 11 carbon atoms, A is oxypropylene groups, x is an integer of from 3 to about 15 with the proviso that the sum of number of carbon atoms in the alkyl group and of  $\frac{1}{2}$  of value of x is in the range from 10 to about 12, and B is a random mixture of oxyethylene and oxypropylene groups in the molar ratio of oxyethylene to oxypropylene of from about 2:1 to about 5:1 with the total amount of said random mixture of oxyalkylene groups being such that the surface active agent is a liquid having a cloud point in the range from about 20° C. to about 60° C.

**4,340,383**  
**PROCESS FOR SIMULTANEOUS DYEING AND BONDING OF SEWING SILKS MADE FROM POLYESTER FILAMENTS**  
 Helmut Röhser, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany  
 Filed Feb. 20, 1981, Ser. No. 236,606  
 Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006687  
 Int. Cl.<sup>3</sup> D06P 7/00, 1/54, 1/56

U.S. Cl. 8—494

4 Claims

1. A process for the simultaneous dyeing and bonding of sewing silk consisting of filaments of linear polyesters, which comprises continuously padding the twisted multifilament, during a rewinding operation, with an aqueous dispersion which contains one or more disperse dyestuffs, a binder system of one or more thermally cross-linkable, polymeric components selected from the group consisting of homopolymers and copolymers of acrylic acid derivatives and a catalyst which promotes cross-linking, at a liquor pick-up of 15 to 25%, relative to the weight of the dry filament material, subsequently drying and subjecting the padded twisted multifilament to a heat treatment with hot air of from 190° to 225° C. for a time of from 15 to 60 seconds, continuously afterscouring the sewing silk in a hot alkaline bath containing a reducing agent

before winding it up again and finally applying onto it a fiber preparation comprising a usual plasticizer.

**4,340,384**  
**COLORLED, POROUS FLUOROCARBON MATERIAL AND METHOD FOR ITS MANUFACTURE**  
 Haruo Nomi, Tanashi, Japan, assignor to Junkosha Co., Ltd., Tokyo, Japan  
 Filed Mar. 4, 1981, Ser. No. 240,321  
 Claims priority, application Japan, Mar. 12, 1980, 55-31357  
 Int. Cl.<sup>3</sup> D06P 3/00; B32B 5/14; D06P 5/00

U.S. Cl. 8—495

6 Claims

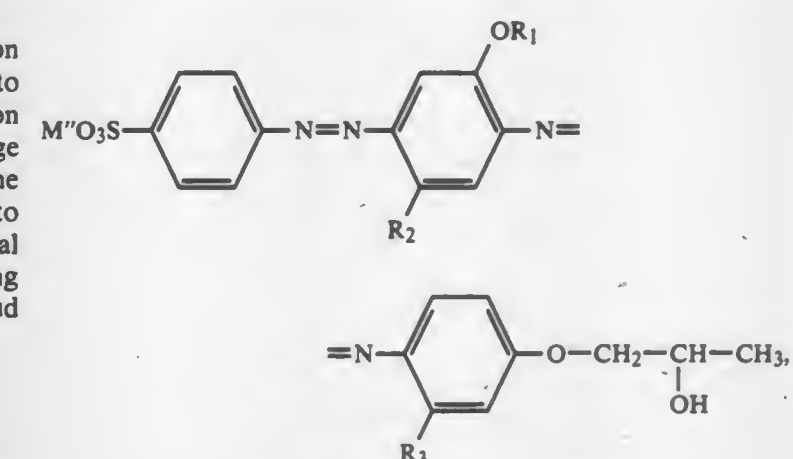
1. A colored, porous material comprising a base material of porous, expanded polytetrafluoroethylene having a microstructure consisting of nodes interconnected by fibrils, the surfaces of said nodes and fibrils having a porous coating layer thereon comprising a dyeable resin.

**4,340,385**  
**STABLE, CONCENTRATED, AQUEOUS COMPOSITIONS CONTAINING PARA-SULFOPHENYL-AZO-SUBSTITUTED 1,4-PHENYLENE-AZO-PARA-2-HYDROXYPROPOXYPHENYL DYES**  
 Silvio A. Rodriguez, Bamberg, S.C., and Sigmund C. Catino, deceased, late of Aiken, S.C. (by Esther E. Catino, executor), assignors to Sandoz, Inc., E. Hanover, N.J.  
 Filed Feb. 23, 1981, Ser. No. 237,278  
 Int. Cl.<sup>3</sup> D06P 67/00

U.S. Cl. 8—527

8 Claims

1. A stable, concentrated, aqueous composition consisting essentially of, by weight, 5-20% of a compound having the formula:



or a mixture of such compounds, wherein  
 R<sub>1</sub> is C<sub>1-4</sub>alkyl,  
 R<sub>2</sub> is hydrogen, C<sub>1-4</sub>alkyl or C<sub>1-4</sub>alkoxy,  
 R<sub>3</sub> is hydrogen or C<sub>1-4</sub>alkyl, and  
 M<sup>+</sup> is a monovalent non-chromophoric cation,  
 2-25% of 2-(2-methoxyethoxy)ethanol,  
 0-8% of propylene glycol and, to 100%, water.

**4,340,386**  
**CATIONIC DYESTUFF PRINTING INKS**  
 Alex Pociluyko, Glen Mills, Pa., assignor to Scott Paper Company, Philadelphia, Pa.  
 Continuation-in-part of Ser. No. 88,288, Oct. 26, 1979, which is a division of Ser. No. 902,661, May 4, 1978, Pat. No. 4,221,562.  
 This application Nov. 14, 1980, Ser. No. 206,730  
 The portion of the term of this patent subsequent to Sep. 9, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> C09B 67/00; D06P 3/60, 5/02

U.S. Cl. 8—541

6 Claims

1. An aqueous, printing fluid containing an aldehyde selected from the group consisting of formaldehyde, glyoxal and glutaraldehyde and a water-soluble, cationic dyestuff having a



functional group capable of reacting with the aldehyde to produce a reaction product dyestuff having improved bleed fastness on cellulosic fibers.

4,340,387

**PROCESS FOR THE DYEING OF FIBRE MATERIAL**  
David G. Evans, Bamford, England; Jacques Zurbuchen, Pratteln, and Willi Leutenegger, Bottmingen, both of Switzerland, assignors to Ciba-Gelby Corporation, Ardsley, N.Y.  
Continuation of Ser. No. 15,385, Feb. 26, 1979, abandoned, which is a continuation of Ser. No. 890,335, Mar. 27, 1978, abandoned, which is a continuation of Ser. No. 638,134, Dec. 5, 1975, abandoned, which is a continuation of Ser. No. 302,695, Nov. 1, 1972, abandoned. This application Dec. 30, 1980, Ser. No. 221,468

Claims priority, application Switzerland, Nov. 9, 1971, 16260/71; Nov. 9, 1971, 16261/71

Int. Cl.<sup>3</sup> D06P 7/00, 5/00

U.S. Cl. 8—580

5 Claims

1. A batch process for the exhaustion dyeing of fiber material, comprising the steps of first applying to the fiber material an aqueous non-foaming dye liquor, containing no thickening agent and containing

(a) a water-soluble or water-dispersible dyestuff having affinity for the fiber material and

(b) a non-foaming amount, in the range of 0.2 to 10 grams per liter, of a surface-active agent which has no cloud point and which is selected from the group consisting of C<sub>10</sub> to C<sub>20</sub>-fatty acid soaps, sulfated C<sub>8</sub> to C<sub>18</sub>-alkanol soaps, sulfated unsaturated higher fatty acid ester soaps, soaps of sulfated ethyleneoxide-C<sub>8</sub> to C<sub>20</sub>-alkanol adducts, soaps of sulfated esterified polyoxy compounds, soaps of C<sub>8</sub> to C<sub>20</sub>-primary and secondary alkyl sulfonates, soaps of alkylarylsulfonates having at least 7 carbon atoms in the alkyl chain, soaps of sulfonates of polycarboxylic acid esters, soaps of sulfates of N-acylated alkanolamines, ethyleneoxide-higher fatty acid adducts, ethyleneoxide-C<sub>8</sub> to C<sub>20</sub>-alkanols, ethyleneoxide-C<sub>8</sub> to C<sub>20</sub>-mercaptan adducts, ethyleneoxide-C<sub>8</sub> to C<sub>20</sub>-amine adducts, ethyleneoxide-alkylphenol adducts wherein the alkyl radical contains at least 7 carbon atoms, ethyleneoxide-alkylthiophenol adducts wherein the alkyl radical contains at least 7 carbon atoms, fatty acid mono- or di-glycerides, higher molecular fatty acid amides, and adducts of higher molecular fatty acid-hydroxyalkyl amides with ethyleneoxide,

at a goods-to-liquor ratio of 1:1.5 to 1:2.5 and at a temperature below the absorption temperature of the dyestuff, subsequently shaking or tossing the fiber material and applied aqueous dye liquor, in a closed container, sufficiently to evenly distribute the aqueous dye liquor on the fiber material, while still maintaining the temperature below the absorption temperature of the dyestuff, and finally heating the fiber material and the evenly-distributed aqueous dye liquor at a temperature in the range of 95° to 140° C. to exhaust the dyestuff onto the fiber material.

4,340,388

**DYEING OF TEXTILE MATERIALS**

Xavier Kowalski, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 135,424, Mar. 31, 1980, abandoned, which is a continuation-in-part of Ser. No. 67,575, Aug. 17, 1979, abandoned. This application Jul. 10, 1981, Ser. No. 282,313

Int. Cl.<sup>3</sup> D06P 1/667

U.S. Cl. 8—584

13 Claims

1. In a process for dyeing textile material with a water-insoluble dye in an aqueous bath, the improvement which comprises including in said bath (a) aminophosphonate selected from the group consisting of aminotri(methylene phosphonic acid) and alkali metal salts thereof and (b) hydroxyphosphonate selected from the group consisting of 1-hydrox-

yethane-1,1-diphosphonic acid and alkali metal salts thereof in a combined amount sufficient to increase the uniformity of said dyeing and in a mole ratio of (b):(a) sufficient to increase said uniformity above that obtained with the same amount of (a) alone.

4,340,389

**PROCESS FOR THE PREPARATION OF WATER-SOLUBLE DYESTUFFS WITH A LOW SALT CONTENT**

Konrad Nonn, Leverkusen; Joachim Laser, Cologne; Karlheinz Wolf, Leverkusen; Reinhold Hörnle, Cologne, and Erich Istel, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Filed Apr. 15, 1981, Ser. No. 254,365

Claims priority, application Fed. Rep. of Germany, May 3, 1980, 3017070

Int. Cl.<sup>3</sup> C09B 67/54

U.S. Cl. 8—620

7 Claims

1. Process for the preparation of water-soluble dyestuffs with a low salt content, characterised in that the water-soluble dyestuffs are salted out from their aqueous solutions and/or dispersions by adding ammonium salts which are volatile at temperatures of about 40° C. to about 250° C. and under a pressure of about 10 mm Hg to about 760 mm Hg, the dyestuffs are isolated and the volatile salts are volatilised during the drying process.

4,340,390

**METHOD AND APPARATUS FOR METERING BIOLOGICAL FLUIDS**

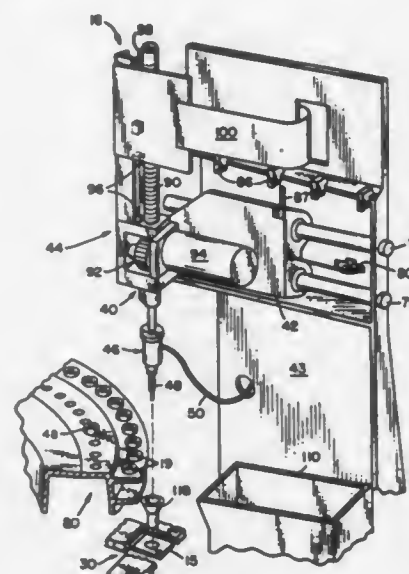
Richard A. Collins, Fairport; Glenn E. Tersteeg, Honeoye Falls, and Thomas C. Jessop, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 159,563, Jun. 16, 1980, abandoned. This application May 6, 1981, Ser. No. 260,855

Int. Cl.<sup>3</sup> G01N 1/14, 1/28

U.S. Cl. 23—230 B

14 Claims



8. A process for the precise dispensing of a biological fluid from a metering tip onto a generally planar analysis slide, said process comprising the steps of:

aspirating the fluid into said tip until the tip is partially filled with fluid and has an air space above the fluid;  
positioning the tip in a metering position closely adjacent the slide and spaced therefrom between about 0.030 cm and about 0.15 cm;  
pressurizing the air and fluid in the tip for a preselected period to force about 10 µl of fluid onto the slide at a fixed, predetermined dispense rate of between about 10 µl/sec and 300 µl/sec; and  
maintaining said tip in the metering position between about

0.05 second and about 0.5 second after said period and then withdrawing the tip from said metering position.

4,340,391

**PREDICTING HYDROCARBON POTENTIAL OF AN EARTH FORMATION UNDERLYING A BODY OF WATER BY ANALYSIS OF SEEPS CONTAINING LOW CONCENTRATIONS OF METHANE**

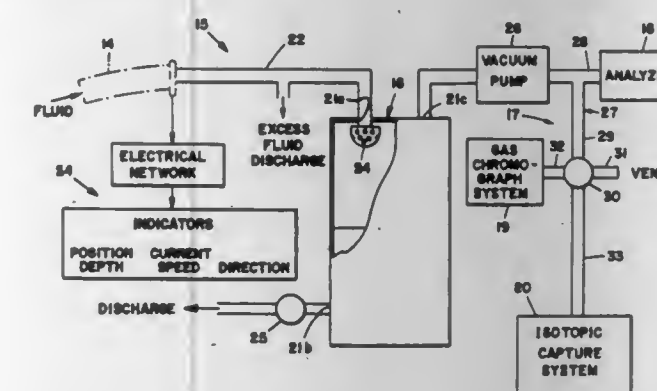
Gerard J. Demaison, Orinda, and Isaac R. Kaplan, Sherman Oaks, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 135,026, Mar. 28, 1980. This application Jul. 13, 1981, Ser. No. 282,841

Int. Cl.<sup>3</sup> G01N 33/24

U.S. Cl. 23—230 EP

13 Claims



1. Method of on-site collection and examination of small concentrations of methane dissolved in water so as to predict hydrocarbon potential of an earth formation underlying a body of water, said formation being a source of said methane, comprising:

- at a known geographic location continuously sampling said water at a selected flow rate and at a selected depth;
- continuously vacuum separating said water into liquid and gas phases;
- quantitatively separating interfering gas species from said methane at a series of separating stations by conveying said separated gas phase of step (ii) via an air carrier vented to atmosphere and flowing at a known flow rate, in series to and through said separating stations;
- quantitatively oxidizing said methane at an oxidizing station;
- cryogenically trapping gaseous oxidants of step (iv) in the form of carbon dioxide and water vapor at a trapping station; and
- isotopically analyzing said trapped oxidants of step (v) for carbon and deuterium distribution so as to determine biogenic and/or thermogenic origin of said methane and thereby aid in the evaluation of the hydrocarbon potential of said earth formation.

4,340,392

**STABILIZATION OF BENZIDINE-TYPE INDICATORS WITH VARIOUS ENHANCERS**

Thomas A. Magers, South Bend, and David L. Tabb, Elkhart, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

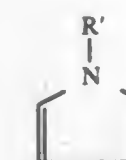
Division of Ser. No. 93,431, Nov. 13, 1979, Pat. No. 4,290,773. This application Jul. 23, 1981, Ser. No. 285,923

Int. Cl.<sup>3</sup> G01N 33/52

U.S. Cl. 23—230 B

5 Claims

1. In a composition for detecting the presence of a constituent in a test sample, said composition comprising a benzidine-type indicator, the improvement wherein said composition additionally comprises an enhancer compound having the structure



wherein R' is H or lower alkyl.

4,340,393

**STABILIZATION OF BENZIDINE-TYPE INDICATORS WITH VARIOUS ENHANCERS**

Thomas A. Magers, South Bend, and David L. Tabb, Elkhart, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

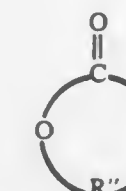
Division of Ser. No. 93,431, Nov. 13, 1979, Pat. No. 4,290,773. This application Jul. 23, 1981, Ser. No. 285,924

Int. Cl.<sup>3</sup> G01N 33/52

U.S. Cl. 23—230 B

5 Claims

1. In a composition for detecting the presence of a constituent in a test sample, said composition comprising a benzidine-type indicator, the improvement wherein said composition additionally comprises an enhancer compound having the structure



wherein R'' is lower alkylene.

4,340,394

**STABILIZATION OF BENZIDINE-TYPE INDICATORS WITH VARIOUS ENHANCERS**

Thomas A. Magers, South Bend, and David L. Tabb, Elkhart, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

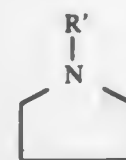
Division of Ser. No. 93,431, Nov. 13, 1979, Pat. No. 4,290,773. This application Jul. 23, 1981, Ser. No. 285,928

Int. Cl.<sup>3</sup> G01N 33/52

U.S. Cl. 23—230 B

5 Claims

1. In a composition for detecting the presence of a constituent in a test sample, said composition comprising a benzidine-type indicator, the improvement wherein said composition additionally comprises an enhancer compound having the structure



wherein R' is H or lower alkyl.

4,340,395

**STABILIZATION OF BENZIDINE-TYPE INDICATORS WITH VARIOUS ENHANCERS**

Thomas A. Magers, South Bend, and David L. Tabb, Elkhart, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 93,431, Nov. 13, 1979, Pat. No. 4,290,773. This application Jul. 23, 1981, Ser. No. 285,978

Int. Cl.<sup>3</sup> G01N 33/52

U.S. Cl. 23—230 B

5 Claims

1. In a composition for detecting the presence of a constituent in a test sample, said composition comprising a benzidine-

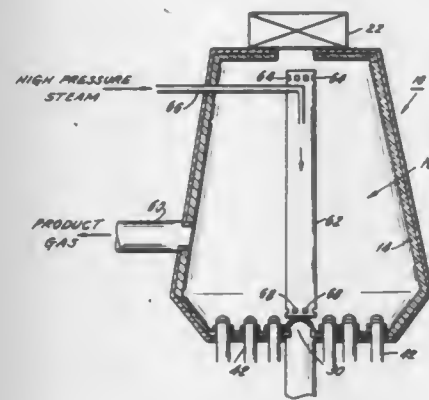


type indicator, the improvement wherein said composition additionally comprises an enhancer compound having the structure R-CN, wherein R is lower alkyl.

**4,340,396**  
**PROCESS FOR DISPOSAL OF AMMONIUM JAROSITE**  
 David W. Robinson-Todd, Billericay, England, assignor to Stablex A.G., Zug, Switzerland  
 Filed Dec. 16, 1980, Ser. No. 217,207  
 Claims priority, application United Kingdom, Dec. 21, 1979, 7944286  
 Int. Cl.<sup>3</sup> C04B 7/02, 7/24  
 U.S. Cl. 23—293 R 3 Claims

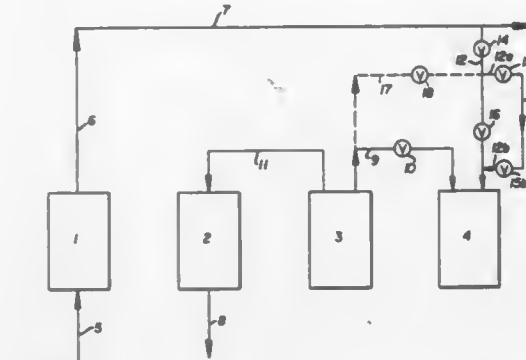
1. A method of solidifying a hazardous sludge comprising significant amounts of ammonium jarosite by admixture with a calcium containing cement powder and a powder material based on aluminum and silica characterized in that the solidification is carried out under mildly basic conditions without the removal of ammonia.

**4,340,397**  
**SLAGGING GASIFIER**  
 Helmut Schulz, Harrison, N.Y., assignor to Brandenburg Energy Corporation, Harrison, N.Y.  
 Filed Oct. 14, 1980, Ser. No. 196,817  
 Int. Cl.<sup>3</sup> C10J 3/68  
 U.S. Cl. 48—74 18 Claims



1. A slagging gasifier for the gasification of coal or carbonaceous materials comprising:  
 a vertical blast furnace including a hearth section at the bottom thereof;  
 a slag tap hole formed in said hearth section;  
 means for introducing a charge comprising coal or briquetted carbonaceous materials into said blast furnace near the top thereof such that said charge travels down said blast furnace towards said hearth section;  
 means for introducing oxidizing gases into said blast furnace near the bottom thereof such that said oxidizing gases flow up said blast furnace as said charge travels down said blast furnace whereby gas and molten slag are formed in said furnace, said slag collecting in said hearth section and exiting via said tap hole;  
 a first gas removing means comprising a vertically extending conduit located inside said blast furnace and having a first opening near the top of said furnace and a second opening near the bottom of said furnace; and  
 means for causing steam to flow through said conduit in a direction from said first to said second opening; and a second gas removing means for removing relatively tar-free gases from said blast furnace in the lower portion thereof.

**4,340,398**  
**PRESSURE SWING ADSORPTION RECOVERY**  
 Kishore J. Doshi, Mahopac, and Kirit M. Patel, Wappingers Falls, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.  
 Filed May 20, 1981, Ser. No. 265,659  
 Int. Cl.<sup>3</sup> B01D 53/04  
 U.S. Cl. 55—25 22 Claims



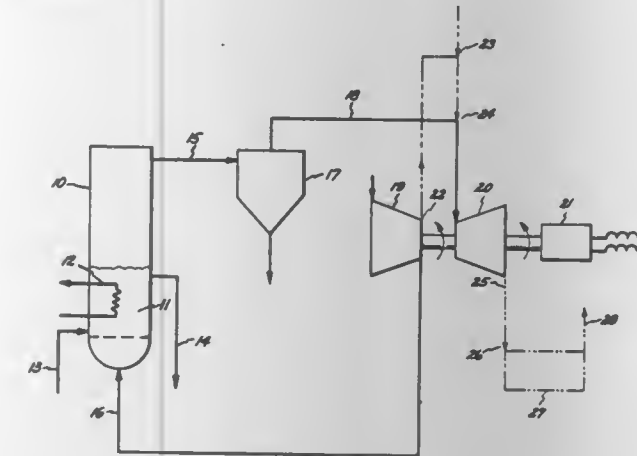
1. In a pressure swing adsorption process for the selective adsorption of at least one gas component from a feed gas mixture in an adsorption system having at least three adsorbent beds, each of which undergoes, on a cyclic basis, higher pressure adsorption, cocurrent depressurization to intermediate pressure with release of void space gas from the bed, counter-current depressurization to a lower desorption pressure, and repressurization to said higher pressure, and in which the void space gas released from one bed is passed to the product end of another bed initially at a lower pressure to equalize the pressure therebetween, said other bed also being repressurized by a portion of the product effluent withdrawn from a bed undergoing adsorption at said higher pressure, the improvement comprising:

- introducing released void space gas to be used for said pressure equalization purposes directly into the bed undergoing repressurization to equalize the pressure between the beds at an intermediate pressure;
- simultaneously passing a portion of the product effluent withdrawn from a bed undergoing adsorption at said higher pressure to an external repressurization storage tank; and
- upon completion of said pressure equalization, passing said gas from said repressurization storage tank to said bed undergoing repressurization, together with an additional portion of product effluent withdrawn from a bed undergoing adsorption at said higher pressure, whereby product recovery is enhanced without discontinuity in the substantially uniform flow of product effluent from the adsorption system.

**4,340,399**  
**METHOD OF REMOVING ALKALI METAL CONTAMINATION FROM A GASEOUS STREAM**  
 Krishan L. Luthra, Schenectady, N.Y., and Henry S. Spacil, Tokyo, Japan, assignors to General Electric Company, Schenectady, N.Y.  
 Filed Dec. 22, 1980, Ser. No. 218,991  
 Int. Cl.<sup>3</sup> B01D 53/12  
 U.S. Cl. 55—72 11 Claims

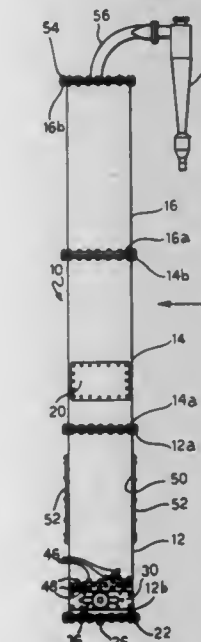
1. A method of removing alkali metal compounds from a gaseous mixture superheated to a temperature suitable for power generation which contains such alkali metal compounds in vaporous form comprising:  
 (1) introducing into the superheated gaseous mixture finely divided refractory oxide particles having an average diameter of from 0.005 micron to 1 micron which are utilized in an amount sufficient to provide a total adsorption surface area sufficient to reduce the level of alkali metal contamination of the superheated gaseous mixture to an

acceptable value prior to the introduction of the superheated gaseous mixture into the gas turbine,  
 (2) introducing the resulting heated gaseous mixture into the gas turbine at a flow rate sufficient to energize the gas turbine,



(3) exhausting the resulting gaseous mixture into a precipitator to effect particle removal, and  
 (4) thereafter venting the resulting gases substantially free of refractory oxide particles into the atmosphere.

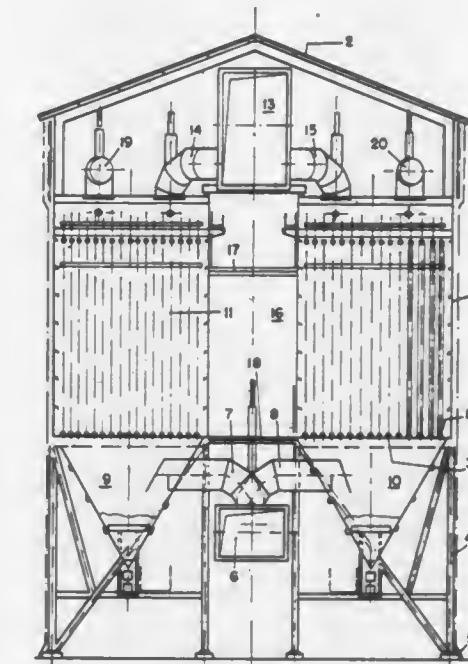
**4,340,400**  
**FLUIDIZED BED FILTERING AND/OR HEAT EXCHANGE APPARATUS PARTICULARLY FOR GASEOUS DISCHARGES FROM INTERNAL COMBUSTION ENGINES AND INDUSTRIAL PLANTS**  
 Armando Campanile, Turin; Giovanni M. Carlomagno, Naples; Angelo De Vita, Moio della Civitella; Giorgio Donsi, Naples; Leopoldo Massimilla, Naples, and Agostino Scognamiglio, Naples, all of Italy, assignors to Centro Ricerche Fiat S.p.A., Turin and Università Degli Studi di Napoli, Naples, both of Italy  
 Filed Sep. 9, 1981, Ser. No. 300,528  
 Claims priority, application Italy, Sep. 10, 1980, 53499/80[U]  
 Int. Cl.<sup>3</sup> B01D 51/00  
 U.S. Cl. 55—269 16 Claims



1. Fluidized bed filtering and heat exchange apparatus particularly for treating gaseous discharges from internal combustion engines and industrial plants, comprising in combination:  
 an elongate casing arranged with its longitudinal axis vertical;  
 a filler of inert, particulate material within said casing;  
 a gas-feed manifold associated with a lower part of said casing and including at least one distributor duct extending within said casing transverse said axis and a plurality

of discharge nozzles spaced apart along said duct and arranged to direct gas fed to said duct downwardly into said casing, whereby, in use, said gas flows upwardly through said casing from said lower part to maintain said filler in a fluidized state;  
 a cyclone communicating with an upper part of said casing to receive said gas therefrom and to separate agglomerated particles from said gas; and  
 heat-exchange means for cooling the fluidized filler including a plurality of tubes for carrying a heat-exchange fluid, said tubes extending through said casing transverse said axis and being located in said casing so as to be totally immersed in said fluidized filler in use of the apparatus.

**4,340,401**  
**BAG-FILTER TYPE DUST COLLECTOR**  
 Jan H. van Weelden, Helloo, and Adrianus H. Rietvink, Koedijk, both of Netherlands, assignors to Estel Hoogovens B.V., IJmuiden, Netherlands  
 Filed Oct. 28, 1980, Ser. No. 201,454  
 Int. Cl.<sup>3</sup> B01D 46/04  
 U.S. Cl. 55—305 25 Claims



6. A filtering installation for removing entrained dust or particles from a gas stream, the installation having a plurality of elongate vertically disposed filter bags enclosed in a housing and vertically suspended by rods depending from suspending beams, each rod having suspension means holding a bag pendant therefrom, the bags having a provision to admit the gas stream at their open lower ends and being capable of accepting a reverse flushing air flow from the top periodically as desired, each bag being closed at its top and maintained taut by a resilient tensioning member acting on the associated rod at a location above the bag;  
 the installation further comprising a shaking-mechanism to tilt the bags in a gang whenever desired, the shaking mechanism including pivotal tipping means disposed above the tensioning member and cooperating with an upper portion of each rod so as to permit pendular movement of the rod about a substantially horizontal axis passing through said pivotal tipping means;  
 and actuating means disposed outside of said housing to actuate said rods as a gang to cause pendular movement of the rods whereby each bag associated with its rod tilts upon operation of the actuating means.



4,340,402

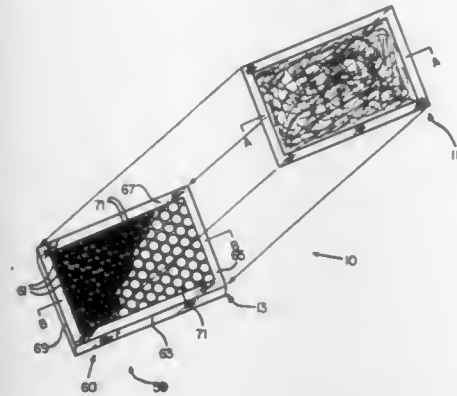
## DISPOSABLE AIR FILTER

George W. Catron, Sacramento, Calif., assignor to Walt R. Philipanko, Sacramento, Calif.

Filed Oct. 14, 1980, Ser. No. 196,612

Int. Cl.<sup>3</sup> B01D 50/00

U.S. Cl. 55—487



1. A filter system for removing particulate and dirt from the airflow of: heaters and air conditioners comprising: a primary filter and a secondary filter releasably secured thereto and in axial alignment therewith, said secondary filter being the first impact surface of dirty air, such that the airflow passes first through the secondary filter and then through primary filter wherein the primary filter comprises a conventional generally rectangular frame formed from suitably cut and scored card-stock comprising a plurality of interconnected frame members, each of which is generally U shaped in cross-section, said frame carrying a sandwich of a metallic layer adapted to pass air therethrough and wherein the secondary filter comprises a generally rectangular thin sheet of filter medium sized substantially the same as the frame of the primary filter, said secondary filter being superposed upon said primary filter, said secondary filter medium being adapted to remove dirt and particulates from an airflow, said secondary filter having a pressure sensitive removable adhesive layer on one side thereof, said adhesive being capable of releasably binding said sheet to the outside of the frame of the primary filter.

4,340,403

## CERAMIC HONEYCOMB FILTER

Noboru Higuchi; Teruo Yano, both of Nagoya, and Masahiro Ohnishi, Kuwana, all of Japan, assignors to NGK Insulators, Ltd., Japan

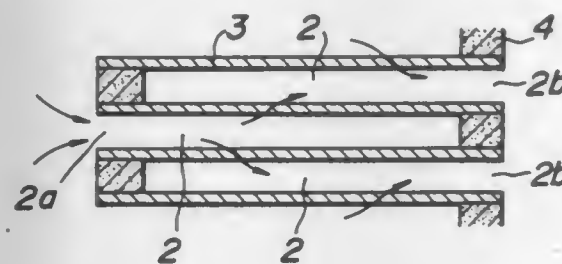
Filed Oct. 15, 1980, Ser. No. 197,025

Claims priority, application Japan, Aug. 28, 1980, 55-117737

Int. Cl.<sup>3</sup> B01D 39/20; B32B 3/12; C04B 21/06

U.S. Cl. 55—523

3 Claims



1. A ceramic honeycomb filter having ceramic honeycomb structural body with channels whose ends are selectively sealed by sealing material comprising alumina cement containing calcium oxide (CaO), wherein said alumina cement contains not more than 27% by weight of said calcium oxide (CaO).

4,340,404

## REFRIGERATING APPARATUS

Toshiyuki Oonishi, Takatsukishi; Masato Tsutsumi, Osakafu, and Noboru Nakagawa, Osakashi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

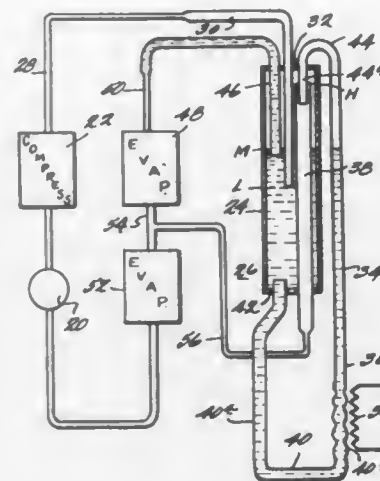
Filed Sep. 23, 1980, Ser. No. 190,051

Claims priority, application Japan, Oct. 1, 1979, 54-126565; Oct. 1, 1979, 54-126566

Int. Cl.<sup>3</sup> F25B 41/00, 39/02

U.S. Cl. 62—198

11 Claims



1. Apparatus for feeding refrigerant in a refrigerator to a first evaporator and a second evaporator connected to receive refrigerant from the first evaporator, comprising: tank means for storing refrigerant having an inlet for receiving refrigerant, a first outlet for supplying refrigerant to said first evaporator and a second outlet; conduit means connected to said second outlet for supplying said refrigerant to said second evaporator and extending at least in part in said tank in heat exchange with refrigerant therein, and connected to the interior of said tank means for equalizing gaseous pressures developed in said tank means, said conduit means including a generally U-shaped tube at a lower portion thereof, one end of said tube extending into said tank means to collect said refrigerant; and vapor pump means provided at a portion of said conduit means for causing, when operating, said refrigerant to be supplied to said second evaporator through said conduit means and causing refrigerant to cease to be supplied to said first evaporator.

4,340,405

## APPARATUS AND METHOD FOR MAINTAINING LOW TEMPERATURES ABOUT AN OBJECT AT A REMOTE LOCATION

William A. Steyert, Jr., and William C. Overton, Jr., both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 29, 1980, Ser. No. 202,041

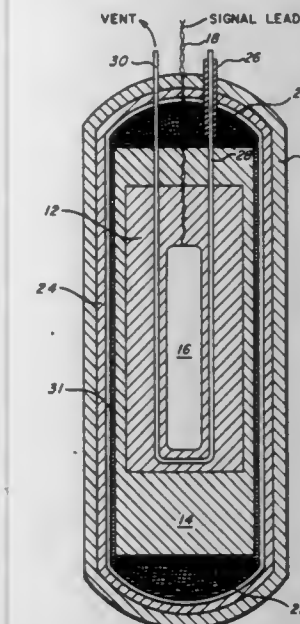
Int. Cl.<sup>3</sup> F25B 19/00

U.S. Cl. 62—514 R

13 Claims

1. An apparatus for maintaining cryogenic temperatures about an object for an extended period of time in a remote location comprising: a housing; a body comprising a material having a high specific heat at

cryogenic temperatures disposed within said housing, said body comprising an orifice for receiving said object; and



means for conducting cryogenic coolant to said body to lower its temperature to at least about 2 to about 15 K.

4,340,406

## PRESSURIZED GAS ACCELERATORS FOR RECIPROCATING DEVICE

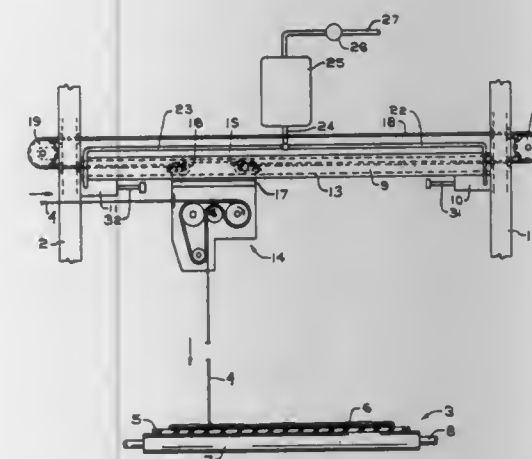
Jeffrey A. Neubauer, Boiling Springs, N.C., and Walter J. Reese, North Huntingdon, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 30, 1980, Ser. No. 221,489

Int. Cl.<sup>3</sup> C03B 37/025

U.S. Cl. 65—9

17 Claims



1. In an apparatus for reciprocating a movable glass fiber feeding device traversing along an axis having means for supporting and guiding said device along said axis; and means for providing the traversing motion to said device along said axis in a single horizontal plane, the improvement comprising: (a) a pair of engageable means each having a movable extending member and where each is affixed to an end of said axis so that the movable extended member engages said movable device and is compressed when the movable device approaches the end of the axis, and (b) a gas supply source connected to the engageable means to extend the engageable means engaging the movable device to apply acceleration force to said device to initiate reciprocating motion to the device to traverse along said axis in the opposite direction.

4,340,407

## METHOD OF FORMING CAVITATED OBJECTS OF CONTROLLED DIMENSION

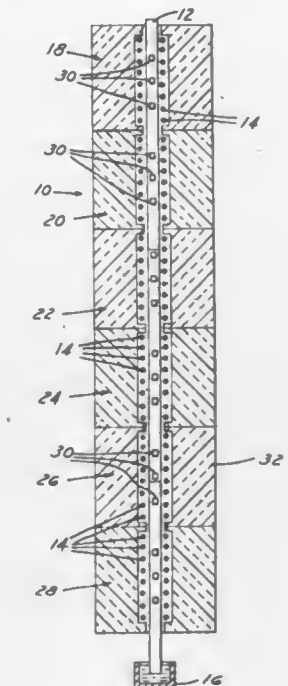
Paul R. Anderson, Toledo, Ohio, and Wayne J. Miller, Ann Arbor, Mich., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 11, 1981, Ser. No. 233,341

Int. Cl.<sup>3</sup> C03B 19/10

U.S. Cl. 65—21.4

9 Claims



1. A method of controlling expansion of hollow cellular objects in a blowing operation comprising the steps of: (a) selecting a cellular plasticizable precursor having one or more closed internal cavities containing a volatile blowing agent, at least a portion of which is impermeable through the cavity walls of said precursor at a selected first temperature above the precursor softening temperature, and then (b) subjecting said precursor to said selected first temperature in an ambience of gas, at least a portion of which is permeable through the cavity walls of said precursor at said selected first temperature, for a time sufficient for equalization of the partial pressures of said permeable gas internally and externally of said precursor cavities, such that said precursor expands as a function of said partial pressures of said impermeable gas and independently of partial pressure of said permeable gas.

4,340,408

## HIGH SILICA GLASS

Peter W. McMillan, Leamington Spa, and Ronald Maddison, Bedworth, both of England, assignors to National Research Development Corporation, London, England

Filed Apr. 23, 1981, Ser. No. 256,946

Claims priority, application United Kingdom, Apr. 28, 1980, 8013919

Int. Cl.<sup>3</sup> C03C 15/00, 3/06

U.S. Cl. 65—31

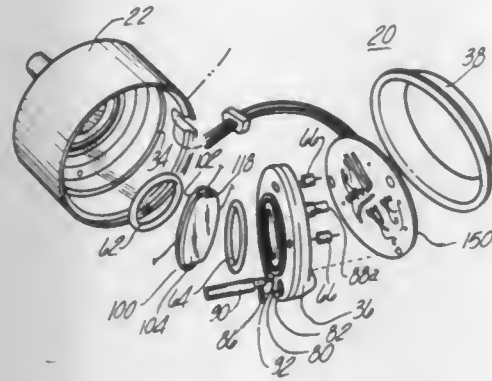
15 Claims

1. A method for making a high silica glass comprising the steps of: a. selecting a silica glass which can be separated into two interconnecting phase components; b. treating the glass to phase separate it into said two interconnecting phase components and removing one phase component to leave a porous silica-rich glass component; c. forming a layer of metal oxide over the surface of the porous glass; and d. sintering the metal oxide covered porous glass to a fully dense high silica glass



wherein said metal oxide of step (c) is such that the step (d) sintering can be carried out at a temperature which is lower than the temperature required without the layer of said metal oxide being formed over the surface of the porous glass

**4,340,409**  
**METHOD OF FABRICATING A PRESSURE SENSOR**  
 Mark A. Brooks, Sterling Hts., and Jane Miler, Troy, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.  
 Continuation of Ser. No. 30,588, Apr. 16, 1979, abandoned. This application Feb. 11, 1981, Ser. No. 233,370  
 Int. Cl.<sup>3</sup> C03B 23/20  
 U.S. Cl. 65—43 17 Claims

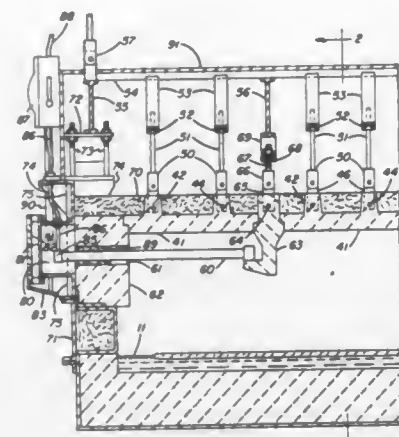


1. A method of fabricating a pressure capsule comprising:
  - 1.1 providing two flexible quartz plates having electrodes thereon, wherein the electrodes form the elements of a pressure sensitive capacitor;
  - 1.2 applying a dielectric sealing glass material, having a predetermined viscosity, to at least one of said quartz plates in the shape of a peripheral seal;
  - 1.3 positioning said quartz plates with said dielectric therebetween in a substantial parallel orientation, at an initial spacing determined by the height of said dielectric;
  - 1.4 decreasing the local pressure proximate the capsule from atmospheric pressure to a lower first pressure level thereby similarly reducing the pressure within the capsule to the first pressure level;
  - 1.5 monotonically increasing the local temperature to a temperature level to reduce the dielectric to a molten glassy state to encourage outgassing of an organic matter contained in the electrode or dielectric to a molten state;
  - 1.6 increasing the local pressure, in an oxygen enriched environment, to a second pressure level between the range of 1-8 torr of oxygen, to prevent any oxide material in the dielectric from becoming conductive thereby causing an electrical short circuit between the electrodes;
  - 1.7 varying the separation between the plates by clamping the plates together reducing the thickness of the dielectric by increasing the local pressure to a third pressure level after the dielectric has attained said molten state.

**4,340,410**  
**FLOAT GLASS FORMING CHAMBER WITH ISOLATED HEATING MEANS**  
 Earl L. May, Irwin, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.  
 Filed Jan. 5, 1981, Ser. No. 222,397  
 Int. Cl.<sup>3</sup> C03B 18/22  
 U.S. Cl. 65—182.3 6 Claims

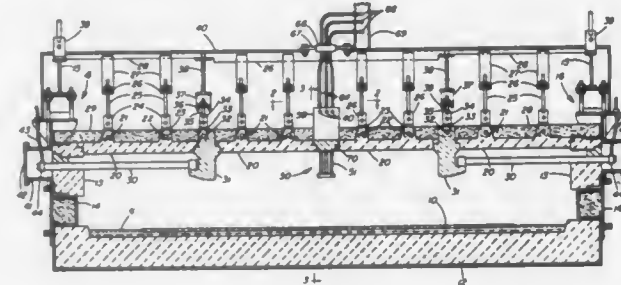
1. Apparatus for forming flat glass by the float process comprising an enclosure adapted to hold a pool of molten metal, means for delivering a stream of molten glass onto the molten metal, means for drawing the glass along the pool of molten metal so as to form the glass into a ribbon, and a plurality of electrical resistance heating elements extending into the enclosure,

the improvement comprising: a plurality of gas-tight housings, each housing enclosing the exterior terminus of a separate one of the heating elements, a plurality of electrical switch means outside each housing alongside the enclosure,



each switch means corresponding to one of the heating elements, and electrical leads connected to the portion of each heating element within each housing and extending through the housing walls to the respective electrical switch means.

**4,340,411**  
**FLOAT GLASS FORMING CHAMBER WITH AUXILIARY HEATING MODULES**  
 Earl L. May, Irwin, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.  
 Filed Jan. 5, 1981, Ser. No. 222,398  
 Int. Cl.<sup>3</sup> C03B 18/22  
 U.S. Cl. 65—182.3 10 Claims

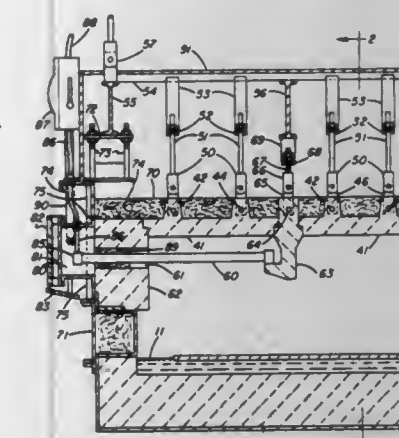


1. Apparatus for forming flat glass by the float process comprising an enclosure adapted to hold a pool of molten metal, means for delivering a stream of molten glass onto the molten metal, means for drawing the glass along the pool of molten metal so as to form the glass into a ribbon, primary heating means within the enclosure, the improvement comprising: an opening in the enclosure for receiving auxiliary heating means, auxiliary heating means including a unitary refractory base configured to serve as a portable closure for said opening, a plurality of elongated electrical resistance heating elements insulated from each other and extending through the refractory base and into the enclosure, a common electrical connection point carried on the base, and electrical conductor means joining each of the heating elements to the common electrical connection point whereby the auxiliary heating means may be inserted into the enclosure as a prewired module.

**4,340,412**  
**FLOAT GLASS FORMING CHAMBER WITH EXTERNALLY SUPPORTED ROOF**  
 Earl L. May, Irwin, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.  
 Filed Jan. 5, 1981, Ser. No. 222,396  
 Int. Cl.<sup>3</sup> C03B 18/16  
 U.S. Cl. 65—182.5 14 Claims

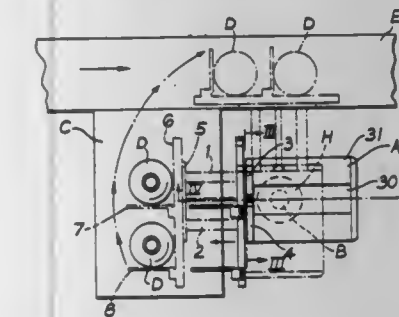
1. Apparatus for forming flat glass by the float process com-

prising an enclosure adapted to hold a pool of molten metal, means for delivering a stream of molten glass onto the molten metal, and means for drawing the glass along the pool of molten metal so as to form the glass into a ribbon, the improvement comprising: a roof portion of the enclosure formed by a plurality of refractory slabs, each slab having a generally flat horizontally extending configuration and having its vertical dimen-



sions minor relative to its horizontal dimensions, at least one horizontally elongated girder means associated with each slab, a horizontally elongated receptacle in each slab in which is received one of the elongated girder means for distributing the weight of the slab, and a plurality of hanger means engaging each girder at spaced apart locations along the length of the girder and extending from the girder upwardly above the slab to means for supporting each hanger from above.

**4,340,413**  
**TRANSFER MECHANISM IN A GLASSWARE FORMING MACHINE**  
 Roger G. Rowland, Southport, England, assignor to E. R. Latimer Limited, Southport, England  
 Filed Jan. 2, 1981, Ser. No. 222,136  
 Claims priority, application United Kingdom, Sep. 27, 1980, 8031299  
 Int. Cl.<sup>3</sup> B65G 47/14  
 U.S. Cl. 65—375 5 Claims



3. In a transfer mechanism for a glassware forming machine for transferring hot newly-formed glassware from a dead plate to a moving conveyor, the combination of:
  - a fluid motor assembly characterized by a housing accommodating a pair of stationary cylinders and a respective pair of reciprocating tubular pistons,
  - a motor support post supported in the housing and disposed on the longitudinal center line between the cylinders of the pair,
  - a mounting plate being pivotal about a vertical axis through 90° for changing the positions of the pistons to accommodate the motor for either a right hand or left hand disposition with its center line intersecting the swinging axis of the mounting plate,
  - a fingered pusher plate connected to the outboard free ends of the pistons,
  - fixing means for mounting the mounting plate
  - a piston stop bar located centrally of the pusher plate and

connected to the pistons for arresting the pistons at the end of the extending stroke; and parts in the mounting plate and connected fluid supply lines for supplying fluid to the motor.

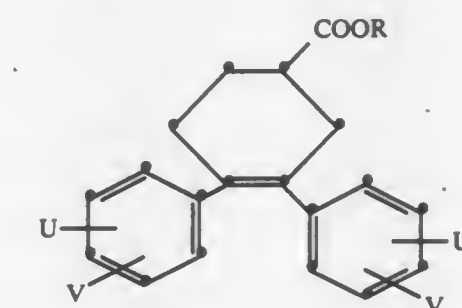
**4,340,414**  
**PLANT HIBERNATION**  
 Walton J. Smith, Rte. 4, Grafton, N.H. 03240  
 Continuation of Ser. No. 904,889, May 11, 1978, abandoned.  
 This application Feb. 4, 1980, Ser. No. 118,304  
 Int. Cl.<sup>3</sup> C05C 5/02, 5/04 1 Claim

1. A plant nutrient solution for bringing about hibernation of plants consisting of approximately 3 grams of calcium nitrate and 2 grams of potassium nitrate per gallon of water, said solution containing no more than trace quantities of phosphate.

**4,340,415**  
**ESTERS OF 1,2-DIPHENYL-CYCLOHEX-1-ENE-4-CARBOXYLIC ACID**

Verena Laanio, Arisdorf; Werner Förty, Basel, and Rolf Schurter, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.  
 Division of Ser. No. 918,212, Jun. 22, 1978, Pat. No. 4,229,207, which is a continuation-in-part of Ser. No. 713,477, Aug. 11, 1976, abandoned. This application May 19, 1980, Ser. No. 151,033  
 Claims priority, application Switzerland, Aug. 15, 1975, 01664/75; Aug. 15, 1975, 01665/75; Aug. 15, 1975, 01666/75  
 Int. Cl.<sup>3</sup> A01N 37/08 18 Claims

1. A method for inhibiting the growth of monocotyledonous and dicotyledonous plants, which comprises applying to such plants an effective amount of an ester of 1,2-diphenyl-cyclohex-1-ene-4-carboxylic acid of the formula



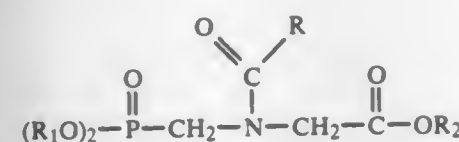
wherein

R is C<sub>1</sub>-C<sub>7</sub> alkyl optionally substituted by halogen, nitro, C<sub>1</sub>-C<sub>4</sub> alkoxy, C<sub>3</sub>-C<sub>8</sub> cycloalkyl, by phenyl or phenoxy unsubstituted or substituted by chlorine, bromine, C<sub>1</sub>-C<sub>4</sub> alkyl or C<sub>1</sub>-C<sub>4</sub> alkoxy; C<sub>3</sub>-C<sub>7</sub> alkenyl optionally substituted by chlorine, bromine or C<sub>1</sub>-C<sub>4</sub> alkyl; C<sub>3</sub>-C<sub>7</sub> alkynyl; C<sub>3</sub>-C<sub>6</sub> cycloalkyl optionally substituted by chlorine; phenyl or benzyl unsubstituted or substituted by chlorine, bromine, C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, nitro, amino, mono- or di-(C<sub>1</sub>-C<sub>4</sub>)alkylamino or trifluoromethyl; and U and V are each selected from the group consisting of hydrogen, chlorine, bromine, C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, nitro and trifluoromethyl.

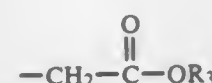


**4,340,416**  
**N-SUBSTITUTED TRIESTERS OF**  
**N-PHOSPHONOMETHYLGLYCINE**  
 Gerard A. Dutra, Ladue, Mo., assignor to Monsanto Company,  
 St. Louis, Mo.  
 Division of Ser. No. 63,297, Aug. 2, 1979, Pat. No. 4,261,727.  
 This application Apr. 2, 1981, Ser. No. 250,525  
 Int. Cl.<sup>3</sup> A01N 57/14; C07F 9/40

U.S. Cl. 71-86 12 Claims  
 1. A compound of the formula



wherein R is a

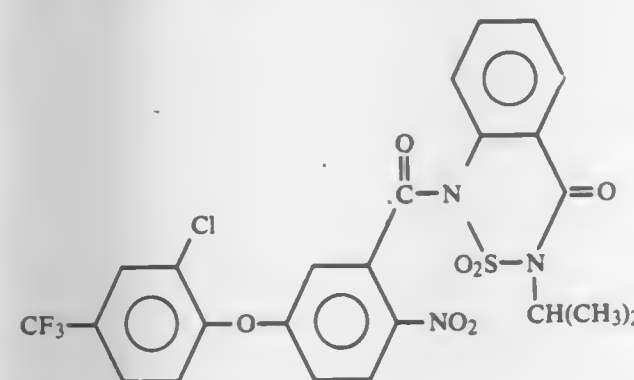


group wherein R<sub>3</sub> is lower alkyl, R<sub>1</sub> is phenyl or lower alkox-  
 yphenyl; and R<sub>2</sub> is lower alkyl.

**4,340,417**  
**HERBICIDAL**  
**1-(5-[2-CHLORO-4-(TRIFLUOROMETHYL)PHENOXY]-2-**  
**NITROBENZOYL)-3-ISOPROPYL-2,1,3-BENZO-**  
**THIADIAZIN-4-ONE,2,2-DIOXIDE**

Robert J. Theissen, Bridgewater, N.J., assignor to Rhone-  
 Poulenc Agrochimie, Lyons, France  
 Continuation-in-part of Ser. No. 117,732, Feb. 1, 1980,  
 abandoned. This application Jun. 23, 1981, Ser. No. 276,619  
 Int. Cl.<sup>3</sup> C07D 285/16; A01N 43/88

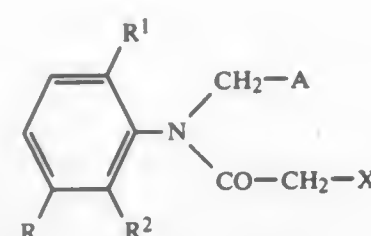
U.S. Cl. 71-91 4 Claims  
 1. A herbicidal compound of the formula



2. A method for combating unwanted plants which com-  
 prises contacting them with a herbicidally effective amount of  
 a compound according to claim 1.

**4,340,418**  
**HERBICIDAL AGENTS BASED ON**  
**N-AZOLYLMETHYLACETANILIDES AND**  
**CYCLOHEXANE-1,3-DIONE DERIVATIVES**  
 Karl Eicken, Wachenheim, and Bruno Wuerzer, Otterstadt, both  
 of Fed. Rep. of Germany, assignors to BASF Aktiengesell-  
 schaft, Fed. Rep. of Germany  
 Filed May 15, 1980, Ser. No. 149,965  
 Claims priority, application Fed. Rep. of Germany, May 19,  
 1979, 2920300

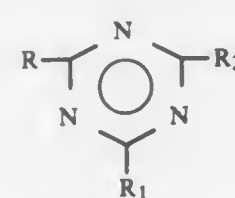
Int. Cl.<sup>3</sup> A01N 43/56 4 Claims  
 U.S. Cl. 71-92  
 1. A herbicidal agent comprising a herbicidally effective  
 amount of a mixture of an N-azolylmethylhaloacetanilide of  
 the formula



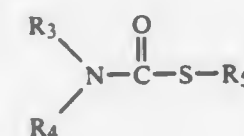
where R is hydrogen, R<sup>1</sup> and R<sup>2</sup> are identical or different and  
 each is methyl or ethyl, X is chlorine and A is pyrazol-1-yl, and  
 the substituted cyclohexane-1,3-dione derivative 2-(1-ethox-  
 yaminobutylidene)-5-(2-ethylthiopropyl)-cyclohexane-1,3-  
 dione the ratio of N-azolylmethylhaloacetanilide to cyclohex-  
 ane-1,3-dione being from 1:0.125 to 1:10 parts by weight.

**4,340,419**  
**S-TRIAZINE HERBICIDAL ANTIDOTES**  
 Alan A. MacDonald, Kensington; Ferenc M. Pallos, Walnut  
 Creek, and Eugene G. Teach, El Cerrito, all of Calif., assign-  
 ors to Stauffer Chemical Company, Westport, Conn.  
 Filed Jul. 7, 1980, Ser. No. 165,994  
 Int. Cl.<sup>3</sup> A01N 25/32

U.S. Cl. 71-93 13 Claims  
 1. A herbicidal composition comprising  
 (a) a non-phytotoxic antidotally effective amount for mono-  
 cotyledon crops of a compound of the formula



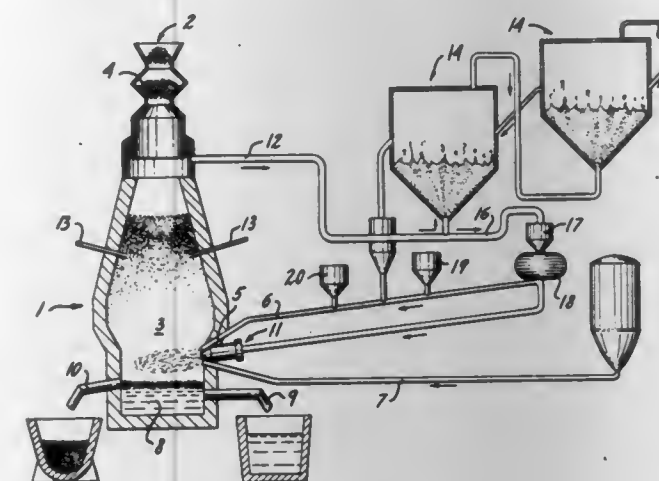
in which  
 (I) R is selected from the group consisting of haloalkyl having  
 1-4 carbon atoms and alkylamine having 1-4 carbon  
 atoms;  
 R<sub>1</sub> is selected from the group consisting of alkyl having 1-4  
 carbon atoms, haloalkyl having 1-4 carbon atoms, and  
 chloro; and  
 R<sub>2</sub> is selected from the group consisting of haloalkyl having  
 1-4 carbon atoms and N-dichloroacetylthylamino; and  
 (b) a herbicidally effective amount of a thiolcarbamate of the  
 formula



in which  
 R<sub>3</sub> is selected from the group consisting of alkyl having 1-6  
 carbon atoms and alkenyl having 2-6 carbon atoms;  
 R<sub>4</sub> is selected from the group consisting of alkyl having 1-6  
 carbon atoms, alkenyl having 2-6 carbon atoms, cyclo-  
 hexyl and phenyl; or  
 R<sub>3</sub> and R<sub>4</sub> together form a hexamethylene group;  
 R<sub>5</sub> is selected from the group consisting of alkyl having 1-6  
 carbon atoms, haloalkyl having 1-4 carbon atoms, cyclo-  
 alkyl having 5-10 carbon atoms, phenyl, substituted  
 phenyl, wherein the substituents are alkyl having 1-4  
 carbon atoms, haloalkyl having 1-4 carbon atoms, and  
 halo, benzyl, and substituted benzyl, wherein the substitu-  
 ents are alkyl having 1-4 carbon atoms, haloalkyl having  
 1-4 carbon atoms and halo.

**4,340,420**  
**METHOD OF MANUFACTURING STAINLESS STEEL**  
 Sven Santen, Hofors, and John O. Edström, Stocksund, both of  
 Sweden, assignors to SKF Steel Engineering Aktiebolag, Ho-  
 fors, Sweden

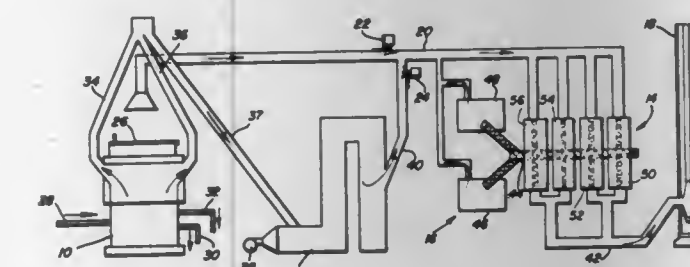
Filed Oct. 24, 1980, Ser. No. 200,151  
 Claims priority, application Sweden, Jun. 10, 1980, 8004311  
 Int. Cl.<sup>3</sup> C22B 4/00  
 U.S. Cl. 75-10 R 11 Claims



1. A two step method of manufacturing chromium steel  
 comprising the first step of injecting a starting material in the  
 form of fine grains and containing chromium oxide and iron  
 oxide into the lower portion of a reactor having an upper and  
 a lower portion; said reactor containing a solid reducing agent,  
 passing said starting material into a reduction zone within said  
 lower portion, said reduction zone being maintained by the use  
 of a plasma generator adjacent thereto, simultaneously inject-  
 ing carbon and/or hydrocarbon fuel into said reduction zone,  
 substantially instantaneously reducing and melting said starting  
 material in said reduction zone, and removing the melted and  
 reduced chromiferous product from the bottom of the reactor,  
 and a second step of further refining the chromiferous product  
 to produce chromium steel.

**4,340,421**  
**METHOD OF RECOVERING LEAD FROM LEAD-ACID**  
**BATTERIES**  
 Svend Bergsøe, Glostrup, Denmark, assignor to Paul Bergsøe  
 and Son A/S, Denmark

Filed Oct. 9, 1980, Ser. No. 195,435  
 Int. Cl.<sup>3</sup> C22B 7/02, 13/00  
 U.S. Cl. 75-25 11 Claims



1. A process for recovering lead from scrap batteries com-  
 prising; inserting a charge containing whole unbroken batteries  
 into a blast furnace, said blast furnace containing a smelting  
 zone to produce molten metallic lead, said charge descending  
 into said smelting zone, introducing air into said furnace for  
 maintaining combustion within said smelting zone, said furnace  
 being characterized such that the ratio of cubic meters per  
 hour of air, measured at standard temperature and pressure,  
 entering the furnace to the shaft area in square meters does not  
 exceed about 1000, whereby gases formed during the combus-  
 tion in the smelting zone rise slowly countercurrent with said  
 charge to provide a long contact time between said gases and  
 the descending charge, causing the heated gases to lose heat

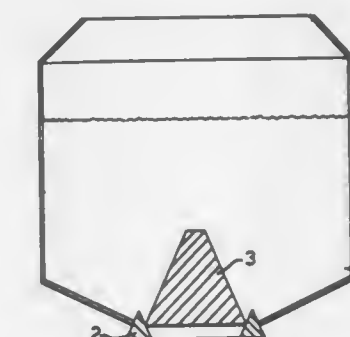
and form at the top of the furnace a cool temperature area  
 sufficient to condense substantial quantities of lead which has  
 been volatilized, reducing the output of flue dust to about  
 2-3% by weight of said charge, said charge further including  
 iron containing material, the amount of said iron containing  
 material being adjusted to the sulfur content of the total charge  
 so that said iron reacts with sulfur compounds to form iron  
 sulphide matte.

**4,340,422**  
**POWDERY DESULFURIZER COMPOSITION**  
 Atsushi Takahashi, Tokyo; Yoshiharu Muratsubaki, Uozu, and  
 Hiroyuki Ishizuka, Mitaka, all of Japan, assignors to Nippon  
 Carbide Kogyo Kabushiki Kaisha, Tokyo, Japan  
 Filed May 13, 1981, Ser. No. 263,306  
 Claims priority, application Japan, May 20, 1980, 55/65924  
 Int. Cl.<sup>3</sup> C21C 7/02

U.S. Cl. 75-58 6 Claims  
 1. A powdery desulfurizer composition for injection desul-  
 furization of molten iron, said composition comprising quick-  
 lime, diamide lime and calcium carbide the total amount of  
 quicklime and diamide lime being 90 to 60% by weight and the  
 amount of calcium carbide is 10 to 40% by weight with the  
 amount of quicklime being 30 to 80 parts by weight and the  
 amount of diamide lime being 70 to 20 parts by weight pro-  
 vided that the total amount of quicklime and diamide lime  
 being taken as 100 parts by weight and the quicklime being  
 quicklime obtained by calcining diamide lime.

**4,340,423**  
**CHARGING OF ZINC-SMELTING BLAST FURNACES**  
 Michael W. Gammon, Whitechurch, England, assignor to Metal-  
 lurgical Processes Limited and I.S.C. Smelting Limited, both  
 of Nassau, The Bahamas  
 Filed Feb. 26, 1981, Ser. No. 238,440  
 Claims priority, application United Kingdom, Mar. 21, 1980,  
 8009723

Int. Cl.<sup>3</sup> C22B 19/08 3 Claims  
 U.S. Cl. 75-87



1. In a method of charging a zinc-smelting blast furnace with  
 alternate loads of coke and zinc oxide material from a hopper  
 by means of a central bell/annular bell charging device, in  
 which the annular bell is lowered by a predetermined fixed  
 distance, the improvement comprising that the time ratio of the  
 time taken to discharge the hopper contents to the time taken  
 for the annular bell to be lowered the predetermined fixed  
 distance is less than unity.



#### 4,340,424 FERRITIC STAINLESS STEEL HAVING EXCELLENT MACHINABILITY AND LOCAL CORROSION RESISTANCE

Koshi Katoh, Tsushima, and Takayoshi Shimizu, Tokai, both of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan  
Continuation of Ser. No. 39,456, May 16, 1979, abandoned, which is a continuation of Ser. No. 888,395, Mar. 20, 1978, abandoned, which is a continuation of Ser. No. 737,411, Oct. 29, 1976, abandoned, which is a continuation-in-part of Ser. No. 554,140, Feb. 28, 1975, abandoned. This application Jun. 16, 1980, Ser. No. 159,695

Claims priority, application Japan, Apr. 23, 1974, 49-45853; May 1, 1974, 49-49439

Int. Cl.<sup>3</sup> C22C 38/24, 38/30

U.S. Cl. 75—126 E

4 Claims

1. A ferritic stainless steel having excellent machinability and local corrosion resistance, consisting essentially of less than 0.020% carbon, less than 0.050% nitrogen, 0.4–0.7% silicon, less than 3.0% manganese, 23–28% chromium, 1.0–5.0% molybdenum, 0.3–3.0% vanadium, 0–5.0% nickel; and at least one element selected from the group consisting of 0.05–0.20% sulfur, 0.05–0.30% selenium, 0.05–0.30% tellurium, 0.01–0.20% lead, 0.01–0.20% bismuth, and 0.005–0.065% calcium, the balance being substantially all iron.

#### 4,340,425 NICRAL TERNARY ALLOY HAVING IMPROVED CYCLIC OXIDATION RESISTANCE

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Charles A. Barrett, Seven Hills; Carl E. Lowell, Lakewood, both of Ohio, and Abdus S. Khan, Palm Beach Garden, Fla.  
Filed Oct. 23, 1980, Ser. No. 199,769

Int. Cl.<sup>3</sup> C22C 19/05

U.S. Cl. 148—428

3 Claims

1. A nickel base ternary alloy system in the  $\beta + \gamma$  and  $\beta$  regions having improved resistance to cyclic oxidation in air at an elevated temperature between about 1100° C. and about 1200° C. consisting essentially of about 10 a/o to about 20 a/o chromium, about 17.5 a/o to about 50 a/o aluminum, about 0.13 w/o zirconium, and the balance nickel.

4,340,426  
ADDITIVES FOR CONTINUOUS CASTING OF STEEL  
Seikichi Tabei, and Shigeo Sasaki, both of Koriyama, Japan, assignors to Nippon Chemical Industrial Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1980, Ser. No. 158,033  
Claims priority, application Japan, Jun. 9, 1979, 54/72664; Feb. 1, 1980, 55/9972

Int. Cl.<sup>3</sup> C22B 9/10

U.S. Cl. 75—257

17 Claims

1. An additive for the continuous casting of steel comprising as a base material a non-acidic amorphous fluorine-containing calcium silicate powder having the composition  $x\text{CaO} \cdot y\text{SiO}_2 \cdot z\text{F}_2$ , wherein  $1.0 \leq x \leq 1.4$  and  $0.05 \leq y \leq 1.5$ , containing up to 10% by weight  $\text{R}_2\text{O}_3$ , wherein R represents Al and Fe, and up to 1.5% by weight  $\text{P}_2\text{O}_5$ .

#### 4,340,427 WELL CEMENTING PROCESS AND GASIFIED CEMENTS USEFUL THEREIN

David L. Sutton, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 38,022, May 10, 1979, Pat. No. 4,304,298. This application Mar. 3, 1980, Ser. No. 126,613

Int. Cl.<sup>3</sup> C04B 1/00

U.S. Cl. 106—87

20 Claims

1. An increased compressibility cement composition for

sealing a subterranean zone penetrated by a bore hole having a portion pressurized by an adjacent gas source comprising an aqueous hydraulic cement, an effective amount of a gas generating agent for generating a stable volume of gas sufficient to increase the compressibility under such downhole conditions by at least 25% in relation to the initial compressibility of the same composition not containing said gas generating agent and at least 0.05 weight percent, based on dry cement, of a chemical fluid loss control additive.

#### 4,340,428 SEMI-PERMEABLE ASYMMETRICAL MEMBRANE AND PROCESS OF PRODUCING SAME

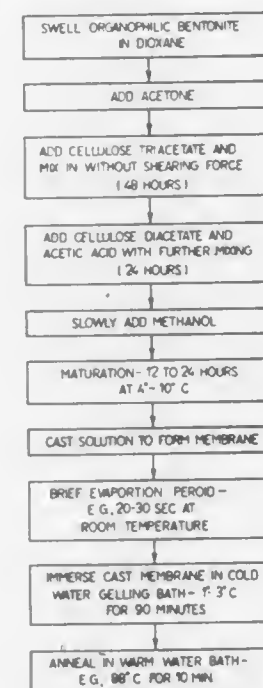
Karl W. Bodeker, Hamburg, and Axel Wenzfaff, Eschburg, both of Fed. Rep. of Germany, assignors to Gesellschaft für Kernenergieverwertung in Schiffbau und Schifffahrt GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 28,262, Apr. 9, 1979, abandoned. This application Jun. 30, 1980, Ser. No. 164,027  
Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2820265

Int. Cl.<sup>3</sup> B29D 27/04

U.S. Cl. 106—122

10 Claims



1. A semi-permeable asymmetrical membrane suitable for water desalting by reverse osmosis, consisting uniformly throughout the whole thereof essentially of cellulose acetate polymers and swelling medium but in the form of a relatively thin nonporous layer and a thicker porous layer, said membrane being the product of a process characterized by:

A. working organophilic aluminum silicate bentonite into an organic medium which is a solvent for at least a portion of said cellulose acetate polymers, to swell the organophilic bentonite; and

B. adding the swollen organophilic bentonite to cellulose acetate polymers and solvents for the same to form a casting solution from which the membrane is cast and wherein the swollen organophilic bentonite constitutes between about 0.07% and 0.2% by weight of the complete casting solution.

#### 4,340,429 PROCESS FOR IMPROVING THE FILTERABILITY OF VISCOSSES

Reinhart Mayer, Kelheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 3,909, Jan. 15, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 192,013

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1978, 2801820

Int. Cl.<sup>3</sup> C08J 3/02, 3/04; C08L 1/22, 1/24

U.S. Cl. 106—164

7 Claims

1. In a process for preparing a viscose solution by dissolving an alkali cellulose-xanthate in dilute sodium hydroxide solution or water, the improvement which comprises carrying out the dissolution step under an elevated pressure of from about 2 to 30 bars for a period of 1 to 180 minutes to improve the filterability of said solution.

#### 4,340,430 AZO PIGMENTS, PROCESS FOR THEIR PRODUCTION AND THEIR USE

Armand Rouëche, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 4, 1980, Ser. No. 174,994

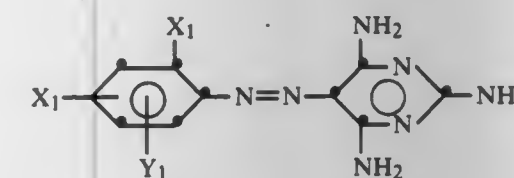
Claims priority, application Switzerland, Aug. 17, 1979, 7559/79

Int. Cl.<sup>3</sup> C08L 1/08; C09B 17/00

U.S. Cl. 106—176

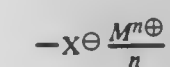
9 Claims

1. An azo pigment of the formula



wherein

one  $X_1$  is a nitro group, a chlorine atom, a sulfo group or a trifluoromethyl group, and the other  $X_1$  is a group of the formula



X is a  $\text{SO}_3$  or  $\text{CO}_2$  group, M is a bivalent metal atom, n is 2, and

$Y_1$  is a hydrogen or chlorine atom or a methyl group.

8. A method of pigmenting organic material of high molecular weight, which comprises the use of a metal salt according to claim 1.

4,340,431  
PIGMENT FLUSHING  
Manohar L. Arora, Zeeland; Timothy A. Overway, Hamilton, and Thomas E. Foye, Jenison, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 10, 1980, Ser. No. 205,138

Int. Cl.<sup>3</sup> C09C 3/10; C09D 17/00

U.S. Cl. 106—262

11 Claims

1. In the method for transferring an organic pigment from an aqueous pulp of the pigment to a water-immiscible organic vehicle by mixing said aqueous pulp and said vehicle until a major portion of the water present in said pulp separates, the improvement comprising incorporation a petroleum sulfonate additive and at least one additive selected from the class consisting of sulfonated sperm oil, sulfated sperm oil, and mixtures thereof with said vehicle and said pigment.

#### 4,340,432 METHOD OF MANUFACTURING STAINLESS FERRITIC-AUSTENITIC STEEL

Allan Hede, Surahammar, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed May 11, 1981, Ser. No. 262,431

Claims priority, application Sweden, May 13, 1980, 8003567

Int. Cl.<sup>3</sup> B22F 3/16

U.S. Cl. 148—11.5 P

6 Claims

1. A method of manufacturing stainless ferritic-austenitic steel containing up to 0.10 percent of C, up to 4.0 percent of Si, up to 2.0 percent of Mn, from 20 to 30 percent of Cr, from 3 to 8 percent of Ni, from 1.0 to 6.0 percent of Mo, up to 0.5 percent of V and up to 4.0 percent of Cu, the remainder being iron and unavoidable impurities in unimportant amounts comprising the steps of:

preparing a melt of the steel with a nitrogen content higher than about 0.10 percent and an austenite content not less than about 20 percent, gas atomizing said melt to form a powder, compacting said powder into a body, heat-treating said body at a temperature of from about 950° to about 1250° C., and cooling the heat-treated body in water, oil or air.

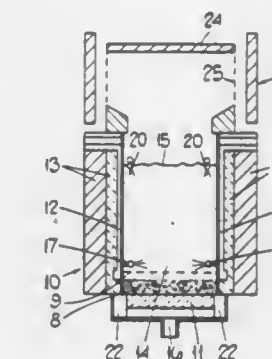
4,340,433  
METHOD OF HEAT TREATING ARTICLES  
Brian Harding, West Bromwich, England, assignor to CAN-ENG Holdings Limited, Ontario, Canada

Continuation-in-part of Ser. No. 831,308, Sep. 7, 1977, abandoned. This application Jan. 16, 1980, Ser. No. 112,576  
Claims priority, application United Kingdom, Sep. 16, 1976, 38339/76

Int. Cl.<sup>3</sup> C21D 1/74

U.S. Cl. 148—16

3 Claims



1. A method of heat treating articles by immersing them in a fluidized bed comprising a container having a porous base and containing a mass of refractory particles, comprising the steps of:

arranging a layer of said refractory particles immediately adjacent to said porous base, the layer being formed of particles having a sufficiently larger mean diameter so as to remain unfuidized, the remainder of said refractory particles being fluidizable;

supplying a non-stoichiometric fluidizing and treatment medium to the underside of said porous base and allowing said medium to flow therethrough and into said mass of refractory particles at such a velocity as will leave said layer of larger mean diameter refractory particles unfuidized while forming a fluidized layer thereabove from said remainder of said refractory particles;

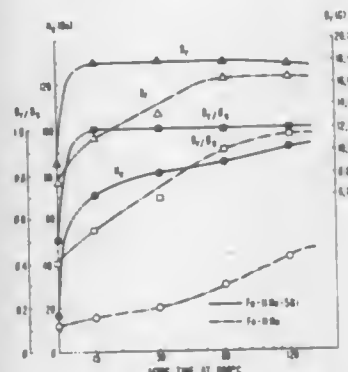
introducing a gaseous medium into said container at a position above and spaced from said porous base, at least one of: said gaseous medium; and, a mixture of said gaseous medium and said fluidizing medium, being a combustible product; and,

igniting said combustible product and thereby heating said fluidized layer of refractory particles, whereby said porous base is thermally shielded from said fluidized layer by



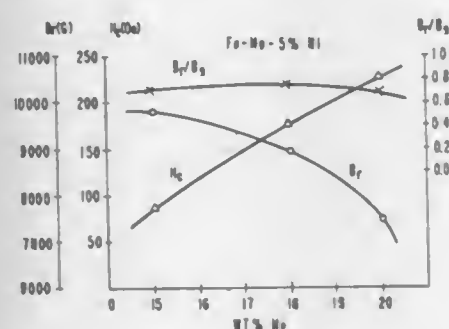
said layer of larger mean diameter unfuidised particles which remain substantially cooler than the fluidised particles.

**4,340,434**  
**HIGH REMANENCE FE-MO-NI ALLOYS FOR MAGNETICALLY ACTUATED DEVICES**  
 Sungho Jin, Gillette, and Thomas H. Tiefel, Rockaway, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
 Filed Aug. 18, 1980, Ser. No. 178,832  
 Int. Cl.<sup>3</sup> C04B 35/00  
 U.S. Cl. 148—31.55



1. Magnetic alloy consisting essentially of an amount of at least 99.5 weight percent Fe, Mo, and Ni, Mo being in the range of 2-26 weight percent of said amount, Ni being in the range of 0.5-15 weight percent of said amount, said alloy having magnetic squareness ratio greater than or equal to 0.9, and said alloy having remanence greater than or equal to 13000 gauss.

**4,340,435**  
**ISOTROPIC AND NEARLY ISOTROPIC PERMANENT MAGNET ALLOYS**  
 Sungho Jin, Gillette, and Thomas H. Tiefel, Rockaway, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
 Filed Oct. 17, 1980, Ser. No. 197,970  
 Int. Cl.<sup>3</sup> C04B 35/00  
 U.S. Cl. 148—31.57



1. Magnetically isotropic or nearly isotropic permanent magnet alloy having a remanent magnetic induction which is greater than or equal to 7000 gauss, a coercive force which is greater than or equal to 50 oersted, and a magnetic squareness ratio which is less than 0.9 CHARACTERIZED IN THAT an amount of at least 95 weight percent of said alloy consists of Fe, Mo, and Ni, Mo being in the range of 10-40 weight percent of said amount, and Ni being in the range of 0.5-15 weight percent of said amount.

**4,340,436**  
**PROCESS FOR FLATTENING GLASS-CERAMIC SUBSTRATES**  
 Derry J. Dubetsky, Wappingers Falls; Lester W. Herron, Hope-well Junction, and Raj N. Master, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.  
 Filed Jul. 14, 1980, Ser. No. 167,975  
 Int. Cl.<sup>3</sup> B32B 31/24; C03B 32/00; C04B 39/00  
 U.S. Cl. 156—89



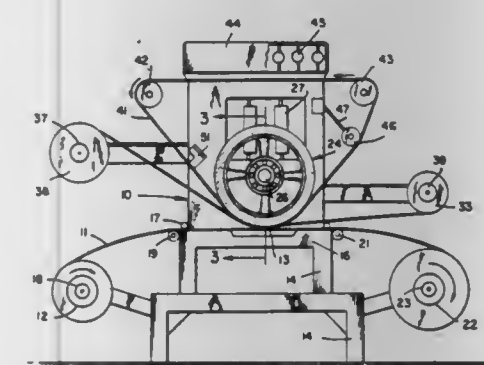
1. A method of forming a glass-ceramic composite structure with a copper based conductor pattern embedded therein comprising:  
 A. forming at least one green sheet comprised of a thermo-plast organic binder having dispersed therein particles of a crystallizable glass having a crystallizing temperature below the melting point of copper;  
 B. forming on a surface of a first said green sheet a pattern of a copper based conductor forming composition;  
 C. superimposing a second said green sheet on said surface of said first sheet to sandwich said pattern therebetween;  
 D. laminating said sheets together;  
 E. heating said laminate in an ambient of hydrogen and H<sub>2</sub>O in a ratio of H<sub>2</sub>/H<sub>2</sub>O in the range of about 10<sup>-4</sup> to about 10<sup>-6.5</sup> to a burn-out temperature in the range between the anneal and softening points of said glass, and maintained thereat for sufficient time to sinter said particles and to decompose and eliminate said binder;  
 F. substituting an inert gas for said ambient;  
 G. further heating said laminate to a range between the coalescent and crystallization temperatures of said glass to partially coalesce said glass of said laminate;  
 H. interrupting the last said heating to superimpose a coextensive inert non-adherent removable light weight planar platen on said laminate, with said platen having a weight in the range below an upper level causing extrusion of said laminate during firing or restricting lateral shrinkage of said laminate and at least at a lower level preventing vertical movement of said laminate during firing;  
 I. further heating said laminate and superimposed platen, under sole pressure of said platen, through the coalescing temperatures of said glass to the crystallization temperature thereof to convert said glass into a glass-ceramic structure and;  
 J. removing said platen from said glass-ceramic structure.

**4,340,437**  
**METHOD OF PRODUCING A MOISTURE-INSENSITIVE MOLDED LEATHER HOLSTER**  
 William H. Rogers, Jacksonville, Fla., assignor to Rogers Holster Co., Inc., Jacksonville, Fla.  
 Filed Mar. 10, 1980, Ser. No. 129,174  
 Int. Cl.<sup>3</sup> B29C 19/00; B29F 1/10, 25/00; A45C 1/00  
 U.S. Cl. 156—224

1. A method of producing a moisture-insensitive molded leather holster having a closed front and back and an open top and a fully lined leather cavity for a holsterable object comprising preparing a laminate of at least one layer of leather integrally bonded to a layer of heat moldable thermoplastic material, and producing a leather holster heating said holster to the molding temperature of said thermoplastic material, opening said open top of said holster and inserting a forming core having a shape conforming to the holsterable object through said open top to lie between said front and back within said

fully lined leather cavity of said holster, applying pressure from the outside of said holster to closely mold said laminate to said forming core while said temperature is reduced to a level below said molding temperature, and forcibly removing said forming core from said cavity out said open top of said holster to break said core away from friction contact points between said core and said laminate forming said cavity.

**4,340,438**  
**ROLL LEAF COATING METHOD**  
 Jesse B. Davis, 196 S. Kilburn Rd., Garden City, N.Y. 11530  
 Division of Ser. No. 38,630, May 14, 1979, Pat. No. 4,288,275.  
 This application May 22, 1981, Ser. No. 266,208  
 Int. Cl.<sup>3</sup> B44C 1/14  
 U.S. Cl. 156—234



1. Method for decorating a product surface by transferring a decorative roll leaf thereto from a foil which comprises a carrier, to which the decorative roll leaf has been bonded with a thermally meltable adhesive, which method includes the steps of;  
 contacting at least one of two pressure elements with a thermal belt, the latter defining a closed loop and being sequentially progressed into heat exchange engagement with a heat source and with one of said pressure elements and  
 compressing the foil against said product surface between said two pressure elements, said at least one heated pressure element concurrently heating the foil to a sufficient temperature to melt said adhesive whereby to permit separation of the decorative roll leaf from the carrier.

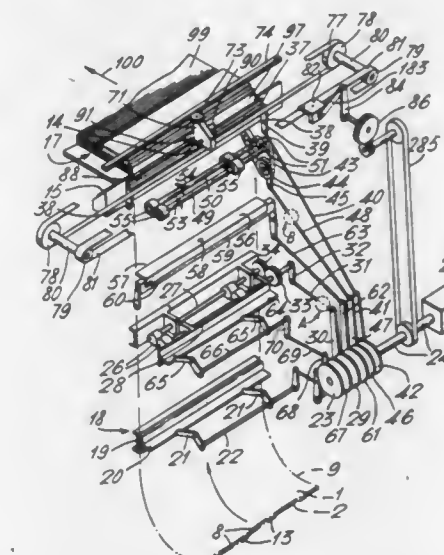
**4,340,439**  
**PROCESS OF USING A CUSHION FOR LAMINATING OPERATIONS**  
 Harold C. Giesler, Westchester, Ohio, assignor to Formica Corporation, Wayne, N.J.  
 Continuation of Ser. No. 96,584, Nov. 21, 1979, Pat. No. 4,264,404. This application Feb. 10, 1981, Ser. No. 233,276  
 The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.  
 Int. Cl.<sup>3</sup> B32B 31/20

U.S. Cl. 156—323  
 1. A process for producing a heat and pressure consolidated laminate which comprises heat and pressure consolidating a laminate assembly while employing, as a pressure cushion, at least two cellulosic sheets and at least one thermoplastic sheet having a glass transition point below 100° C. and a melting point of about 125° C. or more wherein the thermoplastic sheet or sheets have an individual thickness ranging from about 2 to 20 mils and a combined thickness greater than about 5 mils and wherein the individual thermoplastic sheets are interleaved between the cellulosic paper sheets.

**4,340,440**  
**COATING AND/OR ADHESIVE COMPOSITION AND METHOD FOR PREPARATION THEREOF**  
 Challoner R. Chute, 918 Rugby Rd., Charlottesville, Va. 22903  
 Filed Sep. 22, 1977, Ser. No. 835,631  
 Int. Cl.<sup>3</sup> C09J 3/14; C08J 3/00

U.S. Cl. 156—330.9  
 15 Claims  
 1. A composition suitable for forming coatings or for use as an adhesive consisting essentially of a suspension of finely divided polypyrrolidone in aqueous formic acid wherein said composition contains from 2% to 50% of polypyrrolidone and from 15% to 60% of formic acid, based on the weight of the composition.  
 11. A method for adhering a substrate to another substrate comprising interposing a layer of the composition of claim 1 between said substrates.

**4,340,441**  
**SLICING WEB MATERIAL**  
 Peter J. Thwaites, Eltisle, and John N. Thornton, Abbotsley, both of England, assignors to DuFaylite Developments Limited, England  
 Continuation-in-part of Ser. No. 851,907, Nov. 16, 1977, Pat. No. 4,187,138. This application Dec. 10, 1979, Ser. No. 101,408  
 Int. Cl.<sup>3</sup> B32B 31/00  
 U.S. Cl. 156—512



1. Apparatus for cutting web material transversely to form sections of the web material which comprise a blade formed with a linear cutting edge, final advancing means for advancing the web material a section at a time adjacent to the linear cutting edge, final clamping means for clamping the advanced web material in advance of the edge with the sections projecting beyond the edge in turn, a linear guide parallel with the edge, a mounting movable to and fro along the linear guide, a blade carried by the mounting and formed with a circular peripheral cutting edge positioned to overlap the linear cutting edge, in web-material cutting association therewith, and a drive for moving the mounting to and fro along the guide in a continuous cyclic movement in which the mounting is moved in a first direction to a first reversal position, reversed in its motion, moved in the opposite direction to a second reversal position and again reversed in its motion for further movement in said first direction, said final advancing and said final clamping means being operable to advance a section of the web material when the mounting is in the region of its reversal positions and to clamp the web material when the mounting is moving to or fro over an intermediate part of its motion between the reversal positions, said blades cooperating to cut the web material transversely during each intermediate part of the cyclic movement of the mounting to cut off the then projecting section of the web material and leave the remainder of the web material with a cut edge at the positions of the linear cutting edge, said apparatus having, in addition to said final advancing



means and said final clamping means, primary advancing means and primary clamping means, said primary and final clamping means, and primary and final advancing means, being arranged to operate so that the primary advancing means advances the web material whilst the final clamping means is clamping it and the primary clamping means clamps the web material whilst the final advancing means is advancing it, the rate of the advancement by the primary advancing means being less than the rate of advancement by the final advancing means.

#### 4,340,442 STARCH FIBRIDS USEFUL IN ENHANCING THE PHYSICAL PROPERTIES OF PAPER, AND PROCESS OF PREPARING SAME

John R. Hart, Savannah, Ga.; Stanley G. Juergens, Cincinnati, and William E. McCormack, Hamilton, both of Ohio, assignors to Champion International Corporation, Stamford, Conn. Continuation of Ser. No. 958,187, Nov. 6, 1978, abandoned. This application Jun. 23, 1980, Ser. No. 161,664

Int. Cl.<sup>3</sup> D21H 5/12

U.S. Cl. 162—146 13 Claims

1. A process for the production of a paper product including water insoluble starch fibrids, which comprises:

- providing an aqueous, alkaline solution of a normally water-insoluble starch in finely divided form,
- suspending said finely divided starch solution in a gas and introducing the resulting aerosol into an agitated, aqueous precipitating medium at an angle of less than 90 degrees with the surface of said aqueous precipitating medium, said aqueous precipitating medium comprising a salt solution, to thereby produce starch fibrids characterized by having both film and fiber morphology,
- separating said starch fibrids which are insoluble in water from said aqueous precipitating medium,
- incorporating said starch fibrids into a papermaking wood pulp in an amount ranging from 1 percent to about 60 percent by weight, and
- preparing a paper product from said papermaking wood pulp including said starch fibrids.

#### 4,340,443 ANALYSIS OF GOLD-CONTAINING MATERIALS

Colin G. Clayton, and Malcolm R. Wormald, both of Abingdon, England, assignors to United Kingdom Atomic Energy Authority, London, England

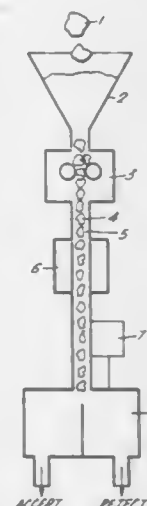
Filed Jun. 9, 1980, Ser. No. 157,300

Claims priority, application United Kingdom, Jun. 14, 1979, 7920667

Int. Cl.<sup>3</sup> G21G 1/06

U.S. Cl. 376—342

8 Claims



1. A method for determining the gold content of an auriferous material, comprising the operations of irradiating a body of the material with neutrons and determining the intensity of

$\gamma$ -rays having an energy of 279 keV arising from the reaction  $^{197}\text{Au}(\text{nn}')^{197\text{m}}\text{Au} \rightarrow 279 \text{ keV}$ .

#### 4,340,444 PLANT FOR RETORTING OIL PRODUCTS CONTAINED IN SHALES AND SANDS

Carlo Roma, Rome, Italy, assignor to SQUARE S.A., Coira, Switzerland

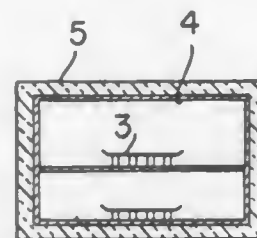
Continuation-in-part of Ser. No. 105,470, Dec. 19, 1979, Pat. No. 4,253,938. This application Feb. 3, 1981, Ser. No. 230,987

Claims priority, application Italy, Sep. 21, 1979, 50323 A/79

Int. Cl.<sup>3</sup> C10B 7/06, 53/06; C10G 1/02

U.S. Cl. 202—99

3 Claims



1. A continuous apparatus for retorting oil products from shale and/or sand material, comprising, a horizontal retort, means for conveying a layer of said material horizontally through said retort while supporting the material on a metal body, means for flowing a gaseous stream horizontally through the retort countercurrently to said layer of material, means for burning fuel at a location outside the retort to provide a supply of hot combusted gases, means for heating said countercurrently flowing gaseous stream by adding combusted gases thereto at one or more input zones in the horizontal retort,

said means for flowing a gaseous stream horizontally through the retort being operable to pass the heated gaseous stream to exchange heat convectively with the metal body and the material and the retort walls which face the material, whereby the metal body exchanges heat with the material by conduction and the retort walls exchange heat with the material by radiation, said material being heated to cause the vaporization of at least some of the oil products contained in said material, means for removing vapors from said retort, means for bringing a condensing fluid into heat exchanging relation to said vapors to condense said vapors, and means for removing dust therefrom to provide an oil-containing condensate and a stream of uncondensed vapors, means for decanting said oil containing condensate, means for cooling the condensing fluid before bringing it into heat exchanging relation to said vapor, means for recycling at least a portion of said uncondensed vapors into the retort as said gaseous stream, and means for removing carbon dioxide, hydrogen, light hydrocarbon fractions, nitrogen and steam as the stream of uncondensed vapors.

#### 4,340,445 CAR FOR RECEIVING INCANDESCENT COKE

Valery N. Kucher, ulitsa 5 maya, 15, kv. 25; Alexandr Z. Popenko, ulitsa Prigorodnaya, 68; Georgy R. Reiman, ulitsa Syrovtsa, 2/28, kv. 79; Mikhail I. Durachenko, ulitsa Lesopilnaya, 1/28, kv. 79, and Grigory D. Zhovtobryukh, Kom-somolsky prospekt, 20, kv. 40, all of Dneprodzerzhinsk, U.S.S.R.

Filed Jan. 9, 1981, Ser. No. 223,683

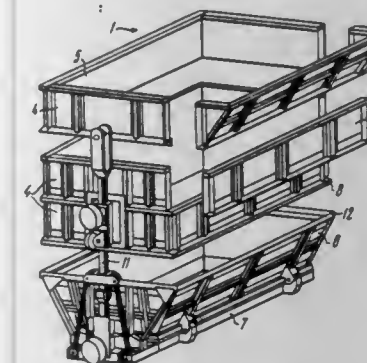
Int. Cl.<sup>3</sup> C10B 35/00

U.S. Cl. 202—262

5 Claims

1. A car for receiving incandescent coke and transporting it

from a coking chamber to a quenching site, comprising a body removably mounted on an undercarriage and having a bunker and a wall structure which includes a wall girder disposed around the outer face thereof adjacent the junction to the bunker and carries a coke-receiving chute characterized in that the wall structure is detachably mounted on the bunker, and



wherein said bunker is provided with a bunker girder disposed around the upper end portion thereof, said bunker girder being in contact with the wall girder so as to provide for free linear expansion for each of the respective girders under the action of heat from the incandescent coke, whereby the effect of thermal strain in the wall structure and the bunker is eliminated.

#### 4,340,446 HEAT RECOVERY IN DISTILLATION PROCESS

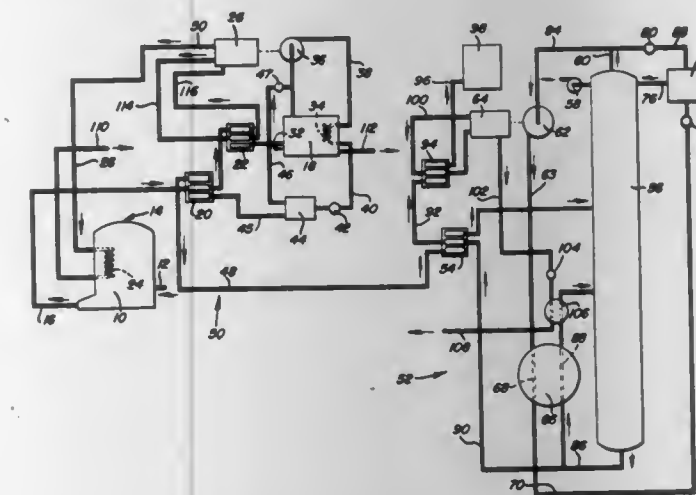
Lynn A. Crawford, Box 225 Suburban Rte., Rapid City, S. Dak. 57701

Continuation of Ser. No. 71,687, Aug. 31, 1979, abandoned. This application Sep. 30, 1980, Ser. No. 192,316

Int. Cl.<sup>3</sup> B01D 3/14

U.S. Cl. 203—19

14 Claims



1. A process for the separation and recovery of ethanol from an aqueous fermentate consisting essentially of about 7% by weight ethanol, a minor portion of suspended solid matter, with the balance of the fermentate being water, the process comprising the following steps:

- pumping the fermentate to an evaporator within which separation and discharge of said solid matter from evaporator vapors of ethanol and water occurs;
- recompressing said evaporator vapors by a first compressor and condensing the compressed vapors;
- passing the condensate formed from the compressed vapors to a fractionation stage and fractionating said condensate under reduced pressure fractionation into vapors rich in ethanol and liquid bottom product rich in water;
- withdrawing the vapors and withdrawing the bottom product;
- recompressing said vapors rich in ethanol in a second compressor and condensing the vapors to form a liquid product rich in ethanol;

- withdrawing said liquid product containing at least about 97 volume percent ethanol;
- driving each of said first and second compressors by an engine, said engine producing recoverable waste heat; and
- using at least a portion of said recoverable waste heat for heating said fermentate, said bottom product, or said discharged solid matter.

#### 4,340,447 PROCESS FOR THE RECOVERY OF PURE ACETONE FROM CUMENE HYDROPEROXIDE CLEAVAGE REACTION PRODUCT

Robert G. Laverick, Sandy, England, and James M. Scotland, Stirlingshire, Scotland, assignors to BP Chemicals Limited, London, England

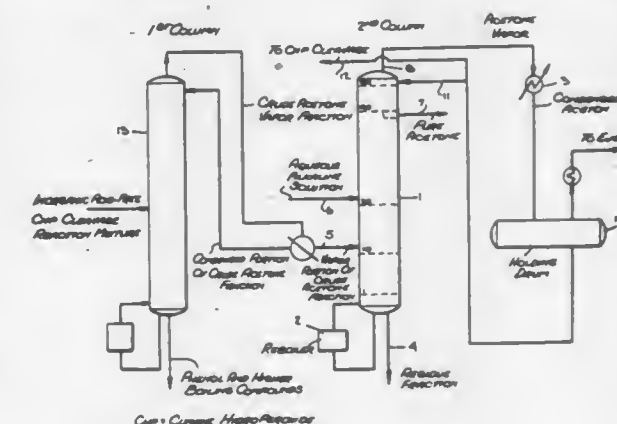
Filed May 27, 1981, Ser. No. 267,603

Claims priority, application United Kingdom, May 27, 1980, 8017367

Int. Cl.<sup>3</sup> B01D 3/34; C07C 49/08

U.S. Cl. 203—36

10 Claims



1. A process for the recovery of pure acetone from a crude acetone fraction removed overhead as a vapour from a first column separating phenol and higher-boiling compounds as a bottom fraction from the cumene hydroperoxide cleavage reaction product which process comprises partially condensing the crude acetone fraction, returning the condensed portion of the crude acetone fraction to the first column as reflux, feeding the remaining portion of the crude acetone fraction whilst still in the vapour phase to an intermediate point in a second distillation column to which there is also continuously fed at a point above the acetone feedpoint a dilute aqueous solution of an alkaline material, removing from the base of the second column a residue fraction comprising compounds boiling above acetone, removing from a point in the second column intermediate between the alkaline material feed point and the top of the column as a liquid sidedraw fraction pure acetone having a permanganate time greater than 4 hours, and removing from the top of the second column as a vapour fraction acetone having a permanganate time less than that of the sidedraw fraction, condensing the acetone vapour fraction and returning to the second column at a point above the liquid acetone sidedraw removal point a portion of the condensate as reflux.

#### 4,340,448 POTENTIOMETRIC DETECTION OF HYDROGEN PEROXIDE AND APPARATUS THEREFOR

Julian G. Schiller, Pittsburgh; Lemuel B. Wingard, Jr., Monroeville, both of Pa., and Chung-Chiun Liu, Cleveland, Ohio, assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed Aug. 28, 1978, Ser. No. 937,365

Int. Cl.<sup>3</sup> C12Q 1/26, 1/30; G01N 27/46

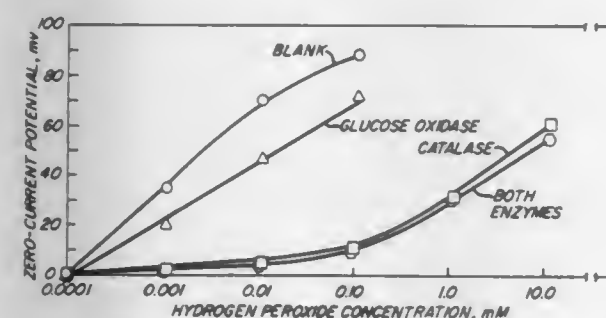
U.S. Cl. 204—1 T

13 Claims

1. A method for potentiometric detection of hydrogen peroxide comprising providing an electrolytic cell having a reference electrode



and a working electrode composed at least in part of a hydrogen peroxide sensitive material, immobilizing at least one oxidase enzyme on said working electrode, said immobilized enzyme including catalase, introducing a hydrogen peroxide releasing substance into said cell, releasing said hydrogen peroxide by effecting contact between said enzyme and said hydrogen peroxide releasing substance, developing in said cell through interaction between said hydrogen peroxide and said working electrode an electrical potential which is a function of the concentration of said hydrogen peroxide in said electrolytic cell, maintaining the pH of said cell in the range of about 5 to 9, and measuring said electrical potential of said cell whereby said working electrode will serve as a support for said oxidase enzyme and also as a hydrogen peroxide sensitive electrode to provide an electrical potential signal which is a function of the concentration of said hydrogen peroxide.



9. An apparatus for potentiometric detection of hydrogen peroxide comprising a cell containing an electrolyte, a working electrode and a reference electrode, an electrometer operatively associated with said working electrode and said reference electrode, said working electrode composed of a material which creates an electrical potential when it interacts with hydrogen peroxide, at least one oxidase enzyme immobilized on said working electrode, said enzyme includes glucose oxidase and catalase, whereby introduction of a hydrogen peroxide containing substance into said cell will result in said enzyme releasing hydrogen peroxide from said hydrogen peroxide releasing substance with the hydrogen peroxide interacting with said working electrode and said working electrode functioning as a support for said oxidase enzyme and to generate an electrical potential which is a function of the concentration of said hydrogen peroxide.

#### 4,340,449 METHOD FOR SELECTIVELY ELECTROPLATING PORTIONS OF ARTICLES

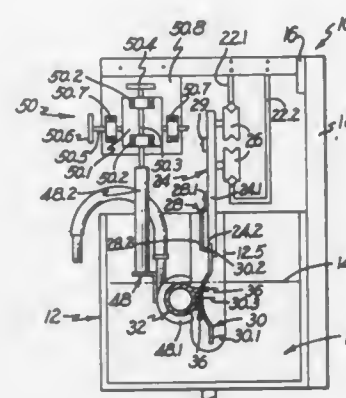
Venkataraman Srinivasan, Attleboro; Stephen Cassidy, Canton, and Charles Grassie, Attleboro, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.  
Continuation of Ser. No. 840,698, Oct. 11, 1977, abandoned.  
This application Oct. 16, 1980, Ser. No. 197,445  
Int. Cl.<sup>3</sup> C25D 5/02, 5/08

U.S. Cl. 204—15

1 Claim

1. A method of rapidly electroplating selected portions of a plurality of metallic articles having a selected front surface configuration to be plated to enhance the uniformity of plating on said surfaces for permitting such selective plating in a commercially effective manner using lesser tolerances, the method comprising the steps of providing a reservoir of an electroplating solution with a top surface level of the solution in the reservoir defined, moving the selected portions of the articles through the reservoir beneath the top surface thereof in a straight

longitudinal direction so that the selected front configuration of the articles define a plane area of selected length as the articles move through the reservoir, disposing an anode with a longitudinally extending surface essentially conforming to the plane area in the reservoir beneath the top surface of the reservoir closely adjacent to but spaced from said plane so that the space between the plane and the anode surface is maintained continuously filled with the plating solution of the reservoir, disposing parallel, longitudinally extending lands of electrically insulating material above and below the anode surface to cooperate with the anode and with said plane to form a plating cavity, the cavity being defined by the anode serving as a back portion of the cavity, by the lands serving as top and bottom portions of the cavity, and by a



front portion defined by the selected front surface configurations of the articles moving past the anode the lands each forming an edge extending longitudinally along the plating cavity.

biasing the articles to slide against the edges formed by the lands as the articles move through the reservoir, directing jets of electroplating solution into the plating cavity in a direction extending from the anode toward the front portion of the plating cavity whereby the solution is caused to pass through the first portion of the cavity between adjacent articles moving along the front portion of the plating cavity, upward and downward flow of the solution being blocked by the edges of the respective lands, and directing electrical current through the plating solution between the anode and the articles moving past the anode.

#### 4,340,450 METHOD FOR PLATING ROLLERS AND APPARATUS FOR MOUNTING ROLLERS UTILIZED IN THE METHOD

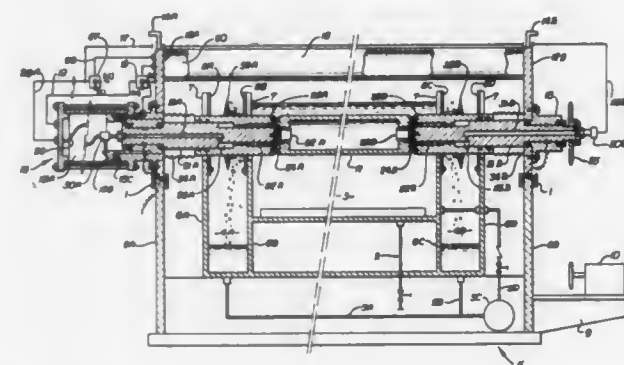
Susumu Saito, Kashiwa, Japan, assignor to Shinku Laboratory Co., Ltd., Chiba, Japan

Filed Jul. 9, 1980, Ser. No. 167,108

Int. Cl.<sup>3</sup> C25D 5/34, 7/04, 17/06

U.S. Cl. 204—25

2 Claims



1. A plating method for plating only the outer circumferential surface of a hollow roller utilizing a pretreatment device,

an etching device, an after-treatment device and an electric metal plating device, said method comprising the steps of:

mounting the roller in a cassette wherein the cassette comprises:  
a pair of lifting frames;  
a pair of rotary spindles facing each other and rotatably coupled to the lifting frames such that at least one of the spindles are axially movable;  
a pair of electrically conductive members provided one on each of said pair of spindles capable of supporting said roller by engaging with hollow ends of the rollers; and  
a pair of leakage-proof prevention caps provided one on each end of the pair of spindles for engaging with said hollow roller and for preventing liquid from leaking to the inside of said roller when the caps engage with the hollow end of the roller;  
conveying the cassette to and mounting the cassette on successively, a tank of each of said pretreatment, etching, after-treatment and electric metal plating devices such that at least a part of the roller is immersed in a solution in the tank;  
rotating the roller during pretreatment, etching, after-treatment and electric metal plating;  
dismounting the cassette from the tank of said electric metal plating device;  
conveying the cassette to a roller removal location; and removing the roller from the cassette.

#### 4,340,451 METHOD OF REPLENISHING GOLD/IN PLATING BATHS

Yutaka Okinaka, Madison, and Catherine Wolowodiuk, Chatham Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 17, 1979, Ser. No. 104,181

Int. Cl.<sup>3</sup> C25D 3/48

U.S. Cl. 204—46 G

7 Claims

1. A method of replenishing gold in a gold electroplating bath comprising the steps of:  
establishing a free cyanide concentration in said plating solution having a pH of at least 3 by plating from a solution comprising at least one member selected from the group consisting of  $\text{KAu(CN)}_2$ ,  $\text{NaAu(CN)}_2$ ,  $\text{LiAu(CN)}_2$ , and  $\text{NH}_4\text{Au(CN)}_2$ ; and  
circulating said plating solution through at least one vessel  
CHARACTERIZED IN THAT said vessel contains AuCN.

#### 4,340,452 NOVEL ELECTROLYSIS CELL

Oronzio deNora, Milan, Italy, assignor to Oronzio deNora Elettrochimici S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 102,629, Dec. 11, 1979. This application May 19, 1980, Ser. No. 151,346

Claims priority, application Italy, Jan. 28, 1980, 19592 A/80

Int. Cl.<sup>3</sup> C23B 1/34, 1/02, 9/00

U.S. Cl. 204—129

63 Claims



1. A method of generating halogen by electrolysis of halide electrolyte in an electrolytic cell having an anode and a cathode separated by a semi-permeable membrane characterized in that both electrodes are open to gas and electrolyte flow and have a

surface in direct contact at a plurality of points with the surface of the membrane, wherein the density of the points of contact is at least 30 points/cm<sup>2</sup> and the ratio between the total contact area and the projected area is not more than 75% and a substantially uniform resilient pressure is maintained over the points of contact, the electrode surfaces in contact at a plurality of points with the surface membrane comprise thin, electrically conductive screens slideable with respect to the membrane and having a mesh number of at least 10.

#### 4,340,453 U.V.-CURABLE RESIN WITH AMINE ACCELERATOR

Arie Noomem, Voorhout, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Filed Apr. 9, 1980, Ser. No. 138,684

Claims priority, application Netherlands, Apr. 10, 1979, 7902797

Int. Cl.<sup>3</sup> C08F 2/50; C08K 5/34

U.S. Cl. 204—159.15

13 Claims

1. A coating composition which is curable under the influence of ultraviolet light and is based on a U.V.-curable binder, a photoinitiator and a nitrogen-containing accelerator, characterized in that the accelerator is a polycyclic condensation product of formaldehyde and/or acetaldehyde and an aliphatic and/or cycloaliphatic diprimary 1,2-diamine.

#### 4,340,454 PHOTOCROSSLINKABLE, HIGH-TEMPERATURE-RESISTANT POLYMERS AND THEIR USE IN COLOR IMAGING DEVICES

Thomas W. Martin, Rochester; Mohammad A. Sandhu, Pittsford, and Dennis J. Savage, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 75,621, Sep. 14, 1979, Pat. No. 4,267,961, which is a division of Ser. No. 940,057, Sep. 6, 1978, Pat. No. 4,190,446. This application Sep. 10, 1980, Ser. No. 185,659

Int. Cl.<sup>3</sup> C08F 8/00; C08G 18/00, 63/00, 69/00

U.S. Cl. 204—159.16

6 Claims

1. A photocrosslinkable, organic solvent-soluble polymer having a T<sub>g</sub> greater than 200° C., wherein said polymer contains sufficient radiation-sensitive crosslinkable units to render said polymer insoluble in organic solvents on exposure to radiation to which said crosslinkable units are sensitive.

#### 4,340,455 POLYADDUCT/POLYCONDENSATE CONTAINING BASIC NITROGEN GROUPS, AND ITS USE

Fritz E. Kempter, Mannheim, and Eberhard Schupp, Schwetzingen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,920

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1980, 3026873

Int. Cl.<sup>3</sup> C08G 59/50, 59/54; C08L 63/10

U.S. Cl. 204—181 C

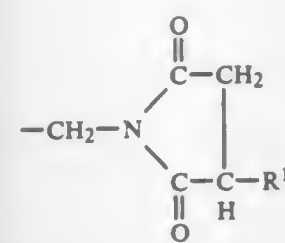
7 Claims

1. A polyadduct/polycondensate which is water-dilutable when protonated with an acid and which contains basic nitrogen groups, the product being obtained by polyaddition reaction of

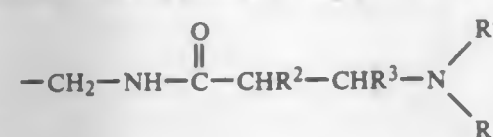
(A) from 10 to 90% by weight of a Mannich base obtained from (a) monophenols and/or polyphenols, (b) one or more secondary amines which contain one or more hydroxyalkyl groups (b<sub>1</sub>), or a mixture of such a secondary amine with another secondary amine (b<sub>2</sub>) and (c) formaldehyde or a formaldehyde donor, with

(B) from 10 to 90% by weight of one or more epoxy resins, wherein the polyadduct/polycondensate of (A) with (B) contains groups, bonded to aromatic rings, of the formula (I)



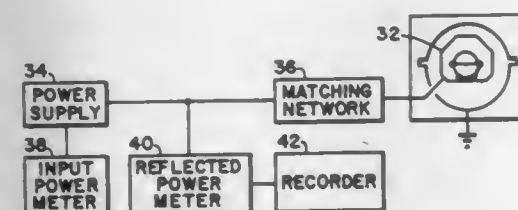


with or without groups of the general formula II



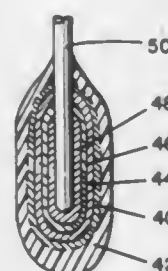
where R<sup>1</sup> is a polydienyl radical, R<sup>2</sup> and R<sup>3</sup> are identical or different and each is hydrogen or methyl and R<sup>4</sup> and R<sup>5</sup> are identical or different and each alkyl of 1 to 9 carbon atoms or hydroxyalkyl or alkoxyalkyl of 2 to 10 carbon atoms, or which are linked to one another to form a 5-membered or 6-membered ring.

**4,340,456**  
**METHOD FOR DETECTING THE END POINT OF A PLASMA ETCHING REACTION**  
Frederick J. Robinson, Scottsdale, and Clarence J. Tracy, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.  
Division of Ser. No. 912,615, Jun. 5, 1978, Pat. No. 4,201,579.  
This application Nov. 2, 1979, Ser. No. 90,767  
Int. Cl.<sup>3</sup> H01L 21/306  
U.S. Cl. 204—192 E 6 Claims



1. An improved method for detecting the end point of a plasma etching reaction where material is removed from a body and wherein radio frequency power is applied to a plasma reactor to form a plasma therein and a portion of said power is reflected from said plasma reactor, the improvement which comprises monitoring changes in said power reflected from said plasma reactor and terminating said plasma etching reaction in response to said changes.

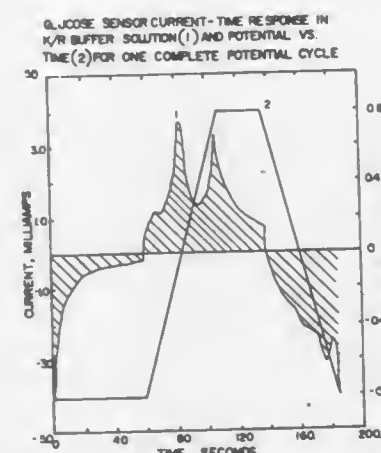
**4,340,457**  
**ION SELECTIVE ELECTRODES**  
John A. R. Kater, 2037 W. San Lorenzo, Santa Ana, Calif. 92704  
Filed Jan. 28, 1980, Ser. No. 116,297  
Int. Cl.<sup>3</sup> G01N 27/30  
U.S. Cl. 204—195 R 15 Claims



1. An ion selective electrode comprising a metallic conductor, an overlayer of at least one of silver black or platinum black overlying the conductor, a layer of non-liquid hydrophilic material overlying and in intimate contact with said overlayer and a material selective to a specific ion and overlying and in intimate contact with the hydrophilic material.  
14. In combination, an ion selective electrode and a refer-

(I) ence electrode, each comprising reference electrode, each comprising a half-cell formed of like material, the half-cell of each electrode comprising at least one of silver black and platinum black and the reference electrode being overcoated with a layer of protein material; said electrodes, except for portions of their electrical conductors, being disposed in a common sealed container containing reference solution.

**4,340,458**  
**GLUCOSE SENSOR**  
Harry Lerner, Lexington; Jose D. Giner, Brookline, and John S. Soeldner, Newton, all of Mass., assignors to Joslin Diabetes Center, Inc., Boston, Mass.  
Filed Jun. 2, 1980, Ser. No. 155,198  
Int. Cl.<sup>3</sup> G01N 27/46, 27/50  
U.S. Cl. 204—195 R 16 Claims

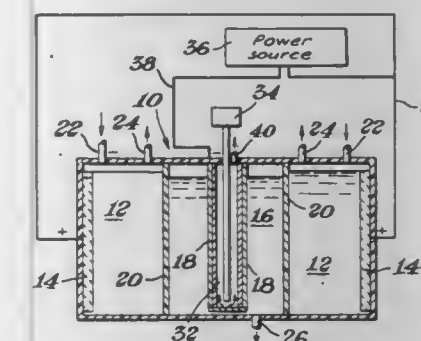


1. Apparatus implantable in a living body for sensing the concentration of glucose in biological fluids, comprising an electrode for catalytically promoting electrochemical oxidation of glucose, a voltage source, means for applying a varying voltage from said source to said electrode to cause a current flow therethrough, means for integrating current at the electrode with respect to time, and control means automatically operative without manual intervention to cause said voltage to sweep over a range in a first direction from a first limit to a second limit and in the reverse direction back toward said first limit, and to selectively activate said means for integrating during a period including at least a portion of said voltage sweep in both directions selected to produce a total charge sensitive to glucose concentration and relatively insensitive to other components in the fluid.

**4,340,459**  
**ELECTROLYTIC CELL WITH OXYGEN-DEPOLARIZED CATHODES**  
James A. McIntyre; Robert F. Phillips, both of Midland, and Joseph D. Lefevre, Bay City, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.  
Continuation-in-part of Ser. No. 939,588, Sep. 5, 1978, abandoned. This application Dec. 11, 1979, Ser. No. 102,481  
Int. Cl.<sup>3</sup> C25B 9/00, 11/03, 11/08  
U.S. Cl. 204—258 20 Claims

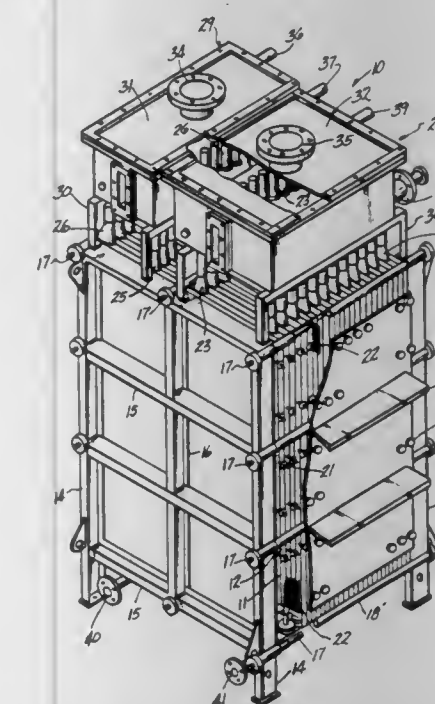
1. An electrolytic cell comprising an anode in an anode compartment, spaced apart from a cathode in a cathode compartment by an ion exchange membrane or a diaphragm, wherein the cathode comprises:  
a first electrically conductive porous layer having a plurality of interconnecting passageways therethrough with diameters of from about 7 to about 12 microns; and  
a second electrically conductive porous layer having a plurality of interconnecting passageways therethrough with diameters of from about 0.1 to about 3 microns; the layers being joined into a wall structure in a manner so that at

least a portion of the passageways of the first layer interconnect with at least a portion of the passageways of the second layer,  
said wall being in the shape of a pocket, wherein at least a portion of an inner surface of the pocket is a surface of the



first layer and at least a portion of an outer surface of the pocket is a surface of the second layer.

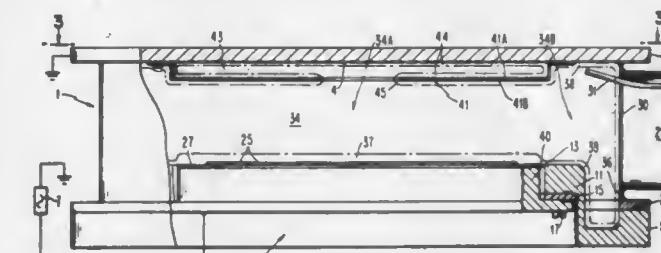
**4,340,460**  
**INTERNAL DOWNCOMER FOR ELECTROLYTIC RECIRCULATION**  
Morton S. Kircher, Clearwater, Fla., assignor to Olin Corporation, New Haven, Conn.  
Filed Nov. 24, 1980, Ser. No. 209,634  
Int. Cl.<sup>3</sup> C25B 9/00, 11/03, 15/08  
U.S. Cl. 204—258 28 Claims



1. In a monopolar filter press membrane electrolytic cell for the production of halogen gas having:  
(a) elongate frame means supporting the cell;  
(b) a plurality of elongate planar cathodes of predetermined height and length supported by the frame means;  
(c) a plurality of elongate planar anodes of predetermined height and length generally parallel to the cathodes, each anode being sandwiched between a pair of cathodes;  
(d) electrolyte circulateable through the cell at a predetermined rate;  
(e) a catholyte gas-liquid disengager supported by the frame and connected to each cathode to permit gas to separate from the electrolyte in the cathodes;  
(f) an anolyte gas-liquid disengager supported by the frame and connected to each anode to permit gas to separate from the electrolyte in the anodes;  
(g) fluid flow conduit means interconnecting the cathodes and the catholyte gas-liquid disengager;  
(h) a plurality of fluid flow conduit means interconnecting the anolyte gas-liquid disengager and each anode wherein

at least one of the conduit means has a first portion outside of each anode extending into the anolyte disengager and a second portion within each anode, the first portion at least partially of generally circular cross-section and the second portion having in cross-section generally elongate parallel opposing first and second sides interconnected on opposing ends by arcuate members and extending down into each anode a predetermined distance less than the predetermined height of the anode;  
(i) conducting means connecting to the anodes and the cathodes for conducting electrical current thereto, the conducting means further comprising a plurality of conductor rods extending into at least each anode and having welded thereto said at least one of the conduit means to provide structural stiffness to the cell; and  
(j) electric power means connected to the cell to drive the electrolytic reactions therein.

**4,340,461**  
**MODIFIED RIE CHAMBER FOR UNIFORM SILICON ETCHING**  
Charles J. Hendricks; William W. Hicks, both of Wappingers Falls, and John H. Keller, Newburgh, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.  
Filed Sep. 10, 1980, Ser. No. 185,831  
Int. Cl.<sup>3</sup> C23C 15/00; C23F 1/00  
U.S. Cl. 204—298 9 Claims



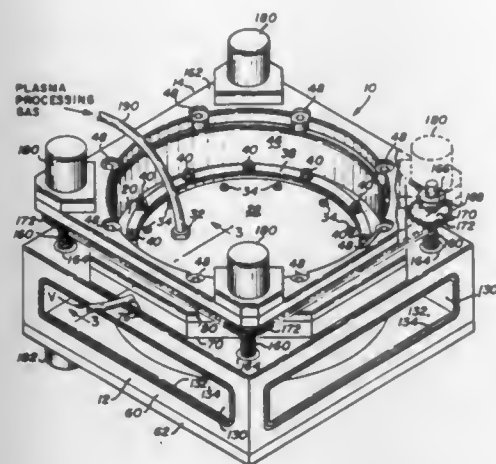
1. In a reactive ion etching system including anode and target cathode means adapted to be biased to create an ionized plasma within a reaction chamber having ion species and neutral etching species, the improvement comprising a plasma enhancing baffle plate electrically coupled to said anode and arranged to form a constricted chamber region between said anode and baffle plate with said baffle plate being at least as close to said anode than as to said cathode and with said constricted chamber region being open to said reaction chamber through aperture means in said baffle plate to permit said plasma to be generated within said constricted chamber region such that the total surface area of said anode is increased thereby acting to increase the creation and distribution of said neutral species.

**4,340,462**  
**ADJUSTABLE ELECTRODE PLASMA PROCESSING CHAMBER**  
George R. Koch, Los Altos, Calif., assignor to Lam Research Corporation, Santa Clara, Calif.  
Filed Feb. 13, 1981, Ser. No. 234,346  
Int. Cl.<sup>3</sup> C23C 15/00; C23F 1/02  
U.S. Cl. 204—298 12 Claims

1. An adjustable electrode plasma processing chamber comprising:  
a sealable assembly including an electrode housing having a first electrode formed at one terminal end thereof and a reaction chamber body having formed therein a second electrode and an aperture for receiving and sealing about said first electrode terminal end of said electrode housing, said electrodes being electrically insulated from one another and positioned adjacent to one another to establish a plasma reaction region between adjacent surfaces thereof, said electrode housing and said reaction chamber body being moveable with respect to each other for changing said separation distance of said adjacent surfaces of said



electrodes, the assembly being adapted to receive a workpiece within said plasma reaction region, the assembly further including a workpiece transfer aperture to allow a workpiece to enter or exit the plasma reaction region, a processing gas inlet aperture for infusing plasma processing gases into the plasma reaction region and an exhaust aperture for removing gases from the plasma reaction region; and



an electrode positioning means for moving said electrode housing with respect to said reaction chamber body whereby said separation distance between adjacent surfaces of said electrodes may be controlled, the positioning means being operable from outside the sealed plasma processing chamber.

4,340,463

## SYSTEM FOR UTILIZING OIL SHALE FINES

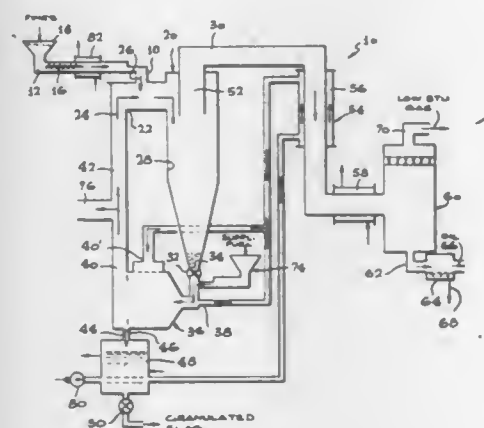
Arnold E. Harak, Laramie, Wyo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 13, 1981, Ser. No. 243,307

Int. Cl.<sup>3</sup> C10G 1/00, 1/02

U.S. Cl. 208—11 R

11 Claims



1. Apparatus for utilizing fines of carbonaceous material, of a size on the order of magnitude of one-half inch and less, comprising:

a cyclone retort chamber having an inlet for receiving said fines and hot gases, and having means for circulating fines around said chamber whereby said fines are maintained in a fluidized state with hot gases in said chamber, a gas outlet for removing at least gas from said chamber, and a spent fine outlet for removing spent fine material from said chamber; and

a burner having an inlet coupled to said spent fine outlet of said retort, for burning said spent fine material to generate substantially oxygen-free gaseous combustion products, said burner having an outlet connected to said inlet of said retort for supplying hot gas thereto which is formed of substantially oxygen-free combustion products.

7. A process for utilizing and disposing of carbonaceous fines, comprising:

pyrolyzing said fines with hot substantially nonoxidizing gases in a retort having a cyclone chamber, by maintaining said fines circulating around the chamber in a fluidized state with hot substantially non-oxidizing gas, removing gas from the retort, and removing spent fines from the retort;

cooling the gas removed from the retort to recover oil therefrom;

burning the removed spent fines in a burner to generate hot flue gases and heat said spent fines to a temperature at which the resulting ash is molten; and

carrying at least part of the hot flue gas from the burner to the cyclone chamber of said retort to supply hot nonoxidizing gas utilized therein.

removing the molten ash from the burner and quenching it to form a granular waste.

4,340,464

## METHOD FOR THERMAL CRACKING OF HEAVY PETROLEUM OIL

Takaaki Aiba; Hisatsugu Kaji; Tomizo Endo, and Takao Ishihara, all of Ichihara, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo; Sumitomo Metal Industries, Ltd., Osaka and Sumikin Coke Co., Ltd., Wakayama, all of, Japan

Continuation-in-part of Ser. No. 888,393, Mar. 20, 1978, abandoned. This application Jan. 17, 1980, Ser. No. 112,920

Int. Cl.<sup>3</sup> C10C 3/00, 3/04

U.S. Cl. 208—40

3 Claims

1. In the method for the thermal cracking of a heavy petroleum oil wherein the heavy petroleum oil is preheated to a temperature of 450° to 520° C. and introduced into a reaction system, where the heavy petroleum oil is then subjected to thermal cracking under conditions of a temperature of 350° to 450° C., a pressure of 300 mmHg to 15 kg/cm<sup>2</sup> and a residence time of 1 to 10 hours, the improvement wherein

(a) the heavy petroleum oil is introduced into a reaction system comprising a plurality of reaction vessels arranged in series; and

(b) the interior of each of said plurality of reaction vessels arranged in series is maintained at a temperature which is 5° to 50° C. lower than the interior temperature of the preceding reaction vessel by contacting the heavy petroleum oil in each vessel with a gaseous thermal medium which does not react with the oil at a temperature of 400° to 2000° C. and controlling the volume of the gaseous thermal medium introduced into each vessel,

thereby suppressing the formation of coke on the inner walls of said reaction vessels and forming a high aromatic and uniform pitch of the ratio of H/C of 0.4 to 1.1, of a content of n-heptane-insoluble and quinoline-soluble fraction of more than 55% and of a softening point of about 170° C.

4,340,465

## DUAL COMPONENT CRYSTALLINE SILICATE CRACKING CATALYST

Stephen J. Miller, San Francisco, and Keith C. Bishop, III, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sep. 29, 1980, Ser. No. 191,575

Int. Cl.<sup>3</sup> C10G 11/05

U.S. Cl. 208—120

20 Claims

1. A process for catalytically cracking a hydrocarbonaceous feedstock comprising the step of contacting the feedstock in a reaction zone under catalytic cracking conditions in the absence of added hydrogen with a catalyst composition comprising a crystalline silicate component having a mole ratio of oxides of SiO<sub>2</sub>:Al<sub>2</sub>O<sub>3</sub> greater than about 500 and having an internal pore structure which will allow the entry of normal aliphatic and slightly branched aliphatic compounds, yet sub-

stantially exclude all compounds having a molecular dimension equal to or substantially greater than a quaternary carbon atom and a large pore size crystalline aluminosilicate cracking component.

4,340,466

## PROCESS FOR HYDROTREATING HEAVY OILS CONTAINING METALS

Masayoshi Inooka, Yokohama, Japan, assignor to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

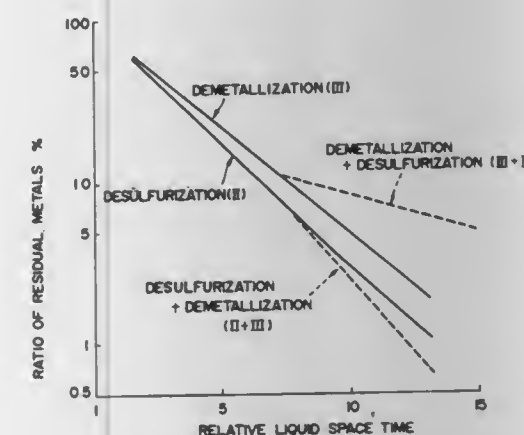
Filed May 15, 1980, Ser. No. 150,132

Claims priority, application Japan, May 22, 1979, 54-62242

Int. Cl.<sup>3</sup> C10G 23/02

U.S. Cl. 208—210

11 Claims



1. In a process for hydrotreating a heavy oil containing soluble metals in two steps at a temperature of 320° to 470° C. under a hydrogen pressure of 30 to 350 kg/cm<sup>2</sup>, the improvement which comprises using a first-step catalyst having a desulfurization selectivity  $\gamma_1$  in the first step and a second-step catalyst having a desulfurization selectivity  $\gamma_2$ , which is lower than  $\gamma_1$ , in the second step, each of the desulfurization selectivities  $\gamma_1$  and  $\gamma_2$  being defined by the following equation:

$$\gamma \text{ (i.e., } \gamma_1 \text{ or } \gamma_2) = (\ln S_0/S) / (\ln M_0/M)$$

wherein  $S_0$  and  $S$  represent the sulfur contents of the starting heavy oil and the treated oil respectively, and  $M_0$  and  $M$  represent the metal contents of the starting oil and the treated oil respectively, and maintaining the partial pressure of hydrogen in the first step 10 to 50 kg/cm<sup>2</sup> lower than that in the second step.

4,340,467

## FLOTATION OF COAL WITH LATEX EMULSIONS OF HYDROCARBON ANIMAL OR VEGETABLE BASED OIL

Samuel S. Wang, Cheshire, and Michael J. Scanlon, Stratford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 20, 1980, Ser. No. 132,248

Int. Cl.<sup>3</sup> B03D 1/02

U.S. Cl. 209—166

6 Claims

1. In a froth flotation process comprising adding to an aqueous phase containing a coal and its associated ash (1) a frother, (2) a collector, (3) a frothing gas and optionally (4) a modifier and thereafter recovering the coal that is froth floated, the improvement which comprises:

adding a latex emulsion as the collector, said latex emulsion consisting essentially of from about 10% to 70% by weight of a hydrocarbon, animal or vegetable based oil, from about 1.0% to 18% by weight of a hydrophobic water-in-oil emulsifier having an HLB value of not greater than 5.0, from about 0.1% to 7% by weight of a hydrophilic surfactant having an HLB value of not less than 9.0 and the remainder constituting water.

4,340,468

## METHOD AND APPARATUS FOR SEPARATING MATERIALS MAGNETICALLY

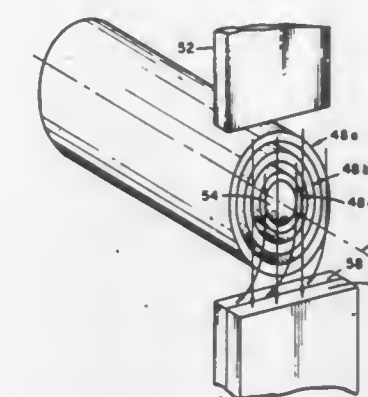
Eugene C. Hise, Jr., Oak Ridge, and Allen S. Holman, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 6, 1980, Ser. No. 204,450

Int. Cl.<sup>3</sup> B03C 1/26

U.S. Cl. 209—214

2 Claims



1. Apparatus for separating materials having different magnetic properties, comprising:

a plurality of concentrically disposed, current-conducting coils each having a plurality of windings extending circumferentially about a central axis;

means for passing a stream of said materials across ends of said coils in a direction substantially normal to said axis; and

means for separately collecting portions of said materials that travel along different paths while crossing the ends of said coils under the influence of the magnetic field produced by said coils.

4,340,469

## VIBRATORY SCREEN APPARATUS

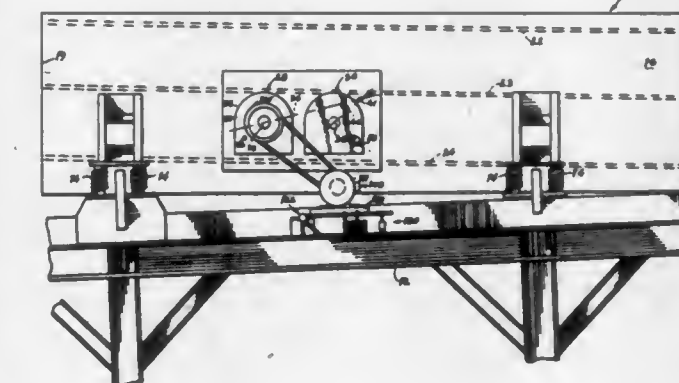
Fred C. Archer, Spokane, Wash., assignor to Spokane Crusher Mfg. Co., Spokane, Wash.

Filed Jan. 23, 1981, Ser. No. 227,759

Int. Cl.<sup>3</sup> B07B 1/28

U.S. Cl. 209—315

18 Claims



1. A self-synchronizing multi-vibratory screen apparatus for classifying loose solid material, comprising:

a screen frame resiliently mounted on a base in which the screen frame supports a plurality of vertically spaced substantially horizontal classifying screens extending between side walls from a feed end to a discharge end with the screens defining an uppermost screen and lowermost screen;

a first unbalanced weight vibrator means mounted on the frame with a first shaft extending horizontally between the side walls interconnecting eccentric weights with the shaft journaled to rotate about a first vibratory axis verti-



cally spaced intermediate the uppermost and lowermost screens to generate a first gyrational centrifugal force of a desired first magnitude about the first vibratory axis when the shaft is rotated at a desired speed;

a second unbalanced weight vibratory means mounted on the frame with a shaft extending horizontally between the side walls interconnecting vibratory axis vertically spaced intermediate the uppermost and lowermost screens and parallel with the first vibratory axis to generate a second gyrational centrifugal force of a desired second magnitude about the second vibratory axis when the second shaft is rotated at the desired speed;

individual motor drive means for independently rotating the corresponding shafts in self synchronization at the desired speed cause the screens to vibrate in elliptical paths with the maximum amplitudes of the elliptical paths inclined toward the discharge end to agitate the loose solid material on the horizontal screens and and to cause the material on the horizontal screens to migrate from the feed end towards the discharged end;

wherein the apparatus has a center of gravity; wherein the first and second vibratory axes are spaced vertically below the center of gravity and wherein a midpoint between the first and second vibratory axes is horizontally spaced from the center of gravity toward the feed end of the frame to generate a rocking moment about the center of gravity to cause the maximum amplitude of the elliptical paths of the screen to progressively decrease from the feed end to the discharged end.

4,340,470

## LIQUID FILTER

John D. Van Mol, Box 13, Group 20, R.R. #1, Winnipeg, Manitoba, Canada (R3C 2E4)

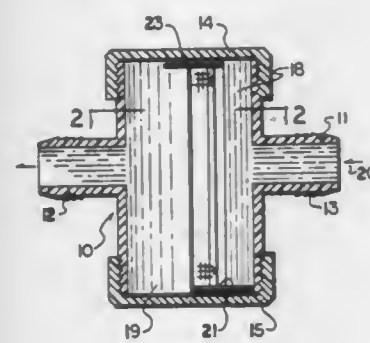
Filed Jan. 5, 1981, Ser. No. 222,360

Claims priority, application Canada, May 2, 1980, 351191

Int. Cl.<sup>3</sup> B01D 35/28

U.S. Cl. 210—94

2 Claims



1. A filter assembly for liquids comprising in combination a cylindrical housing including a cylindrical body portion having open upper and lower ends, caps screw threadably engageable upon each of said ends, for detachably closing said ends, an inlet and an outlet formed through the wall of said body portion substantially diametrically opposite one another and spaced above the lower end cap thereof, a removable screening element within said housing dividing said housing into an inlet portion and an outlet portion with said inlet communicating with said inlet portion and said outlet communicating with said outlet portion, said screening element being situated vertically within said housing and extending between said end caps, said screening element including a vertical portion and a base portion situated at right angles to said vertical portion and extending from the lower end of said vertical portion, said base portion covering substantially entirely the portion of the lower end cap within said inlet portion of said housing to collect and retain sediment thereon, means within said housing extending from the wall of said body portion and engageable by said screening element, for positioning said screening element within said housing, at an inclined angle less than 90° from the direction of flow of said liquid through said housing, said

means for positioning said screening element including lug means on the inner wall of said housing engageable by the vertical side edges of said screening element to locate said element in the desired angular relationship relative to the direction of flow of liquid through said housing.

4,340,471

## SYSTEM AND APPARATUS FOR THE CONTINUOUS DESTRUCTION AND REMOVAL OF POLYCHLORINATED BIPHENYLS FROM FLUIDS

Otis D. Jordan, North Canton, Ohio, assignor to Sun-Ohio Inc., Canton, Ohio

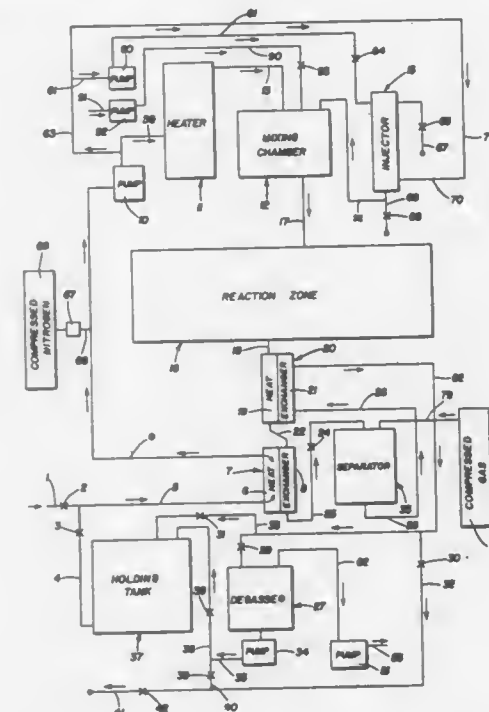
Continuation-in-part of Ser. No. 171,388, Jul. 23, 1980,

abandoned. This application Oct. 21, 1980, Ser. No. 199,261

Int. Cl.<sup>3</sup> B01D 19/00

U.S. Cl. 210—101

26 Claims



1. A system for the continuous destruction of polychlorinated biphenyl present in a fluid including:

- a mixing chamber;
- agitator means in the mixing chamber for thoroughly agitating and mixing the contents of said chamber;
- pump means for feeding a predetermined quantity of the fluid containing polychlorinated biphenyl into the mixing chamber;
- heating means for raising the temperature of the fluid to a predetermined temperature;
- injector means for feeding a predetermined quantity of a reagent such as an elemental sodium or potassium dispersion into the mixing chamber, said injector means operatively communicating with the pump means whereby the amount of fluid being fed by said pump means into the mixing chamber controls the quantity of reagent being fed into the mixing chamber by the injector means;
- reaction chamber means operatively connected to the mixing chamber for receiving the fluid containing the polychlorinated biphenyl and reagent from said mixing chamber, said reaction chamber having an elongated configuration with a linear length in the direction of flow greater than the square root of the cross-sectional area of the chamber across the direction of flow;
- separator means for separating the products of reaction between the polychlorinated biphenyl and reagent from the fluid leaving the reaction chamber means; and
- degassing means for removing certain gases contained in the fluid and products of reaction leaving the separator means.

4,340,472

## WATER TREATMENT PLANT

James A. Mixon, Jacksonville, Fla., assignor to American Enviro-Port, Inc., Jacksonville, Fla.

Continuation of Ser. No. 107,189, Dec. 26, 1979, abandoned,

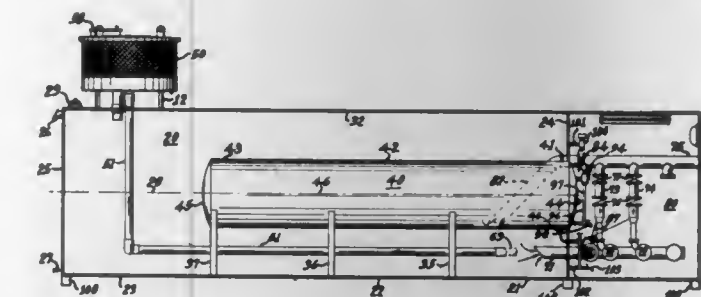
which is a continuation of Ser. No. 901,562, May 1, 1978,

abandoned. This application May 11, 1981, Ser. No. 262,310

Int. Cl.<sup>3</sup> C02F 1/74, 3/02

U.S. Cl. 210—104

21 Claims



1. In a water treatment plant which receives untreated water, treats it to make it potable, and delivers the potable water under pressure required for modern residential water systems, a generally elongated water storage tank provided with spaced opposite end walls of a predetermined lateral dimension and having a longitudinal axis therebetween, a generally elongated closed pressure tank capable of containing water and air under pressure required for modern residential water systems, said pressure tank being substantially totally enclosed within said storage tank and being provided with spaced opposite curved end portions of a lateral dimension less than said predetermined dimension and having a longitudinal axis generally parallel to said longitudinal axis of said storage tank, one said end portion of said pressure tank intersecting and being rigidly connected to one said end wall of said storage tank, pipe means in fluid communication between said storage and pressure tanks for conveying potable water from said storage tank to said pressure tank, pump means operatively connected to said pipe means for automatically pumping potable water to said pressure tank from said storage tank to maintain a selected level therein and means for automatically maintaining air in said pressure tank under pressure sufficient to deliver potable water from said pressure tank under pressure required for modern residential water systems.

4,340,473

## APPARATUS FOR JOINT PARTICULATE RECOVERY AND LIQUID PURIFICATION

William E. Lindman, Fountain Valley, and John A. Alexander, Cayucos, both of Calif., assignors to Precipitator Corporation, Santa Fe Springs, Calif.

Division of Ser. No. 840,414, Oct. 7, 1977, Pat. No. 4,224,148,

which is a continuation of Ser. No. 597,217, Jul. 18, 1975,

abandoned. This application Sep. 22, 1980, Ser. No. 189,339

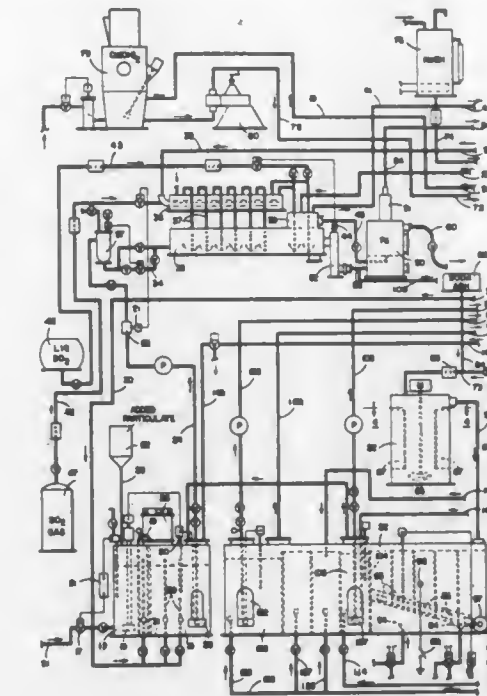
Int. Cl.<sup>3</sup> B01D 21/01

U.S. Cl. 210—173

4 Claims

1. An apparatus for purification of contaminated liquid comprising a plurality of sequentially flow-connected units, each electrically insulated from the ground and adjacent units and including liquid flow control means for moving a liquid medium through each unit at a predetermined flow rate which prevents coalescence of particles suspended in the medium, said units being sequentially arranged as follows: (a) liquid inlet and container means including associated means for selectively mascerating and distributing solid components which will accept a galvanic charge into the liquid medium; (b) acidic treatment means flow connected to said container means and including means for regulation of pH by selective introduction of acidic and gaseous oxidizing agents throughout the medium; (c) container and reactant means flow connected to said last reaction means and comprising a source of soluble metal ions adapted to mingle with the flowing medium for reaction with said acidic and oxidizing agents to impart a galvanic charge on

said solid components, and means for subsequently aerating the medium by passing air therethrough; (d) neutralizing means flow connected to said last reactive means and including an elongated chamber containing successive downstream air delivery conduits individually having ejection nozzles transversely disposed within the flow stream at successive staggered angular displacement from a longitudinal axial plane of



4,340,474

## CONVERGING FLOW FILTER

Ian R. W. Johnston, 8 Kennedy St., Glenroy, Victoria, Australia

Filed Sep. 24, 1980, Ser. No. 190,231

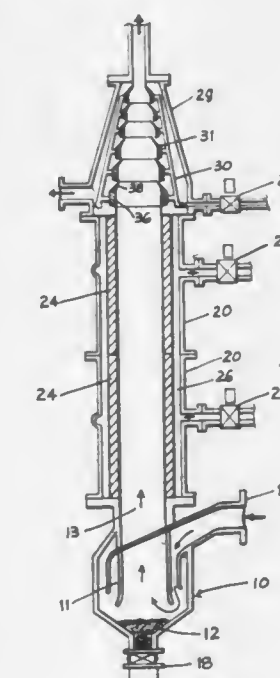
Claims priority, application United Kingdom, Sep. 29, 1979,

7933861

Int. Cl.<sup>3</sup> B01D 46/12

U.S. Cl. 210—199

11 Claims



1. A filter for solids-bearing fluid including a filter means adapted to receive the fluid into the larger diameter end of the



filter, the filter including a plurality of spaced, substantially annular, porous segments, each segment including means to focus entrained solids in the fluid into the central mainstream flow of fluid through the filter and means to draw off clean fluid between said segments, said focusing means including means for injecting fluid through said segments into the fluid stream.

4,340,475

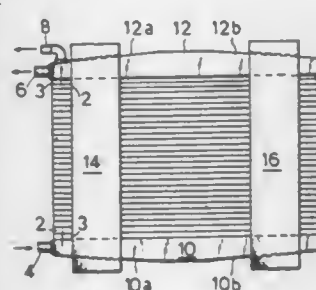
## MEMBRANE SEPARATION CELL

Menahem A. Kraus, Rehovot; Avinoam Livni, Haifa; Mara Nemas, Neveh Monoson, and Moshe A. Frommer, Rehovot, all of Israel, assignors to A.T. Ramot Plastics Ltd., Tel Aviv, Israel

Filed Jan. 22, 1980, Ser. No. 114,363

Int. Cl.<sup>3</sup> B01D 31/00

U.S. Cl. 210—232



1. A membrane separation cell for separating a permeate from a feed solution, comprising: a stack including a plurality of supporting plates each supporting a membrane on each of its opposite faces and defining a permeate compartment between the membrane and the respective face of the supporting plate; and a plurality of separator plates each interposed between the membranes of adjacent supporting plates and defining a feed solution compartment between the separator plate and the respective membrane; said separator plates being formed with passageways therebetween connecting the feed solution compartments in series through the stack such that the feed solution flows through each feed solution compartment in an inward direction across one face of the separator plate and in an outward direction across the opposite face of the separator plate; the opposite faces of the separator plates being each formed with a thickened outer rim circumscribing a recessed area across which the feed solution flows as a thin layer in a radial direction in contact with the face of the adjacent membrane; said passageways through each separator plate including a peripheral array of openings formed therethrough just inwardly of said thickened outer rim; each membrane supporting plate being apertured at its center and each separator plate being non-apertured at its center; said stack further including: a ring insert interposed between the center of each separator plate and the adjacent membrane for pressing same against the inner rim of the respective supporting plate around its central aperture; a pair of cover plates at the opposite ends of the stack and having extensions projecting radially outwardly of the membranes, supporting plates and separator plates; and a plurality of rods passing through the cover plates outwardly of the membranes, supporting plates and separator plates, for clamping them all together.

4,340,476  
ARRANGEMENT FOR MOUNTING DIVIDING OR SEPARATING ELEMENTS IN A FILTERING WATER SEPARATOR

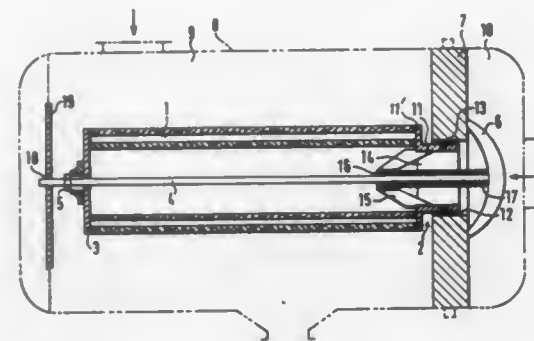
Karl Pötz, Oberursel, and Rudolf Schütz, Königstein-Falkenstein, both of Fed. Rep. of Germany, assignors to Fandi Feinbau GmbH, Oberursel, Fed. Rep. of Germany  
Filed Jun. 8, 1981, Ser. No. 271,180

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024106

Int. Cl.<sup>3</sup> B01D 27/00

U.S. Cl. 210—232

12 Claims



7 Claims

1. An arrangement for mounting elongated dividing or separating elements in a filtering water separator, comprising a stationary mounting plate provided with a plurality of openings each having an axis; means for tensioning both ends of each of the elements and including a tensioning member axially abutting against said mounting plate, and a central spindle member having two end portions of which one end portion is arranged to be connected with one end of each of the elements, whereas the other end portion extends through a respective one of said openings of said mounting plate and is connected with said tensioning member; and a receiving member arranged to receive the other end of a respective one of the elements and sealed against said mounting plate, said receiving member having a substantially radial flange part and a substantially axial projecting part, said projecting part of said receiving member extending with play into said one opening of said mounting plate and is sealed against the latter, said receiving member axially abutting against said tensioning member, and said flange part of said receiving member being axially spaced from said mounting plate.

4,340,477

## VACUUM SLUDGE RECEIVER

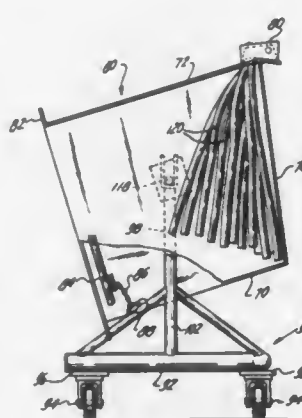
Russell B. Hobson, Jr., 64 Upper Mountain Ave., Montclair, N.J. 07042, and Roger B. Vannelli, 38 Cottontail Trail, Upper Saddle River, N.J. 07458

Filed Apr. 30, 1979, Ser. No. 34,929

Int. Cl.<sup>3</sup> B01D 29/18

U.S. Cl. 210—241

18 Claims



18. Apparatus for separating liquids and solids from a mixture of the two comprising:

a vessel for receiving a mixture of liquids and solids; support means for the vessel; elongated extractor elements disposed proximate the bottom of the area of the vessel and supported along their length for receiving the mixture of solids and liquids; means for communicating a source of vacuum to the extractor elements at one point thereof to draw a liquid from the mixture of liquid and solids through the extractor elements and away from the vessel; said extractor elements being fixed at one point thereof and flexible along the length thereof and being moveable relative each other when proximate the bottom of the area of the vessel for receiving the mixture of solids and liquids; means to rotate the vessel to remove the remainder of the mixture of liquids and solids after extraction of the liquid; and said extractor elements being sufficiently flexible under the force of gravity to enable substantial deflection for movement away from the bottom of the area of the vessel for receiving the mixture of liquid and solids upon angular displacement of said vessel to enable sufficient access for cleaning the extractor elements and the areas of the vessel proximate the extractor elements from which said extractor will be movable away from when the vessel is angularly displaced.

4,340,478

## FILTER MEDIA AND FILTER APPARATUS

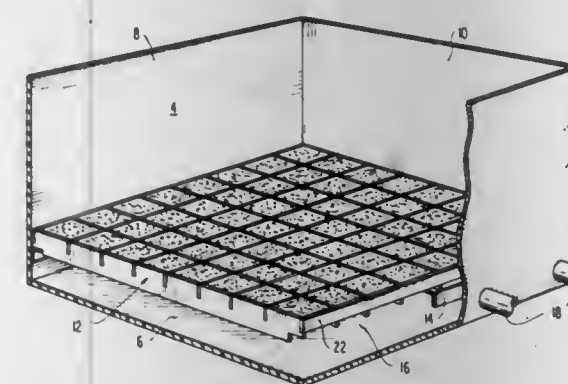
Forrest B. Stannard, Ft. Lauderdale, and Edward J. Highstreet, Coral Springs, both of Fla., assignors to The DeHydro Corporation, Charlotte, N.C.

Filed Aug. 18, 1981, Ser. No. 294,039

Int. Cl.<sup>3</sup> B01D 23/02, 39/14

U.S. Cl. 210—286

13 Claims



1. A filter media comprising:

a first series of parallel, elongated rigid strips, each strip in said series having substantially equal transverse dimensions and having a multiplicity of slots extending from the top edge thereof part way into the strip normal to the longitudinal axis of the strip, all said slots in all said strips being of substantially the same width and depth, a second series of parallel, elongated rigid strips having a cross-section substantially equal to said slots fixed in said slots normal to said first series of strips forming a grid of parallelogram openings, said grid openings all being filled with rigid, porous filter material consisting essentially of solid particles held in a matrix of cured resin, said filter material together with said first and second series of strips presenting a substantially flat upper surface on said filter media, the depth of said filter material being at least equal to the depth of said slots but substantially less than the transverse dimension of said first series of strips.

4,340,479

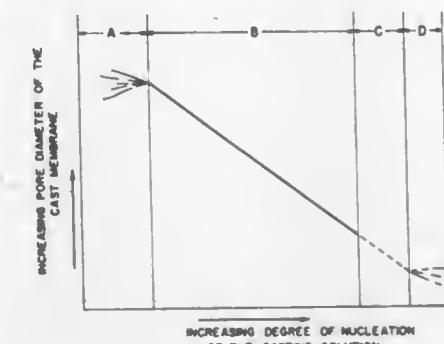
## PROCESS FOR PREPARING HYDROPHILIC POLYAMIDE MEMBRANE FILTER MEDIA AND PRODUCT

David B. Pall, Roslyn Estates, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 905,698, May 15, 1978, abandoned. This application Oct. 20, 1980, Ser. No. 198,569  
Int. Cl.<sup>3</sup> B01D 31/00

U.S. Cl. 210—490

162 Claims



155. A multilayer hydrophilic skinless alcohol-insoluble polyamide resin membrane sheet of alcohol-insoluble hydrophobic polyamide resin having a ratio  $\text{CH}_2:\text{NHCO}$  of methylene  $\text{CH}_2$  to amide  $\text{NHCO}$  groups within the range from about 5:1 to about 7:1, capable when completely immersed in water of being wetted through within no more than one second, and reverting when heated to a temperature just below the softening temperature of the membrane to a hydrophobic material which is no longer wetted by water, and having at least two membrane layers integrally adhered together.

4,340,480

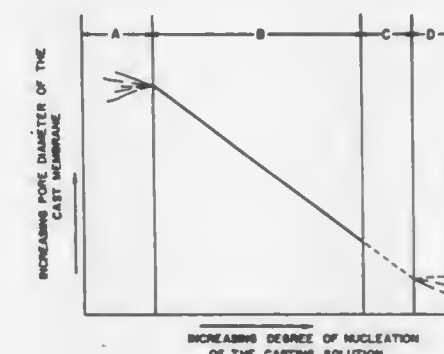
## PROCESS FOR PREPARING LIQUOPHILIC POLYAMIDE MEMBRANE FILTER MEDIA AND PRODUCT

David B. Pall, Roslyn Estates, and Frank Model, Dix Hills, both of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 905,698, May 15, 1978, abandoned. This application Oct. 20, 1980, Ser. No. 198,570  
Int. Cl.<sup>3</sup> B01D 31/00

U.S. Cl. 210—490

79 Claims



40. A liquophilic skinless alcohol-insoluble polyamide resin membrane sheet of alcohol-insoluble liquophobic polyamide resin, capable when completely immersed in an organic liquid having a surface tension of from about 40 to about 60 dynes/cm of being wetted through within no more than one second, and reverting when heated to a temperature just below the softening temperature of the membrane to a liquophobic material which is no longer wetted by such organic liquids.



4,340,481

**MEMBRANE FILTRATION TYPE HOLLOW FIBERS**

**Mashahiro Mishiro, Moriyama; Tokio Nishikawa, Hikone; Shigeyasu Ohashi, Moriyama, and Yasuo Yokokawa, Tanashi, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki, Osaka, Japan**

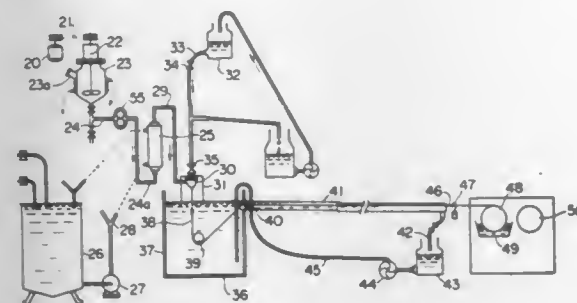
Division of Ser. No. 831,198, Sep. 7, 1977, Pat. No. 4,234,431.

This application Dec. 28, 1979, Ser. No. 107,975

Int. Cl.<sup>3</sup> B01D 39/16

U.S. Cl. 210—500.2

2 Claims



1. A membrane filtration type hollow fiber comprised of a single material phase, the material being a synthetic or semi-synthetic chain high polymer capable of forming fibers other than cellulose acetate, wherein the cylindrical wall defining said hollow fiber represents a three-dimensional net-like structure of fine filtering passages of 0.05 to 1 micron, said structure occupying the whole mass of said wall when seen in any cross-section of said wall, providing thus an effective and active filtering zone, the total pore volume amounting to at least 55%, active points of the filtering passages for governing minimum passable sizes of said passages for solids included in a filtering liquor to be treated being distributed at random throughout the whole mass of said wall providing said active zone, said passages being nearly uniform.

4,340,482  
PROCESS FOR GRAFTING AMINO ACID MOLECULES  
ONTO PREFORMED POLYMER SURFACES AND  
PRODUCTS PREPARED THEREBY  
Shmuel Sternberg, Lexington, Mass., assignor to Millipore  
Corporation, Bedford, Mass.  
Continuation of Ser. No. 879,746, Feb. 21, 1978, abandoned.  
This application Apr. 3, 1980, Ser. No. 136,908  
Int. Cl.<sup>3</sup> B01D 31/00

U.S. Cl. 210—500.2 13 Claims  
1. A preformed microporous polymeric article having a surface onto which molecules of an amino acid have been grafted to produce an altered surface characteristic without altering substantially the subsurface physical and chemical properties of the polymer, wherein the polymer is predominantly a fluorocarbon polymer having a polyvinyl carbon chain to which alternating hydrogen and fluorine atoms are attached, and wherein the amine residue of the amino acid is reacted with and grafted to reactive sites on the polymeric surface.

4,340,483  
POLAR POLYMERIC SORBENT BASED ON GLYCIDYL  
ESTERS FOR GAS AND LIQUID CHROMATOGRAPHY  
Jaromir Lukas; Jaroslav Kalal, both of Prague, and Frantisek  
Svec, Kladno, all of Czechoslovakia, assignors to Ceskosloven-  
ska akademie ved, Prague, Czechoslovakia  
Filed Dec. 23, 1977, Ser. No. 863,936  
Claims priority, application Czechoslovakia, Jan. 19, 1977,  
372/77

U.S. Cl. 210—502 2 Claims  
1. The polar polymeric sorbent based on glycidyl esters suitable for gas and liquid chromatography, which consists of the macroporous copolymer containing 3-70 percent of polymerized monomeric units with epoxy groups selected from the

group consisting of glycidyl methacrylate and glycidyl acrylate, 97-30 percent of a crosslinking agent selected from the group consisting of alkylene diacrylate, alkylene dimethacrylate, hydroxyalkylene diacrylate, hydroxyalkylene dimethacrylate, where the alkylene contains 1-6 carbon atoms, and divinylbenzene, and 0 to 30 percent of polymerized monomeric units with nitrile groups selected from the group consisting of acrylonitrile and methacrylonitrile.

4,340,484

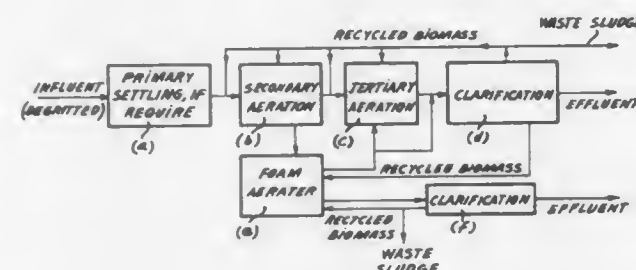
**METHOD FOR THE FROTH FLOTATION SEPARATION  
AND TREATMENT OF SLOWLY BIODEGRADABLE  
COMPONENTS IN WASTE TREATMENT**

David C. I. Pollock, Richmond Hill, and Malcolm A. Wilson,  
Vegreville, both of Canada, assignors to C-I-L Inc., North  
York, Canada

Continuation-in-part of Ser. No. 159,351, Jun. 13, 1980,  
abandoned. This application May 18, 1981, Ser. No. 264,839

Claims priority, application Canada, Oct. 26, 1979, 338536

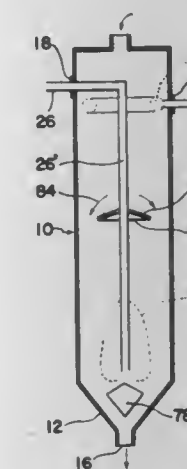
Int. Cl.<sup>3</sup> C02F 3/22



1. In a modified activated sludge waste treatment method wherein an aerobic biological reaction takes place during the continuous circulation of fluid waste in an apparatus comprising a surface basin, a long vertical downcomer chamber, a long vertical riser chamber operatively communicating with the downcomer through the basin and at the lower end of the downcomer to form a circulating loop and including means to circulate waste liquor through said loop in the presence of oxygen-containing gas, the improvements whereby the slowly biodegradable components of the waste may be separated from the waste liquor in the loop, aerobically treated, and after treatment returned to the waste liquor in the loop, comprising the steps of:

- (a) introducing waste liquor from a single source into the said riser chamber of the said loop,
- (b) adding oxygen-containing gas to the waste liquor in the said riser chamber to lift said waste liquor for circulation through said loop and to provide oxygenation of the said waste,
- (c) collecting from the surface of said waste in the said surface basin any foam containing slowly biodegradable materials together with activated sludge, which foam has been produced by stripping the supersaturated dissolved gases ascending from depth in the said circulating loop by the action of the said added oxygen-containing gas in the said riser,
- (d) separating said foam and contained slowly biodegradable materials and activated sludge from the surface of the liquid waste in the said basin and transferring said foam and contained materials to a foam oxidation vessel,
- (e) aerating said foam in said foam oxidation vessel to produce further biodegraded liquid and solids mixture, and
- (f) returning the said further biodegraded liquids and solids mixture from step (e) to the circulating waste in the said loop via step (a).

4,340,485  
COUNTERCURRENT LIQUID-SOLID CONTACTING  
APPARATUS  
Yorifumi Ikeda, Suita, and Yasuhiro Tsujimoto, Toyonaka, both  
of Japan, assignors to Takeda Chemical Industries, Ltd.,  
Osaka, Japan  
Continuation of Ser. No. 865,327, Dec. 28, 1977, abandoned.  
This application Nov. 29, 1979, Ser. No. 98,392  
Claims priority, application Japan, Oct. 7, 1977, 52-121255  
Int. Cl.<sup>3</sup> B01D 15/08  
U.S. Cl. 210—675 4 Claims



4. A method of substantially purifying liquid by countercurrent liquid-solid contact and of regenerating the purifying material used to purify the liquid, said method comprising the steps of:

passing said liquid to be purified upwardly through a bed of purifying material in a liquid treating column; withdrawing substantially purified liquid from said liquid treating column at the upper portion of said liquid treating column beneath a portion of said bed of purifying material which alone acts as a settling layer for the remaining purifying material therebeneath from which said purified liquid is directly withdrawn and thereby preventing upward expansion or fluidization of said remaining purifying material;

intermittently transferring a portion of said purifying material, after said liquid being purified has passed there-through, from a downwardly inclined bottom of said liquid treating column into the top of a regenerating column where impurities are removed from said purifying material.

discharging said purifying material with said impurities removed therefrom from said regenerating column and returning said discharged material to the top of said bed of purifying material in said liquid treating column;

purifying material in said liquid treating column, maintaining the bottom portion of said liquid treating column completely filled with said purifying material while preventing the formation therein of any cavities;

supplying said liquid to be purified into said liquid treating

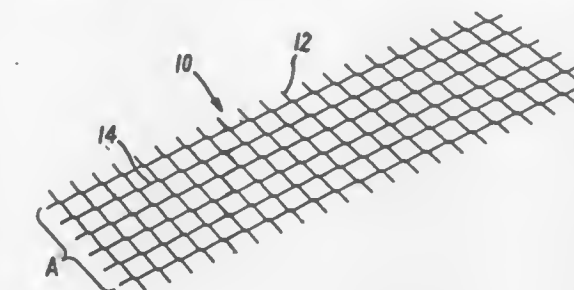
column through an imperforate pipe arranged coaxially of said liquid treating column and having an upper end extending into said liquid treating column at an upper port-

tion thereof and a lower end having an open discharge end directed downwardly and located at a position adjacent but spaced a predetermined position above said bottom of said discharge passage, and thereby discharging said

said liquid treating column, and thereby discharging said liquid downwardly through said open discharge end directly into said purifying material adjacent said bottom of said liquid treating column; and

directing said downwardly directed liquid outwardly and upwardly through said purifying material only, thereby purifying said liquid to form said substantially purified liquid, whereafter said purified liquid is withdrawn from said liquid treating column.

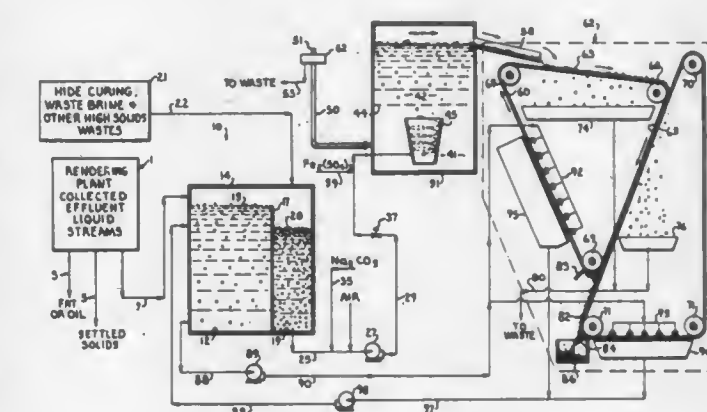
**4,340,486**  
**OIL SORBENT STRUCTURES AND METHOD OF PICKING UP OIL**  
**Clare E. Swanson, White Bear Lake, Minn., assignor to Conwed Corporation, St. Paul, Minn.**  
**Continuation of Ser. No. 861,641, Dec. 19, 1977, abandoned.**  
**This application Aug. 16, 1979, Ser. No. 67,158**  
**Int. Cl.<sup>3</sup> C02F 1/28**  
**U.S. Cl. 210—693**  
**5 Claims**



1. A method of picking up oil, said method comprising contacting the oil with an oil sorber, said oil sorber comprising a plurality of adjacent strips of oleophilic, hydrophobic, flexible netting material bound together, said strips of netting material:

- (a) being from about 2 to about 10 inches in width;
- (b) being formed by extrusion with a plurality of sets of strands which cross at an angle;
- (c) having from 2 to about 5 strands per lineal inch;
- (d) being biaxially oriented; and
- (e) weighing from about  $\frac{1}{4}$  to about 5 pounds per thousand square feet.

4,340,487  
PROCESS FOR PURIFYING WATER  
Michael R. Lyon, 800 N. Atlantic, Kansas City, Mo. 64116  
Filed Dec. 24, 1980, Ser. No. 219,886  
Int. Cl.<sup>3</sup> C02F 1/52



1. A process for the removal of suspended solids from stick water exiting a rendering process comprising the steps of:

(a) collecting said stick water in a holding region;  
(b) treating a first flow of said stick water from said holding region with a flocculating agent;

(c) placing said stick water having been treated with said flocculating agent into a vessel;

(d) allowing formation in said vessel of a lower liquid phase having a relatively low suspended solids content and an

upper phase having a relatively high suspended solids content;

- (e) removing said upper phase from said vessel;
- (f) placing said upper phase after removal from said vessel onto a filter media such that liquid is removed therefrom and said suspended solids form a substantially liquid free solids cake;



- (g) removing a substantial portion of said solids cake from said filter media;
- (h) utilizing a second flow of said stick water from said holding region prior to treatment of the stick water with a flocculating agent to backwash said filter media; and
- (i) returning said stick water utilized to backwash said filter media to said holding region.

**4,340,488**  
**PROCESS AND EQUIPMENT FOR ULTRASONIC CONDITIONING OF SEWAGE SLUDGES**

Andras Toth; Emese Toth nee Palotai; Jozsef Olah; Jozsef Bitskey, and Lajos Bulkai, all of Budapest, Hungary, assignors to Vizgazdalkodasi Tudományos Kutatóközpont, Budapest, Hungary

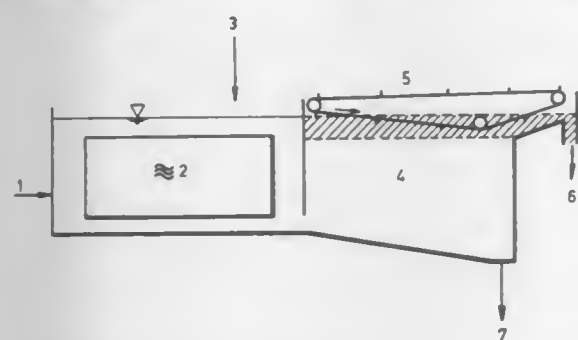
Continuation of Ser. No. 138,403, Apr. 8, 1980, abandoned. This application Apr. 6, 1981, Ser. No. 251,365

Claims priority, application Hungary, Apr. 13, 1979, TO 1103

Int. Cl.<sup>3</sup> C02F 1/24

U.S. Cl. 210—705

2 Claims



1. A sludge treatment process, comprising feeding sludge to a first tank, applying ultrasonic vibration to the sludge in the first tank, feeding the sludge after ultrasonic vibration to a flotation tank, separating solids from the ultrasonic-treated sludge in the flotation tank solely by means of flotation of the solids to the surface of the material in the flotation tank by gas bubbles generated within the sludge during the course of ultrasonic treatment, and adding an inorganic chemical coagulating agent to the sludge in the first tank after the sludge has been decomposed to a dispersed homogeneous colloidal mass by the ultrasonic treatment in the first tank, said ultrasonic treatment mixing said coagulating agent into the sludge, the dwell time of the sludge in the first tank during ultrasonic treatment being about 10 minutes and the dwell time of the ultrasonic treated material in the flotation tank being about 5 to 10 minutes.

2. A process as claimed in claim 1, said agent being aluminum sulfate.

**4,340,489**  
**WASTEWATER TREATMENT PROCESS WITH PH ADJUSTMENT**

V. Dean Adams, Logan, and James H. Reynolds, Layton, both of Utah, assignors to International Environmental, Inc., Salt Lake City, Utah

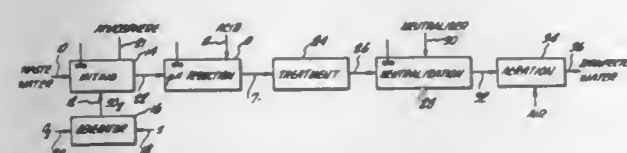
Continuation-in-part of Ser. No. 138,214, Apr. 7, 1980, Pat. No. 4,304,673. This application Aug. 27, 1980, Ser. No. 181,780

The portion of the term of this patent subsequent to Dec. 8, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> C02F 1/72, 1/52

U.S. Cl. 210—718

45 Claims



1. A continuous process for disinfecting wastewater containing infectious microorganisms comprising the steps of:

- (a) combining the wastewater with acid to reduce the pH of

the wastewater and combining the wastewater with sufficient  $\text{SO}_2$  so that the wastewater has a selected free  $\text{SO}_2$  content of at least about 5 mg/liter and less than about 200 mg/liter and a pH of from about 1 to about 4;

(b) maintaining the combined  $\text{SO}_2$ /wastewater in a treatment zone at the selected free  $\text{SO}_2$  content and pH for about 5 to about 60 minutes; and

(c) withdrawing wastewater from the treatment zone, the withdrawn wastewater containing substantially no infectious microorganisms.

**4,340,490**  
**PROCESS FOR THE DETOXIFICATION OF WASTE WATER CONTAINING PHENOL, PHENOL DERIVATIVE OR PHENOL AND FORMALDEHYDE**

Helmut Junkermann, Frankfurt, and Horst Krüger, Darmstadt, both of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Dec. 20, 1977, Ser. No. 862,760

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1977, 2703267; Jan. 27, 1977, 2703268

Int. Cl.<sup>3</sup> C02F 1/72

U.S. Cl. 210—759

13 Claims

1. A process for purifying waste water containing (I) phenol, (2) a substitute phenol or (3) phenol + formaldehyde comprising treating the waste water with hydrogen peroxide in the presence of 0.5 to 2 grams per liter of waste water of the complex sodium iron (III) ethylenediamine tetraacetate trihydrate or the equivalent amount of the complex sodium iron (II) ethylenediamine tetraacetate, the treatment being at least initiated under alkaline conditions.

U.S. Cl. 210—759

13 Claims

1. A process for purifying waste water containing (I) phenol, (2) a substitute phenol or (3) phenol + formaldehyde comprising treating the waste water with hydrogen peroxide in the presence of 0.5 to 2 grams per liter of waste water of the complex sodium iron (III) ethylenediamine tetraacetate trihydrate or the equivalent amount of the complex sodium iron (II) ethylenediamine tetraacetate, the treatment being at least initiated under alkaline conditions.

U.S. Cl. 210—759

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U.S. Cl. 210—759

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U.S. Cl. 210—759

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U.S. Cl. 210—759

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U.S. Cl. 210—759

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U.S. Cl. 210—759

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U.S. Cl. 210—759

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U.S. Cl. 210—759

13 Claims

U.S. Cl. 210—759

13 Claims

containing said active ingredient having a pH in the range of 2.5–10.0; and (5) allowing said active ingredient to diffuse through said swollen film and be released into said aqueous medium.

**4,340,492**  
**OIL RECOVERY BY SURFACTANT WATERFLOODING**

Stamoulis Stournas, Flemington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

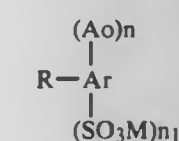
Filed Nov. 26, 1976, Ser. No. 745,323

Int. Cl.<sup>3</sup> E21B 43/22

U.S. Cl. 252—8.55 D

4 Claims

1. In a method for the recovery of oil from a subterranean oil reservoir penetrated by spaced injection and production systems in which an aqueous fluid is introduced into said reservoir via said injection system to displace oil to said production system, the improvement comprising employing as at least a portion of the fluid introduced into said injection system a substantially oil-free aqueous liquid containing a water-soluble anionic-nonionic surfactant characterized by the formula



wherein

R is an aliphatic-substituted succinimido group or its succinamic acid derivative,

Ar is a mononuclear or condensed ring dinuclear aryl group,

AO is a polyalkylene oxide having a terminal hydroxyl group and containing at least 3 alkylene oxide units having 2 or 3 carbon atoms therein,

n is 1 or 2,

M is an alkali metal, ammonium, or substituted ammonium ion, and

n<sub>1</sub> is 1 or 2.

**4,340,493**  
**DETERGENT-DISPERSANT COMPOSITION FOR LUBRICATING OR FUEL OILS**

Shigeo Miyata, Takamatsu, Japan, assignor to Kyowa Chemical Industry Co. Ltd., Tokyo, Japan

Filed May 1, 1981, Ser. No. 259,432

Claims priority, application Japan, Mar. 14, 1980, 55/31682

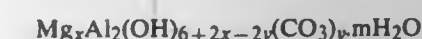
Int. Cl.<sup>3</sup> C10M 1/10, 3/02

U.S. Cl. 252—18

7 Claims

1. A detergent-dispersant composition for lubricating or fuel oils, said composition consisting essentially of

(a) an amount effective as a detergent-dispersant of a hydro-talcite having a specific surface area, determined by the BET method, of up to about 60 m<sup>2</sup>/g and an average secondary particle size of up to about 5 microns, the hydro-talcite particles being untreated or surface-treated with an anionic surface-active agent, and the hydro-talcite being represented by the following formula



wherein x is a positive number represented by  $3 < x < 20$ , y is a positive number represented by  $0 < y < 2$ , and m is a positive number of up to 7, and

(b) a hydrophobic dispersant or diluent.

**4,340,494**  
**PROCESS FOR THE MANUFACTURE OF FERROMAGNETIC CHROMIUM DIOXIDE**

Manfred Ohlinger, Frankenthal; Guenter Väeth, Limburgerhof; Norbert Mueller, Friedelshelm, and Eugen Wettstein, Germersheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 21, 1980, Ser. No. 199,347

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1979, 2942646

Int. Cl.<sup>3</sup> C01G 37/027; H01F 1/36

U.S. Cl. 252—62.56

4 Claims

1. A process for the manufacture of ferromagnetic chromium dioxide by reacting oxides of trivalent and hexavalent chromium under a pressure of from 100 to 700 bar at a temperature from 200°–600° C. in the presence of water and of antimony(III) oxide as modifier, with or without other modifiers in an amount not exceeding 15% by weight, wherein the antimony(III) oxide employed as modifier is, to the extent of more than one-third of the antimony(III) oxide, present as the senarmontite cubic modification, has a specific surface area, measured by the BET method, of from 2.5 to 15 m<sup>2</sup>/g, and is added in an amount of from 0.1 to 0.5% by weight, based on the resulting chromium dioxide.

3. A process as claimed in claim 1 or 2, wherein acicular iron oxide particles in the form of alpha-FeOOH are employed, as additional modifier, in an amount of from 0.5 to 15% by weight, based on chromium dioxide.

**4,340,495**  
**ALKYL SILOXANE ALKOXY SILOXANE COPOLYMERIC HYDRAULIC FLUIDS**

Edgar D. Brown, Jr., Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Apr. 4, 1980, Ser. No. 137,339

Int. Cl.<sup>3</sup> C10M 3/46, 3/44

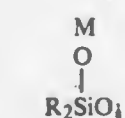
U.S. Cl. 252—78.3

15 Claims

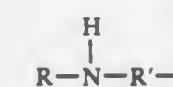
1. A silicone fluid useful as a hydraulic fluid comprising a mixture of

(a) 100 parts by weight of a silicone base polymer having, approximately, 3 to 20 mole percent of polymeric units having the formula  $\text{R}_3\text{SiO}_2$ , 1.5 to 20 mole percent of polymeric units having the formula  $\text{RSiO}_{1.5}$ , and 60 to 95 mole percent of polymeric units having the formula  $\text{R}_2\text{SiO}$ , and a viscosity of approximately 1 to 200 centistokes at 25° C., and

(b) approximately 0.5 to 5.0 parts by weight of a dialkylalkoxysilyl chain-stopped polydialkylsiloxane fluid comprising 10 to 60 mole percent of polymeric units having the formula



and 40 to 90 mole percent  $\text{R}_2\text{SiO}$  units and having a viscosity of approximately 10 to 50 centistokes at 25° C.; wherein R represents the same or different monovalent hydrocarbon radical, M is selected from the class consisting of R—, ROR'—, ROR'OR'—,  $\text{R}(\text{OC}_x\text{H}_{2x})_n$ —, and



such that R is as previously described, R' is selected from the class consisting of alkylene and arylene radicals having up to 20 carbon atoms, x varies from 2 to 4 and n varies from 4 to 100.



4,340,496

ANION EXCHANGE CHROMATOGRAPHIC  
COMPOSITION FOR SEPARATION OF  
POLYFUNCTIONAL COMPOUNDSSeth R. Abbott, Concord, Calif., assignor to Varian Associates,  
Inc., Palo Alto, Calif.Division of Ser. No. 16,847, Mar. 2, 1979, Pat. No. 4,290,892,  
which is a continuation-in-part of Ser. No. 953,380, Oct. 23,  
1978, Pat. No. 4,275,300. This application Jun. 9, 1981, Ser. No.  
271,903Int. Cl.<sup>3</sup> B01D 15/08; B01J 41/06

U.S. Cl. 252-184

20 Claims

1. A weak anion exchange composition comprising an inert porous particle having a size of about 5 to about 20 microns, and a modified tetra-substituted silane material of the general formula



wherein R is an alkyl or an alkoxy, having 1 to 5 carbon atoms, x is an integer of 2 or 3 and Y and Z are hydrogen, alkyl, substituted alkyl, or an alkyl amine fixedly attached to covalent bonding to the surface of said particle; said particle with said modified tetra-substituted silane material fixedly attached by covalent bonding having been washed with an acid to produce said weak anion exchange composition.

4,340,497

## (N-SUBSTITUTED CARBAMOYLOXY)

## ALKANOYLOXYALKYL ACRYLATE ESTERS

Robert J. Knopf, Saint Albans, W. Va., assignor to Union Car-  
bide Corporation, Danbury, Conn.

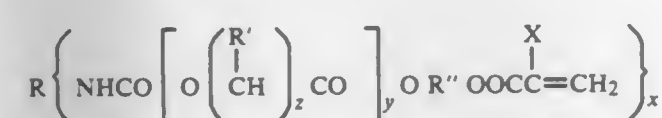
Filed Mar. 21, 1980, Ser. No. 132,650

Int. Cl.<sup>3</sup> C07C 125/065, 125/073

U.S. Cl. 252-188.3 R

17 Claims

1. An (N-substituted carbamoyloxy) alkanoyloxyhydrocar-  
byl acrylate ester of the formula



wherein R is an unsubstituted or substituted (i) linear or branched alkyl group having from 1 to 4 carbon atoms or (ii) aryl, alkaryl or aralkyl group having 6 or 10 ring carbon atoms or (iii) cycloalkyl group having from 5 to 8 ring carbon atoms when x is 1 and polyvalent alkylene, arylene, alkarylene, aralkylene or cycloalkylene having carbon atom values defined for (i) to (iii) supra and a valence equal to the value of x when x is greater than 1; wherein the substituents on the R group are not reactive with the isocyanato radical; R' is hydrogen or alkyl or alkoxy having from 1 to 4 carbon atoms; R'' is a linear or branched divalent alkylene of 1 to 10 carbon atoms, divalent cycloalkylene of 5 to 12 ring carbon atoms or divalent arylene of 6 to 10 ring carbon atoms; X is hydrogen, methyl or cyano; x has a value of from 1 to 4; y has an average value of from 1 to 20; and z has a value of from 3 to 10.

10. A composition comprising a compound as claimed in claim 1 and a photoinitiator.

4,340,498

## HALOGENATED ESTER DERIVATIVES

Shigeru Sugimori, Yokohama, Japan, assignor to Chisso Corpo-  
ration, Tokyo, Japan

Filed Jan. 23, 1981, Ser. No. 227,942

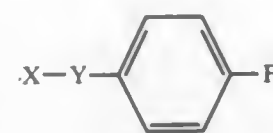
Claims priority, application Japan, Jan. 25, 1980, 55-7539;  
Feb. 7, 1980, 55-13889; Mar. 27, 1980, 55-39202Int. Cl.<sup>3</sup> C09K 3/34; G02F 1/13; C07C 69/62, 69/63, 69/353,  
69/635, 69/75

U.S. Cl. 252-299.5

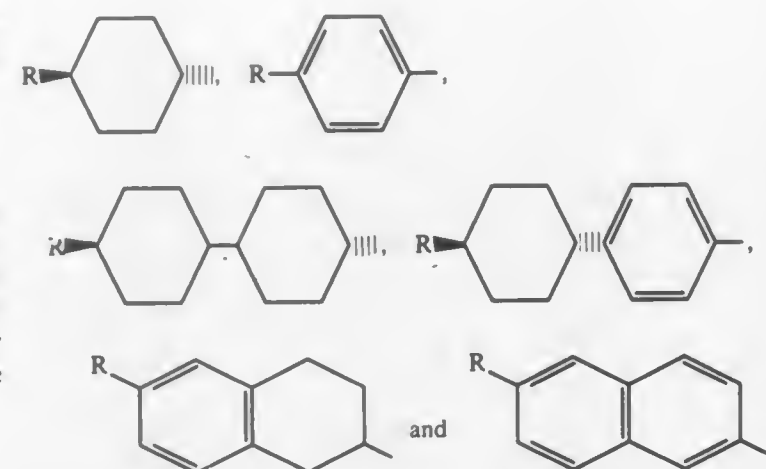
8 Claims

1. In a liquid crystalline admixture, the improvement

wherein at least one component of said admixture is a haloge-  
nated ester derivative expressed by the general formula



wherein X represents a group selected from the group consist-  
ing of



R represents an alkyl group or an alkoxy group, each having 1  
to 15 carbon atoms; and Y represents carboxyl group the sym-  
bol  $\text{—CO—}$  and the symbol  $\text{—C(=O)—}$  being in a trans-configuration  
relative to cyclohexane or bicyclohexane ring.

4,340,499

## METHOD FOR TREATING RADIOACTIVE SOLUTIONS

Gustav Fischer, Nuremberg, Fed. Rep. of Germany, assignor to  
Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of  
Germany

Filed Feb. 28, 1980, Ser. No. 125,678

Claims priority, application Fed. Rep. of Germany, Mar. 14,  
1979, 2910034Int. Cl.<sup>3</sup> G21F 9/10, 9/12, 9/16

U.S. Cl. 252-628

3 Claims

1. Method of treating aqueous waste solutions containing  
 $\text{Co}^{58}$  and  $\text{Co}^{60}$ , other radionuclides selected from the group  
consisting of  $\text{Mn}^{54}$ ,  $\text{Sb}^{124}$ ,  $\text{Sb}^{125}$  and  $\text{Zn}^{65}$  and mixtures thereof  
and organic complexing agents, which comprises maintaining  
the pH of the solution at about 5 and adding alkali-metal per-  
manganate to the solution in excess amount to oxidize the  
complexing agents and subsequently adding  $\text{MnSO}_4$  to the  
solution to reduce the excess  $\text{MnO}_4^-$  in the solution to  $\text{MnO}_2$   
which latter separates as a solid from the solution and adsorbs  
said other radionuclides contained in the aqueous solution  
subjected to treatment, separating the solids from the solution  
raising the pH of the separated solution to about 10.5, adding a  
complex  $[\text{Co}^{+3}(\text{NH}_3)_6] \text{Cl}_3$  salt as a carrier for  $\text{Co}^{58}$  and  $\text{Co}^{60}$   
to the solution, adding a reducing agent to the solution to  
reduce  $\text{Co}^{+3}$  to  $\text{Co}^{+2}$ , adding a decomplexing agent to free  
 $\text{Co}^{+2}$  from the complex, and then adding a precipitating agent  
to the solution to precipitate  $\text{Co}^{+2}$  as a compound insoluble in  
the solution, and subsequently encapsulating the said solids and  
said insoluble compounds in a binder.

4,340,500

## LIQUID DEFOAMER AND PROCESS OF USE THEREOF

Francis J. Boylan, Newton, N.J., assignor to Drew Chemical  
Corporation, Boonton, N.J.Continuation-in-part of Ser. No. 135,478, Mar. 31, 1980, Pat.  
No. 4,303,549, and Ser. No. 85,781, Oct. 18, 1979, abandoned.

This application Mar. 2, 1981, Ser. No. 239,430

The portion of the term of this patent subsequent to Dec. 1, 1998,  
has been disclaimed.Int. Cl.<sup>3</sup> B01D 19/04

U.S. Cl. 252-321

30 Claims

1. A pumpable free flowing aqueous defoaming composition  
which can be stored in a ready to use form, comprising:

- (a) water;
- (b) at least one solid alcohol having from 14 to 28 carbon atoms;
- (c) at least one solid fatty acid;
- (d) at least one soap of a solid fatty acid, said components (b), (c) and (d) being present in the water in an effective defoaming amount and to provide a dispersed solids content in the water of at least 5% and no greater than about 30%, by weight; and
- (e) a surfactant comprised of at least one member selected from the group consisting of non-ionic surfactants and anionic surfactants, said anionic surfactant being selected from the group consisting of:
  - alcohol sulfates
  - alkaryl sulfonates
  - ethoxylated alcohol sulfates
  - sulfates and sulfonates of ethoxylated alkyl phenols
  - sulfates and sulfonates of alkyl phenols
  - sulfonates of condensed naphthalenes
  - sulfonates of naphthalene
  - sodium derivatives of sulfo-succinates
  - alkali salts of petroleum sulfonates
  - alkali phosphate esters
  - sulfonated alkyl esters
  - sodium polymeric carboxylic acid
 said surfactant being a surfactant which in combination with components (b), (c) and (d) prevents formation of a gelled mass of the solids at 20%, by weight, dispersed solids in the water to provide a pumpable free flowing dispersion of the solids in the water.

15. A pumpable free flowing aqueous defoaming composi-  
tion which can be stored in a ready to use form, comprising:

- (a) water;
- (b) at least one solid alcohol having from 14 to 28 carbon atoms;
- (c) at least one solid fatty acid;
- (d) at least one soap of a solid fatty acid, said components (b), (c) and (d) being present in the water in an effective defoaming amount and to provide a dispersed solids content in the water of from about 20% to about 30%, by weight; and
- (e) a surfactant comprised of at least one member selected from the group consisting of non-ionic surfactants and anionic surfactants, said anionic surfactant being selected from the group consisting of:
  - alcohol sulfates
  - alkaryl sulfonates
  - ethoxylated alcohol sulfates
  - sulfates and sulfonates of ethoxylated alkyl phenols
  - sulfates of fatty esters
  - sulfates and sulfonates of alkyl phenols
  - sulfonates of condensed naphthalenes
  - sulfonates of naphthalene
  - sodium derivatives of sulfo-succinates
  - alkali salts of petroleum sulfonates
  - alkali phosphate esters
  - sulfonated alkyl esters
  - sodium polymeric carboxylic acid
 which surfactant in combination with said components (b), (c) and (d) prevents formation of a gelled mass of the solids to

provide a pumpable free flowing dispersion of the solids in the  
water.

4,340,501

## FLUID FLOW

Peter J. Davidson, Sedgefield, England, assignor to Imperial  
Chemical Industries Limited, London, England

Filed Sep. 2, 1980, Ser. No. 183,414

Claims priority, application United Kingdom, Sep. 6, 1979,  
7930993Int. Cl.<sup>3</sup> C01B 3/34

U.S. Cl. 252-373

6 Claims

1. A process for reacting steam with a gaseous or vaporized  
hydrocarbon in endothermic conditions flowing over a steam  
reforming catalyst at a catalyst outlet temperature in the range  
600°-1000° C. in a vessel having heated walls, the steam re-  
forming catalyst being in the form of a structure spaced from  
the vessel walls with through passages angled to the general  
direction of flow in the vessel, comprising the steps of flowing  
the reactant mixture alternating (a) through the passages in the  
catalyst and (b) through the space between the catalyst struc-  
ture and the heated vessel walls.

4,340,502

## TRANSITION METAL COMPOSITION

Ashley D. Bye, The Hague, Netherlands, assignor to Imperial  
Chemical Industries Limited, London, England

Continuation of Ser. No. 936,896, Aug. 25, 1978, abandoned.

This application Oct. 6, 1980, Ser. No. 194,257

Claims priority, application United Kingdom, Aug. 31, 1977,  
36341/77; May 24, 1978, 21732/78Int. Cl.<sup>3</sup> C08F 4/64

U.S. Cl. 252-429 B

16 Claims

1. A process for the production of a titanium trichloride-con-  
taining composition which process comprises

- (1) reducing titanium tetrachloride by reacting the titanium  
tetrachloride with a reducing agent under conditions to  
give a solid titanium trichloride product which includes  
an associated aluminium compound containing aluminium  
and chlorine atoms, wherein the titanium trichloride is  
formed predominantly in the beta-form;
- (2) contacting a suspension of the solid reduction product  
with compound E and compound L either simultaneously  
or sequentially, at least part of the contacting being ef-  
fected while maintaining the suspension at a temperature  
of at least 60° C. in the presence of at least compound E or  
compound L; and
- (3) subsequent to the contacting with the compound E wash-  
ing the solid product obtained with an inert hydrocarbon  
or inert haloalkane liquid

wherein

E is an ether or a thioether;

L is an organic phosphorus-containing Lewis Base  
compound of the general formula:

where

$\text{R}^3$  is a hydrocarbyl, or a hydrocarbyloxy group wherein the  
hydrocarbyl group contains up to 18 carbon atoms;

$\text{R}^4$  and  $\text{R}^5$  which may be the same or different, are each a  
hydrogen atom or a group  $\text{R}^3$ ; and

m is 0 or 1.



#### 4,340,503 CATALYST FOR CONVERTING SYNTHESIS GAS TO LIGHT OLEFINS

V. Udaya S. Rao, Monroeville, and Robert J. Gormley, Pittsburgh, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 15, 1980, Ser. No. 178,654

Int. Cl.<sup>3</sup> B01J 21/08, 23/78

U.S. Cl. 252—459 11 Claims

1. A catalyst comprising a silicalite support having iron and potassium dispersed therethrough wherein said iron is present in the range of from about 5 to about 25 percent by weight of the silicalite and the potassium is present in an amount not less than about 0.2 percent by weight of the silicalite, said silicalite support is substantially aluminum free having less than about 1000 parts per million aluminum.

8. A process for forming a catalyst useful in the catalytic hydrogenation of carbon monoxide comprising preparing a silicalite support substantially free of aluminum, soaking the silicalite support in an aqueous solution of water-soluble iron salts and potassium salts wherein the iron and potassium are present in concentrations such that the dried silicalite has iron present in the range of from about 5 to about 25 percent by weight and has potassium present in an amount not less than about 0.2 percent by weight, and drying the silicalite.

#### 4,340,504 CATALYST FOR A PROCESS FOR DEALKYLATING AROMATIC HYDROCARBONS IN THE PRESENCE OF STEAM

Philippe Courty, Houilles, France; Georgy L. Rabinovich, Leningrad; Victor N. Mojaiko, Otradnoe, both of U.S.S.R., and Jean-Francois Le Page, Ruell-Malmaison, France, assignors to Institut Français du Pétrole, Ruell-Malmaison, France

Filed Nov. 12, 1980, Ser. No. 206,408

Claims priority, application France, Nov. 12, 1979, 79 28029

Int. Cl.<sup>3</sup> B01J 23/36, 23/48, 23/58

U.S. Cl. 252—465 18 Claims

1. A catalyst containing (a) an alumina carrier and, by weight with respect to the catalyst, (b) from 0.1 to 2% of rhodium, (c) from 0.05 to 2% of at least one metal from group I B of the periodic classification of elements, selected from copper, silver and gold, (d) from 0.05 to 2% of rhenium and (e) from 0.02 to 5% of at least one additional metal selected from lithium, sodium, potassium, rubidium, cesium, beryllium, magnesium, calcium, strontium, barium and uranium.

#### 4,340,505 REDUCING PRECIOUS METAL USE IN CATALYST SUBSTRATES

Calvin M. Dolan, King of Prussia, Pa., assignor to Johnson Matthey, Inc., Malvern, Pa.

Filed Apr. 28, 1981, Ser. No. 258,300

Int. Cl.<sup>3</sup> B01J 21/04, 23/40, 35/04

U.S. Cl. 252—466 PT 12 Claims

1. A method of producing a coated catalyst from a cylindrical catalyst substrate having a circumferential periphery and an interior honeycomb structure, and utilizing a jacket of liquid impermeable material having first and second ends and fastening means for attaching the first and second ends together and having a height substantially the same as the height of the cylindrical catalyst, comprising the steps of substantially sequentially:

- covering the circumferential periphery of the substrate, said covering consisting of the substep of wrapping the jacket around the cylindrical catalyst substrate circumferential periphery and fastening the jacket ends together to provide a cylindrical catalyst substrate having the circumferential periphery thereof covered so that a precious metal liquid solution or suspension will not coat it;
- passing the wrapped cylindrical catalyst substrate through a shower of a precious metal liquid solution or

suspension so that the honeycomb structure surfaces are coated with precious metal; and

- removing the jacket by releasing the fastening means attaching the ends thereof together so as to provide a cylindrical catalyst substrate having a precious-metal coated interior honeycomb structure and a circumferential periphery uncoated by precious metal.

#### 4,340,506 PHOTOELECTRIC TRANSFER DEVICE

Kohji Toda, C-209, No. 2069 Futaba 1-chome, Yokosuka-shi, Kanagawa-ken, Japan; Koji Takahashi, and Isao Matsufuji, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo and Kohji Toda, Yokosuka, both of, Japan

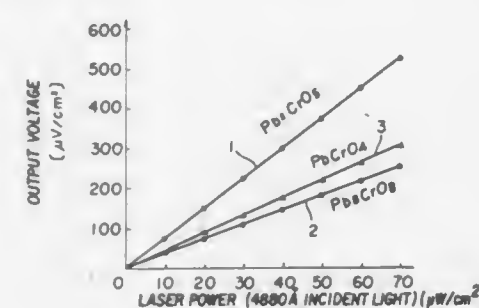
Filed Jul. 26, 1979, Ser. No. 60,901

Claims priority, application Japan, Jul. 26, 1978, 53/091295; Jul. 26, 1978, 53/091296; Jul. 26, 1978, 53/091297; Jul. 26, 1978, 53/091298; Jul. 26, 1978, 53/091299; Jul. 26, 1978, 53/091300; Jul. 26, 1978, 53/091301

Int. Cl.<sup>3</sup> H01C 13/00

U.S. Cl. 252—501.1

16 Claims



1. A photoelectric transfer device in which an electroconductive layer having a thickness enabling photoelectric transfer of 0.1 to 100 μ is coated on a surface of a solid oxide substrate comprising a lead component at a ratio of 30–99.5 mol % as PbO and an oxide of chromium component at a ratio of 0.5–70 mol %, said substrate being uniformly and integrally associated in a unitary mass as a sheet, rod, plate or film.

#### 4,340,507 PREPARATION OF ELECTRICALLY CONDUCTIVE POLYAROMATICS, AND THEIR USE IN THE ELECTRICAL INDUSTRY AND FOR RENDERING PLASTICS ANTISTATIC

Herbert Naarmann, Wattenheim; Dieter Naegele, Worms; Klaus Penzien, Frankenthal, and Johannes Schlag, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 6, 1980, Ser. No. 204,639

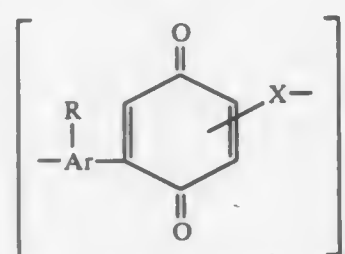
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948454

Int. Cl.<sup>3</sup> H01B 1/02

U.S. Cl. 252—512

3 Claims

1. A process for the preparation of an electrically conductive polyaromatic of the formula



wherein Ar is phenylene, R is H, X is phenylene and n is a whole number of from 1 to 50, said polyaromatic having an electrical conductivity greater than 10<sup>-2</sup> S/cm, wherein from

0.5 to 5% by weight, based on the polyaromatic employed, of sodium, potassium, rubidium or cesium are added to the polyaromatic, in the absence of moisture and of oxygen.

#### 4,340,508 RESISTANCE MATERIAL, RESISTOR AND METHOD OF MAKING THE SAME

Richard L. Wahlers, Churchville, Pa., and Vernon E. Osborne, Boone, N.C., assignors to TRW Inc., Cleveland, Ohio

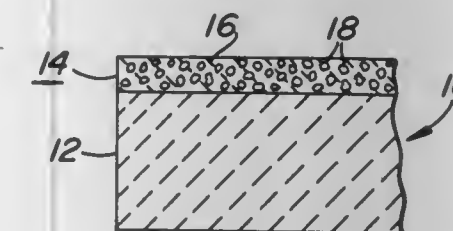
Division of Ser. No. 7,433, Jan. 29, 1979, Pat. No. 4,293,838.

This application Mar. 25, 1981, Ser. No. 247,257

Int. Cl.<sup>3</sup> H01B 1/06; H01C 1/012

U.S. Cl. 252—520

7 Claims



1. A vitreous enamel resistance material adapted to be applied to and fired on a substrate to form an electrical resistor of relatively high resistivity and rugged physical characteristics comprising a mixture of a glass frit, an insulating material containing an oxide of zirconium, and a conductive phase of fine particles of tin oxide, the glass frit and insulating material being present in an amount up to about 70% by volume of the resistance material.

#### 4,340,509 COMPOSITION, CONCENTRATE AND FOUNTAIN SOLUTION FOR LITHOGRAPHIC PRINTING OPERATIONS

Ralph D. Canale, Long Island City; Albert S. Canale, Massapequa, and Harry Papazian, Long Island City, all of N.Y., assignors to Michael A. Canale, Long Island City, N.Y., by said Harry Papazian

Continuation-in-part of Ser. No. 890,018, Mar. 24, 1978, Pat. No. 4,234,443. This application Apr. 16, 1980, Ser. No. 140,689

The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> C11D 1/44, 3/075, 9/36

U.S. Cl. 252—529

28 Claims

1. A composition adapted for use in a fountain solution which consists essentially of 2 to 66 percent by weight trisodium phosphate; 0.5 to 26.0 percent by weight sodium metasilicate; 2 to 67 percent by weight tetrapotassium pyrophosphate; 2 to 25 percent by weight of a nonionic detergent which is a condensation product of ethylene oxide with an alkylamine, the alkyl moiety of which is of from 2 to 20 carbon atoms, the molar ratio of ethylene oxide units to each alkylamine unit in said condensation product being of from 9:1 to 150:1, and 0.02 to 10.00 percent by weight dialkylpolysiloxane.

#### 4,340,510 CONCRETE MIXTURES OR MORTAR MIXTURES OR CONCRETES OR MORTARS AND PROCESS FOR THEIR PRODUCTION

Friedrich Howanietz, Penzingerstrasse 20, A-1140 Vienna, and Alexander Kozlowski, Mariahilferstrasse 106/9, A-1070 Vienna, both of Austria

Filed Dec. 27, 1978, Ser. No. 973,663

Claims priority, application Austria, Dec. 30, 1977, 9436/77

Int. Cl.<sup>3</sup> C08L 1/00

U.S. Cl. 260—8

29 Claims

1. A concrete or mortar mixture or concrete or mortar on the basis of hydraulic binders and plastic materials for the production of building elements or coatings insensitive to

shock and impact stress, abrasion, frost-thaw and defrosting salt and chemical attack as well as for effecting repair work on building elements or coatings, wherein lime or cement selected from the group consisting of Portland cement of conventional composition, iron Portland cement, blast furnace cement, flue ash Portland cement, Ciment compose, puzzolane cement, high-alumina cement, modified Portland cement on the basis of 11CaO.7Al<sub>2</sub>O<sub>3</sub>. CaF<sub>2</sub>, Brunauer cement, Grenoble cement and Roman cement and further at least one liquid-dispersed or dissolved plastic material consisting essentially of a polymer of an ethylenically unsaturated monomer, said plastic material having low-temperature adhesiveness and a T<sub>max</sub> value of less than -8° C. determined according to DIN 53445 are contained.

#### 4,340,511 PRODUCTION OF POLYMER MICROPARTICLES AND COATING COMPOSITIONS CONTAINING THEM

Alan J. Backhouse, South Ascot, and Auguste L. Palluel, Windsor, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 2, 1979, Ser. No. 53,850

Claims priority, application United Kingdom, Jul. 19, 1978, 30356/78

Int. Cl.<sup>3</sup> C08F 265/06; C08G 81/00; C08L 51/08, 61/28

U.S. Cl. 524—504

11 Claims

1. A process for the production of crosslinked addition polymer microparticles, comprising the dispersion polymerisation of ethylenically unsaturated monomers in an aliphatic hydrocarbon liquid which is a solvent for the monomers but is a non-solvent for the polymer produced, in the presence of a dispersion stabiliser the molecule of which comprises at least one polymeric component which is solvated by the hydrocarbon liquid and at least one other component which is not solvated by the liquid and is capable of associating with the polymer produced, characterised in that (i) there is present in the hydrocarbon liquid a reactive amino resin which is a condensate of formaldehyde with an amine group-containing substance which has subsequently been etherified by reaction with a lower alcohol so as to convert at least a proportion of the —NH.CH<sub>2</sub>OH groups present into —NH.CH<sub>2</sub>OR groups, where R is an alkyl group containing from 1 to 4 carbon atoms, the said etherified condensate having a mineral spirit tolerance of less than 100 as measured according to ASTM D1198-73 and a molecular weight of less than 2000 and which is insoluble in the hydrocarbon liquid and (ii) at least one of the ethylenically unsaturated monomers carries a group which is capable of reacting with the amino resin, the polymerisation conditions being so chosen that during the polymerisation of the monomer or monomers the said group reacts with the amino resin so as to effect cross-linking of the addition polymer chains.

#### 4,340,512 METHOD OF PROVIDING A UNIVERSAL COATING FOR FLUORESCENT LAMPS

Willy P. Schreurs, Danvers, Mass., assignor to North American Philips Corporation, New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,853

Int. Cl.<sup>3</sup> C08L 1/08

U.S. Cl. 523—122

7 Claims

1. A method for preparing a universal water-base suspension for coating the interior surface of fluorescent lamps, said method comprising:

- preparing a temporary binder solution of polyoxyethylene in water at concentrations ranging from 1.5 to 2.5 weight by volume percent and removing the contaminating particulates of silica and Ca CO<sub>3</sub> by centrifuging;
- preparing a temporary binder solution of sodium carboxymethyl cellulose in water at concentrations ranging from 1.2 to 2.5 weight by volume percent;
- mixing said temporary binder solutions and removing the contaminating cations by an ion exchange process;



- (d) neutralizing said purified temporary binder solution with ammonia to a pH 7.0 to 7.5 and adding between 0.01 and 0.02 weight by volume percent of bactericide;
- (e) preparing an inorganic binder suspension of submicron size  $\text{Al}_2\text{O}_3$  in water solution of low molecular weight polyacrylic acid neutralized to a pH 9.0 to 9.5 with monothanolamine, said suspension containing 0.5 to 1.5 weight by volume percent polyacrylic acid and 5 to 15 weight by volume percent of  $\text{Al}_2\text{O}_3$ ; and
- (f) mixing said temporary binder solution and inorganic binder suspension with phosphors and defoamer in such proportions as to contain a ratio of 0.5 to 1.5 weight percent of dry binder to phosphor and 0.02 to 0.1 weight percent of defoamer to phosphor.

4,340,513

## POLYOLEFIN RESIN COMPOSITION

Tsutomu Moteki, Kunihiro Yamaguchi, both of Ichiharashi, and Yoshikazu Nakajima, Musashinoshi, all of Japan, assignors to Chisso Corporation, Osaka and Kabushiki Kaisha Mikuni Seisakusho, Tokyo, both of Japan

Filed Jun. 3, 1980, Ser. No. 156,096

Claims priority, application Japan, Aug. 28, 1979, 54/109438  
Int. Cl.<sup>3</sup> C08L 1/02, 21/00, 53/00, 93/00

U.S. Cl. 524—13

6 Claims

1. A molding resin composition comprising a blend of
- (1) 0.3 to 4.0% by weight of a member selected from the group consisting of
    - (a) rosins and products derived from rosins,
    - (b) petroleum resins, and
    - (c) mixtures of (a) and (b),
  - (2) 0.5 to 4.0% by weight of a plasticizer,
  - (3) 15 to 60% by weight, on a dry basis, of finely ground vegetable fibers, and
  - (4) a blend of a polypropylene block copolymer and a high density polyethylene making up the remainder, all of the above percentages being based on the weight of said composition.

4,340,514

## NON-TOXIC LIQUID STABILIZER FOR HALOGENATED HYDROCARBON RESINS AND PROCESS FOR STABILIZING SUCH RESINS

David S. House, Flemington, N.J., assignor to Interstab Chemicals Inc., New Brunswick, N.J.

Filed Jun. 29, 1981, Ser. No. 278,340

Int. Cl.<sup>3</sup> C08L 93/00; C09F 1/04; C09K 15/32

U.S. Cl. 524—77

10 Claims

1. A non-toxic liquid stabilizer comprising,
- (a) from about 5 to about 35 percent of zinc resinate,
  - (b) from about 5 to about 35 percent of calcium resinate,
  - (c) from about 10 to about 40 percent of a non-toxic plasticizer,
  - (d) from about 1 to about 10 percent of a non-toxic antioxidant, and
  - (e) from about 25 to about 75 percent of a non-toxic phosphite,
- said stabilizer containing from about 0.1 to about 3.5 percent zinc and from about 0.025 to about 2.28 percent calcium, all weight being based upon the total weight of the stabilizer.
5. A method for stabilizing a halogenated hydrocarbon resin comprising incorporating into said resin a non-toxic liquid stabilizer comprising,
- (a) from about 5 to about 35 percent of zinc resinate,
  - (b) from about 5 to about 35 percent of calcium resinate,
  - (c) from about 10 to about 40 percent of a non-toxic plasticizer,
  - (d) from about 1 to about 10 percent of a non-toxic antioxidant, and
  - (e) from about 25 to about 75 percent of a non-toxic phosphite,
- said stabilizer containing from about 0.1 to about 3.5 percent zinc and from about 0.025 to about 2.28 percent calcium, all

weights being based upon the total weight of the stabilizer, said stabilizer being incorporated in a stabilizing amount from about 0.25 to about 4.0 weight percent based upon the weight of the resin.

4,340,515

## SOLID RUBBER ADHESION PROMOTER AND A METHOD FOR IMPROVING THE ADHESION OF RUBBER TO METAL REINFORCING ELEMENTS EMBEDDED THEREIN

Karl-Heinz Frassek, Langerwehe, Fed. Rep. of Germany, and Willy J. van Ooij, Dieren, Netherlands, assignors to Akzo NV, Arnhem, Netherlands

Filed Jun. 16, 1981, Ser. No. 274,251

Int. Cl.<sup>3</sup> C08L 7/00, 9/00; C08F 1/04; C08C 4/00

U.S. Cl. 524—274

9 Claims

1. A solid rubber adhesion promoter composition comprising 20–90% by weight of cobalt naphthenate, nickel naphthenate or a mixture thereof and 10–80% by weight of cobalt resinate, nickel resinate or a mixture thereof.
9. A method for improving the adhesion of rubber to metal reinforcing elements embedded therein by incorporating into 100 parts of rubber prior to curing 0.2–10 parts of the solid promoter composition of claim 1.

4,340,516

## COMPOUNDING MICA AND RESIN WITH HEAT SENSITIVE ADDITIVES

Allen J. Keeney, Saline, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 970,838, Dec. 18, 1978,

abandoned. This application Dec. 13, 1979, Ser. No. 103,301

Int. Cl.<sup>3</sup> C08L 91/06

U.S. Cl. 523—216

16 Claims

1. A method of compounding in less than about 30 seconds at elevated temperatures mica and melt forming resin made from monomers comprising olefinic hydrocarbon monomers wherein the mica has a coating comprising a chlorinated hydrocarbon having about 65–80% by weight chlorine, which comprises:

- (A) providing the resin, rendered molten by a first shear and having a melt index (ASTM D1238) below about 15, at a temperature in the range about 10°–60° F. below that temperature at which chlorine containing gas evolves from the chlorinated hydrocarbon coating, the resin being provided in first and second streams that are counter rotating with respect to one another and provide a turbulence therebetween;
- (B) introducing the coated mica into the turbulence; and
- (C) kneading the coated mica into the streams under a second shear, lower than the first shear, at a temperature below that temperature at which chlorine containing gas evolves from the chlorinated hydrocarbon.

4,340,517

## POLYMER/BITUMINOUS MATERIAL BLENDS, PROCESS FOR MAKING ARTICLES FROM SUCH BLENDS AND ARTICLES MADE BY THE PROCESS

Alan C. G. Aldred, North Cheam, and Brian Weeks, Epsom, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Dec. 15, 1980, Ser. No. 216,649

Claims priority, application United Kingdom, Dec. 19, 1979, 7943645

Int. Cl.<sup>3</sup> C08L 95/00

U.S. Cl. 524—59

15 Claims

1. A composition which is a blend of chlorosulphonated polyethylene and a bituminous material of softening point in excess of 80° C. and an asphaltene content in excess of 25% by weight, characterised in that it contains a thermoplastic olefin polymer having a softening temperature in the range 110° C. to 160° C., the quantity of thermoplastic being not more than 15%

by weight of the total weight of chlorine-containing synthetic elastomer present in the blend.

4,340,518

## PROCESS FOR THE PRODUCTION OF A CATIONIC POLYCHLOROPRENE LATEX AND A MIXTURE OF THIS LATEX WITH BITUMEN EMULSION

Wilfried Nolte, Leverkusen, and Heinz Esser, Burscheid, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 126,534, Mar. 3, 1980, abandoned. This application Jun. 18, 1981, Ser. No. 274,819

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2908965

Int. Cl.<sup>3</sup> C08L 91/00

U.S. Cl. 524—61

5 Claims

1. In the process for producing a cationic polychloroprene latex by polymerizing chloroprene and from 0 to 50 parts by weight of a copolymerizable comonomer based on 100 parts by weight of total monomer, in aqueous emulsion in the presence of a carboxylic acid salt of a primary, secondary or tertiary monoamine, polyamine or aminoamide as emulsifier, wherein said carboxylic acid is selected from the group consisting of mono-, di- or tricarboxylic acids containing from 1 to 6 carbon atoms, the improvement wherein the polymerization is carried out in the presence of at least one member selected from the group consisting of alkaline earth metal salts of organic carboxylic acids and alkali metal salts of organic carboxylic acids in an amount of from 0.2 to 5 parts by weight based on total monomer, wherein said organic carboxylic acids are selected from the group consisting of saturated mono-, di- or tricarboxylic acids with 1 to 6 carbon atoms or in the presence of a mixture of  $\text{Na}_2\text{HPO}_4$  and  $\text{KH}_2\text{PO}_4$  in a weight ratio of 1:5 to 5:1 and in an amount of from 0.5 to 2.0 parts by weight based on total monomer.

4,340,519

## POLYESTER RESIN AQUEOUS DISPERSION

Nobukazu Kotera, Kyoto; Yutaka Mizumura, Shiga, and Hideo Miyake, Otsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1980, Ser. No. 217,629

Claims priority, application Japan, Dec. 21, 1979, 54-167002

Int. Cl.<sup>3</sup> C08L 67/02, 81/08

U.S. Cl. 523—414

10 Claims

1. An aqueous dispersion of polyester resin which comprises
- (A) a crystalline polyester having a molecular weight of 2,500 to 30,000 and a melting point of 70° to 200° C. and, comprising polycarboxylic acid components consisting of 40 to 99.5% by mole of an aromatic dicarboxylic acid having no metal sulfonate group, 59.5 to 0% by mole of an aliphatic or alicyclic dicarboxylic acid having 4 to 36 carbon atoms and 0.5 to 10% by mole of an aromatic dicarboxylic acid having a metal sulfonate group, and polyol components consisting of 20 to 100% by mole of an aliphatic glycol having 2 to 8 carbon atoms and/or an alicyclic glycol having 6 to 12 carbon atoms and 80 to 0% by mole of bisphenol A ethylene oxide or propylene oxide adduct,
  - (B) a non-crystalline polyester having a molecular weight of 2,500 to 30,000 and a softening point of 60° to 180° C. and comprising polycarboxylic acid components consisting of 40 to 99.5% by mole of an aromatic dicarboxylic acid having no metal sulfonate group, 59.5 to 0% by mole of an aliphatic or alicyclic dicarboxylic acid having 4 to 36 carbon atoms and 0.5 to 10% by mole of an aromatic dicarboxylic acid having a metal sulfonate group, and polyol components consisting of 20 to 100% by mole of an aliphatic glycol having 2 to 8 carbon atoms and/or an alicyclic glycol having 6 to 12 carbon atoms and 80 to 0% by mole of bisphenol A ethylene oxide or propylene oxide adduct,

- (C) a water-soluble organic compound having a boiling point of 60° to 200° C., and
- (D) water, said components (A), (B), (C), and (D) being incorporated in the following weight ratio:

$$A/B=0-95/100-5 \quad (1)$$

$$A+B/C/D=10-70/2-40/20-88 \quad (2)$$

$$0.02 \leq C/C+D \leq 0.66 \quad (3)$$

4,340,520

## POLYESTER AMINOORGANOSILANE SALT/POLYALKYLENE OXIDE COMPOSITIONS FOR IMPROVED GLASS FIBER TREATMENT

James G. Marsden, and Enrico J. Pepe, both of Amawalk, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 163,628, Jun. 27, 1980,

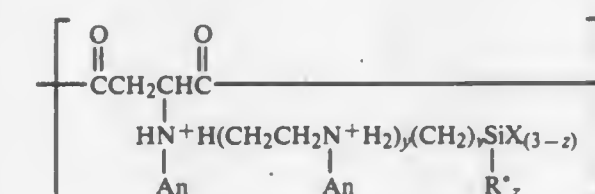
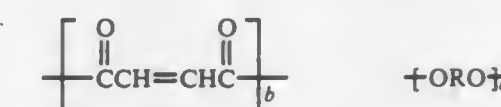
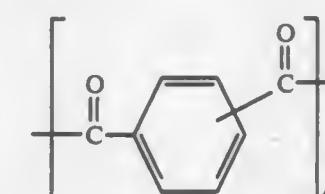
abandoned. This application Jan. 21, 1981, Ser. No. 226,551

Int. Cl.<sup>3</sup> C08G 63/54; C08K 3/40; C08L 67/06

U.S. Cl. 523—209

10 Claims

1. A composition suitable for use in the treatment of glass fibers which comprises
- a polyester polymer having a molecular weight of greater than 1000 and comprising units of the formulae



wherein R is a divalent hydrocarbon radical, R' is an alkyl, aryl, or aralkyl group, X is alkoxy, hydroxy, or divalent oxygen, y is 0 or 1, v is an integer of from 1 to 6, z is 2, 1, or 0, a is 0 or a mole fraction of from 0.004 to 0.6, b and e are mole fractions ranging from about 0.004 to about 0.6, and d is a mole fraction ranging from 0.4 to 0.6, with the proviso that d is greater than, equal to, or slightly less than the sum of a, b, and e, and An is anion of a monovalent acid, and

from 10 weight % to 100 weight %, based upon the weight of said polyester polymer in the composition, of a polyalkylene oxide polymer of the formula



wherein E is hydrogen or an alkyl end-blocking group having up to 8 carbon atoms, m ranges from 0 to 50, n ranges from 0 to 20, and m+n must total at least 3.



#### 4,340,521 PRESSURE COMPACTING OF SETTABLE PLASTER COMPOSITIONS

Michel Deleuil, Lyons, France, assignor to Rhone-Poulenc Industries, Paris, France

Continuation-in-part of Ser. No. 88,588, Oct. 26, 1979, abandoned, which is a continuation of Ser. No. 876,492, Feb. 9, 1978, abandoned. This application Oct. 23, 1980, Ser. No. 200,084

Claims priority, application France, Feb. 9, 1977, 77 03561; Apr. 4, 1977, 77 10060; Jul. 6, 1977, 77 20773

Int. Cl.<sup>3</sup> C08L 61/24; C04B 11/14

U.S. Cl. 524—2 14 Claims

1. A settable molding composition, which comprises a mix of a synthetic plaster having a Blaine surface area in the range from about 2,500 to about 7,000 cm<sup>2</sup>/g and a water donor therefor selected from the group consisting of synthetic gypsum having a given content of water and a mixture of said synthetic gypsum and free water, said plaster comprising from about 30% to about 99% by weight of the mix and the amount of free available water in the mix from the water donor being in excess of that amount stoichiometrically required for ultimate complete setting of the mix, with said excess of free available water comprising between 0 and 15% by weight of the total weight of said mix.

#### 4,340,522 PROCESS FOR PREPARING CATIONIC POLYMERS

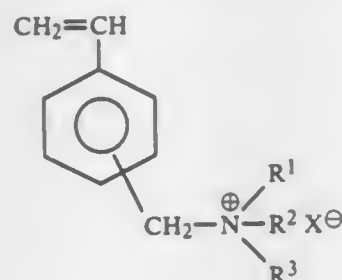
Irena Y. Bronstein-Bonte, Newton, and Edward P. Lindholm, Boston, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 22, 1980, Ser. No. 142,637

Int. Cl.<sup>3</sup> C08L 39/08

U.S. Cl. 524—766 24 Claims

1. A process which comprises: forming a solution, in a solvent medium comprising water and a lower alcohol, of a mixture of copolymerizable monomers comprising a vinylpyridine and an ethylenically-unsaturated copolymerizable vinylbenzyl quaternary ammonium salt having the formula:



wherein each of R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> is independently alkyl; substituted alkyl; cycloalkyl; aryl; aralkyl; alkaryl; or at least two of R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> together with the quaternary nitrogen atom to which they are bonded complete a saturated or unsaturated, substituted or unsubstituted nitrogen-containing heterocyclic ring; and X is an anion; and polymerizing said mixture of copolymerizable monomers in said solvent medium, thereby to form a solution of a copolymer of said copolymerizable monomers in said solvent medium.

#### 4,340,523 ELECTROCOATING COMPOSITION WITH POLYHYDROXYAMINE AND EPOXY

Isidor Hazan, Clementon, N.J., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 106,258, Dec. 21, 1979, abandoned. This application Dec. 29, 1980, Ser. No. 220,957

Int. Cl.<sup>3</sup> G08L 29/00, 39/00

U.S. Cl. 524—504 14 Claims

1. An aqueous cathodic electrodeposition coating composition comprising a dispersion of a first polymer, a second polymer, enough of an organic acid to give the composition a pH about in the range of 6 to 7, and optionally a nitrogen resin

crosslinker, said coating composition containing, by weight based on the first and second polymers, about 20-70% of a first polymer which is a copolymer comprising a backbone and a graft pendent to the backbone, said backbone containing amine functional groups and hydroxy functional groups, characterized in that said backbone contains at least about 0.13 equivalent of amine groups per 100 grams of first polymer and at least about 0.03 equivalent of hydroxyl groups per 100 grams of first polymer, and containing, by weight, the equivalent of about: (a) 35-90% amine functional monomers, (b) 10-60% hydroxy functional monomers, (c) 0-40% nonfunctional acrylic or methacrylic monomers, and (d) 0-5% chain-terminating monomers

the total of (a), (b), (c) and (d) being 100% of said backbone, said graft comprising a monoglycidyl ester of at least one tertiary carboxylic acid containing 9-20 carbon atoms and being grafted to said amine groups in said backbone, said copolymer containing about 1-30% by weight of said graft, and, by weight based on the first and second polymers, about 80-30% of a second polymer which is an epoxy resin reacted with, based on the weight of said second polymer, about 80-150% of an entity selected from the group consisting of alkyl phenols, alkyl alcohols and alkyl hydroxy ethers, with 1-20 carbon atoms in the alkyl groups, hydroxyamines, fatty amines and mercaptans.

#### 4,340,524 WATER-RESISTANT LATEX SEALANTS

Allan R. Bullman, Bernardsville, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1980, Ser. No. 163,955

Int. Cl.<sup>3</sup> C08L 33/08

U.S. Cl. 524—297 14 Claims

1. In an acrylic resin latex based sealant composition, the improvement which comprises introducing about 0.1 to about 10 weight % of an hydrophobic resin dissolved in about 2 to about 20 weight % of a liquid organic, non-coagulating, non-gelling solvent into said acrylic resin latex together with an aqueous solution of about 0.5 to about 5.0 weight % of an hydrolyzed organoaminosilane containing sufficient base to maintain a pH of at least 8.5, with the proviso that the total weight of the components including the acrylic latex equals 100%.

#### 4,340,525 ADDITIVE FOR DEEP-WELL CEMENT SLURRIES

Wolfgang Hübner, Kempen; Otto Schroers, and Hans J. Sladeck, both of Krefeld, all of Fed. Rep. of Germany, assignors to Chemische Fabrik Stockhausen & Cie, Krefeld, Fed. Rep. of Germany

Continuation of Ser. No. 56,490, Jul. 11, 1979, abandoned. This application Mar. 19, 1981, Ser. No. 245,475

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830528

Int. Cl.<sup>3</sup> C04B 7/35

U.S. Cl. 252—8.55 B 13 Claims

1. In the cementing of a deep-well employing a deep-well cement slurry, the improvement which comprises including in such cement or cement slurry an additive comprising a water-soluble anionic copolymer having a molecular weight from 50,000 to 500,000 and comprising 1 to 60 mole% of anionic structural units and 99 to 40 mole% of non-ionic structural units, the copolymer having been obtained by radical polymerization of a substantially neutral solution of the monomers.

#### 4,340,526 POLYESTER ADHESIVE

Frederick D. Petke, and Richard L. McConnell, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,407

Int. Cl.<sup>3</sup> C08K 5/10

U.S. Cl. 524—292 8 Claims

1. Composition comprising (a) about 65.0-90% by weight of a polymer selected from the group consisting of (1) copolyesters derived from terephthalic acid, isophthalic acid, 1,4-butanediol and 1,6-hexanediol and (2) copolyesters derived from a major portion of cyclohexanedicarboxylic acid and a minor portion of dimer acid, and 1,4-cyclohexanedimethanol, said copolyester having an inherent viscosity of about 0.45-1.2, a melting point of from about 70° C. to about 200° C. and a heat of fusion of from about 0.1 to about 12.0 calories per gram, and (b) about 10-35.0% by weight of a monomeric ester selected from the group consisting of glyceryl tribenzoate, neopentyl dibenzoate, triethylene glycol dibenzoate and dioctyl phthalate.

#### 4,340,527 CHLORINE-RESISTANT SPANDEX FIBERS

Kenneth E. Martin, Waynesboro, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 161,606, Jun. 20, 1980, abandoned. This application Aug. 14, 1981, Ser. No. 292,965

Int. Cl.<sup>3</sup> C08K 3/22

U.S. Cl. 524—432 5 Claims

1. In a spandex fiber, the improvement comprising, for increasing the resistance of the fiber to chlorine-induced degradation, an effective amount of finely divided zinc oxide having a purity of at least 99.4% dispersed in the fiber.

#### 4,340,528 PIGMENTED POLYOLEFIN COMPOSITIONS

Harold P. Marsh, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,402

The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.

Int. Cl.<sup>3</sup> C08L 67/00

U.S. Cl. 524—513 7 Claims

1. Polyolefin composition comprising polyethylene or polypropylene having a density of between about 0.90 and about 0.98, at least one pigment in an amount sufficient to provide color to said polyolefin, and from about 0.1 to about 4.0%, based on the weight of said polyolefin, of a polyester having an I.V. of from about 0.6 to about 1.0, a melting point of from about 90° to about 150° C. and a melt index of from about 10 to about 100.

#### 4,340,529 NO-MIX ORTHODONTIC ADHESIVE FORMULATIONS

Henry L. Lee, Jr., Pasadena, and Giovanni Nolet, Westminster, both of Calif., assignors to Lee Pharmaceuticals, Inc., South El Monte, Calif.

Filed Apr. 11, 1980, Ser. No. 139,270

Int. Cl.<sup>3</sup> A61K 5/00

U.S. Cl. 524—105 25 Claims

1. An orthodontic adhesive composition that becomes reactive and set when a layer of one component is placed in contact with a layer of the other component, comprising: (a) a first component having a viscosity in the range of about 800 cps to about 50,000 cps at 23° C. comprising a liquid resin binder consisting of, in percentages by weight of the binder, at least 30% of a monofunctional ethylenically unsaturated monomer comprising methoxyethyl methacrylate, and optionally, as additional monomer in the binder, a polyfunctional carboxylate selected from the

group consisting of aromatic diacrylates, aromatic dimethacrylates, polyalkylene glycol diacrylates, polyalkylene glycol dimethacrylates, and mixtures thereof, and (b) a second component having a viscosity greater than about 100,000 cps at 23° C. comprising a liquid resin binder and a filler, the binder comprising from about 10% to about 70% by weight of the second component and consisting of one or more poly-ethylenically unsaturated monomers that can copolymerize with the monomer present in the component (a) binder upon curing, to form cross-linked polymer;

one of said components containing an effective amount of a polymerization accelerator and the other of said components containing an effective amount of a polymerization initiator, said accelerator and initiator being effective upon contact of layers of the two components that have been separably applied to cause curing to occur.

#### 4,340,530 VINYL CHLORIDE TYPE RESIN COMPOSITION

Takeichi Higashiguchi, Tenri; Masasuke Fukuoka, Osaka; Tomoyuki Emura, and Yasuhiro Moriuchi, both of Niihama, all of Japan, assignors to Sumitomo Bakelite Company Limited and Sumitomo Chemical Company Limited, both of, Japan

Continuation of Ser. No. 966,721, Dec. 5, 1978, abandoned. This application Jul. 2, 1980, Ser. No. 165,329

Claims priority, application Japan, Dec. 8, 1977, 52-146637; Mar. 6, 1978, 53-24539; May 22, 1978, 53-59989; May 22, 1978, 53-59990; May 22, 1978, 53-59991

Int. Cl.<sup>3</sup> C08K 5/52

U.S. Cl. 524—515 14 Claims

1. A vinyl chloride resin composition consisting essentially of 100 parts by weight of a vinyl chloride resin and 25 to 200 parts by weight of a plasticizer, said vinyl chloride resin being composed of 28 to 90% by weight of tetrahydrofuran-insoluble gel fraction and the remainder of tetrahydrofuran-soluble fraction, and being

(1) a polymer obtained by reacting vinyl chloride monomer or a mixture thereof and a minor amount of at least one monomer copolymerizable therewith, with a polyfunctional compound selected from the group consisting of diallyl esters of phthalic acid, diallyl esters of ethylenically unsaturated dibasic acids, diallyl ethers, triallyl cyanurate, triallyl isocyanurate, triallyl trimellitate, divinyl ethers, dimethacrylic and diacrylic esters of polyhydric alcohols, trimethacrylic and triacrylic esters of polyhydric alcohols, bismethacryloyloxyethylene phthalate and 1,3,5-triacryloyl hexahydrotriazine, or (2) a blend of (a) said polymer (1) and (b) a usual vinyl chloride type resin free from gel.

#### 4,340,531 AQUEOUS-MEDIA DISPERSIBLE, HIGHLY-CONCENTRATED, FINELY-DISPERSE, LOW-DISPERSANT OR FREE-OF-DISPERSANT PREPARATION OF HARDLY WATER-SOLUBLE TO WATER-INSOLUBLE ACTIVE SUBSTANCES IN SOLID FORM, PROCESS FOR THEIR PREPARATION AND THEIR APPLICATION

Jacques Wegmann, Bettingen, Switzerland, assignor to Rohrer AG Pratteln, Pratteln, Switzerland

Filed Feb. 1, 1980, Ser. No. 117,800

Claims priority, application Switzerland, Feb. 2, 1979, 1057/79

Int. Cl.<sup>3</sup> C08K 5/00

U.S. Cl. 524—556 7 Claims

1. A process for making a preparation of active substances, hardly soluble or insoluble in water and in the form of powders or granules, said preparation being dispersible in an aqueous media, comprising: (a) 40 to 90% by weight of at least one active substance only



slightly soluble or insoluble in water with an average particle size less than 5 microns; and  
(b) 10 to 60% by weight of at least one water-soluble ammonium or volatile amine salt selected from the group consisting of a salt of a water-insoluble maleinate resin, a salt of a water-insoluble polymer containing maleic acid units and a salt of a water-insoluble polymer containing maleic acid derivative units;

said process for making comprising the step of exposing a mixture of said active substance and at least one water-insoluble compound selected from the group consisting of a maleinate resin, a polymer containing maleic acid units and a polymer containing maleic acid derivative units to the vapors of ammonia or volatile amines to convert said water-insoluble compound into said water-soluble ammonium or volatile amine salt of the compound.

4,340,532

# ADHESIVE COMPOSITIONS CONTAINING ALKOXY ALKYL ACRYLATES OR METHACRYLATES

Henry L. Lee, Jr., Pasadena, and Giovanni Nolet, Westminster, both of Calif., assignors to Lee Pharmaceuticals, Inc., South El Monte, Calif.

Filed Apr. 11, 1980, Ser. No. 139,360

Int. Cl.<sup>3</sup> C08K 3/40; C08F 220/20; A61K 5/06

U.S. Cl. 524—854

25 Claims

1. In an adhesive composition comprising a curable liquid resin binder and effective amounts of polymerization initiator and accelerator, respectively, the improvement comprising: a curable liquid resin binder comprising, in percentage by weight based on the resin binder: from about 1% to about 60% of (A) a lower alkoxy alkyl methacrylate comprising methoxyethyl methacrylate, and from about 40% to about 99% of (B) a polyunsaturated, copolymerizable agent selected from the group consisting of aliphatic diacrylates and dimethacrylates, aromatic diacrylates and dimethacrylates, and mixtures thereof, and from 0% to about 80% of the total adhesive composition of a finely divided filler selected from the group consisting of finely divided inorganic fillers, finely divided organic fillers, and mixtures thereof.

4,340,533

# NOVEL STABILIZERS

Jean Rody, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 50,572, Jun. 21, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 191,721

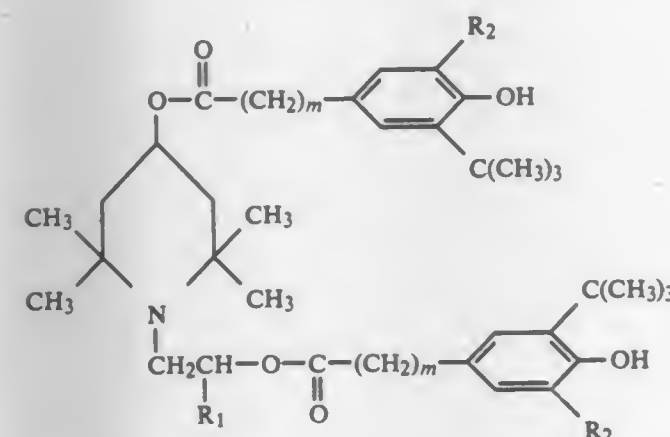
Claims priority, application United Kingdom, Jul. 3, 1978, 28653/78

Int. Cl.<sup>3</sup> C07D 211/50; C08K 5/34

U.S. Cl. 524—99

3 Claims

1. 2,2,6,6-Tetramethylpiperidine derivatives having the formula



wherein m is 0, 1 or 2, R<sub>1</sub> is hydrogen, methyl, ethyl, phenoxy-methyl or phenyl, and R<sub>2</sub> is C<sub>1</sub>-C<sub>8</sub> alkyl.

3. Stabilized synthetic polymer compositions containing a

2,2,6,6-tetramethylpiperidine derivative as defined in claim 1 or 2.

4,340,534

# ETHERS BASED ON

## POLYALKYL-1-OXADIAZASPIRODECANES

Hartmut Wiezer, Gersthofen, and Gerhard Pfahler, Augsburg, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 6, 1980, Ser. No. 194,140

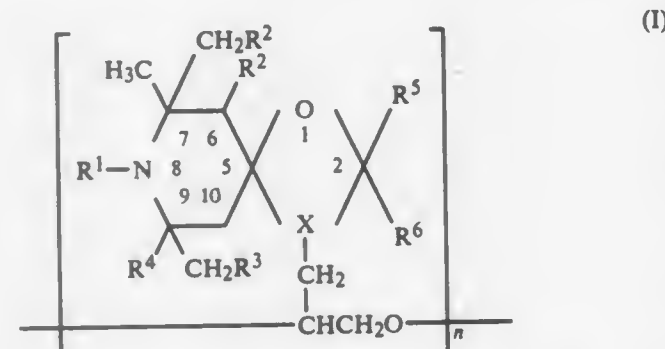
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1979, 2941004

Int. Cl.<sup>3</sup> C08G 65/22; C08K 5/35; C07D 471/10; C08L 23/12

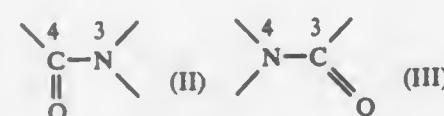
U.S. Cl. 524—99

13 Claims

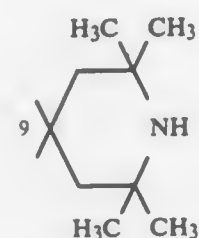
1. An ether or epoxide, containing polyalkylpiperidine groups, of the formula (I)



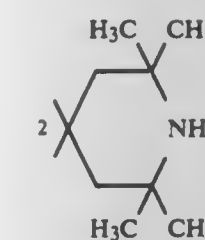
in which n is an integer from 1 to 50, when n equals 1, an oxirane ring being completed via the free bonds, X denotes a group of the formula (II) or (III)



wherein the indices 3 and 4 indicate the ring positions in the diazaspirondecane system and one bond of the nitrogen is attached to the CH<sub>2</sub> group of the ether radical, R<sup>1</sup> is hydrogen, oxygen or C<sub>1</sub>- to C<sub>12</sub>-alkyl, R<sup>2</sup> and R<sup>3</sup> are either identical and denote hydrogen or a C<sub>1</sub>- to C<sub>5</sub>-alkyl group, in which case R<sup>4</sup> is a methyl group, or R<sup>2</sup> is hydrogen or C<sub>1</sub>- to C<sub>5</sub>-alkyl and R<sup>3</sup> and R<sup>4</sup>, conjointly with the carbon atoms to which they are linked, represent a C<sub>5</sub>- or C<sub>6</sub>-cycloalkyl group or a group of the formula



R<sup>5</sup> and R<sup>6</sup> are identical or different and represent hydrogen, C<sub>1</sub>- to C<sub>30</sub>-alkyl, a phenyl or naphthyl group which is unsubstituted or substituted by chlorine or C<sub>1</sub>- to C<sub>4</sub>-alkyl, or a C<sub>7</sub>- to C<sub>12</sub>-phenylalkyl group which is unsubstituted or substituted by C<sub>1</sub>- to C<sub>4</sub>-alkyl, or R<sup>5</sup> and R<sup>6</sup>, conjointly with the carbon atom which is linked to them, denote a C<sub>5</sub>- to C<sub>18</sub>-cycloalkyl group which is unsubstituted or substituted by up to four C<sub>1</sub>- to C<sub>4</sub>-alkyl groups, or denote a group of the formula



4,340,535

# CYTOTOXIC PRODUCTS FORMED BY COVALENT BONDING OF THE A CHAIN OF RICIN WITH AN ANTIBODY AND THE PROCESS FOR THEIR PREPARATION AND USE

Guy Volsin, Paris; Franz Jansen, Saint Gely Du Fesc, and Pierre Gros, Montpellier, all of France, assignors to C M Industries, Paris, France

Filed Sep. 27, 1979, Ser. No. 79,441

Claims priority, application France, Sep. 28, 1978, 78 27838

Int. Cl.<sup>3</sup> A61K 39/44; C07G 7/00

U.S. Cl. 260—112 B

14 Claims

1. Process for the preparation of a cytotoxic product having a covalent disulphide bond between a cytotoxic compound and an antibody, the process comprising forming a disulphide bridge between the A chain of ricin and the antibody, the antibody being an immunoglobulin or an immunoglobulin fragment and being specific for a given antigen carried by the cells which are to be destroyed.

4,340,536

# CHROME-COMPLEX DYES AND THE PRODUCTION AND USE THEREOF

Fabio Beffa, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 14, 1980, Ser. No. 149,605

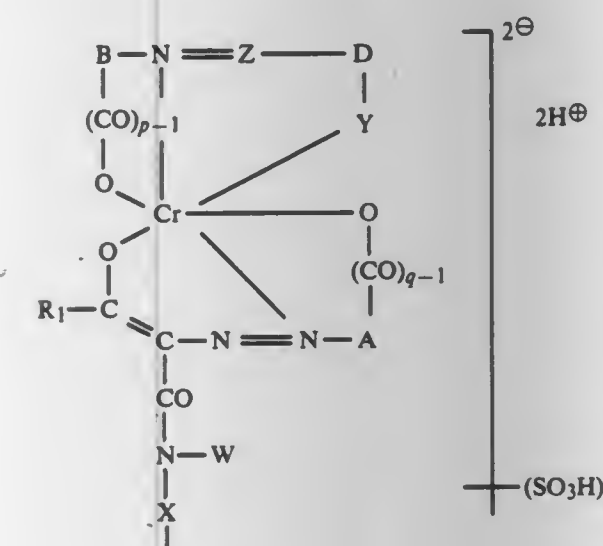
Claims priority, application Switzerland, May 23, 1979, 4839/79; Apr. 28, 1980, 3265/80

Int. Cl.<sup>3</sup> C09B 45/48, 56/04

U.S. Cl. 260—145 A

10 Claims

1. A chrome-complex dye which, in the form of the free acid, corresponds to the formula





**4,340,538**  
**PROCESS FOR PRODUCING 6 $\alpha$ -FLUORO- $\Delta^{1,4,3}$ -KETO STEROIDS**

Kenneth P. Shephard, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

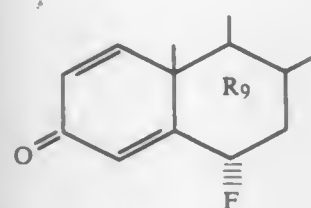
Filed Jul. 21, 1980, Ser. No. 170,790

Int. Cl.<sup>3</sup> C07J 71/00

U.S. Cl. 260—239.55 D

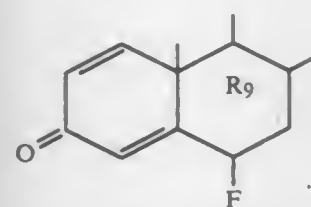
46 Claims

1. A process for preparing a 6 $\alpha$ -fluoro- $\Delta^{1,4,3}$ -keto steroid of the formula

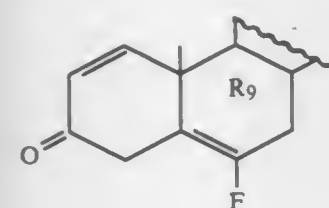


which comprises

(1) deconjugating a 6 $\beta$ -fluoro- $\Delta^{1,4,3}$ -keto steroid of the formula



by reaction with a deconjugating agent,  
 (2) quenching with a quenching agent to produce a 6-fluoro- $\Delta^{1,5,3}$ -keto steroid of the formula



(3) isolating the 6-fluoro- $\Delta^{1,5,3}$ -keto steroid (V)  
 (4) isomerizing the 6-fluoro- $\Delta^{1,5,3}$ -keto steroid (V) by reaction with an isomerizing agent and  
 (5) neutralizing with an acid where R<sub>g</sub> and are defined in the specification.

38. A process according to claim 1 where in the C ring is a 9 $\beta$ ,11 $\beta$ -epoxide or a  $\Delta^{9(11)}$ -double bond.

**4,340,539**  
**DERIVATIVES OF 6-BROMO PENICILLANIC ACID**  
 William J. Gottstein, Fayetteville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

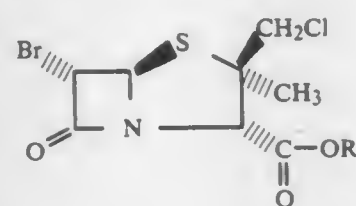
Continuation-in-part of Ser. No. 113,894, Jan. 21, 1980, abandoned. This application Dec. 11, 1980, Ser. No. 214,833

Int. Cl.<sup>3</sup> C07D 499/00

U.S. Cl. 260—245.2 R

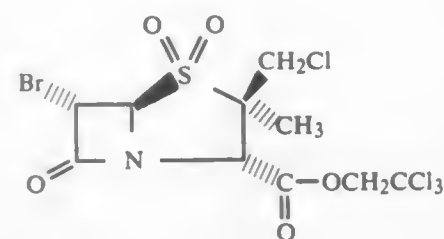
6 Claims

1. An ester having the formula



wherein R is benzyl or p-nitrobenzyl.

6. The ester having the formula



**4,340,540**  
**PREPARATION OF BASIC TRIARYLMETHANE DYESTUFFS**

Karl H. Hermann, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 26, 1980, Ser. No. 163,364

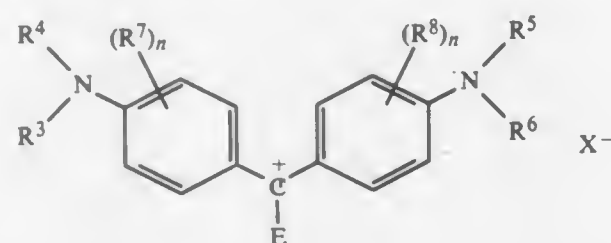
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928404

Int. Cl.<sup>3</sup> C07D 209/04; C09B 11/10

U.S. Cl. 548—440

3 Claims

1. In the preparation of a basic dyestuff of the formula



in which

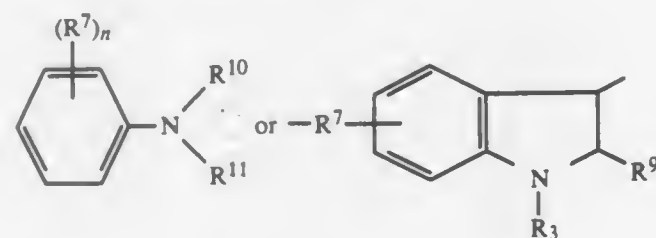
R<sup>3</sup> and R<sup>5</sup> each independently is hydrogen, C<sub>1</sub>- to C<sub>4</sub>-alkyl, hydroxyalkyl with two or three C atoms, cyanoethyl, alkoxyalkyl with a total of three to five C atoms, alkoxy-carbonylalkyl with a total of three to eight C atoms, alkyl-carbonyloxyalkyl with a total of three to eight C atoms, C<sub>1</sub>- to C<sub>4</sub>-halogenoalkyl, sulphonylalkyl with two to four C atoms, cyclohexyl, benzyl, phenyl, phenethyl, phenyl which is substituted by halogen or C<sub>1</sub>- to C<sub>4</sub>-alkyl or -alkoxy, or sulphonylbenzyl,

R<sup>4</sup> and R<sup>6</sup> each independently is C<sub>1</sub>- to C<sub>4</sub>-alkyl, hydroxyalkyl with two or three C atoms, cyanoethyl, C<sub>1</sub>- to C<sub>4</sub>-halogenoalkyl, alkoxyalkyl with a total of three to five C atoms, alkoxy-carbonylalkyl with a total of three to eight C atoms, alkyl-carbonyloxyalkyl with a total of three to eight C atoms or benzyl, or

R<sup>3</sup> and R<sup>4</sup> and/or R<sup>5</sup> and R<sup>6</sup> together form a pyrrolidine, morpholine or piperazine ring which is optionally substituted by C<sub>1</sub>- to C<sub>4</sub>-alkyl, or

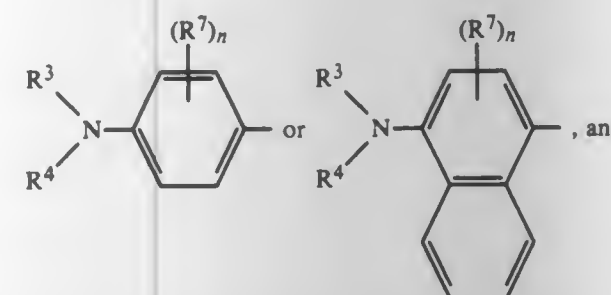
R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> and/or R<sup>6</sup>, together with the ortho position of the phenyl ring, form a tetrahydroquinoline, indoline, tulolidine, phenmorpholine, tetrahydroquinoline or carbazole ring which is optionally substituted by C<sub>1</sub>- to C<sub>4</sub>-alkyl, phenyl or benzyl,

R<sup>7</sup> and R<sup>8</sup> each independently is hydrogen, C<sub>1</sub>- to C<sub>4</sub>-alkyl, C<sub>1</sub>- to C<sub>4</sub>-alkoxy, carboxyl or halogen, n denotes an integer between 1 and 4,



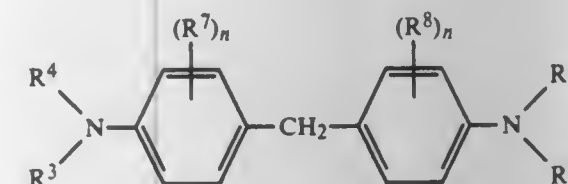
R<sup>9</sup> is H, C<sub>1</sub>- to C<sub>4</sub>-alkyl, phenyl, carboxylic acid C<sub>1</sub>- or C<sub>2</sub>-alkyl ester, carboxylic acid amide which is optionally N-

substituted by C<sub>1</sub>- to C<sub>4</sub>-alkyl, or C<sub>1</sub>- to C<sub>4</sub>-alkoxy or a radical from the synthesis existing said reactor, which comprises separating the vapor and liquid mixture exiting said evaporator into



R<sup>10</sup> and R<sup>11</sup> each independently is methyl, ethyl or hydroxy-ethyl,

the steps comprising oxidizing a compound of the formula



in the presence of a nucleophilic compound of the formula

E—H,

in the presence of quinone oxidizing agent with a catalyst comprising nitrogen oxide or compound forming it selected from the group consisting of nitrogen monoxide, nitrogen dioxide, sodium nitrite or iron-III nitrate.

**4,340,541**  
**4-(2-BENZOYLOXY-3-TERT-BUTYLAMINOPROPOXY)-2-METHYL INDOLE**

Franz Troxler, Bottmingen, and Fritz Seemann, Ettingen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland  
 Continuation of Ser. No. 34,582, Apr. 30, 1979, abandoned, which is a continuation of Ser. No. 711,906, Aug. 5, 1976, abandoned. This application Apr. 10, 1980, Ser. No. 138,901

Claims priority, application Switzerland, Aug. 15, 1975, 10714/75; Sep. 23, 1975, 12335/75; Jul. 2, 1976, 8497/76

Int. Cl.<sup>3</sup> C07D 209/08; A61K 31/40

U.S. Cl. 548—503

2 Claims

1. A compound which is 4-(2-benzoyloxy-3-tert-butylaminopropoxy)-2-methyl-indole.

**4,340,542**  
**PROCESS AND EQUIPMENT FOR THE CONTINUOUS MANUFACTURE OF TRIOXAN**

Helmüt Bär, Offenbach am Main; Herbert Mader, Nauheim; Karl-Friedrich Mück, and Paul Zorner, both of Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany  
 Filed Oct. 29, 1980, Ser. No. 201,751

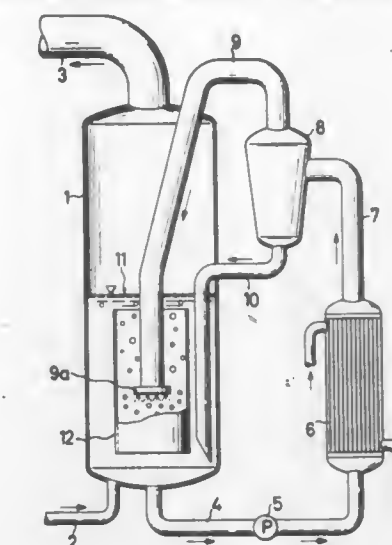
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943984

Int. Cl.<sup>3</sup> C07D 323/06

U.S. Cl. 549—368

3 Claims

1. A process for the continuous manufacture of trioxan from aqueous formaldehyde solutions in the presence of an acid catalyst in a reactor system having a forced circulation reactor cooperating with an evaporator for vaporizing the reaction mixture from said reactor to form a mixture of vapor and liquid, said reaction mixture having a residence time in the reactor system in the range of 2 to 240 minutes, the mixture of vapor and liquid exiting the evaporator being fed in below the liquid level of the reaction mixture in said reactor, the vapor



respective vapor and liquid streams and separately feeding said respective vapor and liquid streams to the reactor.

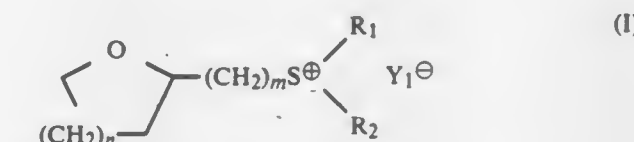
**4,340,543**  
**SULFONIUM COMPOUNDS**  
 Akihide Koda; Mikio Hori, both of Gifu; Mitsugi Yasumoto, Tokushima; Ichiro Yamawaki, Tokushima; Yuji Yamada, Tokushima, and Katsuo Takikawa, Naruto, all of Japan, assignors to Taiho Pharmaceutical Company Limited, Tokyo, Japan

Filed Feb. 3, 1981, Ser. No. 231,126  
 Claims priority, application Japan, Feb. 15, 1980, 55-18385

Int. Cl.<sup>3</sup> C07D 309/04, 307/10; A61K 31/35, 31/34  
 U.S. Cl. 549—414

9 Claims

1. A sulfonium compound represented by the formula



wherein R<sub>1</sub> and R<sub>2</sub> are each alkyl, cycloalkyl, cyclopropyl-methyl, alkylene-2-tetrahydrofuran, alkylene-2-tetrahydrofuran, alkenyl, phenyl which may be substituted with alkyl, alkoxy or halogen, aralkyl which may be substituted with alkyl, alkoxy or halogen on the benzene ring, or benzoyloxyethyl, Y<sub>1</sub> is halogen, or an inorganic acid residue or organic acid residue, n is 1 or 2, and m is an integer of 1 to 15.

**4,340,544**  
**PROCESS FOR PRODUCING 2-(2'-METHYL-1'-PROPENYL)-4-METHYLTETRAHYDROPYRAN**

Gohu Suzukamo, Ibaraki; Tetsuo Takano, Takatsuki; Mitsuhiro Tamura, Ibaraki, and Kiyoshi Ikimi, Kyoto, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 158,810, Jun. 12, 1980, Pat. No. 4,312,717. This application Jul. 31, 1981, Ser. No. 289,071

Claims priority, application Japan, Jun. 19, 1979, 54/77919; Jun. 20, 1979, 54/78602

Int. Cl.<sup>3</sup> C07D 309/303; C07C 33/02

U.S. Cl. 549—356

12 Claims

1. A process for producing 2-(2'-methyl-1'-propenyl)-4-methyltetrahydropyran which comprises the steps of anodic alkoxylation of citronellol in an alcohol in the presence of an alkali metal aromatic sulfonate as a supporting electrolyte, dealkoxylation of 2,6-dimethyl-3-alkoxyoct-1-en-8-ol in an alcohol solvent in the presence of a palladium or nickel complex and a base to obtain 2,6-dimethyl-1,3-octadien-8-ol, and



cyclization of the 2,6-dimethyl-1,3-octadien-8-ol in the presence of an acid.

12. A process for producing 2,6-dimethyl-1,3-octadien-8-ol, which comprises dealkoxylation of 2,6-dimethyl-3-alkoxyoct-1-en-8-ol in an alcohol solvent in the presence of a palladium or nickel complex and a base.

#### 4,340,545 METHOD FOR MAKING AROMATIC BIS(ETHER ANHYDRIDES)

Jimmy L. Webb, Ballston Lake, N.Y., and Bharat M. Mehta, Pittsfield, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 13, 1981, Ser. No. 253,446

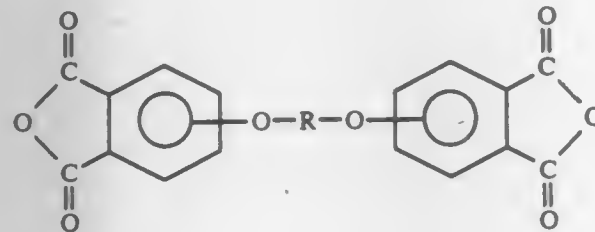
The portion of the term of this patent subsequent to May 11, 1999, has been disclaimed.

Int. Cl.<sup>3</sup> C07D 307/89

U.S. Cl. 549—241

4 Claims

1. In the process of making aromatic bis(ether phthalic anhydride)s of the formula,



comprising effecting an exchange reaction between molten aromatic bis(ether phthalimide) and phthalic anhydride in the presence of water and an imide-anhydride exchange catalyst, and thereafter extracting the resulting mixture from the exchange reaction mixture with an inert organic solvent to produce an imide-anhydride exchange product having at least 97 mole % of the aromatic bisanhydride requiring temperatures of about 200° C. and pressures up to 500 psi whereby high pressure extraction equipment is required creating hazardous extraction conditions, the improvement which comprises increasing by a factor of at least 2, the number of times extraction of the imide anhydride exchange mixture is effected with the inert organic solvent, whereby the exchange product having at least 97 mole % of bisanhydride can be recovered at temperatures of about 160° C. or less and the need for high pressure equipment and hazardous extraction conditions is substantially avoided where R is a C<sub>(6-30)</sub> divalent organic radical.

#### 4,340,546 PROCESS FOR THE REDUCTION OF UNSATURATED CARBOXYLIC ACIDS

Gail M. Qualeatti, and Dalia Germanas, both of Des Plaines, Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Mar. 9, 1981, Ser. No. 241,870

Int. Cl.<sup>3</sup> C11C 3/12

U.S. Cl. 260—409

11 Claims

1. A process for the reduction of an unsaturated carboxylic acid comprising treating an unsaturated carboxylic acid in a reaction system in the presence of hydrogen and a reduction catalyst comprising cadmium and rhenium composited on a solid support at treatment conditions, continuously bleeding hydrogen from said reaction system during the reaction period, and recovering the resultant unsaturated product.

#### 4,340,547 PROCESS FOR CONCENTRATING A FLOW OF LIPIDS IN SOLVENT

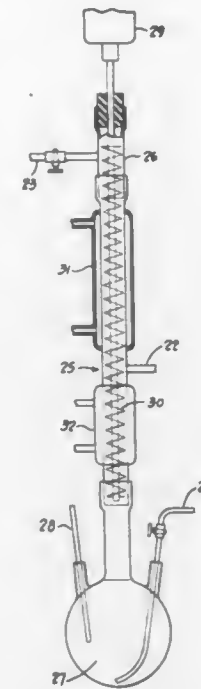
Daniel R. Pate, Strongsville; Robert R. Delaney, Medina, and John J. Shuleva, Parma, all of Ohio, assignors to SCM Corporation

Continuation-in-part of Ser. No. 129,182, Mar. 10, 1980, abandoned. This application Jun. 2, 1981, Ser. No. 269,750

Int. Cl.<sup>3</sup> C09F 5/10; C11B 3/00

U.S. Cl. 260—428.5

25 Claims



1. A flow process for concentrating lipid and solvent therefor, said lipid being precipitable in solid phase from solution of same in said solvent, which comprises:

feeding lipid and solvent in fluent condition into a chamber having major and minor outlets, the feeding being intermediate to said outlets, and there being not substantially more than about 20 parts by weight solvent per part lipid; withdrawing lipid and solvent from said outlets, the amount of lipid and solvent withdrawn from said major outlet being greater than the amount of lipid and solvent withdrawn from said minor outlet thereby establishing within said chamber a major net flow of lipid and solvent directed toward said major outlet and a minor net flow of lipid and solvent directed toward said minor outlet; establishing temperature of said major net flow below the temperature at which a portion of said lipid therein will precipitate in solid phase therefrom, as said major net flow approaches said major outlet; transporting solid phase lipid from the region of said major net flow into the region of said minor net flow; maintaining temperature of said minor net flow about said minor outlet sufficiently elevated for at least partially redissolving or remelting solid phase lipid within said chamber prior to said withdrawing, the ratio of lipid to solvent in said lipid and solvent withdrawn from said minor outlet being greater than that withdrawn from said major outlet.

#### 4,340,548 PROCESS FOR THE PREPARATION OF PERHALOALKANOYL CHLORIDE

Louis G. Anello, Hamburg; Richard E. Elbeck, Orchard Park, and Martin A. Robinson, East Amherst, all of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 15, 1980, Ser. No. 216,033

Int. Cl.<sup>3</sup> C07C 51/58

U.S. Cl. 260—544 Y

14 Claims

1. A process for preparation of perhaloalkanoyl chloride, which comprises contacting a 1,1,1-trichloroperhaloalkane with an effective amount of a sulfur trioxide-containing sub-

stance selected from the group consisting of oleum, SO<sub>3</sub> and stabilized SO<sub>3</sub> in the presence of a catalytic amount of a halogen catalyst, wherein the 1,1,1-trichloroperhaloalkane is a straight or branched chain acyclic organic compound having 2 to 8 carbon atoms and having at least one trihalomethyl group wherein at least one halo atom is fluorine, having the remaining carbon atoms substituted by chlorine or fluorine atoms.

#### 4,340,549 DUAL INPUT CARBURETOR

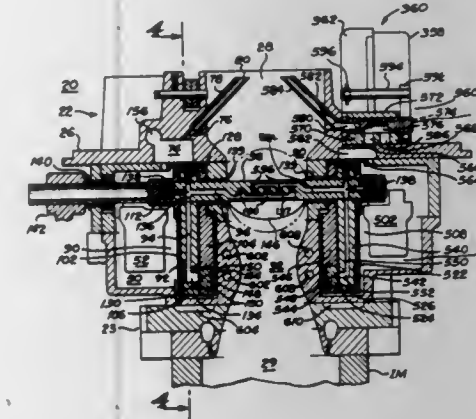
Robert E. McKim, 1884 Fifth St., Oroville, Calif. 95905

Filed Mar. 27, 1981, Ser. No. 248,527

Int. Cl.<sup>3</sup> F02M 7/20

U.S. Cl. 261—144

53 Claims



1. An improved carburetor for a liquid cooled internal combustion engine having an intake manifold, the carburetor having an air horn, a venturi section, a throat and a throttle valve disposed within the venturi section, with the improvement comprising:

- a spray bar rotatable on an axis extending transversely across the venturi section for rotatably supporting the throttle valve within the venturi section, said spray bar having at least one internal passageway extending along the length of said spray bar and having a plurality of openings in communication with said passageway;
- a first liquid reservoir;
- first liquid delivery means for conveying a first liquid from said first liquid reservoir to said spray bar internal passageway, said first liquid delivery means including first, flow regulating means for regulating the flow rate of the first liquid through said first liquid fuel delivery means in response to the rotational orientation of said spray bar;
- vacuum actuated second flow regulating means for regulating the flow rate of the first liquid through said first liquid delivery means in response to the level of manifold vacuum;
- thermally activated third flow regulating means for regulating the flow rate of the first liquid through said first liquid delivery means in response to both engine coolant temperature and intake manifold temperature, said third flow regulating means operating in series with said second flow regulating means, and restraining the capacity of said second flow regulating means to vary the rate of flow of the first fuel based on the temperature of the engine coolant and the intake manifold;
- a second liquid reservoir;
- second liquid delivery means for conveying a second liquid from said second liquid reservoir to said spray bar internal passageway, said second liquid delivery means including fourth flow regulating means for varying the flow rate of the second liquid through said second liquid delivery means in response to the rotational orientation of said spray bar; and
- fifth flow regulating means for varying the flow rate of the second liquid through said second liquid delivery means in response to engine temperature.

#### 4,340,550 OLIGOMER PELLETS OF ETHYLENE TEREPHTHALATE

Chungfah H. Ho, Kinston, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 24, 1980, Ser. No. 209,324

Int. Cl.<sup>3</sup> B01J 2/06

U.S. Cl. 264—13

3 Claims



1. A process for producing free-flowing pellets of ethylene terephthalate oligomer comprising forcing a molten ethylene terephthalate oligomer having an intrinsic viscosity of from about 0.08 to 0.15 through a plurality of orifices of an orifice plate under pressure into an inert gas zone to form jets of the oligomer which dissociate into spherical droplets under the influence of surface tension, allowing the droplets to fall through the inert gas zone into a body of water to solidify the droplets into pellets, said body of water being at a distance of about 20 to 40 inches from said orifice plate, and removing the pellets from the water.

#### 4,340,551 INJECTION MOLDED ARTICLES WITH IMPROVED SURFACE CHARACTERISTICS, PRODUCTION OF SAME AND APPARATUS THEREFOR

Akihiro Wada, Inagi; Kichiya Tazaki, Yokohama; Tamotsu Tahara, Omiya; Hiroshi Suzuki, Tokyo, and Yukihisa Mizutani, Kawasaki, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 177,184

Int. Cl.<sup>3</sup> H05B 1/00

U.S. Cl. 264—25

3 Claims



1. A method of injection molding thermoplastic resins or thermoplastic resins containing reinforcing material and/or fillers comprising:

heating selective inner surface areas of a metal mold by high-frequency induction heating to a temperature above the heat distortion temperature of the resin; injecting molten resin into the mold, thereby flowing the molten resin composition adjacent to the inner surface area of the mold to form a skin layer consisting substantially of only the resin; and cooling the mold, opening the mold, and removing a molded article.

#### 4,340,552 MELT SPINNING SOLUTION DYED FILAMENTS AND IMPROVED SPIN PACK THEREFOR

John S. Roberts, Howell, N.J., assignor to Kling-Tecs, Inc., Mantoloking, N.J.

Filed Feb. 23, 1981, Ser. No. 236,767

Int. Cl.<sup>3</sup> B28B 7/04

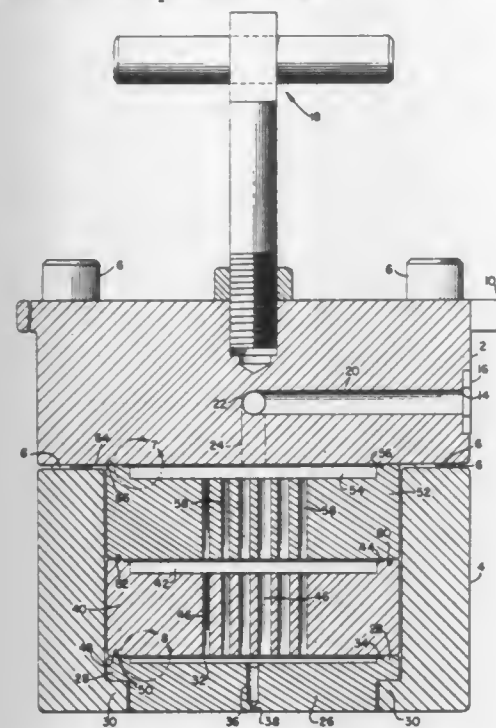
U.S. Cl. 264—39

6 Claims

1. A method of melt spinning solution dyed polypropylene filaments with quicker color changes, comprising:



passing solution dyed polypropylene melt of a first color at a temperature below 385° F. through a spin pack containing a spinnerette having a plurality of capillaries therein; passing the solution dyed melt downwardly through at least three shallow horizontally disposed cavities while passing through said spin pack, each of said cavities containing a set of mesh screens which occupies at least one-third the depth of the cavity so occupied and through which sets of screens said melt passes, one of said sets of screens being in contact with the spinnerette; and



extruding the solution dyed melt through said capillaries to form a plurality of solution dyed filaments of said first color; then, when it is needed to change color, cutting off said first color and passing natural polypropylene melt through said spin pack without interrupting extrusion; and immediately thereafter, without interrupting extrusion, passing solution dyed polypropylene melt of a second color through said spin pack to form a plurality of filaments of said second color, the color change from said first color to said second color being effected quickly and completely by purging through said spin pack.

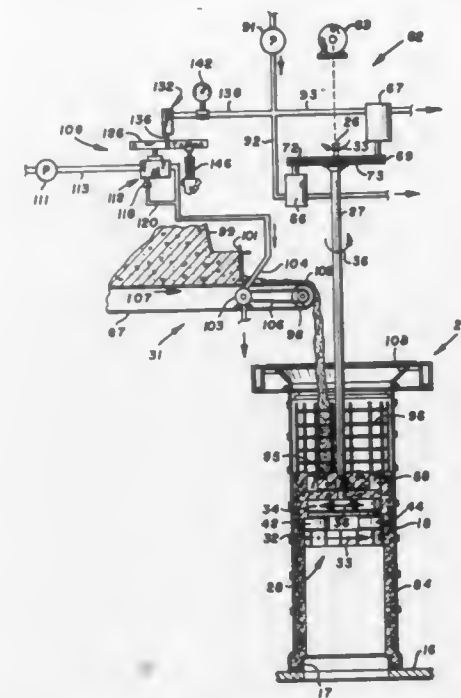
**4,340,553**  
**MACHINE AND METHOD FOR MAKING CONCRETE PRODUCT**

Navarro T. Fosse, Nashua, Iowa, assignor to Hydrotile Machinery Company, Nashua, Iowa  
Continuation-in-part of Ser. No. 974,303, Dec. 29, 1978, abandoned. This application Sep. 18, 1980, Ser. No. 188,301  
Int. Cl.<sup>3</sup> B28B 21/26, 13/02

U.S. Cl. 264—40.7 46 Claims

1. A method of making a concrete product in a mold having a chamber having a lower portion and an open top with a machine having a packerhead assembly comprising an upper packerhead unit having a plurality of roller means and annular trowel means located radially inward of the roller means rotatable in one direction and having means fixedly mounting a finned impeller to the upper packerhead unit for rotation therewith, and a lower packerhead unit having concrete working means located radially outward of said annular trowel means rotatable in a direction opposite the one direction, said upper packerhead unit comprising: positioning the packerhead assembly in the lower portion of the chamber of the mold, discharging the concrete into said chamber to provide a supply of concrete on top of said upper packerhead unit, controlling the discharge of said concrete into said chamber to maintain a generally constant supply of concrete on top of said upper packerhead unit in response to the amount of torque required to rotate the

upper packerhead unit, moving said packerhead assembly longitudinally in said chamber from the bottom to the top thereof, packing concrete in an annular space between said upper packerhead unit and said mold with the roller means by rotating the upper packerhead unit in one direction during the longitudinal movement thereof, moving the supply of concrete radially outwardly by said finned impeller as the same rotates with said upper packerhead, metering said packed concrete to

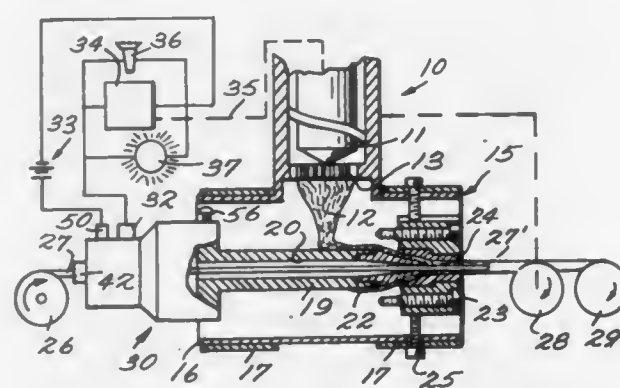


said lower packerhead unit with said trowel means, and further packing said packed concrete with said concrete working means by rotating the lower packerhead unit in a direction opposite the direction of rotation of the upper packerhead unit during said longitudinal movement thereof, and removing the completed concrete product from said mold.

**4,340,554**  
**METHOD AND APPARATUS FOR EXTRUSION COATING OF A CABLE INVOLVING GUIDER TIP PROTECTION FROM AN OVERSIZED PORTION OF THE CABLE**

Robert G. Bardwell, Rte. 1, Box 60, Starkville, Miss. 39759  
Filed Sep. 29, 1980, Ser. No. 192,031  
Int. Cl.<sup>3</sup> B29F 3/10; G01B 3/34

U.S. Cl. 264—40.7 12 Claims

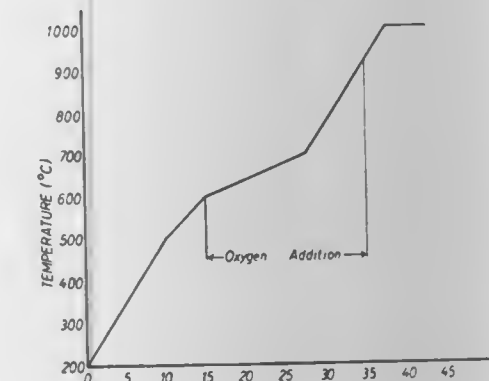


1. A method of forming insulated cable from uninsulated cable utilizing a molten insulation extruder, a cable guiding mandrel, a forming die, and a guider tip of the mandrel, comprising the steps of:  
(a) feeding uninsulated cable from a source to the guiding mandrel;  
(b) extruding molten cable insulation between the guider tip and forming die to coat the cable with insulation;  
(c) continuously withdrawing the coated cable from the forming die;

(d) sensing the cross-sectional dimensions of the uninsulated cable during feeding thereof to the guiding mandrel; and  
(e) generating a signal in response to the uninsulated cable sensing if any cross-sectional dimension of the uninsulated cable is greater than a predetermined amount.

**4,340,555**  
**MANUFACTURE OF CERAMIC ARTICLES**  
James W. Procter, 12 Victoria St., Southport, PR9 ODU, Merseyside, England  
Continuation of Ser. No. 857,968, Dec. 6, 1977, abandoned. This application Mar. 19, 1980, Ser. No. 131,572  
Claims priority, application United Kingdom, Dec. 8, 1976, 51102/76

Int. Cl.<sup>3</sup> C04B 33/32  
U.S. Cl. 264—65 13 Claims

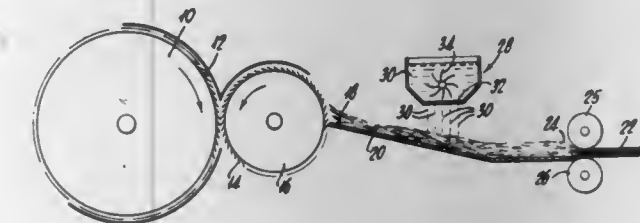


1. In the process for the manufacture of ceramic products from carbonaceous clay comprising heat-treating shaped articles of carbonaceous clay in a kiln wherein carbon is removed by oxidation, the improvement comprising adding essentially pure oxygen to the kiln separately from the fuel to increase the oxygen level in the kiln during oxidation of the carbon content of the clay.

**4,340,556**  
**PRODUCTION OF FIBROUS SLIVER HAVING PARTICULATE MATTER DISTRIBUTED THERETHROUGH**

Evelyn Ciencewicz, South River, N.J., assignor to Personal Products Company, Milltown, N.J.  
Filed Dec. 5, 1980, Ser. No. 213,439  
Int. Cl.<sup>3</sup> D04H 1/04

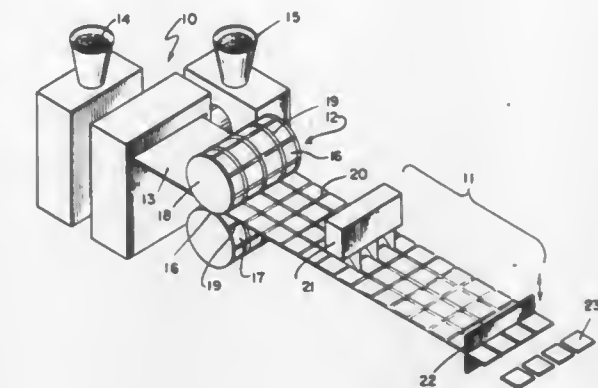
U.S. Cl. 264—119 9 Claims



1. A method for producing a fibrous sliver having particulate material distributed therethrough wherein the largest dimension of said fibrous material is at least 1.5 times that of the particulate material, said method comprising:  
first forming a gossamer-like web;  
compacting said gossamer-like web to form a low weight web of fibrous material having a weight per unit area of from about 0.015 to about 0.10 times that desired in the finished sliver;  
depositing said particulate material only onto said low weight web; and  
compacting the web by reducing its width by a factor of about 10.0 to about 66.7 to form the sliver.

**4,340,557**  
**METHOD OF MAKING UNFESTOONED PLASTIC CONTAINERS FROM POLYGONAL BLANKS**  
Robert M. Gross, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

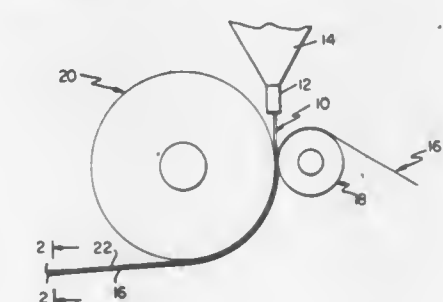
Filed Dec. 16, 1980, Ser. No. 216,747  
Int. Cl.<sup>3</sup> B29D 23/10  
U.S. Cl. 264—146 18 Claims



1. A method of preventing festooning effect on a container produced by scrapless forming process comprising providing a thermoplastic sheet material, impressing surface grooves on said sheet material, severing within said grooves to separate said sheet material into individual blanks, each blank having sufficient material to form a container, each blank having a pair of major faces located substantially parallel to one another and having a minor surface provided by said impressing step, said minor surface extending outwardly from said major faces and presenting a smooth surface commensurate to that of said major faces and an essentially unsmooth surface provided by said severing step, thereafter forging said blank in a forging mold heated to a temperature at least as high as the softening temperature of the thermoplastic material of said blank to form a preform, and forming said preform into a container.

**4,340,558**  
**SCRIM REINFORCED PLASTIC FILM**  
Thomas C. Hendrickson, South River, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.  
Division of Ser. No. 683,555, May 5, 1976, abandoned. This application Dec. 7, 1979, Ser. No. 101,234  
Int. Cl.<sup>3</sup> B29C 17/00

U.S. Cl. 264—151 12 Claims

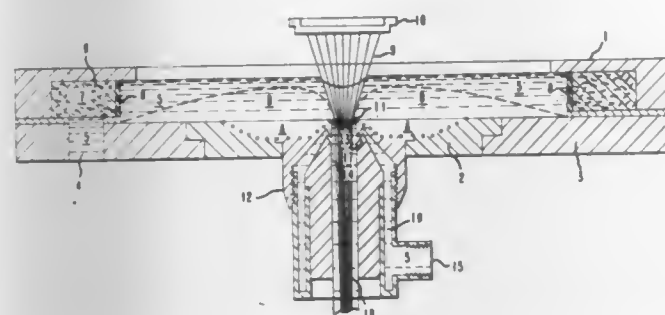


1. Process for preparing a scrim-reinforced film composite comprising the steps of feeding hot molten synthetic non-metallic plastic material from a source in a state of high fluidity onto and into an unsupported scrim in the form of a sheet or web having a network of spaced strands, said plastic material being in a molten highly fluid state when it first contacts said scrim and being caused to flow into and around the scrim network under such conditions and in such manner that the molten plastic while still fluid flows over, between and around said strands whereby to completely cover and coat said strands on opposite sides and completely occupy the spaces between said strands, and then cooling said covered scrim to solidify the



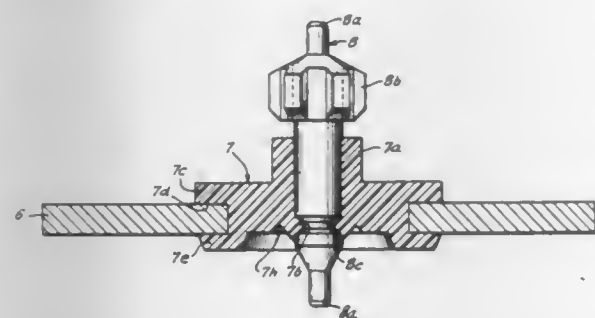
plastic material to produce a scrim-film composite wherein the scrim is completely enclosed by said plastic material.

**4,340,559**  
**SPINNING PROCESS**  
 Hung H. Yang, Richmond, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
 Filed Oct. 31, 1980, Ser. No. 202,737  
 Int. Cl.<sup>3</sup> D01D 5/14  
 U.S. Cl. 264—181 6 Claims



1. A process for spinning high strength, high modulus aromatic polyamide filaments from aromatic polyamides having an inherent viscosity of at least 4.0 whose chain extending bonds are coaxial or parallel and oppositely directed by extruding downwardly an anisotropic solution in 98.0-100.2% sulfuric acid having a polyamide concentration of at least 30 g/100 ml solvent through a layer of noncoagulating fluid into a coagulating bath whereby overflowing coagulating liquid passes downwardly through an orifice along with the filaments, the filaments are separated from the coagulating liquid, forwarded at 500 to 2,000 m/min., washed, dried and wound up, wherein a shallow bath is used, said bath having sufficient width to provide substantially horizontal nonturbulent flow of coagulating liquid toward said orifice and having no more than a minor portion of the total coagulating liquid lower than the entrance of said orifice within the area of nonturbulent flow adjacent to said orifice, the orifice having a length to diameter ratio of 3 or less and the cross-sectional area of the orifice being such as to provide a mass flow ratio of quench liquid/polymer of 25-200.

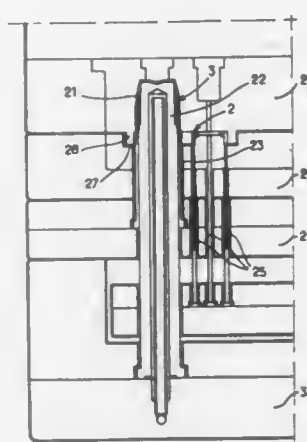
**4,340,560**  
**METHOD FOR MAKING A ROTOR ASSEMBLY**  
 Jean P. Migeon, Audeux, France, assignor to Timex Corporation, Waterbury, Conn.  
 Division of Ser. No. 109,594, Jan. 4, 1980, abandoned. This application Jul. 31, 1981, Ser. No. 288,970  
 Int. Cl.<sup>3</sup> B29D 3/00; B29C 17/00  
 U.S. Cl. 264—249 4 Claims



1. A method for making a rotor assembly for a stepping motor, comprising:  
 (a) mounting a hub of molded thermoplastic material onto a shaft having a circumferential groove intermediate the shaft ends, said hub having a generally cylindrical body with one end including a first preformed annular shoulder extending radially outward to provide an alignment sur-

face for rotor location and the other end disposed around the groove in said shaft,  
 (b) disposing an annular rotor disc having oppositely facing flat sides onto the cylindrical body of the hub with one flat side thereof abutted against the alignment surface of the preformed annular shoulder to effect proper alignment of the rotor disc on the shaft, and  
 (c) working with heat and pressure outer and inner portions of said other hub end adjacent the other flat side of the mounted rotor disc to form in situ a second annular shoulder extending radially outward and spaced from the first preformed annular shoulder to clamp the rotor disc therebetween against said alignment surface, and to form in situ a circumferential lip extending radially inward into the circumferential groove on the shaft to thereby prevent axial movement of the hub on the shaft, said working being localized at said other end adjacent the other flat side of the rotor disc so as not to distort the preformed annular shoulder and associated alignment surface of the hub.

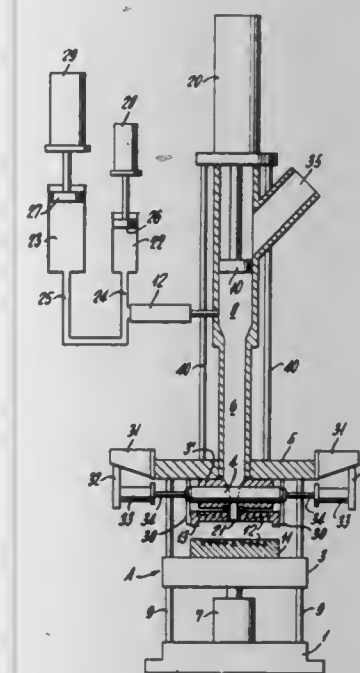
**4,340,561**  
**PROCESS FOR THE MANUFACTURE OF A HOLDER FOR A DEODORIZING AND DISINFECTING PRODUCT FOR TOILET PANS**  
 Bertrand Cretin, Tours, and Andre Godefroy, Neuville-Pont-Pierre, both of France, assignors to L'Oreal, Paris, France  
 Filed Aug. 13, 1980, Ser. No. 177,813  
 Claims priority, application France, Aug. 29, 1979, 79 21659  
 Int. Cl.<sup>3</sup> B28B 3/06  
 U.S. Cl. 264—297 4 Claims



1. A process of manufacturing, by moulding from plastics material, a holder which comprises a perforated cage intended to contain a stick of deodorising and disinfecting product for toilet pans, and a suspension hook having a connecting ring portion, the perforated cage being comprised of two half-cages each of which has an end flange, the half-cages being joined by their end flanges with the connecting ring of the suspension hook being fixed to the cage by being snapped around at least one half-cage end flange, said method comprising simultaneously injection moulding the suspension hook and one half-cage onto the end flange of which the connecting ring of the hook is to be snapped, the suspension hook and half-cage being injection-moulded in the same mould, but inside two separate moulding cavities, the mould comprising a die and a core engaging within the die to define the moulding cavity for the half-cage, a releasing sleeve surrounding the said core and movable relative thereto for stripping a formed half-cage from the core, a releasing plate cooperable with the die, the moulding cavity for the suspension hook being delimited by the die, the releasing sleeve and the releasing plate, and ejectors for separately displacing the releasing plate and the releasing sleeve relative to the core and for displacing a moulded half-cage/suspension hook unit from the releasing plate, and following moulding the mould is opened, the die is separated from the core, the releasing plate which carries the moulded hook is displaced by at least one of said ejectors parallel to the

core axis until the connecting ring of the hook snaps around the end flange of the moulded half-cage carried by the core, the releasing plate and the releasing sleeve are displaced by means of at least one ejector to detach the half-cage/suspension hook unit from the core, and the ejectors are displaced relative to the releasing plate so as to release the half-cage/suspension hook unit from the latter.

**4,340,562**  
**PROCESS FOR PRODUCING A MOLDED ARTICLE**  
 Laurence H. Gross, Bridgewater, and Marvin E. Sauers, Belle Mead, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.  
 Continuation-in-part of Ser. No. 113,345, Jan. 18, 1980, abandoned. This application Feb. 18, 1981, Ser. No. 235,462  
 Int. Cl.<sup>3</sup> B29G 3/00  
 U.S. Cl. 264—328.2 14 Claims

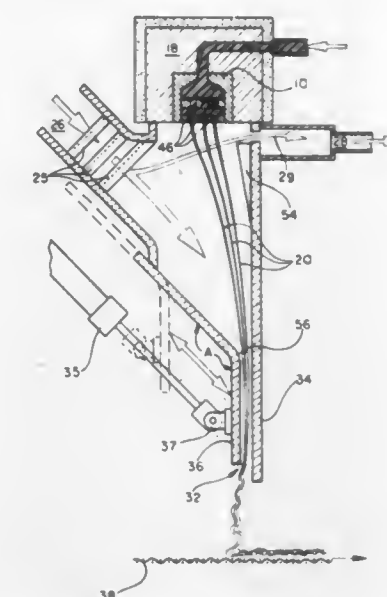


1. A process for producing a fiber reinforced thermoset resin article which comprises the steps of (a) providing in a distributing zone, an intimate mixture of one or more fibers with a melting point or a glass transition temperature above about 130° C., having a fiber length greater than about 0.5 centimeters, and a liquid resin having a viscosity of less than about 3000 centipoise at 25° C., (b) injecting said mixture into the cavity of a closed matched metal die mold, thereby filling said cavity with said mixture; (c) heating said mixture so as to cause an exothermic reaction to occur in said mold, and (d) opening said mold and recovering a thermoset molded article therefrom.

**4,340,563**  
**METHOD FOR FORMING NONWOVEN WEBS**  
 David W. Appel, Wittenberg, and Michael T. Morman, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.  
 Filed May 5, 1980, Ser. No. 146,450  
 Int. Cl.<sup>3</sup> B29J 5/00  
 U.S. Cl. 264—518 8 Claims

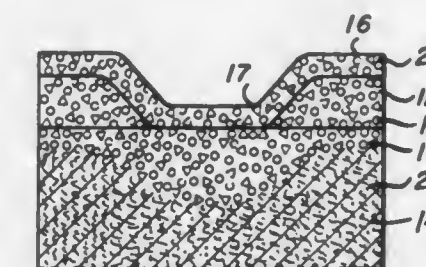
1. Method of forming a nonwoven web comprising the steps of,  
 (a) forming one or more rows of closely spaced filaments by spinning molten polymer streams;  
 (b) directing said spun filaments through a low pressure quench chamber;  
 (c) contacting said filaments with a low pressure quenching fluid at a temperature cooler than said filaments within said quench chamber to produce substantially nontacky

filaments while maintaining said filament cross machine distribution substantially constant;



(d) drawing said filaments nonductively in a nozzle by substantially uniformly accelerating the quenching fluid to a uniform high velocity in a nozzle; and  
 (e) collecting said filaments as a web of entangled filaments.

**4,340,564**  
**IMMUNOADSORPTIVE SURFACE COATING FOR SOLID-PHASE IMMUNOSUBSTRATE AND SOLID-PHASE IMMUNOSUBSTRATE**  
 Richard A. Harte, Redwood City, and Max Bart, San Jose, both of Calif., assignors to Daryl Laboratories, Inc., Santa Clara, Calif.  
 Filed Jul. 21, 1980, Ser. No. 170,632  
 Int. Cl.<sup>3</sup> G01N 33/50, 31/22  
 U.S. Cl. 422—56 2 Claims



1. A solid-phase immunoreactive immunosubstrate for use in immunological assay determinations comprising:  
 a solid-phase surface;  
 a water based emulsion of dispersed latex polymer beads coating said surface and including latex polymer beads, water and an emulsifying agent to promote the emulsification of said beads within said water, said beads being of microdiameter size and composed of one of the substances from the group consisting of acrylic polymers, polyvinyl acetate polymers and butadiene-styrene copolymers, and formed with a diameter of from 0.1 microns up to 1.0 microns, said coating further including a source of light scattering centers added to said coating to improve its fluorescent properties, whereby the concentration by weight of the components of said coating is approximately 15% light scattering centers, 15% polymer beads, 69% water and a 1% emulsifying agent;  
 an overcoating disposed over said coating and composed of a liquid emulsion having a composition by weight which includes 10-20% light scattering centers and 16-25% latex polymer beads of substantially identical size to those contained in said coating, plus a water vehicle in an amount sufficient to equal 100%, and having added to each 100 milliliters thereof, 0.5 grams of carboxymethyl cellulose, 1



milliliter of polyvinyl alcohol and 1 milliliter of hydroxypropylmethyl cellulose; and an immunoreagent applied to at least one of said coating and said overcoating and adsorbed thereto to form an immunoreactive immunosubstrate for use in specific immunoreactions which require said immunoreagent.

4,340,565

**HEMATOCRIT VALUE DETERMINING ELEMENT**  
Masao Kitajima; Fuminori Arai, and Asaji Kondo, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

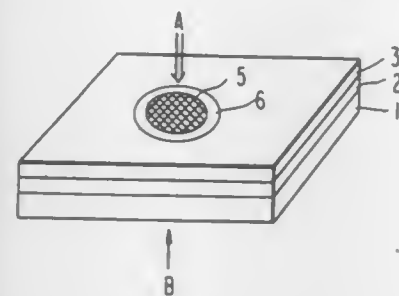
Filed Dec. 29, 1980, Ser. No. 221,183

Claims priority, application Japan, Dec. 28, 1979, 54-173624

Int. Cl.<sup>3</sup> G01N 33/50, 33/52

U.S. Cl. 422-56

17 Claims



1. A hematocrit value determining element comprising a water-impermeable planar support having integrally provided thereon a porous spreading layer which has a hydrophilic surface and in which the surface of the internal voids or the interior is hydrophilic and water-insoluble, said porous spreading layer being such that blood spreads therethrough depending upon the spreading nature of the blood, wherein the porous spreading layer has a mean pore diameter ranging from about 0.1  $\mu\text{m}$  to about 2.5  $\mu\text{m}$  and wherein the porous spreading layer comprises a layer of a non-fibrous porous material or a fibrous porous material which has a yarn number count of about 100 to about 200.

4,340,566

**CATALYST REGENERATION APPARATUS**  
Gregory J. Thompson, Waukegan, and Anthony G. Vickers, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 101,295, Dec. 7, 1979, Pat. No. 4,285,908, which is a continuation-in-part of Ser. No. 908,301, May 22, 1978, Pat. No. 4,197,189. This application Mar. 2, 1981, Ser. No. 239,814

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> B01J 8/32; B01J 8/44; F27B 15/08, 15/10  
U.S. Cl. 422-143 1 Claim

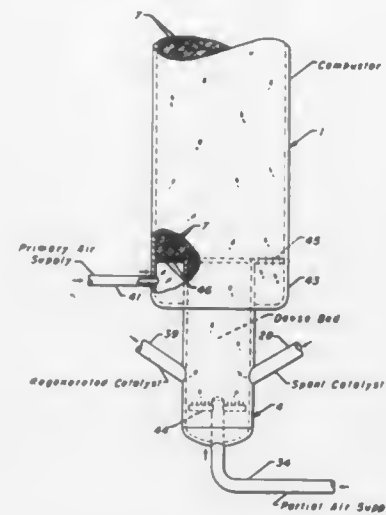
1. A regeneration apparatus for regenerating spent catalyst with a regeneration gas which comprises a combination of:

(a) a vertical mixer zone having at the lower portion thereof a spent catalyst inlet, a regenerated catalyst inlet and a secondary fluidizing gas inlet for passage of a minor portion of said fluidizing gas, and having at the uppermost portion thereof an upwardly directed outlet for passage of a mixture of spent and regenerated catalyst, said uppermost portion terminating at the inlet means of the catalyst chamber of (b);

(b) a relatively dense-phase fluidized bed catalyst chamber having at least twice the diameter of said mixer zone and having at the bottommost portion thereof an inlet means for receiving a mixture of spent and regenerated catalyst, and having a regenerated catalyst and spent regeneration gas outlet means at the top portion of said chamber for removal of regenerated catalyst and spent regeneration gas in admixture from said chamber, wherein the peripher-

ies of said inlet means and said mixer zone outlet are connected with a substantially horizontal perforated surface in the transfer section of (c);

(c) a transfer section possessing a primary regeneration gas inlet, said transfer section comprising said substantially horizontal perforated surface having an outside perimeter intermediate the outside perimeters of said chamber and said mixer zone, said horizontal surface containing multiple perforations connective with said primary regeneration gas inlet for passage of a major portion of said regeneration gas into said chamber, said transfer section located above said spent catalyst, said regenerated catalyst and said fluidizing gas inlets of said mixer zones; and



(d) a regenerated catalyst receiving zone in communication with said chamber outlet means, said receiving zone containing a spent regeneration gas outlet means for the withdrawal of spent regeneration gas from said regeneration apparatus, an upper regenerated catalyst outlet means for the withdrawal from said regeneration apparatus of a portion of regenerated catalyst and a regenerated catalyst recycle conduit connected to said mixer zone by means of said regenerated catalyst inlet for the passage of a portion of said regenerated catalyst from said receiving zone through said conduit and said inlet to said mixer zone.

4,340,567

Patent Not Issued For This Number

4,340,568

**SUPER HARD HIGHLY PURE SILICON NITRIDES AND A PROCESS AND APPARATUS FOR PRODUCING THE SAME**

Toshio Hirai, and Koichi Niihara, both of Sendai, Japan, assignors to The Research Institute for Iron, Steel and Other Metals of the Tohoku University, Japan

Continuation of Ser. No. 926,613, Jul. 21, 1978, abandoned, which is a division of Ser. No. 756,282, Jan. 3, 1977, Pat. No. 4,118,539. This application Jan. 28, 1980, Ser. No. 115,728  
Claims priority, application Japan, Jan. 13, 1976, 51-2468

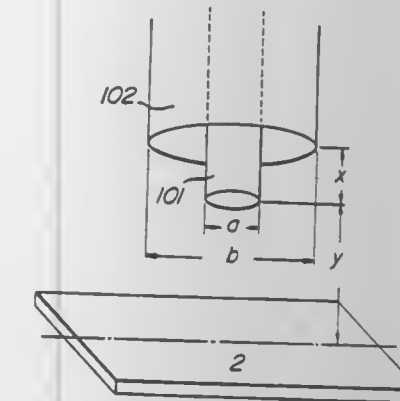
Int. Cl.<sup>3</sup> C30B 35/00

U.S. Cl. 422-245

1 Claim

1. An apparatus for producing super hard highly pure silicon nitrides, comprising a container, a means for clamping and heating a substrate accommodated in the container, and a blowpipe for blowing each of a nitrogen depositing source and a silicon depositing source on the substrate, said blowpipe being composed of a pipe assembly wherein a first pipe for said nitrogen depositing source is surrounded with a second pipe for said silicon depositing source so as to surround a gas stream

of said nitrogen depositing source with a gas stream of said silicon depositing source and a distance from an opening end of



the first pipe to the substrate is shorter than a distance from an opening end of the second pipe to the substrate.

4,340,569

**TREATMENT OF CARBONYLATION RESIDUES**  
Walter C. Davidson, Mahwah, N.J., and Richard V. Porcelli, Yonkers, N.Y., assignors to The Halcon SD Group, Inc., New York, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,180

Int. Cl.<sup>3</sup> C01G 55/00

U.S. Cl. 423-22

16 Claims

1. In a process for recovering Group VIII noble metals bound to residues of noble metal catalyzed carbonylation reactions comprising separating said residues, vaporizing the volatile components therefrom to produce a reduced residue, treating the reduced residues with an amine, and extracting said noble metals from said treated reduced residue with an aqueous halogen acid, the improvement comprising treating said residues with an alkanol or mixture thereof and thereafter vaporizing the volatile components at low temperatures and a suitable vacuum, thereby improving the subsequent recovery of said noble metals.

4,340,570

**RECOVERY OF RHODIUM FROM CARBONYLATION RESIDUES**

Walter C. Davidson, Mahwah, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,181

Int. Cl.<sup>3</sup> C01G 55/00

U.S. Cl. 423-22

10 Claims

1. A process for recovering Group VIII noble metals from the residues of noble metal catalyzed carbonylation reactions comprising:

- separating said residues from the carbonylation reaction mixture;
- vaporizing the volatile components of said residues of (a) at low temperatures under vacuum and recovering a heavy material therefrom;
- treating said heavy material of (b) with a reagent comprising an amine in an amount sufficient to free a portion of said noble metals bound to said residue;
- extracting said treated heavy material of (c) with an aqueous halogen acid in the presence of a solvent able to dissolve heavy material, thereby recovering a portion of said noble metals in said aqueous acid;
- evaporating said solvent of (d) and recovering a dissolved residue depleted in noble metal;
- repeating steps (c) (d) and (e) until a predetermined desired fraction of the noble metal in the heavy material of (b) has been removed.

4,340,571

**PROCESS FOR CHROME RECOVERY FROM INDUSTRIAL WASTE AND THE LIKE, AS FROM CHROME-LADENED TANNERY WASTE**

James E. Cartier, Saco, Me., assignor to Saco Tanning Division of Kirslein Leather Co., Saco, Me.

Division of Ser. No. 916,464, Jun. 19, 1978, Pat. No. 4,215,989.

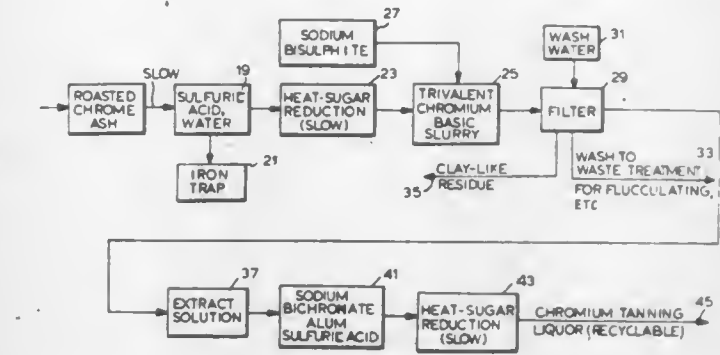
This application May 1, 1980, Ser. No. 145,737

The portion of the term of this patent subsequent to Aug. 5, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> C01G 37/00, 37/08

U.S. Cl. 423-53

4 Claims



1. A process for reclaiming chromium from roasted chromium ash resulting from the incineration of industrial waste, the ash containing chromium in substantially completely the hexavalent state, the process comprising the steps of mixing the ash with sulfuric acid and water to form an acid-ash slurry; adding a reducing agent to the slurry to convert the hexavalent chromium to the trivalent state; filtering the slurry and reducing agent mixture to provide an extract solution of trivalent chromium and a residue; and water-washing the residue to remove extract solution remaining in the residue after said filtering and to provide an aqueous wash solution, said extract solution and said aqueous wash solution providing said reclaimed chromium.

4,340,572

**PROCESS FOR RECOVERING HEAT FROM STACK OR FLUE GAS**

Dan Ben-Shmuel, St. Johnsville, and Philip Zacuto, Johnstown, both of N.Y., assignors to Woodside Construction, Inc., Johnstown, N.Y.

Filed May 19, 1978, Ser. No. 907,667

Int. Cl.<sup>3</sup> C01B 17/00

U.S. Cl. 423-242

11 Claims

1. A method of recovering usable heat from a hot stream of waste stack gas or flue gas having particulate loading and including noxious products of combustion gases including sulfur dioxide which, when exposed to cool heat exchange surfaces will produce condensed active corrosive liquids, said method comprising:

- as a first heat exchange step, bringing an aqueous liquid into direct physical contact with the hot gas stream whereby to extract heat from said stream and raise the temperature of the aqueous liquid and at the same time to cleanse said stream by
- dispersing the particulate loading in the aqueous liquid and
- dissolving said noxious gases in said aqueous liquid
- so that a dirty heated liquid aqueous medium and a cool cleansed gas stream are produced, and further so that the noxious gases are removed as a dilute aqueous solution thereof and in an environment such that the dilute aqueous solution of dissolved noxious gases is innocuous,
- said aqueous liquid being an aqueous solution containing a dissolved alkaline medium selected from the group consisting of the hydroxide, sulfite and carbonate of sodium, potassium, lithium and ammonia,



- (B) then as a second heat exchange step, passing the dirty heated liquid aqueous medium with dispersed particulate loading and dissolved noxious gases in indirect heat exchange with a cooler fluid working medium such as process water, potable water, boiler feed water, air for space heating, and combustion air;
- (C) whereby the dirty heated liquid aqueous medium is cooled and the cooler fluid medium is heated so that the heat from the hot gas stream by means of said two heat exchange steps raises the temperature of the fluid medium without dirtying the fluid medium and without producing corrosive liquids from said noxious gases during the second heat exchange step, and
- (D) discharging at least a fraction of the cooled dirty aqueous liquid medium to waste.

11. A method of recovering usable heat from a hot stream of waste stack gas or flue gas having particulate loading and including noxious products of combustion gases which, when exposed to cool heat exchange surfaces will produce condensed active corrosive liquids, said method comprising:

- (A) as a first heat exchange step, bringing an aqueous liquid into direct physical contact with the hot gas stream whereby to extract heat from said stream and raise the temperature of the aqueous liquid and at the same time to cleanse said stream by
- (i) dispersing the particulate loading in the aqueous liquid and
- (ii) dissolving said noxious gases in said aqueous liquid
- (iii) so that a dirty heated liquid aqueous medium and a cool cleansed gas stream are produced, and further so that the noxious gases are removed as a dilute aqueous solution thereof and in an environment such that the dilute aqueous solution of dissolved noxious gases is innocuous,
- (B) then as a second heat exchange step, passing the dirty heated liquid aqueous medium with dispersed particulate loading and dissolved noxious gases in indirect heat exchange with a cooler fluid working medium such as process water, potable water, boiler feed water, air for space heating, and combustion air;
- (C) whereby the dirty heated liquid aqueous medium is cooled and the cooler fluid medium is heated so that the heat from the hot gas stream by means of said two heat exchange steps raises the temperature of the fluid medium without dirtying the fluid medium and without producing corrosive liquids from said noxious gases during the second heat exchange step, and
- (D) discharging at least a fraction of the cooled dirty aqueous liquid medium to waste.

4,340,573

## PREPARATION OF ZEOLITES

David E. W. Vaughan, Columbia; Grant C. Edwards, Silver Spring, and Michael G. Barrett, Laurel, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 731, Jan. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 880,194, Feb. 22, 1978, abandoned, which is a continuation-in-part of Ser. No. 822,310, Aug. 5, 1977, abandoned, which is a continuation of Ser. No. 742,943, Nov. 18, 1976, abandoned, which is a continuation of Ser. No. 653,695, Jan. 30, 1976, abandoned. This application Jan. 9, 1980, Ser. No. 211,888

The portion of the term of this patent subsequent to Dec. 11, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> C01B 33/26

U.S. Cl. 423—328

3 Claims

1. A method for preparing a crystalline aluminosilicate zeolite-forming seed composition having the mol ratio formula:



which comprises:

- (a) mixing a sodium aluminate solution with a sodium silicate

solution to obtain a gel having the following mol ratio formula:



- (b) agitating and reacting the gel obtained in step (a) at a temperature of from about 10° to 80° C. for about ¼ to 96 hours; and
- (c) adding water to the gel obtained in step (b) with agitation to obtain a homogeneous fluid seed composition having the mol ratio formula:



4,340,574

## PROCESS FOR THE PRODUCTION OF ULTRAHIGH PURITY SILANE WITH RECYCLE FROM SEPARATION COLUMNS

Larry M. Coleman, Tonawanda, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Aug. 28, 1980, Ser. No. 182,148

Int. Cl.<sup>3</sup> C01B 33/04

U.S. Cl. 423—347

7 Claims

1. In the process for the production of silane from metallurgical grade silicon which process includes the steps of (i) reacting metallurgical grade silicon with hydrogen and silicon tetrachloride at elevated temperature and pressure in a hydrogenation reaction zone to form trichlorosilane and dichlorosilane; (ii) separating tri- and dichlorosilane as an overhead stream and unreacted silicon tetrachloride as a bottom stream in a first distillation zone; (iii) separating said overhead stream of tri- and dichlorosilane in a second distillation zone to form a dichlorosilane-rich overhead stream and a trichlorosilane-rich bottom stream; (iv) recycling said unreacted silicon tetrachloride bottom stream to said hydrogenation reaction zone; (v) subjecting said dichlorosilane-rich overhead of (iii) to temperature and pressure conditions capable of causing the disproportionation thereof in a first disproportionation reaction zone containing an ion exchange resin capable of catalyzing said disproportionation reaction, thereby forming a mixture of silane and chlorosilanes; (vi) subjecting said trichlorosilane-rich bottom stream of (iii) to temperature and pressure conditions capable of causing the disproportionation thereof in a second disproportionation reaction zone containing an ion exchange resin capable of catalyzing said disproportionation reaction, thereby forming a mixture of chlorosilanes and silicon tetrachloride; (vii) recycling said mixtures of chlorosilanes and silicon tetrachloride of (vi) to said first distillation zone; (viii) separating said mixture of silane and chlorosilanes of (v) in a third distillation zone to form a product silane overhead stream and a chlorosilane-rich bottom stream; (ix) recycling said chlorosilane-rich bottom stream from said third distillation zone to said second distillation zone; and (x) recovering silane product from said third distillation zone, the improvement which comprises bleeding a portion of the trichlorosilane-rich bottom stream of (iii) said bleed portion containing one or more of  $\text{BCl}_3$ ,  $\text{PCl}_3$  and  $\text{AsCl}_3$  impurities and adding said portion to the unreacted silicon tetrachloride bottom recycle stream of (iv) and bleeding a portion of the chlorosilane-rich bottom stream of (viii) said bleed portion containing one or more of  $\text{B}_2\text{H}_6$ ,  $\text{PH}_3$  and  $\text{AsH}_3$  impurities and adding said portion to the unreacted silicon tetrachloride bottom recycle stream of (iv), wherein the respective bleed portions of the trichlorosilane-rich bottom stream of (iii) and chlorosilane-rich bottom stream of (viii) are 0.01 to 0.1 percent of their respective bottom streams.

4,340,575

MANUFACTURE OF HYDROXYLAMMONIUM SALTS  
Guenther Rapp; Kurt Jockers, both of Ludwigshafen, and Erwin Thomas, Freinsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany  
Filed Sep. 15, 1978, Ser. No. 942,658

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743297

Int. Cl.<sup>3</sup> C01B 21/20

U.S. Cl. 423—387

2 Claims

1. A process for the manufacture of hydroxylammonium salts comprising the catalytic reduction of nitric oxide with hydrogen in a dilute aqueous mineral acid in the presence of a suspended platinum catalyst at an elevated temperature, wherein the reaction is carried out in vessels of which the walls consist of conventional copper-free molybdenum-containing austenitic chromium-nickel steels which, in addition to iron, consist essentially of from 16 to 28% by weight of chromium, from 20 to 50% by weight of nickel, from 1 to 4% by weight of molybdenum and at most 0.1% by weight of carbon and which in addition contain an amount of titanium which is at least 5 times the amount of carbon but is not more than 1.0% by weight, or an amount of niobium or tantalum which is at least 8 times the amount of carbon but is not more than 1.5% by weight.

4,340,576

## HIGH PRESSURE REACTION VESSEL FOR GROWING DIAMOND ON DIAMOND SEED AND METHOD THEREFOR

Herbert M. Strong, Schenectady, N.Y., assignor to General Electric Company, Worthington, Ohio

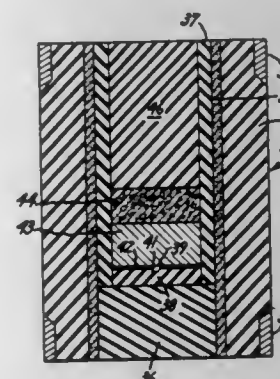
Continuation of Ser. No. 412,190, Nov. 2, 1973, abandoned. This application May 9, 1980, Ser. No. 148,214

The portion of the term of this patent subsequent to Mar. 30, 1999, has been disclaimed.

Int. Cl.<sup>3</sup> C01B 31/06

U.S. Cl. 423—446

30 Claims



7. In the process for producing diamond material wherein a reaction vessel containing (a) diamond seed material and (b) a source of carbon separated by (c) a mass of catalyst-solvent material for the diamond-making process is subjected to simultaneous pressurizing and heating at a pressure and temperature in the diamond stable region of the phase diagram for carbon; said source of carbon, said catalyst-solvent material and said diamond seed material being disposed in said vessel so that during said pressurizing and heating a predetermined temperature gradient exists between said diamond seed material and said source of carbon such that said diamond seed material is at the minimum value of temperature for said temperature gradient while said source of carbon is at the maximum value of temperature for said temperature gradient, the improvement of inhibiting diamond growth in the peripheral vicinity of said diamond seed material at least until substantial diamond growth has developed from said diamond seed material by the use of a layer of nucleation suppressing material, different from said mass of catalyst-solvent material, disposed in contact with the underside of the mass of catalyst-solvent material in the area peripheral to said diamond seed material, said nucleation suppressing material being a metal capable of holding back

diamond nucleation at least until the seeded growth becomes quite large, well formed and capable of accepting the full carbon flux selected from the group consisting of cobalt, iron, manganese, titanium, chromium, tungsten, vanadium, niobium, tantalum, zirconium, and alloys of the preceding metals, said metal capable of holding back diamond nucleation thereby suppressing unwanted spontaneous diamond nucleation the diamond seed material being in direct contact with the mass of catalyst-solvent to allow unrestricted diamond growth from the seed material freely into the mass of catalyst-solvent under the operating conditions, whereby diamond growth greater than about 1/20 carat is produced.

4,340,577

## PROCESS FOR PRODUCING CARBON BLACK

Kohichi Sugawara; Isamu Matsui; Naoki Ishimaru, all of Ohmura, and Teruhiro Ikegami, Taimeimachi, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,433

Claims priority, application Japan, Mar. 11, 1980, 55-30777

Int. Cl.<sup>3</sup> C01B 31/02; C09C 1/48

U.S. Cl. 423—450

5 Claims

1. A process for producing carbon black, comprising: simultaneously ejecting streams of thermally decomposing acetylene and a partially burning hydrocarbon selected from the group consisting of ethylenically unsaturated hydrocarbons, aromatic hydrocarbons, monocyclic unsaturated hydrocarbons and polycyclic unsaturated hydrocarbons in the presence of oxygen from separate sources allowing initiation of the decomposing and combustion reactions before said streams converge, and immediately mixing the materials in the streams such that the bulk of the decomposition and combustion reactions occur while all of the materials are combined in a single zone in a reaction furnace, whereby said carbon black product is produced having the ability to adsorb hydrogen chloride in amounts greater than 17.0 ml/5 g of carbon black.

4,340,578

## OXYGEN PRODUCTION BY MOLTEN ALKALI METAL SALTS

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401  
PCT No. PCT/US78/00149, § 371 Date Jul. 15, 1980, § 102(e)  
Date Jul. 15, 1980, PCT Pub. No. WO80/01066, PCT Pub. Date May 29, 1980

Continuation-in-part of Ser. No. 799,945, May 24, 1977, Pat. No. 4,132,766. This PCT application Nov. 16, 1978, Ser. No. 198,139

Int. Cl.<sup>3</sup> C01B 13/02

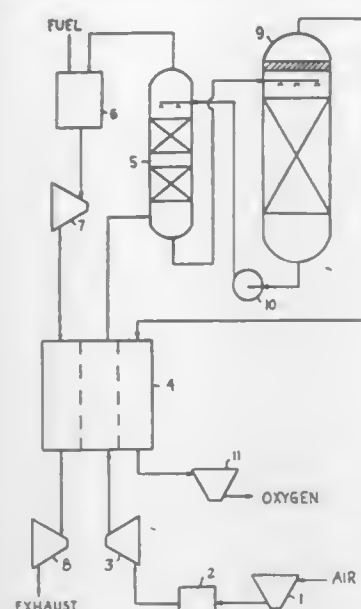
U.S. Cl. 423—579

7 Claims

1. A continuous process for separating oxygen from air comprising reacting an oxygen acceptor with air in an absorption reaction, separately decomposing the oxidized oxygen acceptor to yield oxygen and regenerated oxygen acceptor, and recycling the oxygen acceptor, characterized in that the



oxygen acceptor is a molten solution of alkali metal salt comprised of a cation composition of sodium and potassium cations



and an anion composition of 50 to 94% nitrate, 4 to 25% nitrite, and 2 to 25% combined peroxide and superoxide.

#### 4,340,579 PROCESS FOR PRODUCING MODIFIED ALUMINA HYDRATE CRYSTALS

Jorg F. Greber, Bonn, and Gunter Winkhaus, Königswinger, both of Fed. Rep. of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn, Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 98,846

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852273

Int. Cl.<sup>3</sup> C01F 7/02

U.S. Cl. 423—625 8 Claims  
1. A process for producing modified gibbsite alumina trihydrate particles which comprises:

stirring a Bayer process lye solution which contains caustic lye and dissolved aluminum oxide to obtain a slightly supersaturated solution and subsequently heating said solution to a sufficient temperature to convert it to an undersaturated state, adding to said undersaturated solution a predetermined amount of gibbsite alumina trihydrate crystals to form a suspension and maintaining said suspension for a sufficient time to convert said crystals to modified particles, said crystals having a mean crystal diameter of between about 40 and 100 microns and having substantially sharp edges and rough surfaces, said modified particles having a mean particle diameter of less than about 35 microns and less than about 0.1 percent by volume of said particles having a diameter of less than about 2 microns, said particles further having substantially rounded edges and smooth surfaces.

#### 4,340,580 METHOD OF PRODUCING HYDROGEN

Masahiro Suzuki, 423, Yasaka, Kakegawa-shi, Shizuoka, Japan  
Continuation-in-part of Ser. No. 93,660, Nov. 13, 1979, Pat. No. 4,269,818. This application Apr. 16, 1981, Ser. No. 254,580  
Claims priority, application Japan, Nov. 13, 1978, 53-139632  
Int. Cl.<sup>3</sup> C01B 1/07

U.S. Cl. 423—657 5 Claims

1. A method for producing hydrogen by the reaction between magnesium and water, which comprises the steps of: immersing a magnesium electrode and a second electrode in an aqueous electrolyte solution, and applying a direct or an alternating current voltage between said electrodes for activating the magnesium electrode until the surface of the magnesium electrode turns blackish in color and is thereby activated so that the magnesium electrode will

rapidly react with water over an extended period of time to generate a large volume of hydrogen; and then immersing the activated magnesium electrode in sea water or an aqueous neutral salt solution, without applying a voltage thereto, and thereby generating hydrogen.

4,340,581  
PROCESS FOR THE IMMUNOLOGICAL  
DETERMINATION OF BASAL MEMBRANE MATERIAL  
AND NEW BASAL MEMBRANE SUITABLE THEREFOR  
Rupert Timpl, Krailing, Fed. Rep. of Germany, assignor to  
Max-Planck-Gesellschaft zur Förderung der Wissenschaften  
e.V., Göttingen, Fed. Rep. of Germany  
Filed May 30, 1980, Ser. No. 154,735  
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1979, 2923583

Int. Cl.<sup>3</sup> G01N 33/56, 33/58; C07G 7/00

U.S. Cl. 424—1 18 Claims

1. Process for the immunological determination of basal membrane material in body fluids, which process comprises incubating a tagged basal membrane antigen selected from tagged laminin, tagged laminin fragment P1 and tagged basal membrane fragment 7S collagen, with a first antibody specific to said antigen in the presence of the body fluid sample to be tested, whereby antigens in the body fluid sample will compete with said tagged antigen for said antibody, separating the antigen-antibody-complex formed, and determining the quantity of tagged antigen contained in the complex or in the separated liquid as a measure of the basal membrane material contained in said body fluid.

4,340,582  
ERYTHROMYCIN BASE TABLETS  
Douglas C. Kriesel, Lake Bluff, and Shashi P. Mehta, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.  
Filed Jan. 15, 1981, Ser. No. 225,214  
Int. Cl.<sup>3</sup> A61K 9/36, 31/71

U.S. Cl. 424—35 9 Claims

1. An enteric coated erythromycin base tablet consisting essentially of a tablet core and a tablet coating, said core consisting essentially of 250 parts of erythromycin base in the form of its dihydrate, 35 to 100 parts of a highly water soluble orally nontoxic ingestible salt, and 40 to 165 parts of lubricants, binders, diluents and disintegrants, and said core being coated from a solution consisting essentially of 16 to 25 parts of hydroxypropyl methylcellulose phthalate in an ethanol/water mixture containing pigments, plasticizers, dyes and flavoring agents, said core forming an integral and impervious envelope over said core, and, if desired, a further, outer and clear coating applied from a solution containing said hydroxypropyl methylcellulose phthalate, plasticizer and flavoring components in an ethanol/water mixture.

4,340,583  
HIGH FLUORIDE COMPATIBILITY DENTIFRICE  
ABRASIVES AND COMPOSITIONS

Satish K. Wason, Churchville, Md., assignor to J. M. Huber Corporation, Locust, N.J.  
Division of Ser. No. 41,952, May 23, 1979, Continuation of Ser. No. 862,384, Dec. 20, 1977, abandoned. This application Sep. 23, 1980, Ser. No. 189,880  
Int. Cl.<sup>3</sup> A61K 7/16, 7/18

U.S. Cl. 424—52 8 Claims

1. A toothpaste composition, comprising:  
A. from about 6% to 35% by weight of a precipitated silica abrasive material which is a precipitated amorphous silicon dioxide prepared from fresh water alkali metal silicate by acidulation, which has been intimately reacted with a solution of an hydroxide or an oxide or a salt or a sufficiently water soluble form of an alkaline earth metal so as to have present about 10-300 parts per million of alkaline earth

metal ions in said amorphous silicon dioxide, said amorphous silicon dioxide exhibiting a Radio-active Dentin Abrasion value of at least 40, an average particle size of from about 5 to 15 microns in diameter, a pack density of about 0.24 to 0.55 grams per milliliter, an oil absorption of about 70-95 cc/100 grams, a BET surface area of about 100-250 m<sup>2</sup>/g, and a percent loss on ignition of about 4-6%;

B. from about 0.01% to 3.0% by weight of a water-soluble, fluorine containing material which yields fluoride ions in aqueous solution;

C. from about 3% to 55% by weight of a humectant;

D. from about 0.2% to 2.0% by weight of a binding agent; and

E. from about 15% to 80% by weight of water; said composition providing a pH of from about 4 to 8 when slurried with water in a 3:1 water/composition weight ratio.

#### 4,340,584 THERAPEUTIC DENTIFRICES IN UNLINED CONTAINER AND METHODS

Satish K. Wason, Churchville, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Division of Ser. No. 946,678, Sep. 28, 1978, Pat. No. 4,244,707, which is a division of Ser. No. 826,901, Aug. 24, 1977, Pat. No. 4,159,280, which is a continuation-in-part of Ser. No. 723,345, Sep. 15, 1976, abandoned. This application Dec. 1, 1980, Ser. No. 211,896

Int. Cl.<sup>3</sup> A61K 7/16, 7/18; B65D 81/24, 81/26  
U.S. Cl. 424—52 7 Claims

1. A therapeutic dentifrice toothpaste composition contained in and compatible with the interior surface of an unlined aluminum tube containing said composition and which will not stain or otherwise corrode said unlined aluminum tube, said dentifrice composition comprising about 0.1 to 0.2 weight percent of a fluoride therapeutic agent, a solid phase, a substantially pure demineralized deionized water liquid phase, a binder to prevent separation of the liquid and solid phases, a silica abrasive, and a fluoride corrosion and staining preventing amount of an alkaline earth metal ion, said amount being from 50 ppm to less than 2000 ppm, which amount is insufficient to stoichiometrically interfere with fluoride availability in said dentifrice toothpaste, said alkaline earth metal ion being essentially provided to said dentifrice toothpaste composition as an essential component of the silica abrasive composition, said silica abrasive having an RDA value of between 200 and 400, being selected from the group consisting of amorphous precipitated silica, sodium aluminosilicates, silica xerogels, and mixtures thereof, said silica abrasive having been pretreated with a water soluble alkaline earth metal compound which will provide said alkaline earth metal ions which are selected from the group consisting of calcium ion, magnesium ion, strontium ion, and mixtures thereof, said silica abrasive being used at loadings of at least about 15-30 weight percent in the dentifrice composition and said abrasive composition being prepared by contacting said alkaline earth metal compound with said silica abrasive prior to incorporation into said dentifrice toothpaste composition.

#### 4,340,585 SALIFIED ANIONIC RESIN FOR CHOLESTEROL AND LIPID LOWERING

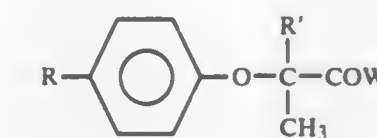
Valerio Borzatta; Manlio Cristofori, both of Bologna, and Angelo Brazzi, Budrio, all of Italy, assignors to Alfa Farmaceutici, S.p.A., Bologna, Italy  
Filed Dec. 11, 1979, Ser. No. 102,614

Claims priority, application Italy, Dec. 21, 1978, 3631 A/78  
Int. Cl.<sup>3</sup> A61K 31/74; C08F 8/10, 8/30, 8/32

U.S. Cl. 424—79 5 Claims

1. A non-toxic cholestyramine resin, said resin being capable of binding itself permanently to the biliary acids, said resin

being salified with an acid corresponding to the general formula:



wherein:

R' represents a hydrogen atom, an alkyl group having 1 to 3 carbon atoms, a hydroxyalkyl group having 1 to 3 carbon atoms,

R represents a chlorine atom or a group selected from the group consisting of p-chlorobenzoyl, p-bromobenzoyl and p-fluorobenzoyl,

W represents a group selected from the group consisting of OH, —N(R'')—CH(R''')—(CH<sub>2</sub>)<sub>n</sub>—COOH and O—CH<sub>2</sub>—COOH wherein n represents a number from 0 to 5, R'' represents a hydrogen atom, a benzyl, a phenyl or a phenyl substituted with an OH group, a lower alkyl, a lower alkoxy or a lower hydroxyalkyl group and R''' represents a hydrogen atom or a lower alkyl.

5. A pharmaceutical preparation orally administrable to lower the cholesterol and lipid content in the blood, containing as an active substance the salified resin of any one of claims 1-4 in an effective dosage amount therefor, together with adjuvants.

#### 4,340,586 PHARMACEUTICAL PREPARATION FOR TREATING DISORDERS OF THE SKIN

Adam Bekierkunst, and Haim A. Cohen, both of Alcharisi 21, Jerusalem, Israel

Filed Feb. 18, 1977, Ser. No. 769,960

Int. Cl.<sup>3</sup> A61K 39/02

U.S. Cl. 424—92 3 Claims

1. A method for the treatment of a disorder of the skin of a human or other mammal selected from the group consisting of mycosis fungoids, basal cell carcinoma, *keratosis solaris*, Bowen squamous cell carcinoma, *Kaposi sarcoma*, *leishmaniasis diffusa*, adenocarcinoma and melanoma, which comprises disinfecting the affected area and adjacent areas of the skin, removing the stratum corneum by repeated applications of pressure sensitive type, applying an effective amount of ointment, consisting essentially of an amount sufficient of killed mycobacteria BCG and cord factor (trehalose-6,6-dimycolate) to effectively treat mycosis fungoids, basal cell carcinoma, *Kaposi sarcoma*, *leishmaniasis diffusa*, adenocarcinoma and melanoma, in a vehicle suitable for topical pharmaceutical application and capable of efficiently maintaining the active ingredients at the desired location on the skin for 24 to about 48 hours, said amount sufficient of the active ingredients constituting from 1.5 mg to 75 mg per gram of said ointment of said killed mycobacteria and from 0.07 mg to 0.15 mg of said cord factor per gram of ointment, covering same with an impervious wrap, and leaving same in place for a period of time of about 24 to 48 hours.

#### 4,340,587 REPELLANT COMPOSITION AND METHOD OF USE

Steve J. Antonik, Mt. Prospect, Ill., assignor to National Repellents, Inc., Mt. Prospect, Ill.

Filed Dec. 13, 1979, Ser. No. 103,341

Int. Cl.<sup>3</sup> A01N 63/02

U.S. Cl. 424—95 4 Claims

1. A composition for introduction into a seawater environment of pinfish for reducing normal physical activity of the pinfish and for disrupting and adversely affecting the capability of the pinfish to function normally.



said composition comprising an aqueous dispersion of whole lyophilized ground fireflies, and said fireflies are in the seawater in a concentration of at least about one firefly per liter of seawater.

**4,340,588**  
**BRUCellosis VACCINE FOR CATTLE CONTAINING MYCOLATE ESTERS OF TREHALOSE**  
 Lynn F. Woodard, Lewiston, Id., assignor to Research Corporation, New York, N.Y.  
 Continuation-in-part of Ser. No. 134,767, Mar. 28, 1980, abandoned. This application Mar. 11, 1981, Ser. No. 239,507  
 Int. Cl.<sup>3</sup> A61K 39/10, 31/72

U.S. Cl. 424—92 **4 Claims**  
 1. A vaccine comprising 0.1 mg/ml to 5 mg/ml of whole, killed *Brucella abortus* 45/20 cells together with a mono- or diester of trehalose as an adjuvant wherein the esterifying moiety is a mycolic acid containing from 30 to 90 carbon atoms in an immunologically acceptable carrier, the weight ratio of cells to adjuvant being from 1:1 to 20:1.  
 3. A method of immunizing cattle against *Brucella abortus* infection which comprises administering to cattle to be immunized an immunologically effective dose of a vaccine comprising 0.1 mg/ml to 5 mg/ml of whole killed *Brucella abortus* 45/20 cells together with a mono- or diester of trehalose as an adjuvant wherein the esterifying moiety is a mycolic acid containing from 30 to 90 carbon atoms in an immunologically acceptable carrier, the weight ratio of cells to adjuvant being from 1:1 to 20:1.

**4,340,589**  
**ANTITHROMBIN PREPARATION AND PROCESS FOR THE PRODUCTION THEREOF**  
 Yaihiro Uemura, Hirakata; Midori Nagatomo, Takatsuki; Satoshi Funakoshi, Katano, and Tadakazu Suyama, Kyoto, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan  
 PCT No. PCT/JP79/00154, § 371 Date Feb. 18, 1981, § 102(e) Date Feb. 17, 1981, PCT Pub. No. WO80/02798, PCT Pub. Date Dec. 24, 1980  
 PCT Filed Jun. 18, 1979, Ser. No. 237,125  
 Int. Cl.<sup>3</sup> A61K 35/14  
 U.S. Cl. 424—101 **15 Claims**  
 1. A freeze-dried antithrombin preparation containing an effective quantity of antithrombin-III and an effective quantity of at least one member selected from the group consisting of albumin, urokinase, gelatin, mannitol, heparin, glycine and lysine as stabilizer therefore.

**4,340,590**  
**METHOD FOR REDUCING OR INHIBITING ECCHYMOsis IN SKIN TISSUES WITH INORGANIC SELENIUM COMPOSITIONS**  
 Joseph R. Levitt, New York, N.Y. (now by change of name Joseph R. Lundy), assignor to Lundy Research Laboratories, Inc., New York, N.Y.  
 Continuation-in-part of Ser. No. 821,156, Aug. 2, 1977, abandoned. This application Oct. 18, 1979, Ser. No. 86,391  
 Int. Cl.<sup>3</sup> A61K 33/38, 33/04  
 U.S. Cl. 424—132 **7 Claims**  
 1. A therapeutic method for reducing or inhibiting ecchymosis in the skin tissue of humans and for accelerating the recovery thereof, said method comprising administering to the host a composition comprising

(i) a water soluble inorganic selenium compound capable of being absorbed by the tissue to be treated of the host, said inorganic compound selected from salts wherein the selenium is present in the form of selenate or selenite anions and the cation is pharmaceutically acceptable and  
 (ii) a non-toxic pharmaceutically acceptable carrier or diluent therefor;  
 said composition being administered so as to provide the equivalent of 0.05 mg–1.0 mg of elemental selenium per day to the host in single or multiple dose form by means selected from oral, topical, parenteral, and intravenous infusion.

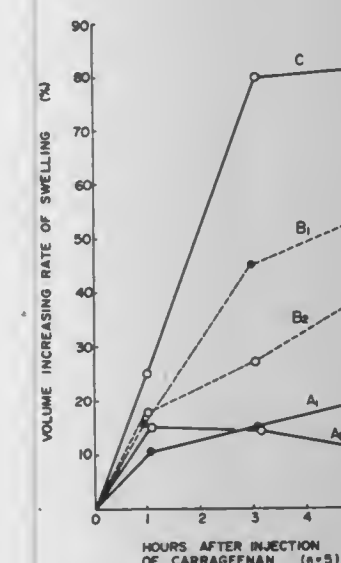
**4,340,591**  
**PROCESS FOR OBTENTION OF THE OVOMUCOID FRACTION AND AN OVOMUCOID EXTRACT OF QUAIL EGG, PRODUCTS SO OBTAINED AND THEIR USE AS A MEDICAMENT**  
 Gerard Lucotte, Le Fete par Arny-le-Duc, and Jerome Talamon, Paris, both of France, assignors to Societe Coturnix, Paris, France  
 Filed May 6, 1980, Ser. No. 147,125  
 Claims priority, application France, May 7, 1979, 79 11523  
 Int. Cl.<sup>3</sup> A61K 37/00

U.S. Cl. 424—177 **15 Claims**  
 1. A process for obtaining the ovomucoid fraction of quail egg which comprises:  
 (1) adding trichloroacetic acid in solution in acetone to quail egg white;  
 (2) separating the supernatant from the reaction medium;  
 (3) adding acetone to the supernatant so obtained;  
 (4) dissolving the precipitate obtained in step (3) in water and dialyzing the solution obtained against water;  
 (5) filtering the resulting solution through a membrane having a cut-off of about 10,000;  
 (6) then subjecting the filtered solution to chromatographic separation and recovering all the fractions having anti-trypsin activity;  
 (7) effecting an acid hydrolysis of the fraction obtained in step (6), in the presence of pepsin; and  
 (8) recovering the fraction that has antitrypsin activity by filtration on gel.  
 12. A quail egg ovomucoid extract, characterized in that it has a molecular weight of about 14,000, its terminal N is valine, and in that it has a single ring in immunoelectrophoresis and possesses no tryptophan.

**4,340,592**  
**NUTRIENT COMPOSITIONS AND METHOD OF ADMINISTERING THE SAME**  
 Siamak A. Adibi, 1154 Wightman St., Pittsburgh, Pa. 15217  
 Continuation-in-part of Ser. No. 130,309, Mar. 14, 1980, abandoned. This application Jan. 26, 1981, Ser. No. 227,127  
 Int. Cl.<sup>3</sup> A61K 37/00  
 U.S. Cl. 424—177 **12 Claims**  
 1. A nutrient composition comprising an aqueous solution containing from one to 20 weight percent of at least two oligopeptides selected from the class consisting of dipeptides and tripeptides, wherein the said oligopeptides include a single glycine unit which is the N-terminal amino acid residue of the oligopeptide.

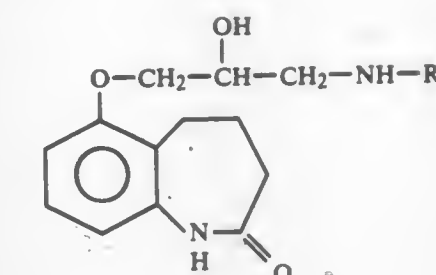
**4,340,593**  
**Patent Not Issued For This Number**

**4,340,594**  
**FAT EMULSION CONTAINING STEROID**  
 Yutaka Mizushima, Kawasaki; Kazumasa Yokoyama, Toyonaka; Kiichiro Nabeta, Sennan; Noboru Yamada, Ashiya, and Tadakazu Suyama, Tsuzuki, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan  
 Filed May 6, 1981, Ser. No. 260,607  
 Claims priority, application Japan, May 15, 1980, 55-64875  
 Int. Cl.<sup>3</sup> A61K 31/56  
 U.S. Cl. 424—238 **6 Claims**



1. A fat emulsion containing a steroid having an anti-inflammatory activity comprising an effective quantity of a steroid having an anti-inflammatory activity selected from the group consisting of esters of hydrocortisone with fatty acids of 6 to 22 carbon atoms, esters of prednisolone with fatty acids of 6 to 22 carbon atoms, and esters of dexamethasone with fatty acids of 6 to 22 carbon atoms, 5 to 50% (W/V) of soybean oil, a phospholipid in a weight ratio of 1–50 to 100 of said soybean oil, and a proper quantity of water.

**4,340,595**  
**AMINOPROPANOL DERIVATIVES OF 6-HYDROXY-2,3,4,5-TETRAHYDRO-1H-1-BENZAZEPIN-2-ONE AND PHARMACEUTICAL FORMULATIONS CONTAINING THE SAID COMPOUNDS**  
 Albrecht Franke, Wachenheim; Dieter Lenke, Ludwigshafen; Josef Gries, Wachenheim, and Hans D. Lehmann, Hirschberg-Leutershausen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany  
 Continuation of Ser. No. 91,200, Nov. 7, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,485  
 Claims priority, application Fed. Rep. of Germany, Nov. 18, 1978, 2850078  
 Int. Cl.<sup>3</sup> A61K 31/55; C07D 223/16  
 U.S. Cl. 424—244 **4 Claims**  
 1. A compound of the formula (I)

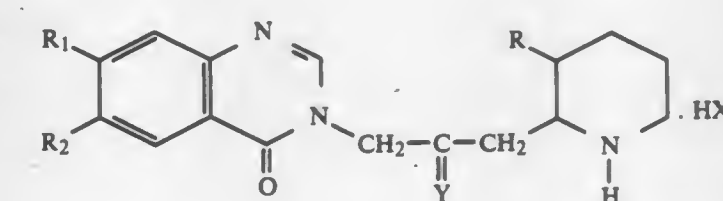


where R is alkyl of 3 to 6 carbon atoms, which is branched at the carbon adjacent to the amino nitrogen, but-3-yn-2-yl or 3-methyl-but-1-yn-3-yl, and its physiologically acceptable addition salts with acids.

4. A therapeutic agent having 8-sympatholytic activity which comprises: a pharmacologically acceptable carrier and/or diluent and a therapeutically effective amount of a compound of the formula I as described in claim 1.

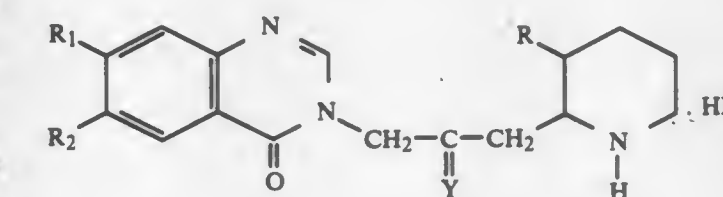
**4,340,596**  
**PREPARATIONS FOR THE TREATMENT OF THEILERIOSIS AND THEIR USE**  
 Eberhard Schein, Berlin, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany  
 Filed Aug. 21, 1980, Ser. No. 180,016  
 Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934069  
 Int. Cl.<sup>3</sup> A61K 31/505 **3 Claims**

U.S. Cl. 424—251 **3 Claims**  
 1. A preparation for the treatment of theileriosis comprising an amount, effective against theileriosis, of a quinazolinone compound of the formula:



wherein

R<sub>1</sub> and R<sub>2</sub> independently are halogen, trifluoromethyl alk-oxy having 1 to 4 carbon atoms, or methyl,  
 Y is oxygen, sulfur, or =OH,  
 R is hydroxy or acyloxy having 1 to 4 carbon atoms, and  
 X is a lactate, acetate, or acetate anion, together with a pharmaceutically acceptable carrier therefor.  
 3. A method for combatting theileriosis in animals which comprises administering to said animals an amount, effective against theileriosis, of a quinazolinone compound of the formula





wherein

R<sub>1</sub> and R<sub>2</sub> independently are halogen, trifluoromethyl alkoxy having 1 to 4 carbon atoms, or methyl,  
Y is oxygen, sulfur, or =NOH,  
R is hydroxy or acyloxy having 1 to 4 carbon atoms, and  
X is an anion of a physiologically acceptable acid.

**4,340,597**  
**1-SUBSTITUTED-4-ARYL-1,2,5,6-TETRAHYDRO AND HEXAHYDROPYRIDINES**

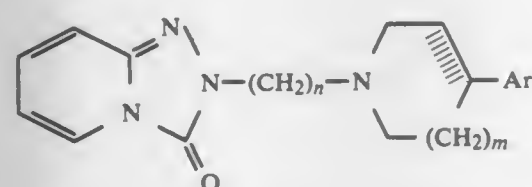
Elijah H. Gold, West Orange; Joel G. Berger, Verona, and Wei K. Chang, Livingston, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Apr. 13, 1981, Ser. No. 253,137  
Int. Cl.<sup>3</sup> C07D 471/04; A61K 31/435

U.S. Cl. 424-256

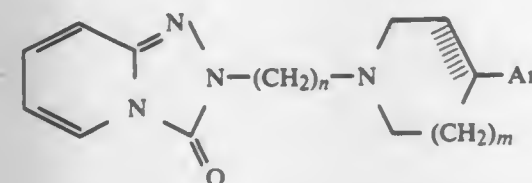
20 Claims

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof wherein Ar is phenyl or phenyl substituted by one or more members of the group consisting of halogeno, (C<sub>1</sub>-C<sub>5</sub>) lower alkyl, halogeno lower alkyl, hydroxyl and (C<sub>1</sub>-C<sub>5</sub>) lower alkoxy; m is an integer of zero or 1, n is an integer of 2 or 3; and the dotted line represents an optional double bond.

15. A method of eliciting an analgesic response from a warm blooded animal suffering with pain which comprises administering to the animal an effective analgesic amount of a compound of the formula



or a pharmaceutically acceptable acid addition salt thereof wherein Ar is phenyl or phenyl substituted by one or more members of the group consisting of halogeno, (C<sub>1</sub>-C<sub>5</sub>) lower alkyl, halogeno lower alkyl, hydroxyl and (C<sub>1</sub>-C<sub>5</sub>) lower alkoxy; m is an integer of zero or 1, n is an integer of 2 or 3; and the dotted line represents an optional double bond.

**4,340,598**  
**HYPOTENSIVE IMIDAZOLE DERIVATIVES**

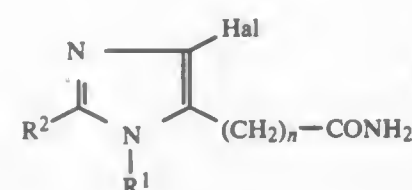
Yoshiyasu Furukawa, Toyonaka; Shoji Kishimoto, Takarazuka, and Kohel Nishikawa, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 5, 1980, Ser. No. 204,356  
Claims priority, application Japan, Nov. 12, 1979, 54-146729  
Int. Cl.<sup>3</sup> A61K 31/415; C07D 233/64, 233/90

U.S. Cl. 424-273 R

12 Claims

1. (6) A compound of the formula:



wherein

R<sup>1</sup> is lower alkyl, or phenyl-C<sub>1</sub>-2alkyl which may be substituted with halogen or nitro;  
R<sup>2</sup> is lower alkyl, lower cycloalkyl, or phenyl which may be substituted with halogen, lower alkyl, lower alkoxy or di(lower alkyl)amino,  
Hal is halogen and  
n is 0, 1 or 2;  
or a pharmaceutically acceptable salt thereof.

12. A method for producing hypotensive activity in a mammal, which comprises administering to said mammal a hypotensively effective amount of a compound of claim 2, 3, 5, 6, 8, 9 or 10.

**4,340,599**  
**PHOSPHONO-HYDROXY-ACETIC ACID AND ITS SALTS, THEIR PRODUCTION AND THEIR MEDICINAL USE**

Folker Lieb, Leverkusen; Hermann Oediger, Cologne, and Gert Streible, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 25, 1980, Ser. No. 190,697

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1979, 2941384

Int. Cl.<sup>3</sup> A61K 31/66; C07F 9/38

U.S. Cl. 424-212

4 Claims

1. A method of combating viral infections in warmblooded animals which comprises administering to the animals an antivirally effective amount of a phosphonohydroxy-acetic acid compound of the formula



either alone or in admixture with an inert pharmaceutical carrier or in the form of a medicament.

**4,340,600**  
**RENAL DILATING METHODS AND COMPOSITIONS USING 4-(3,4-DIHYDROXYPHENYL)-1,2,3,4-TETRAHYDROISOQUINOLINES**

L. Martin Brenner, Havertown, Pa., and Joe R. Wardell, Jr., Voorhees Township, Camden County, N.J., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed May 22, 1980, Ser. No. 152,252

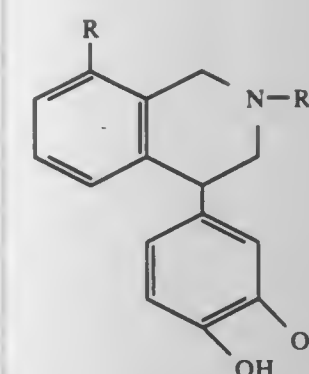
Int. Cl.<sup>3</sup> A61K 31/47; C07D 217/16

U.S. Cl. 424-258

19 Claims

1. A method of producing renal vasodilation in a patient in need thereof comprising administering to said patient internally an effective nontoxic quantity selected from the range of 50 mg to 1 g of a compound of the formula:

sulfotransferase inhibiting compound such that said dosage is administered daily for from 3 to 9 days in quantities each day of from 0.1 to 500 mg of the compound.



in which R is hydroxy, hydrogen, halo or methylthio and R<sub>1</sub> is hydrogen or methyl, one of its O-lower alkanoyl esters, or one of its pharmaceutically acceptable acid addition salts.

**4,340,601**  
**DOPAMINERGIC ISOQUINOLINES**  
L. Martin Brenner, Havertown, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

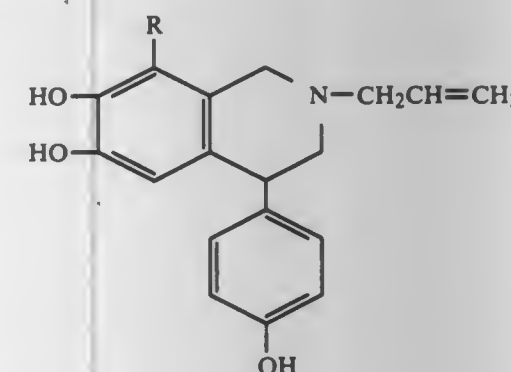
Filed Jul. 8, 1980, Ser. No. 166,933

Int. Cl.<sup>3</sup> A61K 31/47; C07D 217/16

U.S. Cl. 424-258

7 Claims

1. A compound of the structure:



in which R is halo; tri-O-lower alkanoyl esters or pharmaceutically acceptable acid addition salts thereof.

7. A pharmaceutical composition in dosage unit form having renal dilating activity comprising a nontoxic, effective quantity of a compound of any one of claims 1, 2, 3, 4 or 5 combined with a pharmaceutical carrier.

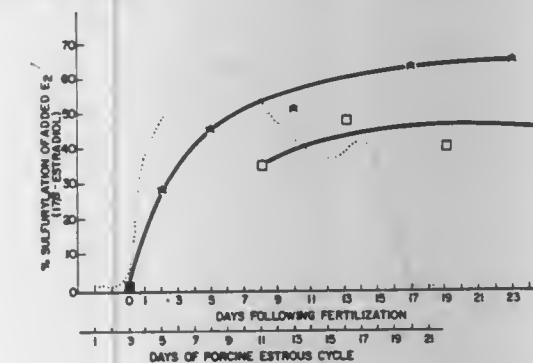
**4,340,602**  
**COMPOSITIONS INHIBITING ESTROGEN SULFOTRANSFERASE ACTIVITY**  
Samuel C. Brooks, Detroit, Mich., assignor to Wayne State University, Detroit, Mich.

Filed Oct. 18, 1978, Ser. No. 952,592

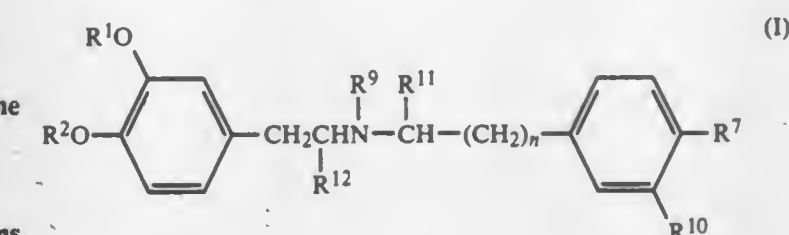
Int. Cl.<sup>3</sup> A01N 45/00; A61K 31/56

U.S. Cl. 424-238

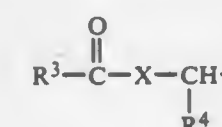
24 Claims



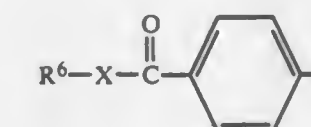
1. A unit dosage pharmaceutical composition for the prevention of implantation of a blastocyst in the epithelial uterine lining of a mammal female and possessing a total per unit dosage of an accurate predetermined amount of an estrogen



wherein R<sup>1</sup> and R<sup>2</sup> are independently selected from the group consisting of hydrogen, R<sup>3</sup>-CO- and



wherein X is O or S; R<sup>3</sup> is straight or branched chain alkyl having from 1 to 20 carbon atoms; aryl having from 6 to 10 carbon atoms; cycloalkyl having from 3 to 8 carbon atoms; alkenyl having from 2 to 20 carbon atoms; cycloalkenyl having from 4 to 8 carbon atoms; alkynyl having from 2 to 20 carbon atoms; or aralkyl, alkaryl, aralkenyl, aralkynyl, alkenylaryl, alkynylaryl, loweracyloxyalkyl, or carboxyalkyl, wherein alkyl, aryl, alkenyl and alkynyl are as defined above; R<sup>4</sup> is hydrogen, lower acyl, cyano, haloloweralkyl, carbamyl, loweralkylcarbamyl, diloweralkylcarbamyl, -CH<sub>2</sub>ONO<sub>2</sub>, -CH<sub>2</sub>OCOR<sup>3</sup>, or any member of the group defined by R<sup>3</sup> above; R<sup>7</sup> and R<sup>10</sup> are hydrogen, OR<sup>1</sup> or OR<sup>8</sup> wherein R<sup>8</sup> is lower alkyl, lower alkoxy, lower acyl, lower acyloxy, halo, haloloweralkyl, cyano, lower alkoxy carbonyl, lower alkylthio, amino, nitro, loweralkylamino, diloweralkylamino, carbonyl, carbamyl, loweralkylcarbamyl, diloweralkylcarbamyl or



wherein R<sup>6</sup> is hydrogen or alkyl having from 1 to 10 carbons; R<sup>9</sup> is hydrogen, lower alkyl, COCF<sub>3</sub>, COOC(CH<sub>3</sub>)<sub>3</sub>, COOCH<sub>2</sub>C<sub>6</sub>H<sub>5</sub>, or other N-protective group; R<sup>11</sup> and R<sup>12</sup> are hydrogen or methyl; and n is 1 or 2; with the proviso that at least one R<sup>1</sup>, R<sup>2</sup> or OR<sup>1</sup>, when R<sup>7</sup> and/or R<sup>10</sup> is OR<sup>1</sup>, must be R<sup>3</sup>COXCH(R<sup>4</sup>)- or R<sup>3</sup>COXCH(R<sup>4</sup>)O-, respectively; and (b) the non-toxic, pharmaceutically acceptable salts thereof.

9. A cardiotionically effective composition of matter comprising a cardiotionically effective amount of a compound as defined by claim 1, and a pharmaceutically effective carrier thereof.



4,340,604  
METHOD FOR INHIBITING THE LOWERING OF  
IMMUNOLOGICAL FUNCTION AND AGENT  
THEREFOR

Tadao Aoki; Hideo Miyakoshi; Yoshihei Hirasawa, all of Niigata, and Yasuo Nishii, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan  
Filed Aug. 11, 1980, Ser. No. 176,641  
Claims priority, application Japan, Aug. 10, 1979, 54/101210  
Int. Cl.<sup>3</sup> A01N 45/00

U.S. Cl. 424—236

3 Claims

1. A method for inhibiting the lowering of immunological function of patients under artificial blood dialysis which comprises administering  $\alpha$ -hydroxycholesterol to said patient.

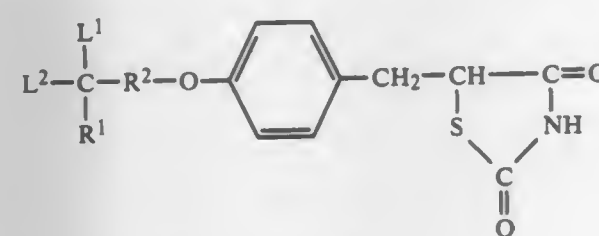
4,340,605  
THIAZOLIDINE DERIVATIVES

Yutaka Kawamatsu, Kyoto, and Takeshi Fujita, Takarazuka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan  
Division of Ser. No. 62,512, Jul. 27, 1979, Pat. No. 4,287,200.  
This application Apr. 29, 1981, Ser. No. 258,554  
Claims priority, application Japan, Aug. 4, 1978, 53-95673  
Int. Cl.<sup>3</sup> C07D 277/04

U.S. Cl. 424—263

7 Claims

1. A thiazolidine derivative of the general formula:



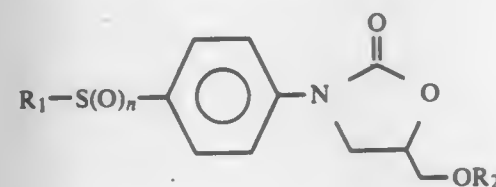
wherein R<sup>1</sup> is pyridyl or thiazolyl; R<sup>2</sup> means a bond or a lower alkylene group; L<sup>1</sup> and L<sup>2</sup> are the same or different and each is hydrogen, lower alkyl or L<sup>1</sup> and L<sup>2</sup> are combined to form an alkylene group.

4,340,606  
3-(P-ALKYLSULFONYLPHENYL)OXAZOLIDINONE  
DERIVATIVES AS ANTIBACTERIAL AGENTS  
Robert B. Fugitt, Newark, and Raymond W. Luckenbaugh, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
Filed Oct. 23, 1980, Ser. No. 199,698  
Int. Cl.<sup>3</sup> C07D 263/38; A61K 31/42

U.S. Cl. 424—272

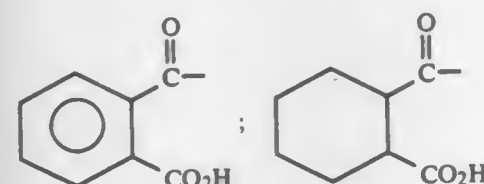
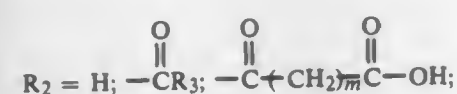
8 Claims

1. A compound of the formula:

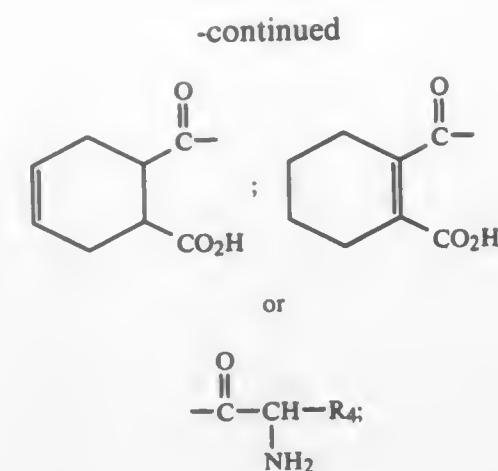


where

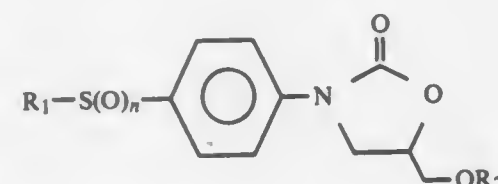
R<sub>1</sub> = CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub>, CF<sub>2</sub>H, CF<sub>3</sub> or CF<sub>2</sub>CF<sub>2</sub>H;



R<sub>3</sub> = aryl or C<sub>1</sub>-C<sub>12</sub> alkyl;  
R<sub>4</sub> = H, C<sub>1</sub>-C<sub>5</sub> alkyl, -CH<sub>2</sub>OH, -CH<sub>2</sub>SH, aryl or aralkyl;  
n = 1 or 2; and  
m = 2 or 3;  
and pharmaceutically acceptable acid and base salts thereof.

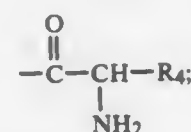
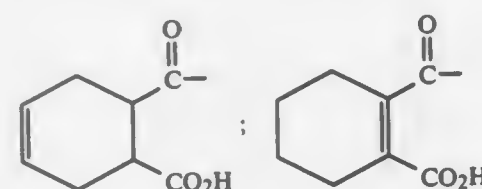
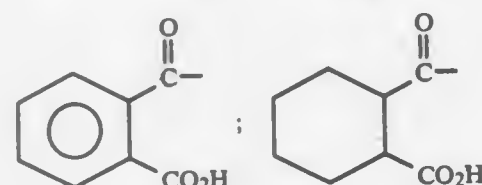
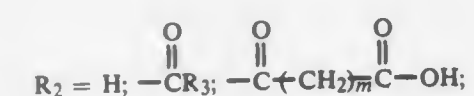


R<sub>3</sub> = aryl or C<sub>1</sub>-C<sub>12</sub> alkyl;  
R<sub>4</sub> = H, C<sub>1</sub>-C<sub>5</sub> alkyl, -CH<sub>2</sub>OH, -CH<sub>2</sub>SH, aryl or aralkyl;  
n = 1 or 2; and  
m = 2 or 3;  
and pharmaceutically acceptable acid and base salts thereof.  
6. A method for alleviating bacterial infection in a mammal which comprises administering to the mammal an effective antibacterial amount of a compound of the formula:



where

R<sub>1</sub> = CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub>, CF<sub>2</sub>H, CF<sub>3</sub> or CF<sub>2</sub>CF<sub>2</sub>H;



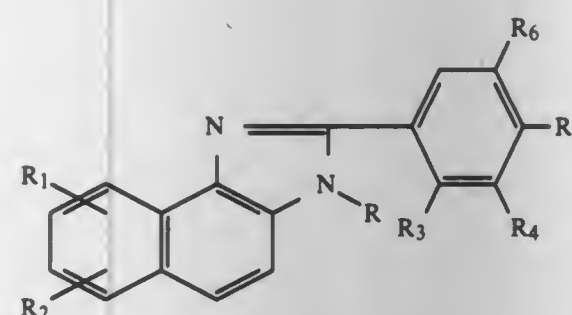
4,340,607  
ANTIMICROBIAL 3H-NAPHTHO[1,2-d]IMIDAZOLES  
Emilio Toja, Milan; Amedeo Omodei-Sale, Voghera, and  
Domenica Selva, Milan, all of Italy, assignors to Gruppo  
Lepetit S.p.A., Milan, Italy  
Continuation-in-part of Ser. No. 104,490, Dec. 17, 1979,  
abandoned. This application Feb. 20, 1981, Ser. No. 236,468  
Claims priority, application United Kingdom, Dec. 21, 1978,  
49690/78

Int. Cl.<sup>3</sup> A61K 31/415; C07D 235/02, 405/02

U.S. Cl. 424—273 B

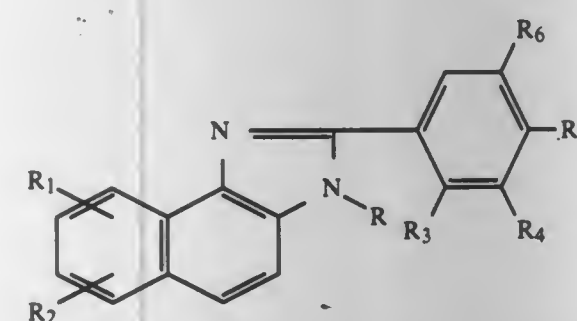
4 Claims

1. 3H-naphtho[1,2-d]imidazole derivative having the following formula



wherein R stands for (C<sub>1-6</sub>)alkyl, (C<sub>3-6</sub>)alkenyl, (C<sub>3-6</sub>)alkynyl or (C<sub>3-7</sub>)cycloalkyl, R<sub>1</sub> and R<sub>2</sub> each independently may represent hydrogen, halogen, (C<sub>1-4</sub>)alkyl, (C<sub>1-4</sub>)alkylthio, (C<sub>1-4</sub>)alkoxy or halo(C<sub>1-4</sub>)alkoxy, R<sub>3</sub> and R<sub>4</sub>, each independently represents hydrogen or (C<sub>1-4</sub>)alkoxy, R<sub>5</sub> stands for hydrogen, (C<sub>1-4</sub>)alkyl, (C<sub>3-4</sub>)alkoxy, carboxymethoxy, [carbo(C<sub>1-4</sub>)alkoxy]methoxy or (C<sub>2-4</sub>)alkanoylamino and R<sub>6</sub> is hydrogen or R<sub>4</sub> and R<sub>6</sub> taken together may represent a methylenedioxy radical, with the proviso that when R<sub>5</sub> is hydrogen at least one of R<sub>3</sub> and R<sub>4</sub> must be different from hydrogen; or a non-toxic pharmaceutically acceptable acid addition salt thereof.

3. An antimicrobial composition which comprises from about 0.1 percent by weight to about 10 percent by weight of a compound of formula I



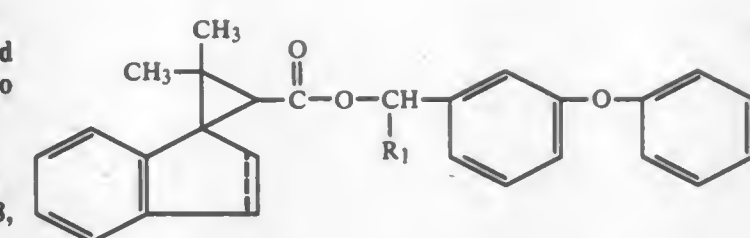
wherein R, R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, and R<sub>6</sub> are as defined in claim 1, or a salt therewith of a pharmaceutically acceptable acid in admixture with a topical pharmaceutical carrier.

4,340,608  
INSECTICIDAL PYRETHROID COMPOSITIONS  
James B. Lovell, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.  
Division of Ser. No. 874,305, Feb. 2, 1978, abandoned, which is a division of Ser. No. 623,864, Oct. 20, 1975, Pat. No. 4,087,523.  
This application Jan. 7, 1980, Ser. No. 110,418  
Int. Cl.<sup>3</sup> A01N 37/10, 37/34, 47/10

U.S. Cl. 424—300

5 Claims

1. An insecticidal composition comprising (i) from about 0.1 to 3 ppm of a phenoxybenzyl ester of a spirocarboxylic acid having the structural formula:



wherein R<sub>1</sub> is hydrogen or cyano and represents a single or double bond, or the optical or geometric isomers thereof, and (ii) from about 1 to 30 ppm of 1-naphthyl-N-methylcarbamate and (iii) an inert diluent.

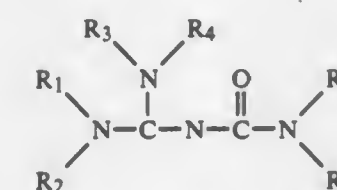
4,340,609  
AMIDINOUREA DERIVATIVE VETERINARY  
COMPOSITIONS FOR SUPPRESSION OF  
PARASITEMIA

Billy J. Chou, Paoli, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.  
Filed Jan. 2, 1980, Ser. No. 109,038  
Int. Cl.<sup>3</sup> A61K 31/17

U.S. Cl. 424—322

17 Claims

1. A method of treating animals for the suppression of filariasis which comprises administering to an infected animal in need of such treatment an effective amount of an amidinorea of the formula:



wherein one of R<sub>1</sub> or R<sub>5</sub> is phenyl, phenyl in which one or more of the hydrogens is substituted by halo, lower alkyl, halo lower alkyl, nitro, amino, acylamino, lower alkoxy, hydroxy, aryl lower alkoxy, acyloxy, cyano, halo lower alkoxy, or lower alkyl sulfonyl; aralkyl, pyridyl, or pyridyl having one or more of the hydrogens replaced by lower alkyl, lower alkoxy, halo, halo lower alkyl, amino, nitro, hydroxy, cyano, carboxyl or lower alkyl sulfonyl; and the other of R<sub>1</sub> or R<sub>5</sub> is hydrogen, lower alkyl, lower alkoxy, lower alkenyl, cyclo lower alkenyl, cyclo lower alkyl, aralkyl, lower alkynyl, halo alkyl, hydroxy lower alkyl, lower alkoxy lower alkyl, cyano lower alkyl, amino lower alkyl, mono or di-lower alkyl amino lower alkyl, carbamoyl lower alkyl, mono or di-carbamoyl lower alkyl, lower alkoxy carbamoyl lower alkyl, aralkoxy carbamoyl lower alkyl, acyl lower alkyl, alkyl sulfonyl or aralkyl sulfonyl; and when R<sub>1</sub> is phenyl, phenyl substituted as above, aralkyl, pyridyl or pyridyl substituted as above, R<sub>5</sub> together with R<sub>6</sub> and the nitrogen to which R<sub>5</sub> and R<sub>6</sub> are attached may form a 5 or 6 membered heterocyclic ring which may include 0 to 2 additional hetero atoms which may be either oxygen, nitrogen or sulfur; and when R<sub>5</sub> is phenyl, phenyl substituted as above, R<sub>1</sub> and R<sub>2</sub> together with the nitrogen to which they are attached may be a 5 or 6 membered heterocyclic ring which may include 0 to 2 additional hetero atoms which may be either oxygen, nitrogen or sulfur; and R<sub>3</sub> and R<sub>4</sub> are each independently hydrogen, lower alkyl, lower alkoxy, lower alkenyl, lower alkynyl, cyclo lower alkyl or aralkyl; or a pharmaceutically acceptable salt thereof.

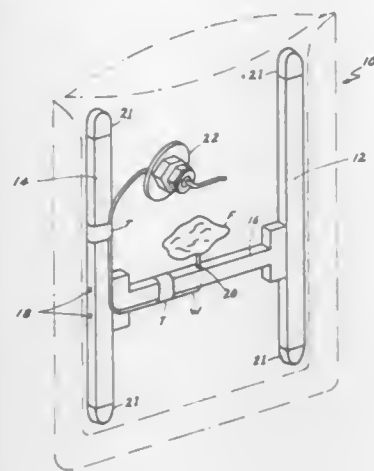


#### 4,340,610 FLEXIBLE POUCH AND THERMOCOUPLE LOCATOR THEREFOR

Robert L. Nioras, Port Chester, N.Y., assignor to RJR Foods, Inc., San Francisco, Calif.

Filed Aug. 27, 1980, Ser. No. 181,587  
Int. Cl.<sup>3</sup> G01K 7/02; B65B 29/08, 25/22  
U.S. Cl. 426—88

2 Claims



1. In a device for measuring temperature within a flexible retortable pouch having two side seals, a top seal, and a bottom seal and being filled with a food product, said device comprising said flexible retortable pouch, a thermocouple contained within said pouch, means for locating and holding said thermocouple at the geometric center of said pouch, a cable for connecting said thermocouple to temperature recording means, and means adapted to communicate said cable through a wall of said pouch without fluid leakage, the improvement wherein said thermocouple locating means comprises:

- a rigid frame contained within the pouch and substantially in the form of the letter "H", having,
  - (a) two elongated side members;
  - (b) a cross-bar member extending between said side members and being rigidly mounted at points spaced from the point equidistant from the ends of each of said side members, said rigid frame including said two side members and said crossbar member being of sufficient dimensions relative to said pouch sufficient to cause the rigid frame to fit snugly in said flexible pouch to positively locate the frame and prevent movement of it relative to the pouch; and,
  - (c) means for securing said thermocouple to said rigid frame, such that said thermocouple is fixedly positioned at the geometric center of said flexible pouch.

4,340,611  
PROCESS FOR REMOVING SOYBEAN HULLS  
Howard F. McKinney, Edwardsville, Ill.; David R. Gardner, and Frederick C. Wear, both of St. Louis, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Jul. 18, 1980, Ser. No. 170,096  
Int. Cl.<sup>3</sup> A21D 6/00

U.S. Cl. 426—241

4 Claims

1. A process for removing hulls from soybeans without damaging the grain comprising the steps of placing the soybeans in an atmosphere of reduced pressure, subjecting the beans to microwave energy while the beans are within the atmosphere of reduced pressure, removing a portion of the moisture from the beans until the moisture content of the soybeans is about 7.46 to about 10% on a wet basis, removing the soybeans from the atmosphere of reduced pressure, the temperature of the soybeans leaving the reduced pressure atmosphere being at least 110° F. and less than 160° F., immediately cracking the hulls of the hot soybeans without tempering, and removing the hulls from the hot beans.

4,340,612  
PROCESS FOR SPINNING FISH PROTEINS  
Lars Askman, Marysville, Ohio; Pierre Wetzel, Vevey, and Alain Isely, Lausanne, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Mar. 20, 1981, Ser. No. 245,999  
Claims priority, application Switzerland, Mar. 31, 1980, 2521/80

Int. Cl.<sup>3</sup> A23J 3/00

U.S. Cl. 426—276

11 Claims

1. A process for preparing fibres from fish proteins which comprises successively:

- (a) grounding whole fish or fish pieces in the presence of water, the water to fish ratio being 0.7:1 to 2.5:1 by weight,
- (b) adding alkali to the ground fish in an alkali to fish ratio of 0.5:1 to 1.5:1 by weight based on dry matter,
- (c) heating the alkali/fish mixture of step (b) to a temperature of 60° to 100° C. for 0.5 to 3 minutes,
- (d) cooling the mixture of step (c) to a temperature of 35° to 60° C.,
- (e) passing the cooled mixture of step (d) through a colloid mill, eliminating solid particles and optionally concentrating to obtain a protein solution having a dry matter content of 6 to 10% by weight,
- (f) injecting the alkaline solution of step (e) through a spinneret into an aqueous acid medium having a pH of 0.7 to 0.9 and an ionic strength of 2.0 to 2.2 thereby to coagulate the proteins to fibres,
- (g) washing the fibres of step (f),
- (h) setting the fibres of step (g) by heating, and
- (i) neutralising the fibres.

4,340,613  
METHOD OF COOKING SHELLFISH  
Michael R. P. Moore, 11724 Lovejoy St., Silver Spring, Md. 20902

Continuation-in-part of Ser. No. 833,133, Sep. 14, 1977, abandoned. This application Dec. 5, 1978, Ser. No. 966,631  
Int. Cl.<sup>3</sup> A22C 29/00

U.S. Cl. 426—456

11 Claims

1. A method for cooking shellfish to increase shelf life and to facilitate removal of edible portions from the skeletal portions thereof, consisting of the steps of:

- subjecting the shellfish to steam to at least partially cook the shellfish; and
- withdrawing moisture from the shellfish, after subjection of the shellfish to steam as aforesaid, by subjecting the shellfish to a vacuum at a rate which causes no disruption to the structure of the skeletal portions.

4,340,614  
STRINGENTLY SODIUM-RESTRICTED DIETETIC SALT AND ITS PREPARATION

Claus H. Pich, and Thomas Moest, both of Moorrege, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 28, 1981, Ser. No. 267,870  
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021298

Int. Cl.<sup>3</sup> A23L 1/237

U.S. Cl. 426—649

4 Claims

1. A stringent sodium-restricted dietetic salt, consisting of a mixture of from 60 to 85% by weight of potassium chloride, from 10 to 30% by weight of potassium adipate, from 2 to 5% by weight of potassium tartrate, from 0.5 to 2% by weight of potassium glutamate, from 0.5 to 2% by weight of adipic acid and a total of from 0.004 to 0.06% by weight of potassium inosinate and/or potassium guanylate.

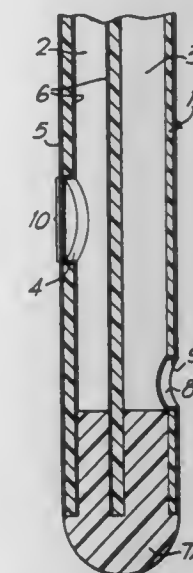
4,340,615  
APPARATUS FOR ANALYSIS OF ABSORBED GASES  
Brian Goodwin, Cheshire, and Peter Middleton, London, both of England, assignors to The Medishield Corporation Limited, London, England

Filed Jun. 3, 1980, Ser. No. 155,912  
Claims priority, application United Kingdom, Jun. 7, 1979, 7919942

Int. Cl.<sup>3</sup> A61B 5/00

U.S. Cl. 427—2

4 Claims



1. A method of manufacturing a device for use in the analysis of absorbed gases in liquids, comprising the steps of taking a flexible plastics material tube with an aperture in its wall; sheathing the exterior surface of at least that portion of the tube which includes said aperture with a layer of bio-compatible gas-permeable material; and coating the interior surface of that area of said sheathing layer which overlies said aperture with a thin layer of gas-permeable material, the permeability of which is significantly less than that of the sheathing layer.

4,340,616  
METHOD FOR DECREASING THE WEAR ON A SURFACE

James D. Weinert, St. Louis, Minn., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 19, 1980, Ser. No. 122,534  
Int. Cl.<sup>3</sup> B05D 3/14

U.S. Cl. 427—47

9 Claims

1. A method for decreasing the wear on a surface, due to relative movement and contact of said surface with a fluid medium of abrasive particles, the weight percent of said particles amounting to a significant part of the total weight of said medium, such contact being for a period of time and such relative movement being of a degree, sufficient to cause excessive wear on said surface, which comprises:

- providing said surface, with a magnetic attraction of sufficient magnitude to attract an amount of magnetic particles which will provide a sacrificial layer thereon, consisting essentially of such magnetic particles, said layer having a thickness, (a) of at least a monolayer of such magnetic particles and (b) effective to materially decrease the wear on the surface underlying said sacrificial layer, and
- maintaining said magnetic attraction during said contact, whereby the particles in said sacrificial layer which are eroded or dislodged may be replenished by new magnetic particles from said fluid stream to provide said materially decreased wear.

1020 O.G.—41

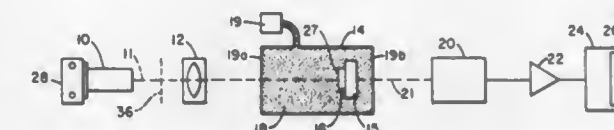
4,340,617  
METHOD AND APPARATUS FOR DEPOSITING A MATERIAL ON A SURFACE

Thomas F. Deutsch, Cambridge; Daniel J. Ehrlich, Arlington, and Richard M. Osgood, Winchester, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 19, 1980, Ser. No. 150,816  
Int. Cl.<sup>3</sup> C23C 13/00

U.S. Cl. 427—53.1

53 Claims



1. Apparatus for depositing from a fluid phase, a layer of a surface compatible material onto a selected surface of a substrate body comprising

- a deposition chamber,
- means for supporting said body in said chamber,
- a laser source of energy operating at a wavelength shorter than 700 nm,
- an optical system for focusing said energy toward said selected surface at a position adjacent said selected surface, said optical system further directing said energy onto said selected surface, and
- means for introducing a fluid medium into said chamber adjacent to the said surface, at least one component of said fluid medium being absorptive at said desired frequency for effecting photodecomposition of said at least one component of the medium in said fluid phase at a photodissociation rate which is linear with power, for depositing said surface-compatible material product of said photodecomposition onto said body surface in a selected pattern.

37. A method for selectively depositing a surface-compatible film on a surface of a substrate body comprising the steps of

- supporting said substrate body in an enclosed chamber,
- exposing at least said substrate surface of said body in said chamber to a gaseous environment containing at least one photolytically decomposable compound,
- directing a laser source of energy onto said surface,
- focusing said laser source of energy at a position adjacent to said surface, said source having an energy output at a wavelength to effect photolytic decomposition of said one photolytically decomposable compound in the gaseous phase at a photodissociation rate which is linear with power, and
- photolytically decomposing said one compound to effect deposition of said surface-compatible film onto said surface in a selected pattern.

4,340,618  
PROCESS FOR FORMING REFRACTORY METAL LAYERS ON CERAMIC SUBSTRATE

Michael A. Fury, Fishkill, and Ananda H. Kumar, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 20, 1981, Ser. No. 245,762  
Int. Cl.<sup>3</sup> H05K 3/12

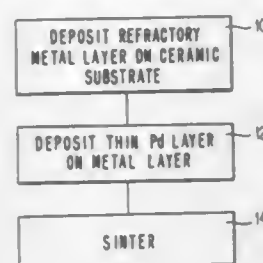
U.S. Cl. 427—96

12 Claims

1. A process of forming a glass free surface on refractory metallurgy pads on ceramic substrate, comprising depositing by screening techniques a refractory metallurgy layer on a ceramic substrate, the metal of said layer selected from the group consisting of Mo, W and Ta, depositing a thin layer of Pd on at least the surface of said metallurgy layer of a thickness that is approximately



40-50 angstroms per each mil thickness of said metallurgy layer,



exposing said substrate to a sintering temperature for a time sufficient to sinter the metallurgy layer and also to fuse the layer to said substrate.

**4,340,619**  
**PROCESS FOR THE PREPARATION OF POLY(DISILYL)SILAZANE POLYMERS AND THE POLYMERS THEREFROM**  
John H. Gaul, Jr., Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.  
Filed Jan. 15, 1981, Ser. No. 225,274  
Int. Cl.<sup>3</sup> B05D 3/02

U.S. Cl. 427-228 89 Claims  
86. A method for preparing an article coated with ceramic which consists of

- (A) coating a substrate with an  $R'_3SiNH-$  containing silazane polymer,
- (B) heating the coated substrate in an inert atmosphere or in a vacuum to an elevated temperature of at least 750° C. until the coating is converted to a silicon carbide ceramic material, whereby a silicon carbide-containing ceramic coated article is obtained, which silazane polymer is obtained by a process which consists of contacting and reacting in an inert, essentially anhydrous, atmosphere, a chlorine-containing disilane or a mixture of chlorine-containing disilanes, wherein the number of diorgano-substituted silicon atoms does not exceed the number of monoorgano-substituted silicon atoms, of the general formula



with a disilazane having the general formula



at a temperature in the range of 125° C. to 300° C. while distilling by-produced volatile products, wherein R is vinyl, an alkyl group of 1-3 carbon atoms or the phenyl group;  
R' is vinyl, hydrogen, an alkyl group of 1-3 carbon atoms or the phenyl group;  
a has a value of 0.5-3;  
b has a value of 0-2.5 and the sum of a + b is equal to three.

**4,340,620**  
**METHOD FOR ACTIVATING TITANIUM SURFACES FOR SUBSEQUENT PLATING WITH METALLIC COATINGS**  
Götz Mielsch, Rolf Dunker, and Martin Thoma, all of Munich, Fed. Rep. of Germany, assignors to MTU Motoren-und Turbinen-Union, Munich, Fed. Rep. of Germany  
Filed Feb. 26, 1981, Ser. No. 238,627  
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008314  
Int. Cl.<sup>3</sup> C23B 5/62

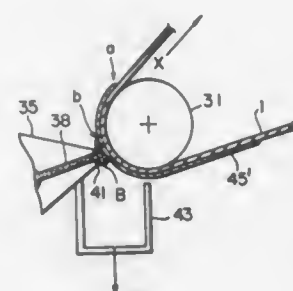
U.S. Cl. 427-292 4 Claims  
1. A method for activating titanium surfaces for subsequent plating with metallic coatings, said method comprising:

- (a) wet peening the titanium surface to be plated using fine-grain  $Al_2O_3$ ,
- (b) pickling said surface with a fluoridic solution at room temperature for several minutes, said fluoridic solution being a solution of nitric acid and hydrofluoric acid,
- (c) activating said surface with a solution consisting essentially of chromium acid or hexavalent chromium compounds, hydrofluoric acid, and arsenic or antimony at temperatures of 35° to 100° C. for 15 to 50 minutes, the molar ratio of fluorine to arsenic or antimony being between 6 and 7 and the molar ratio of chromium to arsenic or antimony being between 3 and 6, the concentration of antimony or arsenic in said solution being between 0.1 and 2.0 Mol/l.

**4,340,621**  
**METHOD FOR PREVENTING FORMATION OF A HEAVY LIQUID LAYER ON A WEB AT A COATING START POSITION**  
Takeshi Matsumiya, and Minoru Minoda, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan  
Filed Feb. 27, 1980, Ser. No. 125,054  
Claims priority, application Japan, Mar. 6, 1979, 54-25749; Mar. 13, 1979, 54-28913  
Int. Cl.<sup>3</sup> B05D 3/00, 3/12

U.S. Cl. 427-294

8 Claims



5. A method for applying a coating liquid on a web being transported continuously by a coating section having a hopper-type coating means including a bead stabilizing suction chamber comprising the steps of:

- (a) applying a thin layer of pretreatment liquid having a low viscosity upon said web in the region of a coating-liquid coating start position;
- (b) transporting said web into said coating section;
- (c) applying said coating liquid upon said thin layer of pretreatment liquid on said web with a pressure in said suction chamber lower than that employed in steady-state operation; and
- (d) returning the pressure reduction of said suction chamber back to that appropriate for the steady-state operation to continue the coating operation with said coating liquid, said pretreatment liquid and said pressure being selected such that heavy coating of said web at said coating start position with said coating liquid is prevented by cooperation of an expansive wetting effect of said thin layer of pretreatment liquid and reduced pressure in said suction chamber.

**4,340,622**  
**PROCESS FOR APPLYING A COATING TO THAT PART OF A STRUCTURE IN A MARINE ENVIRONMENT WHICH PROJECTS ABOVE THE SURFACE OF WATER**  
Leendert A. Kik, Wassenaar; Pieter H. J. Schuurink, Noordwijk-Binnen, and Marinus J. De Vries, Lisse, all of Netherlands, assignors to AKZO NV, Arnhem, Netherlands  
Filed Nov. 19, 1979, Ser. No. 95,567

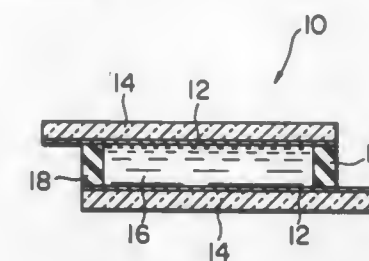
Claims priority, application Netherlands, Nov. 20, 1978, 7811399

Int. Cl.<sup>3</sup> B05D 3/00

U.S. Cl. 427-299

9 Claims

1. A process for applying a coating to that part of a structure which projects above the surface of a body of water, characterized in that a coating composition containing an organic binder dispersed in an organic solvent is applied to the substrate while water is flowing over it.



**4,340,623**

**HIGH SPEED SIZE PRESS**

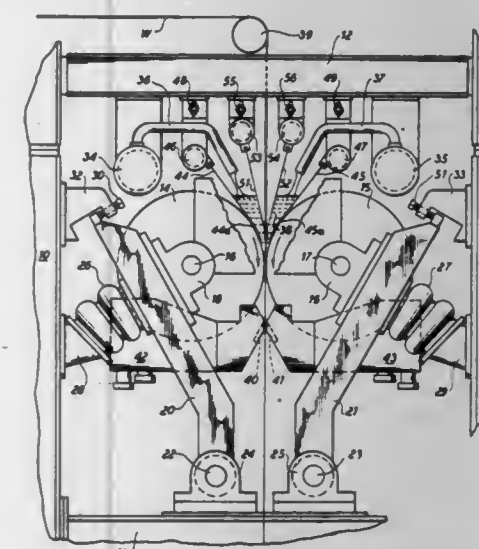
Edgar J. Justus, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 8, 1980, Ser. No. 214,138

Int. Cl.<sup>3</sup> B05D 3/12; B05C 3/02, 11/02, 3/12

U.S. Cl. 427-361

10 Claims



8. A method for applying a sizing composition to a paper web which comprises:  
passing said web into the nip between a pair of counter-rotating rolls,  
delivering a liquid sizing composition between the rolls and the web passing therebetween to thereby form a pond of sizing composition on each side of the traveling paper web, and  
immersing a flexible baffle element into each pond between said web and the roll which applies sizing composition to the side of said web facing said roll to a distance sufficient to reduce substantially the violent turbulence in said pond.

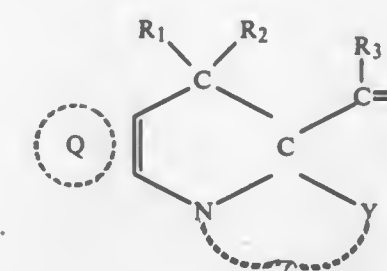
**4,340,624**  
**ELECTROCHROMIC DISPLAY DEVICE**  
Akio Yamashita, and Shirow Asakawa, both of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan  
Filed Oct. 15, 1980, Ser. No. 197,328  
Claims priority, application Japan, Oct. 17, 1979, 54-134577  
Int. Cl.<sup>3</sup> C09K 3/34; G02F 1/13

U.S. Cl. 428-1

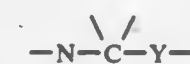
8 Claims

1. An electrochromic display device comprising a pair of electrodes which are disposed with a specified space therebetween, at least one of said electrodes being transparent, and a non-aqueous electrolytic solution filled in the space and comprised of a styryl-like compound and a supporting electrolyte

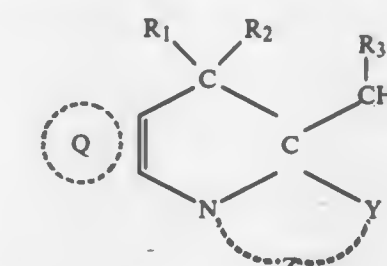
dissolved in a solvent, said styryl-like compound being represented by the formula:



in which Q represents a benzene ring with or without substituents and/or a condensed ring, R<sub>1</sub> and R<sub>2</sub> independently represent a lower alkyl group, a hydroxyalkyl group or an alkoxyalkyl group, R<sub>3</sub> represents hydrogen, an alkyl group, an alkoxy group, a halogen, a nitrile group, an aromatic group or a phenoxy group, Y represents oxygen or sulfur, Z represents an alkylene group of 2 to 4 carbon atoms, with or without an alkyl substituents, required to complete a ring structure together with



and A represents a residue resulting from a condensation reaction of the methyl group or methylene group in the 2-position of a precursor indoline derivative of the formula:



where, R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, Y and Z have the same meanings as defined above, respectively, with a member selected from the group consisting of aromatic aldehydes, heterocyclic aldehydes, aromatic nitroso compounds and heterocyclic nitroso compounds.

**4,340,625**  
**ARTIFICIAL AQUARIUM PLANT**  
Allan H. Willinger, Englewood, N.J., assignor to Willinger Bros., Inc., Englewood, N.J.  
Filed Nov. 17, 1980, Ser. No. 207,342  
Int. Cl.<sup>3</sup> A41G 1/00; A47G 7/00

U.S. Cl. 428-17

13 Claims

1. An artificial aquarium plant comprising:  
a base member having a receptacle, and a plant member upstandingly insertable in said receptacle for support by said base member;  
said plant member including a plurality of plant sections nestingly interfitting within each other, each plant section having a respective trunk portion from which extends respective stem portions, said trunk portion of each of said plant sections being disposed in said receptacle of said



base member in an assembled condition of said plant sections;  
said trunk portion of an innermost plant section being a body member, said trunk portion of each of the other plant sections being a tubular portion, the tubular portions of succeeding plant sections sequentially fitting into each other;  
said innermost plant section including two matingly engaging opposing section halves, each section half including a semi-oval portion with stem portions upwardly extending therefrom;



a connecting pin extending perpendicularly from an inner surface of one semi-oval portion and a cooperating receiving bore provided in an inner surface of the other semi-oval portion, said connecting pin being disposed in said receiving bore to matingly join said section halves together to define said body member; and  
said body member fitting into the tubular portion of the first succeeding plant section with said stem portions of said body member extending upwardly and outwardly from said first succeeding plant section.

#### 4,340,626 DIFFUSION PUMPING APPARATUS SELF-INFLATING DEVICE

Marion F. Rudy, 19001 Vintage St., Northridge, Calif. 91324  
Continuation of Ser. No. 903,055, May 5, 1978, abandoned. This application Jul. 10, 1980, Ser. No. 168,284

Int. Cl.<sup>3</sup> A43B 13/20; B32B 1/06; E04B 1/34; E04G 11/04  
U.S. Cl. 428—35 18 Claims

1. A self inflating device, comprising a sealed chamber of preformed shape, at least a portion of said chamber being of a layer of permeable elastomeric sheet material surrounded by ambient air at atmospheric pressure, said chamber being inflated initially, after having been shaped, with a gaseous medium comprising an inert, non-polar, large molecule gas having a low solubility coefficient, said elastomeric material having characteristics of relatively low permeability with respect to said gas to resist diffusion of said gas therethrough from said chamber and of relatively high permeability with respect to the ambient air surrounding said chamber to permit diffusion of said ambient air through said elastomeric material into said inflated chamber to provide a total pressure in said chamber which is the sum of the partial pressure of the gas in said chamber and the partial pressure of the air in said chamber, the diffusion rate of said gas through said elastomeric material being substantially lower than the diffusion rate of nitrogen through said elastomeric material.

#### 4,340,627 WOUND AND SINTERED VITREOUS SILICA ARTICLE AND METHOD OF MAKING

Heinz Herzog, Karlstein; Heinrich Mohn, Gelnhausen; Karl-Albert Schulke, Neuberg, and Holger Grzybowski, Bruchköbel, all of Fed. Rep. of Germany, assignors to Heraeus Quarzschmelze GmbH, Hanau am Main, Fed. Rep. of Germany

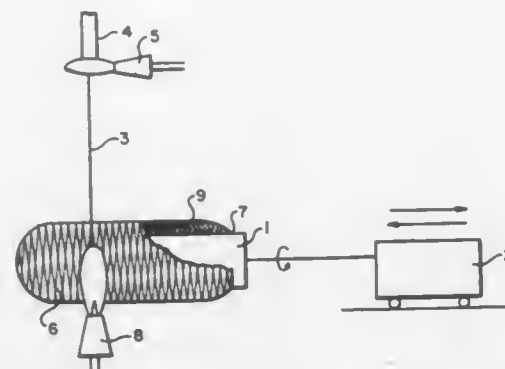
Filed Aug. 28, 1980, Ser. No. 182,155

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1979, 2935198

Int. Cl.<sup>3</sup> C03B 23/00; B32B 17/02

U.S. Cl. 428—36

14 Claims



1. In a method for the manufacture, of porous bodies, especially hollow bodies, from transparent vitreous silica, in which vitreous silica threads and/or vitreous silica wool are bonded together, the improvement including winding the threads and/or wool in crossing courses onto a mandrel to form a coil and, after a sufficient minimum thickness of the winding has been reached, sintering or fusing each succeeding layer during its winding to the preceding layer; at the attainment of a given thickness of the coil, removing the coil removed from the mandrel and then the threads and/or wool of the minimum layer are sintered or fused together from the surface which lay in contact with the mandrel.

#### 4,340,628 ANTIBACTERIAL AGENT AND METHOD

John R. Gilbertson, 354 Jefferson Dr., Pittsburgh, Pa. 15228, and Richard J. Crout, 2122 Pendleton Dr., Monroeville, Pa. 15146

Division of Ser. No. 6,347, Jan. 25, 1979, Pat. No. 4,209,533.

This application Nov. 26, 1979, Ser. No. 97,405

Int. Cl.<sup>3</sup> A61K 7/16, 31/045

U.S. Cl. 424—49

4 Claims

1. A method of inhibiting growth of bacteria comprising exposing said bacteria to an effective concentration of polyunsaturated long-chain alcohol selected from the group consisting of linolenyl alcohol and linoleyl alcohol, providing said alcohol is an orally or locally administerable product, and providing said alcohol in toothpaste.

#### 4,340,629

#### HIGH DENSITY INFORMATION DISC

Louis J. Hillenbrand, Columbus; Joseph R. Preston, Radnor, and David A. Berry, Columbus, all of Ohio, assignors to RCA Corporation, New York, N.Y.

Filed Jun. 12, 1981, Ser. No. 273,241

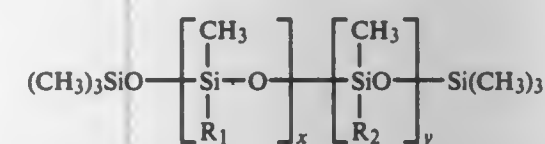
Int. Cl.<sup>3</sup> B32B 3/02

U.S. Cl. 428—64

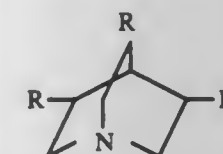
6 Claims

1. In a high density information record adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said record and said stylus, said record comprising a disc of a conductive material containing an information track constituted by a surface relief pattern in said track to accommodate recovery of signals of

said bandwidth upon establishment of relative motion at said rate, said record coated with a methyl alkyl siloxane lubricant having the formula



wherein R<sub>1</sub> and R<sub>2</sub> are alkyl groups of 4-20 carbon atoms, x is an integer of 2-4; y is an integer of 0-2 and wherein the sum of x plus y is 4 or less, the improvement which comprises adding to said lubricant a quinuclidene additive of the formula



wherein R is an electron donating group.

#### 4,340,630

#### LOW CONDUCTIVITY GAS SEALED BUILDING INSULATION

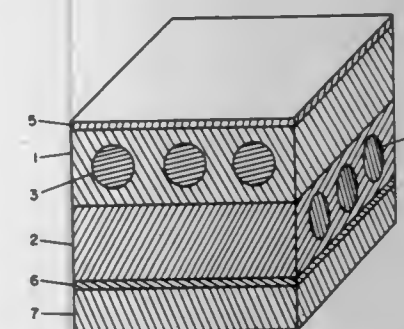
Francis D. Doty, 1440 Bonner Ave., Columbia, S.C. 29204

Filed Apr. 4, 1980, Ser. No. 137,277

Int. Cl.<sup>3</sup> B32B 3/14; E04B 2/00; E04C 2/34; B65D 90/04

U.S. Cl. 428—74

10 Claims



1. Insulation material comprising fibrous material and a low conductivity gas sealed within a casing made from one or more heat sealable laminate sheets, wherein said fibrous material is partially secured to the inner surface of said casing with adhesive means, wherein said laminate sheets each comprise at least two thermoplastic films reinforced longitudinally with glass fibers comprising at least 2% by volume of said thermoplastic films, wherein said films are bonded together orthogonally so as to produce a biaxially reinforced sheet, and wherein one or more ductile low conductivity abrasion resistant thin metallic films are deposited over substantially all of one or both sides of said biaxially reinforced sheets.

#### 4,340,631

#### THICK-AND-THIN FIBERS AND PRODUCTS THEREFROM

Tadakazu Endo, and Shigemitsu Saitoh, both of Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Dec. 6, 1979, Ser. No. 100,974

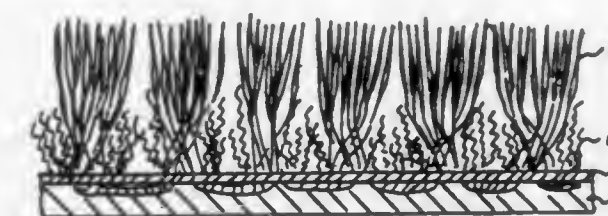
Int. Cl.<sup>3</sup> D02G 3/00; D03D 27/00

U.S. Cl. 428—89

9 Claims

1. Pile fabric having a base fabric and a surface at least partly covered with thick-and-thin fibers whose fineness along the longitudinal direction varies gradually characterized by the following items (a), (b), (c), and (d):  
(a) the thick-and-thin recurring length, defined as a longitudinal length along the fiber axis between adjacent thick portions, lies in the range of five to 500 millimeters,  
(b) the thick-and-thin ratio, defined as a ratio of the cross-sectioned area of the thick portion to that of the adjacent thin portion, lies in the range of four to 50;  
(c) the cross-sectioned area at both the thick portions and those at the thin portions being almost constant, and  
(d) the average fineness of the thick-and-thin fiber lies in the range of 0.05 to 2000 deniers and, wherein the thick portion of each thick-and-thin fiber floats over the base fabric and the thin portion is anchored on the base fabric.

tioned area of the thick portion to that of the adjacent thin portion, lies in the range of four to 50;  
(c) the cross-sectioned area at both the thick portions and those at the thin portions being almost constant, and



(d) the average fineness of the thick-and-thin fiber lies in the range of 0.05 to 2000 deniers and, wherein the thick portion of each thick-and-thin fiber floats over the base fabric and the thin portion is anchored on the base fabric.

#### 4,340,632

#### MANUFACTURE OF FLOCK TRANSFERS

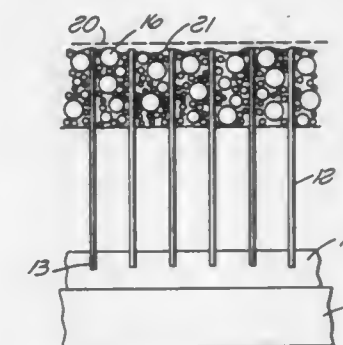
Herbert A. Wells, Los Angeles; Walter L. Hochner, San Dimas, and George F. Matacek, Costa Mesa, all of Calif., assignors to International Coatings Co., Inc., Cerritos, Calif.

Filed Nov. 12, 1980, Ser. No. 206,016

Int. Cl.<sup>3</sup> B05D 1/16

U.S. Cl. 428—90

24 Claims



1. The method that comprises:  
applying a first layer of adhesive to a base sheet;  
applying flock fibers to said first layer of adhesive for temporary adhesion thereby to said base sheet with portions of the fibers projecting beyond the adhesive layer;  
providing a composition which is to be applied to said fibers and which is premixed before application to the fibers and which includes an emulsion or solution of an adhesive polymer in a carrier liquid and a large number of solid particles of thermoplastic polymer resin intermixed intimately with said emulsion or solution;  
applying to said projecting portions of the fibers a layer of said composition containing said solid thermoplastic particles premixed into the composition before application of the composition to the fibers; and  
evaporating the liquid from said composition and leaving said second mentioned layer in integrated form on the fibers.

#### 4,340,633

#### MAT ANCHORING APPARATUS AND METHOD

Edward S. Robbins, Jr., Florence, Ala.

Filed Mar. 14, 1980, Ser. No. 130,337

Int. Cl.<sup>3</sup> B32B 3/02, 3/30

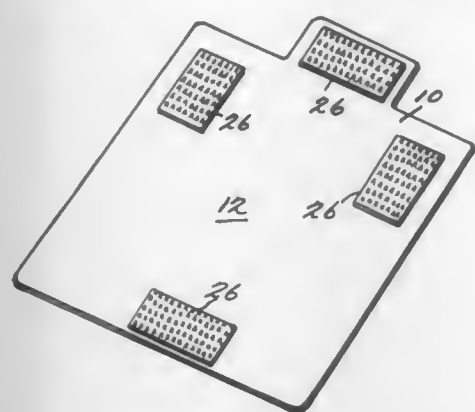
U.S. Cl. 428—99

4 Claims

1. A substantially rigid chair mat having a smooth surface on one side thereof, at least two web segments each of which has a surface area that is substantially less than the surface area of said smooth surface of said chair mat and each of said web segments having one face thereof adhesively secured to a



portion of said one side of said chair mat and another face having a plurality of substantially rigid cleat means projecting from said respective web segment with a selected number of said cleat means projecting in a given angular direction from



the other face of said respective web segment while others of said cleat means project in a different angular direction relative to said given angular direction whereby when said chair mat is placed on a carpet surface, said cleat means will restrain movement of said chair mat on the carpet surface.

4,340,634

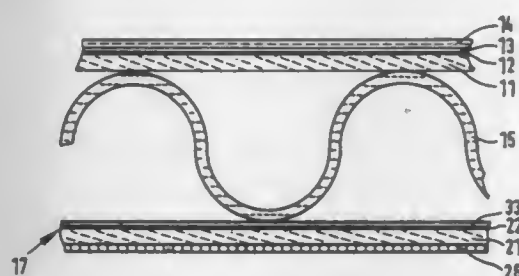
**HEAT-REFLECTIVE WALL-PAPER OR WALL LINER**  
Günter Pusch, Postfach 49, Bannholzweg 12, 6903 Neckargemünd-Dilsberg; Dieter E. Aisslinger, Heidestr. 54, 6222 Geisenheim; Alexander Hoffmann, Heidelberger Str. 24, 6901 Mauer, and Klaus-Werner Pusch, Bannholzweg 12, 6903 Neckargemünd-Dilsberg, all of Fed. Rep. of Germany

Filed Apr. 4, 1980, Ser. No. 137,507  
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1979, 2914436; Jul. 17, 1979, 2928848

Int. Cl.<sup>3</sup> B32B 3/10, 3/28

U.S. Cl. 428—134

11 Claims



1. A heat-reflecting wall-cover comprising
  - (a) a carrier material having
  - (b) a thin vapor-deposited metal layer deposited on said carrier material, said metal layer and carrier material both being deformed to such a degree so as to produce the formation of hairline cracks eliminating the surface electrical conductivity of the metal layer, and said metal layer serving to reflect infrared radiation in a thickness of less than 30 nanometer,
  - (c) a veneer protection layer for protecting the metal layer against corrosion and promoting adhesiveness applied onto said metal layer in a thickness ranging from about 0.5 to 2.0  $\mu\text{m}$ , and
  - (d) a veneer which is substantially transparent in the wavelength range of 4 to 20  $\mu\text{m}$ , but which appears colored in the range  $\lambda=0.4$  to 0.8  $\mu\text{m}$ , applied onto said veneer protection layer in a thickness of 1.5 to 20  $\mu\text{m}$ .

#### 4,340,635 CERAMIC SUBSTRATE FOR FINE-LINE ELECTRICAL CIRCUITRY

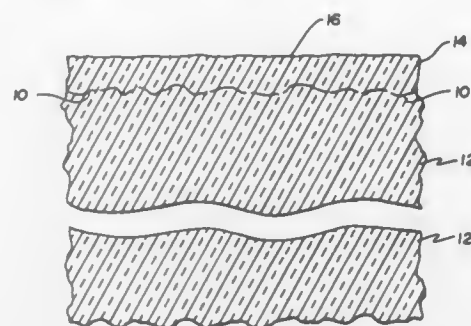
Richard A. Langman, Lakewood; Donald R. Giovanini, Arvada, and Michael P. Letzig, Broomfield, all of Colo., assignors to Coors Porcelain Company, Golden, Colo.

Filed Dec. 15, 1980, Ser. No. 216,397

Int. Cl.<sup>3</sup> B32B 3/00

U.S. Cl. 428—164

7 Claims



1. A sintered monolithic ceramic substrate for fine-line electrical circuitry, said substrate comprising a relatively thick base layer with an upper surface having irregularities therein thin upper layer with a relatively planar upper surface, said upper layer filling substantially all the surface irregularities in the upper surface of the base layer, each of said layers containing at least about 90% by weight crystalline material, the crystalline material of said base layer being substantially all an oxide selected from the group consisting of alumina and beryllia and the crystalline material of said upper layer being substantially all the same as that of the base layer but having an average grain size less than that of the crystalline material of said base layer.

4,340,636

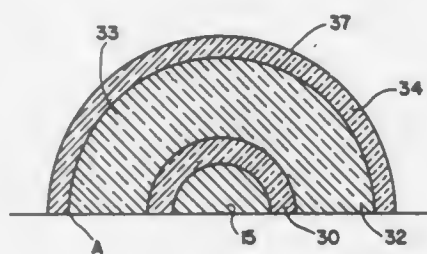
**COATED STOICHIOMETRIC SILICON CARBIDE**  
Harold E. DeBolt, Andover; Raymond J. Suplinskas, Haverhill; James A. Cornie, North Chelmsford; Thomas W. Henze, Lawrence, and Albert W. Hauze, Chelmsford, all of Mass., assignors to Avco Corporation, Wilmington, Mass.

Filed Jul. 30, 1980, Ser. No. 173,773

Int. Cl.<sup>3</sup> B32B 7/02, 9/00

U.S. Cl. 428—215

5 Claims



1. A coated stoichiometric silicon carbide comprising: a first surface comprising stoichiometric silicon carbide, and a layer of carbon-rich silicon carbide contiguous to said first surface, the ratio of silicon to carbon of said layer varies from one at the interface with said first surface to near zero at the interior of the layer to greater than zero at the surface of said layer remote from said interface for enhancing the wettability of the surface to metal matrices while conserving the other properties of the underlying filament.

4,340,637

#### TWO-COMPONENT MATERIAL

Friedrich Koob, and Gusztav Lang, both of Munich, Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Continuation of Ser. No. 46,037, Jun. 6, 1979, abandoned. This application Oct. 30, 1980, Ser. No. 202,200

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2826109

Int. Cl.<sup>3</sup> B32B 27/38, 5/16

U.S. Cl. 428—220

8 Claims

1. In a two-component kneadable material for gluing, sealing, filling, coating or doweling of a hardenable component and a hardener component, the improvement consisting of said components being separated solely by a thin layer of a finely divided particulate material in the shape of small plates or scales, having an average particle size from about 5  $\mu\text{m}$  to 250  $\mu\text{m}$ , said thin layer being destructible under working conditions and acting as a filler in said final kneadable product.

4,340,638

#### METALLIZED LABELS

Johannes T. Brugmans, Enkhuizen, Netherlands, assignor to Koninklijke Emballage Industrie Van Leer B.V., Amstelveen, Netherlands

Filed Apr. 7, 1980, Ser. No. 138,054

Claims priority, application Netherlands, Feb. 15, 1980, 8000965

Int. Cl.<sup>3</sup> B32B 15/08, 15/16

U.S. Cl. 428—323

10 Claims

1. Metallized label for containers such as bottles, coated with a lacquer comprising at least one of a methacrylic homopolymer and a vinyl chloride-vinyl acetate copolymer and comprising 2 to 10 weight % (calculated on the amount of resin in said lacquer) of additives, which do not attack the metal of said labels and which are soluble in an aqueous caustic soda solution, containing 1.5 weight % of the caustic soda, having a temperature of 80° C.

4,340,639

#### SYNTHETIC PAPER COMPRISING AN OLEFIN-BASED RESIN AND AN ADDUCT

Takashi Toyoda; Yozo Ohba, and Masaaki Yamanaka, all of Ibaraki, Japan, assignors to Oji Yuka Goseishi Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1980, Ser. No. 172,481

Claims priority, application Japan, Jul. 25, 1979, 54-94783

Int. Cl.<sup>3</sup> B32B 27/00, 27/06

U.S. Cl. 428—338

11 Claims

1. A synthetic paper prepared by stretching a sheet of a composition comprising a thermoplastic resin, comprising an olefin-based resin, and an adduct of melamine and isocyanuric acid or cyanuric acid, wherein said adduct is present in an amount of from 0.5 to 200 parts by weight per 100 parts by weight of the thermoplastic resin, wherein said stretching is to a size of 1.3 times or more the original size of the sheet, in at least one direction at a temperature lower than the melting temperature of the olefin-based resin.

4,340,640

#### HEAT SEALABLE PACKAGING FILM COMPRISING PROPYLENE POLYMER SUBSTRATE AND A SURFACE LAYER BLEND OF ETHYLENE COPOLYMER AND PROPYLENE COPOLYMER

Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 82,344, Oct. 5, 1979, Pat. No. 4,291,092. This application Nov. 3, 1980, Ser. No. 202,973

The portion of the term of this patent subsequent to Oct. 27, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> B32B 27/00

U.S. Cl. 428—349

4 Claims

1. A multiple-layer, heat-sealable film comprising:
  - (a) a substrate layer consisting essentially of a homopolymer of polypropylene or a copolymer of polypropylene which is blended with up to 40 weight % of a different compatible polyolefin; and
  - (b) on one of the surfaces of the substrate layer, a surface layer comprising a blend of 76-95 wt. % of a copolymer of ethylene (75-90 mole percent) and a higher olefin having three or more carbon atoms (10-25 mole percent), and 5-24 wt. % of a copolymer of propylene (less than 88 mole percent) and a higher olefin having 4 or more carbon atoms (more than 12 mole percent);
 in which said different compatible polyolefin in the substrate corresponds to said surface layer blend.

4,340,641

#### HEAT SEALABLE PACKAGING FILM COMPRISING PROPYLENE POLYMER SUBSTRATE AND A SURFACE LAYER BLEND OF ETHYLENE COPOLYMER AND PROPYLENE COPOLYMER

Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 82,344, Oct. 5, 1979, Pat. No. 4,291,092. This application Nov. 3, 1980, Ser. No. 202,974

The portion of the term of this patent subsequent to Oct. 27, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> B32B 27/00

U.S. Cl. 428—349

4 Claims

1. A multiple-layer, heat-sealable film comprising:
  - (a) a substrate layer consisting essentially of a homopolymer of polypropylene or a copolymer of polypropylene which is blended with up to 40 weight % of a different compatible polyolefin; and
  - (b) on one of the surfaces of the substrate layer, a surface layer comprising a blend of 5-95 wt. % of a copolymer of ethylene (1-9.5 mole %) and a higher olefin having 4 or more carbon atoms (99-90.5 mole %), and a 95-5 wt. % copolymer of propylene (less than 80 mole % or greater than 95 mole %) and a higher olefin having 4 or more carbon atoms (greater than 20 mole % or less than 5 mole %);
 in which said different compatible polyolefin in the substrate corresponds to said surface layer blend.

4,340,642

#### SURFACE MODIFIED HOLLOW MICROSPHERES

David I. Netting, Springfield; Bruce D. Spivack, Norristown, and James P. Cunliffe, Jr., Bridgeport, all of Pa., assignors to PQ Corporation, Valley Forge, Pa.

Filed Jun. 20, 1980, Ser. No. 161,473

Int. Cl.<sup>3</sup> B32B 5/16; C03B 19/10

U.S. Cl. 428—402

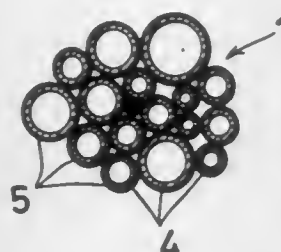
5 Claims

1. Water resistant hollow microspheres that have not been exposed to fusion or sintering temperatures, said microspheres being characterized by a weight % ratio of "polysalt" solids to sodium silicate solids of 0.02:1 to 2.0:1, said polysalt being a colloidal inorganic salt of an alkali metal and/or ammonium cations wherein the anion to cation ratio is reduced when the salt is dissolved and becomes hydrolyzed and said sodium



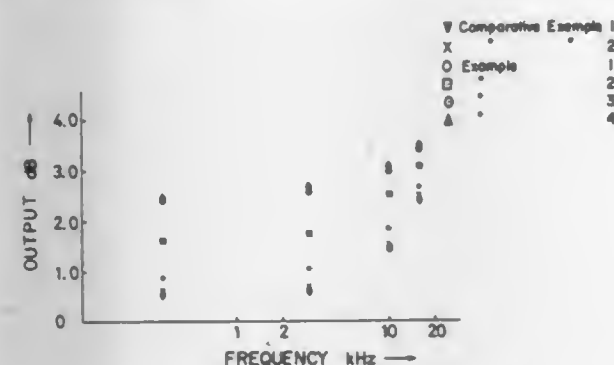
silicate containing 1.5 to 4.0 moles of  $\text{SiO}_2$  per mole of  $\text{Na}_2\text{O}$ ; a particle size of about 35 to 2000 microns; a bulk density of 2 to 20 lbs/cu ft, less than 7% moisture and 0.1 to 5.0% of a multivalent metal that decreases the solubility of the microsphere in water.

**4,340,643**  
**FLUID ANTIOXIDANT**  
Kozo Sato, 7-12, Minami 3-chome, Yamamoto-cho, Yao-shi, Osaka-fu, Japan  
Filed Sep. 22, 1980, Ser. No. 189,940  
Int. Cl.<sup>3</sup> B32B 5/16, 17/00  
U.S. Cl. 428—403 3 Claims



1. A fluid antioxidant for molten metal comprising a mixture of 35-45% by weight of balloons of at least three different diameters, said balloons being made of a member selected from the group consisting of glass and ferrite and being coated with a composition containing 15-25% by weight of powdered silicon, 30-40% by weight of powdered  $\text{MgAl}_2\text{O}_4$ , 1% by weight of nonionic surface active agent and 4% by weight of binder, all percentages being based on the weight of the antioxidant.

**4,340,644**  
**MAGNETIC RECORDING MEDIUM**  
Hiroshi Ota, Komoro; Eiji Horigome, Saku, and Hitoshi Azegami, Tobu, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan  
Filed Nov. 19, 1979, Ser. No. 95,647  
Claims priority, application Japan, Nov. 24, 1978, 53-144285  
Int. Cl.<sup>3</sup> G11B 5/68  
U.S. Cl. 428—423.7 4 Claims



1. A magnetic recording medium of improved frequency response and running quality comprising a base coated with a magnetic coating material which is a dispersion of magnetic particles in a three resin component binder containing a vinyl chloride-vinyl acetate copolymer resin, a polyester resin together with an amount which is effective to achieve such improvements of up to 50% by weight based on the total weight of the binder of a vinyl alcohol-vinyl chloride-vinyl acetate copolymer resin containing at least 10% vinyl alcohol monomer, and a polyfunctional aromatic isocyanate curing agent.

**4,340,645**  
**LEADLESS GLAZES FOR WHITEWARE**  
Eugene F. O'Connor, Towson, Md., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.  
Filed May 11, 1981, Ser. No. 262,086  
Int. Cl.<sup>3</sup> C03C 5/00, 9/00, 3/08; B32B 17/06  
U.S. Cl. 428—428 5 Claims

1. A ceramic frit which, when smelted, consists essentially of:  
(a) from 4.0 to 6.5 percent by weight of a member selected from the group consisting of potassium oxide, sodium oxide, lithium oxide and mixtures thereof;  
(b) from 7.0 to 12.5 percent by weight of zinc oxide;  
(c) from 7.0 to 12.0 percent by weight of calcium oxide;  
(d) from 0 to 0.7 percent by weight of magnesium oxide;  
(e) from 0 to 5.0 percent by weight of barium oxide;  
(f) from 2.0 to 4.0 percent by weight of strontium oxide;  
(g) from 2.5 to 6.0 percent by weight of boric oxide;  
(h) from 7.0 to 8.5 percent by weight of aluminum oxide;  
(i) from 54.0 to 60.0 percent by weight of silica; and  
(j) from 0 to 1.0 percent by weight of zirconium oxide;  
all said percents by weight being based on the total weight of components (a) through (j).

**4,340,646**  
**MULTI-LAYER REFLECTORS**  
Akira Ohno; Shitomi Katayama; Suguru Nomura; Susumu Senaha; Suizo Kyo; Susumu Shimomura; Akira Akagami, and Hiroshi Imai, all of Yokohama, Japan, assignors to NHK Spring Co., Ltd. and Yokohama Kiko Co., Ltd., both of Kanagawa, Japan  
Filed Nov. 13, 1979, Ser. No. 93,558  
Claims priority, application Japan, Nov. 13, 1978, 53/138903  
Int. Cl.<sup>3</sup> G02B 5/08; B32B 17/10, 15/08  
U.S. Cl. 428—429 10 Claims

1. A multi-layer coated reflector which comprises a substrate capable of withstanding a vacuum-deposition operation with a flex resistant thermosetting resin layer capable of withstanding a vacuum-deposition operation coated thereon, a light-reflective metal vacuum-deposited on said substrate, and two protective layers consisting of a vacuum-deposited, light-transmittable inorganic compound layer and a light-transmittable flex resistant thermosetting resin layer coated on said metal layer.

6. A multi-layer coated reflector which comprises a substrate capable of withstanding a vacuum-deposition operation, a light-reflective metal vacuum-deposited directly on said substrate, and two protective layers consisting of a vacuum-deposited, light-transmittable inorganic compound layer and a light-transmittable flex resistant thermosetting resin layer coated on said metal layer.

10. A multi-layer coated reflector as set forth in claims 1, 6, 8, 2 or 3, wherein said light-transmittable inorganic compound is a ceramic.

**4,340,647**  
**VINYL GUM CURE ACCELERATORS FOR ADDITION-CURE SILICONE**  
Richard P. Eckberg, Round Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.  
Filed May 22, 1981, Ser. No. 267,091  
Int. Cl.<sup>3</sup> B32B 9/00  
U.S. Cl. 428—429 19 Claims

1. A silicone release coating composition comprising:  
A. A solventless addition curable composition comprised of:  
(i) a diorganopolysiloxane base polymer having up to approximately 20% by weight alkenyl or silanol functional groups and having a viscosity ranging from approximately 50 to approximately 100,000 centipoise at 25° C.;  
(ii) a polymethylhydrogen siloxane fluid crosslinking agent having up to approximately 100% by weight

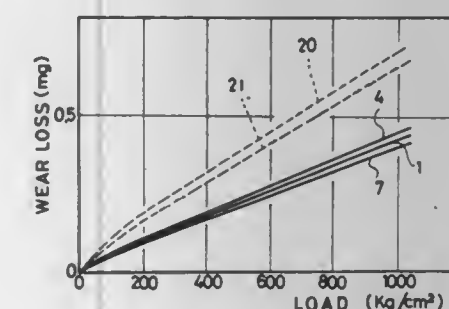
SiH-containing siloxy groups and having a viscosity in the range of approximately 25 to approximately 1000 centipoise at 25° C.;

(iii) an effective amount of precious metal catalyst for facilitating an addition cure hydrosilation reaction between said base polymer and said crosslinking agent at temperatures between, approximately, 90° C. to 300° C.;  
(iv) an amount of dialkyl carboxylic ester containing carbon to carbon unsaturation effective to inhibit the precious metal catalyzed hydrosilation cure reaction of said silicone composition at temperatures below the heat cure temperature of said silicone composition, and  
B. an amount of dimethylvinyl chainstopped polydimethylmethylvinylsiloxane polymer gum effective for accelerating the cure of said addition curable composition wherein said gum has an average molecular weight of, approximately, 200,000 to 400,000.

**4,340,648**  
**POLYVINYL CHLORIDE SUBSTRATES COATED WITH SINGLE PACKAGE WATER-BASED COMPOSITIONS**  
James A. Conrady, Amherst, and William J. Driscoll, Lorain, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio  
Filed Jun. 30, 1980, Ser. No. 164,489  
Int. Cl.<sup>3</sup> B32B 27/08; C08D 1/09; C08L 31/00  
U.S. Cl. 428—518 5 Claims

1. Article of manufacture comprising a coating composition adhering to a substrate comprising polyvinyl chloride, said coating composition comprising a reaction product of a binder resin, a scavenging agent which reacts with the anions of the persulfate initiator used to prepare said binder resin, and a sufficient amount of an alkaline neutralizing agent to render said composition neutral to alkaline, said binder resin, being devoid of an unsaturated nitrile residue, is prepared in absence of emulsifier and has  $T_g$  of about 20° to 70° C., molecular weight of 50,000 to 600,000, and is a polymer of an ethylenically unsaturated carboxylic acid containing 3 to 10 carbon atoms and an acrylic monomer selected from alkyl acrylates and methacrylates containing 4 to 24 carbon atoms, amount of said carboxylic acid being 0 to 5 parts per 100 parts of said acrylic monomers.

**4,340,649**  
**ALUMINUM-TIN BASE BEARING ALLOY AND COMPOSITE**  
Tamotsu Nara, Toyota, and Soji Kamiya, Nishio, both of Japan, assignors to Taiho Kogyo Co., Ltd., Toyota, Japan  
Continuation-in-part of Ser. No. 47,336, Jun. 11, 1979, Pat. No. 4,278,740. This application Apr. 2, 1980, Ser. No. 136,619  
Claims priority, application Japan, Jul. 11, 1978, 53-84232; Jul. 11, 1978, 53-84233  
The portion of the term of this patent subsequent to Jul. 14, 1998, has been disclaimed.  
Int. Cl.<sup>3</sup> B32B 15/04  
U.S. Cl. 428—653 20 Claims



1. An Al-Sn base bearing alloy consisting essentially of 7 to 35 wt. % of Sn; 0.1 to 1.0 wt. % of Cr; 1 to 10 wt. % in total of one or more additive elements selected from the group consisting of W, Ce, Nb, V, Mo, Ba, Ca and Co; from 0 to 3 wt. % in total of Cu and/or Mg; from 0 to 9 wt. % in total of one

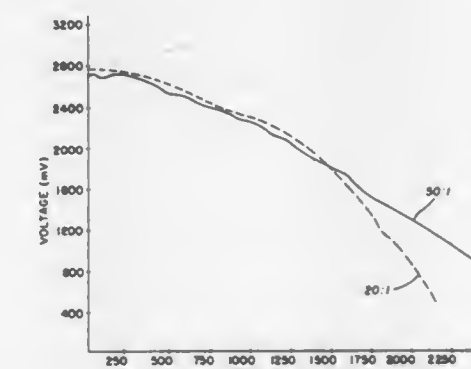
or more constituents selected from the group consisting of Pb, Bi, Ti, Cd and In; and the balance is Al.

3. A bearing material which is made by applying said bearing alloy as claimed in claim 1 to a backing steel sheet by pressure welding.

**4,340,650**  
**MULTI-LAYER COMPOSITE BRAZING ALLOY**  
Surya Pattanaik, San Jose, and Howard Mizuhara, San Mateo, both of Calif., assignors to GTE Products Corporation, Stamford, Conn.  
Filed Jun. 20, 1980, Ser. No. 161,531  
Int. Cl.<sup>3</sup> B32B 15/20 3 Claims

1. A three-layer composite alloy for brazing tungsten carbide to steel, said alloy having a center layer consisting of a metal selected from a group consisting of Fe and Ni and having solid outer layers bonded to said center layer, said outer layers consisting of, in percent by weight, 9.5 Ni-52.5 Cu-38.0 Mn, the ratio of the thickness of each of said outer layers to said center layer being substantially 1 to 2.

**4,340,651**  
**CATHODE MATERIAL AND HIGH CAPACITY LITHIUM-IODINE CELLS**  
William G. Howard, Roseville; John C. Strohkirch, New Brighton, and Marilyn A. Pehl, Anoka, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.  
Filed Nov. 12, 1980, Ser. No. 205,904  
Int. Cl.<sup>3</sup> H01M 4/36, 6/00  
U.S. Cl. 429—101 14 Claims



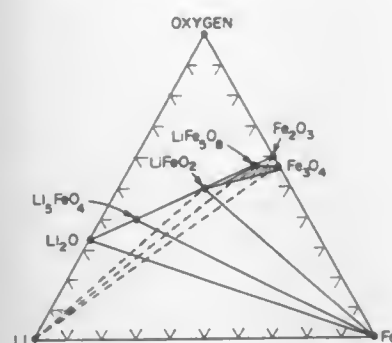
1. An electrochemical cell comprising: an anode and a cathode, the cathode comprising an initial constituent mixture containing greater than about 97% by weight and less than 100% by weight iodine, balance consisting essentially of poly(2-vinylpyridine), the poly(2-vinylpyridine) being complexed with some of the iodine and wherein the iodine and poly(2-vinylpyridine) mixture is treated by heating below about 150° C. (300° F.).

**4,340,652**  
**TERNARY COMPOUND ELECTRODE FOR LITHIUM CELLS**  
Ian D. Raistrick, Menlo Park; Ned A. Godshall, and Robert A. Huggins, both of Stanford, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.  
Filed Jul. 30, 1980, Ser. No. 173,554  
Int. Cl.<sup>3</sup> H01M 4/40, 6/36  
U.S. Cl. 429—112 16 Claims

1. In an electrochemical cell with lithium as the electroactive species thereof, said cell having a positive electrode, a negative electrode and an electrolyte, said electrolyte having a



melting point of about 350° C. to about 500° C., the improvement comprising:



said positive electrode including a ternary compound represented by Li-M-O wherein Li is lithium, M is a transition metal, and O is oxygen.

#### 4,340,653 GALVANIC DRY CELL EMPLOYING A TAPERED CATHODE BOBBIN

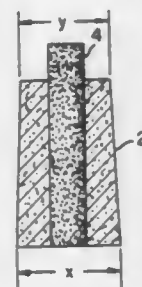
Richard C. Adams, Sevierville, Tenn., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 30, 1981, Ser. No. 249,018

Int. Cl.<sup>3</sup> H01M 2/18

U.S. Cl. 429—133

10 Claims



1. An electrochemical cell comprising in combination an anode; a cathode bobbin disposed within and separated from the anode, said cathode bobbin including a porous cathode mix cake comprising manganese dioxide as the active depolarizer material formed with a central electrode rod; and a separator containing an electrolyte solution interposed in the space between the anode and the cathode bobbin and being in contact with the surface of the anode and the surface of the cathode mix cake; the improvement wherein the cathode bobbin has a tapered form with at least a substantial portion of its outer upstanding wall tapered with respect to the longitudinal axis of the bobbin such that its outer diameter varies along the longitudinal axis of the bobbin so that the separator disposed between the outer wall of the tapered bobbin and the inner wall of the anode varied in wall thickness along the longitudinal axis of the bobbin.

#### 4,340,654 DEFECT-FREE PHOTOMASK

James G. Campi, 709 Blackfoot Ct., San Jose, Calif. 95123  
PCT No. PCT/US81/00825, § 371 Date Jul. 16, 1981, § 102(e)  
Date Jul. 16, 1981, PCT Pub. No. WO81/03628, PCT Pub. Date Dec. 24, 1981

Continuation-in-part of Ser. No. 160,978, Jun. 19, 1980, abandoned. This PCT application Jun. 18, 1981, Ser. No. 290,165

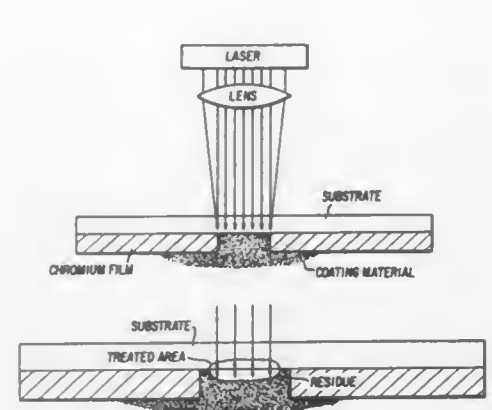
Int. Cl.<sup>3</sup> B05D 3/06

U.S. Cl. 430—5

5 Claims

1. A process for repairing transparent defects in a photomask consisting of a defect containing opaque layer overlying a substrate which is transparent to radiant energy, comprising:

applying a coating material which absorbs radiant energy to the opaque layer and over the transparent defect;  
directing a beam of radiant energy through the substrate and onto said coating in the defect areas, said beam containing sufficient radiant energy to fuse the material at the inter-



face of the substrate and the coating material such that the fusing operation forms a layer of an opaque mixture obscuring the defect area thereby eliminating the defect in the photomask; and  
removing from the photomask surface the unfused coating material.

#### 4,340,655 THERMAL AND MECHANICAL BARRIER LAYERS FOR OPTICAL RECORDING ELEMENTS

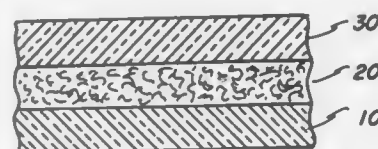
Kenneth R. Hollister, Pittsford, and Harold T. Thomas, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 18, 1980, Ser. No. 160,809

Int. Cl.<sup>3</sup> G03E 1/76; G01D 15/10; G11B 7/24

U.S. Cl. 430—14

18 Claims



1. In a recording element comprising a support having thereon a heat-deformable optical recording layer and, coated on said recording layer, a substantially transparent thermal and mechanical barrier layer, the improvement wherein said barrier layer comprises a water-soluble polymer having a  $T_g$  when dry of at least 100° C.

#### 4,340,656 ELECTROPHOTOGRAPHIC COPYING METHOD WITH RESIDUAL CHARGE ERASING STEP

Kuniki Seino, Aichi, and Yoshihiro Ozaki, Isehara, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 30, 1979, Ser. No. 25,296

Claims priority, application Japan, Apr. 7, 1978, 53/41520; Apr. 7, 1978, 53/41521

Int. Cl.<sup>3</sup> G03G 13/18, 13/22

U.S. Cl. 430—48

4 Claims

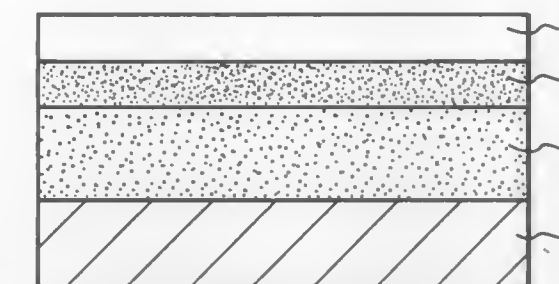
1. An electrophotographic copy method which comprises the steps of:  
charging a surface of an electrostatic charge receiving dielectric member with charges of first polarity;  
applying a direct current voltage of a second polarity between a photosensitive member, photosensitive to both positive and negative polarities and said dielectric member in face-to-face virtual contact therewith while projecting a light image of an original onto said photosensitive mem-

ber so as to form an electrostatic latent image on the dielectric member; and  
applying a direct current voltage of opposite first and second polarities alternately between the photosensitive member and dielectric member while effecting the overall illumination of the photosensitive member simultaneously therewith so as to erase charges of both first and second polarities, the values of said alternately applied voltages being approximately

$$((\chi a + \chi d)/a)(312 + 6.2\chi a)$$

wherein  $\chi a$  and  $\chi d$  are respectively the capacitive air gap equivalent thicknesses in microns of the air gap between the virtually contacting photosensitive and dielectric members and of the dielectric member itself.

and photoconductive zinc oxide in an amount of 1 to 20 parts by weight per part by weight of said photoconductor and



a topcoat layer comprised of a polyvinyl carbazole type photoconductor.

#### 4,340,657 NOVEL RADIATION-SENSITIVE ARTICLES

William Rowe, Westfield, N.J., assignor to Polychrome Corporation, Yonkers, N.Y.

Continuation-in-part of Ser. No. 122,347, Feb. 19, 1980, Pat. No. 4,269,689, which is a continuation-in-part of Ser. No. 2,647, Jan. 11, 1979, Pat. No. 4,214,965, which is a continuation of Ser. No. 600,653, Jul. 21, 1975, abandoned, which is a continuation of Ser. No. 328,678, Feb. 1, 1973, abandoned. This application Mar. 9, 1981, Ser. No. 241,803

The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> G03C 1/78, 1/96

U.S. Cl. 430—56

7 Claims

1. A photosensitive article comprising a transparent support upon the first surface of which is applied a composition which is comprised of an admixture of,

- I. a polymer which is substantially comprised of the reaction product of:
    - A. an organic, active hydrogen containing compound, which compound has an average active hydrogen functionality in the range of from 2.0 to about 2.2 with,
    - B. an excess of an organic polyisocyanate so as to form an isocyanate terminated prepolymer, said prepolymer having been subsequently reacted with,
    - C. an organic, active hydrogen containing compound, which compound has exactly one active hydrogen; said polymer having a molecular weight of from 5,000 to 50,000 with 0% free isocyanate groups; and,
  - II. an addition polymerization initiator activatable by actinic light; and,
  - III. an addition polymerizable ethylenically unsaturated component capable of forming a polymer by photo-initiated polymerization in the presence of said initiator; and,
  - IV. a natural or synthetic rubber in the amount ratio of rubber to polymer of 90:10 to 10:90 parts by weight; and,
- to the second surface of which is applied a second photosensitive layer.

#### 4,340,658 LAMINATED ZNO PHOTOSENSITIVE MATERIAL

Eiichi Inoue, Tokyo, and Isamu Shimizu, Yokohama, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 4, 1981, Ser. No. 240,403

Claims priority, application Japan, Mar. 8, 1980, 55-28584

Int. Cl.<sup>3</sup> G03G 5/087, 5/14

U.S. Cl. 430—58

4 Claims

1. A laminated photosensitive material for electrophotography, which comprises a conductive substrate, an undercoat layer formed of a composition comprising a resin binder having no substantial photoconductivity and photoconductive zinc oxide in an amount of 1 to 20 parts by weight per part by weight of said binder, an intermediate layer formed of a composition comprising a polyvinyl carbazole type photoconduc-

#### 4,340,659 ELECTROSTATIC MASTERS

Michael J. Whalen-Shaw, Paw Paw, and Robert J. Thiessen, Richland, both of Mich., assignors to Allied Paper Incorporated, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 827,127, Aug. 24, 1977, abandoned. This application Jun. 29, 1979, Ser. No. 53,168

The portion of the term of this patent subsequent to Oct. 6, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> B05D 5/12

U.S. Cl. 430—64

28 Claims

18. An electrostatic master having improved water resistance for lithographic printing comprising  
a base;  
a barrier coat applied to said base; and  
a photoconductive layer containing a photoconductive material and a binder applied to said barrier coat;  
said barrier coat consisting essentially of, on a dry weight basis, at least about 50% of a synthetic or natural film-forming hydrophobic polymer and about 2.5–50% plastic particles, said plastic particles being in an at least partially coalesced state in said barrier coat.

#### 4,340,660 TONER FOR DEVELOPMENT HAVING CROSSLINKED POLYMERS

Masashi Kiuchi, Kawasaki; Yoshio Takasu, Tama; Hiroshi Fukumoto, Kawasaki; Takashi Hino, Tokyo; Masaki Uchiyama, Kawasaki, and Yasuo Mitsuhashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1980, Ser. No. 144,219

Claims priority, application Japan, Apr. 24, 1979, 54-56535

Int. Cl.<sup>3</sup> G03 9/08

U.S. Cl. 430—106.6

7 Claims

1. In a toner for development comprising a resin and a colorant, the improvement wherein said resin comprises a first crosslinked vinyl polymer having a gel content of 50–99% and a second crosslinked vinyl polymer having a gel content of 10–0%, said polymers being in a weight ratio ranging from 10:90 to 90:10.

#### 4,340,661 PHOTOGRAPHIC LIGHT SENSITIVE SHEET FOR COLOR DIFFUSION TRANSFER PROCESS

Shigetoshi Ono, and Shinsaku Fujita, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 3, 1980, Ser. No. 137,025

Claims priority, application Japan, Apr. 5, 1979, 54-41311

Int. Cl.<sup>3</sup> G03C 7/00

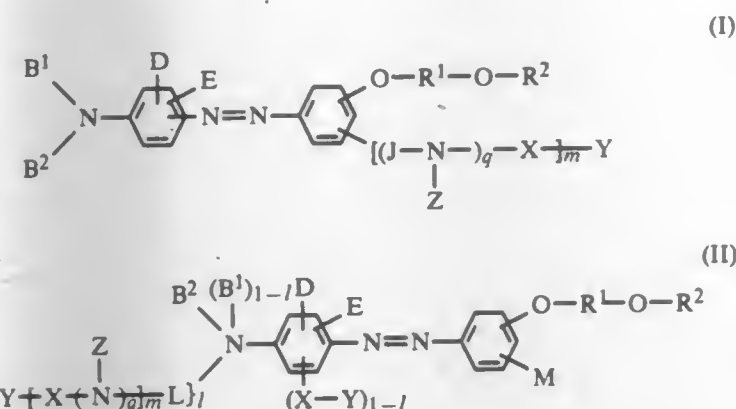
U.S. Cl. 430—223

29 Claims

1. A photographic light-sensitive sheet having at least one light sensitive silver halide emulsion layer, at least one of said



emulsion layers having associated therewith an azo dye providing compound represented by the formula (I) or (II):



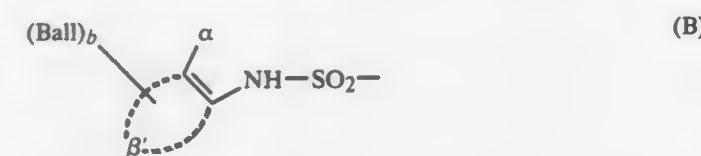
wherein

- B<sup>1</sup> represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group or a substituted or unsubstituted aralkyl group;  
 B<sup>2</sup> represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, an acyl group of the formula —COR<sup>3</sup> (where R<sup>3</sup> represents an alkyl group, a substituted alkyl group, an aralkyl group or a substituted or unsubstituted aryl group), an alkylsulfonyl group, a substituted alkylsulfonyl group or an arylsulfonyl group;  
 D represents a hydrogen atom, an alkyl group, a substituted alkyl group, an alkoxy group, a substituted alkoxy group or a halogen atom;  
 E represents a hydrogen atom, a trifluoromethyl group, a carboxylic acid ester group of the formula —COOR<sup>3</sup> where R<sup>3</sup> is defined above, a nitro group, a halogen atom, an alkyl group, a substituted alkyl group, an alkoxy group, a substituted alkoxy group, an alkylsulfonyl group, a substituted alkylsulfonyl group, an arylsulfonyl group, an alkylcarbonyl group, a substituted alkylcarbonyl group, a sulfonamido group of the formula —NHSO<sub>2</sub>R<sup>3</sup> where R<sup>3</sup> is defined above, a carbonamido group of the formula —NHCOR<sup>3</sup> where R<sup>3</sup> is defined above, a sulfamoyl group of the formula —SO<sub>2</sub>NR<sup>4</sup>R<sup>5</sup> (where R<sup>4</sup> represents a hydrogen atom, an alkyl group or a substituted alkyl group and R<sup>5</sup> represents a hydrogen atom, an alkyl group, a substituted alkyl group, an aralkyl group or a substituted or unsubstituted aryl group and further R<sup>4</sup> and R<sup>5</sup> may combine directly or through an oxygen atom to form a ring), or a carbamoyl group of the formula —CONR<sup>4</sup>R<sup>5</sup> where R<sup>4</sup> and R<sup>5</sup> are defined above;  
 R<sup>1</sup> represents an alkylene group having 2 or more carbon atoms and the two oxygen atoms bound to R<sup>1</sup> are attached to different carbon atoms;  
 R<sup>2</sup> represents an alkyl group or a substituted alkyl group;  
 m represents 1 and q represents 0;  
 J represents a divalent group, a sulfonyl group or a carbon group;  
 Z represents a hydrogen atom, an alkyl group or a substituted alkyl group;  
 X represents a divalent connecting group of the formula —A<sub>1</sub>—(T)<sub>n</sub>—(A<sub>2</sub>)<sub>p</sub>— wherein A<sub>1</sub> and A<sub>2</sub> may be the same or different and each represents an alkylene group or an arylene group; T represents a divalent group selected from an oxy group, a carbonyl group, a carboxyamido group, a carbamoyl group, a sulfonamido group, a sulfamoyl group, a sulfinyl group and a sulfonyl group; and n and p each represents 0 or 1;  
 L represents 1 or 0;  
 L represents an alkylene group or an arylene group;  
 M represents a hydrogen atom, an alkyl group, a substituted alkyl group, an alkoxy group, a substituted alkoxy group, a halogen atom, a sulfamoyl group of the formula —SO<sub>2</sub>NR<sup>4</sup>R<sup>5</sup> or a carbamoyl group of the formula —CONR<sup>4</sup>R<sup>5</sup> where R<sup>4</sup> and R<sup>5</sup> are defined above; and  
 Y represents a sulfamoyl group represented by formula (A), (B), (C) or (D) which provides an azo dye compound differ-

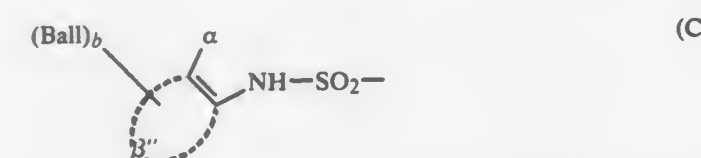
ing in the diffusibility from the compound represented by the general formula (I) or (II) as a result of developing under an alkaline condition



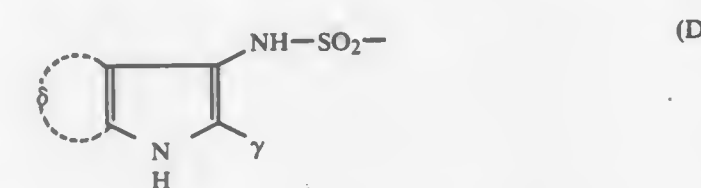
wherein  $\beta$  represents the nonmetal atoms necessary to form a benzene ring, which benzene ring may be condensed with a carbocyclic ring or a heterocyclic ring to form a condensed ring;  
 $\alpha$  represents a group of the formula —OG<sup>1</sup> or —NHG<sup>2</sup> wherein G<sup>1</sup> represents a hydrogen atom or a group capable of producing a hydroxy group when hydrolyzed and G<sup>2</sup> represents a hydrogen atom, an alkyl group having 1 to 22 carbon atoms or a hydrolyzable group;  
 $\beta$  represents 0, 1 or 2 wherein b is 1 or 2 except when  $\alpha$  represents the group —NHG<sup>2</sup> and G<sup>2</sup> contains a group which renders the compound immobile and nondiffusible; and  
 Ball represents a ballast group;



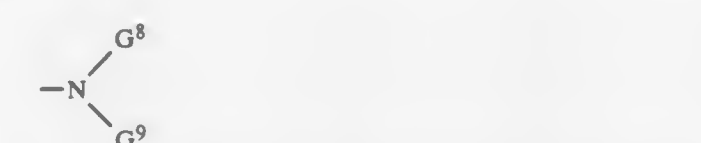
wherein Ball,  $\alpha$  and  $\beta$ , respectively, have the same meanings as in formula (A), and  $\beta'$  represents atoms necessary to form a carbocyclic ring which may be condensed with a carbocyclic ring or heterocyclic ring to form a condensed ring system;



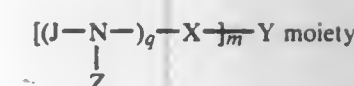
wherein Ball, b and  $\alpha$ , respectively, have the same meanings as in formula (A), and  $\beta''$  represents the atoms necessary to form a heterocyclic ring which may be condensed with a carbocyclic ring or a heterocyclic ring;



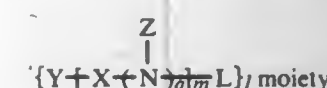
wherein  $\gamma$  represents a hydrogen atom, or an alkyl group, an aryl group or a heterocyclic ring residue or a —CO—G<sup>6</sup> group where



wherein G<sup>7</sup> represents a hydrogen atom, an alkyl group, a cycloalkyl group or an aryl group; G<sup>8</sup> has the same definition as G<sup>7</sup> or is an acyl group derived from an aliphatic or an aromatic carboxylic acid or from a sulfonic acid; and G<sup>9</sup> represents a hydrogen atom or a substituted or unsubstituted alkyl group, further wherein the —O—R<sup>1</sup>—R<sup>2</sup> group is ortho the



in formula (I) and ortho the



in formula (II).

4,340,662

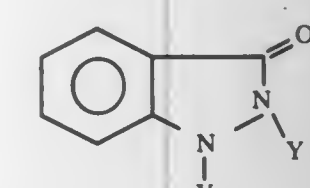
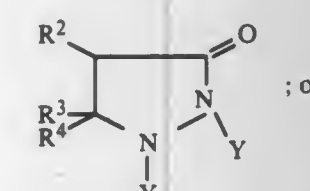
#### TELLURIUM IMAGING COMPOSITION

Stanford R. Ovshinsky, Bloomfield Hills, Mich.; Leon F. Hines, Hazleton, Pa.; Ronald W. Citkowski, Pleasant Ridge, and Terry T. Yu, Mt. Clemens, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

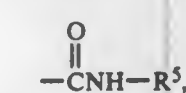
Continuation-in-part of Ser. No. 73,699, Sep. 10, 1979, abandoned Jun. 26, 1981, Ser. No. 277,720  
 Int. Cl.<sup>3</sup> G03C 1/00, 5/24

U.S. Cl. 430—270 65 Claims

1. In a composition responsive to activating energy for forming an imaging film, which composition comprises
  - (a) an image-forming tellurium compound;
  - (b) a reductant precursor which will abstract labile hydrogen from a hydrogen donor under the influence of activating radiation to become a reducing agent with respect to the image-forming tellurium compound;
  - (c) a source of labile hydrogen for reaction with said reductant precursor; and
  - (d) a matrix in which said tellurium compound, reductant precursor and source of labile hydrogen are combined in amounts effective to form a composition which may be applied to a substrate,
 the improvement wherein there is included in said composition a masked reducing agent of the formula



wherein R<sup>1</sup> is alkyl, alkanoyl, alkoxy carbonyl, phenyl, benzyl, benzoyl, nitrophenyl, benzyl carbonyl, diphenylmethyl, diphenylethyl, diphenylpropyl carbonyl or amino carbonyl; R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> each and independently are hydrogen, alkyl, phenyl, or amino; and R<sup>5</sup> is phenyl, nitrophenyl, halophenyl, alkyl, mono-, di- or tri-haloacetyl, benzoyl, alkylphenyl, or alkyl-p-isocyanophenyl, said alkyl grouping in the radicals R<sup>1</sup> through R<sup>5</sup> having from 1 to 7 carbon atoms, and wherein Y is hydrogen or



said compound containing at least one



in said compound, the amount of said masked reducing agent being at least 1% by weight of said image-forming tellurium compound.

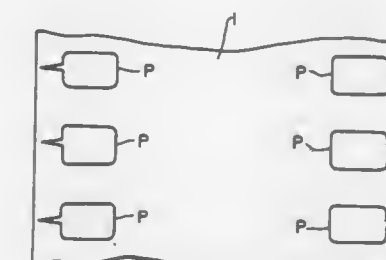
4,340,663

#### PHOTOGRAPHIC FILM

Akikazu Mikawa, Minami-ashigara, and Kyoichi Naruo, Fujinomiya, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 1, 1981, Ser. No. 259,648  
 Claims priority, application Japan, May 14, 1980, 55-65750[U]

Int. Cl.<sup>3</sup> G03C 3/02, 1/76  
 U.S. Cl. 430—496 6 Claims



1. Photographic film of the type having perforations formed along at least one edge of said film in the longitudinal direction of said film at predetermined intervals, the improvement comprising a cut being formed extending from each of said perforations on the side of said perforations away from a picture region toward the marginal edges of said film wherein tears at said perforations propagate away from said film picture regions.

4,340,664

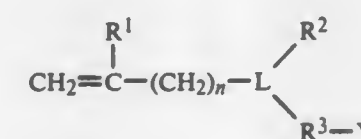
#### COPOLYMER LATEX AND PHOTOGRAPHIC SILVER HALIDE MATERIALS CONTAINING SUCH LATEX

Marcel J. Monbaliu, Mortsel; Walter F. De Winter, 's-Gravenwezel, and Raphaël K. Van Poucke, Berchem, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Sep. 19, 1980, Ser. No. 188,734  
 Claims priority, application United Kingdom, Oct. 15, 1979, 7935782

Int. Cl.<sup>3</sup> G03C 5/24, 1/40  
 U.S. Cl. 430—449 10 Claims

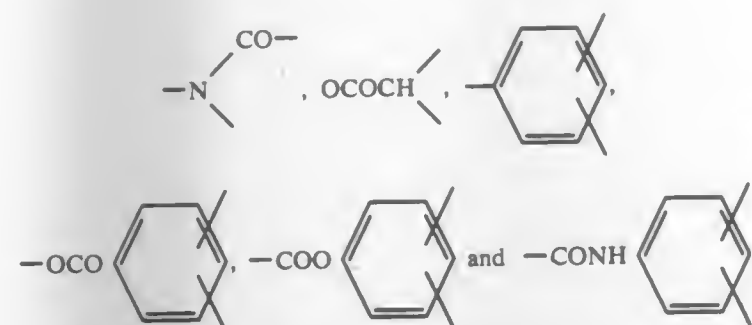
1. An aqueous dispersion of a copolymer comprising recurring units of a monomer which includes a photographically useful group, that plays a chemical role in the preparation, storage and/or processing of a photographic silver halide emulsion material, or defines thereof at least partly the spectral absorption characteristics, and recurring units of an ionogenic surface active monomer, characterized in that the said ionogenic monomer corresponds to the following general formula:



wherein

R<sup>1</sup> is hydrogen or methyl,  
 n is 0 or an integer from 1 to 20,  
 L is a trivalent linking moiety selected from the group consisting of —CONHCH<, —CON<,





$R^2$  is hydrogen or an aliphatic branched or unbranched saturated or unsaturated hydrocarbon group,  
 $R^3$  is a monovalent chemical bond or a bivalent aliphatic hydrocarbon group or such group interrupted by the group  $-COO-$  or  $-CONR-$  wherein  $R$  is hydrogen or a  $C_1-C_4$  alkyl group, and  
 $Y$  is a hydrophilic group selected from sulfo, sulphato and phosphono in acid or salt form, and wherein at least one of the groups represented by  $-(CH_2)_n-$ ,  $R^2$  and  $R^3$  is or contains an uninterrupted aliphatic hydrocarbon chain of at least 8 C-atoms, said monomer being present in said copolymer in an amount sufficient to contribute to the stability of the aqueous dispersion containing said copolymer and to provide a stable dispersion.

4,340,665

## SILVER HALIDE FILM

Lloyd G. Sidwell, Hendersonville, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
 Filed Mar. 4, 1981, Ser. No. 240,416  
 Int. Cl.<sup>3</sup> G03C 1/34

U.S. Cl. 430—539

7 Claims

1. A photographic element comprising a support and at least one silver halide emulsion layer on said support, characterized in that the photographic element contains a combination of a phosphate and trisodium hydroxyethylethylenediamine triacetate; said combination being employed in an amount effective to reduce metal particle contamination.

4,340,666

## METHOD FOR MAKING PHOTSENSITIVE SILVER HALIDE EMULSION LAYERS

Vivian K. Walworth, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.  
 Filed Feb. 17, 1981, Ser. No. 234,936  
 Int. Cl.<sup>3</sup> G03C 1/02

U.S. Cl. 430—569

42 Claims

1. A method for forming a photosensitive silver halide emulsion layer which comprises the steps of applying a mixture of a solution of a water-soluble complex of silver ion and a polymeric thickening agent to a permeable substrate, imbibing said complex into said permeable substrate and crystallizing photosensitive silver halide grains by decomplexation of said complex within said permeable substrate wherein said polymeric thickening agent comprises a polymer which inhibits silver halide grain growth relative to said permeable substrate and said permeable substrate comprises a polymer which promotes silver halide grain growth relative to said thickening agent.

4,340,667

## RAPID, SEMI-AUTOMATED METHOD FOR DETERMINING DIBUCAINE NUMBERS

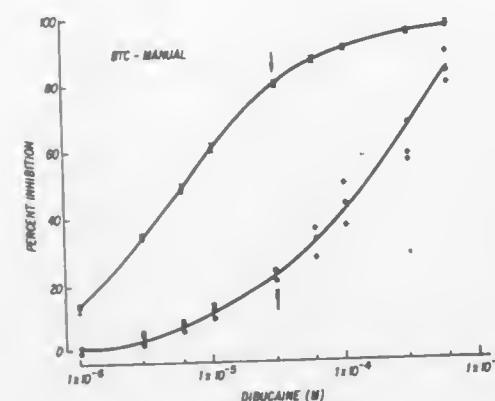
William P. Arnold, Charlottesville, Va., assignor to The University of Virginia, Charlottesville, Va.  
 Filed May 20, 1980, Ser. No. 151,602  
 Int. Cl.<sup>3</sup> C12Q 1/46

U.S. Cl. 435—20

2 Claims

1. In a method for the determination of dibucaine number by determining the plasma cholinesterase activity of serum sam-

ples with and without, dibucaine present, said plasma cholinesterase activity being measured by the hydrolysis of butyrylthiocholine by said serum sample in the presence of the blue dye 2,6-dichlorophenolindophenol, said butyrylthiocholine upon hydrolysis releasing thiocholine which directly reduces the blue dye to a colorless form, the change in absorbance at 600 nm due to the disappearance of 2,6-dichlorophenolindophenol being directly proportional to said plasma cholinesterase activity wherein said activity is measured in the presence of dibu-



caine to give a value for the inhibited activity and in the absence of dibucaine to give a value for the uninhibited activity and the dibucaine number (DN) is determined by the formula  $DN = (1 - (\text{inhibited activity} / \text{uninhibited activity})) \times 100$  the improvement comprising preparing serum samples with dibucaine present by using the serum to reconstitute lyophilized dibucaine coated on the walls of a serum sample vessel or present in a tablet in an amount which will yield a concentration of  $1 \times 10^{-4}$  M dibucaine in the serum sample.

4,340,668

## HEME-LABELED SPECIFIC BINDING ASSAY

William E. Hornby, Berkshire, and David L. Morris, Buckinghamshire, both of England, assignors to Miles Laboratories, Inc., Elkhart, Ind.  
 Division of Ser. No. 45,423, Jun. 4, 1979, Pat. No. 4,238,565, which is a continuation-in-part of Ser. No. 917,961, Jun. 22, 1978, abandoned. This application Nov. 3, 1980, Ser. No. 203,526 The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> G01N 33/54; C12N 9/06

U.S. Cl. 435—7

20 Claims

1. A homogeneous specific binding assay method for determining a ligand in a liquid medium, comprising the steps of: forming a reaction mixture by contacting said liquid medium with

- reagent means including a labeled conjugate comprising, as label component, heme coupled to a binding component, such contact producing a binding reaction system in which a bound-species and a free-species of said labeled conjugate are formed, the proportion of the heme label component in said two formed species being a function of the presence of said ligand in said liquid medium, and
  - an apoenzyme selected from apoperoxidase and apocytocrome C, the ability of the heme label component to combine with the apoenzyme to produce a holoenzyme being different in activity in said two formed species, and
- determining the proportion of the heme label component in said two formed species by measuring holoenzyme activity in said reaction mixture.

4,340,669

## SYSTEM FOR THE DETERMINATION OF GLUCOSE IN FLUIDS

Robert Bauer, Bristol, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Feb. 12, 1981, Ser. No. 233,928  
 Int. Cl.<sup>3</sup> G01N 33/50; C12Q 1/54

U.S. Cl. 435—14

6 Claims

1. In a test composition capable of the determination of the presence of glucose in a liquid test sample, wherein said composition comprises glucose oxidase, a peroxidatively active substance and one or more chromogens reactive with hydrogen peroxide, and wherein the components of the composition are present together as a solution and are present in amounts and proportions such that the composition is capable of differentiating between concentrations of 2,000 and 5,000 milligrams of glucose per deciliter, the improvement which involves the use of m-anisidine as a chromogen.

4,340,670

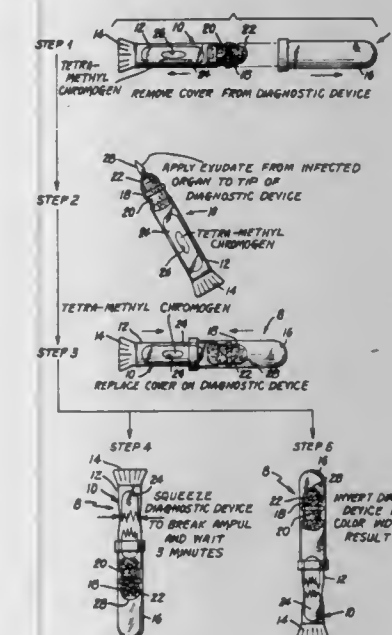
## METHOD OF USING OVER THE COUNTER SWAB KIT FOR SELF DETECTION OF GONORRHEA IN THE MALE USING TETRAMETHYL CHROMOGEN AMPUL

Frederick C. Mennen, 506 Clay St., LaPorte, Ind. 46350

Filed Jun. 19, 1981, Ser. No. 275,171  
 Int. Cl.<sup>3</sup> G01N 33/50; C12K 1/00

U.S. Cl. 435—25

1 Claim



1. A method for the detection and diagnosis of living gonorrhea bacteria by chromogenic reaction with a substantially colorless phenylenediamine dihydrochloride salt without transport of said bacteria from a sampling swab on which exudate from the penis of a male is placed comprising:

- providing a tubular flexible cartridge having a closed end and an open end, placing a frangible ampul in said cartridge fitting a swab protruding from the open end of said cartridge above said ampul to provide a tip projecting from said cartridge, said ampul having a length at least as long as said swab and being supported by said closed end of said cartridge whereby the ampul and bottom portion of said swab substantially fill said cartridge and said ampul being filled with a substantially colorless 1% aqueous solution of N, N, N' N' tetramethyl-p-phenylenediamine dihydrochloride;
- providing a cover which fits over the exposed tip of said swab to cap said cartridge;
- taking a sample of exudate on the tip of the swab; thereafter replacing said cover over said swab on said cartridge;
- inverting the cartridge and cover;
- breaking the ampul by squeezing the cartridge to release the aqueous solution whereby the swab is wetted by said solution and the color of the solution changes from sub-

stantially colorless to a purple color within a period of about three minutes;  
 waiting three minutes for the color indication of purple color and simultaneously inverting the diagnostic device in a final step;  
 the exudate at the tip developing this deep purple color after three minutes to show the presence of endogenous cytochrome oxidase constituting the metabolite of *Neisseria gonorrhea*.

4,340,671

## E. COLI SENSITIVITY BROTH

Sandra F. Gibson, St. Louis, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 828,944, Aug. 29, 1977, abandoned. This application May 27, 1980, Ser. No. 153,194  
 Int. Cl.<sup>3</sup> C12Q 1/18

U.S. Cl. 435—32

15 Claims

1. In a microenvironment having accommodation for less than about 20 microns of dried medium and less than about 1 microliter of antibiotic and having a controlled limited oxygen ( $O_2$ ) accessibility, the improvement of a selective broth medium for determining *Escherichia Coli* sensitivity from a polymicrobial specimen to an antibiotic consisting essentially of:

- from about 1.5 to about 4.5 g/l coumaric acid to inhibit the growth of gram negative organisms other than *E. Coli* which normally give positive results in tests for *E. Coli*,
- from about 5 to about 15 g/l lactose and L-arabinose carbon source,
- from about 2.5 to about 7.5 g/l nitrogen source,
- from about 1.5 to about 4.5 g/l gram-positive organism inhibitor,
- from about 0.25 to about 0.75 g/l mineral and vitamin source,
- from about 10 to about 30 ml reduced aniline blue indicator to visually show the metabolism of *E. Coli* organism,
- said carbon, nitrogen, mineral and vitamin sources containing a material metabolized by *E. Coli* to produce acid to trigger the indicator so that it turns blue, and
- a preselected antibiotic at a pH of about 7.5.

4,340,672

ENZYMATIC SYNTHESIS OF  $\beta$ -LACTAM ANTIBACTERIALS

Eiji Kondo, Ikeda; Takashi Mitsugi, Izumiotsu; Tamio Fujiwara, Amagasaki, and Ryonosuke Muneyuki, Kyoto, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan  
 Filed Sep. 19, 1980, Ser. No. 188,869

Claims priority, application Japan, Sep. 19, 1979, 54-119260  
 Int. Cl.<sup>3</sup> C12P 37/04

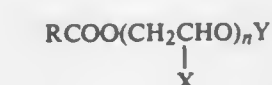
U.S. Cl. 435—45

3 Claims

1. A process for the synthesis of a penicillin or cephalosporin comprising the steps of:  
 subjecting an amine of the formula:

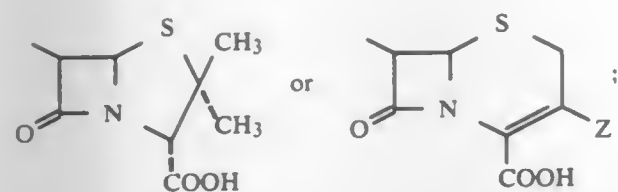


optionally in an enzymatically acceptable conventional salt or ester form to enzymatic catalysis in the presence of an acylase and in the presence of an ester of the formula:



wherein Q is a group of the formula:





Z is hydrogen, halogen, or a group which consisting of 1 to 7 carbon atoms selected from the group consisting of methyl, lower alkoxy, monocyclic (O, N or S)-heterocyclic thio, monocyclic lower aralkyl, lower alkanoyloxy, lower alkanoyloxy-lower alkyl, monocyclic (O, N or S)-heterocyclic thio-lower alkyl, or pyridinium-lower alkyl, optionally substituted with lower alkyl, carboxy-lower alkyl, lower alkoxy, carbamoyl or halogen; RCO, which contains 1 to 15 carbon atoms, is lower alkanoyl, lower alkenoyl, monocyclic lower aralkanoyl, monocyclic aryloxy-lower alkanoyl, (O, N or S)-heterocyclic-lower alkanoyl, (O, N or S)-heterocyclic thio-lower alkanoyl, cyanoacetyl, cyanomethylthioacetyl, monocyclic arylglycyl, monocyclic cycloalkenylglycyl, monocyclic arylglycyl, N-acylaryl glycol, monocyclic arylmalonyl or arylsulfoalkanoyl, optionally substituted with lower alkyl, aminomethyl, halogen, hydroxy, lower alkanoyloxy or lower alkoxy; X is hydrogen, lower alkyl or hydroxymethyl; Y is hydrogen or lower alkyl; and n is an integer of from 1 to 20, to form a penicillin or cephalosporin of the formula:



wherein R and Q are as defined above.

4,340,673

#### PROCESS OF PRODUCING MODIFIED GLUCANS AS ANTI-CARIES AGENT

Thomas H. Stoudt, Westfield, and Karl H. Nollstadt, Clark, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 7, 1980, Ser. No. 205,030

Int. Cl.<sup>3</sup> C12P 19/18, 19/04

U.S. Cl. 435—97

4 Claims

1. A process for the preparation of a glucan with a molecular weight in excess of 500,000, consisting predominantly of  $\alpha$ -(1 $\rightarrow$ 3)glucosidic bonds and inert to enzymatic attack by an endo- $\alpha$ -(1 $\rightarrow$ 3)glucan-3-glucanohydrolase which comprises cell-free biosynthesis of plaque polysaccharides in a biosynthetic medium containing glucosyl transferase derived from *Streptococcus mutans*, sucrose, and from 5-40 units/ml of the endo- $\alpha$ -(1 $\rightarrow$ 3)glucan-3-glucanohydrolase for 24-48 hours at 37° C., inactivating the enzymes, removing insoluble polysaccharides and adding the miscible organic solvent to precipitate the desired glucan.

4,340,674

#### COINTEGRATE PLASMIDS AND THEIR CONSTRUCTION FROM PLASMIDS OF ESCHERICHIA AND STREPTOMYCES

Jack J. Manis, Portage, and Sarah K. Highlander, Oshtemo Township, Kalamazoo County, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 146,320, May 5, 1980, abandoned, which is a continuation-in-part of Ser. No. 129,581, Mar. 12, 1980, abandoned. This application Jul. 23, 1980, Ser. No. 171,448

Int. Cl.<sup>3</sup> C12N 15/00; C12P 21/00; C12N 1/20, 1/00

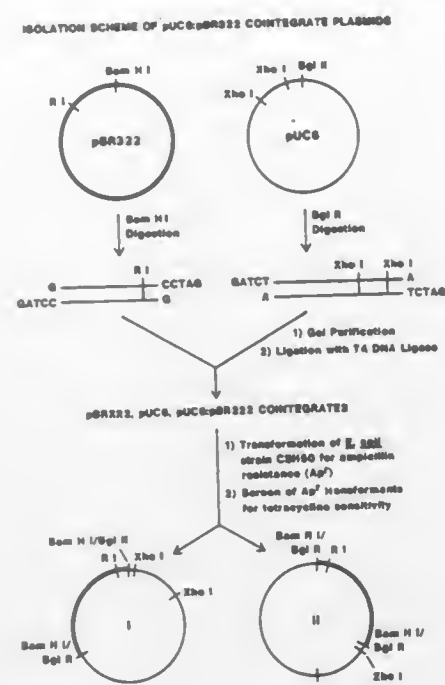
U.S. Cl. 435—172

27 Claims

6. A process for cloning plasmid pUC6 into a suitable bacterium which comprises:

- linearizing plasmids pBR322 and pUC6 to obtain linear plasmid DNA;
- ligating said linear plasmid DNA from pBR322 and

pUC6 to obtain cointegrate plasmids pUC1012 and pUC1013; and,



(c) transforming said cointegrate plasmids into said suitable bacterium.

4,340,675

#### PROCESS FOR RECOVERING Cu,Zn-SUPEROXIDE DISMUTASE FROM YEAST

Jack T. Johansen, Rungsted Kyst, Denmark, assignor to De Forenede Bryggerier A/S, Copenhagen, Denmark

Filed May 13, 1980, Ser. No. 149,392

Claims priority, application Denmark, May 17, 1979, 2033/79

Int. Cl.<sup>3</sup> C12N 9/02

U.S. Cl. 435—189

6 Claims

1. A process for recovering Cu,Zn-superoxide dismutase (SOD) from yeast, characterized by subjecting the yeast to plasmolysis by adding a small amount of ether, and to subsequent autolysis in water at a temperature of 25° to 50° C. and a pH in the range of 5 to 9, and then removing the precipitate and purifying and isolating the superoxide dismutase from the residual liquid (the SOD fraction).

4,340,676

#### METHOD OF CRYSTALLIZING RIBULOSE, 1,5-BISPHOSPHATE CARBOXYLASE/OXYGENASE FROM PHOTOSYNTHETIC ORGANISMS, PARTICULARLY PLANT LEAVES

Don P. Bourque, Tucson, Ariz., assignor to University Patents, Inc., Norwalk, Conn.

Filed Sep. 24, 1980, Ser. No. 190,233

Int. Cl.<sup>3</sup> C12N 9/88

U.S. Cl. 435—232

60 Claims

1. A method of crystallizing fraction I protein from a photosynthetic organism comprising: separating and purifying protein from said photosynthetic organism; mixing said protein in a suitable solvent to form a protein solution at a predetermined pH; mixing a precipitant solution with said protein solution, said precipitant solution having a pH lower than the pH of the protein solution and within the range of 4.8 to 7.2 to form a mixed solution having a pH in the range of 6.6 to 7.0; and removing a portion of said solvent from said mixed solution to cause said protein to crystallize.

4,340,677

#### FERMENTATION PROCESS

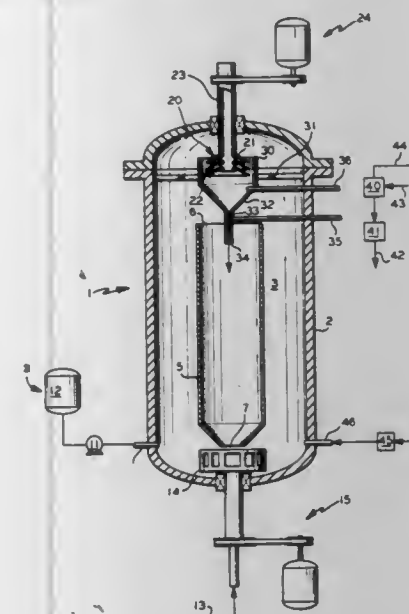
Donald O. Hitzman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 11, 1980, Ser. No. 139,371

Int. Cl.<sup>3</sup> C12N 1/34

U.S. Cl. 435—246

10 Claims



1. In a biological process involving microorganism fermentation in a fluid environment wherein a multiphase mass comprising a liquid nutrient phase, a solid organism phase and a gaseous phase in a fermenter is subjected to fermentation thereby consuming nutrient and multiplying organisms, wherein at least a portion of said multiphase mass is present as a foam in said fermenter, wherein said foam is subjected to a foam breaking step generating a gas stream essentially free of said liquid nutrient phase and of said solid organism phase which gas stream is withdrawn from said fermenter, the improvement comprising

subjecting the fluid stream comprising both said liquid nutrient phase and said solid organism phase leaving said foam breaking step to a centrifugal action inside of said fermenter such as to generate a first fluid stream being rich in said liquid nutrient phase and depleted in said solid organism phase and a second fluid stream being rich in said solid organism phase and depleted in said liquid nutrient phase.

4,340,678

#### XANTHOMONAS BIOPOLYMER FOR USE IN DISPLACEMENT OF OIL FROM PARTIALLY DEPLETED RESERVOIRS

William C. Wernau, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

This application Jan. 5, 1981, Ser. No. 222,388

Int. Cl.<sup>3</sup> C12N 1/20; C12P 19/06; C12R 1/64

Division of Ser. No. 851,757, Nov. 15, 1977, Pat. No. 4,296,203. U.S. Cl. 435—253

4 Claims

1. Pyruvate-free xanthan-containing fermentation broth.

4,340,679

#### CULTURE MEDIA FOR INACTIVATION OF BACTERIAL GROWTH INHIBITORS

George M. Fukui, Herbert J. Spencer, and Laurens R. Williams, II, all of Irving, Tex., assignors to Abbott Laboratories, North Chicago, Ill.

Filed May 8, 1980, Ser. No. 147,794

Int. Cl.<sup>3</sup> C12N 1/20

U.S. Cl. 435—253

4 Claims

1. Bacterial growth medium containing an effective amount

of salicylate to neutralize bacterial growth inhibitors in blood or blood components.

4,340,680

#### CATION EXCHANGE MEMBRANE OF FLUORINATED POLYMER FOR AN ELECTROLYSIS

Tatsuro Asawa, Yokohama; Masaaki Yamabe, Machida, and Haruhisa Miyake, Yokohama, all of Japan, assignors to Asahi Glass Company, Limited, Tokyo, Japan

Filed Jul. 23, 1980, Ser. No. 171,286

Claims priority, application Japan, Aug. 14, 1979, 54-102750

Int. Cl.<sup>3</sup> B01J 47/12

U.S. Cl. 521—27

7 Claims

1. A cation exchange membrane of a fluorinated polymer for an electrolysis which comprises a structure of a copolymer of a fluorinated olefin and a fluorovinyl compound having the formula:



wherein

X represents —F or —CF<sub>3</sub>;

Y and Y' respectively represents —F or C<sub>1</sub>—C<sub>10</sub> perfluoroalkyl group;

l is 0 to 3;

m is 0 or 1;

n is 0 to 12 and M represents hydrogen atom or an alkali metal atom; and

one modified surface layer of said cation exchange membrane on an anode side which has —SO<sub>3</sub>M groups formed from —COOM groups of said copolymer, wherein said modified surface layer does not extend to more than  $\frac{1}{2}$  the thickness of said membrane.

4,340,681

#### PROCESS FOR THE MANUFACTURE OF FOAMED OR NON-FOAMED COMPOSITIONS

Franz G. Reuter, Lemförde, and Karl-Heinz Hilterhaus, Georgsmarienhütte, both of Fed. Rep. of Germany, assignors to Reuter Technologie GmbH, Lemförde and Chemie-Anlagenbau Bischofsheim GmbH, Osnabrück, both of, Fed. Rep. of Germany

PCT No. PCT/DE79/00118, § 371 Date May 29, 1980, § 102(e) Date May 28, 1980, PCT Pub. No. WO80/00705, PCT Pub. Date Apr. 17, 1980

PCT Filed Sep. 28, 1979, Ser. No. 192,592

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842582

Int. Cl.<sup>3</sup> C08G 18/14

U.S. Cl. 521—123

5 Claims

1. Process for the manufacture of foamed or non-foamed compositions comprising reacting at least one organic or inorganic compound containing at least two isocyanate groups in the presence of an alkaline aqueous solution, an alkaline aqueous suspension or an alkaline aqueous slurry of an alkali metal hydroxide or alkaline earth metal hydroxide, and at least one catalyst characterized in that a mixture of the compound containing isocyanate groups and said hydroxide or oxide is added to a mixture of water and catalyst.



**4,340,682**  
**ADHESIVE CONSISTING ESSENTIALLY OF AN**  
**ISOCYANATE TERMINATED RICINOLEATE**  
**PREPOLYMER AND A CHLORINATED POLYVINYL**  
**CHLORIDE**

Norris R. Legue, Scotch Plains, and Myron Shapiro, Rockaway, both of N.J., assignors to Synthetic Surfaces, Inc., Scotch Plains, N.J.

Filed May 7, 1981, Ser. No. 261,589  
 Int. Cl.<sup>3</sup> C09J 3/12, 3/14, 3/16

U.S. Cl. 524—507

23 Claims

1. A curable adhesive composition consisting essentially of a solution in a suitable solvent of

- (a) an isocyanate terminated ricinoleate prepolymer having an available isocyanate content exclusive of solvent and expressed as 100% solids at least as high as 2% by weight, and  
 (b) a chlorinated polyvinyl chloride resin appearing in quantities no more than approximately 90% by weight of the mixture of the combined chlorinated polyvinyl chloride and the said prepolymer.

**4,340,683**  
**POLYCARBONATE COMPOSITIONS**  
 Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Mt. Vernon, Ind.  
 Continuation-in-part of Ser. No. 69,825, Aug. 27, 1979, Pat. No. 4,245,058. This application Mar. 3, 1980, Ser. No. 126,958  
 Int. Cl.<sup>3</sup> C08L 69/00

U.S. Cl. 525—148

5 Claims

1. A ternary polycarbonate composition comprising in admixture, a high molecular weight aromatic polycarbonate which is based on a dihydric phenol, a minor amount of an acrylate copolymer, which is a copolymer of a C<sub>1</sub>-C<sub>5</sub> acrylate and a C<sub>1</sub>-C<sub>5</sub> methacrylate, and a minor amount of polyethylene oxide.

**4,340,684**  
**THERMOPLASTIC ELASTOMER BLENDS**  
 Georg G. A. Bohm, Akron; Gary R. Hamed, Uniontown, and Lee E. Vescelius, Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio  
 Division of Ser. No. 1,623, Jan. 8, 1979, Pat. No. 4,250,273, which is a continuation-in-part of Ser. No. 879,308, Feb. 21, 1978, abandoned, which is a division of Ser. No. 806,036, Jun. 13, 1977, abandoned. This application Aug. 4, 1980, Ser. No. 175,096  
 Int. Cl.<sup>3</sup> C08F 8/00

U.S. Cl. 525—194

6 Claims

1. A thermoplastic elastomer composition, comprising a blend of

- from about 10 to about 50 parts by weight of a crystalline 1-olefin polymer, said 1-olefin polymer selected from the group consisting of a homopolymer and a copolymer made from 1-olefin monomers having from 2 to 20 carbon atoms, said homopolymer or said copolymer having a melting point of at least 90° C.;  
 from about 80 to about 15 parts by weight of a random styrene-butadiene rubber; and  
 from about 5 to about 55 parts by weight of a highly saturated elastomer,  
 said blend being partially cured and having a melt flow index of at least 1.0 so that a thermoplastic elastomer is formed; wherein said highly saturated elastomer is selected from the group consisting of a hydrogenated homopolymer made from having dienes from 4 to 10 carbon atoms, and a hydrogenated diblock or triblock copolymer made from conjugated dienes having from 4 to 10 carbon atoms and vinyl substituted aromatics having from 8 to 12 carbon atoms, the amount of said saturation of said elastomer being at least 70%.

**4,340,685**  
**PROCESS FOR PREPARING POLYBUTADIENE**  
**HAVING A 1,2-CONFIGURATION CONTENT OF 5-40%**  
**AND A CIS-1,4-CONFIGURATION CONTENT OF 60% OR**  
**MORE**

Yasumasa Takeuchi; Yutaka Obata, both of Yokkaichi; Noboru Ohshima, Suzuka; Tooru Shibata, and Kaoru Nakako, both of Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1981, Ser. No. 228,625

Claims priority, application Japan, Jan. 31, 1980, 55/10757  
 Int. Cl.<sup>3</sup> C08F 2/06, 4/70

U.S. Cl. 525—247

18 Claims

1. A process for preparing a polybutadiene with a 1,2-configuration content of 5-40%, a Mooney viscosity of 20 to 150 and a melting point 1,2-configuration portion of 180° C. to 220° C., and a cis-1,4-configuration content of at least 60%, which comprises polymerizing 1,3-butadiene in the presence of a 1,2 syndiotactic polymerization catalyst consisting of:

- (A) a cobalt compound,  
 (B) at least one member selected from the group consisting of:  
 (i) a trialkylaluminum,  
 (ii) a reaction product of a trialkylaluminum and an alcohol or water,  
 (iii) a mixture of a trialkylaluminum and a dialkylaluminum halide,  
 (iv) a dialkylaluminum hydride, and  
 (v) an organolithium compound, and  
 (C) at least one compound selected from the group consisting of phenyl isothiocyanate and carbon disulfide in a hydrocarbon or halogenated hydrocarbon solution of a high cis-1,4-polybutadiene obtained by polymerizing 1,3-butadiene with a catalyst consisting of:  
 (D) at least one compound selected from the group consisting of organocarboxylates of nickel and organic complex compounds of nickel,  
 (E) at least one compound selected from the group consisting of boron trifluoride, boron trifluoride complex compounds and hydrogen fluoride, and  
 (F) at least one compound selected from the group consisting of the organometallic compounds of the alkali metals and the Group II or III metals of the Periodic Table, wherein the amount of the high cis-1,4-polymerization catalyst used is that corresponding to 0.02-2.5 mg atom nickel of the component (D) per 100 g of 1,3-butadiene.

**4,340,686**  
**CARBAMATED POLY(VINYL ALCOHOL) USEFUL AS A**  
**BINDER IN ELASTOMERIC PHOTOPOLYMER**  
**COMPOSITIONS**

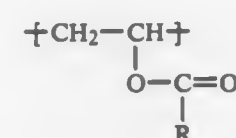
Robert P. Foss, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 42,943, May 29, 1979, Pat. No. 4,247,624.  
 This application Jan. 13, 1981, Ser. No. 224,685  
 Int. Cl.<sup>3</sup> C08F 8/32

U.S. Cl. 525—59

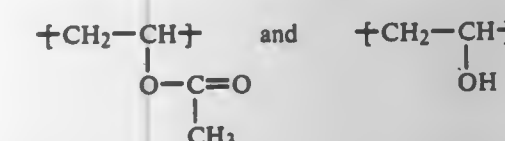
2 Claims

1. A carbamated poly(vinyl alcohol) which comprises 15 to 100 mole percent of recurring units having the formula

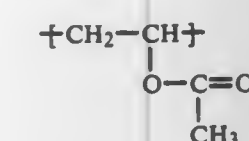


wherein R is NH<sub>2</sub> in some recurring units and at least one of OR<sup>1</sup> and NHR<sup>1</sup> in the remaining recurring units, wherein the units which contain OR<sup>1</sup> and NHR<sup>1</sup> are derived by reaction of said units wherein R is NH<sub>2</sub> with R<sup>1</sup>OH, R<sup>1</sup>OH being an alcohol which has a boiling point of greater than 100° C. at normal atmospheric pressure, with the proviso that said alcohol is compatible with said carbamated poly(vinyl alcohol),

and the ratio of (OR<sup>1</sup> + NHR<sup>1</sup>)/NH<sub>2</sub> is within the range of 0.05 to 1.0, and 0 to 85 mole percent of recurring units having a formula selected from the group consisting of



with the proviso that no more than 12 mole percent of the recurring units have the formula



**4,340,687**  
**HOT MELT ADHESIVE COMPOSITIONS CONTAINING**  
**AN ALPHA-METHYLSTYRENE/VINYL TOLUENE**  
**COPOLYMER**

Vikramkumar Acharya, and Pallavoor R. Lakshmanan, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

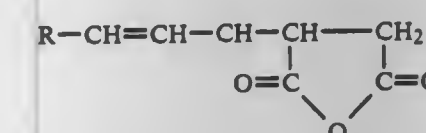
Continuation-in-part of Ser. No. 174,296, Jul. 31, 1980, abandoned. This application Jan. 28, 1981, Ser. No. 229,390  
 Int. Cl.<sup>3</sup> C08F 8/30; C08K 5/01; C08L 91/06

U.S. Cl. 525—193

9 Claims

1. A hot melt adhesive compositions consisting essentially of:

- (a) 10-30 weight % of an alkenyl succinic anhydride,  
 (b) 20-60 weight % of an ethylene copolymer, and  
 (c) 10-40 weight % of a tackifying resin;  
 said alkenyl succinic anhydride having the structure:



where R is an alkyl group containing at least about 15 carbon atoms; said ethylene copolymer having polymerized therein at least 40 weight % polymerized ethylene and the balance one or more polymerized monomers from the group consisting of vinyl acetate, acrylic and methacrylic acid and alkyl esters of acrylic and methacrylic acid; and said tackifying resin being an alpha-methylstyrene/vinyl toluene copolymer having a Ring and Ball softening point of about 75-120° C.

**4,340,688**  
**PROCESS FOR THE PREPARATION OF MALEINATE**  
**OILS**

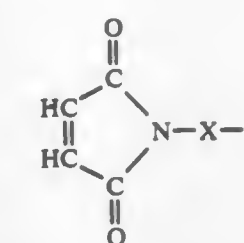
Michael Rössert, Unterschleissheim, and Rolf Dhein, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 3, 1981, Ser. No. 250,589  
 Claims priority, application Fed. Rep. of Germany, Apr. 12, 1980, 3014106  
 Int. Cl.<sup>3</sup> C08F 279/02

U.S. Cl. 525—256

9 Claims

1. A process for the addition of maleic anhydride to diene polymers with a viscosity of from 400 to 50,000 cP (measured at 30° C.) in the presence of at least one gel-inhibitor, characterized in that a compound is used corresponding to the formula:



wherein

X represents a divalent aliphatic, cycloaliphatic, aliphatic-cycloaliphatic, aromatic or aliphatic-aromatic group with from 1 to 12 carbon atoms,

Y represents an amino group corresponding to the formula NR<sup>1</sup>R<sup>2</sup> or an ammonium group corresponding to the formula:



R<sup>1</sup>, R<sup>2</sup> each represents an alkyl group with from 1 to 6 carbon atoms or

R<sup>1</sup> and R<sup>2</sup> together represent an alkylene group with from 2 to 6 carbon atoms which can additionally also contain a hetero-atom from the series N, S, O,

R<sup>3</sup> represents a hydrogen atom, an alkyl group or an alkyl group with from 1 to 18 carbon atoms or the group CH<sub>2</sub>—CO—NH<sub>2</sub>,

Z<sup>-</sup> represents a monovalent anion, or

R<sup>3</sup> and Z<sup>-</sup> together represent a group corresponding to the formulae



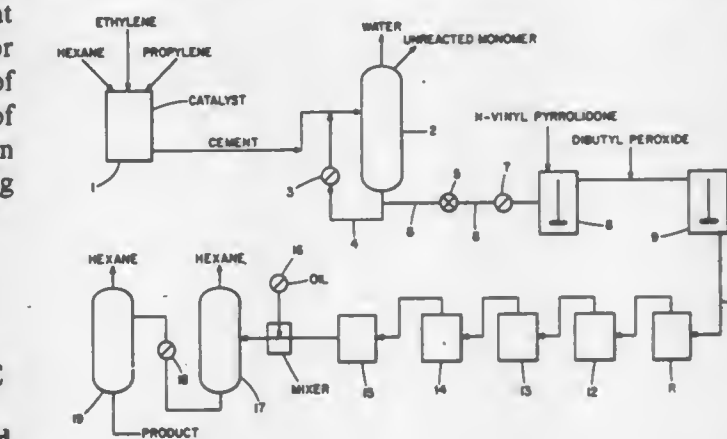
n, m represent an integer from 2 to 6.

**4,340,689**  
**METHOD OF GRAFTING EPM AND EPDM POLYMERS**  
 Ralph K. Joffrion, Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.

Filed Sep. 17, 1979, Ser. No. 76,386  
 Int. Cl.<sup>3</sup> C08F 255/04, 255/06

U.S. Cl. 525—263

14 Claims



1. A process for grafting onto EPM and EPDM backbone polymers formed by solution polymerization in the presence of a Ziegler type catalyst in which the solution polymerization reaction is terminated in a cement stage with the polymer that is formed remaining in solution in the polymerization solvent, the steps of introducing into the cement a grafting compound in the form of an organic compound containing polar groups, introducing into the cement a catalyst in the form of a free radical initiator capable of hydrogen abstraction for admixture with the cement while the cement is at reaction temperature far above the decomposition temperature for the catalyst.



**4,340,690**  
**CYCLIC ORGANO CARBONATE AND SULFITE**  
**COUPLING AGENTS FOR LIVING POLYMERS OF**  
**CONJUGATED DIENES**

Joginder Lal, Akron, and Michael L. Senyek, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 153,121, May 27, 1980, Pat. No. 4,301,258.

This application Jun. 25, 1981, Ser. No. 277,320

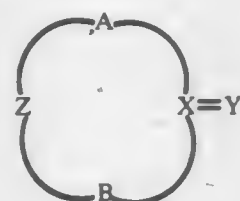
Int. Cl.<sup>3</sup> C08F 297/04

U.S. Cl. 525—271

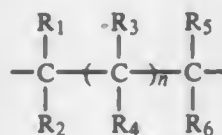
10 Claims

7. Block copolymers of vinyl-substituted aromatic compounds and conjugated dienes of broadened molecular weight distribution prepared by:

- polymerizing a vinyl-substituted aromatic compound in the presence of an initiator selected from organoalkali metal or organomagnesium initiators until the consumption of monomer is substantially complete,
- adding one or more conjugated diene monomers and polymerizing until substantially complete conversion of monomer(s) to polymer has taken place, and
- reacting the resulting block copolymer from said steps (a) and (b) by ring-opening coupling with a compound of the general formula:



wherein, Z is a 1,2-phenylene, 1,2-cyclohexylene, or



grouping wherein n=0 or 1 and R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub> and R<sub>6</sub> are the same or different and are selected from hydrogen or a hydrocarbyl group containing 1 to 12 carbon atoms and A, B and Y are oxygen or sulfur and X is carbon or sulfur with the stipulation that when X is sulfur, Y must be oxygen, in an amount of from 0.2 to 3 moles of compound per mole of said organoalkali metal or organomagnesium initiator.

**4,340,691**  
**LINEAR ORGANO CARBONATE COUPLING AGENTS**  
**FOR LIVING POLYMERS OF CONJUGATED DIENES**

Joginder Lal, Akron, and Michael L. Senyek, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 153,122, May 27, 1980, Pat. No. 4,301,259.

This application Jun. 25, 1981, Ser. No. 277,564

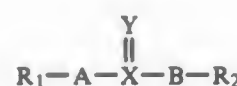
Int. Cl.<sup>3</sup> C08F 297/04

U.S. Cl. 525—271

10 Claims

7. Block copolymers of vinyl-substituted aromatic compounds and conjugated dienes of broadened molecular weight distribution comprising:

- polymerizing a vinyl-substituted aromatic compound in the presence of an initiator selected from organoalkali metal or organomagnesium initiators until the consumption of monomer is substantially complete,
- adding one or more conjugated diene monomers and polymerizing until substantially complete conversion of monomer(s) to polymer has taken place, and
- reacting the resulting block copolymer from said steps (a) and (b) with a coupling agent of the general formula



wherein, R<sub>1</sub> and R<sub>2</sub> are the same or different and are selected from a hydrocarbyl group containing from 1 to 12 carbon atoms and A, B and Y are oxygen or sulfur, X is carbon or sulfur, with the stipulation that when X is sulfur, Y must be oxygen, in an amount of from 0.2 to 3 moles of coupling agent per mole of said organoalkali or organomagnesium initiator.

**4,340,692**  
**WET STRENGTH POLYMERS**

Donald N. Van Eenam, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

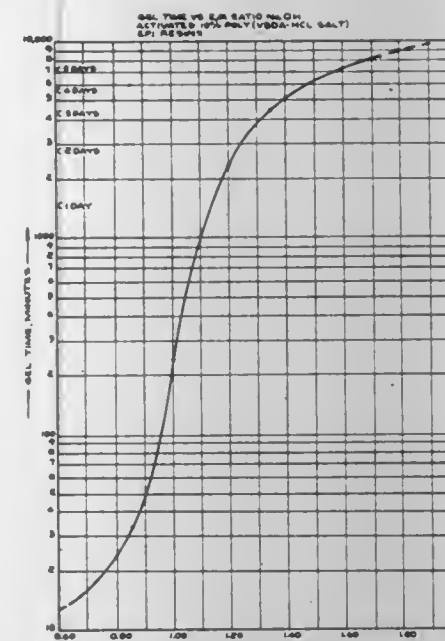
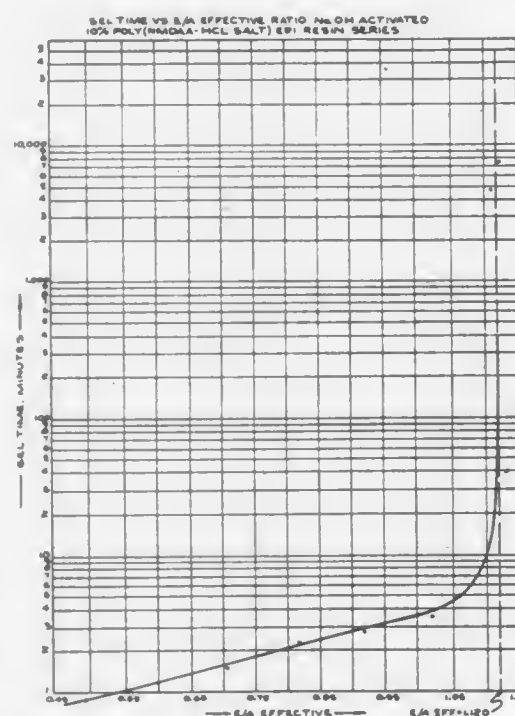
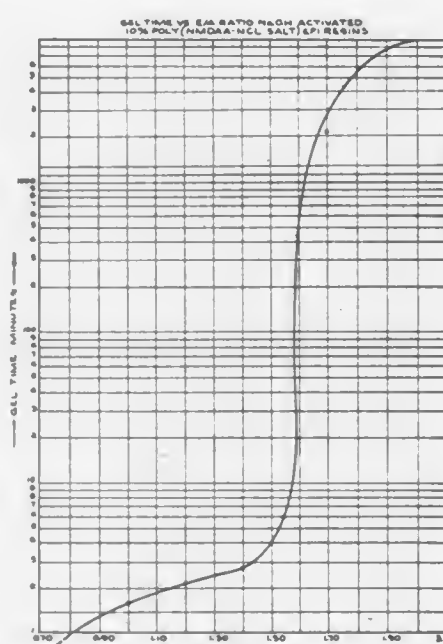
Division of Ser. No. 21,414, Mar. 19, 1979, Pat. No. 4,233,417.

This application Apr. 7, 1980, Ser. No. 137,874

Int. Cl.<sup>3</sup> C08F 8/08, 8/32, 8/44

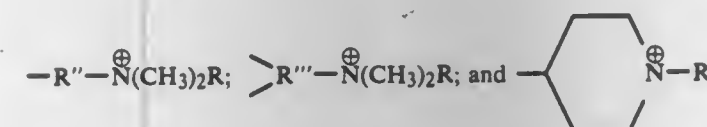
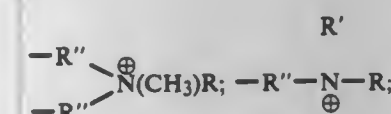
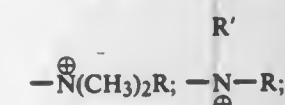
U.S. Cl. 525—329

5 Claims

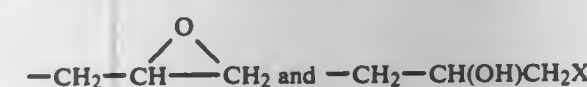


1. A water-soluble, cationic, thermosetting polymer comprising a backbone formed of repeating segments, from 10 to 100% of which backbone segments comprise an amine group, wherein

A. Substantially all the amine groups are pendant from the backbone segment and have a structure selected from the group consisting of



wherein R' is a divalent radical that together with the nitrogen forms a heterocyclic radical; R'' is a divalent radical; R''' is a trivalent radical; and R is selected from



where the second form is obtained by reaction of the first with an acid having the formula H<sup>+</sup>X<sup>-</sup> where X<sup>-</sup> is an anion; the unattached bonds in each amine structure being attached directly to a carbon atom of the polymer backbone; and a 10% solids solution of the polymer in water at 25° C. and a pH of 11 does gel for at least 10 hours.

**4,340,693**  
**TITANOBORATE GLASS AS CROSS-LINKING AGENT IN**  
**POLYCARBOXYLIC ACID CEMENTS**

Cyril F. Drake, and Francesca M. Shreeve, both of Harlow, England, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 91,905, Nov. 6, 1979, abandoned. This application Oct. 17, 1980, Ser. No. 197,863

Claims priority, application United Kingdom, Nov. 24, 1978, 46019/78

Int. Cl.<sup>3</sup> C03C 3/14; C08K 3/40

U.S. Cl. 525—337

9 Claims

1. A water setting cement composition comprising a polycarboxylic acid material, and a partially or completely water soluble glass composition, said glass composition acting as a cross-linking agent and comprising a titanoborate glass containing CaO as at least one further metal oxide said titanoborate glass having no alumina whereby shrinkage upon setting is

generally less than 1% and is lower than that experienced with cements formed from aluminoborate glasses.

**4,340,694**  
**CROSSLINKING AND CHEMICAL MODIFICATION**  
**AGENTS FOR OLEFIN CONTAINING POLYMERS**

Stanley J. Brois, Westfield, and Gary Ver Strate, Matawan, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 874,656, Feb. 2, 1978, Pat. No. 4,230,337, which is a continuation of Ser. No. 634,266, Nov. 21, 1975, abandoned. This application Nov. 21, 1979, Ser. No. 96,526

Int. Cl.<sup>3</sup> C08C 19/20; C08F 8/34

U.S. Cl. 525—342

7 Claims

1. A chemically modified derivative of an olefinically unsaturated polymer, said polymer selected from the group consisting of synthetic and natural hydrocarbon elastomers, vinyl and vinylidene polymers, olefinically unsaturated acrylic polymers, polyvinyl esters and copolymers thereof, unsaturated polyesters, and allyl polymers, said polymer being modified by addition thereto at the site of the olefinically unsaturated carbon atoms of an aliphatic organic oxycarbonyl sulfonyl chloride compound of the formula R(OC(=O)SOCl)<sub>n</sub>, n being an integer of at least 1 and up to about 8 and R being an alkyl or substituted alkyl having 1 to 12 carbon atoms, said substituents on said substituted alkyl comprising hydroxyl, chloro, nitro, oxy, oxycarbonyl or a C<sub>1</sub>-C<sub>4</sub> alkyl or alkoxy-substituted silyl group.

**4,340,695**  
**VULCANIZATION SYSTEM, RUBBER MIXTURE**  
**CONTAINING SAID SYSTEM AND A PROCESS OF**  
**VULCANIZATION**

Rüdiger Schubart, Bergisch-Gladbach; Ulrich Eholzer; Theo Kempermann, both of Cologne, and Ernst Roos, Odenthal-Osenau, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 8, 1981, Ser. No. 252,051

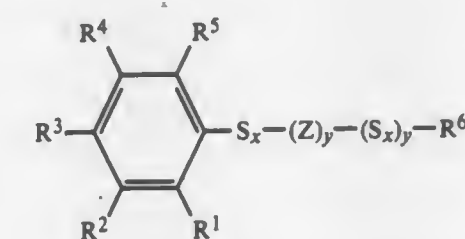
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1980, 3014717

Int. Cl.<sup>3</sup> C08K 5/37, 5/44, 5/41

U.S. Cl. 525—350

6 Claims

1. A vulcanization system consisting of  
 (a) 20-50 parts by weight of sulphur or 20-50 parts by weight of a sulphur donor,  
 (b) 20-50 parts by weight of an accelerator of the mercapto or sulphenamide group,  
 (c) 0-10 parts by weight of a conventional accelerator additive, and  
 (d) 20-50 parts by weight of a compound corresponding to the general formula (i):



wherein

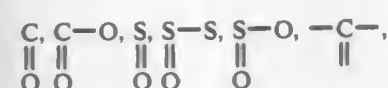
R<sub>1</sub> to R<sub>5</sub> are identical or different and denote hydrogen, halogen, nitro, cyano, CF<sub>3</sub>, CCl<sub>3</sub>, carboxyl, an alkoxy group containing 1-4 C-atoms in the alkyl part, or a C<sub>1</sub>-C<sub>4</sub> alkyl group but the groups R<sub>1</sub>-R<sub>5</sub> must not all be hydrogen,

x represents 1-4, preferably 2-3,

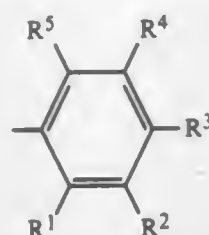
y represents 0 or 1, and

Z denotes divalent groups such as





C<sub>1</sub>-C<sub>12</sub> alkylene, C<sub>4</sub>-C<sub>12</sub> cycloalkylene, C<sub>6</sub>-C<sub>10</sub> arylene or C<sub>8</sub>-C<sub>12</sub> arylalkylene, and  
R<sub>6</sub> denotes the group corresponding to the formula:



wherein R<sub>1</sub>-R<sub>5</sub> have the meaning indicated above and may all be hydrogen;  
C<sub>1</sub>-C<sub>12</sub> alkyl or a C<sub>4</sub>-C<sub>12</sub> cycloalkylene optionally substituted by OH and/or alkoxy with 1-4 C-atoms in the alkoxy group;  
benzyl or trichloromethyl.

4,340,696

## FORMAL-COUPLED POLYPHENYLENE OXIDES

Dwain M. White, Schenectady, and George R. Loucks, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

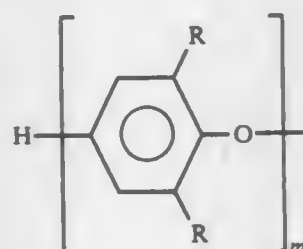
Filed Jan. 5, 1981, Ser. No. 222,409

Int. Cl.<sup>3</sup> C08G 65/48; C08L 71/04

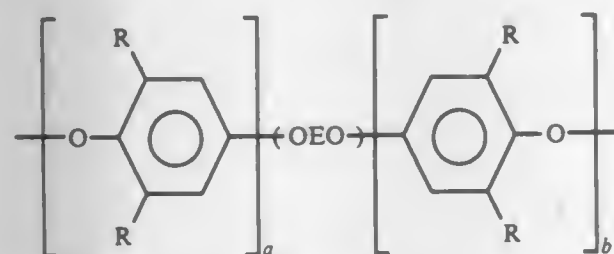
U.S. Cl. 525-390

4 Claims

1. A formal-coupled polyphenylene oxide comprising a polyphenylene oxide radical of the formulas:



where independently each R is hydrogen, a hydrocarbon radical, a halohydrocarbon radical, a hydrocarbonoxy radical or a halohydrocarbonoxy radical, m is a number of at least 1, or



where independently each +OEO+ is a divalent quinone residue, E is a divalent arene radical, either a or b is at least equal to 10, R is the same as above, and a methylene radical of the formula:



4. A process of forming a formal-coupled polyphenylene oxide comprising contacting a polyphenylene oxide and a stoichiometric excess of a methylene halide coupling agent in the presence of an aqueous solution of a water soluble base.

4,340,697

## HEAT RESISTANT MOLDING RESIN COMPOSITION

Toshihiko Aya, and Yasushi Kubo, both of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

PCT No. PCT/JP79/00204, § 371 Date Apr. 1, 1980, § 102(e)

Date Apr. 1, 1980, PCT Pub. No. WO80/00349, PCT Pub.

Date Mar. 6, 1980

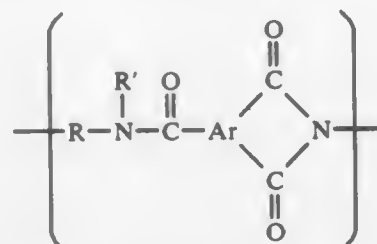
PCT Filed Aug. 2, 1979, Ser. No. 189,841

Int. Cl.<sup>3</sup> C08L 81/04, 79/08

U.S. Cl. 525-420

4 Claims

1. A heat resistant molding resin composition which comprises an aromatic polyamideimide resin having a repeating unit represented by the general formula:



wherein Ar denotes a trivalent aromatic group containing at least one 6-member carbon ring, R denotes a divalent aromatic or aliphatic residue and R' denotes hydrogen, a methyl group or a phenyl group, as a main structural unit present in an amount of 60-99.9% by weight based on the entire weight of the resin composition and at least one thermoplastic resin consisting of a polyphenylene sulfide resin, said polyphenylene sulfide resin having a melt viscosity at 350° C. of not more than 1×10<sup>5</sup> poise and a decomposition temperature of not lower than 350° C., said polyphenylene sulfide resin being present in an amount of 40-0.1% by weight based on the entire weight of the resin composition.

4,340,698

## POWDER COATING

Rudolph O. De Jongh, The Hague; Adrianus Visser, Maassluis, and Robert Van der Linde, Zwolle, all of Netherlands, assignors to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Continuation of Ser. No. 87,322, Oct. 23, 1979, abandoned. This application Mar. 12, 1981, Ser. No. 243,053

Int. Cl.<sup>3</sup> C08L 63/00

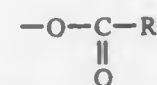
U.S. Cl. 525-438

7 Claims

1. Powder coating consisting essentially of a mixture of a polyester with terminal carboxyl groups, an epoxy compound having more than one 1,2-epoxy group per molecule and between 0.1 and 5 weight % of a curing catalyst, characterized in that the curing catalyst is a choline compound having the formula:



wherein Y is an -OR or



group in which R is hydrogen or a hydrocarbyl group containing 1 to 40 carbon atoms, and X<sup>n-</sup> is an anion in which n represents a whole number from 1 to 3.

4,340,699

## PROCESS FOR PREPARING A POLYMER OF THREE-DIMENSIONAL STRUCTURE OF THE CROSS-LINKED POLYURETHANE TYPE, PRODUCT OBTAINED ACCORDING TO THIS PROCESS AND APPLICATION THEREOF AS SWELLING AGENT, PARTICULARLY IN THERAPEUTICS

Herve Grouiller, Chenove, France, assignor to Laboratoires d'Hygiene et de Dietetique (L.H.D.), Paris, France

Filed Jun. 29, 1981, Ser. No. 278,845

Claims priority, application France, Jun. 30, 1980, 80 14515

Int. Cl.<sup>3</sup> C08G 18/30

U.S. Cl. 525-460

20 Claims

1. A process for preparing a polymer having a three-dimensional structure of the cross-linked polyurethane type and having a good swelling powder, said process comprising the following steps of:

(1) reacting

(a) a polyolether, selected from the group consisting of the oxyalkylene polyols (I) and mixtures thereof, obtained by condensation of a polyol (II) containing at least 2 OH groups with an alkylene oxide (III) at a rate of 1 to 20 moles of (III) per free OH group of (II), with

(b) a polyisocyanate (IV),

the reaction being carried out with an excess of OH groups of (I) with respect to the NCO isocyanate groups of (IV) to obtain a polyurethane-polyol (V) having free OH groups; and

(2) reacting the resulting polyurethane-polyol (V) with epichlorohydrin (VI) and a polyamine (VII) selected from the group consisting of polyamines having at least two NH<sub>2</sub> amino groups and mixtures thereof.

4,340,700

## PROCESS FOR PREPARING A PHENOLIC RESIN FROM AN ARALKYLENE ETHER AND AN AROMATIC ALDEHYDE

Alfred G. Edwards, Stourport-on-Severn, England, assignor to Albright & Wilson Limited, Oldbury, England

Filed Aug. 19, 1981, Ser. No. 294,396

Claims priority, application United Kingdom, Aug. 28, 1980, 8027882

Int. Cl.<sup>3</sup> C08G 8/04, 8/28, 8/36

U.S. Cl. 525-503

18 Claims

1. A process for preparing a resin containing phenolic groups, in which an aralkylene ether of formula ROCH<sub>2</sub>Ar. CH<sub>2</sub>OR, wherein Ar represents a phenylene group and R is an alkyl group of 1-4 carbon atoms, is reacted with a phenol containing 1-3 hydroxyl groups and at least 2 hydrogen atoms in the aromatic phenolic nucleus, wherein (i) an ether composition which comprises at least 50 molar % of said ether and the remainder of said composition, if any, is selected from aromatic compounds each with an Ar nucleus having two substituents selected from CH<sub>3</sub>, CH<sub>2</sub>OR, CHO, CH(OR)<sub>2</sub>, and said phenol and (ii) an added compound of formula R'CHO or R'CH(OR)<sub>2</sub>, wherein R' is monovalent phenyl group or substituted phenyl group, in which each substituent is an alkyl group of 1-4 carbon atoms or a chlorine atom, and R<sup>2</sup> is as defined for R, are reacted together in a reaction mixture in the presence of a catalyst to form a resin containing phenolic groups, the molar proportion of phenol to the total of aromatic compounds in said ether composition and added compounds being 1.3:1 to 2.5:1 and the molar ratio of CH<sub>2</sub>OR to the total of CHO and acetal groups being 3:1 to 10:1, and the molar ratio of phenol to the total of CHO and acetal groups being 3.7:1 to 9:1.

4,340,701

## REMOVAL OF OLEFIN MONOMER FROM OLEFIN POLYMER

Bruce A. E. Willmore, Luton, and Jeffrey C. Greaves, Welwyn Garden City, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 40,313, May 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 936,194, Aug. 24, 1978, abandoned. This application Jun. 27, 1980, Ser. No.

163,471

Claims priority, application United Kingdom, Jun. 13, 1978, 26767/78

Int. Cl.<sup>3</sup> C08F 6/00, 6/28

U.S. Cl. 526-68

14 Claims

1. A process for separating a polymer from monomer absorbed therein, wherein a solid particulate olefin polymer having at least one unpolymerized olefin monomer absorbed therein is vigorously agitated by mechanical means in an inert atmosphere which is substantially free from oxygen and/or oxygen-containing impurities, the vigorous agitation is continued until the temperature of the polymer rises to at least 90° C. and some of the at least one olefin monomer is released from the polymer, and the released monomer is separated from the polymer before any substantial cooling of the polymer has occurred:

wherein the olefin polymer remains in the solid particulate form throughout the process.

13. A process for separating a polymer from monomer absorbed therein, wherein a solid particulate olefin polymer having at least one unpolymerized olefin monomer absorbed therein is vigorously agitated by mechanical means in an inert atmosphere which is substantially free from oxygen and/or oxygen-containing impurities,

the vigorous agitation is continued until the temperature of the polymer rises to at least 90° C. as a consequence of the vigorous mechanical agitation, no additional heat is supplied to the polymer other than that resulting from the vigorous agitation and some of the at least one olefin monomer is released from the polymer, and the released monomer is separated from the polymer before any substantial cooling of the polymer has occurred.

4,340,702

## ULTRAFILTRATION OF VINYL RESIN LATICES AND REUSE OF PERMEATE IN EMULSION POLYMERIZATION

George R. Huddleston, Jr., Lorain, and James W. Turner, Bay Village, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Oct. 22, 1979, Ser. No. 86,853

Int. Cl.<sup>3</sup> C08F 2/26, 6/20

U.S. Cl. 526-70

16 Claims

1. A process of producing homopolymers of vinyl and vinylidene halides and copolymers thereof with each other or either with one or more other vinylidene monomers having at least one terminal CH<sub>2</sub>=C< grouping comprising, forming a monomer premix in a reaction zone, said premix containing the aqueous reaction medium, the monomer or monomers to be polymerized, from about 0.02% to about 1.0% by weight of a free radical yielding catalyst based on the weight of 100 parts of monomer(s) being polymerized, up to about 6.0% by weight of an emulsifier based on the weight of 100 parts of monomer(s), polymerizing said premix in said reaction zone with agitation at a temperature in the range of about 30° C. to about 70° C. to produce a vinyl resin latex, passing said latex through a stripping zone to remove unreacted monomer(s) therefrom with steam, passing the stripped latex to an ultrafiltration zone wherein the latex is forced through a semipermeable membrane leaving behind the vinyl polymer particles in a range of about 30% to about 60% total solids, circulating the emulsifier containing permeate from said ultrafiltration zone to the reaction zone for use as the aqueous reaction medium, passing said



vinyl polymer particles in concentrated latex form to a drying zone and recovering the polymer or copolymer in dry unagglomerated powder form, whereby polymer buildup in said reaction zone is substantially reduced when using said emulsifier containing permeate as the reaction medium.

4,340,703

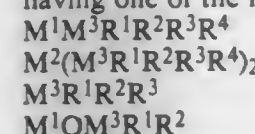
**PROCESS FOR PREPARING BIMODAL OR MULTIMODAL POLYMERS OF CONJUGATED DIENES**  
Christian Freppel, Chamalieres, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Apr. 6, 1981, Ser. No. 251,978  
Claims priority, application France, Apr. 9, 1980, 80 08110  
Int. Cl.<sup>3</sup> C08F 2/40

U.S. Cl. 526—79 7 Claims

1. A process of preparing a bimodal or multimodal homopolymer of a conjugated diene or a bimodal or multimodal copolymer of a conjugated diene with another conjugated diene or with a vinyl aromatic compound, consisting in polymerizing the monomer(s) in a reaction medium at a temperature of between 20° C. and 200° C. in the presence of a catalyst system formed of the reaction product of:

(a) an organic compound of a metal of group 3A of the periodic classification of elements of the Mendeleev Table having one of the following formulas:



in which M<sup>1</sup> represents an alkali metal, M<sup>2</sup> represents an alkaline earth metal, M<sup>3</sup> represents a metal of group 3A, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> represent an alkyl or aralkyl radical and R<sup>4</sup> represents either an alkyl or aralkyl radical or a radical XB in which X represents an oxygen, sulfur or nitrogen atom and B represents an alkyl or aralkyl radical or a radical M<sup>3</sup>(R<sup>5</sup>R<sup>6</sup>) in which R<sup>5</sup>, R<sup>6</sup> represent an alkyl or aralkyl radical,

with (b) at least one electron-donor compound containing at least one heteroatom selected from the group consisting of aprotic polar compounds, protic polar compounds and compounds formed of the reaction products of protic polar compounds with an alkali metal or with an alkaline earth metal,

characterized by adding hydrogen as a modifying agent to the reaction medium during the course of the polymerization reaction.

4,340,704

**THERMOPLASTIC RUBBERS AND PROCESS FOR PREPARING SAME**

Italo Borghi, Sergio Foschi, and Paolo Galli, all of Ferrara, Italy, assignors to Montedison S.p.A., Milan, Italy  
Continuation of Ser. No. 16,558, Mar. 1, 1979, Pat. No.

4,298,721, and Ser. No. 807,520, Jun. 17, 1977, abandoned, and Ser. No. 893,400, Apr. 4, 1978, abandoned, each is a continuation of Ser. No. 550,136, Feb. 14, 1975, abandoned. This application  
Apr. 30, 1980, Ser. No. 145,360

Claims priority, application Italy, Feb. 15, 1974, 41005 A/74  
Int. Cl.<sup>3</sup> C08F 4/76

U.S. Cl. 526—125 7 Claims

1. Process for preparing thermoplastic rubbers which are copolymers of propylene with ethylene containing from 25% to 50% by weight of polymerized ethylene and the balance polymerized propylene, said copolymers showing on X-rays examination in the unoriented state a polypropylene-type and/or a polyethylene-type crystallinity, the polypropylene crystallinity content ranging from 3 to 50% and the polyethylene-type crystallinity being less than 20%, said copolymers being further characterized in that in the infrared spectrum thereof the value of the R ratio between the absorption intensity of the band at 11.88 microns and that of the absorption at 12.16 microns is from 2 to 6, the R ratio being less than 4 when the polymerized propylene content of the polymers is lower than 70% by weight, comprised between 3 and 6 when the polymer-

ized propylene content ranges from 70 to 80% by weight, characterized in that mixtures of propylene and ethylene are polymerized in the presence of a catalyst consisting of the product obtained by reacting

(A) a catalyst-forming component which is an addition and/or substitution reaction product of an electron-donor compound (or Lewis base) with an Al-trialkyl compound, or the addition reaction product of an electron-donor compound with an Al-alkyl compound containing two or more aluminum atoms bound to each other through an oxygen or nitrogen atom,

with

(B) a catalyst-forming component obtained by contacting an addition compound of a halogenated compound of di-, tri-, or tetravalent titanium and an electron-donor compound with a carrier comprising an anhydrous active magnesium dihalide, said component (A) being characterized in that it is prepared by reacting 1.0 mole of Al-alkyl compound with 0.1 to 1.0 mole of a Lewis base which is an ester of an oxygenated organic or inorganic acid, a polyamine compound, or, when catalyst-forming component (B) is prepared starting from a complex of a halogenated titanium compound with a polyamine, any Lewis base other than said esters of oxygenated organic or inorganic acids and polyamine compounds, and catalyst-forming component (B) being characterized in that, in its X-rays powder spectrum, a halo appears in place of the most intense diffraction line characteristic of the X-rays powder spectrum of the normal, non-active magnesium dihalide, in that the amount of Ti compound contained therein, expressed as Ti metal, is less than 0.3 g-atoms per mole of the total amount of the electron-donor used in preparing the catalyst, and in that the molar ratio between said Ti compound and the Al-alkyl compound is from 0.001 to 0.1.

4,340,705

**PREPARATION OF INTERPOLYMERS OF ALPHA-OLEFINS AND NONCONJUGATED ALPHA, OMEGA-POLYENES**

Joginder Lal, Akron, and Michael L. Senyck, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 694,851, Jun. 10, 1976, abandoned. This application Dec. 19, 1977, Ser. No. 861,600  
Int. Cl.<sup>3</sup> C08F 4/64, 36/20

U.S. Cl. 526—139 7 Claims

1. A process of making low-gel, improved unsaturation interpolymers from about 95 to about 5 mole percent of at least one alpha-olefin containing from 4 to 12 carbon atoms and about 5 to about 50 mole percent of at least one second monomer selected from the class of alpha, omega-polyenes containing at least two ethylenic double bonds and having at least 8 carbon atoms in the presence of coordination catalysts prepared from components (A) an organoaluminum compound, (B) a transition metal compound selected from Groups IVB, VB, and VIB of the Periodic Table, and (C) at least one compound of the general formula Q=P(XY)<sub>3</sub> where P is phosphorus, Q is oxygen or sulfur, X is oxygen or sulfur and Y is a hydrocarbon radical containing from 1 to 20 carbon atoms or a hexahydrocarbon phosphoric triamide having 1 to 20 carbon atoms in the hydrocarbon radical.

4,340,706

**ALKALI METAL ACRYLATE OR AMMONIUM ACRYLATE POLYMER EXCELLENT IN SALT SOLUTION-ABSORBENCY AND PROCESS FOR PRODUCING SAME**

Shigeji Obayashi, Akashi, Morio Nakamura, Koichi Fujiki, both of Kakogawa, and Takushi Yamamoto, Kobe, all of Japan, assignors to Seltetsu Kagaku Co., Ltd., Hyogo, Japan

Filed Nov. 21, 1980, Ser. No. 209,174  
Claims priority, application Japan, Mar. 19, 1980, 55/34967  
Int. Cl.<sup>3</sup> C08F 220/06

U.S. Cl. 526—207 25 Claims

1. A process for producing an alkali acrylate polymer having excellent salt solution-absorbency, characterized by suspending an aqueous solution of acrylic acid and an alkali metal acrylate or ammonium acrylate, wherein the monomer concentration is at least 40% by weight, the mole ratio of the acrylic acid to said acrylate is 50/50 to 2/98, in an alicyclic or aliphatic hydrocarbon solvent containing a surfactant having an HLB value of 8-12 and subjecting it to inverse suspension polymerization in the presence of a water-soluble radical polymerization initiator.

4,340,707

**LIQUID, UV-HARDENABLE COATING AGENT AND BINDER**

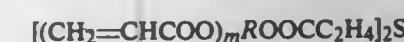
Peter Quis, Darmstadt-Neu-Kranichstein, and Theodor Schroth, Trebur, both of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 198,045  
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1979, 2945549

Int. Cl.<sup>3</sup> C08F 20/38, 2/50

U.S. Cl. 526—289 5 Claims

1. A liquid coating agent and binder, hardenable under the influence of ultraviolet radiation, comprising at least one oligomer of the formula



wherein

R is an (m+1)-valent aliphatic group having 2 to 12 carbon atoms and is an aliphatic hydrocarbon group or two or more of such groups joined pairwise by an oxygen atom to form an ether or polyether and m is an integer from 1 to 3,

said oligomer or oligomers having an average molecular weight between 370 and 1000 and an average double bond equivalent weight of at most 500.

4,340,708

**ANAEROBICALLY HARDENING ADHESIVES AND SEALING COMPOUNDS**

Werner Gruber, Düsseldorf, Fed. Rep. of Germany, assignor to Henkel Komanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 219,244  
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1979, 2952286

Int. Cl.<sup>3</sup> C08F 20/20

U.S. Cl. 526—313 11 Claims

1. An anaerobically hardening adhesive and sealing composition comprising methacrylic or acrylic acid esters, organic peroxides, nitrogen containing compounds as accelerators for polymerization, and customary adjuvant substances, wherein from about 0.01 to 10 percent by weight, based upon the weight of the methacrylic or acrylic acid esters, of a compound selected from the group consisting of cyanoacetic acid, an ester of cyanoacetic acid where the alcohol component of the ester consists of an aliphatic or aromatic radical optionally containing electronegative substituents and having from about 1 to 20 carbon atoms, and an amide of cyanoacetic acid where the amide group consists of at least one aliphatic radical which can

be interrupted by one or more hetero-atoms and/or forms a ring with the amide nitrogen, and has from about 1 to 18 carbon atoms, is also present.

4,340,709

**ADDITION CURING SILICONE COMPOSITIONS**  
Edward M. Jeram, Burnt Hills, and Alfred H. Smith, Jr., Ballston Lake, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jul. 16, 1980, Ser. No. 169,259  
Int. Cl.<sup>3</sup> C08G 77/06

U.S. Cl. 528—15 24 Claims

1. An addition curing silicone composition with a low viscosity in the uncured state and a high physical strength in the cured state comprising (A) 100 parts by weight of a vinyl-containing diorganopolysiloxane having a viscosity varying from 100 to 200,000 centipoise at 25° C., where the diorganovinyl-silox content varies from 0.14 to 2.0 mole percent and the organo group is a monovalent hydrocarbon radical; (B) from 0.1 to 500 parts per million of a platinum catalyst; (C) from 0.1 to 25 parts by weight of a crosslinker selected from the class consisting of hydride resins having only terminal hydrogen atoms and linear hydride polysiloxanes wherein said linear hydride polysiloxane has hydrogen atoms only in the internal position of the siloxane chain, and (D) from 75 to 150 parts by weight of a linear hydride polysiloxane coupler having hydrogen atoms bonded only at the terminal silicone atoms in the siloxane chain wherein said coupler has a dimethyl hydrogen siloxy content of from 3.0 to 9.0 mole percent and the viscosity of the linear hydride coupler varies from 1 to 500 centipoise at 25° C.

4,340,710

**ADDITION CURE COATING WITH IMPROVED ADHESION**

Edgar D. Brown, Jr., Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Apr. 2, 1981, Ser. No. 250,324  
Int. Cl.<sup>3</sup> C08G 77/06

U.S. Cl. 528—15 9 Claims

1. A latent curable electronic junction coating composition stabilized against premature gelation comprising:  
a. an olefinorganopolysiloxane having units of the structural formula:

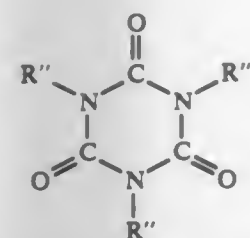


b. an organohydrogenopolysiloxane having units of the structural formula:



wherein R is selected from the group consisting of a monovalent hydrocarbon radical, a halogenated monovalent hydrocarbon radical, a cyanoalkyl radical and mixtures thereof, R' is an olefinic hydrocarbon radical, wherein a has a value of from 0 to 3, inclusive, b has a value of from 0.0005 to 2.0, inclusive, and the sum of a and b is equal to from 0.8 to 3, inclusive,  
c. a sufficient amount of a platinum catalyst to cause the co-reaction of (a) and (b); and  
d. a combination of inhibiting agents comprised of (i) an ethylenically unsaturated isocyanurate corresponding to the structural formula:





wherein R'' is the same or different and is selected from the group consisting of hydrogen, alkyl, aryl, aralkyl, polynuclear aryl, heteroaryl, monofunctional lower-alkenyl and the non-interfering substituted derivatives thereof with the proviso that at least one R'' is lower-alkyl and (ii) a dialkylacetylenedicarboxylate having the structural formula:



wherein R is as described above and wherein said combination of ethylenically unsaturated isocyanurate and said dialkylacetylenedicarboxylate is present in an amount sufficient to inhibit premature gelation but insufficient to prevent cure at elevated temperature.

**4,340,711**  
**PROCESS FOR THE PREPARATION OF GRANULAR SILARYLENE-SILOXANE COPOLYMERS**  
 POLYMERIZED UNDER CONDITIONS OF SHEAR  
 Edwin R. Evans, Elnora, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Jan. 16, 1981, Ser. No. 225,576  
 Int. Cl.<sup>3</sup> C08G 77/06

U.S. Cl. 528—21

5 Claims

1. A process for making granular high molecular weight silarylenesiloxane copolymers which comprises: heating silphenyldiol and disiloxanol to a temperature sufficiently high to melt the monomers but below the carbonization or decomposition temperature thereof in an atmosphere inert to the reactants and products; mixing the composition in a manner which generates an amount of mechanical shear sufficient to assure formation of discrete granules of silarylenesiloxane copolymer; adding an amount of a polymerization catalyst effective for copolymerizing said silphenyldiol and disiloxanol; continuing the heating and mixing for an amount of time sufficient to provide a thermoplastic composition having a bulk density between about 0.25 and 0.40 grams per milliliter; and cooling the composition to below its crystallization melt temperature while continuing the mixing, whereby a dry granular thermoplastic composition is formed.

**4,340,712**  
**PROCESS FOR THE PREPARATION OF POLYISOCYANATES CONTAINING BIURET AND/OR HIGHER POLYURET GROUPS AND USE THEREOF AS SYNTHESIS COMPONENT IN THE PREPARATION OF POLYURETHANE PLASTICS**

Wolfgang Reichmann, Duesseldorf; Klaus König, and Manfred Schönfelder, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 19, 1979, Ser. No. 105,368  
 Claims priority, application Fed. Rep. of Germany, Dec. 30, 1978, 2856826

Int. Cl.<sup>3</sup> C08G 18/78; C07C 127/22

U.S. Cl. 528—45

3 Claims

1. A process for the preparation of polyisocyanates containing biuret and/or higher polyuret groups comprising reacting secondary diamines corresponding to the formula:



with excess quantities of organic diisocyanates corresponding to the formula:



wherein

R<sub>1</sub> and R<sub>3</sub>, which may be the same or different, each represents an aliphatic hydrocarbon radical containing from 1 to 20 carbon atoms which may also be attached to one another with incorporation of the basic diamine skeleton to form a 5- or 6-membered ring, or a cycloaliphatic hydrocarbon radical containing from 4 to 15 carbon atoms; and

R<sub>2</sub> and R<sub>4</sub>, which may be the same or different, each represents an aliphatic hydrocarbon radical having a total of from 2 to 20 carbon atoms optionally containing ester groups or a cycloaliphatic hydrocarbon radical containing from 4 to 15 carbon atoms, at least 2 carbon atoms being arranged between the two nitrogen atoms;

characterized in that

(a) the reaction is carried out in the presence of catalytic quantities of strong acids which form mixed carbamic acid anhydrides with isocyanates, and  
 (b) the reaction product is clear and contains virtually no difficultly soluble polyurea.

2. A process for the preparation of clear polyisocyanates containing biuret and/or higher polyuret groups, but containing virtually no difficultly soluble polyureas comprising reacting secondary diamines corresponding to the formula:



with excess quantities of organic diisocyanates corresponding to the formula:

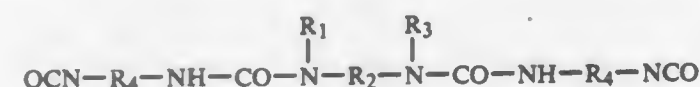


wherein

R<sub>1</sub> and R<sub>3</sub>, which may be the same or different, each represents an aliphatic hydrocarbon radical containing from 1 to 20 carbon atoms which may also be attached to one another with incorporation of the basic diamine skeleton to form a 5- or 6-membered ring, or a cycloaliphatic hydrocarbon radical containing from 4 to 15 carbon atoms; and

R<sub>2</sub> and R<sub>4</sub>, which may be the same or different, each represents an aliphatic hydrocarbon radical having a total of from 2 to 20 carbon atoms optionally containing ester groups or a cycloaliphatic hydrocarbon radical containing from 4 to 15 carbon atoms, at least 2 carbon atoms being arranged between the two nitrogen atoms;

characterized in that the reaction is carried out in the absence of catalysts to form urea diisocyanate corresponding to the formula:



and subsequently reacting said urea diisocyanates thus formed in the presence of catalytic quantities of strong acids which form mixed carbamic acid anhydrides with isocyanates, with more diisocyanate corresponding to the formula:



or with another diisocyanate corresponding to the formula:



wherein

R<sub>5</sub> corresponds to the definition of R<sub>4</sub> but is not the same as R<sub>4</sub>.

**4,340,713**  
**METHOD FOR PREPARING HIGH MOLECULAR WEIGHT EPOXY RESINS CONTAINING HYDROLYZED EPOXY GROUPS**

Rhetta Q. Davis, and Michael B. Cavitt, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 26, 1980, Ser. No. 210,475  
 Int. Cl.<sup>3</sup> C08G 59/14, 59/62

U.S. Cl. 528—89

12 Claims

1. A process for preparing a high molecular weight epoxy resin composition containing one or more hydrolyzed glycidyl group which process comprises reacting in the absence of an inert organic solvent

(A) at least one low molecular weight epoxy resin having an average of more than one glycidyl group per molecule;  
 (B) at least one compound having an average of more than one hydroxyl group per molecule; and  
 (C) water in an amount essentially stoichiometric with the number of glycidyl groups to be hydrolyzed; said reaction being conducted in the presence of  
 (D) a catalytic quantity of a catalyst for reacting component (C) with a glycidyl group;  
 (E) a catalytic quantity of a catalyst for effecting the reaction between components (A) and (B)

thereby providing a high molecular weight epoxy resin composition containing one or more hydrolyzed glycidyl groups.

**4,340,715**  
**EPOXY RESIN COMPOSITIONS CURED WITH IMIDE-AMINES**

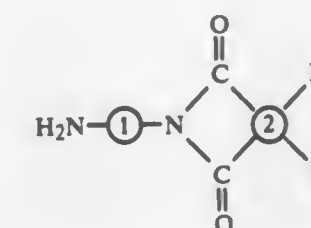
Raj N. Gounder, Robbinsville, N.J., and John T. Geary, Erie, Pa., assignors to Lord Corporation, Erie, Pa.

Filed May 26, 1981, Ser. No. 267,149  
 Int. Cl.<sup>3</sup> C08G 59/54

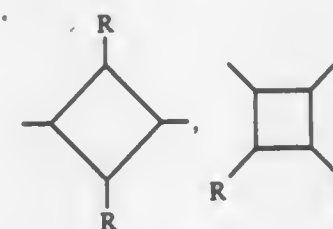
U.S. Cl. 528—99

13 Claims

1. A room temperature-stable two-pack epoxy resin system consisting essentially of  
 (a) a first pack comprising at least one imide-imine having the structure



wherein —①— is a divalent cycloaliphatic or aromatic radical selected from the group consisting of



**4,340,714**  
**PREPARATION OF CURABLE POLYADDUCTS, CONTAINING BASIC NITROGEN GROUPS, AND USE OF THE PRODUCTS**

Eberhard Schupp, Schwetzingen; Fritz E. Kempter, Mannheim, and Erich Gulbins, Heidelberg-Neuenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 22, 1981, Ser. No. 266,363  
 Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021300

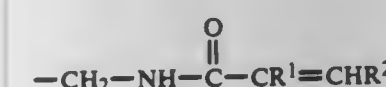
Int. Cl.<sup>3</sup> C08G 59/14, 59/28

U.S. Cl. 528—99

11 Claims

1. A process for the preparation of a curable polyadduct, containing basic nitrogen groups, which after protonation with an acid can be used as a binder for the production of coatings, in particular for the cathodic electrocoating of metal articles, wherein

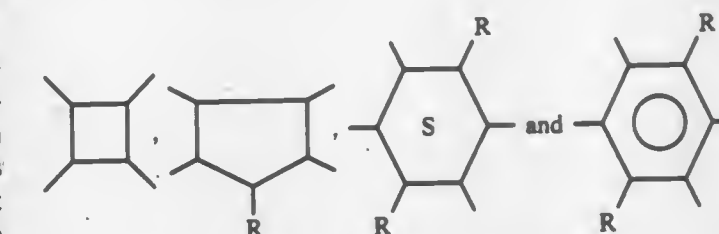
(A) monophenols or polyphenols, or mixtures of monophenols and polyphenols, which contain groups of the general formula (I)



where R<sup>1</sup> and R<sup>2</sup> are identical or different and each is hydrogen or methyl are reacted with

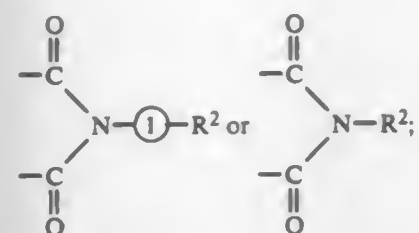
(B) amines having one or more primary or secondary amino groups or one or more primary and one or more secondary amino groups, and the adduct formed is reacted with  
 (C) epoxide compounds having from 1 to 4 epoxide groups per molecule and having a molecular weight of at most 2,500, the components (A) and (C) being employed in such amounts that the ratio of phenolic hydroxyl groups of (A) to epoxide groups of (C) is from 1:0.5 to 1:2 and the amine (B) being employed in such amount that the resulting polyadduct of (A), (B) and (C) contains from 0.1 to 5% by weight of basic nitrogen.

is a tetravalent cycloaliphatic or aromatic radical selected from the group consisting of

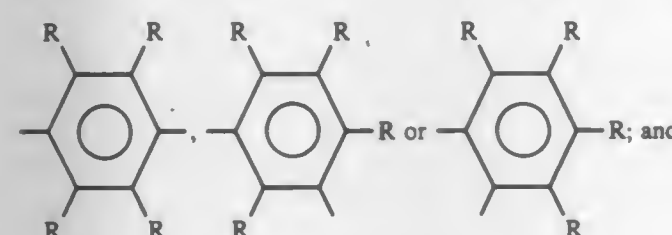
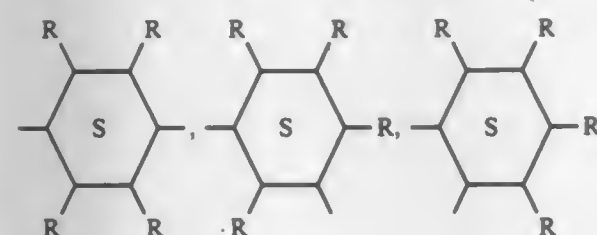
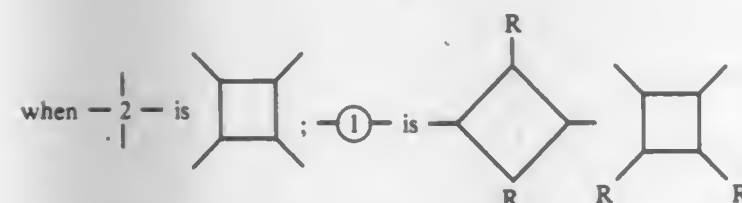
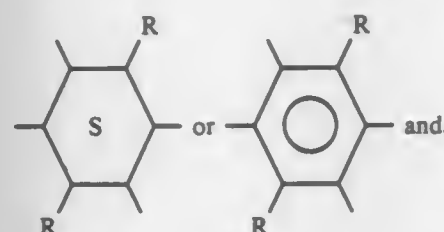
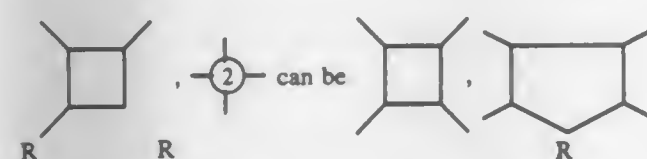
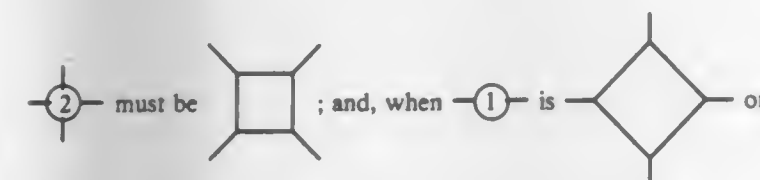
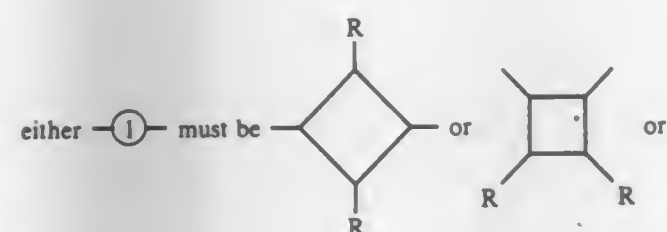


R and R<sup>1</sup> can be the same or different and each is selected from the group consisting of hydrogen, halogen, alkyl group having from 1 to 4 carbon atoms, hydroxyl, carboxyl and amine and when taken together, R and R<sup>1</sup> are:





wherein R<sup>2</sup> is the same as R and R<sup>1</sup>; with the proviso that, in all cases,



(b) a second pack comprising an epoxy resin substantially free of active hydrogen having a 1,2 epoxy equivalent value of greater than 1 and capable of solubilizing said imide-amine.

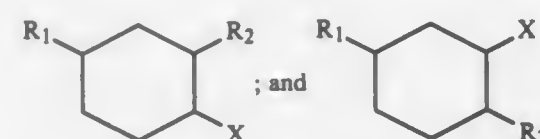
**4,340,716**  
**COATING COMPOSITION**  
Naoaki Hata, Tokyo; Hidehiko Kojo, Koshigaya, and Koji Akimoto, Tokyo, all of Japan, assignors to Asahi Denka Kogyo K.K., Tokyo, Japan  
Filed Jun. 22, 1981, Ser. No. 276,114  
Claims priority, application Japan, Jun. 23, 1980, 55/84994  
Int. Cl.<sup>3</sup> C08G 59/62

U.S. Cl. 528—100 8 Claims  
1. A coating composition containing, as essential components,

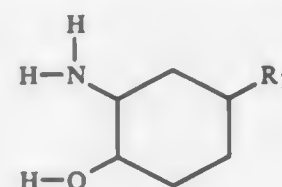
- (A) a prepolymer of epoxy resin and polyhydroxy phenolic compound selected from the group consisting of  
(i) polynuclear polyhydroxy phenols having adjacent hydroxy groups,  
(ii) polyol esters of polyhydroxy phenolic carboxylic acids having adjacent hydroxy groups, and  
(iii) mixtures of (i) and (ii); and  
(B) an organic hardener for said epoxy resin.

**4,340,717**  
**NITROGEN-CONTAINING COMPOUNDS**  
Edward W. Kluger, Pauline, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.  
Filed Mar. 12, 1981, Ser. No. 243,096  
Int. Cl.<sup>3</sup> C08G 59/50; C07C 87/38, 87/45, 91/14  
U.S. Cl. 528—111 7 Claims

1. Nitrogen-containing compounds selected from compounds having the following formula:



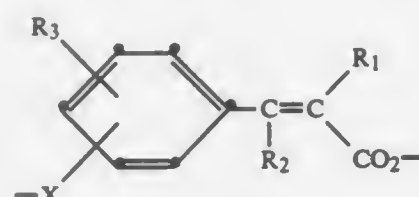
wherein X is selected from OH and NH<sub>2</sub>, R<sub>1</sub> is selected from —CH=CH<sub>2</sub> and —C<sub>2</sub>H<sub>5</sub> and R<sub>2</sub> is selected from —NH<sub>2</sub> and



where R<sub>1</sub> has the value indicated above.

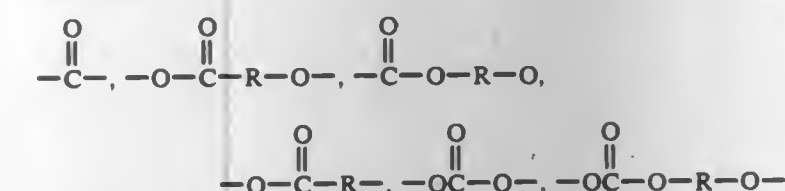
**4,340,718**  
**STABILIZED COPOLYESTER MATERIAL**  
Joseph S. Zannucci, Bobby J. Sublett, and Gether Irick, Jr., all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.  
Filed Jun. 2, 1980, Ser. No. 155,811  
Int. Cl.<sup>3</sup> C08G 63/60, 63/54, 63/68  
U.S. Cl. 528—128 4 Claims

1. A copolyester having an inherent viscosity of at least 0.4 and containing in copolymerized form from about 0.3 to about 5.0% by weight of one or more of the stabilizing moieties having the general formula



where R<sub>1</sub> is cyano, alkylcarbonyl, cycloalkylcarbonyl or arylcarbonyl; R<sub>2</sub> is alkyl, cycloalkyl, or aryl; R<sub>3</sub> represents 1-4 groups each independently selected from H, Cl, F, alkyl, cy-

cloalkyl, alkoxy, aryl or aryloxy; wherein all of the above alkyl and alkylene moieties comprising or being part of the R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> groups contain from 1-8 carbons; —X— is ortho, meta, or para to the —ylene linkage and is selected from groups of the formulae



wherein R is alkylene of 1-10 carbons, arylene, or cycloalkylene; and wherein all of the above alkyl, alkylene, arylene and cycloalkylene groups may be substituted with up to three substituents selected from halogen, alkyl of 1-8 carbons, alkoxy of 1-8 carbons, aryl, cycloalkyl and CN.

**4,340,719**  
**OLIGOMERIC FORMAL DIOLS OF POLY(TETRAMETHYLENE ETHER) GLYCOL AND POLYURETHANES PREPARED THEREFROM**  
Engelbert Pechhold, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
Filed Aug. 25, 1980, Ser. No. 180,878  
Int. Cl.<sup>3</sup> C08G 65/34  
U.S. Cl. 528—230 2 Claims

1. An oligomeric formal diol made by coupling two poly(tetramethylene ether) glycol segments, each having a number average molecular weight of 1000-3000, with formaldehyde.

**4,340,720**  
**PROCESS FOR PRODUCING HIGH-MOLECULAR POLYACETALS**

Boris P. Grishin, ulitsa Bratskaya, 8, kv. 75; Alexandr G. Gruzov, ulitsa Amurskaya, 31, kv. 72; Leonid M. Romanov, ulitsa Vavilova, 55/7, kv. 128; Julian I. Vishnyak, ulitsa Malenkovskaya, 7, kv. 1; Nina A. Shugaeva, ulitsa Oktyabrskaya, 6, korpus 1, kv. 2, all of Moscow; Nikolai M. Bychkov, Pavlovo-Posadsky R-N, 28, Sonino, Moskovskaya oblast; Konstantin V. Lipets, naberezhnaya Shevchenko, 1/2, kv. 55, and Alexandr I. Zotov, Teply Stan, 1 mikroralon, korpus 7, kv. 240, both of Moscow, all of U.S.S.R.  
PCT No. PCT/SU79/00125, § 371 Date Jul. 6, 1981, § 102(e)  
Date Jul. 30, 1981, PCT Pub. No. WO81/01556, PCT Pub. Date Jun. 11, 1981  
PCT Filed Nov. 30, 1979, Ser. No. 279,996  
Int. Cl.<sup>3</sup> C08G 2/08

U.S. Cl. 528—232 1 Claim  
1. A process for producing high-molecular polyacetals by polymerization of gaseous formaldehyde or copolymerization thereof with cyclic formals or cyclic oxides in an inert hydrocarbon solvent in the presence of an ionic-type catalyst at a temperature within the range of from —50° to +120° C. with the formation of a vapour phase, characterized in that formaldehyde is admitted into the reaction zone in a gas mixture which is the product of a catalytic oxidative dehydrogenation of methanol, wherefrom H<sub>2</sub>O, CH<sub>3</sub>OH and HCOOH have been preliminarily removed.

**4,340,721**  
**NOVEL POLYESTER FOR THE PACKAGING OF COMESTIBLES**  
Claude Bonnetat, Pontault Combault; Gilbert Roulet, Clamecy, and Yves Vaginay, Corbas, all of France, assignors to Rhone-Poulenc Industries, Paris, France  
Filed May 19, 1981, Ser. No. 265,335  
Claims priority, application France, May 20, 1980, 80 11201  
Int. Cl.<sup>3</sup> C08G 63/02  
U.S. Cl. 528—272 15 Claims

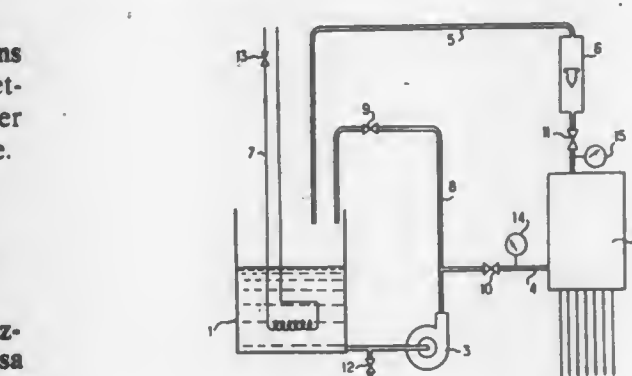
1. A poly(ethylene glycol)terephthalate (PET) having an intrinsic viscosity ranging from 0.65 to 1.05 dl/g and a density of more than 1.38, comprising 92.5 to 98.5% of ethylene tere-

phthalate recurring units and 1.5 to 7.5 mol % of recurring units of at least one polybasic acid and/or polyhydric alcohol comonomeric crystallization retardant, the di- and/or triethylene glycol content thereof being less than about 3.5 mol % per mol of diacid radicals present in the polymer chain, said PET also having a residual acetaldehyde concentration of less than 1.25 ppm, with acetaldehyde being reformed therefrom at a rate of less than 5 ppm/hour, at 220° C., and said PET being devoid of visible crystallization in an at least 4 mm thick test plate shaped in a mold cavity from a melt thereof.

**4,340,722**  
**METHOD OF PREPARING HOMO AND CO-POLYMERS OF VINYL CHLORIDE ADAPTED TO GIVE PLASTISOLS FROM A LATEX CONTAINING TWO POPULATIONS OF PARTICLES**

Claude Arnal; Jean-Barnard Pompon, both of Saint Auban, and Robert Roulet, Lyons, all of France, assignors to Chloé Chmle, Paris, France  
Filed Oct. 23, 1980, Ser. No. 200,092  
Claims priority, application France, Nov. 6, 1979, 79 27282  
Int. Cl.<sup>3</sup> C08F 6/20  
U.S. Cl. 528—480 5 Claims

1. A method of preparing homo and co-polymers of vinyl chloride in the form of a powder adapted to give plasticols with improved rheological properties comprising the steps of concentrating a latex of homo or co-polymer of vinyl chloride containing from 30 to 60% by weight of dry material and two populations of particles by eliminating a fraction of the aqueous phase in the liquid state such that the absolute difference between the dry material contained in the latex before and after its concentration is over 10% to increase the dry material content of the latex to within the range of 50-80% by weight, the two populations of particles in the latex having mean diameters within the respective ranges of 0.7 to 1.5 μm and from 0.12 to 0.3 μm, at least 90% by weight of the particles of each population having a diameter within the range from 0.7 to 1.6 times the mean diameter of the said population, 5 to 45% by weight of the particles of the latex having a diameter less than 0.4 μm, and drying the concentrate.



1. A method of preparing homo and co-polymers of vinyl chloride in the form of a powder adapted to give plasticols with improved rheological properties comprising the steps of concentrating a latex of homo or co-polymer of vinyl chloride containing from 30 to 60% by weight of dry material and two populations of particles by eliminating a fraction of the aqueous phase in the liquid state such that the absolute difference between the dry material contained in the latex before and after its concentration is over 10% to increase the dry material content of the latex to within the range of 50-80% by weight, the two populations of particles in the latex having mean diameters within the respective ranges of 0.7 to 1.5 μm and from 0.12 to 0.3 μm, at least 90% by weight of the particles of each population having a diameter within the range from 0.7 to 1.6 times the mean diameter of the said population, 5 to 45% by weight of the particles of the latex having a diameter less than 0.4 μm, and drying the concentrate.

**4,340,723**  
**PROCESS FOR THE PREPARATION OF A COPOLYMER OF α-METHYLSTYRENE**

Wilhelmus G. Duyzings, Born; Jozef L. M. van der Loos, Sittard, and Jan Tijssen, Geleen, all of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands  
Filed Dec. 19, 1980, Ser. No. 218,452  
Claims priority, application Netherlands, Jan. 19, 1980, 8000355  
Int. Cl.<sup>3</sup> C08F 6/22  
U.S. Cl. 528—497 7 Claims

1. In processes for the preparation of copolymers of α-methylstyrene and at least one other monomer of the group acrylonitrile, methacrylonitrile, methyl-methacrylate, ethylacrylate and styrene, by aqueous emulsion copolymerization, to form a



copolymer latex, and followed by coagulating the latex and recovering and drying the polymer thereby formed, the improvement in combination with said copolymerization wherein said coagulation is effected in the presence of a softener agent for said copolymer of  $\alpha$ -methylstyrene, said softener being a solvent for said copolymer and substantially immiscible with



water, and having a boiling point below that of the boiling point of  $\alpha$ -methylstyrene.

4,340,724

# PROCESS FOR SEPARATING A KETOSE FROM AN ALDOSE BY SELECTIVE ADSORPTION

Richard W. Neuzil, Downers Grove, and James W. Priegnitz, Elgin, both of Ill., assignors to UOP Inc., Des Plaines, Ill. Continuation-in-part of Ser. No. 690,768, May 27, 1976, Pat. No. 4,226,977. This application Mar. 27, 1978, Ser. No. 890,778 Int. Cl.<sup>3</sup> C07H 1/06

U.S. Cl. 536—127

5 Claims

1. A process for separating a fructose from a mixture comprising a fructose and a glucose which process employs an adsorbent selected from the group consisting of Y and X zeolites containing at exchangeable cationic sites thereof at least one cation selected from the group consisting of, in the case of Y zeolite, ammonium, sodium, potassium, calcium, strontium, barium and combinations thereof, and, in the case of X zeolite, barium, sodium and strontium and combinations thereof, which process comprises the steps of:

- (a) maintaining net fluid flow through a column of said adsorbent in a single direction, which column contains at least three zones having separate operational functions occurring therein and being serially interconnected with the terminal zones of said column connected to provide a continuous connection of said zones;
- (b) maintaining an adsorption zone in said column, said zone defined by the adsorbent located between a feed input stream at an upstream boundary of said zone and a raffinate output stream at a downstream boundary of said zone;
- (c) maintaining a purification zone immediately upstream from said adsorption zone, said purification zone defined by the adsorbent located between an extract output stream at an upstream boundary of said purification zone and said

feed input stream at a downstream boundary of said purification zone;

- (d) maintaining a desorption zone immediately upstream from said purification zone, said desorption zone defined by the adsorbent located between a desorbent input stream at an upstream boundary of said zone and said extract output stream at a downstream boundary of said zone;
- (e) passing said feed mixture into said adsorption zone at a temperature within the range of from about 20° C. to about 200° C. and a pressure within the range of from about atmospheric to about 500 psig to effect the selective adsorption of said fructose by said adsorbent in said adsorption zone and withdrawing a raffinate output stream from said adsorption zone;
- (f) passing a desorbent material into said desorption zone at a temperature within the range of from about 20° C. to about 200° C. and a pressure within the range of from about atmospheric to about 500 psig to effect the displacement of said fructose and desorbent material from said desorption zone;
- (g) withdrawing an extract output stream comprising said fructose and desorbent material from said desorption zone;
- (h) passing at least a portion of said extract output stream to and therein separating at separation conditions at least a portion of said desorbent material to produce a fructose product stream having a reduced concentration of desorbent material; and,
- (i) periodically advancing through said column of adsorbent in a downstream direction with respect to fluid flow in said adsorption zone the feed input stream, raffinate output stream, desorbent input stream, and extract output stream to effect the shifting of zones through said adsorbent and the production of extract output and raffinate output streams.

4,340,725

# NOVEL COMPOUND DC-38-V AND PROCESS FOR PRODUCTION THEREOF

Fusao Tomita, Machida; Yuzuru Matsuda, Koganei; Kunikatsu Shirahata, Machida; Keiichi Takahashi, Machida; Hirofumi Nakano, Machida; Tomoyasu Sato, Machida; Shuji Okubo, Matsudo, and Nobuo Nakamura, Machida, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan Filed Aug. 4, 1980, Ser. No. 175,324

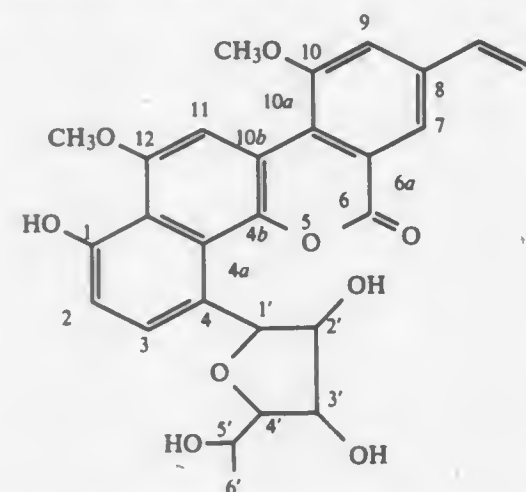
Claims priority, application Japan, Aug. 3, 1979, 54-98656

Int. Cl.<sup>3</sup> C07G 11/00

U.S. Cl. 536—1.1

1 Claim

1. A compound of the formula



characterized by an infrared absorption spectrum substantially as shown in FIG. 1, an ultraviolet absorption spectrum substantially as shown in FIG. 2, a molecular weight of 494 determined by mass spectrometry, and a molecular formula of  $C_{27}H_{26}O_9$ .

4,340,726  
ESTERS

Lionel N. Simon, Santa Ana, Calif.; Alfredo Giner-Sorolla, Riverside, Conn., and Alvin Guttag, Bethesda, Md., assignors to Newport Pharmaceuticals International, Inc., Newport Beach, Calif. and Sloan-Kettering Institute for Cancer Research, New York, N.Y.

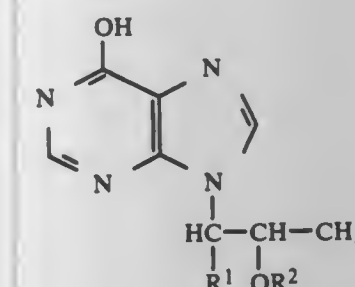
Filed Mar. 14, 1980, Ser. No. 130,334

Int. Cl.<sup>3</sup> C07D 473/30

U.S. Cl. 536—17.4

6 Claims

1. A compound of the formula



wherein  $R^1$  is an n-hexyl group and  $R^2$  is the ester group of formic acid, acetic acid, propionic acid or butyric acid, phenyl-lactic acid having 2 to 3 carbon atoms in the alkanolic acid portion, salicylic acid, a hemi ester of an alkanedioic or alkenedioic acid, phosphoric acid, nitric acid, or a glycoside of a sugar having 5 to 6 carbon atoms.

4,340,727

# 1,2-MODIFIED FORTIMICINS A AND B, INTERMEDIATES THEREFOR AND METHOD FOR THEIR MANUFACTURE

Jerry R. Martin; John S. Tadanier, both of Waukegan, and Paulette Johnson, Zion, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

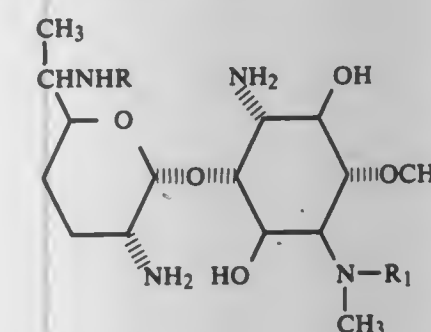
Continuation of Ser. No. 79,135, Sep. 26, 1979, Pat. No. 4,273,925. This application Oct. 28, 1980, Ser. No. 201,651

Int. Cl.<sup>3</sup> C07H 15/22

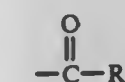
U.S. Cl. 536—16.1

10 Claims

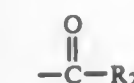
1. A 1,2-di-epi-fortimicin represented by the formula:



wherein R is hydrogen or lower-alkyl; and  $R_1$  is selected from the group consisting of hydrogen, lower-alkyl, aminoloweralkyl, diaminoloweralkyl, N-loweralkylaminoloweralkyl, N,N-diloweralkylaminoloweralkyl, hydroxyloweralkyl, amino hydroxyloweralkyl, N-loweralkylaminohydroxyloweralkyl, N,N-diloweralkylaminohydroxyloweralkyl, acyl of the formula



wherein  $R_2$  is loweralkyl, aminoacyl, hydroxy-substituted aminoacyl, diaminoacyl, hydroxyacyl, hydroxy-substituted diaminoacyl, N-loweralkylaminoacyl, N,N-diloweralkylaminoacyl, hydroxy-substituted-N-loweralkylaminoacyl and hydroxy-substituted-N,N-diloweralkylaminoacyl wherein each acyl is of the formula



$R_2$  being loweralkyl, and the pharmaceutically acceptable salts thereof.

4,340,728

# NUCLEOSIDE DERIVATIVES AND PROCESS FOR PREPARING SAME

Takeshi Endo, Kamiichi; Katsumi Sakai, Kamiichi; Kiyooki Chou, Kamiichi; Yoshitaka Inamoto, Namerikawa, and Haruhiko Teshigawara, Kamiichi, all of Japan, assignors to Fuji Kagaku Kogyo Kabushiki Kaisha, Toyama, Japan

Filed Nov. 26, 1980, Ser. No. 210,796

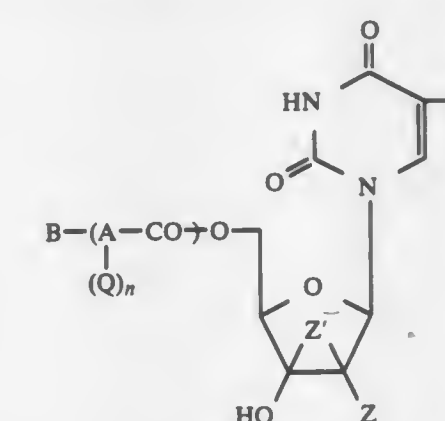
Claims priority, application Japan, Nov. 28, 1979, 54-152922; Dec. 27, 1979, 54-169201

Int. Cl.<sup>3</sup> C07H 19/06, 19/08

U.S. Cl. 536—23

7 Claims

1. A nucleoside derivative of the formula:



wherein (A—CO) is a residue of a saturated straight or branched chain fatty acid having 1 to 17 carbon atoms in the alkyl moiety A thereof, B is selected from the group consisting of substituted or unsubstituted amino groups bound in the  $\alpha$ - or  $\omega$ -position, substituted or unsubstituted hydrazino groups, substituted or unsubstituted guanidino groups, diazo, azido, nitro, isocyano and 3-6 membered heterocyclic amino groups in which the ring carbon chain may be interrupted by one or more hetero atoms, with the proviso that when B is a substituted or unsubstituted amino group said amino group may be combined together with the carbon atoms in the alkyl moiety A to form a ring, Q is selected from the group consisting of hydroxyl, mercapto, alkoxy, aralkoxy, alkylmercapto, aralkylthio, substituted or unsubstituted carboxyl, substituted or unsubstituted amino, phenyl, hydroxyphenyl, sulfinyl, indolyl, imidazolyl, guanidyl and dithio connected at one end to the alkyl moiety of an amino acid, Z is H, Z' is H or OH, and n is zero or an integer of at least 1, or a physiologically acceptable salt thereof.

4,340,729

# 5'-DEOXY-5-FLUOROURIDINE

Richard D'Souza, Basel, and Joseph Kiss, Arlesheim, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jun. 5, 1980, Ser. No. 156,590

Claims priority, application Switzerland, Jun. 12, 1979, 5625/79

Int. Cl.<sup>3</sup> C07H 19/06

U.S. Cl. 536—23

2 Claims

1. A compound of the formula 1-(5-deoxy-2,3-di-O-acyl- $\beta$ -D-ribofuranosyl)-5-fluorouracil wherein acyl represents a group which is a residue of an aliphatic or aromatic acid capable of being used as a protecting group in sugar chemistry.



4,340,730

N<sup>6</sup>-SUBSTITUTED ADENOSINES

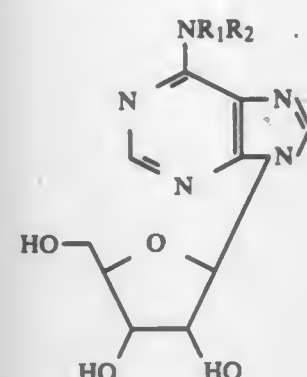
Richard E. L. Henderson, Evanston; Nancy J. Malek, Skokie; Alan E. Moormann, Skokie, and Barnett S. Pitzele, Skokie, Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 157,625, Jun. 9, 1980, abandoned. This application Jan. 30, 1981, Ser. No. 229,824

Int. Cl.<sup>3</sup> C07H 19/16

U.S. Cl. 536—26

1. A compound according to the formula:

wherein R<sub>1</sub> is:

- (a) hydrogen; or  
(b) alkyl of from 1 to 6 carbon atoms inclusive;

where R<sub>2</sub> is:

- (a) 4-(N,N-dimethylaminophenethyl);

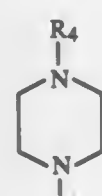
- (b)  $-(CH_2)_nCOOR_5$ ;

wherein n is an integer from 3 to 11 inclusive;

wherein R<sub>5</sub> is:

- (a) hydrogen; or  
(b) alkyl of from 1 to 20 carbon atoms, inclusive with the provision that when R<sub>1</sub> is hydrogen and n is 5, R<sub>5</sub> cannot be hydrogen;

- (c) 3(11,11-dihydro-5H-dibenz[b,f]azepin-5-yl)propyl; or wherein R<sub>1</sub> and R<sub>2</sub> taken together with N form a piperazine ring of the formula:

wherein R<sub>4</sub> is:

- (a) ethoxycarbonyl.

4,340,731

## POLYCARBOXYALKYL-CELLULOSE HAVING HIGH FLUID ABSORBING AND RETAINING PROPERTIES, AND PROCESS FOR PREPARING SAME

Virginio Colombo, Melzo; Alberto Nicoletti, and Benito Casu, both of Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jun. 19, 1980, Ser. No. 160,990

Claims priority, application Italy, Jun. 20, 1979, 23716 A/79

Int. Cl.<sup>3</sup> C08B 11/12, 11/20

U.S. Cl. 536—87

7 Claims

1. Polycarboxyalkyl-cellulose having a degree of substitution greater than 0.35, a cross-linkage comprised between 5% and up to 75% of the substituted groups, a water-solubility below 40% by weight, an absorption and retention of the water comprised between 7,000 and 25,000 ml/100 g of pure product, an absorption and retention of saline solutions or of plasmatic and physiological liquids comprised between 2,500 and 6,000 ml/100 g of pure product, and a pH between 5.5 and 6.4.

4,340,732

## BUTENOLIDE HERBICIDES AND PROCESS FOR THEIR PREPARATION

Alan W. Johnson, c/o The School of Molecular Sciences, University of Sussex, Falmer, Brighton, England (BN1 9QJ), and Ahmed Hassanali-Walji, P.O. Box 786, Dar-es-Salaam, United Rep. of Tanzania

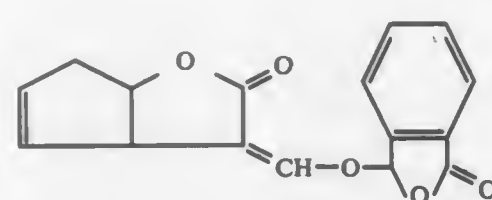
Filed Feb. 20, 1980, Ser. No. 123,257

Int. Cl.<sup>3</sup> A01N 43/26; C07D 407/12

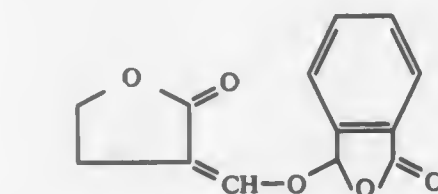
U.S. Cl. 542—426

4 Claims

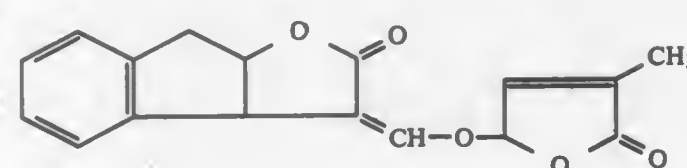
1. A compound represented by one of the formulae IIA, IIIA, IVA, VA, VIA, VIIA, IXA and XA as follows:



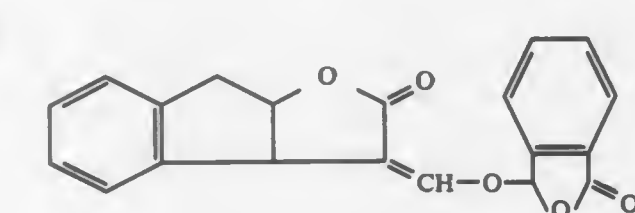
IIA



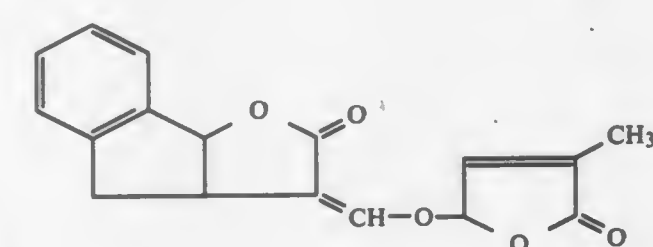
IIIA



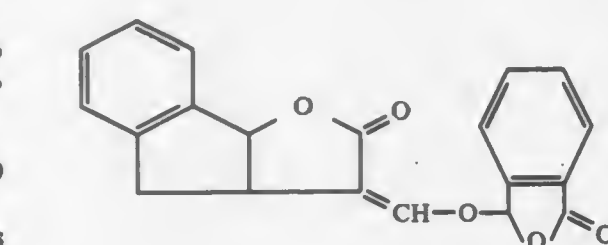
IVA



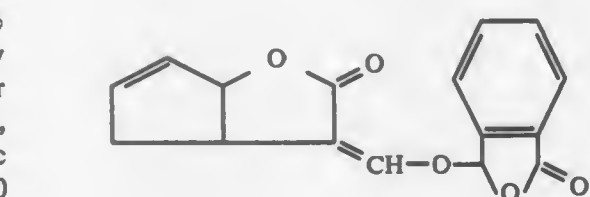
VA



VIA

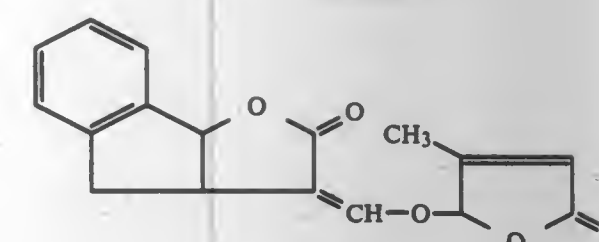


VIIA

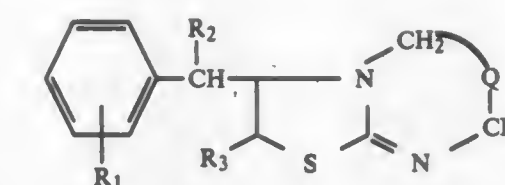


IXA

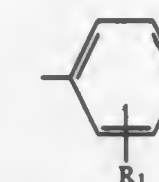
-continued



XA



wherein R<sub>1</sub> is hydrogen, fluoro, chloro, bromo, alkyl having from 1 to 3 carbon atoms or alkoxy having from 1 to 3 carbon atoms; R<sub>2</sub> is hydrogen or



4,340,733

## PROCESS FOR PREPARING

## 3-CHLORO-6-(2-HYDROXYPHENYL)-PYRIDAZINES

Bing L. Lam, King of Prussia, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

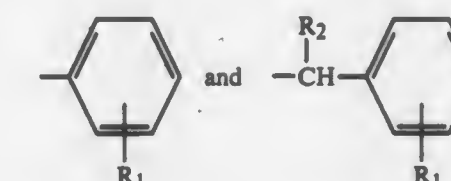
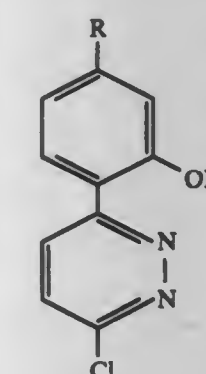
Filed Sep. 2, 1980, Ser. No. 182,913

Int. Cl.<sup>3</sup> C07D 237/12

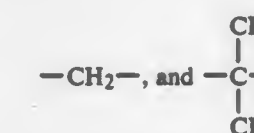
U.S. Cl. 544—224

3 Claims

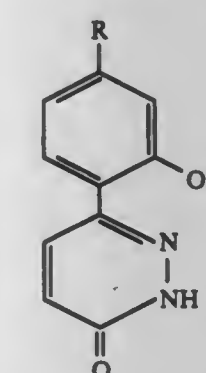
1. A process for preparing a pyridazine compound of the formula:



wherein R<sub>1</sub> and R<sub>2</sub> are as hereinbefore defined, and Q is a divalent moiety selected from the group consisting of those of the formulae:



in which R is hydrogen or lower alkyl, which comprises reacting a pyridazinone of the formula:



as well as the pharmaceutically acceptable salts thereof.

4,340,735

## ISOINDOLINE COLORANTS

Wolfgang Lotsch, Beindersheim, and Reinhard Kemper, Heidelberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,251

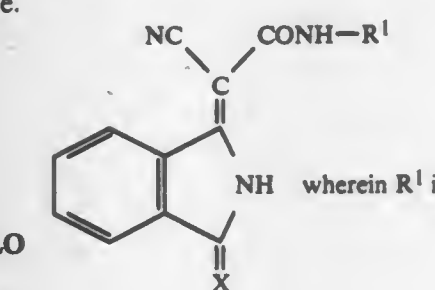
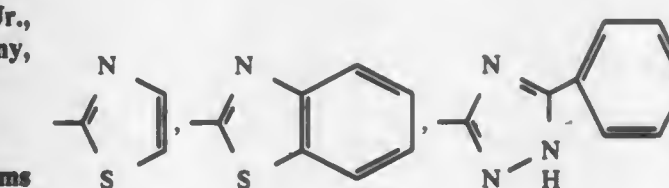
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1980, 3007329

Int. Cl.<sup>3</sup> C09B 57/04

U.S. Cl. 544—300

6 Claims

1. An isoindoline colorant of the formula

wherein R<sup>1</sup> is

with phosphorus oxychloride and a dilower alkylformamide.

4,340,734

## 3-(α-SUBSTITUTED-BENZYL)-2,3-DIHYDROTHIAZOLO [3,2-A][1,3]DIAZACYCLAN-3-OL DERIVATIVES

Andrews S. Tomcufcik, Old Tappan; William B. Wright, Jr., Woodcliff Lake, both of N.J., and Joseph W. Marsico, Jr., Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 14, 1980, Ser. No. 206,803

Int. Cl.<sup>3</sup> C07D 513/04; A61K 31/54, 31/55

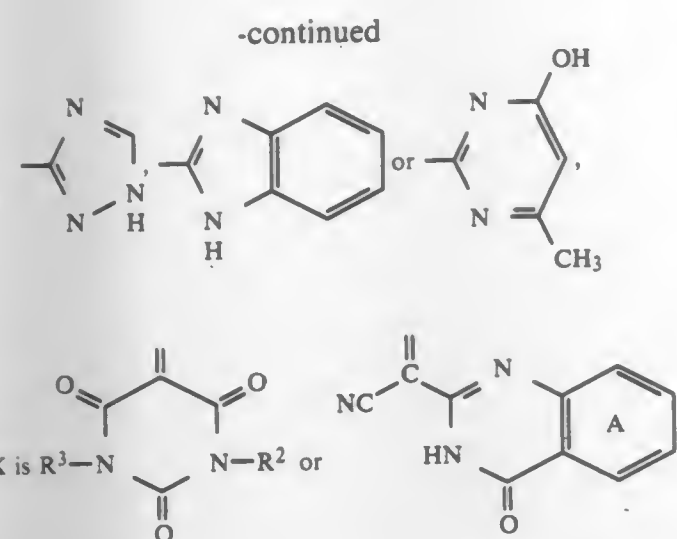
U.S. Cl. 544—282

27 Claims

1. A compound selected from those of the formula:

1020 O.G.—42





$R^2$  and  $R^3$  independently of another are hydrogen,  $C_1$ - $C_4$ -alkyl, benzyl, phenyl or 1-naphthyl and  $R^1$ , the phenyl and naphthyl radicals, and the ring A are unsubstituted or substituted by groups which do not cause solubility of the colorant in water or organic solvents.

4,340,736

**DIAGNOSTIC TEST FOR BARBITURATES**

Antonino Focella, Clifton; John E. Heveran, Fairfield; Sidney Teitel, Clifton, and Manfred Weigele, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J. Continuation of Ser. No. 901,382, May 1, 1978, abandoned, which is a division of Ser. No. 690,123, May 26, 1976, Pat. No. 4,101,549. This application Dec. 5, 1979, Ser. No. 100,328 Int. Cl.<sup>3</sup> C07D 239/62

U.S. Cl. 544-301

2 Claims

1. The compound 5-allyl-5-[1-(4-aminobutyl)carbamoyl-isopropyl]barbituric acid.
2. The compound 5-allyl-5-[1-(3-aminopropyl)carbamoyl-isopropyl]barbituric acid.

4,340,737

**9-HYDROXYOCTAHYDROBENZO[C]QUINOLINES AND INTERMEDIATES THEREFOR**

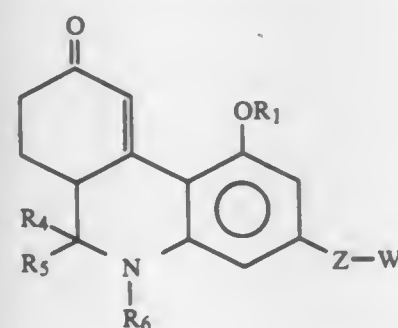
Michael R. Johnson, Groton, Conn., assignor to Pfizer Inc., New York, N.Y. Division of Ser. No. 42,773, May 29, 1979, Pat. No. 4,260,764, which is a continuation-in-part of Ser. No. 777,928, Mar. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 753,619, Dec. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 687,332, May 17, 1976, abandoned. This application Oct. 3, 1980, Ser. No. 193,822 The portion of the term of this patent subsequent to Jun. 3, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> C07D 221/12; A61K 31/47

U.S. Cl. 546-108

6 Claims

1. A compound having the formula:



wherein

$R_1$  is selected from the group consisting of hydrogen, benzyl, benzoyl, alkanoyl having from one to five carbon atoms and  $-\text{CO}-(\text{CH}_2)_p-\text{NR}_2\text{R}_3$  wherein p is 0 or an integer from 1 to 4; each of  $R_2$  and  $R_3$  when taken individ-

ually is selected from the group consisting of hydrogen and alkyl having from one to four carbon atoms;  $R_2$  and  $R_3$  when taken together with the nitrogen to which they are attached form a 5- or 6-membered heterocyclic ring selected from the group consisting of piperidino, pyrrolo, pyrrolidino, morpholino and N-alkylpiperazino having from one to four carbon atoms in the alkyl groups;

$R_4$  is selected from the group consisting of hydrogen, alkyl having from 1 to 6 carbon atoms and  $-(\text{CH}_2)_z-\text{C}_6\text{H}_5$  wherein z is an integer from 1 to 4;

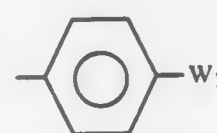
$R_5$  is selected from the group consisting of hydrogen, methyl and ethyl;

$R_6$  is selected from the group consisting of hydrogen,  $-(\text{CH}_2)_y$  carbalkoxy having from one to four carbon atoms in the alkoxy group and wherein y is 0 or an integer from 1 to 4, carbobenzyloxy, formyl, alkanoyl having from two to five carbon atoms, alkyl having from one to six carbon atoms;  $-(\text{CH}_2)_x-\text{C}_6\text{H}_5$  wherein x is an integer from 1 to 4; and  $-\text{CO}(\text{CH}_2)_x-\text{C}_6\text{H}_5$ ;

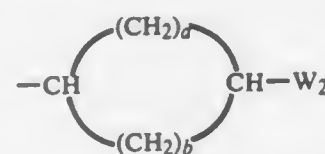
Z is selected from the group consisting of

- (a) alkylene having from one to nine carbon atoms;
- (b)  $-(\text{alk}_1)_m-\text{X}-(\text{alk}_2)_n-$  wherein each of  $(\text{alk}_1)$  plus  $(\text{alk}_2)$  is alkylene having from one to nine carbon atoms, with the proviso that the summation of carbon atoms in  $(\text{alk}_1)$  plus  $(\text{alk}_2)$  is not greater than nine; each of m and n is 0 or 1; X is selected from the group consisting of O, S, SO and  $\text{SO}_2$ ; and

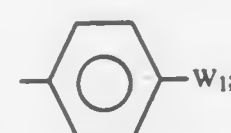
W is selected from the group consisting of hydrogen, methyl, pyridyl, piperidyl,



wherein  $W_1$  is selected from the group consisting of hydrogen, fluoro and chloro; and



wherein  $W_2$  is selected from the group consisting of hydrogen and



a is an integer from 1 to 5 and b is 0 or an integer from 1 to 5; with the proviso that the sum of a and b is not greater than 5; and the ketals thereof wherein the ketal moiety has from two to four carbon atoms.

4,340,738

**2,3-DIHYDRO-IMIDAZO[2,1-b]BENZOTHAZOLES**

Victor Sipido, Merksem, Belgium, assignor to Janssen Pharmaceutica, N.V., Beerse, Belgium Division of Ser. No. 50,734, Jun. 21, 1979, Pat. No. 4,262,004. This application Jan. 9, 1981, Ser. No. 223,544 Int. Cl.<sup>3</sup> C07D 277/60

U.S. Cl. 548-151

2 Claims

1. A chemical compound selected from the group consisting of a 2,3-dihydroimidazo[2,1-b]benzothiazole which may structurally be represented by the formula

4,340,739

**N-HALOMETHYLANILIDES**

Peter Plath, Ludwigshafen; Karl Eicken, Wachenheim, and Wolfgang Rohr, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany Filed Nov. 30, 1979, Ser. No. 99,018

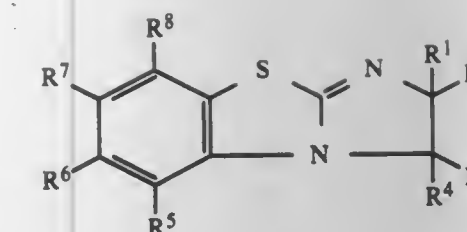
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1978, 2854599

Int. Cl.<sup>3</sup> C07D 261/08, 263/32, 367/30, 333/12

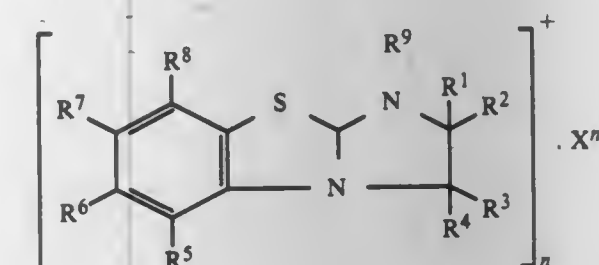
U.S. Cl. 548-236

2 Claims

1. A compound of the general formula



and the pharmaceutically acceptable acid addition salts thereof, the pharmaceutically acceptable imidazo[2,1-b]benzothiazolium salts of formula



and metal salt complexes thereof with a transition metal salt wherein:

$R^1$  and  $R^3$  are each independently selected from the group consisting of hydrogen and lower alkyl;

$R^2$  and  $R^4$  are each independently selected from the group consisting of hydrogen, lower alkyl, aryl, aryl lower alkyl, lower alkyloxy lower alkyl or aryloxy lower alkyl;

$R^5$ ,  $R^6$ ,  $R^7$  and  $R^8$  are each independently selected from the group consisting of hydrogen; nitro; alkyl having from 1 to 20 carbon atoms; cycloalkyl having from 3 to 6 carbon atoms; hydroxy; lower alkyloxy; aryloxy;  $\alpha$ -hydroxyaryl-methyl; amino; mono- and dialkyl-amino; mono-, di- and trihalo-lower alkyl-amino; lower alkenylamino; lower alkynylamino (aryl lower alkyl)amino; (lower alkyloxy-lower alkyl)amino; (hydroxy-lower alkyl)amino; (aryloxy-lower alkyl)amino; [mono- and di(lower alkyl)-amino-lower alkyl]amino; lower alkanoylamino; N-(lower alkyl)-lower alkanoylamino; aminocarbonylamino; (1-lower alkyl-4-piperidyl)amino; cycloalkylamino wherein said cycloalkyl represents a mono-, bi-, tri- or tetracyclic hydrocarbon radical having from 3 to 10 carbon atoms; and a radical of the formula



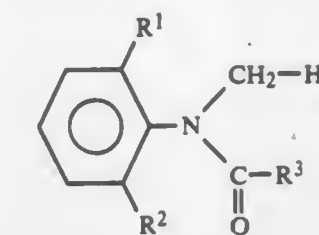
wherein

$R^{10}$  is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl and lower alkynyl; or when taken together  $R^5$  and  $R^6$ ,  $R^6$  and  $R^7$ , or  $R^7$  and  $R^8$  may form a tri- or tetramethylene bridge or complete a fused benzene nucleus;

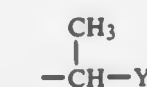
$R^9$  is a member selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl and aryl lower alkyl; and

X is a pharmaceutically acceptable anion and n represents the valency of the anion;

wherein aryl as used in the foregoing definitions is phenyl, optionally substituted with 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy and trifluoromethyl; and aroyl is arylcarbonyl.



where  $R^1$  is methyl, ethyl, isopropyl, methoxy or chlorine,  $R^2$  is methyl, ethyl, isopropyl or chlorine,  $R^3$  is a 5-membered or 6-membered heterocyclic radical selected from the group consisting of thien-2-yl, thienyl-3-yl, fur-2-yl, fur-3-yl, 2,5-dimethylfur-3-yl, 4-chlorothien-3-yl, 2-chloropyrid-3-yl, 2,6-dichloropyrid-4-yl, 3-methylisoxazol-5-yl or 4-methyl-oxazol-5-yl, or is  $-\text{CH}_2\text{Y}$  or



where Y is  $C_1$ - $C_4$ -alkylthio or is phenoxy or phenylthio which are unsubstituted or are monosubstituted or polysubstituted by chlorine, fluorine, methyl, trifluoromethyl or nitro, or  $R^3$  is  $-\text{X}-\text{R}^4$ , where X is oxygen or sulfur and  $R^4$  is phenyl which is unsubstituted or is monosubstituted or disubstituted by fluorine, chlorine, bromine, trifluoromethyl,  $C_1$ - $C_4$ -alkyl, nitro, methoxy or methylthio, and Hal is fluorine, chlorine or bromine.

4,340,740

**ALPHA-THIO-ALPHA-ARYL-SUBSTITUTED ALKANONITRILE AND PROCESS FOR PREPARING ALPHA-ARYL-SUBSTITUTED ALKANONITRILE THEREFROM**

Genichi Tsuchihashi, Tama; Shuichi Mitamura, Sagami-hara, and Katsuyuki Ogura, Narashino, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Jul. 15, 1980, Ser. No. 169,193

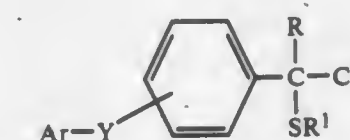
Claims priority, application Japan, Jul. 16, 1979, 54/89357; Jul. 19, 1979, 54/90959; Mar. 28, 1980, 55/38954

Int. Cl.<sup>3</sup> C07D 277/74

U.S. Cl. 548-169

3 Claims

1. An alpha-thio-alpha-aryl-substituted alkanonitrile of the formula



wherein Ar represents phenyl or thienyl, R represents hydrogen or alkyl,  $R^1$  represents alkyl, phenyl, phenyl substituted by alkyl having 1 to 4 carbon atoms, or 2-benzothiazolyl, and Y represents oxygen or carbonyl.



4,340,741  
PROCESS FOR MAKING VINYL OXAZOLINE DRYING  
OIL ESTERS

Joseph A. Vasta, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

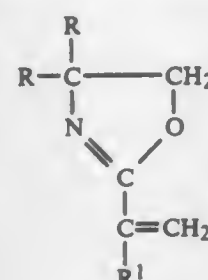
Filed Dec. 1, 1980, Ser. No. 211,584

Int. Cl.<sup>3</sup> C07D 263/14

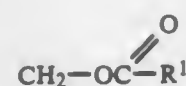
U.S. Cl. 548—237

7 Claims

1. An improved process for preparing a vinyl oxazoline drying oil ester which comprises reacting at about 150°–225° C., in the presence of solvent, drying oil fatty acids with tris(hydroxymethyl) amino methane to form an intermediate, said intermediate being further reacted at about 175°–190° C. with a formaldehyde alcohol solution to form a solution of a vinyl oxazoline drying oil ester of the formula



where R is



and R<sup>1</sup> is the residue of a drying oil fatty acid; the improvement used therewith comprises the use of at least 3 moles of formaldehyde to one mole of intermediate and about 1–5% by weight, based on the weight of the intermediate of methanol and adding after the reaction with formaldehyde about 5–25% by weight, based on the weight of the ester solution, of an alcohol having 1–6 carbon atoms, a ketone having 3–7 carbon atoms or a mixture of said alcohol and ketone.

4,340,742  
PROCESS FOR MAKING  
5-MERCAPTO-1,2,3-TRIAZOLES

Hans-Rudolf Krüger, Berlin, Fed. Rep. of Germany, assignor to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany  
Filed May 19, 1980, Ser. No. 151,110

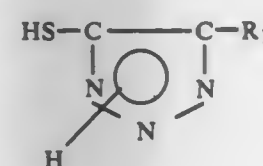
Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920939

Int. Cl.<sup>3</sup> C07D 249/04, 285/06

U.S. Cl. 548—255

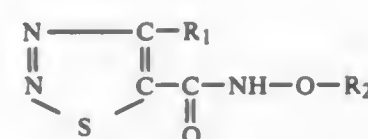
15 Claims

1. A process for making 5-mercapto-1,2,3-triazoles of the formula



wherein R<sub>1</sub> is hydrogen, C<sub>1</sub>–C<sub>4</sub>-alkyl or a C<sub>1</sub>–C<sub>4</sub>-alkyl substituted by chloro, methylthio or hydroxy, said process comprising

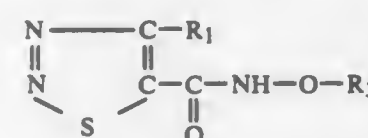
(1) as a first step reacting a solution of 1,2,3-thiadiazole-5-carboxyhydroxamic acid derivative of the formula



wherein R<sub>1</sub> has the meaning as above and R<sub>2</sub> is hydrogen or a univalent metal equivalent in an inert organic solvent in the presence of an acid acceptor with a solution in an inert organic solvent of an acid halide of the formula



wherein R<sub>3</sub> is C<sub>1</sub>–C<sub>4</sub>-alkylcarbonyl, C<sub>1</sub>–C<sub>4</sub>-alkylcarbonyl substituted by chloro, dichloro, trichloro, bromo or methoxy, C<sub>1</sub>–C<sub>4</sub>-alkoxycarbonyl, benzoyl, benzoyl substituted by chloro, methyl or methoxy, aryl- or alkylsulfonyl or aryl- or alkylsulfonyl substituted by chloro, fluoro, bromo or nitro, and X is halogen, so as to form an acylated 1,2,3-thiadiazole-5-carboxyhydroxamic acid derivative of the formula

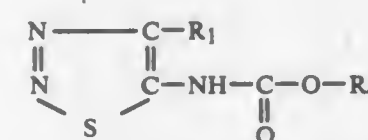


wherein R<sub>1</sub> and R<sub>3</sub> have the same meaning as above (first step), and

(2) reacting as a solution in an inert organic solvent the carboxyhydroxamic acid derivative just obtained with an alcohol or phenol of the formula

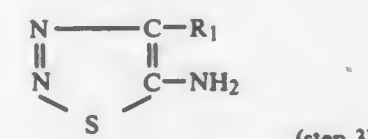


wherein R<sub>4</sub> is C<sub>1</sub>–C<sub>4</sub>-alkyl, C<sub>5</sub>–C<sub>8</sub>-cycloalkyl, aryl-C<sub>1</sub>–C<sub>3</sub>-alkyl, aryl-C<sub>1</sub>–C<sub>3</sub>-alkyl substituted by chloro, dichloro, methyl, dimethyl or methoxy, or an aromatic hydrocarbon residue which may be substituted in one or several positions by C<sub>1</sub>–C<sub>6</sub>-alkyl, halogen, C<sub>1</sub>–C<sub>6</sub>-alkoxy, nitro and/or trifluoromethyl so as to form a (1,2,3-thiadiazole-5-yl)-carbamic acid ester of the formula



wherein R<sub>1</sub> and R<sub>4</sub> have the meaning as above (second step),

(3) then treating the thus obtained carbamic acid ester with an acidic or basic catalyst to form the 5-amino-1,2,3-thiadiazole of the formula

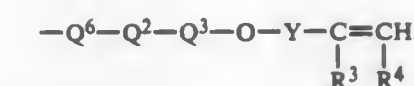


(step 3)

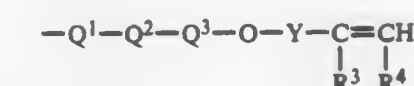
(4) whereupon said amino thiadiazole is not isolated from the reaction mixture and is subject to a rearrangement in the presence of a base followed by isolation of the product of the reaction (step 4).

13. A process for making the starting product employed in the reaction of claim 1, said starting product being a 1,2,3-thiadiazole-5-carboxyhydroxamic acid or a salt thereof of the formula

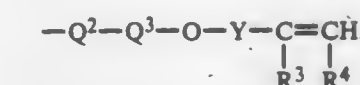
where A<sup>1</sup> and A<sup>5</sup> are each independently H, Q<sup>6</sup>H or



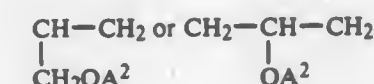
A<sup>3</sup> and A<sup>4</sup> are each independently H, Q<sup>1</sup>H or



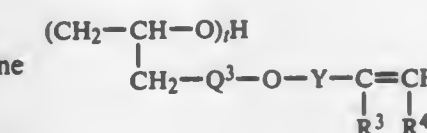
provided that at least one of A<sup>1</sup>, A<sup>3</sup>, A<sup>4</sup> and A<sup>5</sup> is a group having the moiety



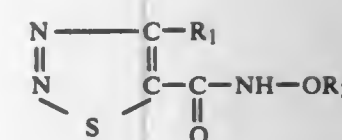
R<sup>1</sup> is alkylene having 2 to 3 carbon atoms; R<sup>2</sup> is alkylene having 2 to about 10 carbon atoms; R<sup>3</sup> is H or CH<sub>3</sub>; R<sup>4</sup> is H or CH<sub>3</sub> and may be the same as or different from R<sup>3</sup>; Q<sup>1</sup> is (R<sup>5</sup>-O)<sub>m</sub> where m is zero or an integer from 1 to about 100, and R<sup>5</sup> is a linear or branched alkylene, alkoxyalkylene, cycloalkylene, cycloalkoxyalkylene, arylalkylene, or aryloxyalkylene residue having 2 to about 20 carbon atoms; Q<sup>2</sup> is



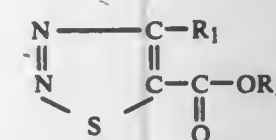
where A<sup>2</sup> is H,



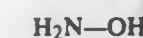
where t is zero or an integer from 1 to 10; Q<sup>3</sup> is (O-R<sup>6</sup>)<sub>n</sub> where n is zero or an integer from 1 to about 100 and may be the same as or different from m, and R<sup>6</sup> is a linear or branched alkylene, alkoxyalkylene, cycloalkylene, cycloalkoxyalkylene, arylalkylene or aryloxyalkylene residue having 2 to about 20 carbon atoms, and may be the same as or different from R<sup>5</sup>; Q<sup>6</sup> is (R<sup>9</sup>-O)<sub>r</sub> where r is zero or an integer from 1 to about 100 and may be the same as or different from m and n and R<sup>9</sup> is a linear or branched alkylene, alkoxyalkylene, cycloalkylene, cycloalkoxyalkylene, arylalkylene, or aryloxyalkylene residue having 2 to about 20 carbon atoms, and may be the same as or different from R<sup>5</sup> and R<sup>6</sup>; and Y is CH<sub>2</sub> or



and said process comprising reacting a 1,2,3-thiadiazole-carboxylic acid ester of the formula

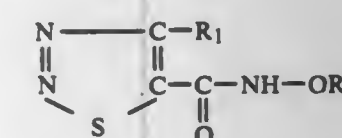


with a hydroxyl amine of the formula

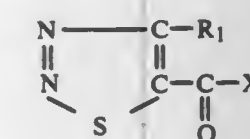


and in the presence of an inorganic base or an alcoholate of an alkali or alkaline earth metal which may be dissolved in a polar organic solvent when R<sub>2</sub> is a univalent metal equivalent, R<sub>2</sub> and X having the meaning as in claim 1 and R<sub>5</sub> being C<sub>1</sub>–C<sub>6</sub>-alkyl.

14. A process of making the starting product employed in claim 1 which is a 1,2,3-thiadiazole-5-carboxyhydroxamic acid or a salt thereof of the formula



said process comprising reacting a 1,2,3-thiadiazole-5-carboxylic acid halide of the formula



wherein R<sub>1</sub> has the meaning as in claim 1 with a hydroxylamine of the formula

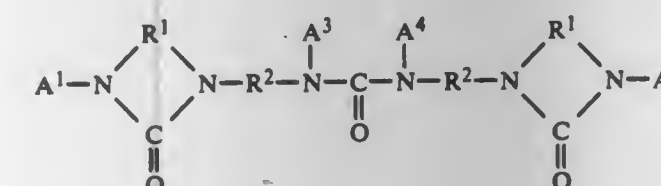


the reaction being carried out in the presence of an inert solvent to which may be added an acid acceptor when R<sub>2</sub> is a univalent metal equivalent, R<sub>2</sub> having the meaning as in claim 1 and X being a halogen.

4,340,743  
DERIVATIVES OF MONO-(ALKYLENE UREIDO ALKYL) UREAS, AND BIS-(ALKYLENE UREIDO ALKYL) UREAS  
Joseph M. Sandri, Arnold; John W. Calentine, Pasadena; Seymour M. Linder, and Yves J. Billioux, both of Baltimore, all of Md., assignors to Alcolac Inc., Baltimore, Md.  
Continuation-in-part of Ser. No. 157,238, Jun. 6, 1980. This application Jun. 27, 1980, Ser. No. 163,488  
Int. Cl.<sup>3</sup> C07D 233/36

U.S. Cl. 548—318

1. A compound having the formula:





4,340,744

## PREPARATION OF IMIDAZOLES

Helmut Schwarz, Ludwigshafen; Toni Dockner, Meckenheim; Uwe Kempe, Limburgerhof; Herbert Krug, Werner Praetorius, both of Ludwigshafen; Peter Magnussen, Bad Duerkheim; Ewald Gallei, Viernheim, and Erich Fehr, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 242,012

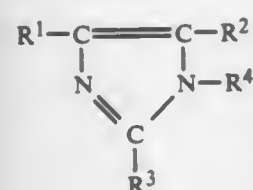
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009631

Int. Cl.<sup>3</sup> C07D 231/12

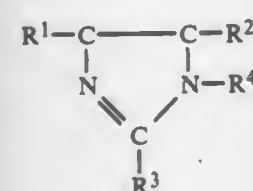
U.S. Cl. 548—346

12 Claims

1. In a process for the preparation of imidazoles of the formula



where  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  may be identical or different and each is an aliphatic, cycloaliphatic araliphatic or aromatic radical or hydrogen, by reacting imidazolines in the presence of a metal catalyst at elevated temperature, the improvement which comprises reacting a 2-imidazoline of the formula



where  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  have the above meanings, at from 250° to 500° C. in the presence of a catalyst mixture containing at least three components and consisting essentially of (a) molybdenum oxide and (b) nickel oxide and/or cobalt oxide and (c) aluminum oxide and/or silicon dioxide and/or silicates.

4,340,745

## PREPARATION OF 2-IMIDAZOLINES

Toni Dockner, Meckenheim; Uwe Kempe, Limburgerhof; Herbert Krug, Ludwigshafen; Peter Magnussen, Bad Duerkheim, and Werner Praetorius, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 242,011

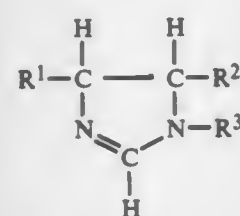
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009633

Int. Cl.<sup>3</sup> C07D 231/06

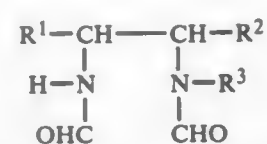
U.S. Cl. 548—347

15 Claims

1. In a process for the preparation of a 2-imidazoline of the formula



where  $R^1$ ,  $R^2$  and  $R^3$  may be identical or different and each is an aliphatic, araliphatic or aromatic radical or is hydrogen, by reacting an N,N'-diformylalkylenediamine over a metal oxide catalyst, the improvement which comprises reacting an N,N'-diformyl-1,2-diamine of the formula



where  $R^1$ ,  $R^2$  and  $R^3$  have the above meanings, in the gas phase, at from 200° to 350° C., in the presence of from 5 to 40 moles of an inert gas per mole of starting material II, over zinc oxide having a pore volume of from 0.05 to 1 milliliter per gram and a specific surface area of from 1 to 500 square meters per gram, or over a mixture of this zinc oxide and aluminum oxide, as the catalyst.

4,340,746

## PROCESS FOR THE PREPARATION OF THIOCHLOROFORMATES

Günther Semler, Kelkheim, and Georg Schaeffer, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 26, 1980, Ser. No. 181,428

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1979, 2934657

Int. Cl.<sup>3</sup> C07C 153/11; C07D 333/10, 307/38

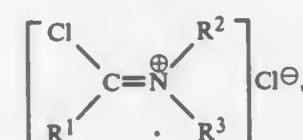
U.S. Cl. 549—78

9 Claims

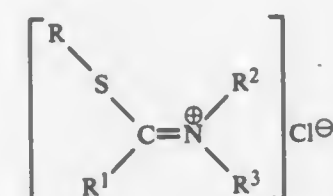
1. In a process for the preparation of a thiochloroformate by reacting a mercaptan of the formula



in which R is alkyl, cycloalkyl, alkenyl, aryl or aralkyl, or alkyl, cycloalkyl, alkenyl, aryl or aralkyl substituted by one or more substituents selected from the group consisting of halogen radicals, alkoxy radicals, aryloxy radicals, carboalkoxy radicals and SH, with phosgene in the presence of a catalyst, the improvement which comprises reacting said mercaptan with phosgene in the presence of a catalyst selected from the group consisting of carboxylic acid amides, urea derivatives, compounds of the formula



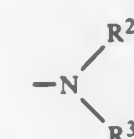
compounds of the formula



I and mixtures of two or more of the foregoing, wherein

R is as defined above,

$R^1$  is hydrogen, alkyl, phenyl or



$R^2$  and  $R^3$ , independently of one another, are hydrogen, alkyl or phenyl, with the proviso that at least one of  $R^1$ ,  $R^2$  and  $R^3$  is not hydrogen when  $R^1$  is not

4,340,748

## PROCESS FOR THE MANUFACTURE OF GLYOXYLIC ACID ESTERS

Herbert Baltes, Frankfurt am Main; Ernst I. Leupold, Neu-Anspach, and Friedrich Wunder, Flörsheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 6, 1980, Ser. No. 118,923

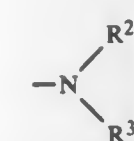
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, 2904775

Int. Cl.<sup>3</sup> C07C 67/313, 69/67

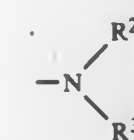
U.S. Cl. 560—177

10 Claims

1. A process for the manufacture of a glyoxylic acid ester by dehydrogenation of a glycolic acid ester in the gaseous phase which comprises contacting said glycolic acid ester with a catalyst containing, as an active component, V, Mo, Ag, Cu, or a combination thereof, and a catalytic promoter containing an effective amount of at least one element selected from the group consisting of Sn, Sb, Bi, elements of Group IA and elements of Group IIA of the Periodic Table.



and at least one of  $R^2$  and  $R^3$  is not hydrogen when  $R^1$  is



or two of  $R^1$ ,  $R^2$  and  $R^3$ , together, are alkylene, the amount of said catalyst being of from about 0.02 to 0.2 mol percent relative to the amount of the mercaptan.

4,340,747

## ESTERS OF

## 1,2-DIPHENYL-CYCLOHEX-1-ENE-4-CARBOXYLIC ACID

Verena Laanio, Arisdorf; Werner Förty, Basel, and Rolf Schurter, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 918,212, Jun. 22, 1978, Pat. No. 4,229,207, which is a continuation-in-part of Ser. No. 713,477, Aug. 11, 1976, abandoned. This application May 19, 1980, Ser. No. 151,034

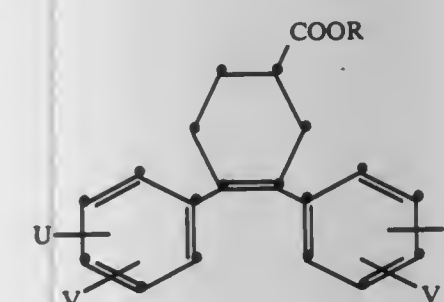
Claims priority, application Switzerland, Aug. 15, 1975, 1664/75; Aug. 15, 1975, 1665/75; Aug. 15, 1975, 1666/75

Int. Cl.<sup>3</sup> C07C 79/46, 69/76

U.S. Cl. 560—102

11 Claims

1. An ester of 1,2-diphenyl-cyclohex-1-ene-4-carboxylic acid of the formula



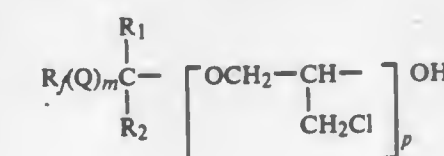
wherein

R is  $C_1$ - $C_7$  alkyl optionally substituted by halogen, nitro,  $C_1$ - $C_4$  alkoxy,  $C_3$ - $C_8$  cycloalkyl, by phenyl or phenoxy unsubstituted or substituted by chlorine, bromine,  $C_1$ - $C_4$  alkyl or  $C_1$ - $C_4$  alkoxy;  $C_3$ - $C_7$  alkenyl optionally substituted by chlorine or  $C_1$ - $C_4$  alkyl;  $C_3$ - $C_7$  alkynyl;  $C_3$ - $C_6$  cycloalkyl optionally substituted by chlorine; phenyl or benzyl unsubstituted or substituted by chlorine, bromine,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  alkoxy, nitro, amino, mono- or di( $C_1$ - $C_4$ )alkylamino or trifluoromethyl

and

U and V are each selected from the group consisting of hydrogen, chlorine, bromine,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  alkoxy, nitro and trifluoromethyl,

with the proviso that if all U's and V's are hydrogen, R is not unsubstituted alkyl.



where

$R_1$  is a fluoroaliphatic radical,  
Q is a divalent linking group free of epoxy-reactive and isocyanate-reactive protons,  
 $R_1$  is hydrogen or lower alkyl,  
 $R_2$  is hydrogen, lower alkyl, or aryl of 6 to 12 carbons,  
m is zero or 1, and  
p is an integer of 1-5 said alcohol having more than 25 weight % carbon-bonded fluorine in the form of said fluoroaliphatic radical, said ester having at least one major transition temperature greater than 25° C.

4,340,750

## PROCESS FOR PRODUCING FLUOROVINYL ETHER

Masaaki Yamabe, Machida; Seisaku Kumai, Yokohama, and Seiji Munekata, Tokyo, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Division of Ser. No. 65,347, Aug. 9, 1979, Pat. No. 4,275,226.

This application Oct. 29, 1980, Ser. No. 201,916

Claims priority, application Japan, Aug. 25, 1978, 53-102686;

Aug. 25, 1978, 53-102687

The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> C07C 69/734, 143/00, 57/065, 41/24

U.S. Cl. 560—183

12 Claims

1. A process for producing a fluorovinyl ether having the formula:



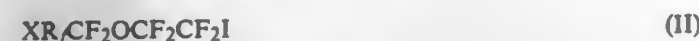
(I)

wherein X represents —H, —Cl, —Br, —F, —CO<sub>2</sub>R, —CONRR', —SO<sub>2</sub>F,





or  $-\text{COF}$ , and R represents a  $\text{C}_1$ - $\text{C}_{10}$  alkyl group; R' represents  $-\text{H}$  or a  $\text{C}_1$ - $\text{C}_{10}$  alkyl group;  $\text{R}_f$  represents a  $\text{C}_1$ - $\text{C}_{20}$  bifunctional perfluoro-containing group which can have one or more ether bonds, which comprises reacting an iodine-containing ether having the formula:



wherein X and  $\text{R}_f$  are as defined above, in the presence of a particulate, metallic catalytic component selected from the group consisting of Zn-Cu, Zn-Cd, Zn-Pd, Zn-Hg;

wherein the iodine-containing ether (II) is reacted with said catalytic component in an inert polar aprotic organic solvent selected from the group consisting of benzonitrile,  $\alpha$ -naphthnitrile,  $\beta$ -naphthnitrile, diphenyl ether, and mixtures thereof.

#### 4,340,751 METHOD OF OPTICAL RESOLUTION OF ( $\pm$ )-2-AMINO-1-BUTANOL AND/OR ( $\pm$ )-MANDELIC ACID

Hiroyuki Nohira, 51-5 Ohkubo Ryoike, Urawa, Saitama, Japan; Hiroshi Fujii, Tokyo, Japan; Masami Yajima, and Rieko Fujimura, both of Saitama, Japan, assignors to Hiroyuki Nohira, Urawa, Japan

Filed Mar. 5, 1981, Ser. No. 240,789

Claims priority, application Japan, Mar. 5, 1980, 55/26720  
Int. Cl.<sup>3</sup> C07B 19/00; C07C 89/04

U.S. Cl. 562-401 7 Claims

1. A method of optical resolution of at least one of ( $\pm$ )-2-amino-1-butanol (AB) and ( $\pm$ )-mandelic acid (MA), which method comprises the steps of:

- crystallizing out, from a solution containing ( $\pm$ )AB and ( $\pm$ )MA, one of the pair of (+)AB-(+)MA salt and (-)AB-(-)MA salt, both of which are contained in said solution and which are enantiomeric salts;
- separating the crystallized salt from the liquid;
- decomposing the enantiomeric salt into optically active AB and MA; and
- recovering the optically active substances.

#### 4,340,752 PROCESS FOR THE PURIFICATION OF TEREPHTHALIC ACID

Ferdinand List, Marl, and Friedrich-August Orlowski, Haltern, both of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Mar. 21, 1978, Ser. No. 888,612

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1977, 2714985

Int. Cl.<sup>3</sup> C07C 51/42

U.S. Cl. 562-485 13 Claims

1. Process for the purification of crude terephthalic acid having about 0.5 to 5 percent by weight of terephthalaldehydic acid therein comprising:

- introducing and circulating a dispersion of particles of said terephthalic acid in an acetic acid dispersant continuously through a cycle comprising a comminuting pump, a heater and a cooler, said cooler functioning as a crystallizer;
- adding fresh dispersion continuously to said cycle while simultaneously removing a corresponding amount of treated dispersion from said cycle;
- subjecting said circulating dispersion, prior to entering the heater to a particle comminution of said particles to about 50-90% of their diameters and exposing said circu-

lating dispersion upstream of or in the heater to an oxygen-containing gas; and  
(d) recovering terephthalic acid product from said treated dispersion, said product having about 0.01 to 0.07 percent by weight of terephthalaldehydic acid therein, wherein the average diameter of said particles introduced in step (a) is about 10 to 150 microns and said comminuted particles of step (c) is about 5 to 10 microns.

#### 4,340,753 METHOD FOR MAKING KETO ACIDS AND DIONE CYCLICS OBTAINED THEREFROM

James A. Cella, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 2, 1980, Ser. No. 182,999

Int. Cl.<sup>3</sup> C07C 51/285

U.S. Cl. 562-528 3 Claims

1. In the method for making a keto-acid from  $\alpha,\beta$ -unsaturated cyclic ketone by cleavage of the  $\alpha,\beta$ -unsaturated ketone utilizing ozonolysis, whereby a hazardous build-up of the resulting ozonide formed in the reaction mixture, the improvement which comprises,

- effecting the ozonolysis of the  $\alpha,\beta$ -unsaturated cyclic ketone in an aqueous organic solvent two phase mixture in the presence of an alkali metal hydroperoxide and a phase transfer catalyst, whereby the resulting keto acid is extracted to the aqueous phase as it is formed from decomposition of its ozonide produced in the organic phase,
- acidifying the aqueous phase containing the keto acid alkali metal salt resulting in the precipitation of the keto acid and
- recovering the resulting keto acid from the mixture of (2).

#### 4,340,754 PROCESS FOR MAKING CHLOROCITRIC ACID

Robert W. Guthrie, Saddle Brook; Richard W. Kierstead, North Caldwell; Francis A. Mennona, Nutley, and Ann C. Sullivan, Cedar Grove, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

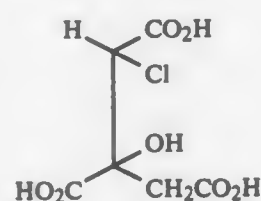
Division of Ser. No. 973,504, Dec. 26, 1978, Pat. No. 4,312,885.

This application Sep. 21, 1981, Ser. No. 304,282

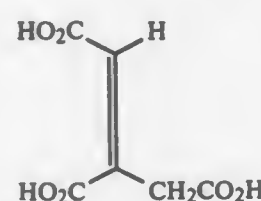
Int. Cl.<sup>3</sup> C07C 59/265, 59/125

U.S. Cl. 562-584 8 Claims

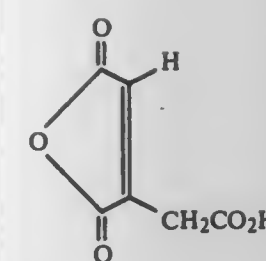
1. A process for the preparation of ( $\pm$ )-erythro-chlorocitric acid of the formula



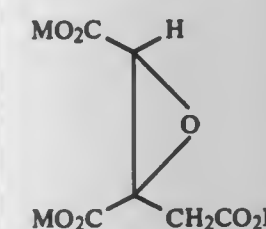
which comprises the steps of  
(a) contacting cis-aconitic acid of the formula



or the anhydride thereof, cis-aconitic anhydride, of the formula



with hydrogen peroxide in the presence of an alkali metal tungstate in an aqueous solvent containing about 2.5 molar equivalents of an alkali metal hydroxide to form a salt of ( $\pm$ )-erythro-epoxyaconitic acid of the formula



wherein m is an alkali metal and R is hydrogen or M; and  
(b) contacting the salt of ( $\pm$ )-erythro-epoxyaconitic acid with an alkali metal chloride or an alkaline earth metal chloride in an aqueous solvent in the presence of about 3.5 molar equivalents of hydrochloric acid at a reaction temperature of about 50° C. to 80° C.

#### 4,340,755 BIGUANIDE DIPERCHLORATE AND PROCESS FOR PREPARATION THEREOF

Gail W. Lawrence, and Horst G. Adolph, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 10, 1980, Ser. No. 195,991

Int. Cl.<sup>3</sup> C07C 129/16

U.S. Cl. 564-233 2 Claims

1. Biguanide diperchlorate.  
2. A process for synthesizing biguanide diperchlorate comprising:

- slowly combining an alcoholic solution of perchloric acid,  $\text{HClO}_4$ , with an alcoholic solution of biguanide while the temperature of the resulting mixture is maintained at a temperature from 0° to less than 20°, wherein two equivalents of perchloric acid are used for each equivalent of biguanide, and
- isolating the product biguanide diperchlorate.

#### 4,340,756 POLYAMINE COMPOUNDS AS ANTIBACTERIAL AGENTS

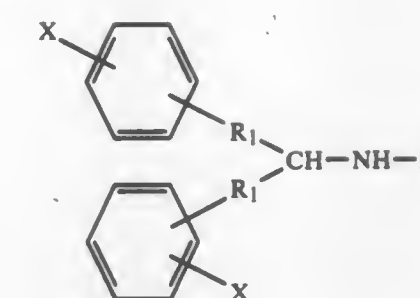
Richard A. Dybas, Somerville; Nathaniel Grier, Englewood, and Bruce E. Witzel, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 4, 1981, Ser. No. 231,193

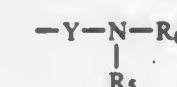
Int. Cl.<sup>3</sup> C07C 87/38

U.S. Cl. 564-367 14 Claims

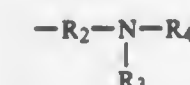
1. A compound of the formula:



where  
X is H, halo, loweralkyl (1 to 6 carbon atoms) and where at least one X is halo;  
each  $\text{R}_1$  is alike or different and is  $\text{C}_1$  to  $\text{C}_4$  alkylene;  
Z is



where  
Y is



or Y is  $\text{R}_2$  and  
 $\text{R}_2$  is 2-hydroxy-1,3-trimethylene, or  $\text{R}_1$  as previously defined;  
 $\text{R}_3$  is hydrogen,  $\text{C}_1$  to  $\text{C}_4$  alkyl,  $\text{C}_2$  to  $\text{C}_4$  aminoalkyl,  $\text{C}_1$  to  $\text{C}_4$  hydroxyalkyl, or  $\text{C}_2$  to  $\text{C}_4$  dihydroxyalkyl;  
 $\text{R}_4$  is 2-hydroxy-1,3-trimethylene, or  $\text{R}_1$  as previously defined;  
 $\text{R}_5$  is hydrogen, aminoethyl, aminopropyl,  $\text{C}_1$  to  $\text{C}_4$  hydroxyalkyl, or  $\text{C}_2$  to  $\text{C}_4$  dihydroxyalkyl; and  
 $\text{R}_6$  is hydrogen,  $\text{C}_1$  to  $\text{C}_4$  hydroxyalkyl or  $\text{C}_2$  to  $\text{C}_4$  dihydroxyalkyl.

#### 4,340,757 PROCESS FOR THE PREPARATION OF 2,6-DIALKYLANILINE FROM BROMINATED DIALKYL T-BUTYLBENZENE

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 6, 1981, Ser. No. 280,440

Int. Cl.<sup>3</sup> C07C 85/04

U.S. Cl. 564-407 15 Claims

1. A process for the preparation of 2,6-dialkylaniline wherein each alkyl group is a straight chain of 1-4 carbon atoms which comprises:

- contacting 1,3-dialkyl-5-tertiary-butylbenzene wherein each alkyl group is a straight chain of 1-4 carbon atoms with molecular bromine at a temperature of from about -10° C. to about 80° C. to form 2-bromo-1,3-dialkyl-5-tertiary-butylbenzene;
- contacting the 2-bromo-1,3-dialkyl-5-tertiary-butylbenzene with 1,3-dialkylbenzene wherein each alkyl group is a straight chain of 1-4 carbon atoms in the presence of hydrogen fluoride at a temperature of from about -10° C. to about 80° C. and a pressure of from about 5 psig to about 300 psig to form 2-bromo-1,3-dialkylbenzene and 1,3-dialkyl-5-tertiary-butylbenzene;
- contacting the 2-bromo-1,3-dialkylbenzene and 1,3-dialkyl-5-tertiary-butylbenzene formed in (b) with ammonia in the presence of a catalytic amount of cuprous halide at a temperature of from about 150° C. to about 300° C. to thereby obtain a reaction mixture comprising 2,6-dialkylaniline and 1,3-dialkyl-5-tertiary-butylbenzene; and
- separating 2,6-dialkylaniline from the reaction mixture.



**4,340,758**  
**NITRATION PROCESS FOR THE PREPARATION OF 2,6-DIALKYLANILINE**

Seymour J. Lapporte, Orinda, and David M. Marquis, Lafayette, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jul. 6, 1981, Ser. No. 280,399  
 Int. Cl.<sup>3</sup> C07C 85/11

U.S. Cl. 564—409 17 Claims

1. A process for the preparation of 2,6-dialkylaniline wherein each alkyl group is a straight chain of 1-4 carbon atoms which comprises:

- contacting 1,3-dialkylbenzene wherein each alkyl group is a straight chain of 1-4 carbon atoms with isobutene in the presence of a hydrogen fluoride catalyst at a temperature of from about -50° C. to about 100° C. and a pressure of from about 0 psig to about 150 psig to form 1,3-dialkyl-5-tertiary-butylbenzene;
- contacting the 1,3-dialkyl-5-tertiary-butylbenzene with nitric acid in the presence of a soluble mercuric salt catalyst at a temperature of from about 0° C. to about 100° C. to form 2-nitro-1,3-dialkyl-5-tertiary-butylbenzene;
- contacting the 2-nitro-1,3-dialkyl-5-tertiary-butylbenzene with hydrogen in the presence of a hydrogenation catalyst at a temperature of from about 0° C. to about 200° C. and a pressure of from about 0 psig to about 2000 psig to form 2,6-dialkyl-4-tertiary-butylaniline;
- heating the 2,6-dialkyl-4-tertiary-butylaniline at a temperature of from about 50° C. to about 500° C. in the presence of a heterogeneous acidic catalyst to thereby obtain a reaction mixture comprising 2,6-dialkylaniline and isobutene; and
- separating 2,6-dialkylaniline from the reaction mixture.

**4,340,759**  
**PROCESS FOR THE PREPARATION OF ANILINES SUBSTITUTED BY CHLORINE IN THE META-POSITION**

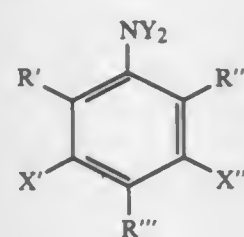
Georges Cordier, Francheville, France, assignor to Rhone-Poulenc Agrochimie, Lyons, France

Filed Jan. 24, 1980, Ser. No. 115,137

Claims priority, application France, Feb. 15, 1979, 79 04482  
 Int. Cl.<sup>3</sup> C07C 85/24

U.S. Cl. 564—412 22 Claims

1. A process for the preparation of anilines substituted in the meta-position by chlorine, by the catalytic hydrogenation of chlorine-substituted nitrogen-containing benzene derivatives, in the liquid phase, in an acid medium, under the action of heat, under pressure and in the presence of noble metals from group VIII of the periodic classification, in which process the benzene derivatives have the formula:



in which Y represents the hydrogen atom or the oxygen atom, X' and X'', which are identical or different from one another, each represent a chlorine atom or an optionally substituted alkyl, aryl, alkoxy or aralkoxy radical, or one of X' and X'' is hydrogen, and R', R'' and R''', which are identical or different from one another, each represent a chlorine atom or an optionally substituted alkyl, aralkyl, alkoxy or aryloxy radical, at least one of these three representing the chlorine atom and at most two of R', R'' or R''' being hydrogen, and the reaction is carried out in the presence of heavy metal cations belonging to one of columns 1b to 5a of the periodic classification.

**4,340,760**  
**MONOPHENYLAMINE DERIVATIVES**

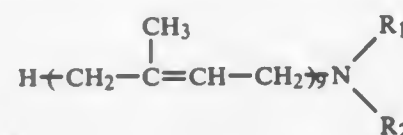
Yoshiyuki Tahara, Ohi; Hiroyasu Koyama, Ageo; Yasuhiro Komatsu, Niiza; Reiko Kubota, Tokyo, and Toshihiro Takahashi, Ohi, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Japan

Filed Apr. 22, 1981, Ser. No. 256,578

Claims priority, application Japan, Apr. 23, 1980, 55-55109  
 Int. Cl.<sup>3</sup> C07C 87/24; A61K 31/13

U.S. Cl. 564—462 5 Claims

1. Nonaprenylamine derivatives of the general formula



wherein R<sub>1</sub> represents a hydrogen atom, a nonaprenyl group or a lower alkyl group, and R<sub>2</sub> represents a lower alkyl or alkenyl group optionally substituted with at least one hydroxy or alkylamino group, or a cycloalkyl group, and acid addition salts thereof.

**4,340,761**  
**PREPARATION OF PHOSPHONIUM PHENOXIDE SALTS**

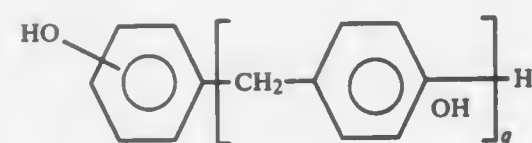
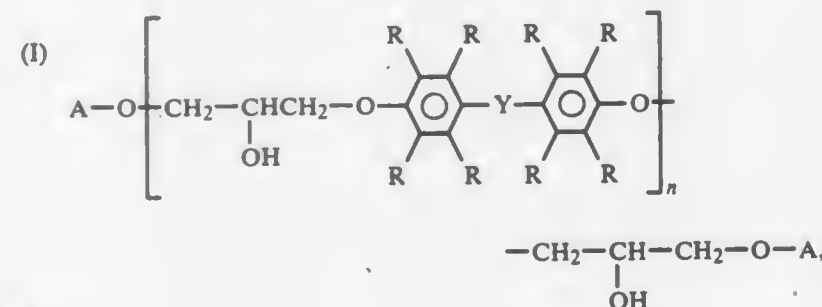
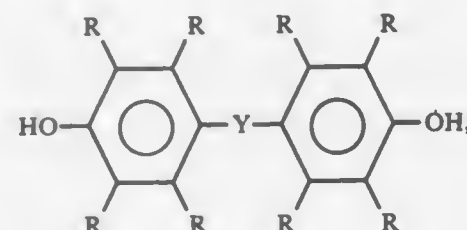
George A. Doorakian, Bedford, and Wanda S. Smith, Framingham, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 24, 1980, Ser. No. 209,640

Int. Cl.<sup>3</sup> C07F 9/54

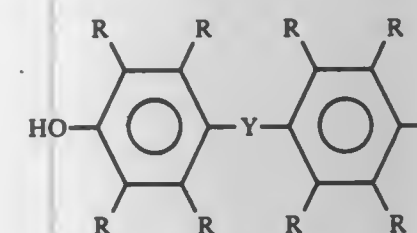
U.S. Cl. 568—11 6 Claims

1. A process for preparing a tetrahydrocarbylphosphonium phenoxide salt comprising reacting by contacting a tetrahydrocarbylphosphonium halide salt in the presence of a phenol compound with an alkali metal or ammonium hydroxide in a liquid reaction medium, so as to effect conversion of the tetrahydrocarbylphosphonium halide to the corresponding tetrahydrocarbylphosphonium salt of the phenol compound or a phenol complex thereof, said phenol compound being represented by the formula



wherein each R independently is a hydrogen, halogen, hydrocarbyl, inertly-substituted hydrocarbyl or hydrocarboxy group, Y is a single covalent bond, —O—, —S—, —CO—,

—SO—, —SO<sub>2</sub>—, or lower alkylene or alkylidene of from 1 to 6 carbon atoms, A is



n is an integer of from 1 to 20 and q is an integer of from 1 to 11.

**4,340,762**  
**GAS PHASE SYNTHESIS OF BIS(TRIFLUOROMETHYL) DISULFIDE**

Louis G. Anello, Hamburg, and Richard F. Sweeney, Elma, both of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 15, 1980, Ser. No. 216,034

Int. Cl.<sup>3</sup> C07C 148/00

U.S. Cl. 568—24 10 Claims

1. A method for preparing bis-(trifluoromethyl) disulfide, which consists essentially of contacting, in the gaseous phase, 2,2,4,4-tetrakis(trifluoromethyl)-1,3-dithietane with an activated carbon catalyst at elevated temperature, producing an effluent stream comprising bis(trifluoromethyl) disulfide and recovering bis(trifluoromethyl) disulfide from the effluent stream.

**4,340,763**  
**WINNING BITTER SUBSTANCES FROM HOPS**

Michael T. Wuesthoff, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 155,686, Jun. 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 110,414, Jan. 7, 1980, abandoned. This application Apr. 3, 1981, Ser. No. 250,794

Int. Cl.<sup>3</sup> C07C 45/32

U.S. Cl. 568—344 20 Claims

1. An improved process for the oxidation of lupulones to hulupones, using an oxygen-containing gas, in a substantially aqueous reaction medium rendered alkaline using a sodium-ion or potassium-ion containing alkalyzing agent, at a temperature in the range from about 25° to about 100° C., wherein the improvement comprises:

- carrying out the process under conditions under which substantially all of the hulupones are caused to precipitate from the reaction medium as a sodium or a potassium salt by using an initial concentration of lupulones in the range from 15 to 30 gm/100 ml of reaction medium; and
- recovering the hulupones from the reaction medium as said sodium or potassium salt.

**4,340,764**  
**PROCESS FOR THE PREPARATION OF 1,4-DIALKYL-2-ENE-1,4-DIONES**

David J. Milner, Whitefield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 17, 1980, Ser. No. 207,613

Claims priority, application United Kingdom, Jan. 11, 1980, 8001011

Int. Cl.<sup>3</sup> C07C 45/57

U.S. Cl. 568—386 7 Claims

1. A process for the preparation of 1,4-dialkylbut-2-ene-1,4-diones which comprises oxidising a 2,5-dialkylfuran with an aqueous solution of a sodium, potassium or calcium hypochlorite at a pH from 7 to 10.

**4,340,765**  
**4-PHENOXY-2-BUTENE DERIVATIVES AS PLANT GROWTH REGULATORS**

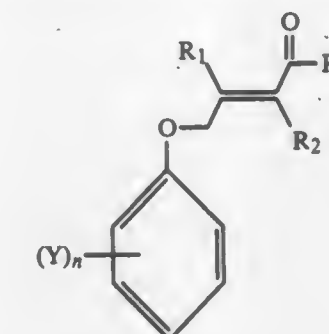
Gary M. Gray, Bethlehem, Pa.; George Schwartzkopf, Jr., Franklin Township, N.J., and J. T. Baker Chemical Co., Phillipsburg, N.J.

Filed Aug. 14, 1980, Ser. No. 178,080

Int. Cl.<sup>3</sup> C07C 59/48

U.S. Cl. 71—123 26 Claims

1. A 4-phenoxy-2-butene compound of the formula



and phytopharmaceutically acceptable salts thereof, wherein R<sub>1</sub> and R<sub>2</sub> are selected from hydrogen and —CH<sub>3</sub> with the proviso that one of R<sub>1</sub> and R<sub>2</sub> is —CH<sub>3</sub> and the other is hydrogen; R<sub>3</sub> is hydrogen Y is selected from the group consisting of (lower)alkyl, halo, nitro, —CF<sub>3</sub>, —S—(lower)alkyl, —O—(lower)alkyl, —O—acetyl, hydroxy, —NH—acetyl, amino, —NH(lower)alkyl, —N—di(lower)alkyl, and a fused benzene ring; and n is equal to 0, 1 or 2, wherein the term (lower)alkyl as used in the foregoing definitions includes straight or branched chain alkyl radicals containing from 1 to 6 carbon atoms.

**4,340,766**  
**DISHWASHING AGENTS AND CLEANING AGENTS CONTAINING OXYBUTYLATED HIGHER ALCOHOL/ETHYLENE OXIDE ADDUCTS AS LOW-FOAMING SURFACTANTS**

Erhard Klahr, Ludwigshafen; Albert Hettche, Hessheim; Wolfgang Trieselt; Dieter Stoeckigt, both of Ludwigshafen, and Horst Trapp, Plankstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,280

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005515

Int. Cl.<sup>3</sup> C07C 43/00, 43/04

U.S. Cl. 568—625 4 Claims

1. A biodegradable and low-foaming cleaning and dishwashing agent containing non-ionic surfactants based upon ethoxylated and butoxylated alcohols, said non-ionic surfactants consisting of one or more adducts of a C<sub>8</sub>- to C<sub>20</sub>-alcohol and from 4 to 14 moles of ethylene oxide with 1,2-butylene oxide in a molar ratio of from 1:1.6 to 1:2.4.

**4,340,767**  
**ANTIOXIDANT PROCESS USING FORMALDEHYDE**

George L. Mina, Orangeburg, S.C., assignor to Ethyl Corporation, Richmond, Va.

Filed May 14, 1981, Ser. No. 263,768

Int. Cl.<sup>3</sup> C07C 39/12

U.S. Cl. 568—720 16 Claims

1. In a process for the production of trialkyl-tris(3,5-dialkyl-4-hydroxybenzyl)benzene, said process comprising reacting, in the liquid phase, trialkylbenzene with 3,5-dialkyl-4-hydroxybenzyl alcohol in the presence of a catalyst selected from the group consisting of sulfuric acid and Friedel-Crafts catalysts, the improvement comprising the addition of formaldehyde and a carboxylic acid of formula RCOOH where R is H or C<sub>1</sub>-C<sub>10</sub> alkyl to the reaction mixture to thereby improve the yield of



trialkyl-tris(3,5-dialkyl-4-hydroxybenzyl)benzene, wherein the alkyl groups of said alcohol are C<sub>1</sub>-C<sub>8</sub> and the alkyl groups of said trialkylbenzene are C<sub>1</sub>-C<sub>4</sub>.

**4,340,768**  
**PROCESS FOR PRODUCING**  
**4,4'-DIHYDROXYBIPHENYL**

Susumu Jinbo; Shoichi Kohno, and Masatoshi Onishi, all of Tokyo, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 45,652, Jun. 5, 1979, abandoned. This application Oct. 14, 1980, Ser. No. 196,756

Claims priority, application Japan, Jul. 18, 1978, 53-86707  
Int. Cl.<sup>3</sup> C07C 37/02, 37/72, 37/84

U.S. Cl. 568—730

9 Claims

1. A process for producing 4,4'-dihydroxybiphenyl having high purity, which process comprises:
  - hydrolyzing a crude 4,4'-dibromobiphenyl which comprises 4-bromobiphenyl, 2-bromobiphenyl and 2,4'-dibromobiphenyl in the presence of a copper compound catalyst in an alkaline aqueous solution;
  - separating said copper compound catalyst from said alkali aqueous solution by filtration;
  - selectively extracting alkali metal phenylphenolates as by-products from the resulting alkaline aqueous solution with an alcohol or ketone which forms an organic phase;
  - separating said organic phase from said alkaline aqueous solution;
  - neutralizing or acidifying the alkaline aqueous solution with an acid;
  - extracting the biphenolic reaction product from said neutralized or acidified solution with an alcohol or ketone which forms an organic phase;
  - separating said organic phase; and
  - crystallizing the 4,4'-dihydroxybiphenyl reaction product from said organic phase.

**4,340,769**  
**PROCESS FOR THE CONTINUOUS PRODUCTION OF**  
**LOWER ALIPHATIC ALCOHOLS**

Günter Brandes, Hamburg; Wilhelm Neier, Orsoy; Johannes Wöllner, Moers; Werner Webers, Orsoy, all of Fed. Rep. of Germany, and Walter F. deVleeschauwer, Ghent, Belgium, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 790,204, Apr. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 593,396, Jul. 7, 1975, abandoned, which is a continuation of Ser. No. 377,662, Jul. 9, 1973, abandoned. This application Sep. 25, 1978, Ser. No. 945,764

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1972, 2233967

Int. Cl.<sup>3</sup> C07C 29/04

U.S. Cl. 568—899

14 Claims

1. In a process for preparing a saturated aliphatic alcohol having from 2 to 5 carbon atoms in a closed fixedbed reactor containing a sulfonated synthetic aryl cation exchange resin catalyst by reacting a water-olefin feed mixture in which said olefin component consists of at least 75 mole percent of a C<sub>2</sub> to C<sub>5</sub> aliphatic olefin and said water-olefin feed mixture consists of from about 1 to 40 moles of water per mole of said olefin, under hydration conditions at a temperature from about 120° to 180° C. and a pressure ranging from about 60 to 200 atmospheres gauge to recover an effluent reaction mixture rich in said saturated aliphatic alcohol, the improvement which comprises employing a sulfonated styrene-divinylbenzene copolymer cation exchange resin catalyst having a specific surface area measured in the dry state employing the BET method, of:
  - (a) less than 1 m<sup>2</sup>/g, when the water-wet resin is dried, and
  - (b) greater than 1 m<sup>2</sup>/g, when the water is displaced from the water-wet resin by a slightly polar or a non-polar organic solvent and the dewatered resin then dried.

## ELECTRICAL

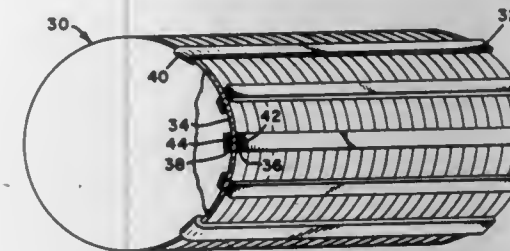
**4,340,770**  
**ENHANCEMENT OF THE MAGNETIC PERMEABILITY**  
**IN GLASSY METAL SHIELDING**

Jack E. Bridges, Park Ridge, and Marvin J. Frazier, Roselle, both of Ill., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 21, 1979, Ser. No. 67,600  
Int. Cl.<sup>3</sup> H05K 9/00

U.S. Cl. 174—35 MS

5 Claims



1. A method for increasing the magnetic permeability of a magnetic metallic glass shield in a time dependent magnetic field comprising biasing the magnetic metallic glass shield with an electromagnetic field having higher frequency components than the frequency of the major components of the time dependent magnetic field, said biasing field generating induction that is at least about equal to the remanent induction.

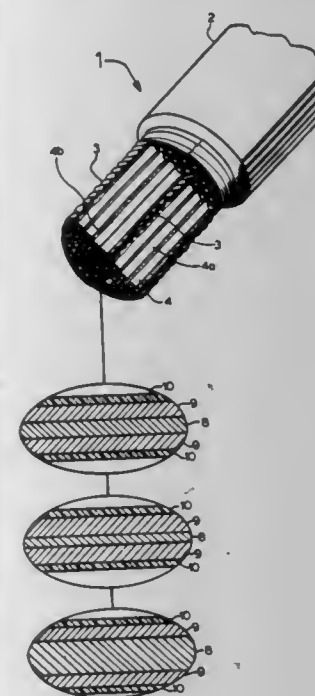
**4,340,771**  
**COMMUNICATIONS CABLE HAVING COMBINATION**  
**SHIELDING-ARMOR MEMBER**

William M. Watts, Hickory, N.C., assignor to Siecor Corporation, Hickory, N.C.

Filed Mar. 16, 1981, Ser. No. 244,238  
Int. Cl.<sup>3</sup> H01B 11/06

U.S. Cl. 174—36

6 Claims



1. A cable comprising:
  - (a) a tubular covering of thermally conductive plastic having an inner peripheral surface that delimits a core-receiving cavity;
  - (b) a core made of two longitudinally extending groups of conductors insulated from one another, received in said core-receiving cavity and nested within said tubular covering, one of said groups adapted to transmit signals in one direction and the other group adapted to transmit signals in an opposite direction;
  - (c) a single metal shielding tape composed of a medial portion and two terminal portions, said medial portion being integrally joined to and in between the two terminal por-

tions, radially extending between said groups of conductors to shield them one from the other, and each terminal portion extending circumferentially in opposite directions to each other around one of the groups until it reaches to and extends beyond the location where the other terminal portion merges with the medial portion; and,  
(d) all portions of said metal shielding tape being insulated from said conductors, corrugated and composed of first, second and third metal layers bonded one to the other, said first and third layers being of one metal and of substantially co-equal thickness bonded to the opposite surfaces of said second layer of a second metal, each of said metal layers having a thickness of about 3 mils.

**4,340,772**  
**COVER PLATES FOR ELECTRICAL UTILITY AND**  
**OTHER BOXES AS USED IN CONCEALED WIRING**  
**SYSTEM OF BUILDINGS**

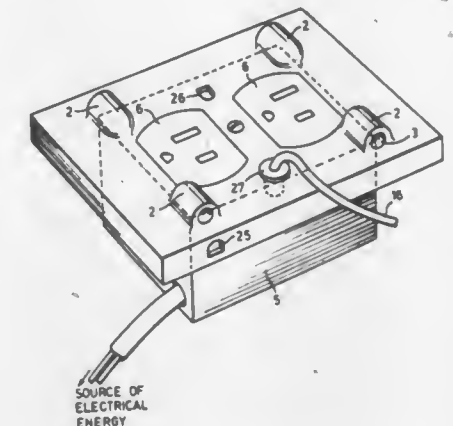
Biswa N. Bose, P.O. Box 116, Station-M, Toronto, Ontario, Canada (M6S 4T2)

Filed Jul. 24, 1980, Ser. No. 171,728

Claims priority, application Canada, Jul. 15, 1980, 355547  
Int. Cl.<sup>3</sup> H02G 3/18

U.S. Cl. 174—51

12 Claims



1. An electrical circuit comprising an electrical circuitry box of electrically conducting material; and an electrical unit mounted within the box and connected by electric cable means to a source of electrical energy, wherein a cover plate is mounted on the box, at least one opening is provided through the cover plate, and a grounding cable is reliably secured to the box, is disposed through said opening in the cover plate, and is connected to supply ground.

**4,340,773**  
**COAXIAL CABLES WITH FOAM DIELECTRIC**  
Aime J. Perreault, South Burlington, Vt., assignor to Champlain Cable Corporation, Wilmington, Del.

Filed Jun. 13, 1980, Ser. No. 159,322

Int. Cl.<sup>3</sup> H01B 7/18

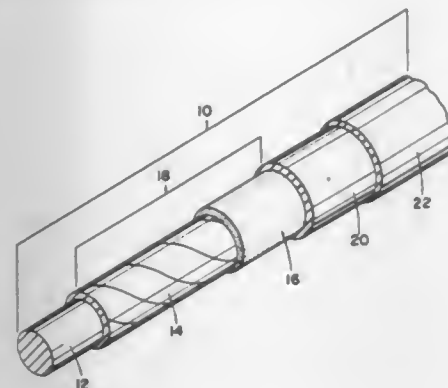
U.S. Cl. 174—107

3 Claims

1. A coaxial cable comprising:
  - a. an inner conductor;
  - b. a dielectric system surrounding said inner conductor, said dielectric system comprising:
    - (i) a first layer of cellular polyparabanic acid providing a continuous skin directly contacting and surrounding said inner conductor along its length, and
    - (ii) a second layer consisting of a crosslinkable polymeric lacquer providing a continuous skin enclosing the first layer;



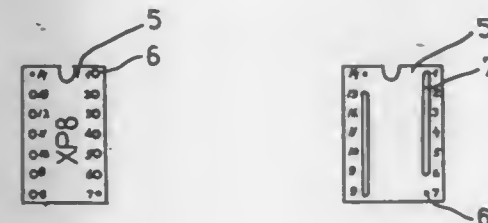
- c. an outer conductor disposed circumferentially about the dielectric system;



**4,340,774**  
**DEVICE FOR MOUNTING CIRCUIT COMPONENTS ON A CIRCUIT BOARD**  
 Sören G. Nilsson, Uppkravägen 2, Balsta, Sweden (S-190 60), and Leif R. Carneborn, Saningsvägen 192, Järfälla, Sweden (S-175 45)

Filed Mar. 10, 1978, Ser. No. 885,255  
 Claims priority, application Sweden, Mar. 10, 1977, 77026904  
 Int. Cl.<sup>3</sup> H05K 13/04, 3/30  
 U.S. Cl. 174—138 G

5 Claims



1. A device for mounting an electric component in the form of a holding socket with contact legs of known axial cross section and shape on a circuit board having apertures therein, the device comprising a plate of an electrically insulating material, said plate having a geometrical shape and a size corresponding to the shape and size of said socket in the plane of said circuit board; apertures in said plate corresponding in axial position to those in said circuit board for penetration by said contact legs, at least one of said apertures in said plate being of a size and shape which is to provide friction forces between at least one of said contact legs and the edge of said at least one of said apertures in said plate; and reference characters corresponding to said legs on said plate at the edge of corresponding, respective said apertures in said plate.

**4,340,775**  
**APPARATUS AND METHOD FOR CONTROLLING A MODULAR TELECOMMUNICATION SYSTEM**  
 William Geseke, Mount Laurel, and James M. Major, Nebford, both of N.J., assignors to Siemens Corporation, Iselin, N.J.  
 Filed Oct. 29, 1980, Ser. No. 199,202  
 Int. Cl.<sup>3</sup> H04Q 3/60; H04L 15/00

U.S. Cl. 178—3

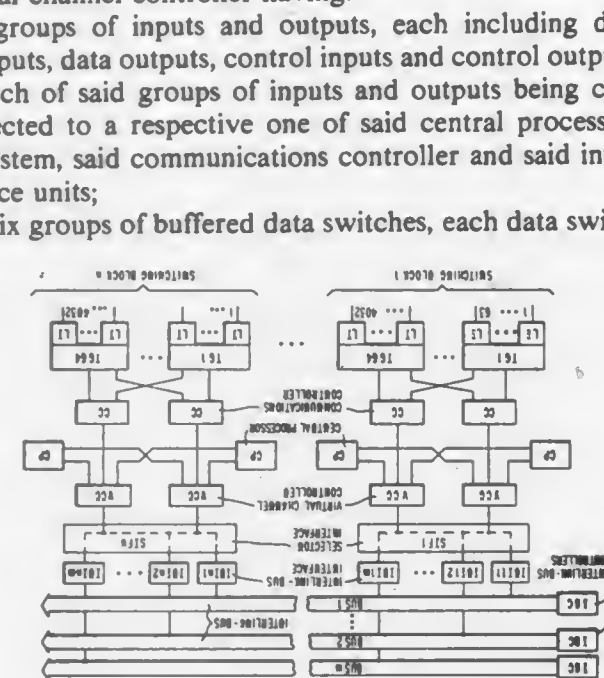
12 Claims

1. In a modular telecommunication system for exchanging data between any pair of a multiplicity of data terminals, said telecommunication system including a plurality of switching blocks and a plurality of interconnecting lines for interconnecting said switching blocks, each of said switching blocks adapted to be connected to a respective group of data terminals and having:

- (a) line terminators each adapted to be connected to a respective one of said data terminals;  
 (b) a central processing system for establishing communication links by means of channels assigned to a call during a call set-up phase upon request of one of said data terminals;

- (c) a communications controller for independently controlling local data transfers from and to said line terminators across real channels during a call-connect phase; and  
 (d) an interface unit connected to said interconnecting lines for providing remote data transfers from and to a data terminal associated with a different, remote one of said switching blocks, the improvement comprising:

- a virtual channel controller having:  
 (1) groups of inputs and outputs, each including data inputs, data outputs, control inputs and control outputs, each of said groups of inputs and outputs being connected to a respective one of said central processing system, said communications controller and said interface units;  
 (2) six groups of buffered data switches, each data switch



- having a switch control input, a switch data input, and a switch data output, said groups of switches being arranged in pairs between said data inputs and said data outputs of said virtual channel controller in such a manner that each group of data inputs associated with one of the devices connected to said virtual channel controller is coupled via a group of data switches to a respective group of data outputs associated with the others of said devices; and  
 (3) a data transfer control unit for controlling of transmitting of data to a respective one of said devices having first inputs connected to said control inputs, second inputs for receiving enabling signals, having outputs each connected to a respective one of said control outputs of said virtual channel controller and to one of said switch control inputs, and including logic networks for decoding routing information accompanying each piece of data information and received at said control inputs of said virtual channel controller.

**4,340,776**  
**MODULAR TELECOMMUNICATION SYSTEM**  
 Manfred Ganz, Munich, Fed. Rep. of Germany, and Enrique Guedner, Cinnaminson, N.J., assignors to Siemens Corporation, Iselin, N.J.  
 Filed Oct. 29, 1980, Ser. No. 199,203  
 Int. Cl.<sup>3</sup> H04Q 3/60; H04L 15/00

U.S. Cl. 178—3

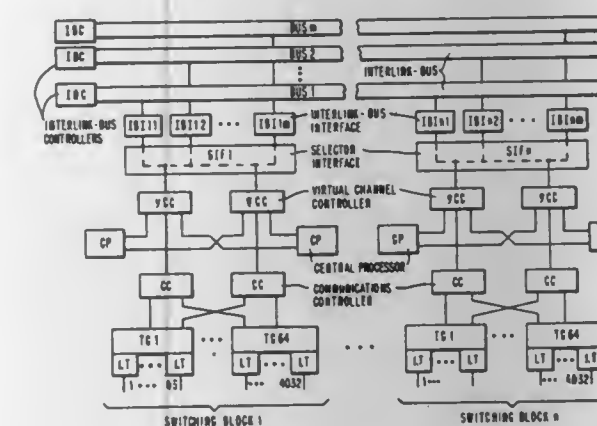
17 Claims

1. In a modular telecommunication system for exchanging data between any pair of a multiplicity of data terminals, said telecommunication system including a plurality of switching blocks and a plurality of interconnecting lines for interconnecting any pair of said switching blocks, each of said switching blocks adapted to be connected to a respective group of data terminals, and including:

- (a) line terminators each adapted to be connected to a respective one of said data terminals;  
 (b) a communications controller for controlling local data

- exchange within the switching block between pairs of said line terminators across real channels;

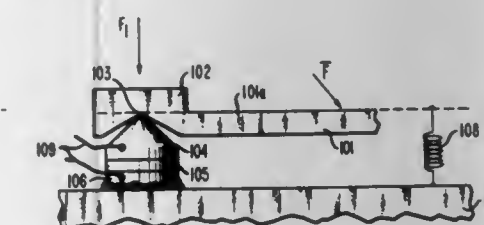
- (c) a central processing system coupled to said communications controller for setting up switching operations within said communications controller; and  
 (d) an interface unit connected to said interconnecting lines for providing remote data exchange between a locally associated data terminal and a data terminal associated with a different, remote one of said switching blocks, the improvement comprising: a virtual channel controller arranged in each switching block for controlling said



- remote data exchange, and being connected to said central processing unit, said communications controller and said interface unit for switching information from either one of these devices connected thereto to the others in such a manner that said virtual channel controller, while being transparent for local data traffic across real channels, establishes additional data links by means of virtual channels for extending data exchange between any pair of a locally associated data terminal and a data terminal associated with a respective one of said remote switching blocks across said interconnecting lines.

**4,340,777**  
**DYNAMIC POSITION LOCATING SYSTEM**  
 John DeCosta, Jackson; James B. Mallos, Freehold, and David B. Roe, Lincroft, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
 Filed Dec. 8, 1980, Ser. No. 214,174  
 Int. Cl.<sup>3</sup> G08C 21/00; H04N 1/00  
 U.S. Cl. 178—18

28 Claims



1. A system for determining the location of a localized force applied to a surface, the system comprising a plurality of force sensing devices adapted to be associated with the surface, each sensing device translating forces at its location into proportional electrical signals,

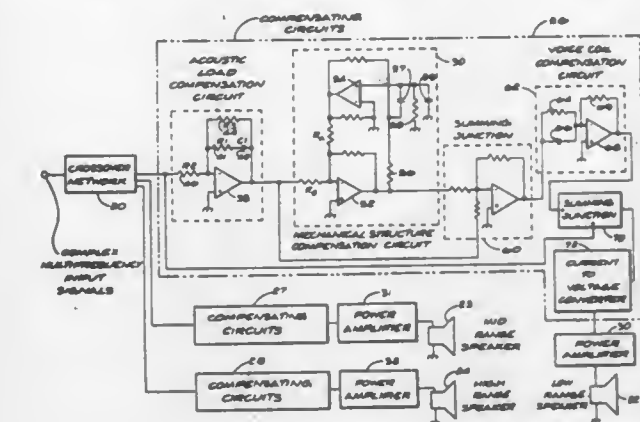
#### CHARACTERIZED BY

- an alternating current coupling circuit (508) associated with each force sensing device (501), the coupling circuit responding to the force proportional electrical signal output of the associated force sensing device and having a particular gain versus frequency characteristic curve (301).

**4,340,778**  
**SPEAKER DISTORTION COMPENSATOR**  
 Kenneth W. Cowans, Encino, and M. Owen Bennett, Agoura, both of Calif., assignors to Bennett Sound Corporation, Tarzana, Calif.  
 Filed Nov. 13, 1979, Ser. No. 93,839  
 Int. Cl.<sup>3</sup> H04R 3/00

U.S. Cl. 179—1 D

32 Claims



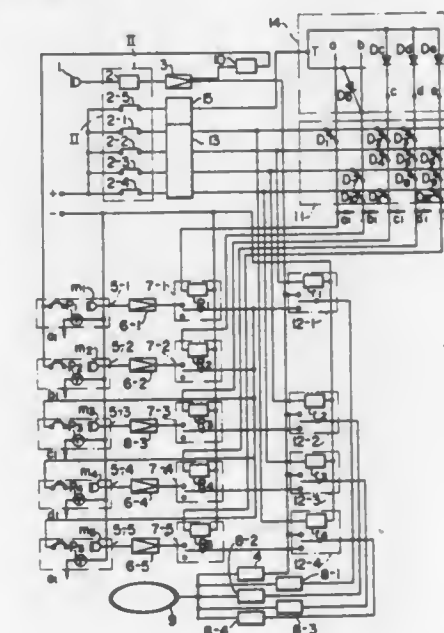
1. The method of generating acoustic pressure waves corresponding to complex electrical audio signals while using a simple source transducer comprising the steps of:  
 generating electrical signals from the audio signals that compensate the mechanical characteristics of the transducer to provide the force variations required for the transducer by electronically modifying the electrical signals in accordance with inverse analogs of at least the mass, damping and compliance characteristics of the transducer system, the acoustic load and the inherent electrical impedance characteristics of the transducer to alter the spurious emanations of the transducer to a frequency region or an amplitude, or both, at which they are substantially inaudible.

**4,340,779**  
**INTERPRETER INTERCOMMUNICATION AND PUBLIC ADDRESS SYSTEM**

Hideaki Hashimoto, Tokyo; Mitsuo Abe, Yokohama, and Masaharu Morita, Kawasaki, all of Japan, assignors to Prince Hotels, Inc., Japan  
 Continuation of Ser. No. 885,350, Mar. 13, 1978. This application Jan. 16, 1980, Ser. No. 112,449  
 Claims priority, application Japan, May 24, 1977, 52-060218  
 Int. Cl.<sup>3</sup> H04B 5/00

U.S. Cl. 179—1 B

1 Claim



1. In a communication system comprising a primary circuit



for transmitting an audio signal from a speaker microphone to an audience through transmitter means, first booth means, means connecting the speaker microphone signal to the first booth means where the audio signal of the speaker is translated into a medium language, second booth means, means connecting the translated medium language to the second booth means where the medium language is translated into final languages, a plurality of secondary circuits connected to the first and second booth means, each circuit having transmitter means for transmitting to the audience an audio signal exclusively used for a translated language, a first diode matrix having a plurality of transverse lines connected to a power source via holding-releasing circuit means and switch means, and obverse lines connected to interpretation display lamps in the first and second booth means, each of the obverse lines being connected to a first selector with one selector associated with each of the booth means and its respective secondary circuit, diode pins arranged to connect and disconnect selected transverse lines with selected obverse lines for alerting translators in the first and second booth means and for energizing certain first selectors so as to transmit translated languages to the audience through certain secondary circuits, the first selectors serving to connect and disconnect between booth amplifiers, one associated with each booth means, and second selectors, the second selectors serving to connect and disconnect between the first selectors and the transmitter means of the secondary circuits, the improvement comprising a second diode matrix having second transverse lines connected to the power source via a second holding-releasing circuit and second switch means, and second obverse lines each connected to one of the obverse lines of the first diode matrix, second diode pins arranged to connect and disconnect the second transverse lines with selected second obverse lines so that the interpretation display lamps in one of the first booth means and in each of the second booth means are energized together with the secondary circuits associated with these booth means whereby even when an additional language is spoken other than the specified languages translation of the additional language is accomplished without interrupting translation of the specified languages.

4,340,780

## SELF-CORRECTING AUDIO EQUALIZER

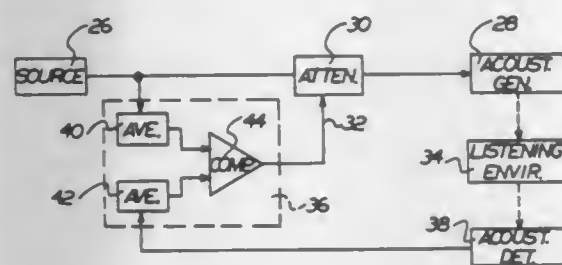
Lars Odlen, Arlov, Sweden, assignor to Transcale AB, Västerås, Sweden

Filed Mar. 7, 1980, Ser. No. 128,245

Int. Cl.<sup>3</sup> H04R 3/04

U.S. Cl. 179—1 D

17 Claims



1. An audio equalizer for use in a system including an audio signal source for providing a first audio signal, and sound reproducing means responsive to a second audio signal for reproducing sounds in accordance therewith, said audio equalizer being responsive to said first audio signal for providing said second audio signal to said sound reproducing means, comprising:

means responsive to said reproduced sounds and to said first audio signal for determining the difference between the frequency versus amplitude characteristics thereof, and means for automatically adjusting the frequency versus amplitude characteristics of said first audio signal in accordance with said determined difference, with the resulting

adjusted audio signal being provided to said sound reproducing means as said second audio signal.

4,340,781

## SPEECH ANALYSING DEVICE

Akira Ichikawa, Musashino; Kazuo Nakata, Kodaira; Akira Nakajima, Tokyo; Yoshihiro Ohta, and Kazuhiro Umemura, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

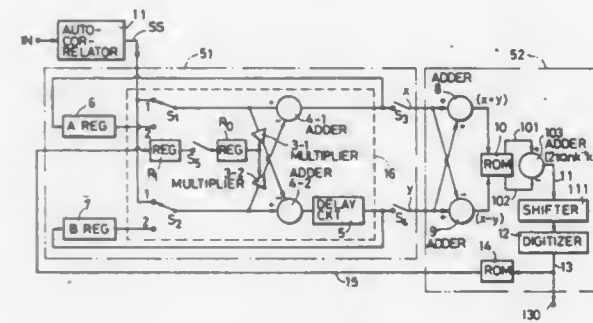
Filed Apr. 30, 1980, Ser. No. 145,148

Claims priority, application Japan, May 14, 1979, 54-63045[U]

Int. Cl.<sup>3</sup> G10L 1/00

U.S. Cl. 179—1 SA

3 Claims



1. A speech analysing device comprising a correlator for obtaining an auto-correlation coefficient sequence of input speech signals, a computation portion for obtaining a partial auto-correlation coefficient sequence of said input speech signals, and a data circulation portion coupled to both said correlator and said computation portion to receive as its input said auto-correlation coefficient sequence and said partial auto-correlation coefficient sequence, wherein an output of said data circulation portion is coupled to an input of said computation portion so that output signals of said data circulation portion are employed as input signals to said computation portion for obtaining said partial auto-correlation sequence.

4,340,782

## CIRCUIT FOR DEMODULATING AMPLITUDE AND ANGLE MODULATED BROADCAST SIGNALS

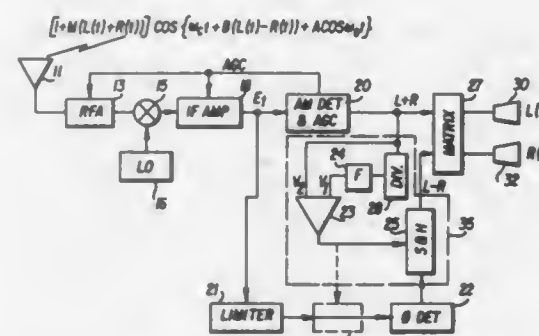
James R. Weigand, and Robert D. Streeter, both of Fort Wayne, Ind., assignors to Magnavox Consumer Electronics Co., Fort Wayne, Ind.

Filed Jun. 13, 1980, Ser. No. 159,357

Int. Cl.<sup>3</sup> H04H 5/00

U.S. Cl. 179—1 GS

10 Claims



5. A circuit for demodulating a signal having both amplitude and angle modulation components comprising: an amplitude demodulation means for providing a signal proportional to the instantaneous amplitude of said signal; an angle demodulator for providing an output signal proportional to said angle modulation components; means for sampling and holding said angle demodulator output signal; and threshold detector means connected to said means for sam-

pling and said amplitude demodulator means, said threshold detector means providing a hold signal to said means for sampling and holding during periods when said modulated signal has an amplitude below a predetermined minimum level.

4,340,783

## VOICE FREQUENCY RESPONSE SYSTEM

Tomonori Sugiyama, Fujisawa, and Akio Suehiro, Shimoda, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

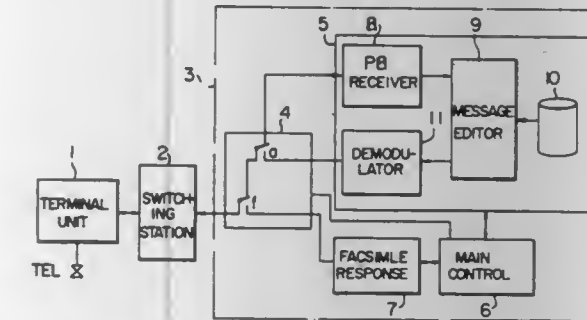
Filed Jun. 13, 1980, Ser. No. 159,223

Claims priority, application Japan, Jun. 19, 1979, 54-76299

Int. Cl.<sup>3</sup> H04M 11/00

U.S. Cl. 179—2 A

17 Claims



1. A voice frequency response system comprising a terminal unit including both a functional part functioning as a telephone and a functional part functioning as a facsimile receiver; a voice frequency response device; and a telephone line connected between said terminal unit and said voice frequency response device; said voice frequency response device comprising voice frequency response means for transmitting a required message to said telephone in response to a demand for voice frequency response service from said telephone in said terminal unit and facsimile response means for transmitting character-pattern information in at least a part of said message to said facsimile receiver in said terminal unit.

4,340,784

## PORTABLE TELEPHONE ANSWERING DEVICE

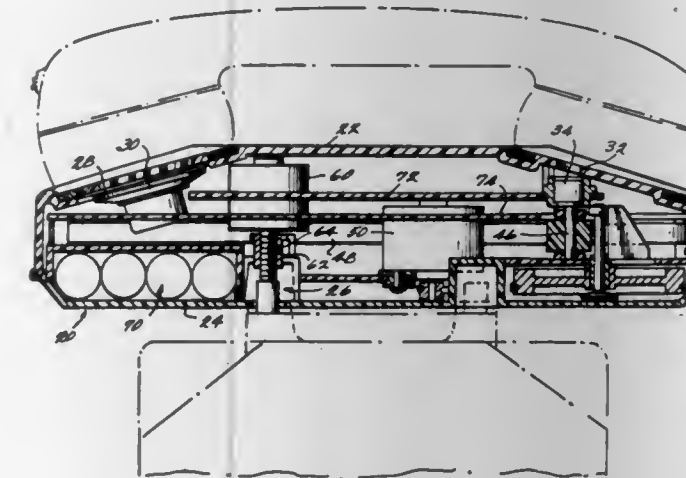
Wayne F. McQueen, Tullahoma, Tenn.; Raymond R. Schansman, Huntsville, Ala.; William A. Hurd, Huntsville, Ala.; Joerg Fischer, Huntsville, Ala., and Billy W. Dunn, Arab, Ala., assignors to International Port-A-Call, Tullahoma, Tenn.

Filed Feb. 5, 1980, Ser. No. 119,007

Int. Cl.<sup>3</sup> H04M 1/64

U.S. Cl. 179—6.12

9 Claims



1. A portable telephone answering device comprising: a housing adapted for removable placement over the cradle of a telephone and for removably receiving a telephone handset having a speaker and a microphone, a speaker adapted to be adjacent the microphone of the

handset speaker when said handset is received by said housing, a microphone adapted to be adjacent the speaker of the handset when said handset is received by said housing, means extending through said housing for engaging the telephone plungers and movable to release and depress said plungers, means within said housing for detecting ringing of said telephone and causing said engaging means to release said plungers in response thereto, a tape head within said housing for reading and recording on each channel of a multi-channel tape, means within said housing for driving an endless loop of multi-channel tape past said head, and logic means within said housing for causing said driving means to drive said tape and said head to read a message recorded on one channel of the loop following detection of ringing, for causing said head to record a message on another channel thereafter, and for causing said engaging means to depress said plungers following completion of said recording, and counter means connected to said logic means within said housing for counting the number of other channels on which a message has been recorded so that said logic means causes said head to record on a track on which a message has not been recorded.

4,340,785

## RINGING SIGNAL SUPPLY

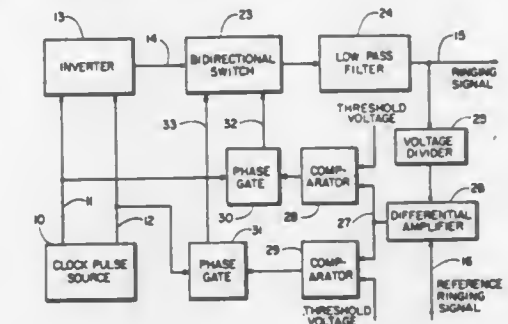
Makary M. Awadalla, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jan. 26, 1981, Ser. No. 228,095

Int. Cl.<sup>3</sup> H04M 5/12

U.S. Cl. 179—51 AA

9 Claims



1. A ringing signal supply comprising: switching means; a low pass filter; means for producing an error signal dependent upon differences between a representation of a signal at the output of the low pass filter and a reference ringing signal; and means responsive to the error signal for controlling the switching means to selectively connect a source of alternating voltage to the input of the low pass filter during alternate half-cycles of the alternating voltage to change the signal at the output of the low pass filter and thereby reduce said error signal, whereby the signal at the output of the low pass filter is an output ringing signal corresponding to said reference ringing signal.

4,340,786

## PIEZO-ELECTRIC FILM MANUFACTURE

Norman W. Tester, 25 Sakins Croft, Harlow, Essex, England

Filed Jan. 28, 1980, Ser. No. 115,826

Claims priority, application United Kingdom, Apr. 3, 1979, 7911672

Int. Cl.<sup>3</sup> H04R 17/00; H01J 41/18, 41/22; B29D 7/24

U.S. Cl. 179—110 A 10 Claims

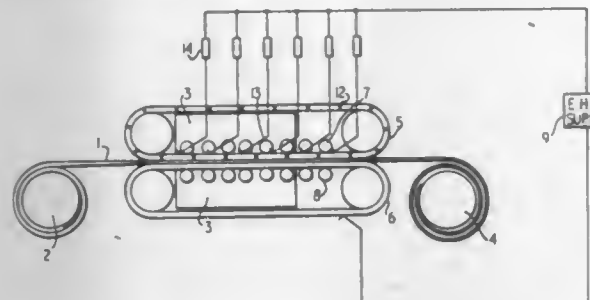
2. A process for the production of piezo-electric PVDF film, which includes the steps of:

(a) stretching melt-extruded PVDF film, which stretching is



effected in a direction parallel to the extrusion direction, with a stretch ratio of the order of 4 to 1 and at a temperature of 100° to 140° C. to convert the sheet into the  $\beta$  crystalline form;

(b) clamping the film between conductive rubber layers to which is applied a polarizing voltage of about  $10^8$  volts per meter in the case of a 12  $\mu$ m thick material, the film being held at a temperature of about 110° C. for 30 mins., whereafter the film is cooled to room temperature with the polarizing field still applied;



- (c) printing or otherwise forming electrodes of an electrically-conductive elastomer onto the film in the required pattern; and
- (d) stabilizing the piezo-electric properties by heating the film at about 90° C. for two hours, wherein the order in which steps (c) and (d) are performed may be reversed.
7. Diaphragms of piezo-electric film for use in electro-acoustic transducers, made by the process of claim 2.

4,340,787

## ELECTROACOUSTIC TRANSDUCER

Rudolf Görike, Vienna, Austria, assignor to AKG Akustische u. Kino-Geräte Gesellschaft-mbH, Austria

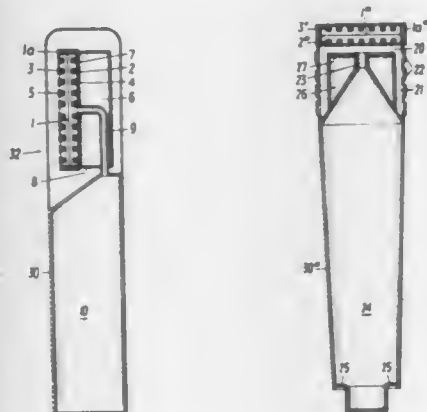
Filed Mar. 17, 1980, Ser. No. 131,176

Claims priority, application Austria, Mar. 22, 1979, 2142/79

Int. Cl.<sup>3</sup> H04R 9/08

U.S. Cl. 179—121 D

4 Claims



1. An electroacoustic transducer of the electrodynamic type, comprising a flat magnetic system permeable to sound including a diaphragm, said diaphragm having a mass provided with conducting tracks, said mass of said diaphragm being substantially equal to the mass of a diaphragm of equal size intended for capacitive transducers, means defining a shallow depth chamber at the interior side of said diaphragm, and acoustic group delay time elements coupled to said diaphragm to give the transducer the form of a sound receiver with unidirectional characteristics, a perforated base plate on each side of said diaphragm, an acoustic frictional resistance connecting said shallow depth chamber with said diaphragm, a housing part defining a large cavity, a tube extending from said large cavity to one of said perforated base plates and said diaphragm, said tube and said large cavity being acoustically effective in the low frequency range and being directly connected to said base plate.
4. An electrodynamic transducer for use as a microphone,

comprising a diaphragm housing, a diaphragm extending across said housing, said housing having acoustic delay time elements adjoining to and acoustically coupled to said diaphragm including a perforated base plate on each side of and spaced from said diaphragm, a plurality of magnets arranged at spaced locations along said base plate, chamber forming means defining a shallow depth air chamber on one side of said diaphragm overlying at least a portion of the associated one of said base plates, a housing part defining a large cavity connected through said shallow depth chamber to said diaphragm, a central tubular member connecting said large cavity with said shallow depth chamber, means defining another chamber adjacent and at least partially surrounding said central tubular member having acoustic resistance connecting said another chamber to said shallow depth chamber and an apertured tubular channel adjacent to and at least partially surrounding both said shallow depth chamber and said another chamber and opening to the outside and having acoustic resistances.

4,340,788

## METHOD OF AND SYSTEM FOR MEASURING ELECTRICAL CHARACTERISTICS OF CIRCUIT ELEMENTS INCLUDED IN TIME-SHARING TELECOMMUNICATION NETWORK

Anes Sbulz, Milan, Italy, assignor to Italtel Societa Italiana Telecomunicazioni S.p.A., Milan, Italy

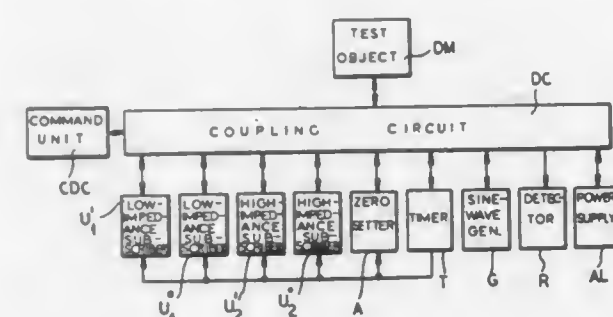
Filed Feb. 17, 1981, Ser. No. 234,805

Claims priority, application Italy, Feb. 18, 1980, 19974 A/80

Int. Cl.<sup>3</sup> H04J 3/08; H04B 3/46

U.S. Cl. 179—175.3 R

12 Claims



1. A method of measuring electrical characteristics of a circuit element forming part of a telecommunication network with branched subscriber lines and with interrupter switches closable in selected combinations for enabling signal transmission between subscribers during sampling intervals separated by guard intervals during which residual energy from previously intercommunicating subscriber lines is dissipated, comprising the steps of:

- (a) establishing a transmission path disconnected from any other network circuitry between a first and a second subscriber line through a circuit element to be tested;
- (b) supplying a sinusoidal test signal by closure of a first interrupter switch from said first subscriber line via part of said transmission path to said circuit element during a chosen sampling interval;
- (c) temporarily connecting said second subscriber line by closure of a second interrupter switch to said circuit element via the remainder of said transmission path at a time separated by not more than a guard interval from said chosen sampling interval; and
- (d) detecting and measuring energy received in step (c) at said second subscriber line.

4,340,789

## CHAFF-FLARE TEST ADAPTER SWITCHING SYSTEM

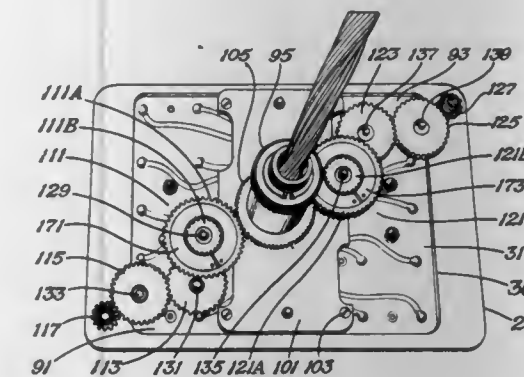
Robert A. Williams, 2721 White Settlement Rd., Fort Worth, Tex. 76107

Filed Apr. 16, 1979, Ser. No. 30,364

Int. Cl.<sup>3</sup> H01H 19/58, 21/78

U.S. Cl. 200—11 R

6 Claims



1. An electrical switch, comprising:

- a plurality of first stationary contacts equal to n, wherein n is a number greater than ten, said plurality of stationary contacts being arranged in sets and located in a housing,
- said contacts of each set being arranged in a circle, each contact of each set representing a decimal digit, a movable contact for each set connected to a first rotatable shaft for sequentially engaging said stationary contacts of its set upon rotation of said first shaft,
- a plurality of second stationary contacts located in said housing and arranged in a circular line, each of said second stationary contacts representing a decimal digit weighted by a factor of ten,
- a movable contact means connected to a second rotatable shaft for sequentially engaging said second stationary contacts upon rotation of said second shaft, each movable contact of said sets being electrically connected to one of said second stationary contacts, said first and second rotatable shafts being rotatable relative to each other,
- a first knob means connected to said first shaft for rotating said first shaft,
- a plurality of numbers each representing a decimal digit formed on said first knob means and located relative to said first shaft such that when any one of said numbers is aligned with first means of said housing, said movable contact of each set engages a stationary contact representing a corresponding number,
- a second knob means connected to said second shaft for rotating said second shaft,
- a plurality of numbers each representing a decimal digit weighted by a factor of ten formed on said second knob means and located relative to said second shaft such that when any one of said numbers formed on said second knob means is aligned with second means of said housing, said movable contact means connected to said second shaft engages one of said second stationary contacts representing a corresponding number and forms an electrical connection between said movable contact means and one of said stationary contacts of said sets of stationary contacts.

4,340,790

## ELECTRICAL SWITCH WITH MELAMINE LOADED THERMOPLASTIC ABLATIVE MATERIAL

Vincent J. Boliver, Pittsfield, Mass., assignor to General Electric Company, Philadelphia, Pa.

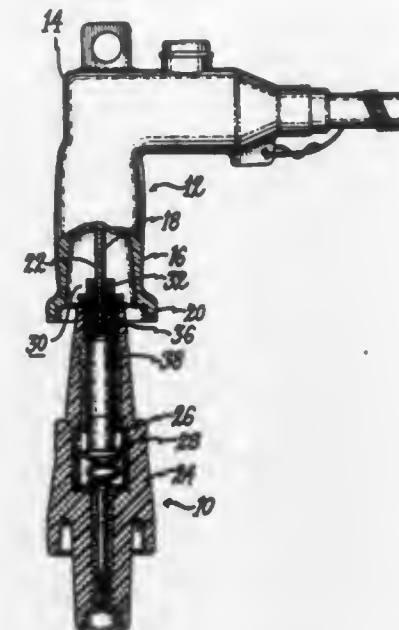
Continuation of Ser. No. 716,130, Aug. 20, 1976. This

application Aug. 8, 1978, Ser. No. 932,060

Int. Cl.<sup>3</sup> H01H 33/70, 9/30

U.S. Cl. 200—144 C

3 Claims



1. A separable electrical connector assembly including mating switch and connector modules respectively having mating bore and rod contact members, each of the modules including an insulating housing with portions thereof having closely matched configurations so as to form a substantially insulating seal when the modules are mated together, the rod contact member having a rod-shaped arc follower of thermoplastic ablative composition material located at a contact engaging end thereof, means for securing said rod-shaped arc follower to said rod contact comprising a reinforcing pin about which said arc follower is molded, the reinforcing pin extending from said rod contact to a location near the free end of said arc follower, said arc follower being subject to a relatively high bending moment when said modules are being mated together or being separated from each other, said arc follower being sufficiently strong enough mechanically to withstand said bending moment, wherein said ablative composition material consists essentially of acetal resin loaded with finely divided melamine in an amount between one fourth and substantially less than one-half of said composition by weight, said switch module including a snuffer tube adjacent said bore contact member, said snuffer tube including an ablative snuffer liner of the same material as said arc follower but having a relatively higher loading of melamine.

4,340,791

## ENVIRONMENTALLY SEALED ROCKER SWITCH

Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Continuation-in-part of Ser. No. 39,859, May 14, 1979, Pat. No. 4,242,551, which is a continuation-in-part of Ser. No. 945,520, Sep. 25, 1978, abandoned. This application Oct. 28, 1980, Ser. No. 201,621

The portion of the term of this patent subsequent to Dec. 30, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> H01H 9/04, 9/16

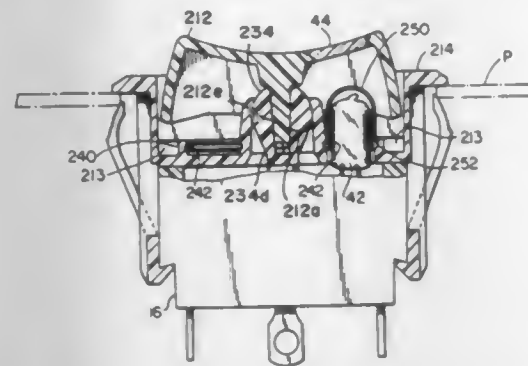
U.S. Cl. 200—302

10 Claims

1. An electric switch housing for protecting the fixed contacts and movable contact bridging member from environmental conditions external to the switch, said housing comprising an upwardly open dielectric base for said contacts and bridging member, a dielectric cover bracket secured to said

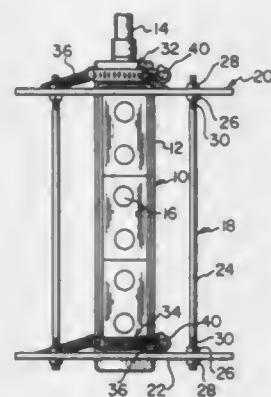


base for isolating the contents of the base from the environment, said cover bracket having a recessed portion and a generally cylindrical upstanding boss defined centrally of said recessed portion, an actuator snugly received in a central opening of said boss and having a shoulder portion engaging an inner end of the actuator adapted to engage the movable contact bridging member and an upper end of said actuator, said cover bracket having a raised periph-



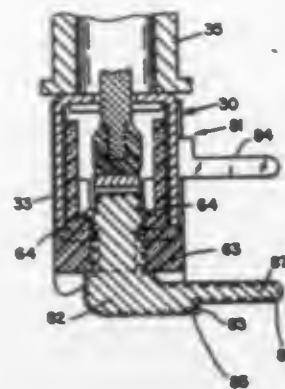
erally extending wall portion, said wall portion having aligned openings therein, which openings are also aligned with a diameter of the upper portion of said cylindrical boss, and a rocker with laterally projecting tabs pivotally received in said aligned openings and having a center portion which cooperates with said upper end of said actuator so that they move together, and wherein the upper end of said actuator more particularly defines an upwardly open hole, and said rocker center portion defines a depending spike for entry in said actuator hole.

**4,340,792**  
**PENDANT CONTROL PROTECTOR**  
Frank P. Cava, 240 Beaver St., Beaver, Pa. 15009  
Filed Nov. 10, 1980, Ser. No. 205,527  
Int. Cl.<sup>3</sup> H01H 9/04  
U.S. Cl. 200—304



1. A protector for a pendant control having a housing and comprising a protective cage, said cage formed by:  
A. a pair of ring-shaped bumpers;  
B. a plurality of connecting rods joined to and disposed about said bumpers to space them from one another;  
C. a pair of adjustable clamps, each clamp being attached to a bumper by at least two shock absorbing members;  
D. each member being disposed equidistant from one another about the bumpers and clamps; and  
E. said clamps and shock absorbing members supporting said bumpers on said pendant control housing to maintain the cage substantially concentric with said housing.

**4,340,793**  
**SUB-MINIATURE, TWO POSITION DOUBLE POLE SWITCH**  
Francis D. Kirchoff, Waban, Mass., assignor to Alco Electronic Products, Inc., North Andover, Mass.  
Division of Ser. No. 782,992, Mar. 30, 1977, Pat. No. 4,110,574.  
This application May 19, 1978, Ser. No. 907,715  
Int. Cl.<sup>3</sup> H01H 1/02, 1/06  
U.S. Cl. 200—268

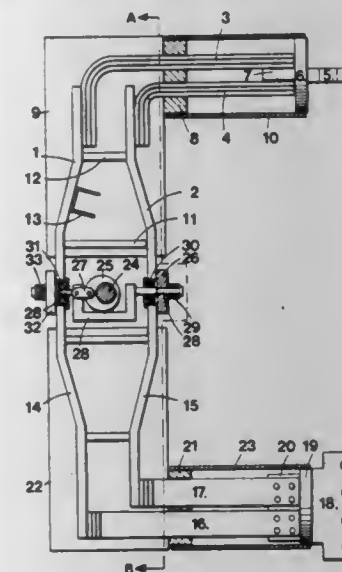


1. A sub-miniature, two position switch of the type having a case with a plurality of projecting conductive terminals, at least one rocker and a single handle with a spring pressed plunger and insulated tip for actuating said rockers characterized by:  
said terminals being each pre-formed of flat, thin, planar, plate-like metal, of generally rectangular cross section, in right angular configuration, in the same plane, with an inner portion in the path of one of said rockers within said case, and with an integral outer portion, at right angles to said inner portion, outside said case;  
and each said pre-formed, flat, planar, right angular terminal having at least one coating layer superposed thereon in intimate contact therewith;  
said coating layer being free of any cracks.  
2. In combination with a sub-miniature switch of the type having a see saw, or rocker, for closing a circuit therewithin and a spring pressed handle for actuating said rocker;  
a plurality of pre-formed, right angularly configured, switch terminals, each of rectangular cross section of predetermined dimensions,  
said pre-formed right angularly configured switch terminals each having a flat, planar inner portion within said case cooperable with said rocker to open and close a circuit and each having a flat, planar outer portion, outside said case, normal to said inner portion in the same plane, with a shoulder forming a stop and an integral terminal blade of reduced rectangular cross section;  
said flat, planar, inner and outer portions of each said terminal being each coated with a nickel barrier layer and a gold plate layer.

**4,340,794**  
**SEMI-CONDUCTOR FOR HIGH CONTINUOUS CURRENTS**  
Bernard V. Maupas, Corserey, Corserey, Canton de Fribourg, Switzerland (CH-1751)  
PCT No. PCT/CH79/00033, § 371 Date Nov. 1, 1979, § 102(e) Date Nov. 1, 1979, PCT Pub. No. WO79/00670, PCT Pub. Date Sep. 6, 1979  
PCT Filed Feb. 28, 1979, Ser. No. 169,119  
Claims priority, application Switzerland, Mar. 1, 1978, 2175/78  
Int. Cl.<sup>3</sup> H01H 9/52  
U.S. Cl. 200—289

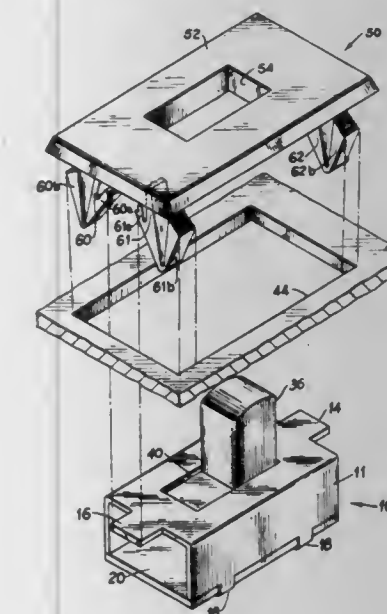
1. Unipolar short-circuiter for electrolysis cells at high direct current at low voltage, characterized by that fact that it includes two sets of movable contact pieces working with two groups of two stationary contact plates arranged in parallel a

driving mechanism for the movable contacts, said movable contact pieces, stationary contact plates and driving mechanism being symmetrical in relation to the axis of a single control shaft for the movable contacts, so that said shaft is essentially submitted solely to torsion efforts, each of the groups of two stationary contact plates being connected through a deformable conductor to a current taking plate in order to form a conductor assembly which is surrounded by an enclosure in



which a cooling fluid circulates, the only parts of said assembly which are located outside the enclosure being the stationary contact plates cooperating with the movable contacts on the one hand and the contact area of the current taking plate cooperating with the connection area of an electrolysis cell on the other hand, said enclosure including a flexible part to permit a movement of the plate for taking current in relation to the stationary contact plates to compensate for the imprecisions of construction of the cells and the short-circuiter.

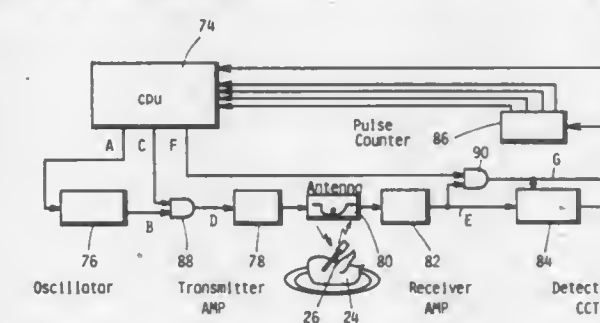
**4,340,795**  
**PANEL MOUNT ADAPTER FOR SWITCHES**  
Ronald H. Arthur, Lauderdale, Fla., assignor to AMF Incorporated, White Plains, N.Y.  
Filed Jul. 29, 1980, Ser. No. 173,318  
Int. Cl.<sup>3</sup> H01H 9/00  
U.S. Cl. 200—295



1. An adapter for mounting an electrical component in an aperture in a mounting panel or the like, said component having a tab that extends outwardly from its housing, said adapter comprising:  
a frame member having an outer periphery that extends, at

least partially, beyond the edge of an aperture into which the component is to be mounted,  
an opening extending transversely through the interior portion of the frame member and adapted to register with the aperture in said mounting panel,  
at least two spaced apart legs extending downwardly from a bottom surface of said frame and adapted to be inserted through said aperture in the mounting panel when the adapter is mounted on the panel,  
each leg having two resilient arms, one extending outwardly toward the edge of said aperture when the leg is inserted therethrough and the other arm extending in a different direction,  
said other arms of the two legs being spaced apart a distance to releasably clamp with opposing resilient bias said tab on the component housing therebetween when the component is inserted through the opening, thereby releasably holding the component to the frame member,  
said one arms on the downwardly extending legs being constructed to engage the edge region of the aperture in the mounting panel to releasably hold the adapter in said aperture.

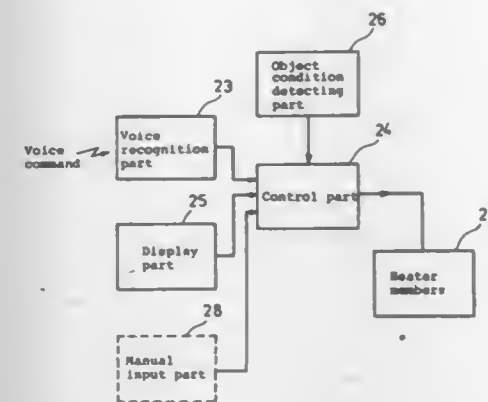
**4,340,796**  
**WIRELESS TEMPERATURE-SENSING SYSTEM INCLUSIVE OF THERMALLY-RESPONSIVE OSCILLATOR**  
Masumi Yamaguchi, Ikoma; Kenji Kawabata, Nara, and Yoshimi Kumagai, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan  
Filed Aug. 29, 1979, Ser. No. 70,730  
Claims priority, application Japan, Aug. 31, 1978, 53-107989; Sep. 12, 1978, 53-112717  
Int. Cl.<sup>3</sup> H05B 6/68; G01K 7/32  
U.S. Cl. 219—10.55 B



1. Wireless temperature sensing means for monitoring a temperature within a cooking apparatus, comprising:  
transmitter means for propagating electromagnetic waves within said cooking apparatus over a range of selectively variable frequencies, the said frequencies varying by predetermined increments upon the respective lapses of corresponding predetermined increments of time over which given discrete frequencies exist;  
resonant circuit means having a resonant frequency variable linearly in accordance with a monitored temperature value in said cooking apparatus and being devoid of a source of power for selectively responding to a particular frequency of said given discrete frequencies of said propagated electromagnetic waves which is representative of said monitored temperature value and repropagating a response wave having that particular frequency over a subsequent interval of time; and  
detection means, responsive to said response wave over a sampling interval coincident with said subsequent interval of time for determining said particular frequency as a measure of monitored temperature value.



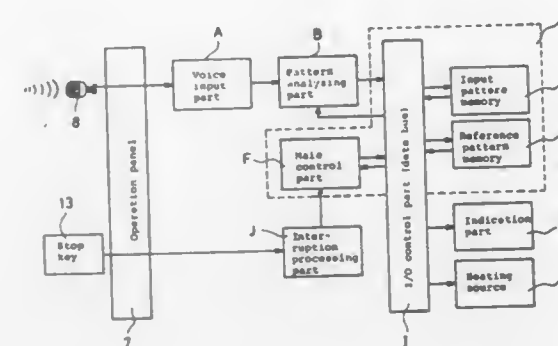
4,340,797  
**VOICE ACTUATED HEATING APPARATUS**  
 Teruhisa Takano, Osaka, and Shigeki Ueda, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan  
 Filed Dec. 18, 1980, Ser. No. 217,651  
 Claims priority, application Japan, Dec. 21, 1979, 54-167404  
 Int. Cl.<sup>3</sup> H05B 6/68  
 U.S. Cl. 219—10.55 B 8 Claims



1. A heating apparatus comprising:

- an enclosure case having therein a heating chamber in which an object to be heated is to be placed, the enclosure case having a door at an opening of said heating chamber,
  - a heating means for radiating heating energy into said heating chamber,
  - detecting means for measuring physical data of heating conditions of said object,
  - a speech recognition and control circuit, and
  - a display means for displaying operation states of said heating apparatus,
- wherein said speech recognition and control circuit comprises:
- a voice command input means including a microphone for transforming a user's voice commands into command input signals,
  - a pattern analyzer for frequency-analyzing said command input signals to divide them into input pattern signals each associated with a predetermined frequency band, subsequently sampling said input pattern signals, and carrying out A/D conversion thereof to produce pattern-analyzed digital data,
  - an input pattern memory for memorizing said pattern-analyzed digital data in a form of time sequential patterns,
  - a reference pattern memory for storing time sequential reference pattern data as reference patterns,
  - a recognition processing circuit for comparing said pattern-analyzed digital data stored in said input pattern memory with said time sequential reference pattern data stored in said reference pattern memory, and for generating a signal indicative of an affinity degree of the comparison, and for producing predetermined recognition codes corresponding to recognized voice commands, when said signal of said affinity degree for one respective voice command among said user's voice commands is more than a present signal level,
  - a control circuit part including a program memory in which a plurality of heating sequences are preliminarily stored prior to the operation of said heating apparatus, and for selecting and presetting the selected one of said heating sequences based on said predetermined recognition codes, and for controlling operations of said heating means in a manner to heat said object according to said preset heating sequence, and wherein that said display means displays said selected heating sequence.

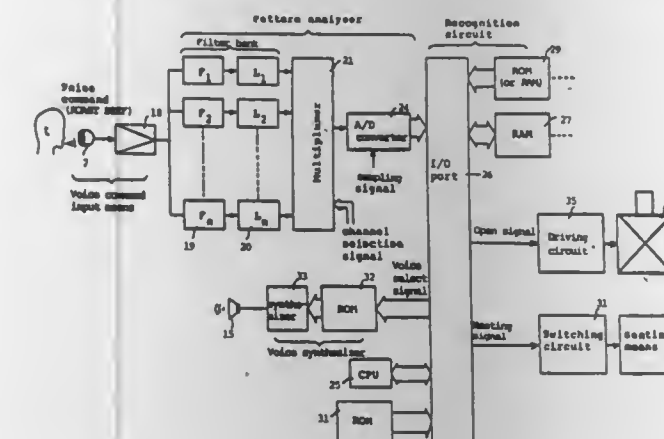
4,340,798  
**VOICE-CONTROLLED SAFETY ARRANGEMENT HEATING APPARATUS**  
 Shigeki Ueda, Kitakatsuragi, and Teruhisa Takano, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan  
 Filed Dec. 18, 1980, Ser. No. 217,653  
 Claims priority, application Japan, Dec. 21, 1979, 54-167406  
 Int. Cl.<sup>3</sup> H05B 6/68  
 U.S. Cl. 219—10.55 B 12 Claims



1. A heating apparatus comprising:

- an enclosure case having therein a heating chamber adapted to receive an object to be heated, said enclosure case having a door at an opening thereof,
- a heating means for generating heating energy in said heating chamber,
- a voice command input means for transforming a user's voice command into a command input signal,
- a pattern analyzer for frequency-analyzing said command input signal by deriving therefrom input pattern signals for a predetermined number of frequency bands, subsequently sampling said input pattern signals, and carrying out A/D conversion thereof thereby producing pattern-analyzed digital data,
- an input pattern memory for storing said pattern-analyzed digital data in a form of time sequential patterns,
- a reference pattern memory for storing time sequential reference pattern data as reference patterns,
- a recognition processing circuit for comparing said pattern-analyzed digital data stored in said input pattern memory with said time sequential reference pattern data stored in said reference pattern memory, and for outputting a signal indicative of an affinity degree of the comparison, and
- an output control circuit for issuing a predetermined control signal when said affinity degree determined by said signal from said recognition processing circuit is higher than a predetermined affinity degree,
- said reference pattern memory comprising a first address part which contains first reference pattern data corresponding to a first voice command for stopping a heating operation of said heating means, and a second address part which contains second reference pattern data corresponding to a second voice command for starting said heating operation of said heating means,
- said recognition processing circuit being constituted to carry out the comparison of said pattern-analyzed digital data with said first reference pattern data corresponding to said first voice command, in advance of the comparison of said pattern-analyzed digital data with said second reference pattern data corresponding to said second voice command.

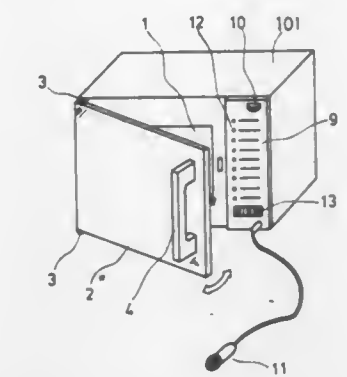
4,340,799  
**HEATING APPARATUS WITH VOICE ACTUATED DOOR OPENING MECHANISM**  
 Shigeki Ueda, Nara; Teruhisa Takano, Osaka, and Ryuji Suzuki, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan  
 Filed Dec. 18, 1980, Ser. No. 217,684  
 Claims priority, application Japan, Dec. 21, 1979, 54-167405  
 Int. Cl.<sup>3</sup> H05B 6/68  
 U.S. Cl. 219—10.55 C 4 Claims



1. A heating apparatus comprising:

- an enclosure case having therein a heating chamber in which an object to be heated is to be placed,
  - a heating means for generating a heating energy to be fed into said heating chamber,
  - a door mounted at an opening of said heating chamber for opening and closing the heating chamber,
  - a locking means for locking said door when the door is closed, and
  - a releasing means for releasing a locking state of said locking means, to open said door,
  - a voice command input means including a microphone for transforming a user's voice command into a command input signal,
  - a pattern analyzer for analyzing said command input signal by (1) dividing it into input pattern signals, each input pattern signal being associated with a predetermined frequency band, (2) subsequently sampling said input pattern signals and (3) carrying out A/D conversion thereof to produce pattern-analyzed digital data,
  - an input pattern memory for memorizing said pattern-analyzed digital data in a form of time sequential patterns,
  - a reference pattern memory for storing time sequential reference pattern data as reference patterns,
  - a recognition processing circuit for comparing said pattern-analyzed digital data stored in said input pattern memory with said time sequential reference pattern data stored in said reference pattern memory, and for providing a signal indicative of the affinity degree of the comparison, and
  - an output control circuit for producing at least a predetermined control signal when said affinity degree is higher than a predetermined degree of affinity,
- said reference pattern memory having an address part for storing reference pattern data corresponding to a voice command for opening said door, the output control circuit being for issuing a control signal to actuate said releasing means thereby releasing said locking means and opening said door, when an affinity degree determined by said signal from said recognition processing circuit after comparing the pattern-analyzed digital data stored in said input pattern memory with said reference pattern data corresponding to said voice command door opening said door, is higher than said predetermined degree of affinity.

4,340,800  
**HEATING APPARATUS HAVING VOICE COMMAND CONTROL OPERATIVE IN A CONVERSATIONAL PROCESSING MANNER**  
 Shigeki Ueda, Nara, and Teruhisa Takano, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan  
 Filed Dec. 18, 1980, Ser. No. 217,685  
 Claims priority, application Japan, Dec. 21, 1979, 54-167407  
 Int. Cl.<sup>3</sup> H05B 6/68  
 U.S. Cl. 219—10.55 B 4 Claims



1. A heating apparatus comprising:

- an enclosure case having therein a heating chamber adapted to receive an object to be heated, the enclosure case having a door at an opening of said heating chamber,
  - a heating means for generating heating energy into said heating chamber, and
  - speech recognition and control circuit means comprising a voice command input means including a microphone for transforming user's voice commands into command input signals, the speech recognition and control circuit further comprising:
  - a pattern analyzer for frequency-analyzing said command input signals to divide them into input pattern signals for a predetermined number of frequency bands, subsequently sampling said input pattern signals, and carrying out A/D conversion thereof to produce pattern-analyzed digital data,
  - an input pattern memory for memorizing said pattern-analyzed digital data in a form of time sequential patterns,
  - a reference pattern memory for storing time sequential reference pattern data as reference patterns,
  - a recognition processing circuit for comparing said pattern-analyzed digital data stored in said input pattern memory with said time sequential reference pattern data stored in said reference pattern memory, for issuing a signal indicative of an affinity degree of the comparison, and producing at least a predetermined control signal corresponding to recognized voice commands, when said signal of said affinity degree for one respective voice command among said user's voice commands is more than a preset signal level,
  - a voice synthesizer which, based upon said predetermined control signal of said recognition processing circuit, synthesizes a voice output signal,
  - a speaker for producing a sound upon receipt of said voice output signal,
  - a voice synthesizer memory, in which voice pattern data are preliminarily stored prior to operation of said heating apparatus,
  - a timer for counting a time period between an issuance of said voice output signal and a subsequent receipt of a second command input signal and
  - a main control unit for controlling the abovementioned component parts in a manner to have sequential operations comprising a first voice recognition mode, a voice synthesizing mode, a second voice recognition mode and an enforcing mode in this order, wherein
- in said first voice recognition mode, said main control unit makes said voice command input means receivable of any



voice commands, and shifts said sequential operation to the voice synthesizing mode upon issuance of said predetermined control signal,

in said voice synthesizing mode, said main control unit makes said voice synthesizer synthesize said voice output signal to ask said user tell a second voice command to said voice command input means, and immediately thereafter makes said sequential operation to said second voice recognition mode,

in said second voice recognition mode, said main control unit makes said voice command input means receivable of only a limited number of predetermined voice commands, makes said sequential operation to said heating means switching mode when one of said predetermined voice commands is received by said voice command input means within said time period set by said timer, and makes the apparatus again operates in said first voice recognition mode when one of said predetermined voice commands are received by said voice command input means, and

in said enforcing mode, said main control unit carries out a program defined by the voice commands recognized in said first and second recognition modes.

4,340,801

## CONTINUOUS HEATING APPARATUS FOR METAL CAPS

Kazuhisa Ishibashi, Yokohama, and Hidehiko Omi, Hiratsuka, both of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

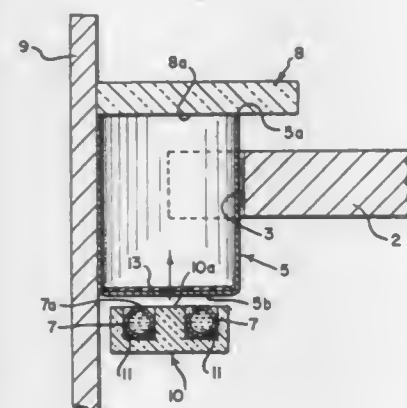
Continuation of Ser. No. 39,122, May 15, 1979, abandoned. This application Jan. 9, 1981, Ser. No. 223,822

Claims priority, application Japan, May 26, 1978, 53-62304; Jul. 19, 1978, 53-87079

Int. Cl.<sup>3</sup> H05B 6/10, 6/40

U.S. Cl. 219—10.71

5 Claims



1. In a continuous heating apparatus for continuously heating non-magnetic metal caps so as to thermally adhere thermoplastic liners to the inner surface of the bottom of the caps, the improvement comprising in that said apparatus has a cap feed means for supplying caps with their bottoms positioned downwardly and their open ends positioned upwardly, at least one pair of high frequency electric conductors positioned beneath and facing the bottom of the metal caps to be heated and being spaced from each other by an interval less than the diameter of the bottom of a cap, a source of high frequency electric current connected to said conductors to cause a current flow in opposite directions in each said pair of conductors, a guide panel formed with a ceramic plate spaced from said conductors a distance slightly greater than the height of a cap to form therebetween part of an unobstructed space through which metal caps may move and where said guide panel is adapted to engage the open ends of said metal caps which are moved from the conductors towards said panel under the influence of the high frequency electric current, and a rotatable table having a plurality of semi-circular peripheral notches to engage the side wall of a metal cap to move the metal cap through the space relative to said conductors with the open end of the metal caps slipping along said guide panel.

4,340,802

## METHOD AND APPARATUS FOR WELDING

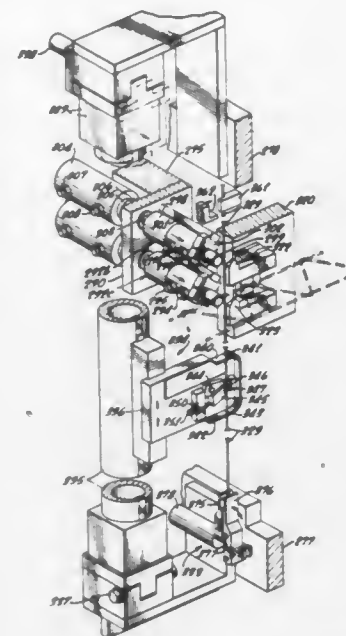
Richard F. Artzer, Riverside, Calif., assignor to Covington Brothers Technologies, Fullerton, Calif.

Continuation-in-part of Ser. No. 33,857, Apr. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 857,235, Dec. 5, 1977, Pat. No. 4,226,067. This application Sep. 17, 1979, Ser. No. 76,542

Int. Cl.<sup>3</sup> B23K 11/32, 11/10

U.S. Cl. 219—56

39 Claims



1. Apparatus for fabricating a three-dimensional panel composed of a stack of wire trusses alternated with elongated filler elements to provide a composite structural panel composed of a three-dimensional wire lattice and a filler therefor, each said truss including mutually spaced, longitudinally extending runner wires interconnected by struts, said apparatus comprising a support, means for holding said trusses and filler elements on said support, a plurality of extensible fluid motors mounted on said support, a plurality of electrodes mounted on respective ones of said motors for motion toward said trusses along paths aligned with respective runner wires of said trusses, means including a pneumatically driven wire pulling shuttle for positioning a cross wire transversely of said runner wires and transversely of said paths, means for energizing said motors to advance said electrodes along said paths and press said cross wire and runner wires together with mutually predetermined pressures, and means for flowing electric current between said electrodes and said wires.

4. The method of resistance welding a workpiece at a plurality of points comprising mounting a plurality of fluid motors in predetermined relative positions, mounting a plurality of weld electrodes to respective ones of said motors to be shifted thereby, positioning a backup member behind said workpiece at each of said points, positioning a plurality of mutually spaced first wires in a row between respective pairs of electrodes and backup members, feeding a cross wire to one end of said row of first wires, said wires forming said workpiece, pneumatically pulling said cross wire transversely of and adjacent to said row of first wires from said one end to the other of said row, holding said cross wire at said ends so as to place the cross wire under substantial tension, moving said electrodes and backup members in unison from a first position in which the backup members clear said workpiece to allow the workpiece to be moved relative to

said backup members and electrodes, to a second position in which the backup members flank the workpiece to enable the electrodes to press the workpiece against the backup members, applying fluid pressure to fluid motors to shift said electrodes into contact with said workpiece to press against said workpiece and press the workpiece against said backup members with a force directly related to pressure applied to said motors, and flowing electric current between said electrodes and workpiece.

4,340,803

## METHOD FOR INTERCONNECTING SOLAR CELLS

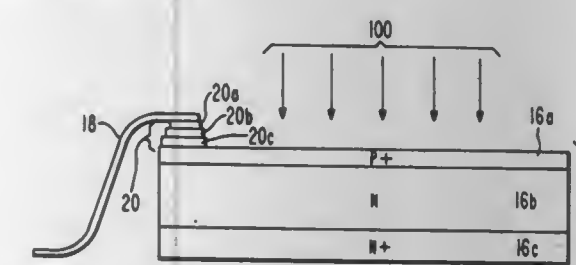
Peter J. Coyle, Maple Shade, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 20, 1979, Ser. No. 96,142

Int. Cl.<sup>3</sup> B23K 11/16, 11/32

U.S. Cl. 219—56.22

8 Claims



1. A process for welding an interconnect to a solar cell, comprising: positioning a solar cell in a parallel gap welding apparatus to weld a metal interconnect to the solar cell such that the width of the weld perpendicular to an applied pulling force will be greater than the length of the weld in the direction of said applied pulling force; adjusting the parameters of the electrode tip resistance to the metal interconnect resistance to a ratio of at least about 10:1 or greater, and said electrical tip resistance to metal interconnect resistance to the thermal mass ratio of the metal interconnect to the tip of said parallel gap welding apparatus of about 60:1; applying at least one weld pulse with a constant voltage across the welding tips at said parallel gap welding apparatus for a sufficient time to weld said metal interconnect directly to the metallization of said solar cell whereby the welds thus formed are capable of withstanding temperatures in excess of about 185° C.

8. A solar cell array comprising a plurality of solar cells connected in series or in parallel with an adjacent solar cell wherein said solar cells are interconnected by means of a parallel gap weld apparatus to form a metal interconnect between said solar cells, wherein said parallel gap weld apparatus is adjusted to have an electrode tip resistance to metal interconnect resistance ratio of at least about 10:1 or greater, and an electrical resistance ratio of the thermal mass ratio of metal interconnect to the parallel gap welding tip of about 60:1.

4,340,804

## WELDING NOZZLE

Adrian H. Krieg, Woodbridge, Conn., assignor to Widder Corporation, Naugatuck, Conn.

Filed Mar. 24, 1980, Ser. No. 132,815

Int. Cl.<sup>3</sup> B23K 9/61

U.S. Cl. 219—137.41

10 Claims

6. A welding nozzle for use in a welding gun assembly having a welding tip, comprising a flexible hose having a hollow interior, a hole in the wall of said hose adjacent one end thereof, through which a welding gun can be inserted, a collar mounted on said one end having a plurality of openings therein and a plurality of screws made of electrically non-conducting

material extending through said openings and into the interior of said collar for locating and holding said welding gun; a sleeve removably mounted on said collar and providing a



cover for the (electrode) welding tip of said welding gun, the length of said sleeve being sufficiently short to permit the tip (of the electrode) to extend beyond the end of the sleeve thus enabling the use of the tip for welding purposes.

4,340,805

## WELDING ELECTRODE WITH A FLUORIDE BASED SLAG SYSTEM

Kenneth E. Banks, Littlestown, Pa., assignor to Chemtron Corporation, Pittsburgh, Pa.

Filed Oct. 14, 1980, Ser. No. 197,058

Int. Cl.<sup>3</sup> B23K 35/30

U.S. Cl. 219—146.23

9 Claims

1. A welding electrode having a generally tubular ferrous metal sheath, and a core defined within the sheath for use in gas shield welding wherein the shielding gas is selected from the group consisting of carbon dioxide, inert gas, oxygen and inert gas mixtures, and mixtures thereof, comprising, by total weight of the electrode, from about 2.0 to 7.5% fluorides selected from the group consisting of calcium fluoride, strontium fluoride and mixtures thereof, up to about 1.0% silicates selected from the group consisting of calcium silicate, sodium silicate and mixtures thereof, less than about 1.0% iron oxide, less than about 2.75% manganese oxide, from about 0.3 to 1.0% silicon, from about 0.5 to 1.5% manganese, from about 0.3 to 1.0% magnesium, and the balance consisting of an alloy powder selected from the group consisting of nickel, chrome, molybdenum, iron and mixtures thereof.

4,340,806

## SAFETY LATCH CONTROL ARRANGEMENT FOR SELF-CLEANING OVEN

Frank H. Bergquist, Elmhurst, Ill., assignor to Harper-Wyman Company, Hinsdale, Ill.

Filed Jan. 21, 1980, Ser. No. 113,734

Int. Cl.<sup>3</sup> H05B 1/02; F24C 7/08

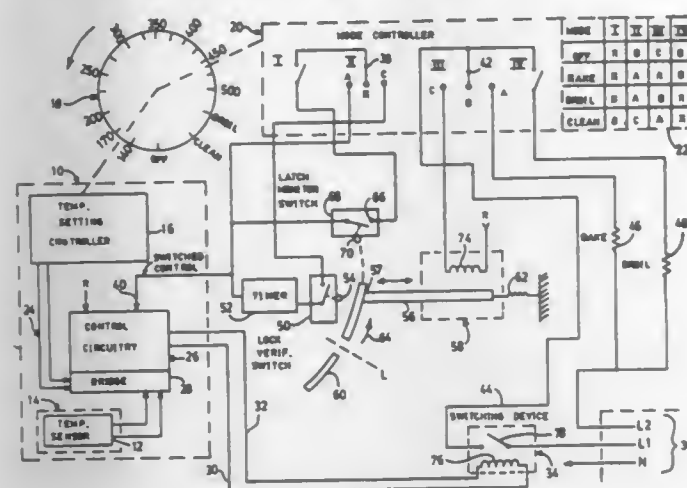
U.S. Cl. 219—413

4 Claims

1. A safety interlock control arrangement for apparatus having an access door movable between an open and closed position, the interlock control arrangement comprising a door latch arrangement including a manually operable latch member movable between an open door position and a closed position to latch the access door, a latch member verification switch including a switch actuator and positioned proximate the latch member for sensing the latched position of the latch member; a locking member positionable between a first unlocked position and a second locked position, a first portion of said locking member being moved into interfering engagement with the movable latch member when the latch member is in the closed latched position; and a locking member verification switch including a switch actuator and positioned proximate the latch member for sensing the locked position of said locking member by engagement of said verification switch actuator by said



first portion of said locking member that engages the door latch member,  
said door latch member comprising means formed there-through for receiving said locking member when the door latch arrangement is closed and means for engaging said locking member upon attempted operation of said door latch arrangement is an interfering relationship to prohibit movement of said door latch member,



said locking member comprising a generally elongated member being arranged to extend through said latch member receiving means, said first portion of said locking member that engages said verification switch comprising a portion of said elongated member that extends through said latch member receiving means.

4,340,807

## OPEN LOOP FUSER CONTROL

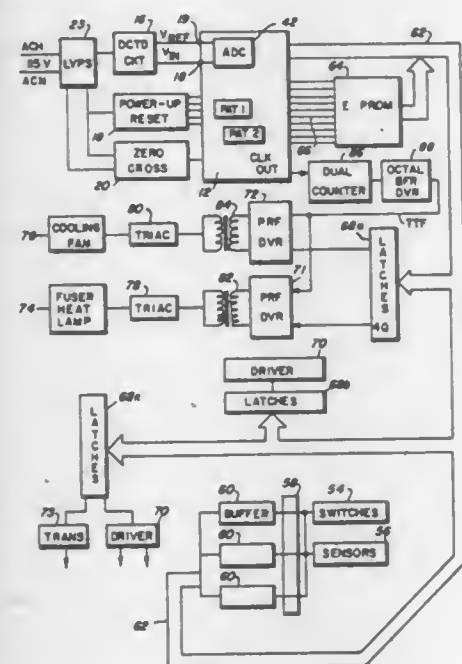
Jerome S. Raskin, Newport Beach; Warren L. Hall, Rancho Palos Verdes, both of Calif.; Charles P. Holt, Fairport, and Gerald E. Carlson, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 10, 1980, Ser. No. 111,048

Int. Cl.<sup>3</sup> H05B 1/02

U.S. Cl. 219—497

10 Claims



1. In an apparatus for producing copies of documents, the apparatus having a fuser for fixing images produced on the copies and a heater for heating the fuser, the combination of, a triac to control voltage to the heater, the triac in a first state providing voltage to the heater and in a second state interrupting voltage to the heater; and a control for operating the triac including a low voltage power supply connected to input line voltage; dedicated fuser circuitry connected to the low voltage

power supply and providing a stabilized reference voltage and a sample voltage, the sample voltage representing input line voltage;  
a microprocessor including a gate activation register;  
a comparator and analog to digital converter responsive to the reference voltage and the sample voltage providing a digital signal equivalent of the sample voltage; and  
means to selectively gate the triac in response to the digital signal equivalent and the gate activation register to regulate the voltage across the heater.

4,340,808

## TIME LOGGING APPARATUS

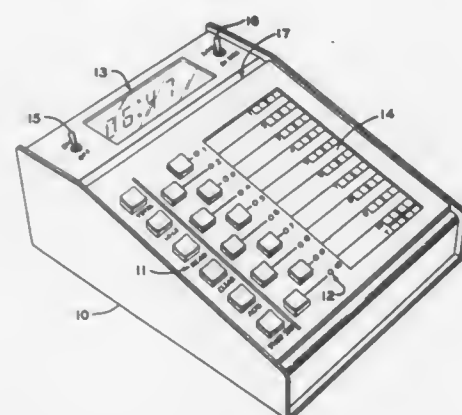
Dan J. Donohoo, 3175 Hafner Ct., Shoreview, Minn. 55116

Filed Mar. 9, 1979, Ser. No. 19,146

Int. Cl.<sup>3</sup> G07C 1/04

U.S. Cl. 235—92 AC

18 Claims



1. A device for monitoring and displaying time charged to any of a plurality of accounts comprising:  
a first source of clock signals;  
a plurality of keyboard actuated account switches, of which a separate account switch is associated with each of a plurality of primary accounts, each account switch being actuated by a separate key on the keyboard;  
memory means for storing counts of clock signals respectively corresponding to times charged to each of a plurality of accounts including said primary accounts;  
microprocessor means coupled to said source of clock signals and operable to distribute the clock signals supplied by said first source within said memory means among the accounts for which storage is provided, the account to which clock signals are supplied being changeable by a single switch actuation, the primary account to which any clock signal is added being determined exclusively by the last actuated account switch; and  
display means for displaying a time interval corresponding to the count in said memory means for a selected one of the plurality of accounts.

4,340,809

## SECURITY DEVICE AND METHOD FOR POSTAGE METER MACHINES

Robert H. Betcher, 4751 NW. 17th Ave., Miami, Fla. 33142

Filed Dec. 22, 1980, Ser. No. 218,733

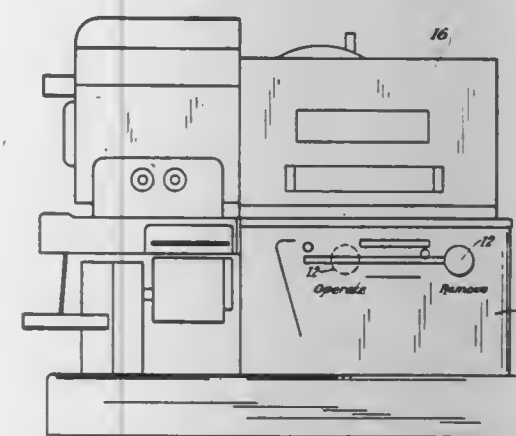
Int. Cl.<sup>3</sup> G07G 1/00

U.S. Cl. 235—101

4 Claims

1. A security device for a postage meter machine having a rotatable control knob including a letter position and a tape position and a control lever having a machine operate position and meter remove position, comprising:  
a disc having an open portion and connected to said rotatable control knob;  
a first control arm having a first end for communicating with said disc and a locking sleeve, said first control arm slid-

ably connected to said machine to slide in a plane perpendicular to the plane of said disc;  
a second control arm having its upper end in communicating relation with said control lever and its lower end connected to said first control arm;  
a locking arm having an upper end for communication with said postage meter and a lower end, said locking arm slidably connected to said machine to slide in a direction perpendicular to the movement of said first control arm; biasing means for biasing said locking arm towards said first control arm, operably connected to said locking arm and said machine;  
said control lever moving said first control arm and said second control arm towards said disc when changed from



the machine operate position to said meter remove position;  
said first end in communication with said disc when said rotatable control knob is in the tape position, preventing movement of said first and second control arms, locking said control lever in the machine operate position;  
said first end in alignment with said open portion when said rotatable control knob is in the letter position, allowing movement of said first and second control arms, enabling said control lever to be moved into said meter remove position and locking said rotatable control knob in the letter position;  
said lower end of said locking arm engaging with said locking sleeve when said meter is removed and disengaging said locking sleeve when said meter is replaced.

4,340,810

## METHOD AND APPARATUS FOR MERCHANDISE DISTRIBUTION CONTROL

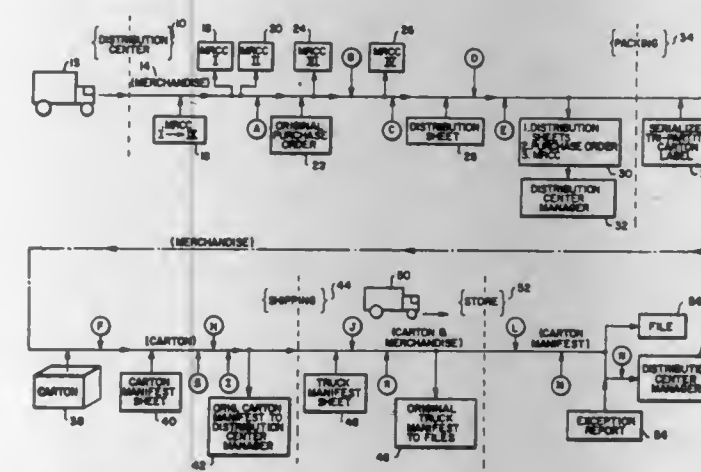
Marvin Glass, 162-21 Powell Cove Blvd., Beechhurst, N.Y. 11357

Filed Mar. 7, 1980, Ser. No. 128,055

Int. Cl.<sup>3</sup> G06K 5/00

U.S. Cl. 235—375

17 Claims



1. A method for controlling the distribution of a plurality of

items of merchandise to selected locations comprising the steps of:

listing the identification data for groups of items of merchandise intended for distribution to the selected locations, including listing a location identification number and a distribution list serial number;  
providing a packing stub label for each selected group of items including printing all of the identification data the distribution list serial number, and the location identification number on each label;  
associating a packing stub label with a corresponding selected group of items;  
providing an address label having the selected location address, the location identification number, and the distribution list serial number and including a separable segment bearing the location identification number and the distribution list serial number;  
placing a container manifest label bearing the location identification number and the distribution list serial number on a container manifest;  
containerizing each group of items;  
placing the packing stub for each containerized group of items on the container manifest;  
affixing the address label to the container;  
placing the containers on a conveyance;  
separating the segment from the address label and affixing it to a conveyance manifest;  
conveying the containers to the selected location; and  
checking the items in the container against the packing stubs on the container manifest.

4,340,811

## FOCUSING METHOD AND APPARATUS FOR USE IN AN OPTICAL SYSTEM

Nobuo Yamashita, and Ken-ichi Nakahashi, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Japan

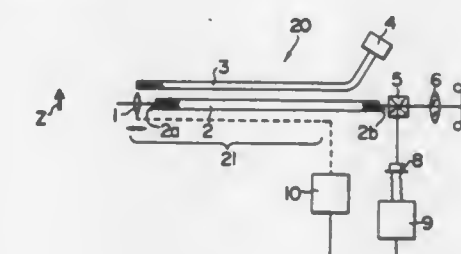
Filed Mar. 3, 1980, Ser. No. 126,661

Claims priority, application Japan, Jun. 12, 1979, 54/73840

Int. Cl.<sup>3</sup> G01J 1/20

U.S. Cl. 250—201

17 Claims



1. A method for focusing an observation optical system which is receiving light reflected off an object being illuminated by an illumination optical system associated with said observation optical system, said observation optical system having at least two elements whose relative position determines the focus of said observation optical system with respect to said object, said method comprising the steps of:

(a) measuring the brightness of said object while the relative positions of said at least two elements are fixed with respect to one another;  
(b) arithmetically determining the location of said object as a function of said measurement; and  
(c) adjusting the relative positions of said at least two elements as a function of said determination so as to bring said object into focus by said observation optical system.



4,340,812

## RADIATION ENERGY COLLECTION AND TRACKING APPARATUS

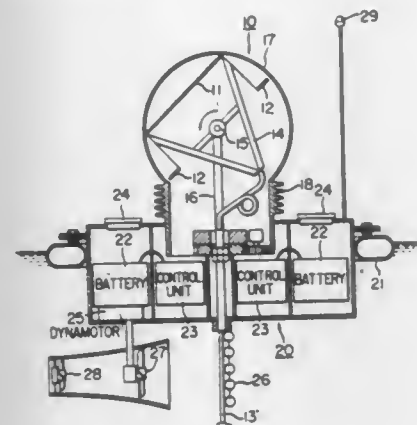
Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan  
Filed Mar. 19, 1980, Ser. No. 131,693

Claims priority, application Japan, Mar. 26, 1979, 54-34243; Mar. 31, 1979, 54-37732; Mar. 31, 1979, 54-37733; Jul. 5, 1979, 54-84406; Nov. 8, 1979, 54-144662; Nov. 8, 1979, 54-144663; Nov. 13, 1979, 54-146962; Nov. 22, 1979, 54-151392

Int. Cl.<sup>3</sup> G01J 1/20

U.S. Cl. 250—203 R

19 Claims



1. A light energy collection apparatus comprising: an optical system for collecting light energy from a light source, comprising:
  - a lens system for converging the light energy,
  - an optical coupler upon which the light energy is focused through said lens system, and
  - a light-guide cable with one end connected to said optical coupler so that the light energy focused on said optical coupler enters said light-guide cable,
- a supporting framework for supporting said optical system;
- a tracking device for driving said supporting framework in such a way that the optical system is normally kept pointed at said light source, said tracking device comprising:
  - a main shaft supported for rotation,
  - one or more light energy collectors each mounted on said main shaft for rotation about an axis perpendicular to the axis of said main shaft, and
  - means for rotating said one or more light energy collectors about their axes of rotation;
- a device for detecting the position of said light source, said device including a weight mechanism mounted on said main shaft in such a way that regardless of the angular position of said main shaft, said weight mechanism is normally vertically oriented;
- a spherical lens mounted on said weight mechanism, and a plurality of optical sensors situated at the focal points of said spherical lens,
- whereby in response to the outputs from said optical sensors, the direction or position of said light source is detected;
- an optically transparent housing enclosing said optical system and said tracking device; and
- a supporting means for supporting said housing.

4,340,813

## SWITCH PANEL WITH TOUCH SWITCHES

Gerd Sauer, Aachen-Laurensberg, Fed. Rep. of Germany, assignor to Saint Gobain Vitre, Neuilly-sur-Seine, France  
Filed Sep. 9, 1980, Ser. No. 185,966

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936815

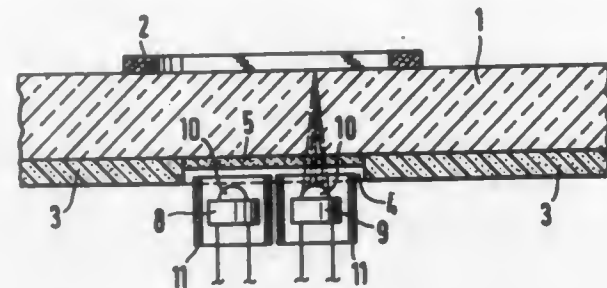
Int. Cl.<sup>3</sup> G01D 5/34

U.S. Cl. 250—221

13 Claims

1. Switch panel comprising a glass plate having markings printed on a surface thereof to form switch spaces for sensors located behind the glass plate in the areas of the switch spaces,

characterized in that the switch sensors comprise semi-conductor elements responsive to infrared radiation, in that windows transparent to infrared radiation are provided between the switch sensors and the switch spaces, in that the glass plate has a dull opaque layer on a rear surface thereof which is impermeable to light, in that said windows comprise openings formed in said opaque layer, in that a filter layer comprising a printed



silver stain is positioned on the rear surface of the glass plate within the area of said windows and which is transparent to infrared radiation, and in that an emitter is provided which emits infrared radiation through a window towards the glass plate with said radiation being reflected or disbursed when the switch space is touched to activate the switch sensors by reflected or disbursed radiation.

4,340,814

## ELECTRO-OPTICAL POSITION TRANSDUCER

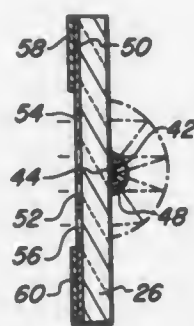
James J. DiCiccio, Somerville, Mass., and John J. Foley, Jr., Weare, N.H., assignors to Dynamics Research Corporation, Wilmington, Mass.

Filed Oct. 14, 1980, Ser. No. 196,596

Int. Cl.<sup>3</sup> H04L 3/00

U.S. Cl. 250—231 SE

9 Claims



7. For use in an electro-optical encoder, including a scale moveable along a travel path and having a plurality of alternating light-responsive and non-responsive segments and means for providing electrical signals indicative of the relative position of the scale along its path, an illumination source comprising:
  - a parabolic reflector;
  - a solid state light emitting device disposed at the focus of the parabolic reflector; and
  - means for mounting the reflector in confronting relation to the encoder scale to provide substantially collimated uniform intense illumination of intended portions of the scale.

4,340,815

## PREPARATION OF MATERIAL FOR EXAMINATION BY TRANSMISSION ELECTRON MICROSCOPY TECHNIQUES

Joseph Franks, Teddington, England, assignor to Ion Tech Limited, Teddington, England

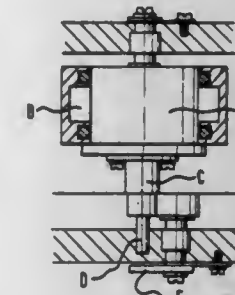
Continuation-in-part of Ser. No. 957,849, Nov. 6, 1978, abandoned. This application May 19, 1980, Ser. No. 150,745

Claims priority, application United Kingdom, Nov. 7, 1977, 46311/77

Int. Cl.<sup>3</sup> G01N 23/00

U.S. Cl. 250—307

17 Claims



1. A method of preparing specimens suitable for examination by electron microscopy techniques comprising providing a saddle-field ion source for producing a beam of ions, placing the specimen in front of a cathode aperture of the ion source, and irradiating one spot on the specimen by the beam to erode its surface, the specimen being held within a range from almost touching the cathode aperture to substantially 2 cms therefrom during irradiation to thereby rapidly erode the specimen to penetration and produce an area surrounding the penetration of suitable thickness for transmission of electrons.

4,340,816

## METHOD OF PRODUCING TOMOGRAMS WITH X-RAYS OR SIMILARLY PENETRATING RADIATION

Ottfried Schott, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin &amp; Munich, Fed. Rep. of Germany

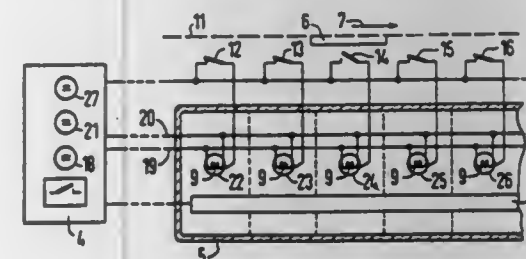
Continuation of Ser. No. 837,198, Sep. 28, 1977. This application Jul. 19, 1979, Ser. No. 58,869

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1976, 2647167

Int. Cl.<sup>3</sup> G03B 41/16

U.S. Cl. 250—445 T

4 Claims



1. A tomographic system for producing tomograms of a body with X-rays, said tomographic system comprising X-ray source means for producing X-ray beams for scanning a subject under examination, a recording device for registering the intensity of the X-ray beams which issue from the subject under examination during a scanning operation, said X-ray source means comprising a multiplicity of X-ray beam sources, and scanning means for successive switching-on of the X-ray beam sources to produce the X-ray beams which scan the subject such that a tomographic layer image can be produced with the aid of said recording device, said beam sources being arranged along a scanning path and being consecutively switched on by said scanning means in a selectable sequence and with a duration necessary for actuation of the recording device, means causing said recording device to be aligned with

the respective switched on X-ray beam sources so as to receive the consecutively switched on X-ray beams therefrom, said X-ray sources having a vacuum envelope and being formed by an anode within said envelope extending along said scanning path and at least five cathodes within said envelope and disposed in operative relation to successive portions of said anode, and said scanning means comprising a switching grid connected to control emission of electrons from each cathode to the associated portion of the anode, said vacuum envelope comprising a single vacuum envelope, said anode comprising a single elongated anode element in said single vacuum envelope, the successive cathodes being disposed in said single vacuum envelope in adjacent relation to successive portions of said single elongated anode element, and the successive cathodes having a special interval from one another of not more than five centimeters.

4,340,817

## SIGNAL ELEMENT WITHOUT A LAMP

Ferdinand Quella, Gauting, and Heinz Pape, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin &amp; Munich, Fed. Rep. of Germany

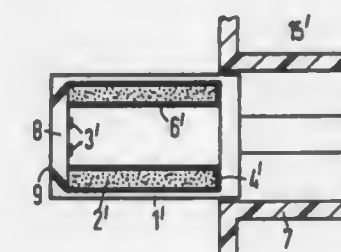
Filed Jun. 19, 1980, Ser. No. 161,078

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1979, 2928700

Int. Cl.<sup>3</sup> F21V 9/16; F21K 2/00

U.S. Cl. 250—458

40 Claims



1. In a signal element without a lamp having a moveable member received in a housing member for movement between at least two positions to cause actuation of parts of said element, the improvement comprising one of said housing and moveable members including a fluorescent member consisting of a body of material having an index of refraction >1 and containing fluorescent particles for fluorescently collecting and scattering incident light to create fluorescent light, and means for uncoupling concentrated fluorescent light from the fluorescent member to a point of the element in response to a selected position of the moveable member in the housing member.

4,340,818

## SCANNING GRID APPARATUS FOR SUPPRESSING SCATTER IN RADIOGRAPHIC IMAGING

Gary T. Barnes, Birmingham, Ala., assignor to The Board of Trustees of the University of Alabama, Birmingham, Ala.

Filed May 14, 1980, Ser. No. 149,754

Int. Cl.<sup>3</sup> H01J 35/16

U.S. Cl. 250—509

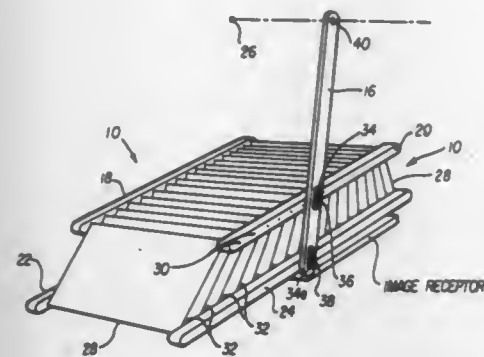
11 Claims

1. A scanning grid apparatus exhibiting high primary and low secondary x-ray transmission of x-ray radiation, said apparatus adapted to be positioned between an x-ray source defining a focal spot and an x-ray sensitive image receptor such that x-rays emitted from said source pass through a subject and through said grid apparatus to said receptor, comprising:
  - at least one scanning grid comprising,
  - a first pair of opposed longitudinally extending grid slat retainers,
  - a second pair of opposed longitudinally extending grid slat retainers, said pairs of grid slat retainers disposed in paral-



lel planes with said first pair adapted to be located between said subject and said second pair, a plurality of radiopaque grid slats pivotably attached at pivot points at predetermined intervals between the retainers of one of the pairs of said grid slat retainers, and means for scanning said grid slats by moving at least one of said pairs of retainers longitudinally in a direction transverse to said plural grid slats and for maintaining said grid slats focused on said focal spot during said scanning, comprising,

means for coupling at least said one pair of retainers having



said pivot points to said focal spot and for moving said at least said one pair longitudinally in a direction transverse to said grid slats, and the other pair of said retainers to which said grid slats are not pivotably attached comprising spacing means for maintaining said grid slats separated predetermined distances within predetermined limits in the plane of said other pair of retainers, said predetermined intervals between said pivot points and the separation distances between slats along the other retainer pair selected to maintain focus of each of said slats on said focal spot during movement of said at least one pair of retainers by said coupling means.

#### 4,340,819 PHOTOELECTRIC ELEMENT ARRAY WITH AUTOMATIC CONTROL OF THE CHARGE STORAGE TIME

Akira Ogasawara, Yokohama; Hiroshi Shirasu, Kawasaki, and Ken Utagawa, Yokohama, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 105,271, Dec. 19, 1979, abandoned.

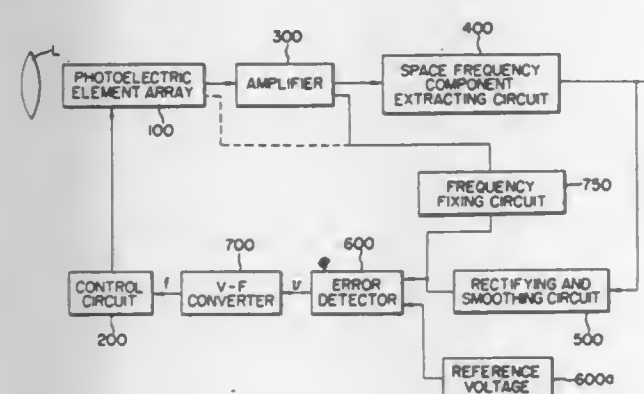
This application Apr. 29, 1981, Ser. No. 258,763

Claims priority, application Japan, Dec. 22, 1978, 53/158845; Dec. 29, 1978, 53/163079

Int. Cl.<sup>3</sup> H01J 40/14

U.S. Cl. 250-578

9 Claims



1. A photoelectric converter device comprising:
  - (a) an image forming optical system;
  - (b) a photoelectric converting portion for photoelectrically converting a light image formed by said image forming optical system and generating an associated output voltage associated with the information contained in said light image, said photoelectric converting portion including a

charge storage type photoelectric element array comprising a plurality of charge storage type photoelectric elements each of which stores charges generated in accordance with the intensity of incident light and generates a photoelectric output related to both the intensity of the light and the storage time; and

(c) a control circuit for driving said photoelectric element array;

the improvement comprising:

(d) a feedback circuit (500, 600, 700) connected between said photoelectric converting portion (100, 300, 400) and said control circuit (200);

said feedback circuit including a V-F converter (700) for receiving said associated output voltage as input and generating a frequency output corresponding thereto;

said feedback circuit supplying the frequency output to said control circuit (200) to cause said control circuit (200) to control the charge storage time of said photoelectric element array (100) so that said associated output voltage becomes a substantially constant value independently of the light image.

#### 4,340,820 APPARATUS AND METHOD FOR PARTIAL-LOAD OPERATION OF A COMBINED GAS AND STEAM TURBINE PLANT

Roland Meyer-Pittroff, Eckental; Bernard Becker, Mülheim, and Hermann Finckh, Nuremberg, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

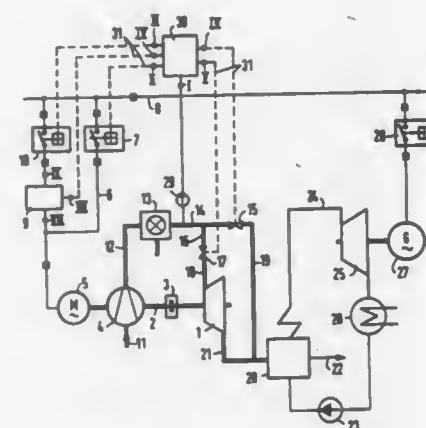
Filed Nov. 10, 1980, Ser. No. 205,297

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945404

Int. Cl.<sup>3</sup> F02C 7/02

U.S. Cl. 290-40 R

9 Claims

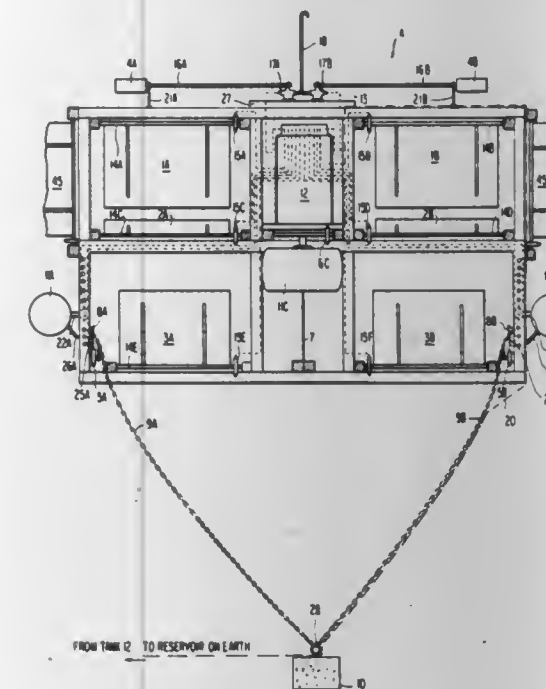


1. Apparatus for the partial load operation of a combined gas turbine and steam turbine plant, comprising a shaft being connected to the gas turbine and drivable at a given nominal speed of rotation, a first generator being connected to said shaft and electrically connectible to an electric network, a compressor being connected to said shaft and connected upstream of the gas turbine in gas flow direction, a heat exchanger having an output and a variable heat supply and being connected upstream of the gas turbine in gas flow direction, a steam generator for the steam turbine being connected downstream of the gas turbine in gas flow direction for receiving exhaust gases therefrom, a second generator being connected to the steam turbine and electrically connectible to the electric network for supplying given nominal power thereto along with said first generator, means for giving to the electric network and taking away from the network at least part of said nominal power if said shaft rotates at less than said nominal speed of rotation, and means for reducing the speed of rotation of the gas turbine for preventing a substantial drop in temperature at said output of said heat exchanger if said heat supply of the heat exchanger is reduced.

#### 4,340,821 APPARATUS FOR HARNESSING WAVE ENERGY David M. Slonim, 1869 P.O.B., 3, Ourania St., Nicosia, Cyprus Filed Jun. 19, 1980, Ser. No. 161,147 Int. Cl.<sup>3</sup> F03B 13/12

U.S. Cl. 290-53

2 Claims



1. Apparatus for harnessing wave energy, comprising a floatable support structure, means anchoring the support structure to a single point on the bottom of a body of water so that wave action will position the structure, pump means supported by the support structure, means responsive to waves for operating the pump means, and means for conveying the wave energy to an on-shore location, the wave responsive means including at least one buoyant flap mounted on the support structure for pivotal movement about a substantially horizontal axis spaced, in use, below the surface of the water by such a distance that the flap will be generally vertically upstanding in the water broadside to the waves in the position of the anchored structure as determined by wave action, the wave-responsive means further including at least one non-buoyant downwardly depending flap mounted on the support structure for pivotal movement about a substantially horizontal axis disposed in use above the surface of the sea, the wave-responsive means further including at least one buoyant flap mounted on the support structure for pivotal movement about a substantially horizontal axis disposed in use adjacent the surface of the water so that the buoyant flap will in use float on the surface of the water.

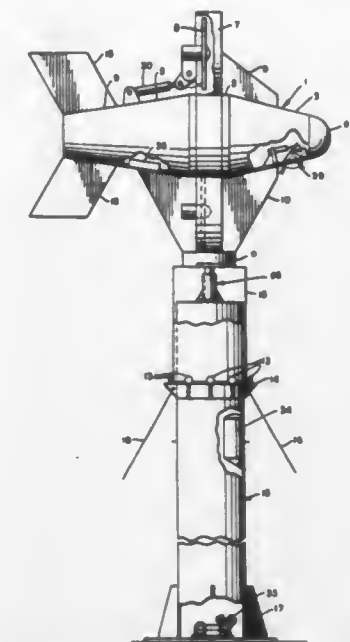
#### 4,340,822 WIND POWER GENERATING SYSTEM Hendrick J. Gregg, 625 S. Alton Way, Denver, Colo. 80231 Filed Aug. 18, 1980, Ser. No. 178,868 Int. Cl.<sup>3</sup> F03D 1/02

U.S. Cl. 290-55

2 Claims

1. A wind power generating system comprising a shaped, closed, hollow central member having a generally circular cross section which is cylindrical in an intermediate part of said member, tapers forwardly and inwardly to a nose at the front and tapers rearwardly and inwardly to a back area, a plurality of open cylindrical shrouds fixedly mounted around the outside of said central member and supported at least in part by the outer surface of said central member, fins mounted forwardly on the outer surface of said central member and extending outwardly therefrom and tangentially against adjacent shrouds to channel wind flow to said shrouds, a propeller mounted centrally on a shaft in each of said shrouds, each said

propeller adapted to be driven by wind passing over the nose and forward of said central member, and means responsive to

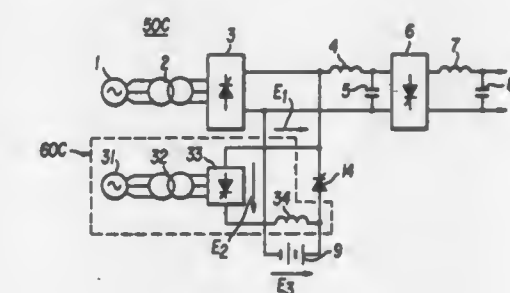


the rotation of said propellers operative to generate electrical power.

#### 4,340,823 UNINTERRUPTIBLE POWER SUPPLY Yoshiaki Miyazawa, Kunitachi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan Filed Apr. 30, 1981, Ser. No. 258,927 Claims priority, application Japan, May 7, 1980, 55/60189 Int. Cl.<sup>3</sup> H02J 7/02, 9/04

U.S. Cl. 307-66

12 Claims



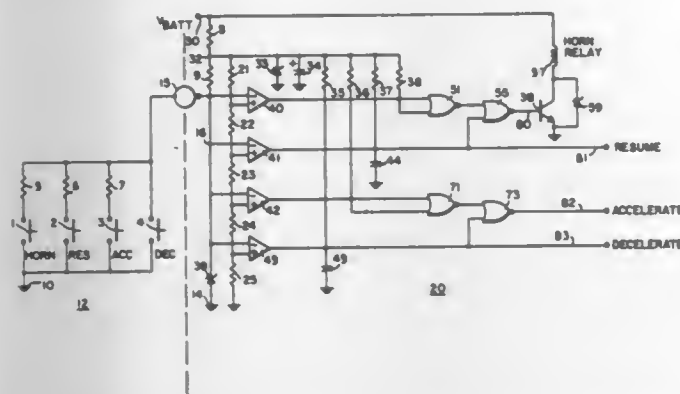
1. An uninterruptible power supply comprising:
  - rectifier means having input and output terminals for receiving at said input terminals a first AC power signal and converting said first AC power signal into a first DC power signal to produce at said output terminals a DC power output of said uninterruptible power supply;
  - battery means for supplying a second DC power signal;
  - controlled rectifier means having input and output terminals for receiving at the input terminals thereof a second AC power signal and converting said second AC power signal into a controlled power output provided at the output terminals thereof;
  - switch means connected to receive said second DC power signal from said battery for producing said second DC power signal as said DC power output when said first AC power signal is interrupted; and
  - the output terminals of said rectifier means being connected in series with the output terminals of said controlled rectifier means and said battery means, whereby said first DC power signal and said controlled power output are added and applied to said battery means for charging thereof.



**4,340,824**  
**AUXILIARY STEERING WHEEL COMMAND SYSTEM**  
 Mark L. Shaw, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 11, 1980, Ser. No. 120,460  
 Int. Cl.<sup>3</sup> H04Q 1/24, 5/02  
 U.S. Cl. 307—115

6 Claims

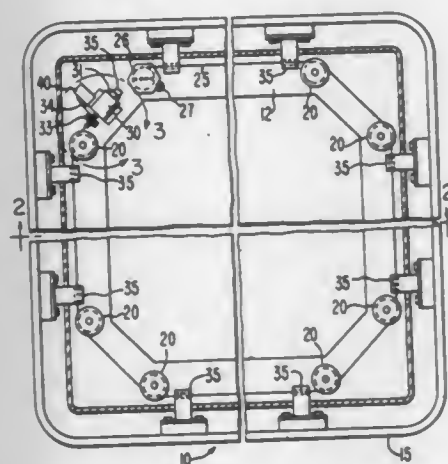


1. A system for transmitting a selected one of a plurality of commands to be multiplexed and decoded to control output devices comprising:  
 first circuit means including a plurality of independent actuating switches;  
 second circuit means for generating a plurality of voltage signals in response to the condition of said actuating switches;  
 slip-ring means for receiving said voltage signals and supplying them to a third circuit means;  
 a plurality of output devices operative in response to voltage signals from said third circuit means;  
 said third circuit means including decoding logic means to produce a selected one of plurality of output signals corresponding to the condition of said independent actuating switches to energize a predetermined one of said output devices;  
 said decoding logic means including timed latch gates to eliminate switching transients from said preselected output signals.

**4,340,825**  
**TOUCH DETECTOR FOR ELECTRON APPLICATOR**  
 James C. Carter, Jr., San Jose, and Stanley Mansfield, Santa Clara, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 26, 1980, Ser. No. 191,109  
 Int. Cl.<sup>3</sup> G01N 23/00  
 U.S. Cl. 307—116

10 Claims



1. A touch detector with sensitivity substantially independent of the orientation of said detector and the direction of activating force comprising:  
 a frame,

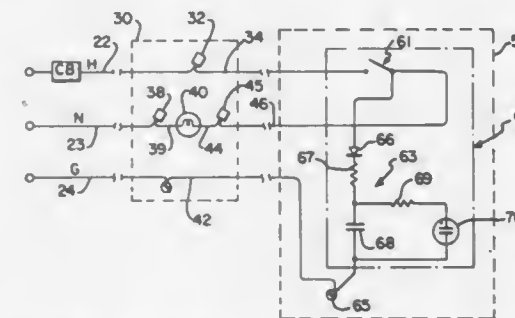
a sensor,  
 an elastic member affixed to said frame and having a movable free end,  
 a cable with one end affixed to said frame and the other end affixed to said free end of said elastic member, and,  
 a guiding means supported by said frame for maintaining said cable in a predetermined tensioned position with respect to said frame in the absence of any external force on said sensor,  
 said sensor being supported by said cable and movable relative to said frame in two orthogonal planes so that an external force applied on said sensor in either of said two orthogonal planes has the effect of deforming said elastic member by displacing said cable from said predetermined tensioned position.

**4,340,826**  
**LOW CURRENT PILOT LIGHT AND SWITCH**  
 Paul Muchnick, Norwalk, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed May 7, 1981, Ser. No. 261,507  
 Int. Cl.<sup>3</sup> H02J 9/02

U.S. Cl. 307—157

6 Claims



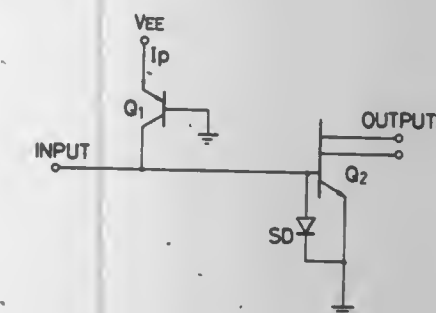
1. An indicator light device for use in combination with an electrical service system for selectively energizing a load, the system including a source of electrical power, an electrical load device, a switch mountable in a switch housing at a location remote from the load device, and power, neutral and ground conductors extending from the source to the load, of which only the power and ground conductors extend to the switch housing, and wherein the ground conductor is connected to a ground terminal in the switch housing and has a prescribed maximum allowable intentional current limitation, and the switch is of the type having a first terminal connected directly to the power conductor leading to the source, a second terminal connected to a conductor leading to the load and means for opening and closing the switch circuit between the first and second terminals, the indicator light device comprising:

a circuit including a diode, a capacitor and a first resistor connected in series circuit relationship between said second terminal of said switch and the ground conductor in the switch housing; and  
 indicating means connected in parallel circuit relationship with said capacitor,  
 said indicating means having a breakdown potential less than the voltage between said power and ground conductors so that when power is applied to said circuit said indicating means periodically flashes,  
 the values of said capacitor and first resistor being selected so that the maximum current normally flowing through said circuit and into said ground conductor is less than one-tenth of said prescribed limitation,  
 said indicating means being mounted so that light emanating therefrom is normally visible from outside of the switch housing when the switch is closed to complete a power circuit to the load device.

**4,340,827**  
**SEMICONDUCTOR INTEGRATED CIRCUIT**  
 Jun-ichi Nishizawa, Sendai, and Yutaka Hayashi, Hoya, both of Japan, assignors to Zaidan Hojin Handotai Kenkyu Shin-kokai, Sendai and Agency of Industrial Science and Technology, Tokyo, both of Japan

Filed May 15, 1979, Ser. No. 39,437  
 Claims priority, application Japan, May 16, 1978, 53-57184  
 Int. Cl.<sup>3</sup> H03K 19/091; H01L 27/04  
 U.S. Cl. 307—477

23 Claims

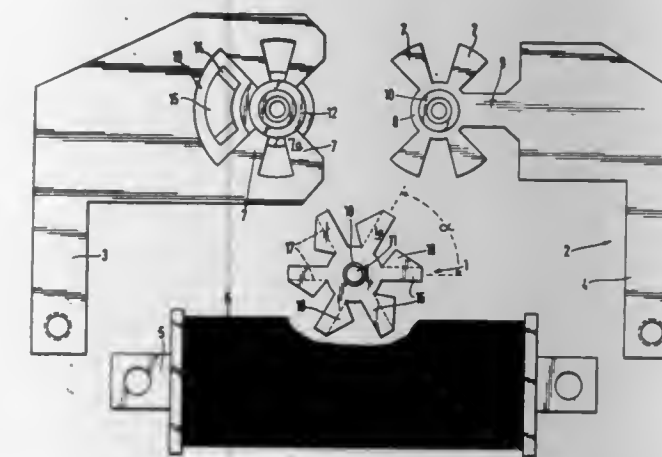


1. A semiconductor circuit comprising:  
 a normally-off unipolar transistor having a single source electrode and a plurality of drain electrodes, and a plurality of current paths formed of semiconductor regions of one conductivity type disposed between said respective drain electrodes and said source electrode and a single gate semiconductor region having electrically connected portions forming pn junctions with a semiconductor region of each of said current paths, and a single gate electrode connected to said gate semiconductor region, said current paths being normally pinched off and becoming conductive upon application of a forward bias to said gate electrode; and  
 a single Schottky diode connected between said single gate and single source electrodes in such direction that a forward bias to said gate electrode is also a forward bias for the Schottky diode and that the Schottky diode forms a bypass for the gate-source path.

**4,340,828**  
**SINGLE PHASE STEPPING MOTOR**  
 Roland Sudler, Frankfurt, and Jean-Francois Schwab, Schwalbach, both of Fed. Rep. of Germany, assignors to Quarz-Zeit AG, Frankfurt am Main, Fed. Rep. of Germany  
 Continuation of Ser. No. 875,789, Feb. 7, 1978, abandoned. This application Mar. 14, 1980, Ser. No. 130,394  
 Claims priority, application Fed. Rep. of Germany, Feb. 11, 1977, 2705684

Int. Cl.<sup>3</sup> H02K 37/00  
 U.S. Cl. 310—49 R

13 Claims



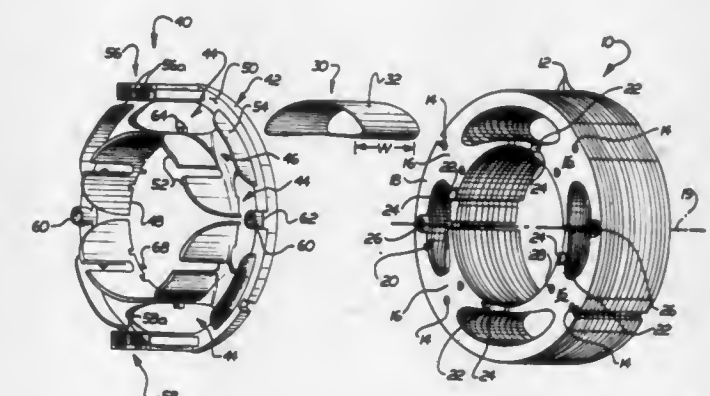
1. In a single phase stepping motor, particularly for clocks, with a rotor having several pole teeth and a stator, the latter being made of two stator parts connected with one another via a bridge part, the latter carrying the excitation winding, of

which each stator part has on its free end and equal or smaller number (in comparison to the rotor pole number) of the stator pole teeth as well as a passage opening for the rotor shaft, the stator pole teeth being directed towards the face sides of the rotor, the improvement wherein

said rotor and said stator parts are made of an unmagnetized soft magnetic material of low retentivity,  
 each rotor pole tooth substantially radially overlaps axial facing sides of the stator pole teeth in positions of the rotor and comprises a main pole and an auxiliary pole, the latter extending in a direction of rotation and formed on said main pole,  
 a permanent magnetic circuit means disposed between the stator pole teeth for determining a rest position of the rotor with the stator unexcited and for producing alternating poles of said rotor, the rotor poles being unmagnetized by the excitation winding, the field lines of said permanent magnetic circuit means close across said rotor poles.

**4,340,829**  
**MOLDED END COIL INSULATOR**  
 Billy R. McCoy, Jackson, Tenn., assignor to Sheller Globe Corporation, Cleveland, Ohio  
 Filed Jun. 22, 1979, Ser. No. 51,051  
 Int. Cl.<sup>3</sup> H02K 11/00  
 U.S. Cl. 310—71

14 Claims



1. A molded end coil insulator for attachment to an end face of a ferromagnetic core to form part of the ground insulation for magnet wires wound thereabout and about the core, said molded end coil insulator comprising a molded body having a surface configured to engage a surface of the ferromagnetic core, said molded body including one or more terminal supports each of which is configured to receive and retain a terminal member and a magnet wire in good electrical contact with each other, each of said terminal supports being further configured to grip a lead wire from an external circuit and connected with the terminal member to isolate a section of the lead wire connected with the terminal member from strains and vibrations in the external circuit, each terminal support comprising a pair of facing surfaces which are spaced apart by a distance less than the diameter of the lead wire for engaging the lead wire in an interference fit to isolate the section of lead wire from strains and vibrations in the external circuit.

**4,340,830**  
**ELECTRIC MOTOR ASSEMBLY**  
 Sigurd Hoyer-Ellefson, New Canaan, Conn., assignor to SCM Corporation, New York, N.Y.  
 Filed Nov. 30, 1979, Ser. No. 99,181  
 Int. Cl.<sup>3</sup> H02K 5/00

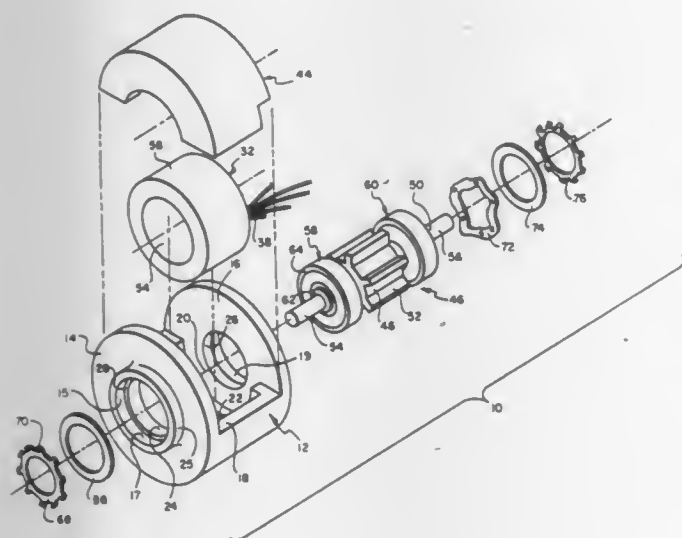
U.S. Cl. 310—89

3 Claims

1. An electric motor assembly comprising:  
 (A) a one-piece housing formed with a base section and a pair of spaced apart upstanding end walls, each one of said end walls being formed with an opening therethrough



- having a coaxial relation therebetween and one of said openings being formed with a step;
- (B) a stator assembly including a central bore therethrough;
- (C) means for mounting said stator assembly on said base section with said central bore being coaxially aligned with said openings;
- (D) a rotor fixedly supported on a shaft, said rotor being disposed within said central bore and said shaft being rotatably supported in said openings;
- (E) a first bearing axially fixed on one end of said shaft for permitting relative rotational movement therebetween, said first bearing being supported in said opening with said step;
- (F) a second bearing axially fixed on the other end of said shaft for permitting relative rotational movement therebetween, said second bearing being supported in the other opening; and
- (G) means for preventing axial movement of said rotor comprising:



- (a) a first set of retaining members including a rigid flat washer and a fingered lock washer located in said opening with said step, said flat washer being positioned in abutment with said step and said first bearing and said lock washer having fingers that grip the peripheral surface of said stepped opening to firmly hold said flat washer in said position to prevent axial displacement of said rotor in one direction; and
- (b) a second set of retaining members including a resilient ring, a second flat washer and a second fingered lock washer located in the other opening, said resilient ring being positioned in abutment with said second bearing through said second flat washer and said second lock washer having fingers that grip the peripheral surface of the other opening to firmly hold said second flat washer and said resilient ring in said position to prevent axial displacement of said rotor in a direction opposite said one direction.

#### 4,340,831 BRUSH HOLDER FOR FRACTIONAL HORSEPOWER MOTORS

Gerhard Kuhlmann, Stuttgart; Ernst Kränzler, Leinfelden-Echterdingen, both of Fed. Rep. of Germany; Gerhard Baer, Solothurn, Switzerland; Kurt Ruetsch, Riedholz, Switzerland; Hansruedi Ramseier, Zuchwil, Switzerland; Heinz Dubach, Lauterbach, Switzerland; Martin Lang, Biberist, Switzerland; Hans Schwartz, Günsberg, Switzerland, and Hans Aebi, Derendingen, Switzerland, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

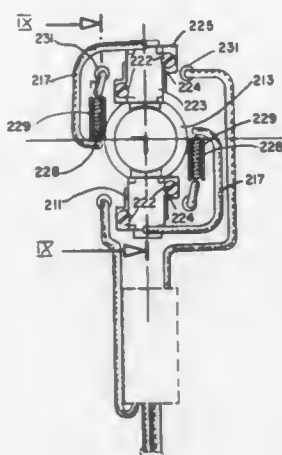
Filed Jul. 5, 1979, Ser. No. 54,781

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1978, 2831928

Int. Cl.<sup>3</sup> H02K 13/00

U.S. Cl. 310—239

19 Claims



1. Brush holder-receiver assembly for fractional horse power, commutator-type electric motor having a brush holder casing;
- a conductive brush movably retained in the casing;
- a spiral brush spring engaging the brush at one end thereof and biasing the brush;
- wherein

the brush casing defines an open tube which, in cross section, is essentially rectangular and has four smooth, continuous, uninterrupted walls forming smooth, uninterrupted interior surfaces;

and comprising

- a support plate engaged by and supporting the spring at its other end, and forming a combined support and electrical connecting plate;
- a pigtail positioned within the spring and flexibly electrically connecting the brush and said connecting support plate and having a length which is of limited length to prevent escape of the brush from the casing after wear of the brush;

a push-on connector electrically and mechanically engaged with the support plate and connected to an electrical connection cable;

a receiver for the brush holder casing to hold and orient the brush holder casing in the motor;

and means securing the brush holder casing to the receiver including

a support surface formed on the receiver fitting against an exterior support surface on said casing;

spaced sidewalls projecting from said support surface and fitting against exterior lateral surfaces of said brush holder casing;

and a retaining wall extending transversely with respect to said side walls, said retaining wall being formed on the receiver located in alignment with the brush holder casing and positioned to provide a stop for said combined support and electrical connecting plate and the push-on connector, and forming a counter element for said brush spring.

#### 4,340,832 DYNAMOELECTRIC MACHINE BRUSH HOLDER

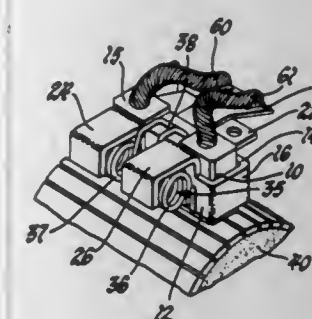
Robert A. Cheetham, Anderson, and Ralph E. Sears, McCordsville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 14, 1980, Ser. No. 196,835

Int. Cl.<sup>3</sup> H02K 13/00

U.S. Cl. 310—239

2 Claims



1. A dynamoelectric machine brush holder comprising:
- a unitary member of a suitable material formed to provide a brush accommodating recess bounded on three sides by two opposing substantially parallel side segments and a transverse segment;
- a pair of mounting flanges extending in opposite directions from and substantially normal to the ends of said side segments remote from said transverse segment;
- a brush lead lug accommodating flange extending from a selected one of said side segments in a direction away from said brush accommodating recess at a location between said transverse segment and said mounting flange;
- a pair of spring retainer members extending from and located in spaced relationship along the other one of said side segments between said transverse segment and said mounting flange with each of said retainers being formed to provide a respective spring retaining recess adjacent said brush accommodating recess;
- and a unitary torsion spring having two coils separated by an intermediate loop portion positioned in such a manner that each said coil is accommodated by a respective said spring retaining recess with said intermediate loop portion extending between said spring retainer members into said brush accommodating recess and arranged to exert a pressure on a brush located within said brush accommodating recess.

#### 4,340,833 MINIATURE MOTOR COIL

Michio Sudo, Kuki, and Hltoshi Miura, Tatebayashi, both of Japan, assignors to Kango Denikiki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1980, Ser. No. 207,484

Claims priority, application Japan, Nov. 26, 1979, 54-153175

Int. Cl.<sup>3</sup> H02K 1/12

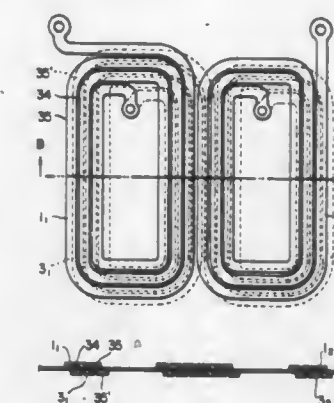
U.S. Cl. 310—268

17 Claims

1. A printed circuit miniature motor coil comprising:
- an insulating sheet;
- a plurality of printed circuit spiral type first coils of substantially the same shape and size disposed on one surface of said insulating sheet;
- a like plurality of printed circuit second coils having substantially the same shape and size as said first coils, said second coils being disposed on the other surface of said insulating sheet in opposing relation respectively to each of said first coils and, when viewed from the same direction, having their spiral direction reverse to that of said first coils, the inner end of each of said spiral first coils being connected to the inner end of the opposing one of said second coils via a connection section which passes through said insulating sheet, and the outer ends of said first and second

coils also being connected to one another such that all the coils are in series connection; and

first and second terminals respectively provided at the opposite ends of said series connection of coils for energizing said series connected coils so that each of said first coils produces magnetic flux which is in phase with the flux produced by the opposing one of said second coils; the relative positions of the opposing first coils and second coils in each pair of opposing coils being shifted relative to



one another to enhance the mechanical strength of the motor coil sheet, the shifted relationship being such that the conductor portion of at least one winding on one coil of each pair of opposing first and second coils overlies the space between the conductor portions of two adjacent windings of the other coil in said pair of coils and overlaps the said conductor portions of said two adjacent windings of the other coil, the overlapping part being more than half the length of a coil in the longitudinal direction of the conductor section of the one winding.

#### 4,340,834 SURFACE ACOUSTIC WAVE RESONATOR DEVICE

Kouji Sato, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

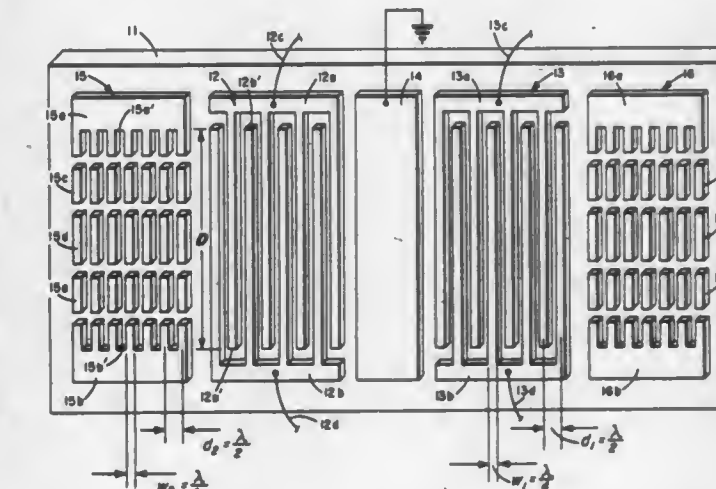
Filed Aug. 27, 1980, Ser. No. 181,746

Claims priority, application Japan, Aug. 31, 1979, 54-110301

Int. Cl.<sup>3</sup> H03H 9/26

U.S. Cl. 310—313 D

14 Claims



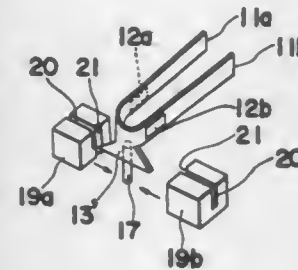
1. A surface acoustic wave resonator device comprising:
- a substrate having at least a surface layer of piezoelectric material;
- at least one interdigital transducer means having an effective length and disposed on the piezoelectric surface for converting an input electrical signal to surface acoustic waves which propagate on the piezoelectric surface of the substrate;
- a pair of spaced grating reflector means, each having an aperture length and disposed on the piezoelectric surface for reflecting the surface acoustic waves, the aperture length of each grating reflector means having substan-



tially the same effective length as the interdigital transducer means; and  
at least one of said grating reflector means including means for suppressing higher transverse modes, said suppressing means comprising a first group of interconnected parallel spaced conductors, a second group of interconnected parallel spaced conductors, each conductor of said second group being aligned with a corresponding conductor of said first group, and at least one group of isolated parallel conductors positioned between said first and second groups of conductors, each conductor of said one group being aligned with a corresponding conductor of said first group and a corresponding conductor of said second group.

**4,340,835**  
**PIEZOELECTRICALLY DRIVEN TUNING FORK WITH INTEGRAL DAMPER MEMBER**  
Takeshi Nakamura, Uji, and Yoshimasa Yamashita, Kameoka, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

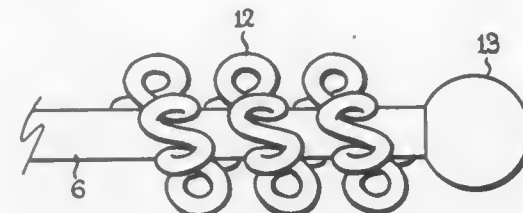
Continuation of Ser. No. 5,197, Jan. 22, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 178,892  
Claims priority, application Japan, Jan. 21, 1978, 53/8685  
Int. Cl.<sup>3</sup> H01L 41/08  
U.S. Cl. 310—321



1. A tuning fork, comprising:
  - a tuning fork vibrator of approximately U-shape, having a base portion and two arms, the arms of said U-shaped vibrator being vibrating pieces;
  - a damping piece in mechanical contact with said base portion of said U-shaped vibrator;
  - support means for supporting said damping piece, said support means and said damping piece cooperating to support said tuning fork vibrator; said support means being in electrical contact with said base portion of said vibrator so as to form an electrical terminal for said tuning fork vibrator, said support means being physically separated from said base portion by said damping piece;
  - at least one piezoelectric element located on one of said vibrating pieces of said tuning fork vibrator;
  - a housing containing said tuning fork vibrator, supporting said support means and provided with an electrical terminal connected to said piezoelectric element;
  - the mass of said tuning fork vibrator being a large enough fraction of the combined mass of said vibrator, said support means, said damping piece, said at least one piezoelectric element and said housing to cause a significant spurious response in the vicinity of approximately one-half the natural frequency of said tuning fork vibrator; and
  - a damper means provided between and in mechanical contact with said damping piece and said housing, for damping vibrations of said tuning fork vibrator in the vicinity of approximately one-half of said natural vibration frequency of said tuning fork vibrator.

**4,340,836**  
**ELECTRODE FOR MINIATURE HIGH PRESSURE METAL HALIDE LAMP**  
Rolf S. Bergman, Cleveland Hts., and William H. Lake, Novelty, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

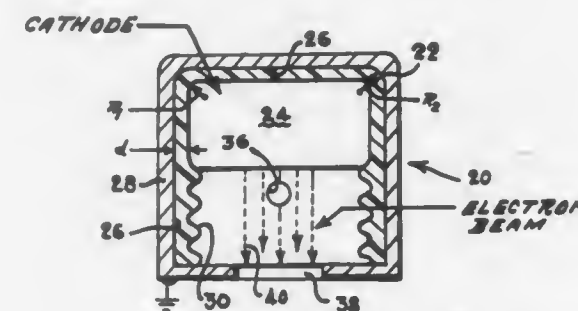
Filed Sep. 11, 1978, Ser. No. 940,957  
Int. Cl.<sup>3</sup> H01J 17/06, 61/073  
U.S. Cl. 313—211



1. A miniature metal vapor lamp arc tube comprising a fused silica envelope having a volume not exceeding 1 cc and containing an ionizable fill comprising mercury and metal halides, electrodes without alkaline earth electron emission material sealed into opposite ends of said envelope for supporting a discharge current not exceeding 1 ampere, each electrode comprising a tungsten shank in the range of 5 to 15 mils and above the wire size at which melt-back occurs at the current level in said lamp, and a mandrel-less coiled-coil single-layer overwind of primary tungsten wire not exceeding 3 mils originally wound on a primary mandrel of 3 to 7 mils subsequently removed, said overwind being wrapped around said shank and extending short of the tip thereof.

**4,340,837**  
**LOW VOLUME, LIGHTWEIGHT, HIGH VOLTAGE ELECTRON GUN**  
Thomas W. Meyer, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 10, 1980, Ser. No. 110,960  
Int. Cl.<sup>3</sup> H01J 1/88, 19/42  
U.S. Cl. 313—259



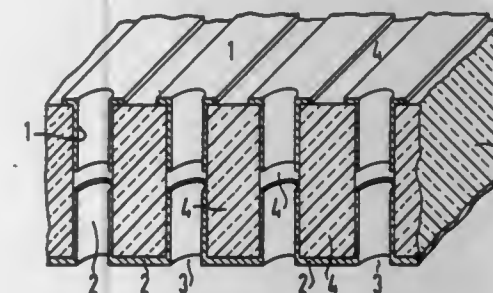
1. A low volume, lightweight, high voltage electron gun comprising a housing, said housing having sides made of electrically conductive material, one of said sides having means therein for allowing a stream of electrons to pass therethrough, a cathode, said cathode being mounted juxtaposed at least a portion of all of said sides of said housing except said side having said electron passing means therein, a high voltage source being operably connected to said cathode, said high voltage source producing at least one hundred thousand volts, a thin piece of solid dielectric material having a preselected breakdown strength being interposed between said cathode and said sides of said housing juxtaposed said cathode, said dielectric material being in direct contact with both said cathode and said sides of said housing juxtaposed said cathode as well as being in direct contact with all other portions of said sides of said housing except said side having said electron passing means therein, said preselected breakdown strength of

said dielectric material being greater than the voltage stress between said cathode and said sides of said housing juxtaposed thereto and means operably connected to the interior of said housing for creating a vacuum therein.

**4,340,838**  
**CONTROL PLATE FOR A GAS DISCHARGE DISPLAY DEVICE**

Manfred Kobale, Faistenhaar; Burkhard Littwin, Hohenschaeftlarn, and Rolf Wengert, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 15, 1980, Ser. No. 149,915  
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1979, 2931077  
Int. Cl.<sup>3</sup> H01J 1/46  
U.S. Cl. 313—348



1. A control plate for a gas discharge display device comprising:
  - a carrier plate consisting of electrically insulating material;
  - a plurality of spaced parallel metallic row conductor tracks disposed on a first side of said carrier plate;
  - a plurality of spaced parallel metallic conductor tracks disposed on a second opposite side of said carrier plate perpendicularly with respect to said row conductor tracks, said row and column conductor tracks in combination forming a matrix;
  - a plurality of control holes disposed in said carrier plate at points of intersection of said row and column conductor tracks in said matrix,
  - said metallic row and column tracks respectively extending a distance into said control holes from opposite sides of said carrier plate and separated within said control holes by a gap of exposed insulating material of said carrier plate forming a ring of high resistance.

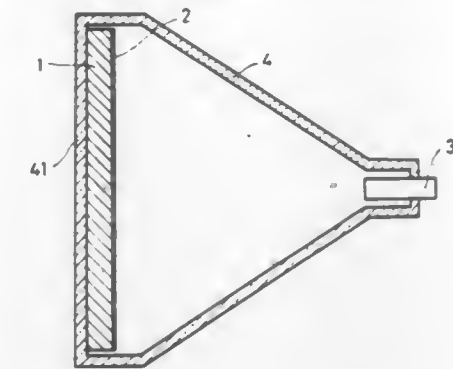
**4,340,839**  
**ZINC SULFIDE CERAMIC MATERIAL AND CATHODE RAY TUBES USING THE SAME**

Yosuke Fujita, Ashiya; Fumio Fukushima, Moriguchi; Yoji Fukuda, Hirakata, and Tsuneharu Nitta, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 20, 1979, Ser. No. 105,862  
Claims priority, application Japan, Dec. 27, 1978, 53-165776; Jun. 11, 1979, 54-73423  
Int. Cl.<sup>3</sup> H01J 29/20; C04B 35/00; C09K 11/10  
U.S. Cl. 313—466

1. Particles of zinc sulfide sintered ceramic material adapted for use as the luminescent screen in a cathode ray tube consisting essentially of zinc sulfide and at least one element selected from the group consisting of Ca, Sr and Ba.
3. Particles of zinc sulfide sintered ceramic material adapted for use as the luminescent screen in a cathode ray tube, said material consisting essentially of zinc sulfide; at least one element selected from the group consisting of Ca, Sr and Ba;

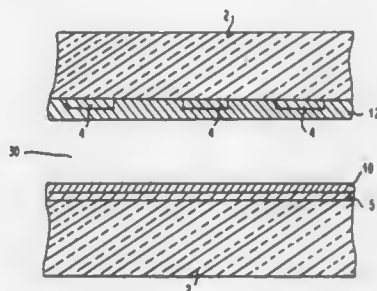
at least one activator selected from the group consisting of Au, Ag, Cu, Mn and Tb; and



at least one co-activator selected from the group consisting of Al, Ga, In, Cl, Br and I.

**4,340,840**  
**DC GAS DISCHARGE DISPLAY PANEL WITH INTERNAL MEMORY**  
Mohamed O. Aboelfotoh, Poughkeepsie, and Marvin B. Skolnik, Kingston, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,564  
Int. Cl.<sup>3</sup> H01J 61/56  
U.S. Cl. 315—58



1. A D.C. gaseous discharge display device with internal memory comprising in combination,
  - an ionizable gaseous medium in a gas chamber formed by a pair of glass plates,
  - a parallel cathode conductor array disposed on one of said glass plates,
  - a parallel anode conductor array disposed on the other of said pair of glass plates,
  - said first and second conductor arrays being disposed substantially orthogonal to each other, the intersections of said cathode and anode conductors defining gas discharge cells,
  - a layer of resistive material overlying one of said conductor arrays to provide a uniform and stable resistance to and to limit the current through each of said cells during discharge of said gaseous discharge display device, and
  - a cermet layer overlying the other of said conductors arrays.

**4,340,841**  
**INTERNAL SHUNT FOR SERIES CONNECTED LAMPS**  
Lewis J. Schupp, Chesterland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

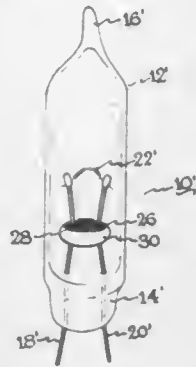
Filed May 22, 1980, Ser. No. 152,425  
Int. Cl.<sup>3</sup> H01J 7/44, 17/34, 19/78, 29/96  
U.S. Cl. 315—75

1. In an incandescent lamp having a light-transmitting envelope, a refractory metal filament connected between a pair of metal inleads and said inleads being spaced apart by an electrically insulative bead member, the improvement wherein a shunt material comprising an admixture of conductive metal particulates, an inorganic binder, and conductive non-metallic particulates exhibiting voltage breakdown behavior, is adhe-



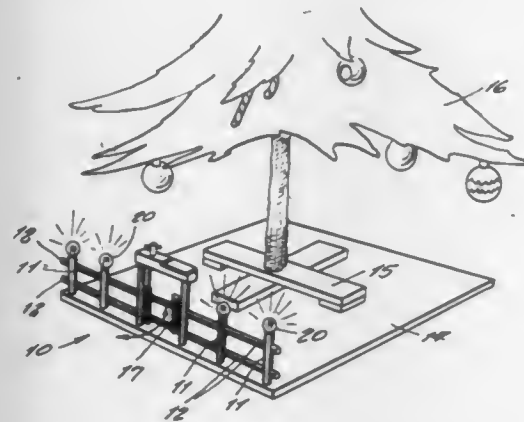
sively bonded to said insulative bead member interconnecting and in physical contact with both spaced apart inleads, wherein the proportions in said admixture are maintained so that electrical conduction continues to take place between the metal particles after the breakdown voltage has been exceeded.

6. In an incandescent lamp having a light-transmitting glass envelope, a tungsten metal filament connected between a pair of metal inleads, said inleads being spaced apart by a glass bead member, and said lamp glass envelope being hermetically



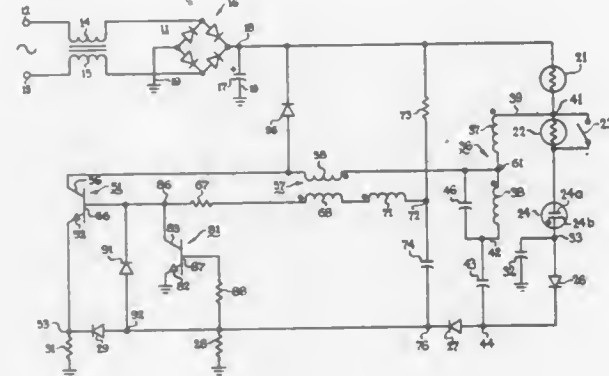
sealed to said inleads, the improvement wherein a shunt material comprising an admixture of conductive metal particulates, an inorganic binder, and conductive non-metallic particulates exhibiting voltage breakdown behavior is adhesively bonded to said glass bead member interconnecting and in physical contact with both spaced apart inleads wherein the proportions in said admixture are maintained so that electrical conduction continues to take place between the metal particles after the breakdown voltage has been exceeded.

**4,340,842**  
**CHRISTMAS TREE DECORATION**  
Paul M. King, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007  
Filed Jun. 11, 1981, Ser. No. 172,286  
Int. Cl.<sup>3</sup> A63H 33/26  
U.S. Cl. 315—186  
2 Claims



1. An electric lighted fence, comprising in combination, a miniature decorative display including a fence and a gate hinged on said fence, said fence being comprised of a plurality of fence posts and rails therebetween, a lamp on each said fence post, an electrical circuit to light up said lamps, and a mechanism to reciprocally swing said gate, said gate opening and closing a switch of said circuit.

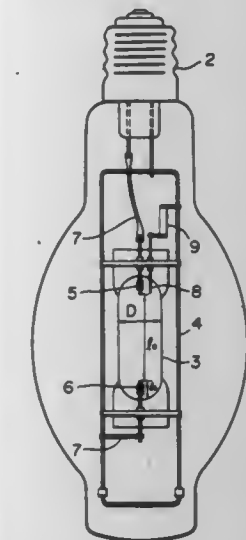
**4,340,843**  
**KEEP-ALIVE CIRCUIT FOR GAS DISCHARGE LAMP**  
Thomas E. Anderson, South Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.  
Continuation of Ser. No. 29,320, Apr. 12, 1979, abandoned. This application Feb. 19, 1980, Ser. No. 122,400  
Int. Cl.<sup>3</sup> H05B 37/00, 39/00, 41/14  
U.S. Cl. 315—205  
9 Claims



1. A keep-alive circuit for maintaining the arc in an operating arc lamp, comprising circuitry for generating a pulsating voltage, means to activate said circuitry whenever the arc current in said arc lamp reduces to a first given value below the normal range of operating values and greater than zero, means to apply said pulsating voltage to said arc lamp before the arc has time to extinguish, to maintain the arc and increase the arc current, and means to inactivate said circuitry when said arc current increases to a second given value, said second given value of arc current being greater than said first given value thereof.

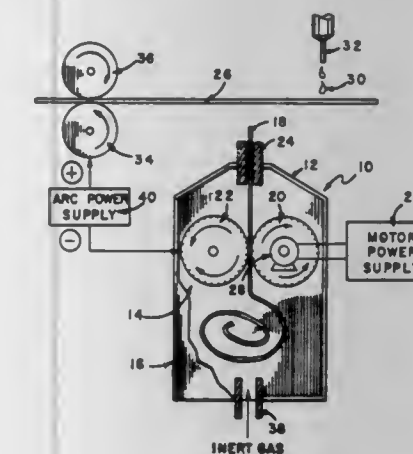
3. A circuit for starting and operating a gas-filled, high-pressure high-intensity type of arc lamp from an electric power source, comprising an oscillatory circuit for providing pulsating voltage, means for applying to said arc lamp a starting voltage derived from said oscillatory circuit for a time period until an operating arc is established in said lamp, means to inactivate said oscillatory circuit when said operating arc is established, means connected for ballasting said arc lamp for operation from said electric power source, and a keep-alive circuit for maintaining the arc in said lamp, said keep-alive circuit comprising means to activate said oscillatory circuit whenever the arc current in said lamp reduces to a first given value greater than zero and below the normal range of operating values and thus causing said starting voltage to be applied to said arc lamp before the arc has time to extinguish, to maintain the arc and increase the arc current, and means to inactivate said oscillatory circuit when said arc current increases to a second given value, said second given value of arc current being greater than said first given value thereof.

**4,340,844**  
**LIGHTING EQUIPMENT**  
Michihiro Tsuchihashi, Masato Saito, Keiichi Baba, and Yusaku Matsushima, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan  
Filed Mar. 12, 1979, Ser. No. 19,931  
Claims priority, application Japan, Mar. 10, 1978, 53-28122  
Int. Cl.<sup>3</sup> H05B 41/16  
U.S. Cl. 315—283  
2 Claims



1. A lighting equipment which comprises a high pressure metal vapor discharge lamp having a rated operating lamp voltage of 145 to 180 V, which is actuated by a lag type ballast supplied with a voltage of lower than 220 V.

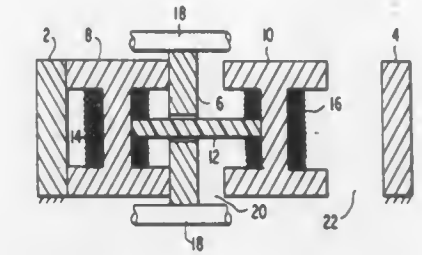
**4,340,845**  
**STABILIZED CATHODE ASSEMBLY FOR ARC LIGHT SOURCE**  
Karl J. Hildebrand, Tyngsboro, and John Leeman, Andover, both of Mass., assignors to Leeman Labs, Inc., Tewksbury, Mass.  
Filed Jul. 16, 1980, Ser. No. 169,288  
Int. Cl.<sup>3</sup> H01J 1/02  
U.S. Cl. 315—327  
12 Claims



1. In an arc light source comprised of an anode, a cathode, and a direct current power supply connected between said anode and said cathode, a stabilized cathode assembly comprising in combination:

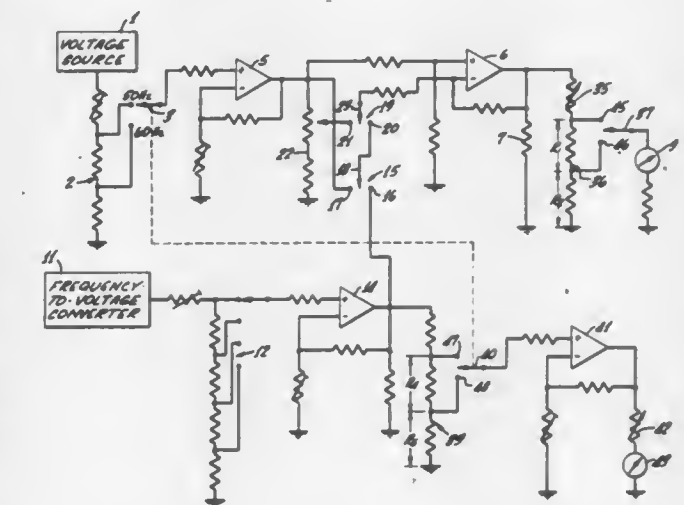
- a cathode comprising a length of electrically conducting braid consisting of a bundle of interwoven electrically conducting fibers, said braid having an unattached end transverse the longitudinal axis of said braid; and
- cathode support means arranged to position said unattached end of said braid in close proximity to said anode whereby an arc path is established between said end and said anode.

**4,340,846**  
**MAGNETIC APPARATUS FOR PRODUCING MOVEMENT**  
J. William Putt, 1162M S. Cedar Crest Blvd., Allentown, Pa. 18103  
Continuation-in-part of Ser. No. 634,568, Nov. 24, 1975, abandoned, Ser. No. 758,227, Jan. 10, 1977, Pat. No. 4,121,139, and Ser. No. 951,710, Oct. 16, 1978, Pat. No. 4,249,115. This application Dec. 18, 1980, Ser. No. 217,928  
Int. Cl.<sup>3</sup> H02K 33/16  
U.S. Cl. 318—135  
11 Claims



1. Apparatus for producing movement, comprising, a pair of paramagnetic members which are relatively movable in an axial direction from mutually distant positions to mutually proximate positions, said members being separated by a gap which has an axial thickness and which opens and closes as the members move relatively away from and toward each other, electrical windings on one of said paramagnetic members, said windings when energized being operable to provide a magnetic field which pulls the paramagnetic members together and closes the gap between them, means for energizing the windings by causing an electrical current to flow therethrough creating a magnetomotive force in the respective paramagnetic member, and control means for gradually reducing said magnetomotive force while the gap is being closed by the field and the axial thickness thereof is decreasing, whereby electrical energy is conserved.

**4,340,847**  
**APPARATUS FOR SUPERVISING AND CONTROLLING THE OUTPUT POWER OF INDUCTION MOTORS**  
Kaichi Izumi, Tokyo, Japan, assignor to Kao Soap Company Limited, Tokyo, Japan  
Filed Aug. 25, 1980, Ser. No. 180,634  
Claims priority, application Japan, Sep. 7, 1979, 54/115007  
Int. Cl.<sup>3</sup> H02K 11/00  
U.S. Cl. 318—490  
11 Claims



1. An apparatus for supervising and/or controlling the output power of an induction motor comprising:



means for generating a first voltage signal (Ha) which varies with the actual speed of said motor in operation;  
 means for generating a second voltage signal (S) corresponding to the synchronous speed of said motor;  
 means for generating a third voltage signal (H) proportional to the speed of said motor at the rated maximum output;  
 circuit means for generating voltage signals proportional to S-H or S-Ha;  
 a first voltage divider circuit coupled to the output of said circuit means for changing the scale of said voltage proportional to S-Ha;  
 a second voltage divider circuit coupled to the output of said first voltage signal generating means for producing an output voltage indicative of the actual speed of said motor in operation irrespective of the frequency of said voltage source; and  
 indicator means responsive to said first and/or second voltage divider circuits.

4,340,848

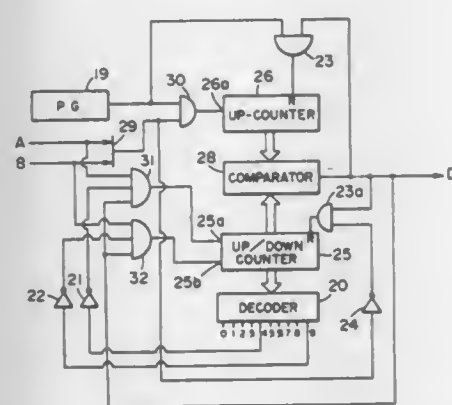
# APPARATUS FOR CONTROLLING THE PULSE PERIOD OF PULSES APPLIED TO A PULSE MOTOR

Takayoshi Hanagata, and Atsushi Noda, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan  
 Filed Aug. 21, 1980, Ser. No. 180,094

Claims priority, application Japan, Aug. 31, 1979, 54/111275  
 Int. Cl.<sup>3</sup> G05B 13/00

U.S. Cl. 318-561

9 Claims



1. Apparatus for controlling the pulse period of pulses applied to a pulse motor, comprising:  
 means for generating addition and subtraction instruction signals;  
 means for generating pulse signals at constant periods;  
 first counting means for counting the number of pulses from said pulse generating means;  
 second counting means for carrying out counting up and down in accordance with said addition and subtraction instruction signals;  
 means for comparing the output of said first counting means with that of said second counting means to produce a coincidence signal;  
 means for applying an addition input to said second counting means upon the coincidence of said addition instruction signal, a preselected output of said second counting means and a coincidence signal from said comparing means, and for applying a subtraction input to said second counting means upon the coincidence of said subtraction instruction signal, a preselected output of said second counting means and a coincidence signal from said comparing means; and  
 a pulse motor connected to receive the coincidence signals from said comparing means.

4,340,849  
**RIPPLE-COMPENSATED VOLTAGE REGULATOR, PARTICULARLY FOR AUTOMOTIVE USE**  
 Edgar Kuhn, Gerlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany  
 PCT No. PCT/EP79/0024, § 371 Date Dec. 4, 1979, § 102(e)  
 Date Nov. 29, 1979, PCT Pub. No. WO79/00878, PCT Pub. Date Nov. 1, 1979

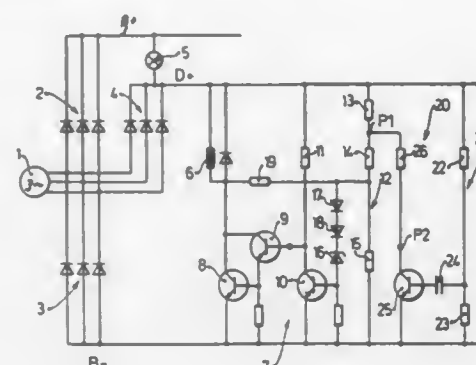
PCT Filed Mar. 27, 1979, Ser. No. 185,907

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1978, 2814424

Int. Cl.<sup>3</sup> H02J 7/14

U.S. Cl. 322-28

4 Claims



1. Ripple-compensated voltage regulator circuit for connection to and in combination with an electrical generator, especially an AC generator, having a field winding, for the on-board electrical supply in motor vehicles, ships, and the like, having a main switching circuit including a semiconductor switch (8, 9) serially connected with the field or exciter winding (6) of the generator;  
 a control transistor (10) having its main switching path connected to the control terminal of the semiconductor switch, and to the output of the generator;  
 a voltage divider (13, 14, 15) connected across the output of the generator;  
 a Zener diode (16) connected to a junction of the voltage divider and to the base of the control transistor (10) to provide for conduction of the control transistor when the generator voltage exceeds the nominal or set-point voltage defined by the Zener diode (16) and thus switches the semiconductor switch (8, 9) of the regulator into non-conducting state, thereby blocking current flow through the exciter or field winding (6), said control transistor becoming blocked or non-conducting whenever the generator voltage drops below the nominal set-point voltage defined by the Zener diode (16) to permit the semiconductor switch (8, 9) of the regulator to become conductive and permit current flow through the exciter or field winding (6);  
 and further comprising a compensation circuit (20) including an active semiconductor switch (25) connected as an inverter, controlled by the undulating portion of the voltage supplied by the generator, and supplying a compensation voltage (11) of opposite phase to the undulating portion of the voltage supplied by the generator to a tap point of said voltage divider, whereby the Zener diode will receive a control voltage unaffected by generator ripple.

4,340,850

**TEMPERATURE RESPONSIVE CONTROL CIRCUIT**  
 Ronald A. Segars, Hopkinton, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 8, 1980, Ser. No. 184,867

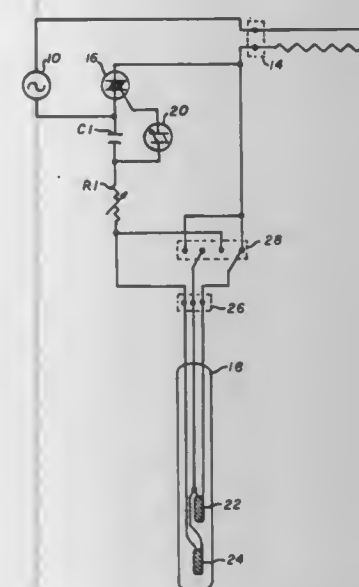
Int. Cl.<sup>3</sup> G05F 1/00

U.S. Cl. 323-218

4 Claims

1. A temperature responsive control comprising:  
 a gate current controlled solid state switch; means for connecting said solid state switch in series with a source of

alternating current and a load; and gate current control means for said solid state switch, said gate current control means including:  
 voltage sensitive switch means, said switch means being normally non-conductive and having first and second terminals, a first terminal of said switch means being connected to the gate of said solid state switch; capacitor means connected between the current source and the second terminal of said switch means; and resistance means connected between the said second terminal of said switch means and the load, said resistance means compris-



ing a variable resistor; a first and second posistor; and switch means for selectively connecting said first and second posistors in series or in parallel and the selected series or parallel combination of posistors is connected in series with said variable resistor, said resistance means being at least in part voltage and temperature responsive whereby the rate at which said capacitor means charges will be a function of a monitored temperature and the source voltage, said switch means becoming conductive to supply gate current to said solid state switch when said capacitor means charges to a predetermined level.

4,340,851

# POWERLESS STARTING CIRCUIT

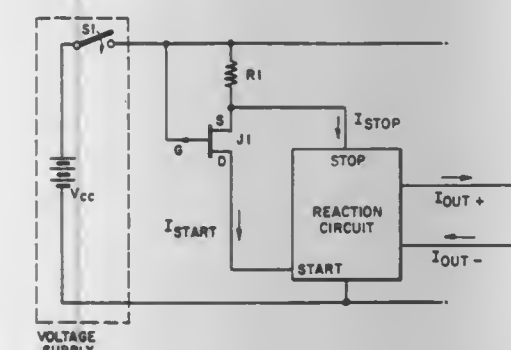
Yukio Nishikawa, San Jose, Calif., assignor to Precision Monolithics, Inc., Santa Clara, Calif.

Filed Jun. 18, 1980, Ser. No. 160,674

Int. Cl.<sup>3</sup> G05F 3/16

U.S. Cl. 323-311

21 Claims



1. An improved start-up circuit for a bias circuit connected to a supply voltage and having biasing currents independent of said voltage but stable at either zero or nonzero values when said supply voltage is nonzero, and also having sufficient regenerative feedback to raise the level of said biasing current to said nonzero stable value in response to only a slightly nonzero starting current injected into said bias circuit, said start up circuit comprising:

field effect transistor means, having gate means connected and source means coupled to said supply voltage and

having drain means and said source means connected to said bias circuit, for injecting a starting current of small value relative to said nonzero value through said drain means into said bias circuit and for disconnecting said starting circuit from said bias circuit;  
 resistor means, connected between said supply voltage and said source means, providing a path from said supply voltage to said bias circuit for a current related to said biasing current level; and  
 said field effect transistor means being responsive to said related current whereby said injection of starting current into said bias circuit causes said feedback to raise said level of said biasing currents to said nonzero value and thereby initiate the flow of said related current through said resistor means, whereupon said field effect transistor means effects said disconnection, with said start-up circuit drawing no power from said voltage supply after said disconnection.

4,340,852

# SCANNING SYSTEM USING ALTERNATING CURRENT FOR INDICATING THE OPEN, CLOSED AND GROUND CONDITION OF A CONTACT

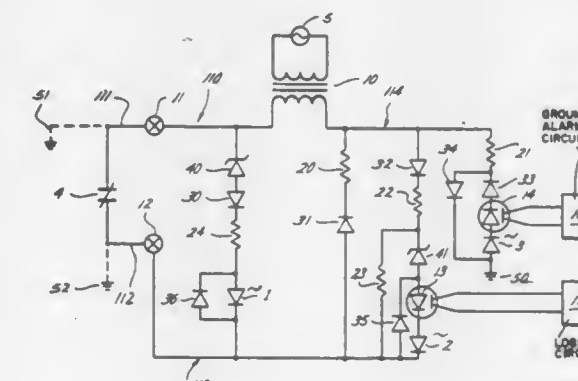
Mauro G. Togneri, P.O. Box 12818, Houston, Tex. 77017

Filed Aug. 9, 1979, Ser. No. 65,370

Int. Cl.<sup>3</sup> G01R 31/02

U.S. Cl. 324-51

8 Claims



1. An alternating-current input and scanning system, with an alternative polarity power source, for scanning an open or closed field loop wherein such field loop may be subject to a ground contact, comprising:  
 first input processing means responsive to one-half cycle of such power source for detecting such closure of such field loop, said first input processing means being electrically connected to such field loop and such power source;  
 second input processing means responsive to the other one-half cycle of such power source for detecting such opening of such loop, said second input processing means being electrically connected to such field loop and such power source; and  
 ground control processing means responsive to such power source and such ground contact for producing an alternating polarity ground signal indicating the status of such ground contact within such field loop.







which contact said product; and wherein said means for making electrical connection to said pins comprises: a series of parallel, spaced contacts connected to said second member, along said longitudinal side edge thereof, the spacing between said contacts being the same as the spacing between said channels whereby a contact is aligned with each of said channels, each of said contacts being electrically connected to a different one of said conductive leads and being positioned to contact a different one of said pins for completing an electrical circuit therebetween.

#### 4,340,859 MODULAR INCUBATOR CONTROL SYSTEM WITH SELF-TEST CAPABILITY

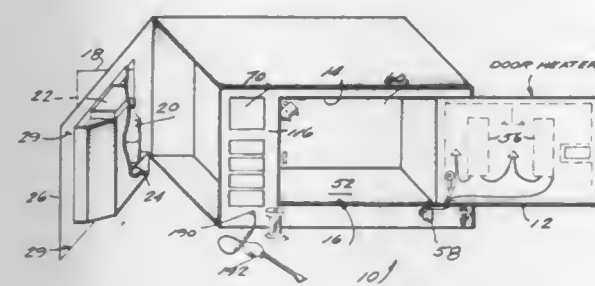
Max F. Farley, Marietta, Ohio, assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Apr. 18, 1980, Ser. No. 141,275

Int. Cl.<sup>3</sup> G01R 31/02; C12M 1/38

U.S. Cl. 324—158 R

6 Claims



1. A modular incubator control system with self-testing capability, said system comprising:  
a frame structure having plural electrical plug connectors;  
plural incubator control modules;  
each module including electronic means for monitoring and controlling at least one condition of the incubator's internal incubated environment and having a respective front panel portion normally visible to an incubator operator and a rear portion plug-connectable with said frame structure at a respectively corresponding one of said plug connectors;  
each said electronic means including voltage measuring and indicating means having an input for measuring the magnitude of a voltage and for visually displaying a numerical representation of that voltage at the front panel portion of its respective module;  
each said electronic means having electronic circuits and also including multiposition test switch means disposed behind said front panel in a position that is not normally accessible to an operator and connected to selectively connect the input of its respective voltage measuring and indicating means to a selected one of plural predetermined points within its electronic circuits, each said multiposition test switch means having a normal position in which its respective module operates normally to monitor and visually display the value of its respective environmental condition and having plural test positions in each of which the module displays, for diagnostic test purposes, a representation of the electrical voltage at a corresponding predetermined position within its electrical circuits; and  
circuit extension means selectively connectable between any of said plug connectors and its associated control module for physically positioning the module to permit ready operator access to said multiposition test switch means while still leaving the module fully operable through electrical connection with its respective plug connector when it is desired to perform diagnostic tests.

#### 4,340,860 INTEGRATED CIRCUIT CARRIER PACKAGE TEST PROBE

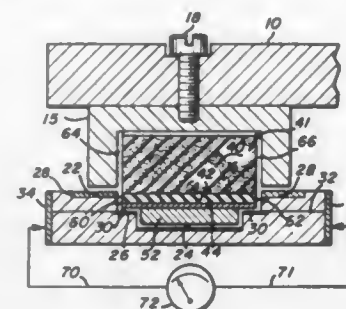
Lawrence R. Teeple, Jr., Palo Alto, Calif., assignor to Trigon, Mountain View, Calif.

Filed May 19, 1980, Ser. No. 151,128

Int. Cl.<sup>3</sup> G01R 31/02

U.S. Cl. 324—158 F

9 Claims



1. A test probe for facilitating the conductor continuity testing of integrated circuit carrier packages of the type having a cavity for receiving an integrated circuit chip and having conductors extending between exterior contact points disposed along the outside edges of the package and interior contact points disposed within said cavity, comprising:  
test probe head means including;  
an elastomeric member having at least a portion shaped to matingly penetrate into the chip receiving cavity of said integrated circuit carrier package, the distal surface of said portion forming an outer face; and  
a thin metal foil plate means configured to be approximately co-extensive in size with said outer face and joined thereto, said foil plate means being formed to make simultaneous electrical contact with each interior contact point located within said chip receiving cavity; and  
means for carrying said probe head means so as to position said elastomeric member in aligned relation to and in mating engagement with said chip receiving cavity whereby said foil plate means simultaneously engages and shorts all of said interior contact points together so that continuity testing of each said conductor can be accomplished by contacting pairs of said exterior contact points with a continuity tester.

#### 4,340,861 METHOD OF MEASURING MAGNETIC FIELD CHARACTERISTICS OF MAGNETIC MATERIALS

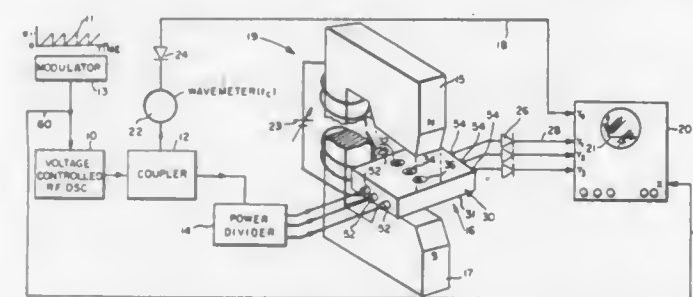
Richard A. Sparks, Bedford, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 3, 1980, Ser. No. 126,260

Int. Cl.<sup>3</sup> G01R 33/12, 35/00; G01N 27/72; G01R 33/02

U.S. Cl. 324—205

8 Claims



1. A method of measuring a magnetic field comprising the steps of:  
(a) passing a magnetic field of a calibrating magnet through a cavity in an apparatus having disposed therein a material adapted to produce ferromagnetic resonance;  
(b) coupling radio frequency energy into said cavity;  
(c) positioning said material within said cavity to produce a

first output signal having a frequency related to the magnetic field of the calibrating magnet passing into the cavity and through said material;  
(d) passing a second magnetic field to be measured into the cavity and through the positioned material;  
(e) coupling radio frequency energy into said cavity to generate a second output signal; and  
(f) comparing the frequency of the first output signal with the frequency of the second output signal to provide a measure of the second magnetic field.

#### 4,340,862 IMAGING SYSTEMS

William S. Percival, London, and Peter E. Walters, Southall, both of England, assignors to Picker International Limited, Wembley, England

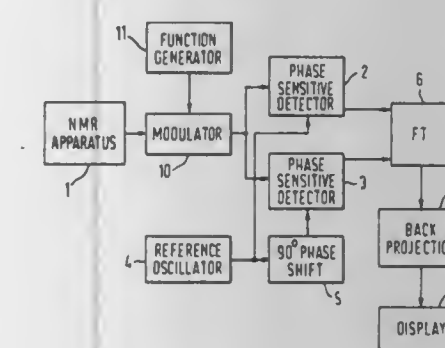
Filed Dec. 10, 1979, Ser. No. 102,113

Claims priority, application United Kingdom, Dec. 13, 1978, 48214/78

Int. Cl.<sup>3</sup> G01N 27/00

U.S. Cl. 324—309

10 Claims



1. A circuit for processing a nuclear magnetic resonance signal to provide an output signal which is substantially the convolution of the Fourier transform of the resonance signal, with a predetermined convolution function, the circuit including function generating means providing a modulation function which is substantially the inverse Fourier Transform of the predetermined convolution function, means for modulating the resonance signal with said modulating function and means for Fourier transforming the modulated signal to provide the output signal.

#### 4,340,863 SMOOTH PULSE SEQUENCE GENERATOR

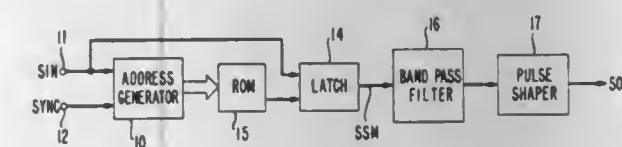
Dominick Scordo, Union, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 23, 1980, Ser. No. 152,647

Int. Cl.<sup>3</sup> H03K 5/13

U.S. Cl. 328—63

8 Claims



1. A pulse sequence generator of the type capable of dividing a reference signal having a uniform pulse sequence by a predetermined rational fraction to produce a smooth pulse sequence, characterized by,  
means responsive to the reference signal for generating a sequence of address signals, and  
memory means having predetermined digital representation stored in predetermined ones of a plurality of memory locations defining pulse transitions of said smooth pulse sequence which when read-out in response to said se-

quence of address signals form said smooth pulse sequence.

#### 4,340,864 FREQUENCY CONTROL SYSTEM

Christopher W. Malinowski, Unterseesheim, and Heinz Rinderle, Heilbronn, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

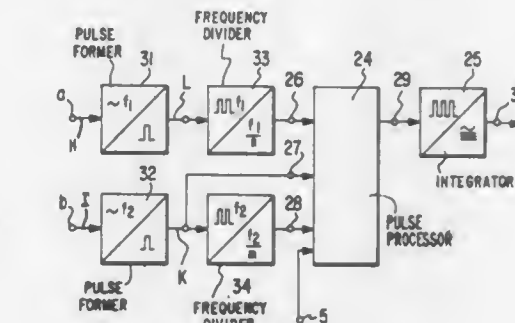
Continuation of Ser. No. 957,006, Nov. 2, 1978, abandoned. This application Dec. 17, 1980, Ser. No. 217,404

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1978, 2844936; Oct. 16, 1978, 2844938; Oct. 16, 1978, 2844939; Oct. 16, 1978, 2845005; Oct. 16, 1978, 2845006

Int. Cl.<sup>3</sup> H03D 13/00; H03L 7/00

U.S. Cl. 328—133

1 Claim



1. A circuit for producing a frequency dependent output signal in response to two a.c. input signals comprising: converter means connected to receive the two a.c. input signals for furnishing an output signal having a steady state d.c. component which varies in dependence on changes in the value of a relationship between the frequencies of the two a.c. input signals, which relationship covers a range containing unequal frequency values for the two input signals; and means connected to said converter means for producing an a.c. output signal whose frequency is a function of the value of such d.c. component, wherein said converter means comprises a pulse processor producing an output signal from two input pulse signals constituting the a.c. input signals, said pulse processor including means producing an output signal in the form of a pulse train the repetition frequency of which is proportional to the frequency of one a.c. input pulse signal and the duration of each pulse of which is inversely proportional to the frequency of the other input pulse signal, and integrating means connected to generate from the output signal in the form of a pulse train a signal corresponding to the time integral thereof and constituting the steady state d.c. component of said converter means output signal.

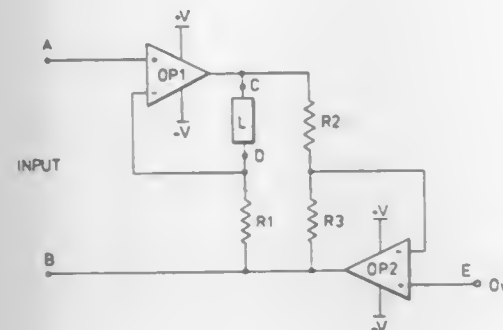


**4,340,865**  
**ELECTRIC AMPLIFIER CIRCUITS THAT RESPOND TO AN INPUT SIGNAL OF EITHER POLARITY TO PRODUCE AN OUTPUT SIGNAL HAVING A POLARITY CORRESPONDING TO THAT OF THE INPUT SIGNAL**  
 Peter Woodhead, Stafford, England, assignor to The General Electric Company Limited, London, England

Filed Feb. 4, 1980, Ser. No. 118,577  
 Claims priority, application United Kingdom, Feb. 13, 1979, 7905104

Int. Cl.<sup>3</sup> H03F 3/45, 1/34  
 U.S. Cl. 330—69

6 Claims



1. An electric amplifier circuit for producing in response to an input signal, which may be of either polarity, an output signal of magnitude and polarity determined by the input signal, the circuit comprising: a first differential amplifier; a pair of terminals to which the input signal is applied in operation; a connection between one input terminal and one of the inputs of the first amplifier; first and second resistances connected in series, in the order stated, between the output of the first amplifier and the other input terminal; a connection between the junction of said first and second resistances and the other input of the first amplifier; a second differential amplifier; a further terminal connected to one input of the second amplifier, to which further terminal a datum potential is applied in operation; a connection between the output of the second amplifier and the end of said second resistance nearer said other input terminal; third and fourth resistances connected in series in the order stated between the output of the first amplifier and the output of the second amplifier; and a connection between the junction of said third and fourth resistances and the other input of said second amplifier; the current in said first resistance constituting said output signal, the ratio of the values of said third and fourth resistances being substantially equal to the ratio of the supply voltages for said first and second amplifiers respectively, each said amplifier being supplied from between lines maintained at substantially equal and opposite potentials with respect to said datum potential, and the input signal being isolated from said supply voltages for the amplifiers.

**4,340,866**  
**THERMALLY-COMPENSATED VARIABLE GAIN DIFFERENTIAL AMPLIFIER**  
 Arthur J. Metz, Gervais, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

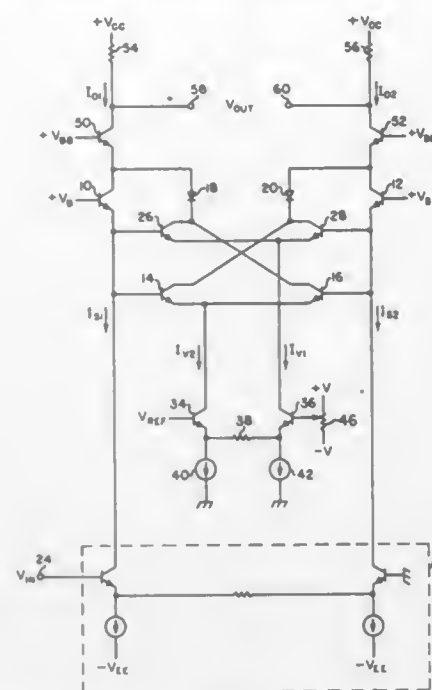
Filed Sep. 17, 1979, Ser. No. 75,779  
 Int. Cl.<sup>3</sup> H03F 3/45

U.S. Cl. 330—254

4 Claims

1. A thermal-compensated variable-gain differential amplifier, comprising:  
 a pair of common-base amplifier input transistors for receiving input currents at the emitters thereof;  
 a first emitter-coupled pair of transistors connected between the emitters of said pair of input transistors, the collectors of said first emitter-coupled pair of transistors being cross-coupled to the collectors of said input transistors;  
 a second emitter-coupled pair of transistors connected between the emitters of said pair of input transistors, the collectors of said second emitter-coupled pair of transistors being coupled to the cross-coupled collectors of said

first emitter-coupled pair of transistors and to the collectors of said pair of input transistors; and  
 differential current generator means for providing first and

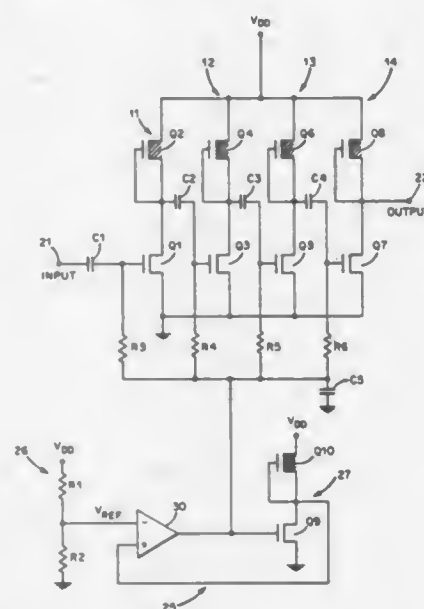


**4,340,867**  
**INVERTER AMPLIFIER**  
 Jun-ichi Sano, Chelmsford, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 5, 1980, Ser. No. 204,092  
 Int. Cl.<sup>3</sup> H03F 3/16

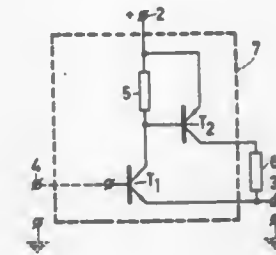
U.S. Cl. 330—277

18 Claims



1. An amplifier comprising  
 an input connection for receiving input signals;  
 an amplifier field effect transistor having a first conduction path electrode coupled to a source of operating potential and a second conduction path electrode connected to a point of fixed potential;  
 the input connection being coupled to the gate of the amplifier field effect transistor;  
 an output connection coupled to the first conduction path electrode of the amplifier field effect transistor;  
 DC bias generating means for establishing a DC bias at the amplifier input including  
 a reference field effect transistor having a first conduction

path electrode coupled to said source of operating potential and a second conduction path electrode connected to said point of fixed potential,  
 an operational amplifier having a first input connected to the first conduction path electrode of the reference field effect transistor,  
 a source of reference potential for producing a reference voltage connected to the second input of said operational amplifier,  
 the output of the operational amplifier being coupled to the gate of the reference field effect transistor and to the gate of the amplifier field effect transistor.

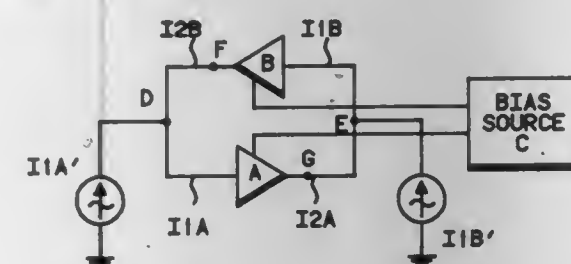


**4,340,868**  
**CURRENT MODE BIQUADRATIC ACTIVE FILTER**  
 Gary L. Pace, Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 12, 1980, Ser. No. 148,850  
 Int. Cl.<sup>3</sup> H03F 1/34

U.S. Cl. 330—294

18 Claims



1. A tunable current mode active filter comprising:  
 first and second current gain amplifier means coupled together for negative current feedback and including first and second transistors respectively;  
 a bias voltage source coupled to control the operating voltage of the filter;  
 a bias current source coupled to control the DC emitter currents of at least one of the transistors;  
 a first capacitor coupled between the collector of the first transistor and ground;  
 a second capacitor coupled between the collector of the second transistor and ground;  
 input means coupled to the amplifier means for receiving an input current;  
 first output means coupled to the amplifier means for providing a first output current having a first filter characteristic; and  
 second output means coupled to the amplifier means for providing a second output current having a second filter characteristic.

**4,340,869**  
**AMPLIFIER FOR USE IN A LINE CIRCUIT**  
 Job F. P. Van Mil, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,274  
 Claims priority, application Netherlands, May 10, 1979, 7903663

U.S. Cl. 330—310

Int. Cl.<sup>3</sup> H03F 1/08

5 Claims

1. An amplifier for use in a line circuit comprising an output impedance, an output transistor, a d.c. voltage source, said voltage source being coupled for direct current to a subscriber line connecting terminal of said amplifier by means of a main current path of said output transistor for applying by means of said output impedance a direct current and an alternating current superimposed on said direct current to a load such as a wire of said subscriber's line connected to said connecting terminal, a first resistor which is arranged in series with said main current path of said output transistor between said voltage source and an output terminal that is coupled to said subscriber line connecting terminal, and a second transistor which

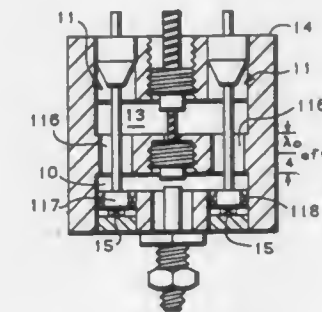
means of the series arrangement of said main current path of said second transistor and said impedance.

**4,340,870**  
**EFFICIENT HIGHER ORDER MODE RESONANT COMBINER**  
 Michael Dydik, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 28, 1980, Ser. No. 172,587  
 Int. Cl.<sup>3</sup> H03B 7/14, 9/14

U.S. Cl. 331—56

22 Claims



1. In a higher order mode resonance combiner comprising a first higher order mode resonant cavity; an input circuit terminated in a stabilizing load of value  $Z_0$ ; input coupling means for coupling energy from said input circuit to said first resonant cavity; and output coupling means for extracting energy from said first cavity, the improvement comprising:  
 first means for reducing the real part,  $R_{in}$ , of the input impedance,  $Z_{in}$ , of said higher order mode resonance combiner; and  
 second means for further reducing said  $R_{in}$  to a value less than  $Z_0$  such that at a selected modal resonant frequency,  $f_0$ ,  $R_{in}$  shall be minimized.

**4,340,871**  
**LOW POWER OSCILLATOR HAVING CLAMPING TRANSISTORS ACROSS ITS TIMING CAPACITORS**  
 Jeffrey R. Teza, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 14, 1979, Ser. No. 75,567  
 Int. Cl.<sup>3</sup> H03K 3/354

U.S. Cl. 331—111

8 Claims

1. An oscillator for providing first and second, substantially complementary output signals, the oscillator comprising:  
 a first inverter providing the first output signal a first predetermined time period after receiving a first inverter drive signal;  
 a first delay network connected to the first inverter, the first delay network receiving the first output signal and providing a second inverter drive signal a predetermined second time period after receiving the first output signal;  
 first clamping means connected to the first inverter and to the first delay network, and first clamping means receiving the second output signal and clamping the second inverter drive signal to the level of the first output signal in response to receiving the second output signal;







4,340,878

## VISUAL DISPLAY APPARATUS

Archer M. Spooner, Orlando, Fla., and Paul M. Murray, Tunbridge Wells, England, assignors to Redifon Simulation Limited, Crawley, England

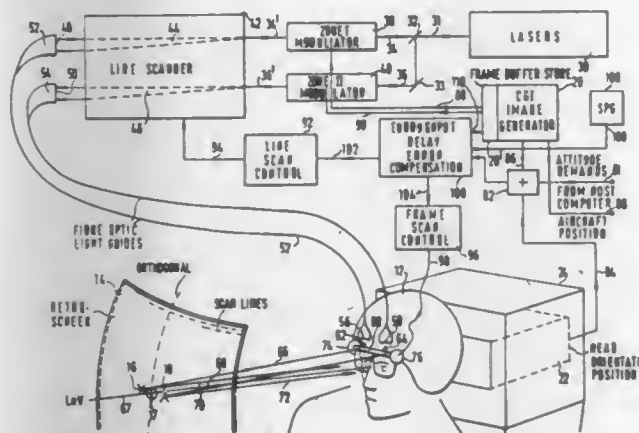
Filed Jan. 11, 1980, Ser. No. 111,285

Claims priority, application United Kingdom, Jan. 11, 1979, 7901011; Dec. 31, 1979, 7944629

Int. Cl.<sup>3</sup> G09G 3/02

U.S. Cl. 340—27 R

8 Claims



1. Head-coupled, area-of-interest, visual display apparatus providing a displayed scene comprising two zones, including a part-spherical retro-reflective concave screen of area greater than a viewer's instantaneous field of view, a helmet, sensing means for sensing the orientation of the viewer's head and helmet, visual image generating means for generating a simulated scene in the direction of the viewer's instantaneous line of view according to the viewer's simulated position and orientation and under control of the said sensing means, the said image generating means being adapted for providing two visual images corresponding respectively to the two zones of the displayed scene, a laser beam source for producing a laser beam, separate laser beam modulators for each zone of the displayed scene for modulating said laser beam, separate line scanners for each zone of said scene for scanning the modulated laser beam over the input ends of respective fibre optic light guides, the said fibre optic light guides having their output ends at spaced-apart positions on the viewer's helmet, and frame scanning means mounted on the said helmet for receiving light from the light guide outputs and projecting the light as simultaneous scan lines of the two said zones to form the composite displayed scene on the screen.

4,340,879

## PERSONNEL IN AND OUT INDICATOR

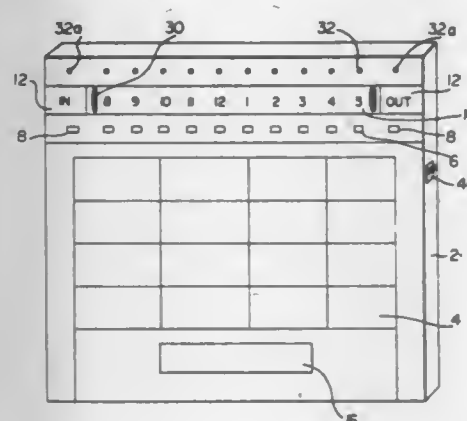
Daniel Laflamme, 1490 - 1500 W. Gerogia St., British Columbia, Canada (V6G 2Z6)

Filed Dec. 15, 1980, Ser. No. 216,448

Int. Cl.<sup>3</sup> G08B 5/36

U.S. Cl. 340—286 R

7 Claims



1. An electronic device for recording and displaying infor-

mation regarding the arrival and departure of personnel at a location, comprising:

- (a) a frame;
- (b) a series of manually operable personnel indicating switches exposed on the frame, each of such switches representing a particular person or persons on different shifts in respect of which information is to be recorded or displayed, each of these switches only being actuable exclusively of the others;
- (c) a further series of manually actuable time indicating switches exposed on the frame, each of such switches representing a particular time, and each of such switches only being actuable exclusively of the others;
- (d) memory means electrically associated with the personnel indicating and time indicating switches to receive and store information received from these switches;
- (e) means electrically associated with the memory means and personnel indicator switches, and actuable upon selection of a personnel indicating switch, to retrieve information stored in the memory means with respect to that person and display it at a time display means visibly located on the frame; and
- (f) switch means to actuate the information retrieval means.

4,340,880

METHOD AND APPARATUS FOR SIGNAL RECOGNITION IN A REMOTE CONTROL SYSTEM WITH INFLUENCING OF THE ZERO POINT TRANSITION OF THE ALTERNATING-CURRENT MAINS VOLTAGE

Eduard Baumann, and Roger Kniel, both of Uster, Switzerland, assignors to Zellweger Limited, Uster, Switzerland

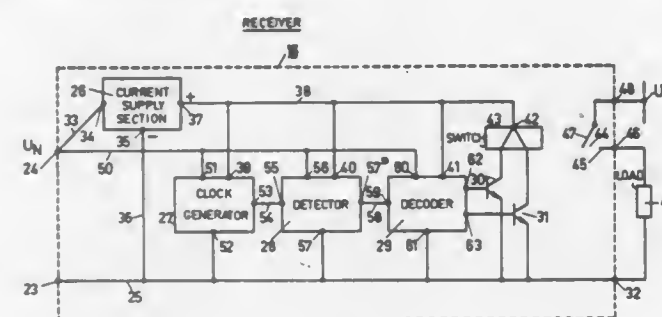
Filed Sep. 9, 1980, Ser. No. 185,425

Claims priority, application Switzerland, Oct. 12, 1979, 9210/70

Int. Cl.<sup>3</sup> H04B 3/54

U.S. Cl. 340—310 R

22 Claims



1. A method of producing, transmitting and recognising a signal in a remote control system having a transmitter-end and a receiver-end, comprising the steps of: producing a remote control signal by intentionally influencing the course of the voltage at the transmitter-end during an influencing period at a region of said voltage course around at least one zero point transition of the alternating-current mains voltage at the transmitter-end; impressing the remote control signal thus produced upon said alternating-current mains voltage; transmitting said remote control signal to the receiver-end; detecting the occurrence of such remote control signal at the receiver-end by comparing the course of the receiver-end alternating-current mains voltage at a region around a zero point transition with said course in a previous such transition region; and accomplishing such comparison operation such that it commences in each case before an expected theoretical zero point transition of the alternating-current mains voltage.

4,340,881

UNIVERSAL ANALOG SIGNAL TO DIGITAL SIGNAL INTERFACE

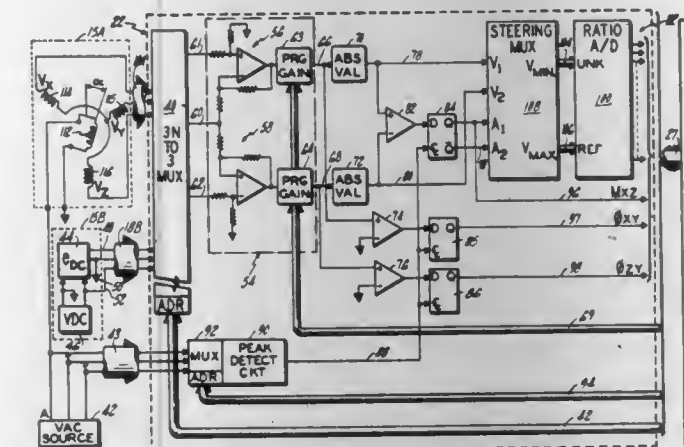
Timothy F. Stack, and George T. Shoemaker, both of Enfield, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 12, 1980, Ser. No. 158,860

Int. Cl.<sup>3</sup> H03K 13/02

U.S. Cl. 340—347 R

3 Claims



1. Analog to digital signal interface for providing digital signal representations of AC and DC analog signal presented alternatively as two wire absolute value signals from an absolute value sensor excited by an associated sensor excitation source, and as three wire ratiometric signals from a common signal source, comprising:

signal switching means, connected for response to the signal outputs of the absolute value sensor and common signal source and to the sensor excitation source, for presenting pairs of output signals representing, alternately in response to the analog signal received, the pair of signals comprising each ratiometric input signal, and for each absolute value input signal, the absolute value signal and the excitation signal from the associated excitation source; signal conditioning means responsive to said pairs of output signals from said switching means, for providing signal manifestations of each output signal magnitude and, in response to AC analog signal information, of each output signal phase; and signal conversion means, responsive to said signal manifestations of magnitude and phase from said signal conditioners, for providing a ratio digital signal representative of the smaller value signal magnitude manifestation divided by the larger value signal magnitude manifestation, for providing a phase digital signal for each signal manifestation of phase, and for providing a magnitude digital signal indicative of the relative values of said signal manifestations of magnitude.

4,340,882

D/A CONVERSION SYSTEM WITH COMPENSATION CIRCUIT

Kenji Maio, Tokyo, and Tsuneta Sudo, Kodaira, both of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Hitachi, Ltd., both of Tokyo, Japan

Filed Mar. 23, 1978, Ser. No. 889,559

Claims priority, application Japan, Apr. 6, 1977, 52-38519

Int. Cl.<sup>3</sup> H03K 13/02

U.S. Cl. 340—347 CC

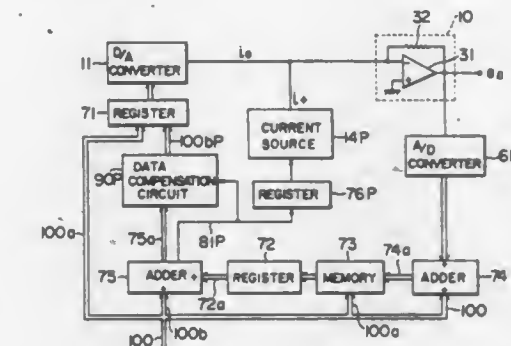
8 Claims

1. A D/A conversion system comprising: input means for applying a digital signal composed of n upper bits and m lower bits as an input to the system; a D/A converter for converting the digital input signal applied from said input means into an analog signal; output means for receiving the analog signal applied from said

D/A converter to provide an analog output signal of the system;

memory means for storing a compensation data, used for the compensation of non-linearities inherent in the D/A converter by compensation of the analog signal appearing from said output means, at an address corresponding to the upper bit portion of the digital input signal;

adder means for adding the compensation data, read out from said memory means at the address corresponding to the upper bit portion of the digital input signal applied from said input means and the lower bit portion of the digital input signal; and



signal applying means for applying the output signal of said adder means representing the result of addition to said D/A converter together with the upper bit portion of the digital input signal, and further comprising

an A/D converter for converting the analog signal appearing from said output means into a digital signal when said adder means is rendered non-operative, and arithmetic means for computing the difference between the digital input signal applied from said input means and the digital signal appearing from said A/D converter and applying the difference signal to the address of said memory means specified by the upper bit portion of the digital input signal.

4,340,883

BIPOLAR MARK-SPACE ANALOGUE TO DIGITAL CONVERTER WITH BALANCED SCALE FACTORS

John G. Cook, Mytchett, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

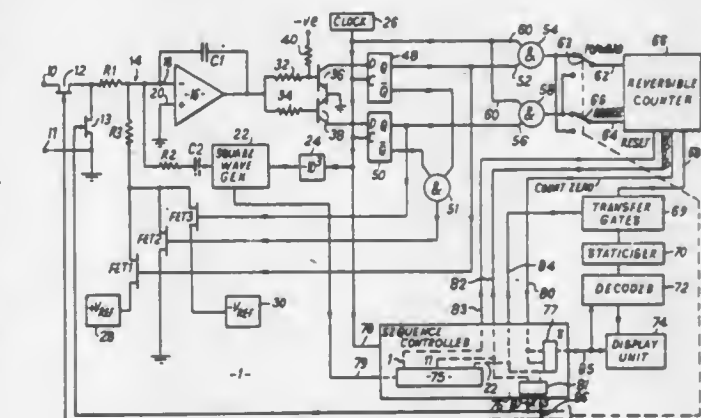
Filed Jun. 14, 1978, Ser. No. 915,488

Claims priority, application United Kingdom, Jun. 20, 1977, 25744/77; Jun. 20, 1977, 25745/77

Int. Cl.<sup>3</sup> H03K 13/02, 13/20

U.S. Cl. 340—347 NT

4 Claims



1. A bipolar mark-space analogue-to-digital converter having balanced scale factors for positive and negative applied voltages comprising: integrating means for receiving an analog input signal to be converted; means for superimposing a periodic signal on the output signal produced by the integrating means;



first and second reference signal sources of opposite polarity;

first and second level detectors connected to compare the output signal from the integrating means with first and second detector levels respectively, wherein, to balance scale factors substantially independently of drift or imbalance in said reference signal sources, for zero input signal, the periodic signal causes the magnitude of the output signal from the integrating means to exceed the first level by crossing it in a direction away from the second level for at least a substantial fraction of one half of each cycle of the periodic signal, and to fall below the second level by crossing it in a direction away from the first level for at least a substantial fraction of the other half of each cycle of the periodic signal, and wherein analogue input signals of one polarity cause the magnitude of the output signal to exceed the first level for more than said fraction of said one half of each cycle, while analogue input signals of the other polarity cause the magnitude of the output signal to fall below the second level for more than said fraction of said other half of each cycle, the first and second level detectors being arranged to produce first and second control signals respectively when the magnitude of the output signal from the integrating means exceeds the first level and falls below the second level respectively;

switch means responsive to the first control signal to apply one of said reference signal sources, opposite in polarity to said one polarity of the analogue input signal to the integrating means, said switch means being also responsive to the second control signal to apply the other of said reference signal sources to the integrating means;

means for defining a conversion interval equal in duration to the duration of an integral number of cycles of said periodic signal;

further switch means for applying said analogue input signal to the integrating means for the duration of one conversion interval and for applying zero input signal to the integrating means for the duration of another conversion interval;

a source of clock pulses; and

counter means responsive to the first and second control signals for counting the clock pulses during the application of either of the reference signal sources to the integrating means, whereby the count in the counter means at the end of the one conversion interval, combined with the count at the end of the other conversion interval, is a digital representation of the magnitude of the integral of the analogue input signal over the one conversion interval, corrected for zero drift.

4,340,884

## INTRUSION ALARM

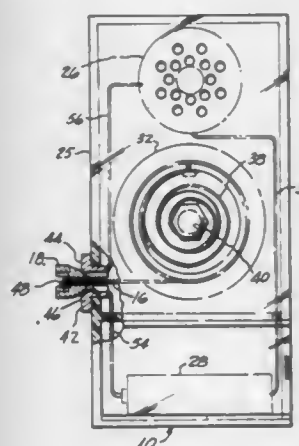
Ronald E. Maizland, 12909 Harding, Silmar, Calif. 91342

Filed May 22, 1980, Ser. No. 152,299

Int. Cl.<sup>3</sup> G08B 13/12

U.S. Cl. 340—548

10 Claims



1. An intrusion alarm apparatus comprising: a retractable,

flexible cord; releasable means attached to said cord for releasably holding said cord in an extended position across an entry way; retractor means enabling said cord to be drawn out to said extended position, and to retract the cord when said releasable means is released; a source of power; electrically conductive metal plug means attached to said cord forming part of said release means when said cord is in said extended position; an alarm device; said release means adapted to be released when in a spanning relationship to said entry and there is entry through said entry way, said electrically conductive metal plug means forming a connection between said power source and said alarm device upon sufficient retraction of said cord, whereby said alarm device is actuated.

4,340,885

## GAS DETECTOR

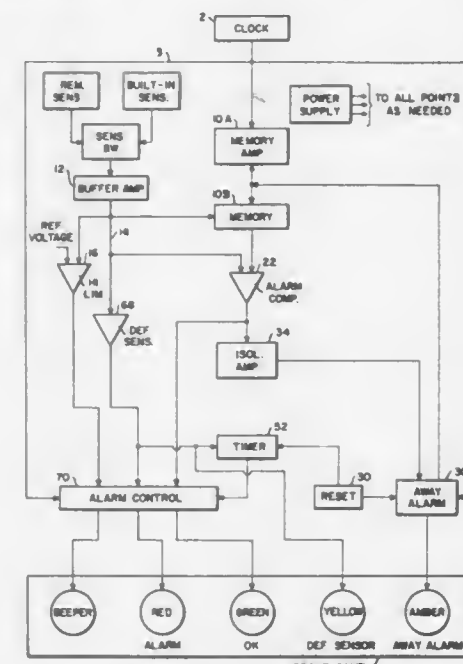
Leon A. Chavis, San Francisco, Calif., and Gordon P. Moseley, Carson City, Nev., assignors to Super Shops, Inc., Newport Beach, Calif.

Filed Sep. 24, 1979, Ser. No. 78,608

Int. Cl.<sup>3</sup> G08B 17/10

U.S. Cl. 340—632

147 Claims



1. An electronic circuit for a gas detector including clock means, said circuit comprising means to sample, track and store signals proportional to gas detected, said clock means controlling the operation of said sample, track and store means, said detector comprising alarm means, and said circuit comprising means to cause said clock means to operate at least a portion of said alarm means in an alternating manner.

4,340,886

## BEARING AND MOTOR TEMPERATURE MONITOR

Robert R. Boldt, Taylor Ridge, Ill., and Arthur R. Nelson, Davenport, Iowa, assignors to Dickey-John Corporation, Auburn, Ill.

Filed Jul. 3, 1978, Ser. No. 921,489

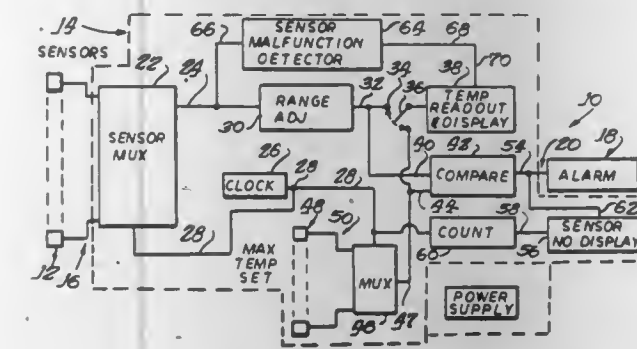
Int. Cl.<sup>3</sup> G01K 1/02; G08B 19/00

U.S. Cl. 340—682

12 Claims

1. A bearing temperature monitor comprising sensor means mounted in thermal contact with each of a plurality of bearings whose temperature is to be monitored, circuit means responsive to said sensor means for producing first signals corresponding to the respective temperatures thereat, lines joining said sensor means with said circuit means, display means coupled with said circuit means for producing an observable indication of the temperatures at each sensor means and input fault

detection circuit means having input means coupled with said joining lines and responsive to an open circuit condition at said



input means for deactivating said display means, thereby indicating a fault condition at the associated sensor or joining line.

4,340,887

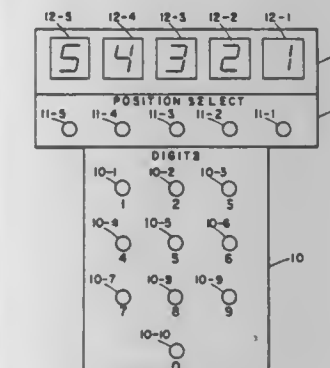
PUSHBUTTON DATA ENTRY AND DISPLAY SYSTEM  
Francis F. Dias, II, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 24, 1980, Ser. No. 115,145

Int. Cl.<sup>3</sup> G09G 3/00

U.S. Cl. 340—711

1 Claim



1. A data entry and display system for loading any one of N digits into any position on an M digit data bus for transmission to a digital processor where N and M are integers, said system being comprised of:

a set of N pushbutton switches each of which is representative of one of said digits;

a set of M pushbutton switches; each of which corresponds to one of said M digit positions; and

a set of M identical circuits operating in parallel, each of the circuits including:

an encoder including a plurality of FET transistors and a plurality of encoder output conductors, the transistors having sources connected to a voltage +V, gates selectively connectable to the voltage +V through the depressing of corresponding ones of the N pushbutton switches, and drains connected to corresponding ones of the encoder output conductors so that a digital code will be generated on the encoder output conductors corresponding to the number represented by the depressed one of the N pushbutton switches,

a first data storage register having a plurality of input terminals, a plurality of output terminals and a clock terminal, the input terminals being connected to corresponding ones of the encoder output terminals,

an OR gate having inputs connected to the encoder output terminals and an output connected to the clock terminal of the first register so that a signal on the output of the OR gate will cause the digital code generated on the encoder output conductors to be stored in the first register,

a second data storage register having a plurality of input terminals, a plurality of output terminals and a clock terminal, the output terminals of the first register being connected to the input terminals of the second register for

storing therein the contents of the first register in response to the depressing of one of the M pushbutton switches connected to the clock terminal of the second register, means for connecting the output terminals of the second register to the M digit data bus,

a decoder having a plurality of input terminals connected to the output terminals of the second register for generating on a plurality of output terminals segment display signals representative of the number of the depressed one of the N pushbutton switches, and

an electro-optic display element having a plurality of input terminals connected to the output terminals of the decoder for receiving the segment display signals and displaying the number of the depressed one of the N pushbutton switches.

4,340,888

## SCAN LINERIZATION METHOD AND DEVICE

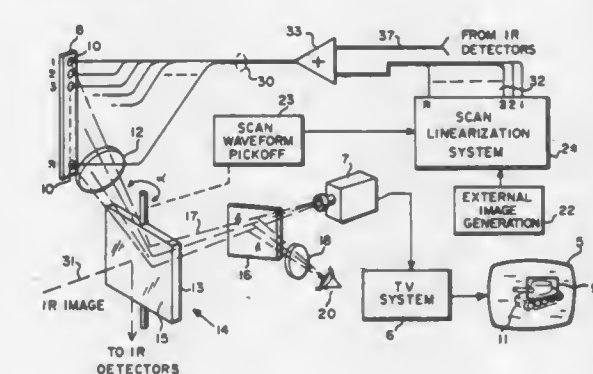
James M. Seroskie, Orlando, Fla., assignor to Martin Marietta Corporation, Orlando, Fla.

Filed Apr. 1, 1980, Ser. No. 136,223

Int. Cl.<sup>3</sup> G09G 3/00

U.S. Cl. 340—755

12 Claims



1. In a system for producing graphic images by means of a nonlinear scanning element which scans a multiplicity of scanning lines, apparatus for compensating for scanning nonlinearities comprising:

means for quantizing the scanning lines into a selected number of discrete image elements;

staircase waveform generation means for producing an electrical staircase waveform having equal amplitude steps equal in number to the selected number of image elements; staircase waveform control means connected to said staircase waveform generation means for controlling the temporal spacing between said amplitude steps to be complementary to the scanning nonlinearities; and

signal introducing means associated with said quantizing means and said staircase waveform control means and responsive to each successive one of said amplitude steps to introduce image-defining signals into the system whereby graphic images produced by the system in response to said image-defining signals are undistorted.

4,340,889

## METHOD AND APPARATUS FOR COORDINATE DIMMING OF ELECTRONIC DISPLAYS

Eric M. Knight, Inkster, and Edward S. Greene, Allen Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 6, 1980, Ser. No. 175,785

Int. Cl.<sup>3</sup> G09G 3/00

U.S. Cl. 340—793

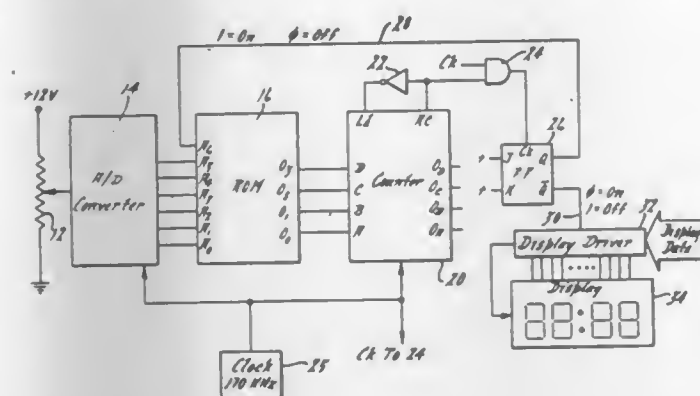
5 Claims

1. A method of adjustably activating an electronic display for selected display cycle periods defined by correspondingly selected ON time periods of activation in combination with correspondingly selected OFF time periods of deactivation to control the brightness level of an electronic display over a



predetermined pattern of brightness levels, comprising the steps of:

- providing a control voltage having a value selected from a predetermined range of voltage values;
- converting the selected value of said control voltage to one of a plurality of digital signals respectively corresponding to a separate predesignated portion of said range;
- converting said correspondingly selected digital signal to a predesignated one of a plurality of first digital signals having a value corresponding to an ON time period for



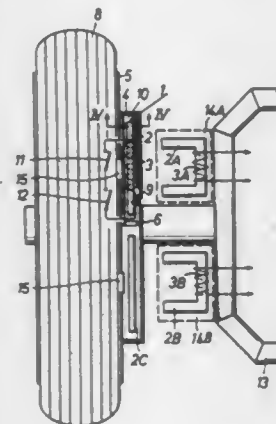
which said display is to be activated out of each defined display cycle period;

- activating said display for a period of time corresponding to said first digital signal value for each display cycle;
- converting said correspondingly selected digital signal to a predesignated one of a plurality of second digital signals having a value corresponding to an OFF time period for which said display is to be deactivated out of each defined display cycle period; and
- deactivating said display for a period of time corresponding to said second digital signal value for each display cycle.

**4,340,890**  
**ARRANGEMENT FOR TELEMETRICALLY MONITORING MOVING MACHINE PARTS**  
 Kurt Fritze, Dibberser Mühlenweg 91b, 2110 Buchholz, Nordheide, Fed. Rep. of Germany  
 Filed Sep. 8, 1980, Ser. No. 184,636  
 Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2935965

Int. Cl.<sup>3</sup> G08C 19/08  
 U.S. Cl. 340—870.32

7 Claims

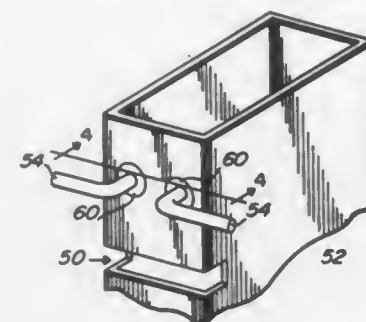


1. In an apparatus for telemetrically monitoring a moving machine part, particularly a rotating vehicle wheel, by means of a transmitter and receiver assembly stationary with respect to said moving part, said transmitter and receiver being spaced from and electrically shielded from one another and provided with output and input coils which are inductively coupled periodically by a coupling means mounted on said moving machine part or rotating vehicle wheel, respectively, via an induction coupling means (1) also mounted thereon, the improvement characterized in that said coupling coil (3) is surrounded by an electrically conductive shielding means (6) provided with an aperture (7) only in its front side facing toward said transmitter and receiver assembly, said aperture (7) in the shielding means (6) forming an angle (α) of 10° to 60° with respect to the centre axis of the coupling coil (3).

rounded by an electrically conductive shielding means (6) provided with an aperture (7) only in its front side facing toward said transmitter and receiver assembly, said aperture (7) in the shielding means (6) forming an angle (α) of 10° to 60° with respect to the centre axis of the coupling coil (3).

**4,340,891**  
**DUAL POLARIZED BASE STATION RECEIVE ANTENNA**  
 James P. Phillips, Lake In The Hills, Ill., assignor to Motorola, Inc., Schaumburg, Ill.  
 Continuation of Ser. No. 900,404, Apr. 26, 1978, abandoned.  
 This application Jul. 23, 1980, Ser. No. 171,629  
 Int. Cl.<sup>3</sup> H01Q 11/13, 21/29  
 U.S. Cl. 343—713

4 Claims



1. In a communication system including undesirable off-frequency transmissions from relatively high power output mobile transmitter antennas and desirable on-frequency signal transmissions from relatively low power output portable transmitter antennas wherein the undesirable transmissions arrive at a base station receiver antenna system substantially vertically polarized and the desirable transmissions arrive at the base station receiver antenna system substantially cross polarized, the method comprising the steps of:

- providing the receiver antenna system with a dipole means having relatively high gain response to horizontally polarized signals combined in a unitary structure with a slot means for providing relatively low gain response to vertically polarized signals to receive and combine the desirable and undesirable transmissions, and to provide a degree of isolation between the desirable and undesirable transmissions; and
- coupling the receiver antenna system to a base station receiver such that the received desirable and undesirable transmissions are simultaneously coupled to the base station receiver.

**4,340,892**  
**DOPPLER NAVIGATION ANTENNA HAVING AUTOMATIC LAND-SEA ERROR CORRECTION**  
 Anton Brunner, Wangen, and Werner Jatsch, Neubiberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany  
 Filed Dec. 7, 1970, Ser. No. 95,888  
 Claims priority, application Fed. Rep. of Germany, Dec. 12, 1969, 1962436

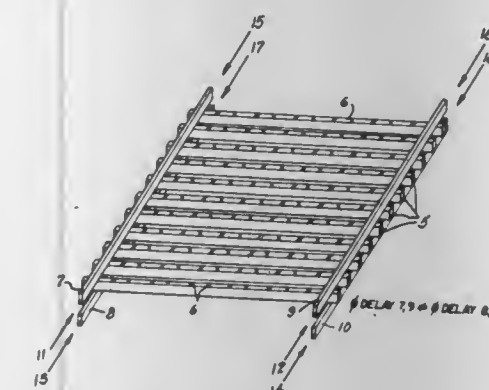
Int. Cl.<sup>3</sup> H01Q 13/10

U.S. Cl. 343—768

15 Claims

1. A doppler navigation antenna with automatic land-sea correction utilizing the production of two somewhat differently inclined lobe groups of four lobes each, comprising a plane radiator group including a plurality of individual radiating arrays arranged in parallel rows, each of said radiating arrays including two ends having respective feed points, a first pair of feed lines extending transversely of said radiating arrays and coupled thereto at the respective feed points at one end thereof, and a second pair of feed lines extending transversely

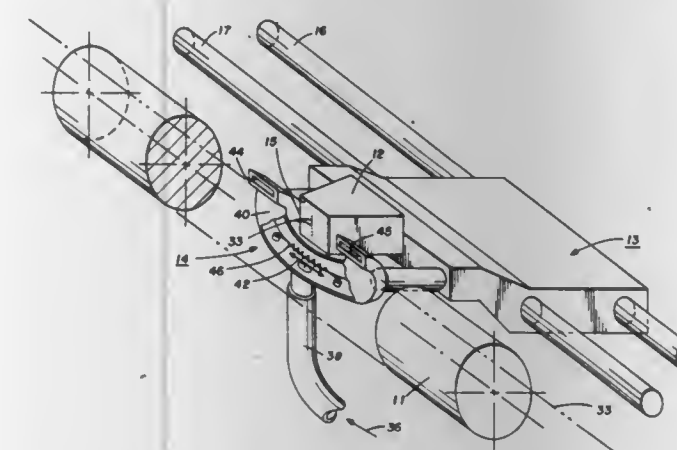
of said radiating arrays and coupled thereto at the respective feed points at the other end thereof, one feed line of each pair



having a different phase delay than the other feed line of the same pair.

**4,340,893**  
**SCANNING DRYER FOR INK JET PRINTERS**  
 Donald L. Ort, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.  
 Filed Nov. 5, 1980, Ser. No. 204,093  
 Int. Cl.<sup>3</sup> G01D 15/00  
 U.S. Cl. 346—1.1

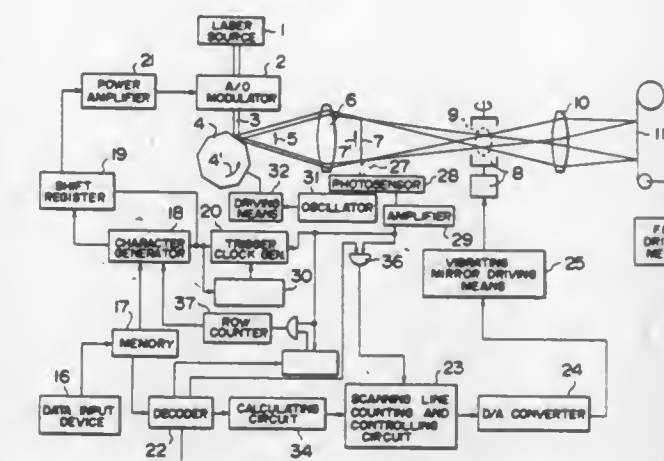
2 Claims



1. A method of printing, which comprises:
  - (a) providing an ink jet droplet emitter on a scanning carriage;
  - (b) providing a record surface positioned such that when said ink jet droplet emitter emits droplets, it prints on said record surface along a predetermined line of printing;
  - (c) causing said ink jet droplet emitter to scan said record surface in a direction parallel to said predetermined line in a first direction;
  - (d) causing said ink jet droplet emitter to scan said record surface in a second direction parallel to but opposite in direction from said first direction;
  - (e) causing said ink jet droplet emitter to emit droplets while said ink jet droplet emitter is scanning in said first direction and in said second direction;
  - (f) providing a dryer for directing a drying gas positioned on both sides of said ink jet droplet emitter on said scanning carriage such that said dryer is positioned to dry droplets on said record surface in the vicinity of said droplet emitter by directing drying gas to said vicinity on both sides of said ink jet emitter; and
  - (g) operating said dryer to dry ink jet droplets on said record surface.

**4,340,894**  
**LASER BEAM RECORDING SYSTEM**  
 Hiroshi Oono, and Masahiro Onishi, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan  
 Filed Jul. 14, 1980, Ser. No. 168,786  
 Claims priority, application Japan, Jul. 13, 1979, 54-89014  
 Int. Cl.<sup>3</sup> G01D 15/14  
 U.S. Cl. 346—108

4 Claims



1. In a laser beam recording system having a recording state and a non-recording state, and wherein a laser beam is modulated by an acousto-optic modulator and a zero-order diffraction light beam is deflected horizontally in accordance with primary scanning and vertically in accordance with secondary scanning so as to two-dimensionally scan a recording material to record information thereon in recording areas thereof, the improvement comprising command means for issuing commands including a stop command to stop vertical scanning, further means for providing a vertical scanning starting position signal, a light shielding mask provided outside said recording area above the recording material, and control means responsive to said stop command and to said vertical scanning starting position signal for deflecting the laser beam out of the recording area onto a vertical scanning starting position on said light shielding mask in the non-recording state of the recording system.

**4,340,895**  
**DEGASSING INK SUPPLY APPARATUS FOR INK JET PRINTER**  
 Masatsugu Kikuchi, Ebina, Japan, assignor to Xerox Corporation, Stamford, Conn.  
 Filed Oct. 14, 1980, Ser. No. 196,506  
 Int. Cl.<sup>3</sup> G01D 15/18

U.S. Cl. 346—140 R

8 Claims



1. In an ink drop printer of the type wherein ink drops are continuously produced from a continuous stream of liquid ink emitted under pressure from at least one nozzle coupled to a manifold containing the ink, the improvement being degassing ink supply apparatus comprising an ink supply vessel for storing a liquid ink from which the ink drops are produced including a space above a liquid containing gasses,



pump means for supplying ink in the supply vessel to the manifold at a drop producing pressure and degassing means coupled to the supply vessel including heating means for heating liquid in the supply vessel for degassing a liquid contained therein.

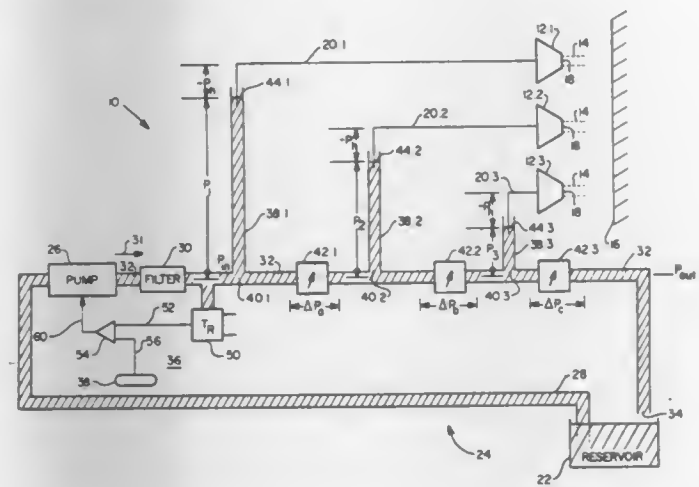
4,340,896

**IMPULSE INK JET INK DELIVERY APPARATUS**  
Antonio S. Cruz-Urbe, Cobalt, and Frank T. Check, Jr.,  
Orange, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 22, 1980, Ser. No. 218,897  
Int. Cl.<sup>3</sup> G01D 15/18

U.S. Cl. 346—140 R

7 Claims



1. An apparatus for delivering ink from a supply to inputs of a plurality of ink jet heads of the type which deliver ink through capillary action to orifices from which ink drops are ejected and wherein ink jet heads are disposed to print from different vertical positions, comprising:

- conduit means extending from an intake at said supply to an ink discharge port;
- means for producing in said conduit means and from said supply of ink a flow of ink starting at an upstream location to flow downstream to said ink discharge port;
- means for coupling ink jet heads disposed at different vertical positions to said conduit means at junctions whose successive positions along the stream of ink correspond with successive vertically lower positions of the ink jet heads;
- means interposed in said conduit means and at least between said junctions for generating a fluid flow impedance therein of a magnitude selected to enable formation of a column of ink in the coupling means on the upstream located junction with the column height commensurate with the vertical height of the ink jet head supplied with ink from the column.

4,340,897

**CLEANING DEVICE FOR WRITING HEADS USED IN INK JET RECORDERS AND PRINTERS**

Peter T. Miller, Norwalk, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 29, 1981, Ser. No. 288,245  
Int. Cl.<sup>3</sup> G01D 15/18

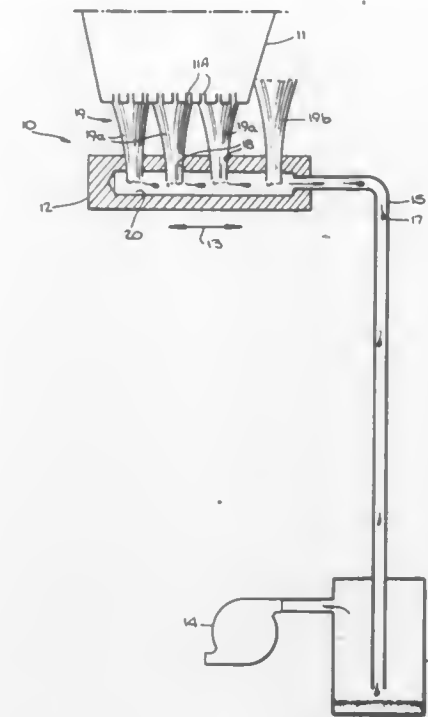
U.S. Cl. 346—140 R

11 Claims

1. An apparatus for use in an ink jet recording device or printer for cleaning a writing head having at least one nozzle therein through which ink flows, said apparatus comprising: manifold means movable in a horizontal direction and including an internally located reservoir and a brush formed of a plurality of fiber elements extending from the reservoir through the manifold, the fiber elements being urged into contact with said nozzles upon sufficient movement of the manifold;

vacuum means communicating in fluid flow with said reser-

voir for forming a negative air pressure along said fibers; and chamber means communicating in fluid flow with both said



manifold and said vacuum means, whereby upon said fibers being urged into contact with said nozzles said vacuum means causes ink to flow from said writing head along said fibers and into said chamber.

4,340,898

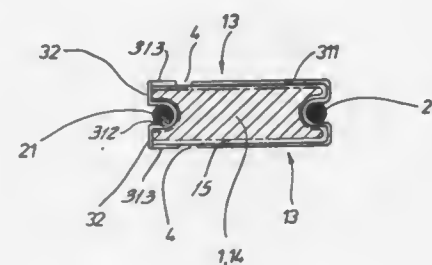
**BARRIER-LAYER CAPACITOR AND PROCESS FOR THE PRODUCTION THEREOF**

Rudolf Fink, Selb, Fed. Rep. of Germany, assignor to Draloric Electronic GmbH, Fed. Rep. of Germany

Filed May 7, 1979, Ser. No. 36,415  
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845931; Nov. 24, 1978, 2850845

Int. Cl.<sup>3</sup> H01L 29/92  
U.S. Cl. 357—10

8 Claims



1. A barrier layer capacitor, comprising:

- a central, conductive ceramic bar having a substantially rectangular cross section defined by first and second opposite side surfaces having third and fourth side surfaces extending therebetween;
- a reoxidation barrier layer formed on almost all of said side surfaces;
- said first side surface including a first portion at which said reoxidation barrier layer is formed and a second portion at which said reoxidation barrier layer is not formed;
- a first terminal lead receiver being defined at said first portion of said first side surface;
- a first solderable metal coating covering said first portion of said first side surface;
- a barrier layer free connection coating extending from said first solderable metal coating to said second section of said first surface such that said barrier layer free connection is in direct contact with said central, conductive ceramic bar

and said first solderable metal is in electrical contact with said central, conductive ceramic bar;

- a first terminal lead being fastened on said first solderable metal coating;
- a second solderable metal coating extending over most of said second, third and fourth side surfaces;
- a second terminal receiver being defined at said second surface at a location where said reoxidation barrier layer is formed and being covered by said second solderable metal coating; and
- a second terminal lead being fastened on said second solderable metal coating at said second conductor receiver.

4,340,899

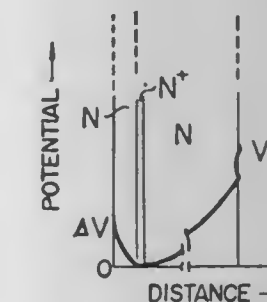
**EPITAXIAL INTEGRATED E-DE SOLID STATE DETECTOR TELESCOPE**

Kazuo Husimi, 32, Naka machi, Kodaira City, Tokyo, and Chisu Kim, 1-380, Ogawa, Kodaira City, Tokyo both of Japan

Filed Jan. 31, 1980, Ser. No. 117,352  
Claims priority, application Japan, Sep. 27, 1979, 54-124885  
Int. Cl.<sup>3</sup> H01L 27/14

U.S. Cl. 357—29

11 Claims



1. An epitaxial integrated E-dE solid state detector telescope comprised of:

- a semiconductor having a complex structure comprising:
  - a high purity semiconductor substrate providing an E detector;
  - a low resistive heavily doped semiconductor layer on said substrate;
  - a slightly doped semiconductor layer produced on said low resistive layer by epitaxial crystal growth providing a dE detector;
- rectifying electrodes on both sides of said semiconductor wafer;
- reverse biasing means reverse biasing said electrodes whereby depletion layers extend from outside toward said low resistive layer;
- said low resistive layer electrically isolating said dE detector from said E detector.

4,340,900

**MESA EPITAXIAL DIODE WITH OXIDE PASSIVATED JUNCTION AND PLATED HEAT SINK**

Herbert Goronkin, Scottsdale, Ariz., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 19, 1979, Ser. No. 50,272  
Int. Cl.<sup>3</sup> H01L 29/06, 29/90, 23/02

U.S. Cl. 357—56

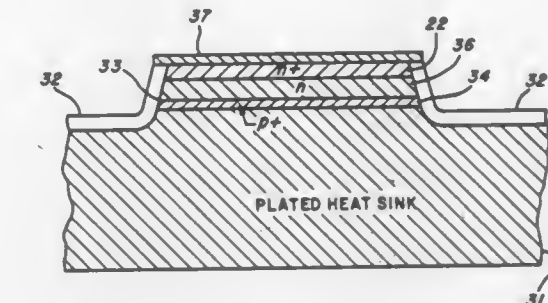
3 Claims

1. A silicon mesa epitaxial diode, comprising:

- a first layer of lightly doped silicon of a first conductivity type, said first layer comprising a base segment of a mesa structure;
- a second layer of heavily doped silicon of the first conductivity type in contact with said first layer and extending the mesa from said first layer;
- a passivation layer of highly pure SiO<sub>2</sub> thermally grown at a temperature in excess of 1000° C. on the mesa walls only of said first and second layers and continuing outwardly

from said base segment, said passivation layer having a thickness of between 1 and 1.5 microns;

d. means for providing a shallow abrupt pn junction in said first layer, said means including a layer of dopant of a second conductivity type diffused in a surface region of said first layer and extending across said surface region into contact with said layer of highly pure thermally grown SiO<sub>2</sub>, said shallow abrupt pn junction characterized as being formed subsequent to the formation of said passivation layer so that diffusion of said dopant does not



occur as a result of the thermal growth of said passivation layer;

- e. a thick layer of thermally and electrically conductive metal plated directly on said layer of dopant and said passivation layer continuing outwardly from said base segment; and
- f. a third layer of electrically conductive material on said second layer, said third layer in electrical contact with said second layer and extending the mesa from said second layer.

4,340,901

**LEAD CONNECTING STRUCTURE FOR A SEMICONDUCTOR DEVICE**

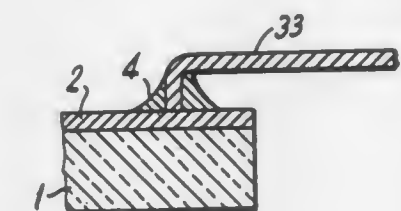
Shinzo Anazawa, and Hideaki Kozu, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 879,863, Feb. 22, 1978, abandoned.  
This application Dec. 21, 1979, Ser. No. 105,964

Claims priority, application Japan, Feb. 25, 1977, 52-22962[U]  
Int. Cl.<sup>3</sup> H01L 23/48, 29/44, 29/52

U.S. Cl. 357—68

8 Claims



1. A brazing structure comprising a support member having a brazable plane, a brazable elongated external lead having its one end portion brazed to said brazable plane inwardly of an edge of said support member with the remaining elongated portion of said lead extending freely from said end portion substantially parallel to said brazable plane, and means for protecting the connection between said one end portion of said lead and said brazable plane as well as between said brazable plane and said support member against pull up stresses to be applied to said lead, said protecting means including a bend at said one end portion of said lead and a solder so connecting the bent end portion of said lead to said brazable plane that the tip end of said bent end portion abut on said brazable plane at a portion spaced from said edge of said support member.



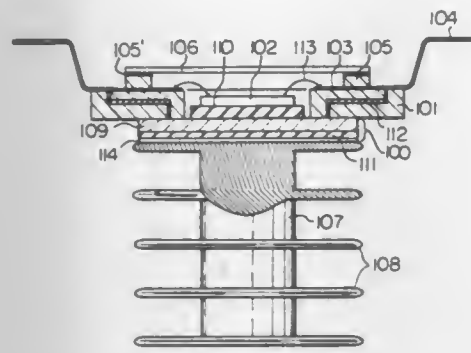
4,340,902

## SEMICONDUCTOR DEVICE

Norio Honda, and Takehisa Sugahara, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan  
PCT No. PCT/JP78/00004, § 371 Date Jul. 18, 1979, § 102(e)  
Date Jul. 12, 1979, PCT Pub. No. WO79/00302, PCT Pub. Date May 31, 1979

PCT Filed Oct. 2, 1978, Ser. No. 128,354  
Claims priority, application Japan, Nov. 18, 1977, 52-138486  
Int. Cl.<sup>3</sup> H01L 23/02, 23/12, 39/02  
U.S. Cl. 357-74

7 Claims



1. In a semiconductor device having a semiconductor chip (102) in a through hole provided substantially in the central portion of a ceramic base (101), an improvement which comprises: a high-heat conductivity metal plate (100) which covers one side of said through-hole and which is secured to one of the major surfaces of said ceramic base (101); said high-heat conductivity metal plate (100) being a laminated single unitary structure formed by a ductile metal plate (109) and a molybdenum plate (111); said semiconductor chip (102) being secured through another molybdenum plate (110) onto the bottom of a recess formed by means of one side of said high-heat conductivity metal plate (100) and said through-hole of said ceramic base (101), said through-hole being formed substantially in a square configuration and each inner corner of the square hole being rounded; a cooling means (107, 108) being secured to the other side of said high-heat conductivity metal plate (100) by means of epoxy resin adhesive between opposed areas of said cooling means and said high-heat conductivity metal plate (100) thus making same substantially integral; and external connecting terminals (104, 104a, 104b, 104c, 104d) being provided on the other major surface of said ceramic base (101) and connected to the wire bonding pads of said semiconductor chip (102).

4,340,903

## TELEVISION CAMERA

Eiji Tamura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

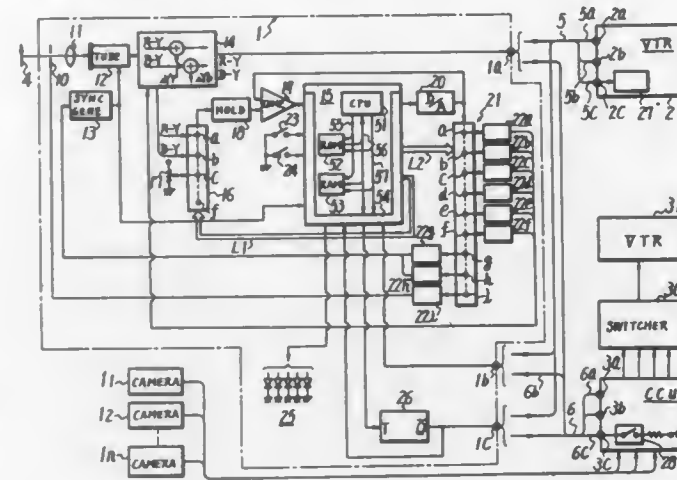
Filed Aug. 6, 1980, Ser. No. 175,776  
Int. Cl.<sup>3</sup> H04N 9/62, 9/535

U.S. Cl. 358-10

11 Claims

1. A television camera adapted to be coupled to an external video device, comprising:  
video pick-up means for providing a video signal;  
adjustable video signal control means for adjusting the balance of said video signal;  
microcomputer means including a random-access memory having a plurality of addressable storage locations and a central processing unit for controlling the operation of said microcomputer and calculating a system control signal;  
a source providing a control level;  
first switching control means having inputs respectively coupled to receive the balance-adjusted video signal and said control level and output means coupled to said microcomputer means for selectively coupling one of said inputs to said output means for providing a corresponding

data signal to said microcomputer means to be read into one of said storage locations;  
digital-to-analog converting means for converting the contents of a selected one of said storage locations to an analog data control signal;  
means coupling said analog data control signal from said converting means to said output means of said first switching control means, so that said output means provides as said corresponding data signal a comparison signal based on the selected one of said balance-adjusted video signal and said control level and on said analog data control signal;



signal holding means for storing said analog data control signal;  
second switching control means coupled between said digital-to-analog converting means and said signal holding means for selectively coupling the latter to said digital-to-analog converting means;  
input terminal means coupled to said external video device to receive a camera control signal provided therefrom; and  
output terminal means for providing the system control signal calculated by said microcomputer means to said external video device.

4,340,904

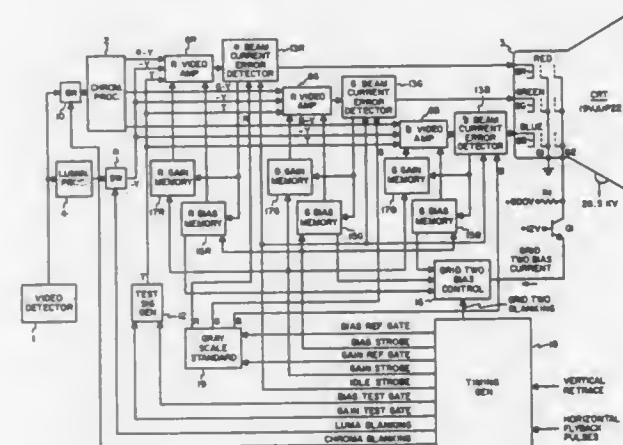
## AUTOMATIC GRAY SCALE TRACKING SYSTEM FOR CATHODE RAY DISPLAY DEVICES

Earl R. Wingrove, Jr., North Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,826  
Int. Cl.<sup>3</sup> H04N 9/535

U.S. Cl. 358-29

15 Claims



1. Apparatus for achieving and maintaining gray scale tracking in a multibeam cathode ray color display device despite fluctuations in the electrical characteristics of said display device and the video amplifiers driving said device, comprising:  
A. a source of detected video signals;

B. a test signal generator for providing bias test signals which, after prescribed amplification, produce beam currents corresponding to a standard gray video image of low intensity; and gain test signals which, after prescribed amplification, produce beam currents corresponding to a standard gray video image of intermediate intensity;  
C. a plurality of video amplifiers, each including:  
1. bias adjusting means responsive to a bias control quantity, and  
2. gain adjusting means responsive to a gain control quantity;  
D. switching means for coupling said video signals or said test signals to the inputs of said video amplifiers, said bias and gain test signals being coupled during predetermined bias and gain test periods, respectively;  
E. a multibeam cathode ray color display device including:  
1. a plurality of electron beam producing guns, each including a cathode, and  
2. a beam blanking grid,  
each gun being driven from the output of a corresponding video amplifier;  
F. means for applying blanking potentials to said beam blanking grid during a portion of each test period;  
G. a standard for producing current standards corresponding to the prescribed beam currents required for a gray image of low intensity during bias test periods, and for a gray image of intermediate intensity during gain test periods;  
H. beam current error detection means, coupled to each cathode, comprising:  
1. means for obtaining two samples of the cathode current, taken during each of said test periods when a given test signal is applied to said video amplifier, one sample being taken when the beam is blanked and the other sample being taken when the beam is not blanked, the difference in said samples representing the beam current;  
2. means for storing the earlier cathode current sample for each test signal; and  
3. summation means for combining the later cathode current sample, the stored earlier cathode current sample, and the current standard for each test signal, in a sense to obtain an error signal indicating the difference between the beam current and said current standard during the bias test period and during the gain test period;  
I. a plurality of control memories, each coupled to a respective video amplifier, each control memory including:  
1. bias memory means, coupled to said bias adjusting means of the respective video amplifier, for storing a bias control quantity, adjustable in response to said detected error signal obtained during said bias test period, for correction of said beam current toward said standard; and  
2. gain memory means coupled to said gain adjusting means of each video amplifier for storing a gain control quantity, adjustable in response to said detected error signal obtained during said gain test period, for correction of said beam current toward said standard; and  
J. means for timing the recited operation to allow gain error and bias error measurements in test periods selected to permit an uninterrupted image display while achieving continuous correction.

4,340,905

## PHOTOGRAPHIC PRINTER AND COLOR FILM ANALYZER APPARATUS

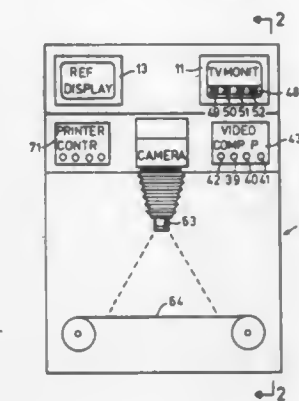
George H. Balding, 1476 Tameron Dr., Sandy, Utah 84070  
Filed Sep. 12, 1980, Ser. No. 186,486  
Int. Cl.<sup>3</sup> H04N 1/46

U.S. Cl. 358-80

10 Claims

1. Apparatus for analyzing and printing color and density corrected photographic prints from color film, comprising in combination:  
video color film analyzer means for reviewing a positive image on a cathode ray tube taken from a color film, said analyzer having means for adjusting the color and density values of the image on the tube; and  
photographic printing means having means for receiving

said adjusted color and density values from said video color film analyzer means and simultaneously converting said color and density values into corresponding timed



increments for directly controlling the exposure of the color film for immediate use in printing a color and density corrected photograph.

4,340,906

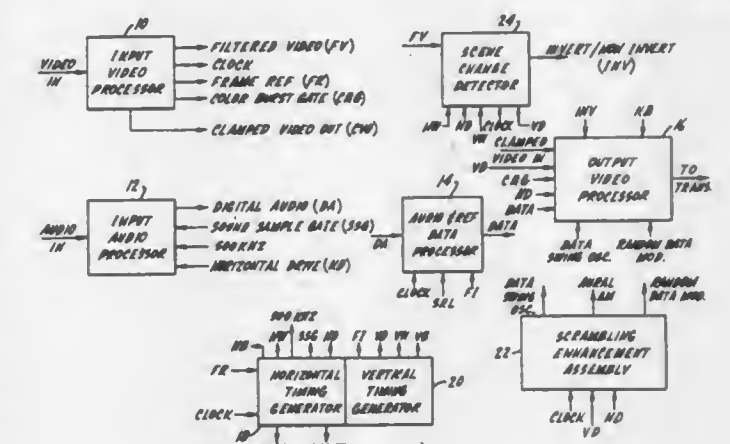
## VIDEO SIGNAL CODING BY VIDEO SIGNAL POLARITY REVERSAL ON THE BASIS OF BRIGHTNESS LEVEL COMPARISON

Pieter den Toonder, Dordrecht; Johannes C. Seltensrijck, Gori-chem, both of Netherlands; Graham S. Stubbs, Poway, Calif.; Pieter J. Fondse, Papendrecht, Netherlands, and Howard F. Jirka, Crystal Lake, Ill., assignors to Oak Industries Inc., Rancho Bernardo, Calif.

Filed May 14, 1980, Ser. No. 149,708  
Int. Cl.<sup>3</sup> H04N 7/16

U.S. Cl. 358-124

10 Claims



1. A method of coding video signals by repetitive alteration of the coding mode including the steps of:  
(a) detecting a change in the picture scene carried by the video signal by comparing the brightness level of a predetermined time period of the video signal which time period includes a video signal field with the brightness level of the video signal over the succeeding predetermined time period, the brightness level being determined by comparing the instantaneous brightness level at successive subdivisions of said time period, each less than a single horizontal line, with an average brightness level,  
(b) altering the coding mode of the video signal if the difference in brightness level between successive predetermined time periods exceeds a given value,  
(c) and preventing such alteration of the coding mode except only between frames of the video signal.



**4,340,907**  
**SPECIAL REPRODUCING SYSTEM IN AN APPARATUS FOR REPRODUCING VIDEO SIGNALS FROM A ROTARY RECORDING MEDIUM**

Atsumi Hirata, Yamato, and Kanji Kayanuma, Hadano, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

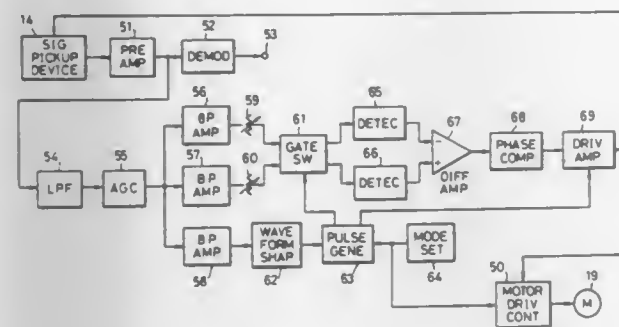
Filed Jan. 19, 1979, Ser. No. 4,813

Claims priority, application Japan, Jan. 20, 1978, 53-5020

Int. Cl.<sup>3</sup> H04N 5/76

U.S. Cl. 358—128.6

9 Claims



1. A reproducing system in an apparatus for reproducing a video signal from a rotary recording medium on which the video signal is recorded along a spiral track, each track turn of the spiral track containing a plurality of fields of the video signal, first and second reference signals being recorded on opposite sides of the track in such a manner that the sides on which the first and second reference signals are recorded are alternated for every track turn, a third reference signal being recorded at each position where said reference signals alternate in their position; said apparatus comprising reproducing element means for tracing over the spiral track on the rotary recording medium while picking up the video signal and the first, second and third reference signals, separating means for individually separating the first reference signal, the second reference signal and the third reference signal from the output signal of said reproducing element means, pulse generating means for generating a pulse signal in response to the separated third reference signal during normal reproduction, producing means responsive to every pulse signal and to the separated first and second reference signals for alternately producing a first signal corresponding to the level of the separated first reference signal minus the level of the separated second reference signal and a second corresponding to the level of the separated second reference signal minus the level of the separated first reference signal, and tracking control means for controlling the reproducing element means corresponding to the output signal of said producing means to trace along the spiral track;

said system comprising:

means in said pulse generating circuit for generating skip pulses with timing corresponding to the vertical blanking period positions of the recorded video signal during every rotational period of the rotary recording medium, the skip pulses having a number corresponding to an operational mode for carrying out a special reproduction which differs from the normal reproduction;

skipping means in said tracking control means operated in response to each of the skip pulses to cause the reproducing element means to shift to an adjacent track turn of the spiral track within the vertical blanking period of the recorded video signal; and

means in said pulse generating circuit for generating switching pulses with the timing of each of the skip pulses which occur except for the timing of the separated third reference signal, and for stopping the pulse signal in response to the skip pulses which occur in accordance with the timing of the separated third reference signal during the special reproduction;

said producing means alternately producing the first signal

and the second signal in response to every switching pulse.

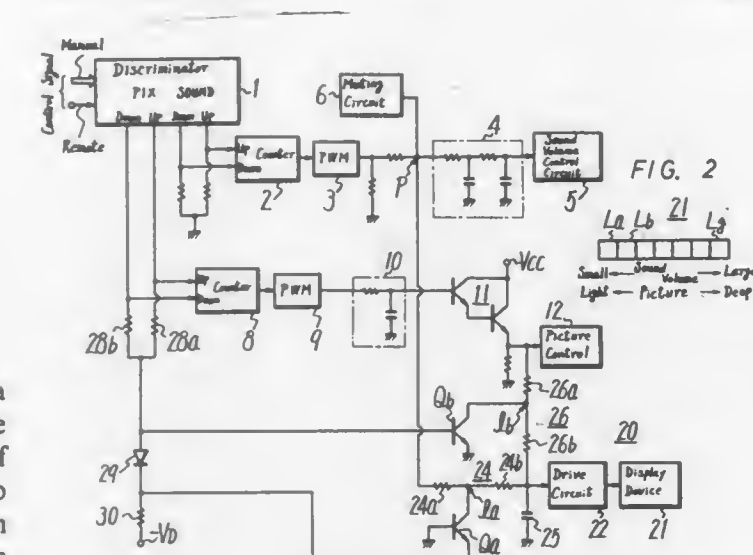
**4,340,908**  
**CONTROL LEVEL DISPLAYING APPARATUS**  
 Hideo Wakabayashi, Souka, and Kenro Teraoka, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan  
 Filed Nov. 21, 1980, Ser. No. 209,144

Claims priority, application Japan, Nov. 22, 1979, 54-161918[U]

U.S. Cl. 358—194.1

Int. Cl.<sup>3</sup> H04N 5/44

6 Claims



1. A control level displaying apparatus, comprising:  
 control signal receiving means including discriminating means for producing at least one of a sound volume control signal and at least one characteristic control signal relating to at least one other characteristic of a received information signal, in response to a received control signal;  
 sound volume control generating means for producing a sound volume control voltage in response to said sound volume control signal;  
 second control generating means for producing at least one characteristic control voltage in response to said at least one characteristic control signal;  
 a sound volume control circuit for controlling the sound volume in response to said sound volume control voltage from said sound volume control generating means;  
 a second control circuit for controlling said at least one other characteristic in response to said at least one characteristic control voltage from said second control generating means;  
 control level displaying means for displaying the level of one of said control voltages;  
 supply means for selectively supplying one of the sound volume control voltage and the at least one characteristic control voltage to said control level displaying means; and  
 switch control means for controlling the operation of said supply means in response to said at least one characteristic control signal so as to supply said at least one characteristic control voltage to said control level displaying means when a control signal for said at least one other characteristic is received by said control signal receiving means.

**4,340,909**  
**SOLID STATE AREA IMAGING APPARATUS**  
 Takahiro Yamada, Katano, and Hiromichi Tanaka, Hiokata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 7, 1980, Ser. No. 166,115

Claims priority, application Japan, Jul. 5, 1979, 54-85274

Int. Cl.<sup>3</sup> H04N 3/14

U.S. Cl. 358—213

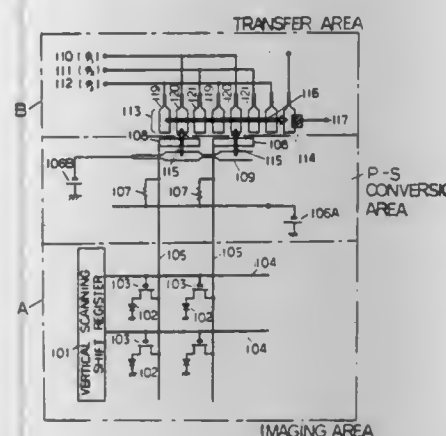
16 Claims

1. A solid state area imaging apparatus for producing a video

signal representing an optical image of an object, said apparatus comprising:

a photosensitive means for converting impinging radiation into electrical signals and which consists of a plurality of photosensitive elements which are substantially linearly arranged in lines in both a horizontal and vertical scanning direction;

a scanning means operatively connected to said photosensitive means for accessing one line of said photosensitive elements at a time and for reading out signal charges therefrom one line at a time;



a charge transfer means, including an output register means and a p-s conversion means which is operatively connected between said photosensitive means and said output register means, for receiving said signal charges and for injecting charge signals into predetermined positions of said output register means, each of said charge signals corresponding to each of said signal charges, wherein said output register means transfers said charge signals out therefrom to produce a video signal.

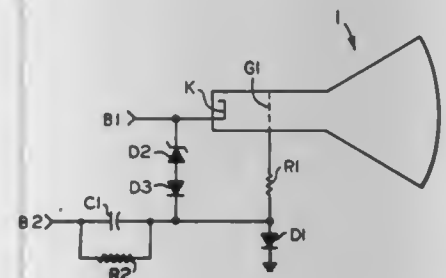
**4,340,910**  
**CRT SPOT SUPPRESSION CIRCUIT**  
 Silverio A. Valdes, Alexander, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Sep. 24, 1979, Ser. No. 78,421

Int. Cl.<sup>3</sup> H04N 5/68; H01J 29/96; H02H 7/20

U.S. Cl. 358—243

4 Claims



1. In a cathode ray tube system having a reference electrode coupled to a source of first potential voltage and a control electrode biased negatively with respect to the first potential voltage, spot-suppressing means coupled to a source of second potential voltage and the control electrode for superimposing negative-going transitions in the second potential voltage upon the control electrode so as to suppress spots on the face of the cathode ray tube system when that system is de-energized, said spot-suppressing means comprising breakdown means coupled between the reference electrode and the control electrode.

**4,340,911**  
**IMAGE GRADATION PROCESSING METHOD AND APPARATUS FOR MAMMOGRAM COPYING SYSTEM**  
 Hisatoyo Kato, Masamitsu Ishida, and Seiji Matsumoto, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

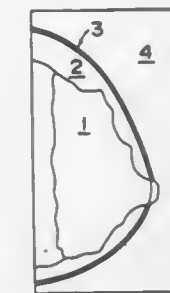
Filed Feb. 22, 1980, Ser. No. 123,697

Claims priority, application Japan, Feb. 28, 1979, 54-23090

Int. Cl.<sup>3</sup> H04N 5/32

U.S. Cl. 358—280

8 Claims



1. A method of processing a mammogram image which includes images of glandular tissue, subcutaneous tissue, and skin where the densities of the images increase from a minimum density of the glandular tissue through a boundary density between the densities of the subcutaneous tissue and the skin to a maximum density of the skin where the mammogram image is scanned with a light beam and the image densities recorded therein are read out and converted into an electric signal, the level of which varies with the recorded image densities, and then an image is recorded on a recording medium having a fog density by use of the electric signal, said method comprising lowering the level of the electric signal corresponding to the minimum density of the glandular tissue of the mammogram down to a level between the level corresponding to the fog density and a level higher than the level corresponding to fog density by 0.3 in terms of the density of the recording medium, and lowering the density of the mammogram image as a whole with the lowering degree decreasing from the smaller densities thereof to the higher densities, whereby the contrast of the mammogram image is raised in the image recorded on the recording medium.

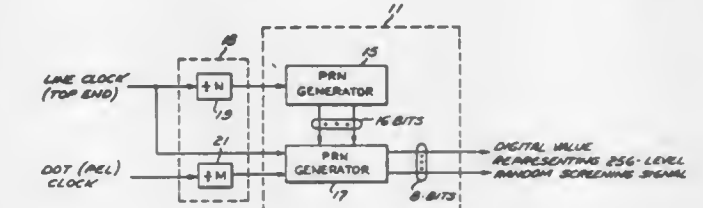
**4,340,912**  
**RANDOM SCREEN GENERATOR APPARATUS FOR PRODUCING HALFTONE IMAGES**  
 Donald E. Troxel, Belmont, Mass., assignor to AM International, Inc., Chicago, Ill.

Filed Sep. 15, 1980, Ser. No. 187,292

Int. Cl.<sup>3</sup> H04N 1/40

U.S. Cl. 358—283

10 Claims



1. Apparatus for producing random digital numbers useable as random screen reference values in producing halftone images, the apparatus comprising:

a first random number generator means responsive to an applied first clock signal for producing a first output in accordance with the frequency of the first clock signal; and

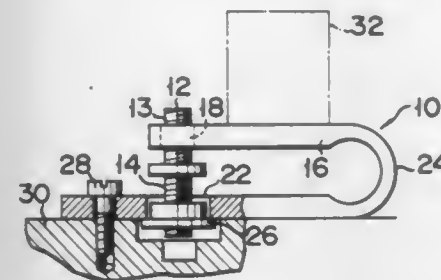
a second random number generator means coupled to receive the first output and a second clock signal for producing a sequence of random screen reference values in ac-







lower portions of the head mount and in substantial alignment with said through hole (22); at least one adjustment screw (12) having two oppositely extending male threaded sections (13, 14) cut in the same direction but at different pitches, one of said male threaded sections of said adjustment screw (12) being threadably engaged with said threaded hole (18) and the



other of said male threaded sections extending through said through hole (22) in an unthreaded state with respect to said through hole, said through hole (22) being larger than the outer diameter of said other male threaded section; and a nut (26) above the portion of the head mount in which said through hole (22) is formed, said nut (26) being in screw engagement with said other male threaded section.

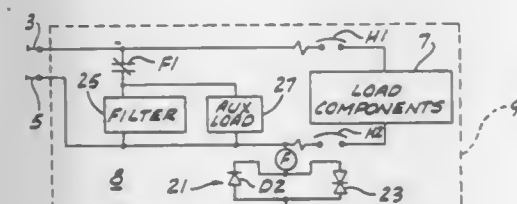
4,340,920

**MINE VEHICLE SAFETY APPARATUS**  
Ronald P. Gill, Nashville; Dempsey G. Tucker, Mascoutah, and John E. Hull, Jr., Sparta, all of Ill., assignors to Peabody Coal Company, St. Louis, Mo.

Filed Mar. 30, 1981, Ser. No. 249,078  
Int. Cl.<sup>3</sup> H02H 3/00

U.S. Cl. 361-49

9 Claims



1. A mine safety system for use with a direct current power supply delivering power via a pair of conductors to the direct current load components of mining apparatus which includes a conductive frame electrically isolated from ground and normally isolated from at least one of the conductors, comprising: means for transmitting an alternating current signal of a predetermined frequency over the pair of conductors to the mining apparatus; a filter at the mining apparatus in a shunt circuit with the load components and thereby being connected to said transmitting means, the filter passing the predetermined frequency signal; means for monitoring the impedance of the electrical load on the transmitting means at the predetermined frequency; means responsive to the monitoring means for stopping the delivery of power from the power supply to the mining apparatus upon the impedance of the electrical load on the transmitting means at the predetermined frequency exceeding a predetermined level, said predetermined level

exceeding the impedance of the shunt combination of the filter and load components; and means responsive to the flow of significant current to the mining apparatus frame for disconnecting said filter from said transmitting means, thereby to increase the impedance of the electrical load on the transmitting means at the predetermined frequency to above the predetermined level, whereby delivery of power from the power supply to the mining apparatus is stopped.

4,340,921

**HVDC POWER TRANSMISSION SYSTEM WITH METALLIC RETURN CONDUCTOR**

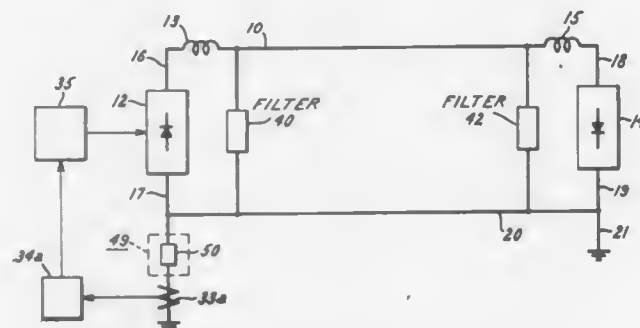
Robert H. Lasseter, Swarthmore, Pa., assignor to General Electric Company, Philadelphia, Pa.

Continuation of Ser. No. 908,331, May 17, 1978, abandoned.  
This application Oct. 20, 1980, Ser. No. 198,340

Int. Cl.<sup>3</sup> H02H 7/10

U.S. Cl. 361-56

6 Claims



1. In a high voltage d.c. power transmission system comprising: (i) a high voltage line, (ii) a first converter at one end of said line having first and second d.c. terminals of opposite polarity, the first terminal being connected to said line, (iii) a second converter at the opposite end of said line having first and second d.c. terminals of opposite polarity, said first terminal of the second converter being connected to said line, and (iv) a metallic return conductor interconnecting said second d.c. terminals of the two converters, the combination of:

- means for connecting said second terminal of said second converter to earth ground at said second terminal,
- means insulating said metallic return conductor from earth ground except for the earth ground connection defined hereinabove in (a), thereby causing said second terminal of said first converter to be floating with respect to d.c. under steady state conditions so as to allow voltages of several thousand volts or more to be developed on said metallic return conductor at said second terminal of the first converter,
- said metallic return conductor having no capacitor connected from earth ground thereto of a size capable of effectively limiting the voltage thereon during operating transients on the system, and
- a valve-type surge arrester connected between the second terminal of said first converter and earth ground, said surge arrester having a primarily zinc-oxide valve element and no gap in series therewith, said valve element being characterized by (i) substantial non-conductance of currents therethrough until the voltage thereacross reaches a predetermined protective level, and (ii) an ability to return to its substantially non-conducting state when the voltage thereacross drops to a seal-off level close to said protective level,
- said insulating means of (b) hereinabove and said surge arrester of (d) hereinabove, during normal operation of said converters, providing, at all locations along said metallic return conductor except at the connection of (a) hereinabove, a high impedance to normal harmonic currents generated by operation of said converters and attempting to flow through said connection of (a), thereby effectively limiting the flow between said converters through earth ground of said normal harmonic currents,

(f) the surge arrester having a protective level that is reached by the overvoltages produced on said return conductor by normal operating transients of the system.

4,340,922

**INTERFACE CIRCUIT IN CONFORMITY WITH EIA STANDARDS AND IMPLEMENTED WITH AN OPERATIONAL AMPLIFIER-LIKE CIRCUIT**

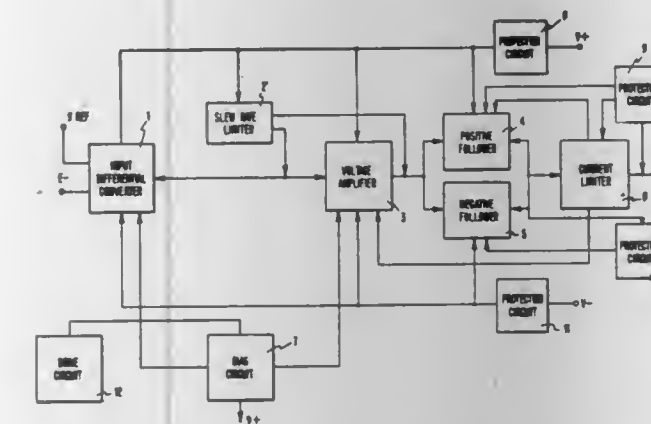
Francois X. Delaporte, Cros de Cagnes; Gerard M. Lebesnerais, Perthes, and Jean-Pierre Pantani, Nice, all of France, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 21, 1980, Ser. No. 208,959

Claims priority, application France, Nov. 28, 1979, 79 29808  
Int. Cl.<sup>3</sup> H02H 9/04

U.S. Cl. 361-91

12 Claims



1. An interface circuit utilizing the stages of an operational amplifier circuit with said stages including an input differential converter stage having two input terminals E- and E+ and an output terminal coupled to a frequency compensation stage, said operational amplifier further including a voltage amplifier stage coupled to said frequency compensation stage and to positive and negative voltage follower stages with latter stages coupled via current limiting means to output terminal means, the improvement comprising:

- reference voltage means coupled to one of said two input terminals E- and E+;
- protection circuit means including first unilateral conducting means series connected with the positive terminal of said supply voltage and arranged to protect said operational amplifier circuit stages from positive and negative overvoltages in excess of the supply voltage occurring at said output terminal means and second unilateral conducting means coupled between said output terminal means and said first unilateral conducting means so as to protect said positive voltage follower stage and said current limiting means from positive overvoltages; and
- constant current bias circuit means coupled to bias said operational amplifier circuit stages at a constant bias voltage independent of overvoltages in said supply voltage.

4,340,923

**ELECTRICAL CIRCUIT PROTECTOR**

Albert Bazarian, Lake Forest; John W. Scannell, Glenview, and Clifford H. Andersen, Park Ridge, all of Ill., assignors to General Instrument Corporation, New York, N.Y.

Filed Mar. 12, 1981, Ser. No. 243,198

Int. Cl.<sup>3</sup> H02H 1/04, 3/22

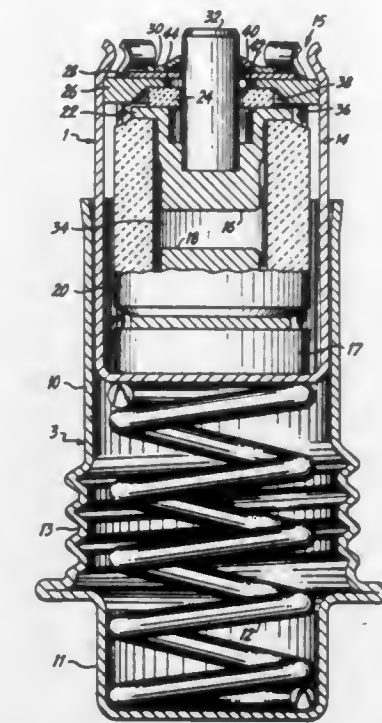
U.S. Cl. 361-120

12 Claims

1. Apparatus for protecting a circuit from electrical overload comprising:
- an electrically conductive casing;
  - a gas filled surge arrester situated within said casing and having first and second conductive electrodes spaced apart to provide a spark gap thereacross and a hermetically sealed gaseous environment in the region of said spark gap;
  - an additional electrode spaced from and axially aligned

1020 O.G.-44

with said gas filled surge arrester, said first and additional electrodes being separated by an air gap so as to form an air gap surge arrester and said second and additional electrodes being operatively electrically connected to said casing;



- discharge means comprising a high dielectric ceramic, sandwiched between and in contact with said first and additional electrodes, for causing ions to be emitted into said air gap in the presence of a predetermined electric potential across said air gap; and
- fastener means to maintain said sandwiched relation.

4,340,924

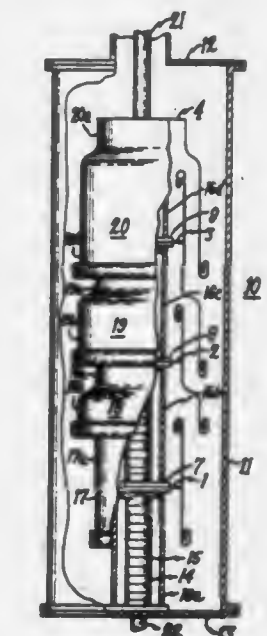
**GRADING MEANS FOR HIGH VOLTAGE METAL ENCLOSED GAS INSULATED SURGE ARRESTERS**  
James S. Kresge, Pittsfield, and Eugene C. Sakshang, Lanesborough, both of Mass., assignors to General Electric Company

Filed Oct. 27, 1980, Ser. No. 200,931

Int. Cl.<sup>3</sup> H02H 9/04

U.S. Cl. 361-127

7 Claims



1. A surge arrester assembly having graded capacitance comprising:
- a plurality of zinc oxide varistor discs arranged in a stack provided with a line connection at one end and a ground connection at an opposite end;



a metal housing coextensive with said varistor stack; and a succession of capacitor shields encompassing said varistor stack, each said shield electrically connected to a point in the portion of said stack encompassed thereby, some of said shields having a large diameter portion and a small diameter portion with the large diameter portion of one shield in spaced overlapping relation with the small diameter portion of a successive shield to provide intershield capacitance at the regions of overlap.

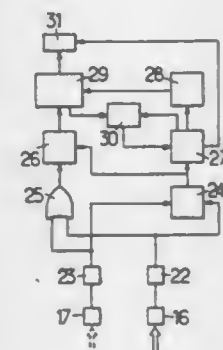
#### 4,340,925 SAFETY LOCKS

Jacques Lewiner, 5, rue Bory d'Arnex, 92210 Saint-Cloud, and Claude Hennion, 18, rue Flatters, 75005 Paris, both of France  
Filed Jan. 21, 1981, Ser. No. 226,761

Claims priority, application France, Jan. 25, 1980, 80 01673  
Int. Cl.<sup>3</sup> H01H 47/00

U.S. Cl. 361—172

19 Claims



1. Safety lock comprising at least one bolt adapted to cooperate with a suitable bolt clasp and at least one barrel adapted to receive a rotary actuating key, the actuation of the bolt requiring prior unlocking of this bolt ensured by applying to the key lodged in a barrel a sequence of at least angular solicitations whose characteristics correspond to at least one predetermined code memorised in the lock, means being provided to utilise for decoding purposes said sequence of solicitations and to ensure the consequent unlocking of the bolt, said means for utilising for decoding purposes the sequence of solicitations exerted on the key being of electrical type.

#### 4,340,926 DEVICE FOR ELECTROSTATICALLY CHARGING SHEET MATERIAL

John M. Payne, 36a High St., Maxey, Peterborough, England  
PCT No. PCT/GB79/00198, § 371 Date Jul. 16, 1980, § 102(e)  
Date Jul. 16, 1980, PCT Pub. No. WO80/01112, PCT Pub. Date May 29, 1980

PCT Filed Nov. 21, 1979, Ser. No. 198,950  
Claims priority, application United Kingdom, Nov. 23, 1978, 45805/78

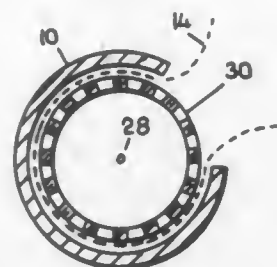
Int. Cl.<sup>3</sup> H01T 19/00

U.S. Cl. 361—229

11 Claims

1. In a photographic copier, a device for charging paper by corona discharge, comprising:  
a cylindrical housing defining a cylindrical cavity and having a conductive internal surface;

an inlet and an outlet to allow the paper to be introduced and extend around said internal surface;  
a wire conductor extending along the axis of the cylindrical housing and insulated from the conductive internal surface thereof; and



a source of electric potential with one terminal connected to the conductive surface and the other to the wire conductor in order to produce a corona discharge therebetween for laying a static charge on the paper.

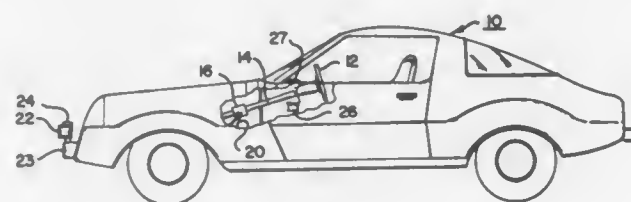
#### 4,340,927 Patent Not Issued For This Number

4,340,928  
ROTATABLE VEHICLE HEADLIGHTS  
Thomas Hohmann, Jr., 1770 Ferguson Rd., 206 Fox Croft, Allison Park, Pa. 15101

Filed Jul. 31, 1980, Ser. No. 174,347  
Int. Cl.<sup>3</sup> B60Q 1/12

U.S. Cl. 362—49

7 Claims



1. A rotatable vehicle headlight system comprising:  
(a) a mechanical linkage adapted to fit a vehicle's steering column in a manner so that movement of the steering column will activate the mechanical linkage;  
(b) a first potentiometer attached to the mechanical linkage in a manner so that its resistance will change when the linkage is activated;  
(c) at least one DC motor electrically connected to the first potentiometer;  
(d) a second potentiometer electrically connected to the first potentiometer and mechanically connected to one of the D.C. motors;

(e) at least one reflector pivotably connected to each DC motor;  
(f) at least one light bulb mounted within each reflector;  
(g) a power source electrically connected to the light bulbs and DC motors; and  
(h) a switch electrically connected to the power source.

there being a bore in said body adjacent said flenching; a sleeve on one end of and aligned with said nock, frictionally projected into said body within said bore; said nock being of a light transmitting plastic material and having a bore adjacent its one end; a normally open electrical circuit including a lamp and a battery assembly nested within said sleeve and body, with said lamp positioned within said nock bore; and a switch means on said arrow adapted to close said circuit.

#### 4,340,929

##### ILLUMINATED PORTABLE FLOOR

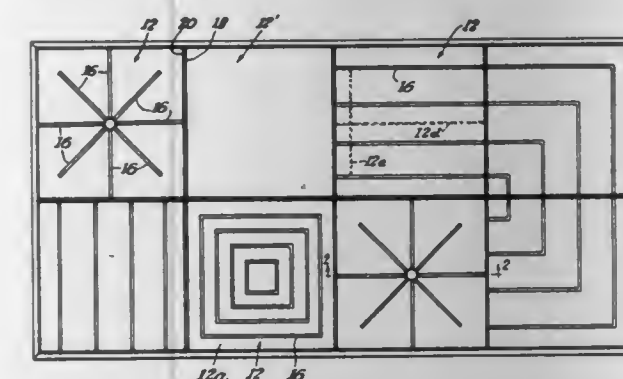
Robert S. K. Konikoff, North Miami Beach; Richard G. Rudolph, Miami, and George H. Gill, North Miami, all of Fla., assignors to Sico Incorporated, Minneapolis, Minn.

Filed Dec. 10, 1979, Ser. No. 101,716

Int. Cl.<sup>3</sup> F21S 1/02

U.S. Cl. 362—153

5 Claims



1. An illuminated portable dance floor for use in conjunction with light energizing apparatus comprising:  
a plurality of interlocking floor sections having top and bottom surfaces and means for coupling said sections together to create a continuous floor surface of adjacent sections,  
at least one illuminated segment embedded in any one of said sections, light from said segments being visible from said top surface,  
each section including electrical connecting means for supplying power to said segments in that section and for supplying power to at least one adjacent section, and said connecting means being located to engage like means on adjacent sections simultaneously with the joining of said coupling means.

#### 4,340,930

##### LIGHT ASSEMBLY FOR ARCHERS ARROW

Sam Carissimi, 22731 Sunnyside, St. Clair Shores, Mich. 48080

Filed Aug. 29, 1980, Ser. No. 182,491

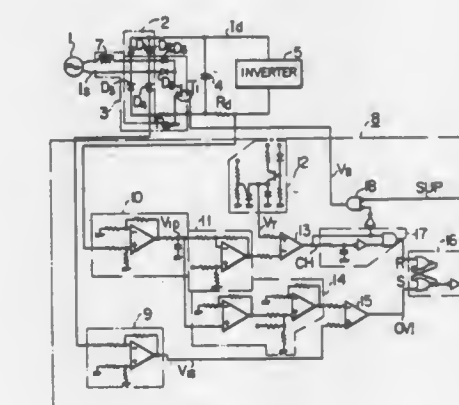
Int. Cl.<sup>3</sup> F21L 7/00

U.S. Cl. 362—204

12 Claims



1. In an archers arrow having an elongated body, a head, flenching and a nock;



1. A power supply system comprising:  
an AC power supply operating at a predetermined frequency;  
a rectifier circuit including rectifier elements connected to said AC power supply;  
a load coupled to a DC output of said rectifier circuit to be applied with output power of said rectifier circuit;  
an inductance element connected between said AC power supply and an AC input terminal of said rectifier circuit;  
a switching circuit including rectifier elements connected by a switching element between the AC input terminal of said rectifier circuit and the DC output of said rectifier circuit;  
an oscillation circuit for oscillating at a frequency higher than the frequency of said AC power supply;  
averaging means coupled to said load for providing a weighted voltage signal in accordance with an average DC current flowing in said load;  
a comparator coupled to an output of said oscillation circuit and to an output of said averaging means for comparing the output voltage of said oscillation circuit with said weighted voltage signal; and  
a circuit coupled between an output of said comparator and said switching element for determining a duty cycle for ON and OFF operations of said switching element on the basis of an output signal of said comparator.



4,340,932

**DUAL MAPPING MEMORY EXPANSION UNIT**

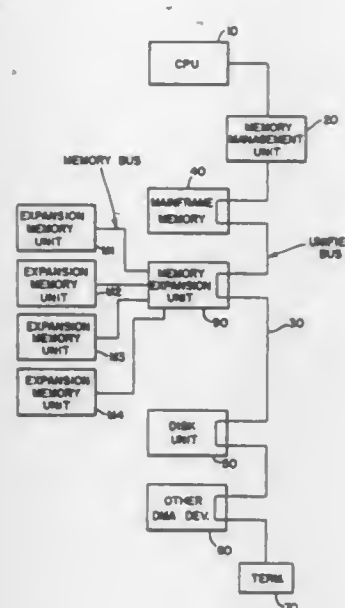
Richard E. Bakula, Indianantic; Dennis L. Maly, and James H. Weemhoff, both of Melbourne, all of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed May 17, 1978, Ser. No. 906,830

Int. Cl.<sup>3</sup> G06F 13/00

U.S. Cl. 364—200

22 Claims



1. In a data processing system including an I/O bus having a plurality of conductors for carrying both data and address signals; a plurality of I/O devices including devices forming physically addressed storage locations connected to said bus in parallel, each of said I/O devices being assigned to a respective address slot consisting of a predetermined block of the available addresses on said bus; a central processor unit for processing a program stored in at least one of said storage locations, the addresses of said storage locations being divided into first, second, and third portions; and address conversion means connected in series between said central processor unit and said bus for transmitting onto the bus, in response to a virtual address from said central processor unit, a physical address for selecting a storage location; the improvement comprising

- a plurality of expansion memory units providing a total number of memory locations exceeding the number of physical addresses making up an address slot on said bus;
- a memory expansion unit connected to said bus in parallel with said I/O devices and having an address slot assigned thereto for converting the block of physical addresses corresponding to said address slot on said bus into an expanded range of physical addresses for selecting said memory locations in said expansion memory units; and
- means for connecting the respective expansion memory units to said memory expansion unit;
- said memory expansion unit including a mapping register in the form of a random access memory storing the base physical address for a block of consecutively addressed memory locations, said mapping register being responsive to the first portion of said physical address received from said bus for reading out a selected base physical address; and
- address means for combining the output of said mapping register and the second portion of the physical address received from said bus to produce an intermediate address; at least a portion of said intermediate address juxtaposed with the third portion of said physical address received from said bus being forwarded to said expansion memory units as an expanded physical address.

4,340,933

**DATA PROCESSING SYSTEM HAVING CENTRALIZED NONEXISTENT MEMORY ADDRESS DETECTION**

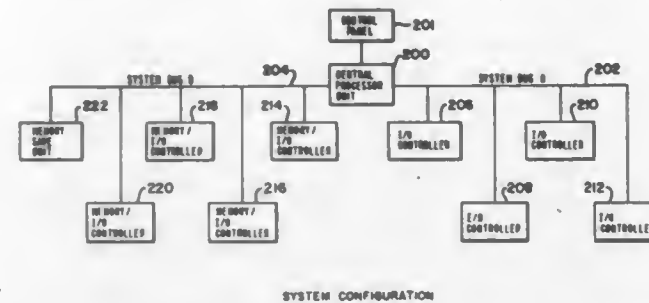
Ming T. Min, Chelmsford; John J. Bradley, Framingham; William Panepinto, Jr., Tewksbury, and Jian-Kuo Shen, Watertown, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Feb. 12, 1979, Ser. No. 8,010

Int. Cl.<sup>3</sup> G06F 11/00, 13/00

U.S. Cl. 364—200

2 Claims



2. A data processing system comprising:

- A. a main memory capable of storing a plurality of words of data, each word of said plurality of words of data having a unique memory address;
- B. a central processing unit (CPU), coupled to said main memory, capable of addressing words of data stored in said main memory;
- C. an input/output controller (IOC), coupled to said main memory and said CPU, capable of addressing words of data stored in said main memory;
- D. first means, included in said CPU, for detecting an attempt by said IOC to address a word of data not physically present in said main memory;
- E. second means, included in said first means, for detecting an attempt by said CPU during the execution of a software instruction to address a word of data not physically present in said main memory;
- F. address switch means, coupled to said first means, for indicating the highest address of a last word of data physically present in said main memory;
- G. bus means, included in said CPU and coupled to said IOC and said first means, for carrying a set of signals corresponding to said memory address from said IOC or said CPU to address a word of data not physically present in said main memory;
- H. comparator means, included in said first means and coupled to said bus means, for continually comparing said set of signals with the indication of the highest address of said last word of data physically present in said main memory from said address switch means;
- I. bistable means, having a data input, a clock input, a reset input and an output, included in said first means and with the data input coupled to the output of said comparator means, for storing an indication of an attempt by said IOC or said CPU to address a word of data not physically present in said main memory;
- J. signal means, coupled to said output of said bistable means and said IOC, for transmitting said indication of an attempt to address a word of data not physically present in said main memory to said IOC;
- K. memory cycle indication means, coupled to said clock input of said bistable means, for clocking said bistable means in a memory cycle when said bus means is carrying said set of signals corresponding to said memory address;
- L. first reset means, included in said first means and coupled to said reset input of said bistable means, for resetting said bistable means prior to the end of said memory cycle if said memory address came from said IOC;
- M. interrupt means, coupled to said output of said bistable means and said CPU, for interrupting the execution by said CPU of a software instruction if said bistable means still indicates after the end of said memory cycle that an

attempt to address a word of data not physically present in said main memory has occurred; and

N. second reset means, included in said first means and coupled to said reset input of said bistable means, for resetting said bistable means in response to the interruption by said interrupt means of the execution of a software instruction by said CPU.

4,340,934

**METHOD OF GENERATING SUBSURFACE CHARACTERISTIC MODELS**

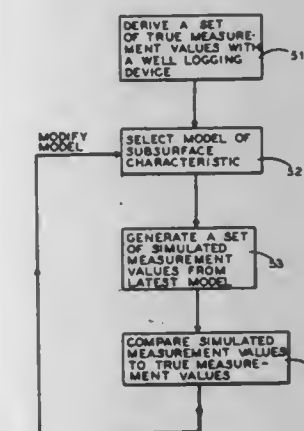
Francis F. Segesman, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 177,940, Sep. 7, 1971, abandoned. This application Mar. 12, 1979, Ser. No. 19,918

Int. Cl.<sup>3</sup> G06F 15/20; E21B 47/00

U.S. Cl. 364—422

26 Claims



1. A well logging method of plotting the variation with depth of a characteristic of the earth formation adjacent a borehole to a higher vertical resolution than that of the output of a well logging device passed through the borehole to initially measure said characteristic, comprising the steps of:

- (a) for each of a succession of depths in the borehole, producing a corresponding initial well logging measurement of said characteristic of the earth formation adjacent the borehole at said depth derived from a well logging device which is passed through the borehole and has a selected vertical response range and a selected vertical response characteristic;
- (b) storing, in a computer storage device, a selected variation of said characteristic with depth along the borehole;
- (c) generating new well logging measurements for said depths in the borehole by, operating computer circuits to apply the vertical response characteristic of the well logging device to said stored selected variation of the characteristic with depth along the borehole;
- (d) operating computer circuits to compare the initial and the new well logging measurements, and
- (e) modifying said selected variation of the measured characteristic with depth along the borehole by operating computer circuits in accordance with the comparison to produce thereby a modified variation with depth which conforms more closely to the initial logging measurements, and plotting said modified variation of the measured characteristic of the earth formation versus depth in the borehole to thereby produce a plot having higher vertical resolution than that determined initially by the extent of the vertical response range of the well logging device, said plot approximating the variation of the measured charac-

teristic of the earth formation with depth in the borehole more closely than a plot of the initial well logging measurements versus depth in the borehole.

4,340,935

**METHOD OF TESTING THE OPERATIVENESS OF A CONTROL SYSTEM**

Jurgen Anlauf, Goppingen, and Wolf-Dieter Jonner, Sandhausen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

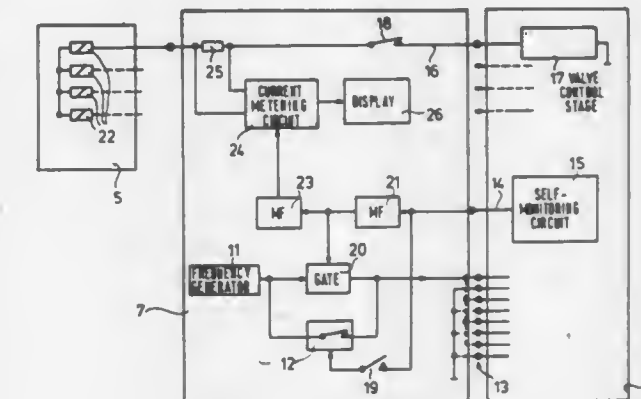
Filed Aug. 7, 1979, Ser. No. 64,625

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841220

Int. Cl.<sup>3</sup> G06F 11/30, 15/50

U.S. Cl. 364—426

9 Claims



1. A method of testing the operativeness of a negative feedback control system employing at least one feedback transducer comprising:

- providing a feedback signal from the feedback transducer to control circuit means;
- generating actuating signal depending on the feedback signals for actuating adjuster elements with the actuating signals; applying to the control circuit means artificially generated signals simulating those furnished by at least one feedback transducer;
- applying operating voltage to the control circuit means in order to initiate a predetermined test program; monitoring the course of implementation of the test program;
- at least one reinitiating the test program upon completion of the initiated test program and if no malfunction signals had been produced, but now with a predetermined malfunction simulated;
- determining upon each completion of the test program the production of a malfunction signal or the absence of a malfunction signal to indicate whether a self monitoring circuit means is or is not operating correctly with respect to the malfunction simulated; and
- generating a malfunction signal upon detection of a malfunction exhibited by the circuit control means as an output signal.

4,340,936

**MICROPROCESSOR NAVIGATIONAL AID SYSTEM**

George R. Mounce, 18 Bridle Path, Willowdale, Ontario, Canada (M2L 1C8)

Filed Jul. 3, 1980, Ser. No. 165,840

Int. Cl.<sup>3</sup> G01C 21/10

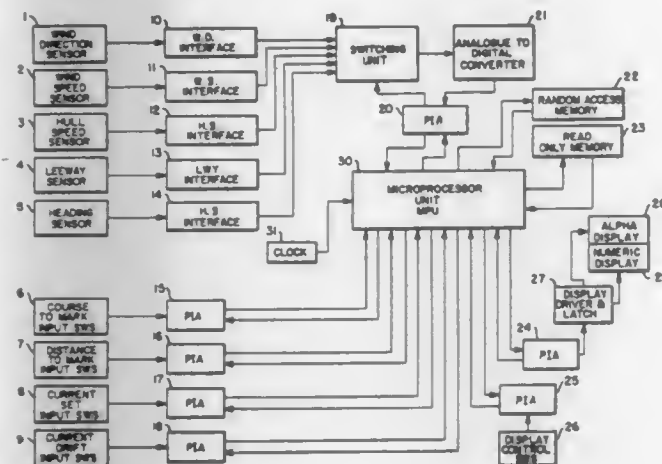
U.S. Cl. 364—443

13 Claims

1. A navigational aid system for use in navigating a vessel toward a destination mark whose course and distance are known, comprising:



- (a) means for measuring variable navigational parameters defining the motion of the vessel relative to the water, the motion of the wind relative to the vessel and the compass heading of the vessel;
- (b) means for converting the parameters sequentially into digital data inputs;
- (c) addressable memory means for storing data in digital form;
- (d) manually settable fixed parameter means for inserting information defining said course and distance to said destination mark and for defining current drift and set, along said course the information being stored in the addressable memory means in the form of digital data inputs;
- (e) a microprocessor having input and output ports, and having a main routine and subroutines for calculating



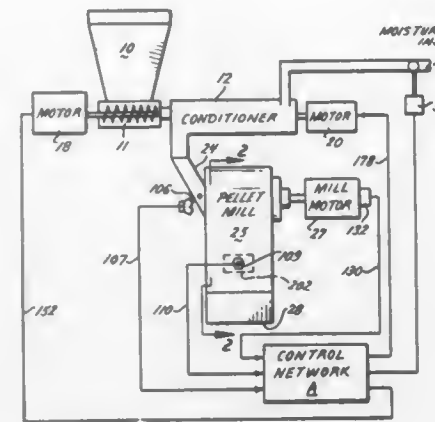
- navigational output data from said measured and fixed data inputs and for continuously updating and storing said input and output data as digital data in said addressable memory means;
- (f) a digital display operative to display selected digital data; and
- (g) multiple actuatable selection means corresponding respectively with the various input and output digital data stored in said memory means, said selection means being connected with the microprocessor to be sequentially polled thereby during said routines, and the microprocessor being operative to transfer that digital data which corresponds with each actuated selection means for display on said digital display.

**4,340,937**  
**AUTOMATIC CONTROL FOR A PELLET PRODUCING APPARATUS**  
 Joseph A. Volk, Jr., Florissant, Mo., assignor to Beta Corporation of St. Louis, Bridgeton, Mo.  
 Filed Apr. 14, 1980, Ser. No. 139,841  
 Int. Cl.<sup>3</sup> G05B 1/02, 13/02

U.S. Cl. 364-468

7 Claims

1. An automatic control system for a pelleting apparatus; the apparatus including a pellet producing means and means for feeding a supply of material to the producing means, said control system comprising means for sensing the temperature of the material near the input of the producing means, means for sensing the temperature of the material near the output of the producing means, and means for measuring the difference between said temperatures ( $\Delta T$  mill), and means for automati-

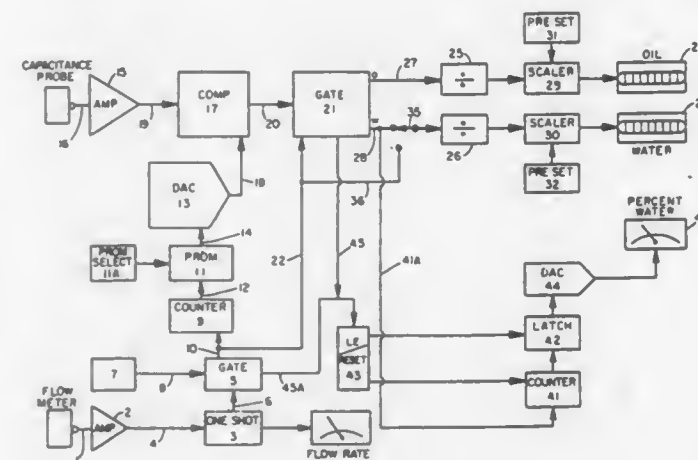


said sensing means to maintain  $\Delta T$  mill to within a prescribed range.

**4,340,938**  
**NET OIL COMPUTER**  
 John B. Rosso, Tulsa, Okla., assignor to Combustion Engineering, Inc., Windsor, Conn.  
 Filed Jul. 7, 1980, Ser. No. 166,207  
 Int. Cl.<sup>3</sup> G01F 1/00

U.S. Cl. 364-510

4 Claims



1. A net oil computer, including,
- a flow meter for sensing the rate of flow of a mixture of oil and water and establishing an output of voltage pulses with a frequency representative of the rate of flow,
- an electronic clock establishing an output of voltage pulses at a constant frequency substantially greater than the frequency of the flow pulses,
- a first gate receiving both the clock pulses and the flow pulses arranged to divide the flow pulses into trains of clock pulses,
- a binary counter receiving the clocked trains of pulses and establishing each train as a separate output,
- a prom circuit connected to the binary counter programmed to receive each clocked pulse train in the form of binary data and establishing a nonlinear output of the binary data,
- a digital-to-analog converter connected to the prom circuit to receive the output of the prom circuit and convert it to a voltage ramp output,

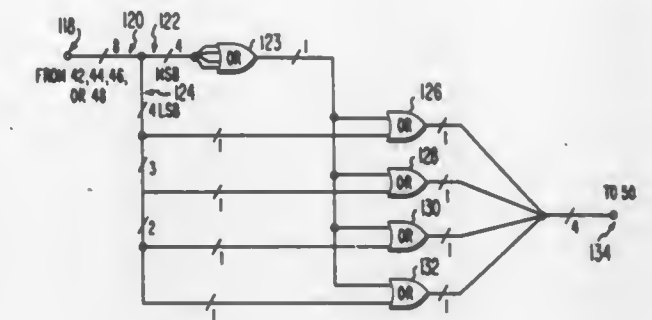
- a primary element capacitance arranged to respond to the flowing mixture of oil and water to establish an analog signal output with the non-linearity matching that of the prom output,
- a comparing circuit connected to the capacitance circuit and the pulse train analog circuit to establish an output divided by each portion of the ramp as determined by the value of the capacitance circuit signal,
- a second gate receiving the clocked pulse trains and the output of the comparison circuit and dividing each train into two quantitative parts proportional to the division of the ramp analog signal,
- and means to manifest each portion of the pulse train divided by the gate as the quantities of oil and water of the mixture sensed by the capacitance.

**4,340,940**  
**HARDWARE REDUCTION BY TRUNCATION OF SELECTED NUMBER OF MOST SIGNIFICANT BITS FOR DIGITAL VIDEO SYSTEM USING SUBSAMPLING AND ADAPTIVE RECONSTRUCTION**  
 James J. Williams, Jr., Plainsboro, and Robert A. Dischert, Burlington, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 26, 1980, Ser. No. 181,425  
 Int. Cl.<sup>3</sup> G06F 7/02

U.S. Cl. 364-745

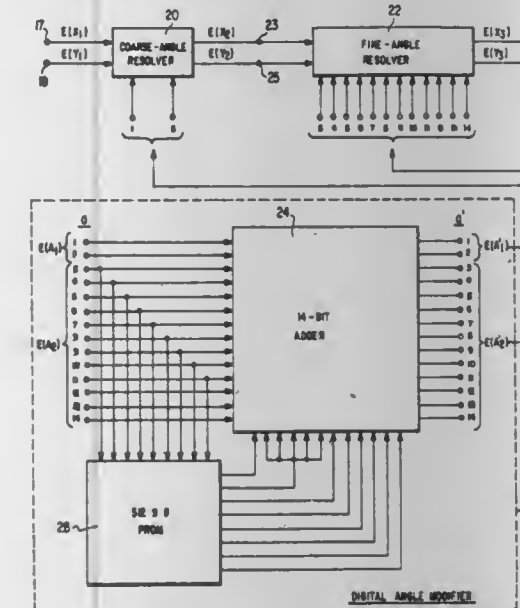
8 Claims



**4,340,939**  
**SOLID-STATE RESOLVER APPARATUS INCLUDING DIGITAL ANGLE MODIFIER**  
 Arthur Mayer, 83-57 118th St., Kew Gardens, N.Y. 11415  
 Filed Jun. 24, 1980, Ser. No. 162,672  
 Int. Cl.<sup>3</sup> G06J 1/00; G06G 7/22

U.S. Cl. 364-603

7 Claims



7. Resolver apparatus for receiving simultaneously a vectorial input signal and an angular input signal, said vectorial input signal having first and second components corresponding respectively to the orthogonal components of an input vector and said angular input signal corresponding to an angle of rotation, said apparatus generating a vectorial output signal having first and second components corresponding respectively to the orthogonal components of an output vector produced by rotation of said input vector through said angle of rotation, comprising:
- memory means for receiving said angular input signal and generating at its output a correction signal, said correction signal being a function of said angular input signal;
- adding means for adding said angular input signal and said correction signal to produce a modified angular signal; and
- resolver means for receiving said vectorial input signal and said modified angular signal, said modified angular signal causing said resolver means to rotate said vectorial input signal through said angle of rotation.

**4,340,941**  
 Patent Not Issued For This Number

**4,340,942**  
**PERMALLOY-FIRST BUBBLE SWITCH**  
 Otto Voegeli, Morgan Hill, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.  
 Filed Dec. 1, 1980, Ser. No. 211,599  
 Int. Cl.<sup>3</sup> G11C 19/08

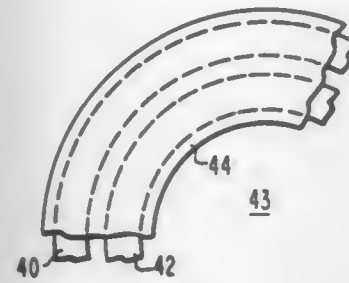
U.S. Cl. 365-16

10 Claims

1. A bubble switching device comprising:
- a first layer of bubble domain supporting material,
- a spacer layer on said first layer,
- a first propagation element superimposed on said spacer layer, said first element having a substantially curved portion,
- a second propagation element superimposed on said first layer, said second element having a substantially curved portion that is in spaced relation with and substantially concentric with said first curved portion, and
- a conductor element superimposed on said first and second propagation elements, said conductor element having a



substantially curved portion concentric with said first and second element curved portions wherein passing current through said conductor element permits a bubble in said



first layer to be moved from under said first element curved portion to under said second element curved portion.

4,340,943

## MEMORY DEVICE UTILIZING MOS FETS

Masamichi Asano, Tokyo, and Hiroshi Iwahashi, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

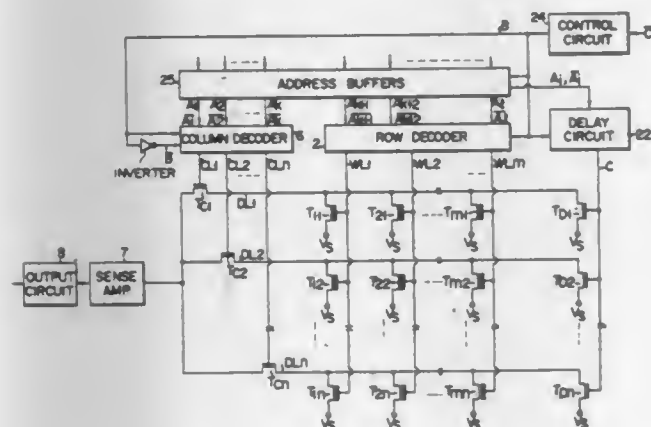
Filed May 28, 1980, Ser. No. 153,951

Claims priority, application Japan, May 31, 1979, 54-68033, 54/68034, Aug. 10, 1979, 54/101182

Int. Cl.<sup>3</sup> G11C 7/00, 11/40

U.S. Cl. 365—194

16 Claims



1. A memory device utilizing metal oxide semiconductor field effect transistors (MOS FETs) formed in an electrically selectable semiconductor chip, comprising:

- a plurality of row lines through which input signals are supplied;
- a row decoder for selecting any one of said row lines;
- a plurality of column lines through which output signals are supplied;
- a column decoder for selecting any one of said column lines;
- a plurality of memory cells connected to said row and column lines in such a manner that each receives an input signal through the row line to which it is connected and supplies an output signal through the column line to which it is connected;
- a signal sensing circuit connected to said column lines for detecting an output signal supplied thereon and for supplying an output circuit with a readout signal in response thereto;
- a first potential source connected to said column lines through a load element for supplying said column lines with a reference voltage potential;

a second potential source connected to said memory cells for supplying said memory cells with a second potential source voltage; and

means for holding said column lines at a potential substantially equal to the voltage supplied from said second potential source, for the period during which said semiconductor chip is not in a selected state and for an initial portion of the period during which said semiconductor chip is in a selected state.

4,340,944

## ULTRASONIC ECHOGRAPHIC PROBE HAVING AN ACOUSTIC LENS AND AN ECHOGRAPH INCORPORATING SAID PROBE

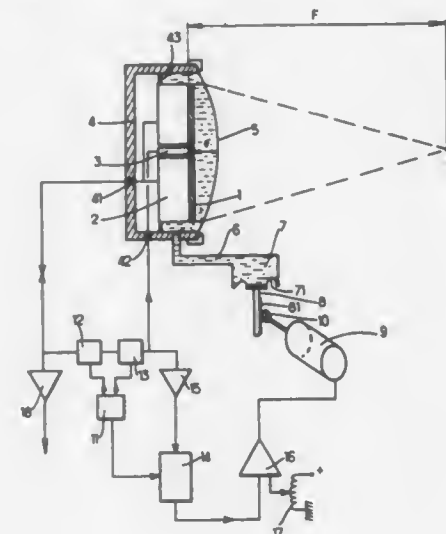
Jacques Dory, Villenoy-les-Meaux, France, assignor to CGR Ultrasonic, Villenoy-les-Meaux, France

Filed Mar. 6, 1981, Ser. No. 241,111

Claims priority, application France, Mar. 7, 1980, 80 05200 Int. Cl.<sup>3</sup> G01S 15/89

U.S. Cl. 367—96

7 Claims



1. An ultrasonic echographic probe having a deformable acoustic lens and comprising a main piezoelectric transducer associated with an acoustic lens constituted by a chamber filled with a liquid and having a first face delimited by the active face of the transducer and a second curved face constituted by a deformable diaphragm, wherein said probe comprises means for varying the pressure of the liquid on the diaphragm as a function of a control signal, an electroacoustic means for measuring the thickness of the lens by reflection of ultrasonic pulses, and means for comparing the thickness-measuring signal generated by said electroacoustic means with a signal which is representative of a reference value in order to generate a difference signal which constitutes said control signal.

4,340,945

## OPERATING APPARATUS FOR AN APPLIANCE OF A MOTOR VEHICLE

Diethard Gothe, North Eltham, Australia, assignor to VDO Adolf Schindling AG, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 115,774

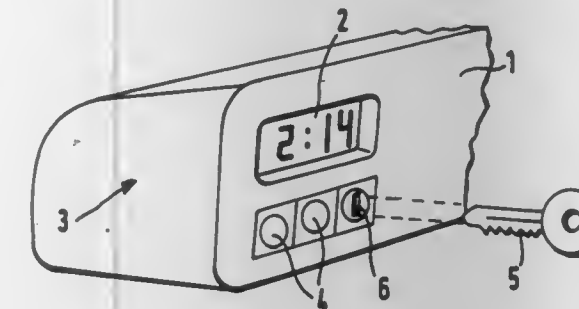
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1979, 2909258

Int. Cl.<sup>3</sup> G04F 8/00; G04B 47/00; B62D 45/00; B60Q 1/00 U.S. Cl. 368—6

10 Claims

1. Operating apparatus for an appliance with electrical indication, particularly an electrical digital clock, of a motor vehi-

cle with electric push-button switch means, said apparatus comprising a recess for receiving a normally detached key-like element, a contact switch comprising a movable electrical contact element and a cooperating fixed electrical contact element both associated with the electrical circuit controlled by said push-button switch, said movable contact element



having at least a portion thereof positioned in said recess, whereby said key-like element when inserted into said recess into operative association with said movable contact element determines the state of operativeness of said electrical circuit which may be used to correct the indication of said electrical digital clock or other appliance and is controlled by said push-button switch.

4,340,946

## ELECTRONIC TIMEPIECE

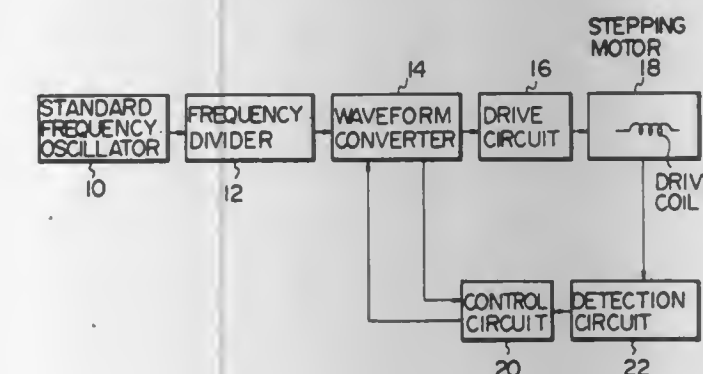
Fumio Kanno, and Fumio Nakajima, both of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Jul. 24, 1980, Ser. No. 171,914

Claims priority, application Japan, Jul. 27, 1979, 54-94933 Int. Cl.<sup>3</sup> G04B 19/00

U.S. Cl. 368—76

8 Claims



1. In an electronic timepiece having a source of a standard frequency timebase signal, frequency divider means for producing a unit time signal and a plurality of timing signals by frequency division of said standard frequency timebase signal, drive circuit means responsive to said unit time signal for producing a drive signal, and a stepping motor having a drive coil and a rotor which is periodically rotated in response to said drive signals applied to said drive coil, the improvement comprising:

waveform converter circuit means coupled between said drive circuit and said frequency divider means and coupled to receive said unit time signal and said timing signals, for generating a plurality of drive input signals, each comprising a train of pulses synchronized with said unit time signal, for driving said stepping motor at a plurality of different drive power levels through said drive circuit means, said drive input signals including a minimum drive

power level input signal and a maximum drive power level input signal, and at least one intermediate drive power level input signal, a selected one of said input signals being applied from said waveform converter circuit means to said drive circuit means, said drive circuit means being operable to establish a short-circuit condition across said drive coil in the intervals between periodic applications of said selected drive input signals to said drive circuit means, said waveform converter circuit means further producing at least one interruption signal pulse following each of said drive input signal pulses, said drive circuit means being responsive to said interruption signal pulse for interruption said short-circuit condition of said drive coil, with at least two of said interruption signal pulses occurring successively after each drive input signal pulse of level intermediate between said maximum drive power level input signal and said minimum drive power level input signal;

control and detection circuit means for detecting the amplitude of a voltage induced in said drive coil during each of said interruption signal pulses, said control and detection circuit means producing a first control signal if at least one of said drive coil induced voltages of said successive interruption signal pulses occurring after said intermediate drive input signal pulse is above a predetermined threshold level, and producing a second control signal if a remaining one of said drive coil induced voltages during said successive interruption signal pulses is above said predetermined threshold level;

said waveform converter circuit means being responsive to said first control signal for selecting a drive input signal of level lower than the drive input signal currently being applied, for application to said drive circuit means, and said waveform converter circuit means being further responsive to said second control signal for selecting a drive input signal of level higher than the drive input signal currently being applied, for application to said drive circuit means.

4,340,947

## DUAL TIMING APPARATUS

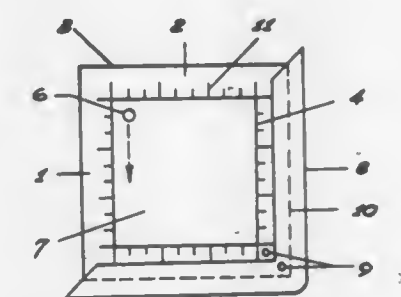
Lyndon O. Barton, 26 Shull Dr., Newark, Del. 19711

Filed Jan. 30, 1981, Ser. No. 231,147

Int. Cl.<sup>3</sup> G04F 1/04

U.S. Cl. 368—93

6 Claims



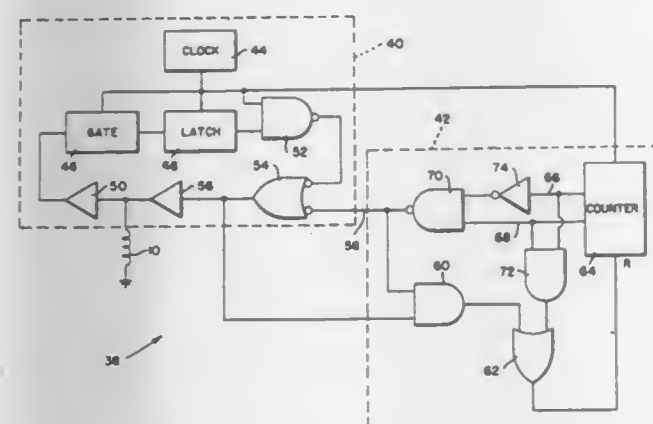
1. A timing apparatus comprising an enclosure having a rectangular cavity filled with a fluid, a body that is free to move within said fluid and a base wherein

- a. said fluid-filled cavity forms a fluid layer, rectangular in shape, with uniform thickness sufficient to permit freedom of movement of said body in at least two directions,
- b. said body has a density slightly different from that of the fluid,
- c. said enclosure is constructed of a material such that said movement of said body is completely visible anywhere within said fluid-filled cavity,
- d. said base is right angular so that on a level surface, it is



- rotatable in a vertical plane from one leg to the other to restrict said apparatus to just two stable operating positions.
- c. said enclosure is attached to said base such that the legs of said base are parallel to adjacent sides of said rectangular cavity,
- f. said rectangular cavity, when in one of said stable positions or the other, has a normally upright orientation with adjacent sides horizontal and vertical so that said body, under influence of gravity or buoyancy, moves in a parallel path relative one of said adjacent sides or the other.

**4,340,948**  
**SINGLE-COIL BALANCE WHEEL FOR DRIVING A MECHANICAL MOVEMENT**  
 John W. Goodnight, Kannapolis, N.C., assignor to General Time Corporation, Thomaston, Conn.  
 Filed Apr. 24, 1980, Ser. No. 143,291  
 Int. Cl.<sup>3</sup> G06F 1/04; H02K 33/10  
 U.S. Cl. 368-158 14 Claims



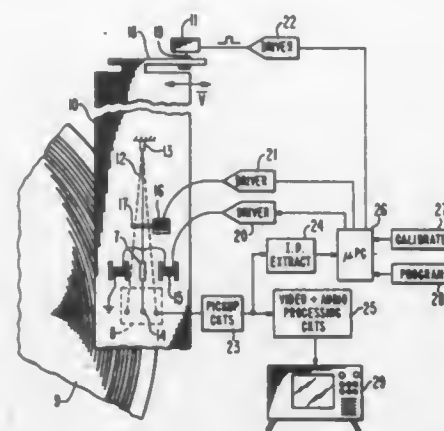
1. In combination with a timepiece: a single-coil including a winding serving as a pick-up coil and a drive coil; a mechanical movement; a movable system for driving said mechanical movement including a balance wheel formed by at least one plate and a magnetic member having a magnetic north pole and a magnetic south pole carried by each said plate; means mounting each said plate for movement rotationally about an axis adjacent said coil and parallel to the axis of a central region so that said magnetic field may sweep back and forth across said winding from a position approaching one outer edge, through said central region, to a position beyond the other outer edge to induce a voltage in said winding upon each back and forth sweeping movement; and a circuit having an input connected to said coil responsive to said induced voltage, an output connected to said coil adapted to impress a feedback signal across said winding, a start signal generator connected to said output, means for generating a feedback signal substantially in synchronism with said induced voltage to which said circuit shall have responded to add energy to the movable system during the time that said balance wheel is sweeping at least at a minimum prescribed weight of movement and at the same time to provide a reset signal to reset said start signal generator to prevent generation of a start signal, said circuit further including a source of output oscillation, and a gate circuit controlled by said source of output oscillation to connect and disconnect said input and output.

**4,340,949**  
**PROCESSOR CONTROLLED VIDEO DISC SERVO SYSTEM**  
 Kevin C. Kelleher, Plainfield, Ind., assignor to RCA Corporation, New York, N.Y.  
 Filed Jul. 31, 1980, Ser. No. 174,030  
 Int. Cl.<sup>3</sup> G11B 21/04, 3/38  
 U.S. Cl. 369-33 8 Claims

1. A record playback apparatus for recovering prerecorded information from disc records wherein the prerecorded information

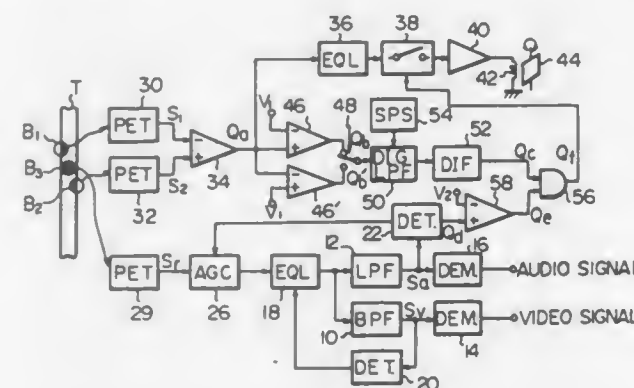
is contained in information tracks and the information includes track identification numbers, said apparatus comprising:

- a carriage assembly;
- signal recovery means mounted to the carriage assembly and arranged to engage the disc record;
- pickup circuitry cooperating with the signal recovery means for producing an electrical manifestation of the recorded information, including said track identification numbers;



means responsive to said electrical manifestation for identifying said track identification numbers and for generating a control pulse each time a predetermined number of track numbers occur in a predetermined succession; and motive means mechanically coupled to the carriage assembly and responsive to said control pulses for translating the carriage in discreet steps by more than one information track radially across said disc record upon receiving each control pulse.

**4,340,950**  
**VIDEO DISC PLAYER**  
 Minoru Kosaka, Tokorozawa, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan  
 Filed Oct. 10, 1980, Ser. No. 196,148  
 Claims priority, application Japan, Oct. 12, 1979, 54-131494; Oct. 12, 1979, 54-131495; Oct. 13, 1979, 54-132285  
 Int. Cl.<sup>3</sup> G11B 21/10; H04N 5/76  
 U.S. Cl. 369-44 13 Claims



8. In a video-disc information reading and reproducing apparatus including a source of a reproducing signal read out from a video disc scanned by a detecting point which is deflected radially of the video disc and a signal correcting device which is operative to compensate for the attenuation of the signal level of high frequency components of said reproducing signal and which includes signal level detector means operative to produce an output signal variable with the signal level of a frequency modulated audio carrier component contained in the reproducing signal, a tracking servo system for deflecting said detecting point radially of said video disc, the tracking servo system comprising

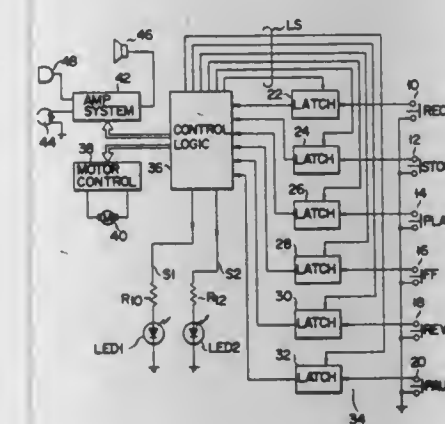
error signal producing means operative to produce a tracking error signal which is continuously variable in magnitude with the distance between the center line of a target track on said video disc and said detecting point to be placed on said target track and which has polarities respectively corresponding to the directions in which the said detecting point is to be deflected radially of the video disc,

comparing means for comparing the output signal having a predetermined level for producing a track existence signal when the former is higher in level than the latter,

control signal producing means responsive to said tracking error signal and said output signal from said comparing means and operative to produce a loop closure control signal when said tracking error signal has a predetermined level in the presence of said track existence signal from the comparing means, and

switch means provided in the servo loop of said tracking servo system and operative to make operative the servo loop in response to the loop closure control signal so as to perform quick and smooth lock-in operation.

**4,340,951**  
**OPERATION MODE DISPLAY APPARATUS**  
 Kazuyasu Motoyama; Toshihiro Nakao; Katsumi Kanayama, and Kenzi Furuta, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan  
 Filed May 14, 1980, Ser. No. 149,926  
 Claims priority, application Japan, May 24, 1979, 54-64230  
 Int. Cl.<sup>3</sup> G11B 27/36  
 U.S. Cl. 369-53 15 Claims



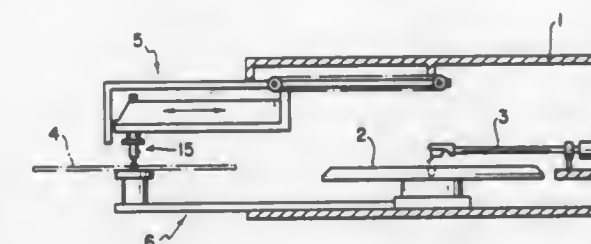
12. An operation mode display apparatus for a multi-mode tape recorder, comprising:

first and second light emitting diodes which respectively emit light of different colors, said light emitting diodes being capable of being operated to respective light producing and non-light producing display states independently of each other; and

a single display state indicating surface in light communication with both of said light emitting diodes for indicating on said single indicating surface the display states of both of said first and second light emitting diodes corresponding to an operation mode of the tape recorder;

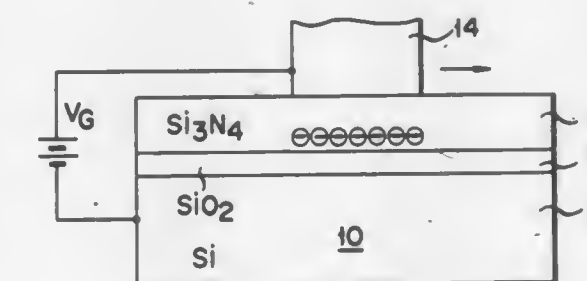
wherein at least three operation modes of the tape recorder are displayable by respectively different combinations of the display states of said first and second light emitting diodes as displayed on said single indicating surface.

**4,340,952**  
**AUTOMATIC DISC LOADING MECHANISM**  
 Yuji Ikeda, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan  
 Filed Sep. 17, 1980, Ser. No. 187,896  
 Claims priority, application Japan, Sep. 17, 1979, 54-119706; Sep. 17, 1979, 54-119709  
 Int. Cl.<sup>3</sup> G11B 17/04  
 U.S. Cl. 369-77 13 Claims



1. An automatic disc loading mechanism for a disc player comprising a player body; a turntable; disc transferring means for automatically delivering a disc to said turntable and automatically delivering said disc outside of said player body, said disc transferring means including clamping means for clamping said disc at a center hole position thereof, said clamping means comprising a clamping spindle freely movable in substantially a vertical direction to a plane including the surface of said turntable and insertable into said center hole of said disc; a projecting member projectable beyond an outer wall of said clamping spindle; and drive means for driving said projecting member in a projecting direction, said projecting member being driven to clamp said disc when said clamping spindle inserted into said center hole of said disc is lifted, said projecting member being rotatably mounted in said clamping spindle, said drive means comprising a slidable member located in and slidable within an axial bore formed in said clamping spindle and being slidable in response to a predetermined outside force to rotate said projecting member in a predetermined direction and biasing means for biasing said projecting member in a direction opposite to said predetermined direction.

**4,340,953**  
**INFORMATION RECORDING MEDIUM AND RECORDING AND REPRODUCING SYSTEM USING THE SAME**  
 Soichi Iwamura, Fuchu; Yasuaki Nishida, Tokyo; Toshimi Yamato, Musashino; Norikazu Sawazaki; Yoshio Nishi, both of Yokohama; Masaharu Watanabe, Yokosuka, and Norio Endo, Yokohama, all of Japan, assignors to Nippon Hoso Kyokai and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, both of, Japan  
 Filed May 7, 1980, Ser. No. 147,620  
 Claims priority, application Japan, May 14, 1979, 54-58090  
 Int. Cl.<sup>3</sup> G11B 9/06  
 U.S. Cl. 369-126 6 Claims



1. An information recording medium comprising a semiconductor substrate, a first insulating film formed on one principal surface of said semiconductor substrate, and a second insulating film formed on the other principal surface of said semiconductor substrate.

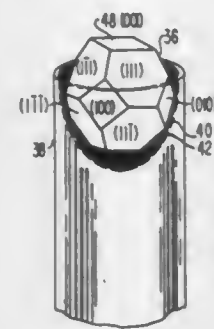


ing film formed on said first insulating film and having a charge storage function, said second insulating film having a principal surface which forms the top surface of said recording medium, wherein charges corresponding to a recording signal are passes through said first insulating film by a tunnel effect and stored in said second insulating film when a voltage corresponding to said recording signal is applied between said substrate and a recording electrode stylus which moves along said top surface.

#### 4,340,954 STYLUS TIP FABRICATION FROM A SYNTHETIC DIAMOND STONE

Shiu-Shin Chio, and George A. Kim, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.  
Filed Aug. 4, 1980, Ser. No. 174,865  
Int. Cl.<sup>3</sup> G11B 3/44

U.S. Cl. 369-173



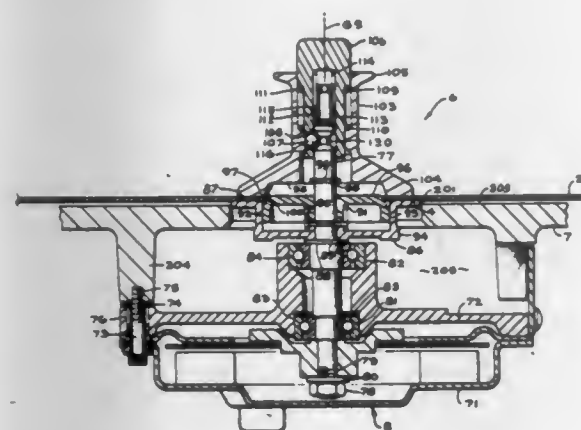
5. In a stylus tip fabricated from a synthetic diamond stone having a plurality of facets oriented along the {100} family of planes, said facets having an average surface area, the improvement comprising said entire tip being a portion of said stone bounded by a right circular cylinder having a base thereof centered along one of said facets having a surface area larger than said average surface area, said cylinder having a base diameter and height equal to about half the width of said one facet.

#### 4,340,955 VIDEO DISC PLAYER

James E. Elliott, San Pedro, Calif., assignor to Discovision Associates, Costa Mesa, Calif.  
Continuation of Ser. No. 890,770, Mar. 27, 1978, abandoned.  
This application Feb. 9, 1979, Ser. No. 10,870  
Int. Cl.<sup>3</sup> G11B 3/62, 17/00

U.S. Cl. 369-213

21 Claims



1. A video disc player comprising:  
a housing including fixed support means having at least one linear rail member;  
a movable carriage having at least one linear bearing means in operative engagement with said rail member;  
means for controlling movement of said carriage with respect to said housing along said rail;  
a motor and spindle assembly mounted on said carriage for movement therewith, said spindle having a central axis

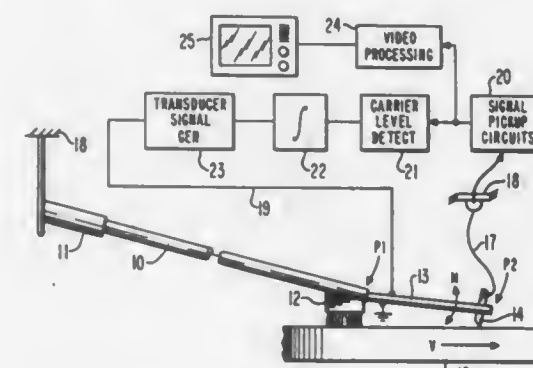
and said assembly including means for mounting a video disc about said spindle in a plane generally perpendicular to the axis of said spindle, said mounting means including a video disc support ring having a generally flat surface disposed in a plane generally perpendicular to said spindle axis and arranged to abut one side of said disc; and means for centering said disc about said spindle, said centering means being disposed about said spindle and having an outer surface generally forming a frustrum of a cone, which surface is arranged to engage a central aperture in said video disc thereby centering said disc with respect to said spindle axis.

#### 4,340,956 MINIMUM TRACKING FORCE STYLUS

Michael E. Miller, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.  
Filed Apr. 10, 1980, Ser. No. 138,882  
Int. Cl.<sup>3</sup> G11B 3/10

U.S. Cl. 369-244

4 Claims



1. In a record playback apparatus, of the type wherein information prerecorded in FM or phase angle modulated signal format is recovered from a record medium by means of a signal pickup apparatus engaging the record medium, said signal pickup apparatus being mounted to an arm which is compliantly suspended from a carriage mechanism, the improvement comprising:

first means connected to the signal pickup apparatus for generating a first signal having an amplitude related to the amplitude of the recovered FM signal;  
second means responsive to said first signal for producing a control signal;  
piezoelectric transducer means responsive to said control signal and coupled between said arm and said signal pickup apparatus for controlling the pressure applied between the signal pickup apparatus and the record medium responsive to the amplitude of the FM signal recovered therefrom.

#### 4,340,957 CARTRIDGE AND HEADSHELL ASSEMBLY

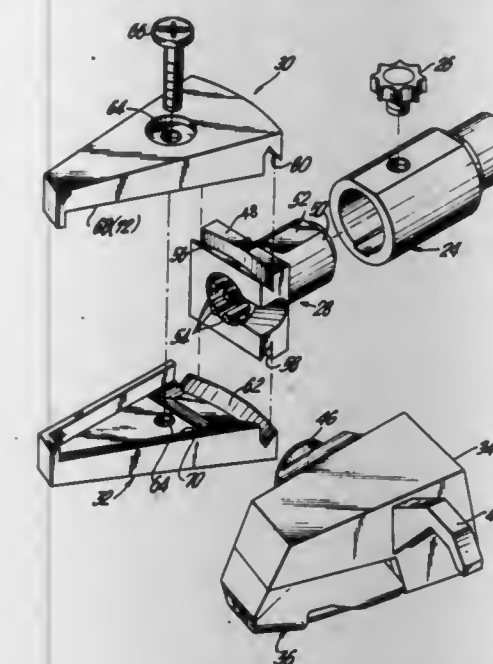
John P. Kuehn, Brookfield Center, Conn., assignor to Audio Dynamics Corporation, New Milford, Conn.  
Filed Sep. 25, 1980, Ser. No. 190,801  
Int. Cl.<sup>3</sup> G11B 21/24

U.S. Cl. 369-256

5 Claims

1. A phonograph cartridge and head shell assembly for attachment to a tone arm, said assembly comprising:  
a fixed part releasably coupled to said tone arm,  
a movable part joined to said fixed part, said movable part including a stylus and transducer assembly,  
means for permitting said movable part to be laterally angularly displaced with respect to said fixed part, and  
single means for permitting said movable part to be longitudinally and vertically angularly displaced with respect to said fixed part, said single means including first and second clamp means, at least one of said first and second clamp

means having a recess, the other of said first and second clamp means cooperating with said at least one clamp means to define an elongated slot, said movable part having a projection receivable within said elongated slot,



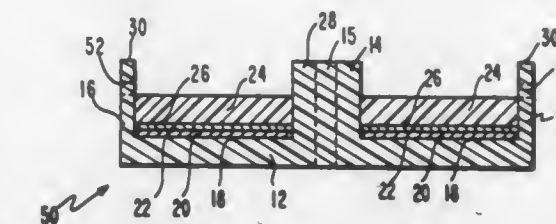
#### 4,340,959 OPTICAL RECORDING MEDIUM WITH A THICK OVERCOAT

Leonard J. Levin, Levittown, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 28, 1979, Ser. No. 108,030  
Int. Cl.<sup>3</sup> G11B 7/24

U.S. Cl. 369-275

11 Claims



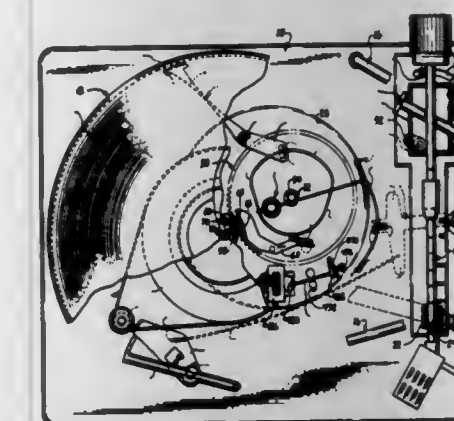
means for retaining said projection within said elongated slot, and means for locking said movable means against rotation about said projection and against displacement along said slot.

#### 4,340,958 AUTOMATIC RECORD CHANGER

James T. Dennis, P.O. Box 15100, Oklahoma City, Okla. 73155, and George Kolomayets, Chicago, Ill., assignors to James T. Dennis, Oklahoma City, Okla.  
Division of Ser. No. 9,254, Feb. 5, 1979, Pat. No. 4,291,886, which is a continuation of Ser. No. 813,225, Jul. 5, 1977, abandoned. This application Dec. 1, 1980, Ser. No. 211,821  
Int. Cl.<sup>3</sup> G11B 3/60, 25/04

U.S. Cl. 369-267

2 Claims



1. In a record player of the type provided with a turntable having a flange for engagement with a drive belt and a pair of drive pulleys of different diameter, which are adjacent and coaxially mounted on a drive shaft, a belt shifting arrangement of shifting said belt from one pulley to the other comprising a support member, a first member pivotally mounted on said support member and movable between first and second positions, said first member having an inclined portion adapted to engage one side of said drive belt and shift belt from a first one of said pulleys to the second pulley when said first member is moved to said first position, a second member pivotally mounted on said support member and interconnected with said first member at a point between the respective pivot points of said first and second members so that said first and second members pivot in opposite directions in response to movement of said first member between said first and second positions, said

1. In an optical recording medium for use in an optical recording and readout system employing light of a certain wavelength which comprises:

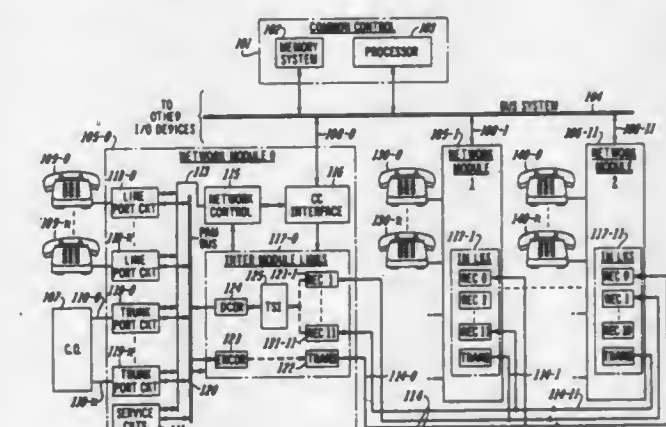
a substrate having a major surface;  
a light reflective layer, which reflects a substantial portion of light incident thereon at said wavelength, overlying at least a portion of said major surface;  
a light absorptive layer, which absorbs light at said wavelength, overlying said light reflective layer; and  
an overcoat layer, which is substantially transmissive of light at said wavelength, overlying said light absorptive layer; the improvement which comprises a substrate having a major surface, which has a center portion and a portion extending about said substrate periphery raised a distance above said major surface;  
wherein said light reflective layer and said light absorptive layer overlie at least a portion of said major surface which is not raised and said overcoat layer overlies said light absorptive layer and wherein said raised peripheral portions contain one or more openings extending radially therethrough and extending upwards a distance from a point above the surface of said light absorptive layer.

#### 4,340,960 TIME DIVISION SWITCHING SYSTEM

John C. Moran, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Jul. 25, 1980, Ser. No. 172,273  
Int. Cl.<sup>3</sup> H04Q 11/04

U.S. Cl. 370-62

21 Claims



1. In a time division switching system having a plurality of call serving switching modules,  
a time division bus in each of said modules,



a plurality of port circuits in each of said modules with each of said port circuits being connected to the time division bus of its module,

means for assigning each call served by any one of said modules to a unique time slot in a series of cyclically recurring time slots unique to each module,

characterized in that said system further comprises: a bus system interconnecting all of said modules for the exchange of call information between modules serving inter-module calls,

means responsive to the serving of an intermodule conference call between port circuits in at least three different ones of said modules for exchanging call data words containing call message information over said bus system between each of said three different modules,

a buffer memory in each of said modules,

means for writing into said buffer memory of any one of said modules said call message information of a data word received by a said one module over said bus system and pertaining to an intermodule conference call currently being served by said one module,

means for repetitively scanning said buffer memory in each of said modules to read out any call message information stored in said buffer memory, and

means responsive to each readout of call message information pertaining to a conference call from any one of said buffer memories for applying said readout information over the time division bus of said module containing said readout memory to the module port circuit serving the intermodule conference call to which said readout information pertains.

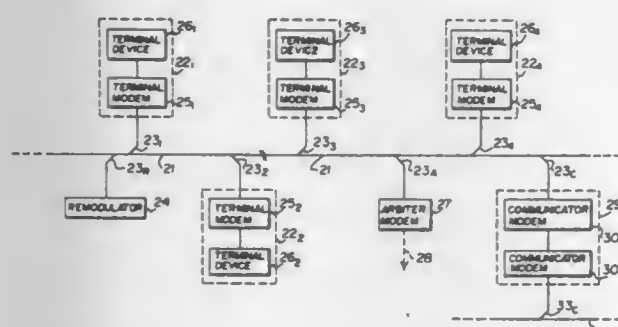
#### 4,340,961 DISTRIBUTED MULTI-PORT COMMUNICATIONS SYSTEM

Antony C. Capel; George Yan, both of Deep River; George E. Gilks, Chalk River, and Rodney J. West, Pembroke, all of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed Mar. 6, 1980, Ser. No. 127,562  
Int. Cl.<sup>3</sup> H04J 3/16

U.S. Cl. 370-84

6 Claims



1. A communication system for terminals in a network comprising:
  - a common communication channel to which the terminals are coupled;
  - modem means in each of the terminals for coupling a user device in the terminal to the common channel, the modem means including means for transmitting onto the common channel during one or more assigned time slots in a poll cycle or during a burst cycle, the modem means further including means for receiving transmissions addressed to the modem means through the common channel during time slots in the poll cycle assigned to the transmitting modem means and during a burst cycle allotted to the transmitting modem means; and
  - arbitrator means for initiating the poll cycle in each modem means and for allotting a burst cycle to a modem means upon request.

#### 4,340,962 CIRCUIT ARRANGEMENT FOR THE SYNCHRONIZATION OF A DIGITAL SUBSCRIBER STATION BY A DIGITAL EXCHANGE IN A PCM TELECOMMUNICATION NETWORK

Klaus Wintzer; Josef Zemanek, and Frithjof von Sichart, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

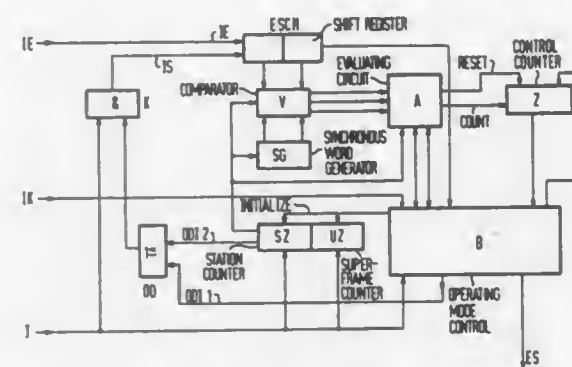
Filed Jul. 7, 1980, Ser. No. 166,474

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930586

Int. Cl.<sup>3</sup> H04J 3/06; H04L 7/10

U.S. Cl. 370-100

4 Claims



1. A circuit arrangement for the synchronization of a subordinate system, such as a digital subscriber station, by a superordinate system, such as a digital exchange, in a PCM telecommunication network for the transmission of digital signals in the form of message signal blocks which comprise:
  - (a) a prefix synchronization word having a first bit whose value remains the same and at least one subsequent bit indicative at least of the beginning of a superframe containing several receive/transmit periods within such message signal blocks, and
  - (b) at least one message signal word having a plurality of bits,
 said circuit arrangement being disposed in said subordinate system and comprising, in combination:
  - (a) a shift register (ESCH) having a plurality of stages at least equal in number to the number of bits of a synchronization word and having an input connected to the first stage for receiving said message signal blocks in serial form;
  - (b) station counter means (SZ), connected to receive clock pulses at a first input and to receive first reset pulses at a second input, for producing a first output signal indicating the transmit and receive periods of said subordinate system;
  - (c) superframe counter means (UZ), connected to receive said clock pulses at a first input and to receive second reset pulses at a second input, for producing a second output signal indicating the superframe periods of said subordinate system;
  - (d) a synchronous word generator (SG), connected to said superframe counter means for providing a bit pattern of an expected synchronization word, said bit pattern being selected to indicate the beginning of a superframe period of said subordinate system in response to said second output signal from said superframe counter means;
  - (e) comparator means (V) connected to the stages of said shift register associated with the bits of said synchronization word, to said synchronous word generator and to said station counter means, for comparing the contents of said shift register stages and said synchronous word generator when said first output signal from said station counter means signals the beginning of each receive period;
  - (f) operating mode control means (B), connected to receive signals from said shift register representing the bits of a synchronization word and connected to receive a signal representing a criterion which identifies the first bit of the bit combinations received by said shift register as being

the start of a message signal block, for producing (1) a mode signal (ES) indicative of a synchronization phase when in one mode and a synchronous operation phase when in another mode, (2) said first reset pulse when the bit contained in the last stage of said shift register has the same binary value as the first bit of a correct synchronization word and (3) said second reset pulse when said bit combination of said synchronization word identifies a superframe;

- (g) an evaluating circuit (A), connected to the output of said comparator means and to said operating mode control means for producing during said synchronization phase first result signals when said comparator means indicates a positive comparison result and second result signals when said comparator means indicates a negative comparison result; and producing during said synchronous operation phase third result signals when said comparator means indicates a negative comparison result; and
  - (h) a control counter (Z), connected to said evaluating circuit and to said operating mode control means, for counting forward upon receipt of said first and third result signals and resetting to zero upon receipt of said second result signals, said control counter supplying a first signal to said operating mode control means upon reaching a prescribed counter position during said synchronization phase, whereupon said operating mode control means switches to said synchronous operation phase, said control counter being set back one count during said synchronous operation phase after a given number of transmission periods if it is not already in its initial position and said control counter supplying a second signal to said operating mode control means upon reaching a prescribed counter position during said synchronous operation phase whereupon said operating mode control means switches again to said synchronization phase;
- whereby the transmission and reception of information by other parts of said subordinate system is suppressed during the synchronization phase until the next synchronous phase begins.

#### 4,340,963 METHODS AND SYSTEMS FOR THE CORRECTION OF ERRORS IN DATA TRANSMISSION

Peter J. Munday, Reading, England, assignor to Racal Research Limited, Bracknell, England

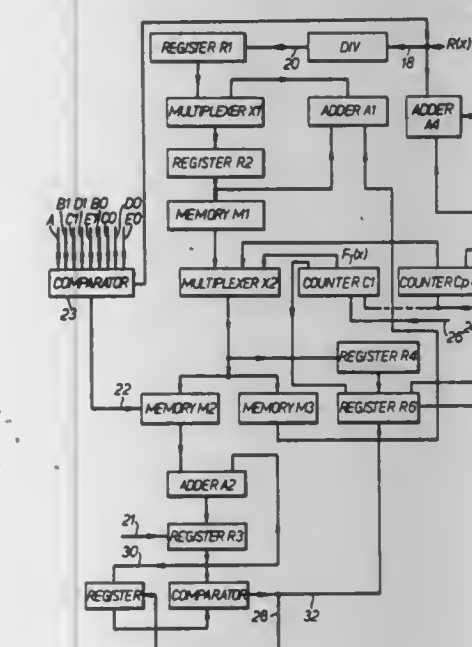
Filed Nov. 10, 1980, Ser. No. 205,437

Claims priority, application United Kingdom, Nov. 17, 1979, 7939825

Int. Cl.<sup>3</sup> G06F 11/10

U.S. Cl. 371-37

7 Claims



1. A method of correcting errors in a block of data received via a transmission link, in which the block of data is made up

of a plurality of data symbols each of which can have any one of a plurality of predetermined data values, comprising the steps of: monitoring the actual level of signal representing each received data symbol whereby to produce for each symbol a first signal output representing the particular data value of that symbol and a second signal output representing the degree of probability of the symbol having that particular data value; generating, in response to the received block of data, a plurality of further, mutually different, blocks of data in each of which up to a predetermined number (the same for all the generated blocks) of the symbols differ in data value from the corresponding symbols in the received data block; and producing for each of the said further data blocks, in response to the values of the said second signal outputs respectively corresponding to the data symbols in the received block of data, a signal level representing the degree of probability that the further block of data is the same as the block of data input to the transmission link, and thereby determining which of the said further blocks of data is most likely to equal the transmitted block of data.

#### 4,340,964 METHOD AND AN ARRANGEMENT FOR AUTOMATIC ACCESS OPTIMIZATION IN RANDOM ACCESS MEMORIES

Erhard Sprick, and Rudolf Kaiserswerth, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

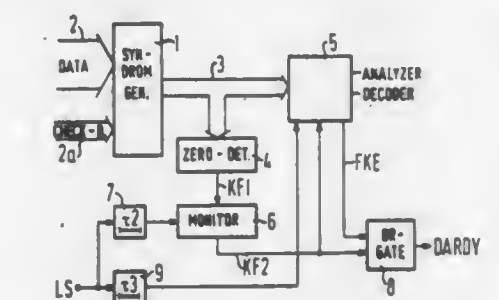
Filed Jun. 10, 1980, Ser. No. 158,116

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1979, 2925966

Int. Cl.<sup>3</sup> G06F 11/10

U.S. Cl. 371-38

10 Claims



1. A method for automatic access optimization in reading data words from a random access memory having an error correction device comprising the steps of:
  - generating a syndrome having a value representing the error condition of a read data word;
  - monitoring the value of the syndrome during a predetermined monitoring interval;
  - when the syndrome value deviates from a prescribed value during the monitoring interval, repeating the monitoring interval; and emitting a data ready signal when the error condition of the read data word is at a predetermined condition.

#### 4,340,965 METHOD OF AND APPARATUS FOR DETECTING AND CIRCUMVENTING MALFUNCTIONS IN A CURRENT-LOOP COMMUNICATIONS SYSTEM

John T. Beckman, Granville, and Paul S. Sanik, Westerville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 22, 1980, Ser. No. 199,176

Int. Cl.<sup>3</sup> G06F 11/00

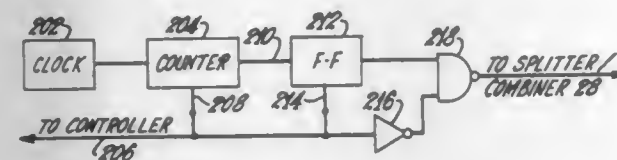
U.S. Cl. 371-62

10 Claims

1. In a communication system having a communication line with a plurality of ports to which electronic means are attached for transmitting and receiving sets of signals, said sets of signals comprising combinations of a first signal having a first

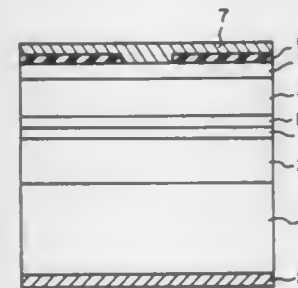


magnitude and a second signal having a second magnitude, said second magnitude being different than said first magnitude, and said sets of signals being of a predetermined total number of said first and second signals and always starting with a second signal and ending with a first signal, each of said plurality of electronic means being adapted to provide a first signal when it is not transmitting a set of signals, a method of detecting a malfunction in a first electronic means associated with a first port of said plurality of ports and preventing said first electronic means from interfering with the operation of the



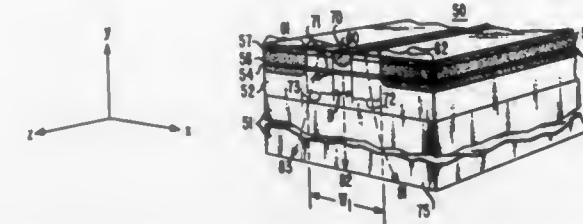
remainder of the system when such malfunction occurs, said method comprising the steps of: starting the timing of a predetermined period of time when said first electronic means transmits a second signal after a first signal; resetting the time period when said first electronic means transmits a first signal; inhibiting the transmission of signals transmitted by said first electronic means to said communication line if said predetermined period of time has elapsed; and providing a first signal to said communication line if said predetermined period of time has elapsed.

**4,340,966**  
**SEMICONDUCTOR LASER WITH BUFFER LAYER**  
Shigeyuki Akiba, Tokyo; Yasuharu Suematsu, Kawasaki; Shigehisa Arai, Tokyo; Masanobu Kodaira, Yokohama; Yoshio Itaya, Tokyo; Kenichi Iga, Machida; Chuichi Ota, Fuchu; Takaya Yamamoto, Niza; and Kazuo Sakai, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan  
Filed Feb. 19, 1980, Ser. No. 122,171  
Claims priority, application Japan, Aug. 15, 1979, 54-103125  
Int. Cl.<sup>3</sup> H01S 3/19  
U.S. Cl. 372-45 2 Claims



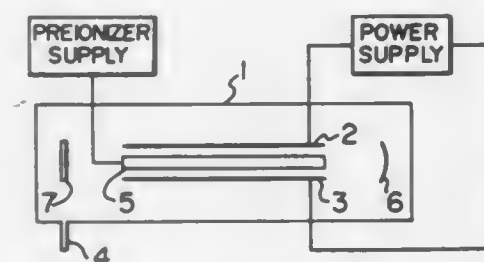
1. In a semiconductor laser formed on an InP substrate having a hetero structure comprising a plurality of  $\text{In}_{1-x}\text{Ga}_x\text{As}_y\text{P}_{1-y}$  ( $0.42y \leq x \leq 0.5y$ ,  $0 \leq y \leq 1$ ) layers which are lattice-matched with InP, said semiconductor laser having carrier injecting electrodes and resonant cavity means formed by a light emitting layer included in said plurality of  $\text{In}_{1-x}\text{Ga}_x\text{As}_y\text{P}_{1-y}$  layers, the improvement comprising said layers comprising the light emitting layer having a forbidden band width larger than 0.6 eV but smaller than 0.9 eV at room temperature and sandwiched between two InP layers on the InP substrate, and said layers including a buffer layer having a forbidden band width larger than the forbidden band width of the light emitting layer but smaller than the forbidden band width of InP and disposed between the light emitting layer and the InP layer grown thereon.

**4,340,967**  
**SEMICONDUCTOR LASERS WITH STABLE HIGHER-ORDER MODES PARALLEL TO THE JUNCTION PLANE**  
Richard W. Dixon, Bernardsville, and Bertram Schwartz, Westfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Jun. 2, 1980, Ser. No. 155,560  
Int. Cl.<sup>3</sup> H01S 3/19  
U.S. Cl. 372-46 11 Claims



1. In a semiconductor junction laser, a semiconductor body comprising:  
at least two contiguous layers forming a planar p-n junction; means forming a current flow path overlapping at least a portion of said p-n junction;  
an active region within said current flow path for generating stimulated radiation when said p-n junction is forward biased; and  
an elongated lossy region located in said current flow path and positioned for causing said laser to operate in a particular higher order transverse mode in a direction parallel to said p-n junction.

**4,340,968**  
**RARE-GAS HYDROGEN-HALIDE EXCIMER LASER WITH HYDROGEN ADDITIVE**  
Clive Willis, Ottawa, and Terrence J. McKee, Nepean, both of Canada, assignors to Canadian Patents & Dev. Ltd., Ottawa, Canada  
Filed Jun. 9, 1980, Ser. No. 157,942  
Int. Cl.<sup>3</sup> H01S 3/22  
U.S. Cl. 372-60 20 Claims

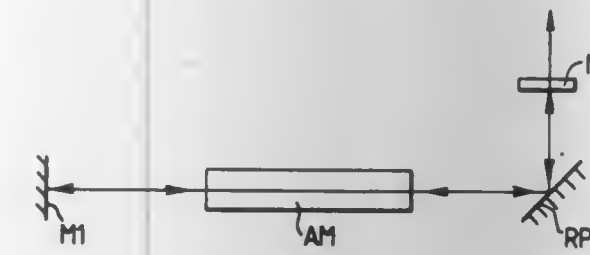


1. In a rare-gas hydrogen-halide excimer laser the gas mixture including: two rare gases, a hydrogen halide, and a hydrogen donor additive.

**4,340,969**  
**LASER APPARATUS**  
David C. Hamilton, Cottingham, England, and Kenneth S. Lip-ton, Edinburgh, Scotland, assignors to Ferranti Limited, Cheddle, England  
Filed May 30, 1980, Ser. No. 154,858  
Claims priority, application United Kingdom, Jun. 2, 1979, 7919306  
Int. Cl.<sup>3</sup> H01S 3/081, 3/08  
U.S. Cl. 372-93 7 Claims

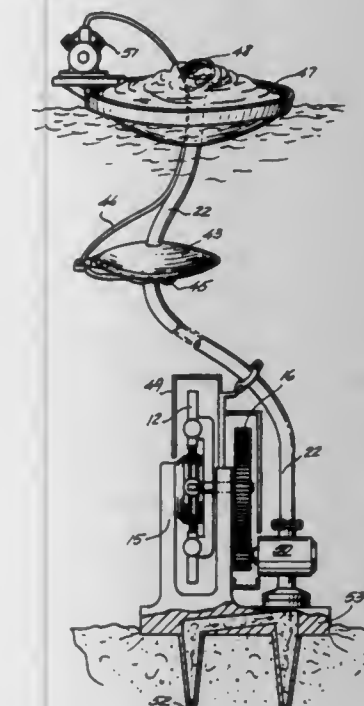
1. Laser apparatus having an optical cavity operable at a wavelength in the range 8 to 50 microns, which includes within its optical cavity a reflector positioned at an insertion angle in the range 20° to 70° and comprising a substrate carrying a metallic reflecting coating over which is formed a layer

of dielectric material of a composition and thickness such that at the wavelength of operation the differential absorption



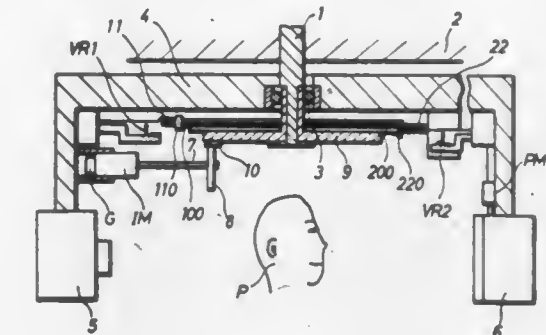
between radiation polarised in two perpendicular planes prevents laser operation in one of the two planes.

**4,340,970**  
**POWER WHEEL**  
Friedrich Weinert, 219-19 131st Ave., Jamaica, N.Y. 11413  
Filed Jan. 4, 1980, Ser. No. 156,419  
Int. Cl.<sup>3</sup> G21C 00/00  
U.S. Cl. 376-208 4 Claims



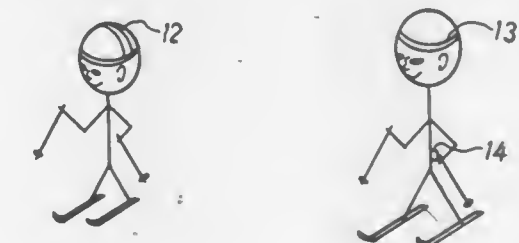
1. A nuclear power wheel comprising a stationary side gear having a central substantially horizontal axis and mounted on a frame means, a shaft having first and second ends, said shaft being mounted on said axis, means for rotating said shaft solely in one direction, a satellite gear fixed to said first end of said shaft, a wheel fixedly mounted between the first and second ends of said shaft, said wheel having an outer perimeter, a plurality of expansion valves mounted on said outer perimeter on radial axes, each of said expansion valves including a nuclear heat element, an expandable fluid, a pushrod, a rotating spindle bushing joined to said pushrod, a pinion gear joined to said spindle bushing, said pinion gear intermeshing with said stationary side gear and said satellite gear, a drive gear for delivering useful work output mounted on the second end of said shaft, wherein when one of said plurality of expansion valves is at the lowest vertical point of said wheel, said nuclear heat element causes the fluid to expand by means of nuclear reactions, and when one of said plurality of expansion valves is at the highest vertical point of said wheel, said nuclear heat element causes said fluid to contract by substantial absence of nuclear reactions; thereby effecting reciprocatory motion of the pushrods which in turn effect rotary motion of said pinion gear, said satellite gear and said drive gear.

**4,340,971**  
**DENTAL RADIOGRAPHIC APPARATUS FOR PHOTOGRAPHING ENTIRE JAWS**  
Shuhei Furuichi, Shiga, Japan, and Masakazu Suzuki, Naka, both of Japan, assignors to Kabushiki Kaisha Morita Seisaku-sho, Kyoto, Japan  
Filed Sep. 19, 1980, Ser. No. 188,884  
Claims priority, application Japan, Sep. 20, 1979, 54-121524  
Int. Cl.<sup>3</sup> G03B 41/16  
U.S. Cl. 378-40 7 Claims



1. A dental radiographic apparatus for photographing the entire jaws including a horizontal rotary arm and a drive motor for rotating said horizontal rotary arm, said arm having an X-ray generator disposed at one end thereof and having an X-ray film cassette holder disposed at the other end thereof in an opposed relation with each other and a motor for feeding X-ray film in said X-ray film cassette holder, said apparatus being characterized in that said apparatus comprises at least one circuit for detecting as an electrical signal the rotation position of said horizontal rotary arm, a circuit for controlling the speed of said drive motor, said circuit controlling the speed of the drive motor in response to the electrical signal detected by said detecting circuit, and a circuit for automatically controlling the speed of an X-ray film feed motor synchronously with or independently of the drive motor of said rotary arm.

**4,340,972**  
**TRANSMITTER/RECEIVER TEACHING APPARATUS**  
Kenneth D. Heist, Billings, Mont., assignor to Sporteach, Inc., Helena, Mont.  
Filed Aug. 7, 1979, Ser. No. 64,572  
Int. Cl.<sup>3</sup> H04B 1/034  
U.S. Cl. 455-39 7 Claims



1. Teaching apparatus including a transmitter unit, a receiver unit and a prompter unit, each of said units being disposed in a separate self-contained unit, said transmitter unit being adapted to be worn on a head of a first individual and including a first peripheral band portion and a top connecting portion extending in an arcuate path between opposing sides of said first peripheral band, a microphone disposed on the under side of said connecting portion intermediate the ends thereof for contact with the head, an antenna associated with said first peripheral band portion, first citizen's band transmitter means located on said connecting portion, first power supply means connected to said first transmitter means, voice activatable actuating means connected to said first transmitter means; said receiver unit being adapted to be worn on a head of a second individual and including a second peripheral band portion, transducer means disposed on the inside of said second periph-



eral band portion, citizen's band receiver means connected to said transducer means, second power supply means connected to said receiver means, said prompter unit being adapted to be worn by said second individual including second citizen's band transmitter means, message producing means connected to said second transmitter means, third power supply means connected to said second transmitter means and an antenna connected to said second transmitter means.

4,340,973

### SELECTIVE CALLING RECEIVER INCLUDING A VOLTAGE CONVERTER WITH LOW POWER CONSUMPTION

Shinjiro Umetsu, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

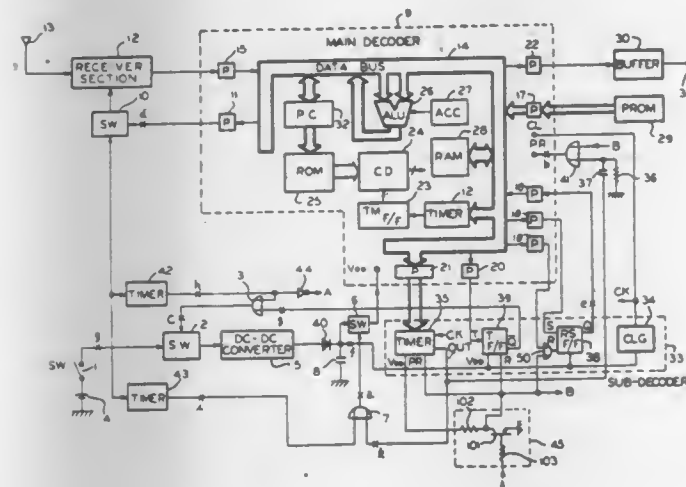
Filed Sep. 26, 1980, Ser. No. 190,924

Claims priority, application Japan, Sep. 29, 1979, 54-134803[U]

Int. Cl.<sup>3</sup> H04B 1/16

U.S. Cl. 455—228

5 Claims



5. A receiver comprising decoding means selectively operating at either a relatively low power consumption level or at a relatively high power consumption level; power source means; voltage converter means for converting the output of said power source means to supply power to said decoding means; first means for disabling said voltage converter means in response to a signal from said decoding means when said decoding means operates at said relatively low power consumption level and for making said voltage converter means intermittently operative when said decoding means operates at said relatively high power consumption level; means for smoothing the output of said voltage converter means; and timer means responsive to said decoding means for activating said first means for the duration of a measured period of time.

4,340,974

### LOCAL OSCILLATOR FREQUENCY DRIFT COMPENSATION CIRCUIT

Billy O. Cooke, Selly Oak, and Philip N. Nield, Wythall, both of England, assignors to Eddystone Radio Limited, Chelmsford, England

Continuation of Ser. No. 102,759, Dec. 12, 1979, abandoned, which is a continuation-in-part of Ser. No. 1,608, Jan. 8, 1979, abandoned, which is a continuation of Ser. No. 798,875, May 20, 1977, abandoned. This application Feb. 23, 1981, Ser. No. 236,984

Claims priority, application United Kingdom, May 22, 1976, 21292/76

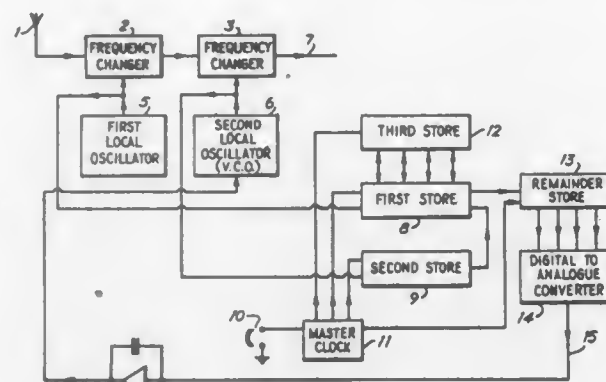
Int. Cl.<sup>3</sup> H04B 1/26

U.S. Cl. 455—258

1 Claim

1. In a superheterodyne receiver having a plurality of local oscillators each associated with a frequency changer, the im-

provement which comprises means for determining a relationship between two of said oscillators to provide a control signal and means for utilising said control signal to control one of said oscillators so as to tend to maintain said relationship constant, said relationship being the difference frequency between said two of said oscillators, said means for determining comprising a first store provided to receive a count corresponding to the frequency of one of said two oscillators, a second store to receive a count corresponding to the frequency of the other of two oscillators, means for subtractively adding the count of



said first and said second store and for transferring the resultant to a third store and means for subsequently transferring the count of said third store into said first store, for applying a count corresponding to the frequency of said one oscillator into said first store and a count corresponding to the frequency of said other oscillator into said second store, and means for subtractively adding the count then in said second store to the count then in said first store and transferring the remainder to a fourth store whose output is said control signal.

4,340,975

### MICROWAVE MIXING CIRCUIT AND A VHF-UHF TUNER HAVING THE MIXING CIRCUIT

Hiroshi Onishi, Kawasaki, and Sadahiko Yamashita, Sagami-hara, both of Japan, assignors to Matsushita Electric Industrial Company Limited, Osaka, Japan

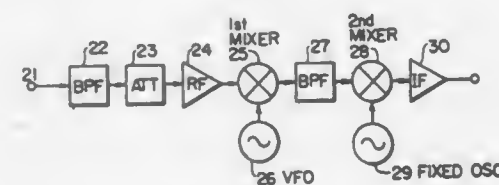
Filed Oct. 8, 1980, Ser. No. 195,314

Claims priority, application Japan, Oct. 9, 1979, 54-130573; Apr. 14, 1980, 55-49377

Int. Cl.<sup>3</sup> H03D 7/02, 7/14; H04B 1/26; H04N 5/44

U.S. Cl. 455—315

29 Claims



1. A VHF-UHF all-band tuner of the double superheterodyne type including a first mixing circuit for converting an incoming signal frequency into a first intermediate frequency by mixing said incoming signal with a first local oscillator signal whose frequency is variable, a filter circuit for selectively receiving said first intermediate frequency signal, and a second mixing circuit responsive to the output signal of said filter circuit and to a second local oscillator signal whose frequency is fixed, for converting said first intermediate frequency into a second intermediate frequency; characterized in that said first local oscillator frequency is higher than said first intermediate frequency, and in that said first intermediate frequency lies in a band of 2520 to 2700 MHz.

## DESIGN PATENTS

GRANTED JUL. 20, 1982

### ERRATA

For  
CLASS

D02-019

See  
PATENT NO.

265,487



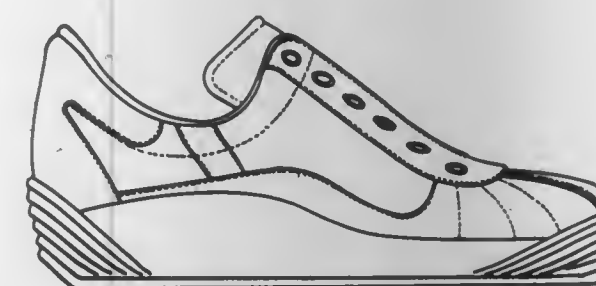
# DESIGNS

JULY 20, 1982

265,435  
SHOE

Christian Vermonet, Cholet, France, assignor to Societe Technisynthese (S.A.R.L.), Saint Pierre Montlimart, France  
Filed May 6, 1980, Ser. No. 147,323  
Term of patent 3½ years  
Int. Cl. D2-04

U.S. Cl. D2-309



265,436  
SHOE

Christian Vermonet, Cholet, France, assignor to Societe Technisynthese (S.A.R.L.), Saint Pierre Montlimart, France  
Filed May 6, 1980, Ser. No. 147,327  
Term of patent 3½ years  
Int. Cl. D2-04

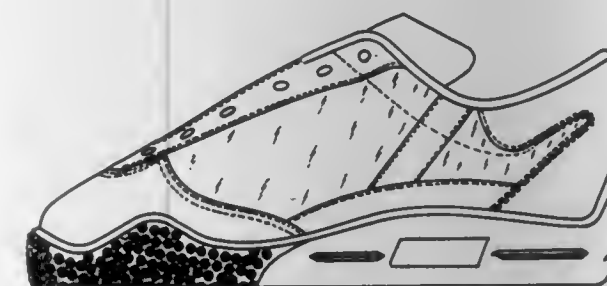
U.S. Cl. D2-309



265,437  
SHOE

Christian Vermonet, Cholet, France, assignor to Societe Technisynthese (S.A.R.L.), Saint Pierre Montlimart, France  
Filed May 6, 1980, Ser. No. 147,328  
Term of patent 3½ years  
Int. Cl. D2-04

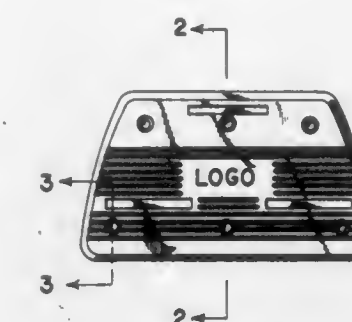
U.S. Cl. D2-309



265,438  
RUNNER'S SHOE PLATE

Myron Jaffe, 2800 Tennyson Rd., Cleveland, Ohio 44104  
Filed Nov. 16, 1979, Ser. No. 94,926  
Term of patent 7 years  
Int. Cl. D2-04

U.S. Cl. D2-317



265,439  
LUGGAGE

Ted Stark, Montclair, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.  
Filed Oct. 17, 1980, Ser. No. 197,778  
Term of patent 14 years  
Int. Cl. D3-01

U.S. Cl. D3-71





265,440  
CHAIR

Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044  
Filed Oct. 12, 1979, Ser. No. 84,111  
Term of patent 14 years  
Int. Cl. D6-01

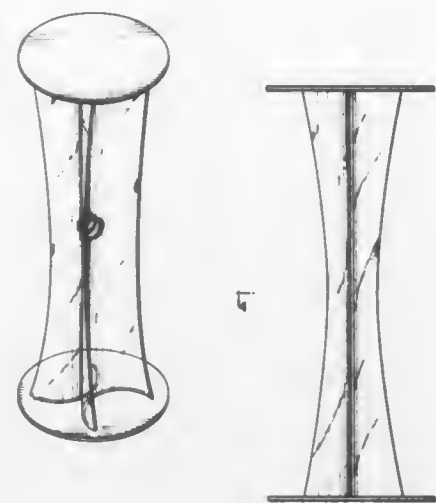
U.S. Cl. D6-12



265,442  
ARTICLE DISPLAY STAND

Robert D. Grossman, 22 Rivo Alto Dr., Miami Beach, Fla. 33139  
Filed Jun. 2, 1980, Ser. No. 155,372  
Term of patent 14 years  
Int. Cl. D06-06

U.S. Cl. D6-27

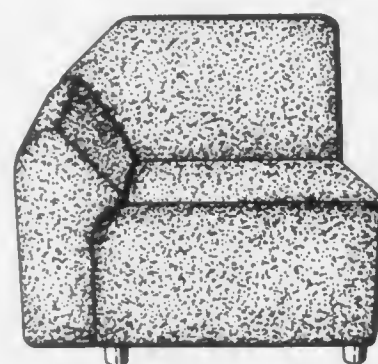


265,443  
SEAT

Roger L. Webb, London, England, assignor to Antocks Lairn Limited, London, England  
Filed Mar. 12, 1980, Ser. No. 129,758  
Claims priority, application United Kingdom, Sep. 14, 1979, 991576

Term of patent 14 years  
Int. Cl. D6-01

U.S. Cl. D6-67

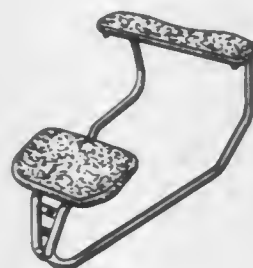


265,441  
PEDICURE TABLE

J. Nissim Menashe, Santa Ana Heights, Calif., assignor to American International Industries, Inc., North Hollywood, Calif.

Filed May 27, 1980, Ser. No. 153,200  
Term of patent 14 years  
Int. Cl. D6-05

U.S. Cl. D6-17



265,444  
CHAIR

Takeshi Nii, 1-13, Nishisenbacho, Tokushima 770, Japan  
Filed Jun. 10, 1980, Ser. No. 158,234  
Claims priority, application Japan, Dec. 22, 1979, 54-54554  
Term of patent 3 1/2 years  
Int. Cl. D6-01

U.S. Cl. D6-68



265,445  
COMBINED TOWEL RACK AND SHELF

James E. Duggan, 1991 Dellwood Dr., Atlanta, Ga. 30309  
Filed Feb. 28, 1980, Ser. No. 125,560  
Term of patent 14 years  
Int. Cl. D23-02; D6-04

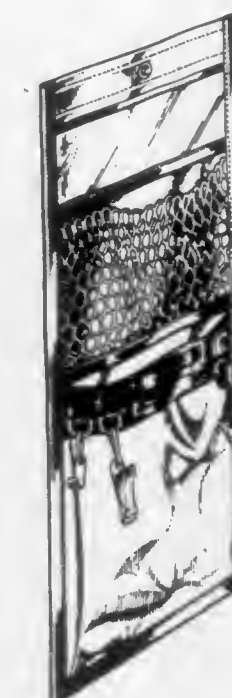
U.S. Cl. D6-91



265,447  
STORAGE UNIT FOR LOCKER OR THE LIKE

Warren D. Harris, Carmichael, Calif., assignor to Jedseth Products, Carmichael, Calif.  
Filed Feb. 8, 1980, Ser. No. 119,693  
Term of patent 14 years  
Int. Cl. D6-04

U.S. Cl. D6-131

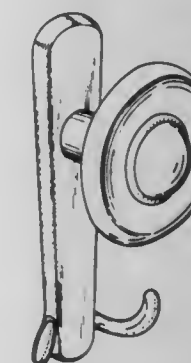


265,446  
COATHOOK

Pasquale Valli, Renate, Italy, assignor to Valli & Colombo S.p.A., Italy

Filed Apr. 7, 1980, Ser. No. 138,212  
Claims priority, application Italy, Oct. 5, 1979, 22772/79[U]  
Term of patent 14 years  
Int. Cl. D6-06; D8-08

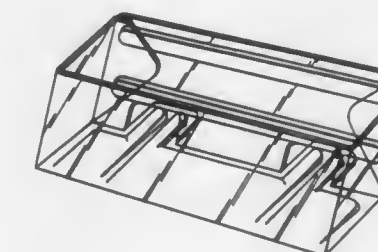
U.S. Cl. D6-122



265,448  
DISPLAY HOLDER FOR CARDS AND THE LIKE

Richard M. Liptak, Parma Heights, Ohio, assignor to Integral Design, Inc., Cleveland, Ohio  
Filed Apr. 7, 1980, Ser. No. 137,768  
Term of patent 14 years  
Int. Cl. D20-02

U.S. Cl. D6-140





265,449  
DESK

Carlos L. Lopez-Benitez, Jamestown, N.C., assignor to Monarch Furniture Corp., High Point, N.C.  
Filed Jun. 2, 1980, Ser. No. 155,855  
Term of patent 14 years  
Int. Cl. D06—04

U.S. Cl. D6—161



265,450  
COFFEE TABLE

Denise Berryman, 58 W. 58th St., Apt. 20B, New York  
Filed Jul. 7, 1980, Ser. No. 166,620  
Term of patent 14 years  
Int. Cl. D6—03

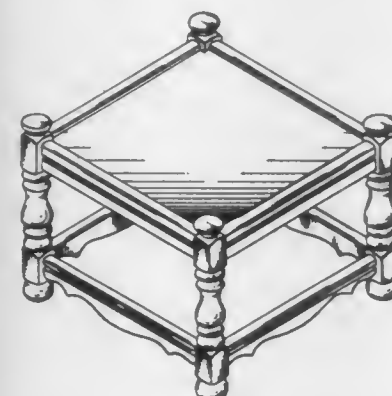
U.S. Cl. D6—175



265,451  
TABLE

Daniel D. Wistehuff, Hickory, N.C., assignor to Pinnacle Furniture Company, Inc., Claremont, N.C.  
Filed Apr. 18, 1980, Ser. No. 141,592  
Term of patent 14 years  
Int. Cl. D6—03

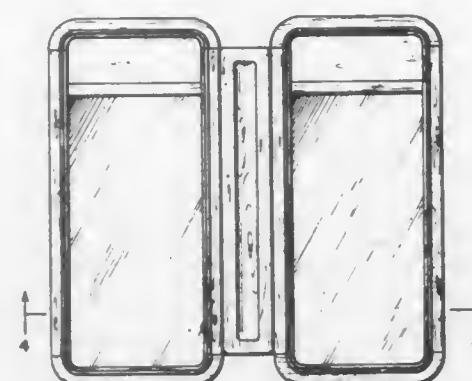
U.S. Cl. D6—177



265,452  
MIRROR FRAME

Huey T. Keller, High Point, N.C., assignor to The Vaughan Furniture Company, Galax, Va.  
Filed Feb. 21, 1980, Ser. No. 123,291  
Term of patent 14 years  
Int. Cl. D6—07

U.S. Cl. D6—234

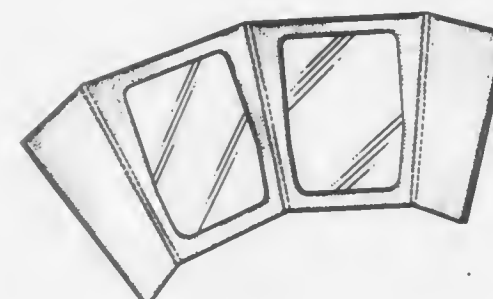
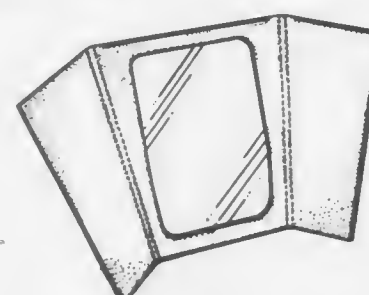


265,453

PICTURE DISPLAY FRAME

Donald B. Smith, R.R. No. 1, Mount Brydges, Ontario, Canada (NOL 1W0)  
Division of Ser. No. 44,844, Jun. 4, 1979, Pat. No. Des. 261,585.  
This application May 28, 1981, Ser. No. 267,999  
Term of patent 14 years  
Int. Cl. D6—07

U.S. Cl. D6—235

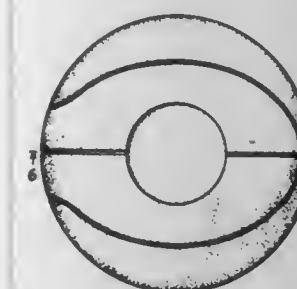


265,454

SIMULATIVE PHOTO FRAME

Nick P. Martin, 438 Cresent, Santa Maria, Calif. 93454  
Filed Feb. 4, 1980, Ser. No. 118,564  
Term of patent 14 years  
Int. Cl. D6—07

U.S. Cl. D6—245



265,455

SUPPORT FOR PICTURE OR THE LIKE

Robert S. Wallace, Los Angeles, Calif., assignor to Dan F. Wallace, Kailua-Kona, HI.  
Filed Feb. 19, 1980, Ser. No. 122,462  
Term of patent 14 years  
Int. Cl. D6—07

U.S. Cl. D6—246

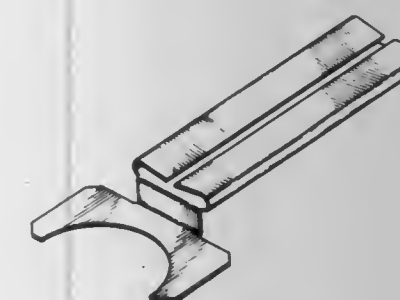


265,456

HOUSING FOR CUTTING IMPLEMENT

Donald L. Winslow, 704 Calle Casita, San Clemente, Calif. 92672, and Robert A. Clanton, 27041 Calle Juanita, Capistrano Beach, Calif. 92624  
Filed May 5, 1980, Ser. No. 146,709  
Term of patent 14 years  
Int. Cl. D8—05

U.S. Cl. D8—99

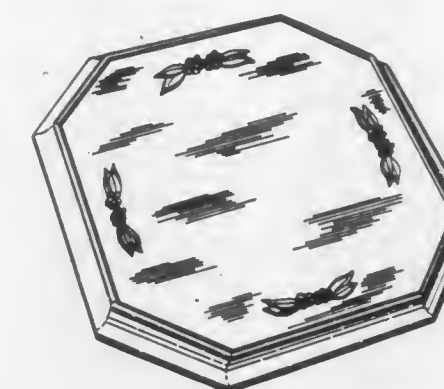


265,457

WALL PLATE

Reg Littlefield, Mississauga, Canada, assignor to Aqualine Products Limited, Mississauga, Canada  
Filed Aug. 3, 1981, Ser. No. 289,242  
Term of patent 14 years  
Int. Cl. D8—09

U.S. Cl. D8—351



265,458

MOUNTING BRACKET

Harry Thomasson, Paarp, Sweden, assignor to Osmos Plast AB, Helsingborg, Sweden  
Filed Jan. 25, 1980, Ser. No. 115,169  
Claims priority, application Sweden, Oct. 24, 1979, 79-2358  
Term of patent 14 years  
Int. Cl. D8—08; D23—02

U.S. Cl. D8—373





265,459

## DISPENSING CONTAINER

Bernard T. Picot, Paris, France, assignor to Parfums Christian Dior S.A., Paris, France

Filed Jan. 28, 1980, Ser. No. 117,529

Claims priority, application France, Jul. 27, 1979, 79 42672

Term of patent 14 years

Int. Cl. D9—01

U.S. Cl. D9—300



265,460

## JUG

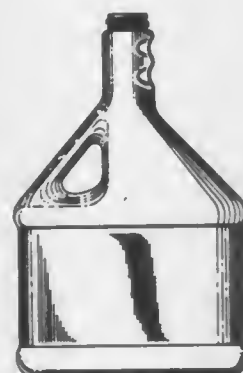
James L. Wilson, White Bear Lake Township, Ramsey County, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.

Filed Feb. 25, 1980, Ser. No. 124,579

Term of patent 14 years

Int. Cl. D9—01

U.S. Cl. D9—378



265,461

## DART CONTAINER

Earl M. Valley, 909 S. Main St., Englewood, Ohio 45322

Filed Jul. 2, 1980, Ser. No. 165,404

Term of patent 14 years

Int. Cl. D9—03

U.S. Cl. D9—425



265,462

## PACKAGING CUP

Algis S. Andrulionis, and Dereck V. Mancini, both of Etobicoke, Canada, assignors to Consumers Glass Company Limited, Etobicoke, Canada

Filed Jun. 1, 1979, Ser. No. 44,708

Claims priority, application Canada, Jan. 4, 1979, 04-01-79-2

Term of patent 14 years

Int. Cl. D9—03

U.S. Cl. D9—429



265,463

## END CLOSURE FOR A CONTAINER

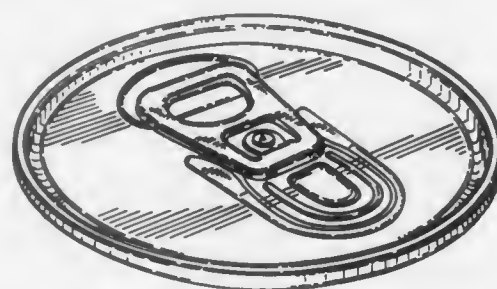
Gary K. Hasegawa, Chicago, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Oct. 29, 1979, Ser. No. 88,982

Term of patent 14 years

Int. Cl. D09—07

U.S. Cl. D9—438



265,464

## WATCH CASE

Rene Bannwart, La Chaux-de-Fonds, Switzerland, assignor to Corum, Ries, Bannwart & Co., Switzerland

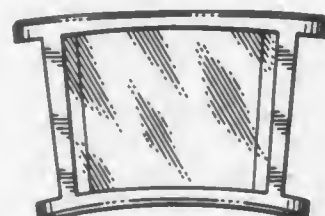
Filed Jun. 11, 1980, Ser. No. 158,408

Claims priority, application Switzerland, Dec. 11, 1979, 69685/79

Term of patent 14 years

Int. Cl. D10—02

U.S. Cl. D10—38



265,465

## MOISTURE TESTER

John G. Baldwin, Readley, England, assignor to Thomas Ashworth & Co. Limited, Burnley, England

Filed Jul. 18, 1980, Ser. No. 170,235

Claims priority, application United Kingdom, Jan. 24, 1980, 80/993 283

Term of patent 14 years

Int. Cl. D10—04

U.S. Cl. D10—56



265,467

## SCALE

Robert Perrier, Paris, France, assignor to Testut-Aequitas, Paris, France

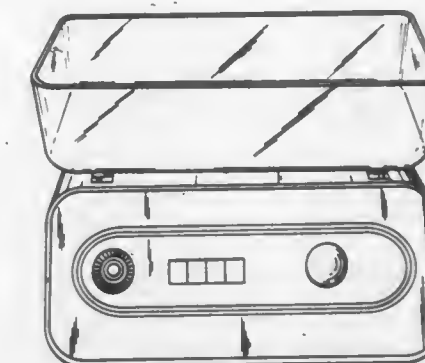
Filed Jul. 11, 1980, Ser. No. 168,174

Claims priority, application France, Feb. 21, 1980, 80 0462

Term of patent 14 years

Int. Cl. D10—04

U.S. Cl. D10—91



265,468

## HIGHWAY SIGNAL

William Yeager, R.D. #1, Box 212, Easton, Pa. 18042

Filed Jul. 14, 1980, Ser. No. 168,101

Term of patent 14 years

Int. Cl. D10—06

U.S. Cl. D10—115



265,466

## MOISTURE TESTER

John G. Baldwin, Readley, England, assignor to Thomas Ashworth & Co. Limited, Burnley, England

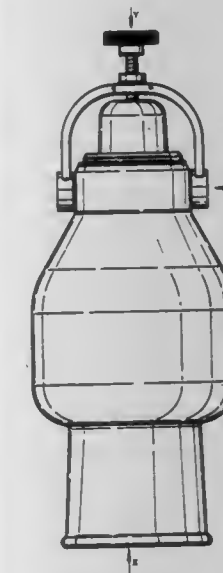
Filed Jul. 18, 1980, Ser. No. 170,237

Claims priority, application United Kingdom, Jan. 24, 1980, 80/993 284

Term of patent 14 years

Int. Cl. D10—04

U.S. Cl. D10—56



265,469

## COFFEE BEAN PENDANT

Lois E. Hegnes; Candace S. Hegnes, both of 2606 Tulalip Hwy., and Herbert S. Hegnes, 2606 1/2 Tulalip Hwy., all of Marysville, Wash. 98270

Filed Jan. 14, 1980, Ser. No. 112,101

Term of patent 14 years

Int. Cl. D11—01

U.S. Cl. D11—75





265,470

## NOVELTY STATUETTE OR THE LIKE

Audrey L. Fritzke, #1210 "P", 201 Ocean Ave., Santa Monica, Calif. 90402

Filed Jul. 21, 1980, Ser. No. 170,616

Term of patent 14 years

Int. Cl. D11-02

U.S. Cl. D11-131



265,473

## PENNANT

Larry B. Ornatek, 100-14th St., North Chicago, Ill. 60064

Filed Mar. 13, 1980, Ser. No. 116,266

Term of patent 3 1/2 years

Int. Cl. D11-05

U.S. Cl. D11-166



265,471

## TROPHY PLAQUE

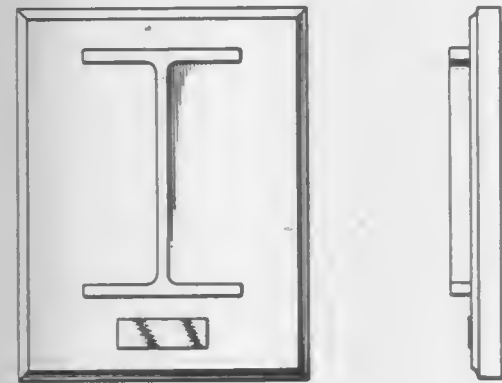
John B. Lanahan, Holmen, Wis., assignor to J. B. Originals, Inc., Holmen, Wis.

Filed Jun. 9, 1980, Ser. No. 157,543

Term of patent 14 years

Int. Cl. D11-02

U.S. Cl. D11-133



265,474

## ENCLOSURE FOR THE BED OF A PICK-UP TRUCK

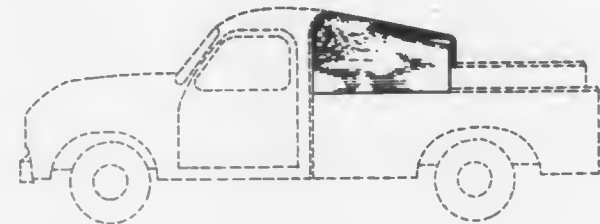
Rictor J. Downs, Box 951, Preeceville, Saskatchewan, Canada

Filed Apr. 28, 1980, Ser. No. 144,222

Term of patent 14 years

Int. Cl. D12-16

U.S. Cl. D12-156



265,472

## PLAQUE

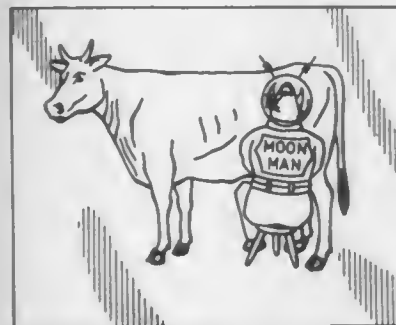
Brice B. Archer, 2118 N. 2000 West, Clinton, Utah 84015

Filed Dec. 26, 1979, Ser. No. 106,513

Term of patent 14 years

Int. Cl. D11-02

U.S. Cl. D11-135



265,475

## SAILBOAT

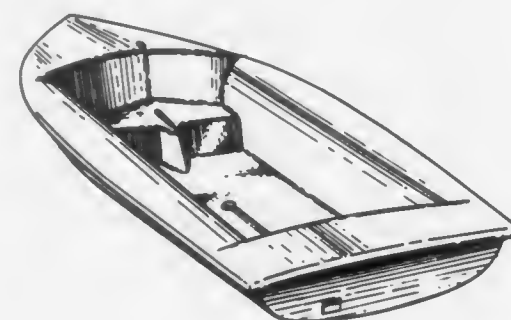
Timothy W. Pape, Mercer Island, Wash., assignor to Alpha Racing Boats, Inc., Mercer Island, Wash.

Filed Aug. 6, 1979, Ser. No. 64,189

Term of patent 14 years

Int. Cl. D12-06

U.S. Cl. D12-303



265,476

## RACING CAR CONTROL PANEL

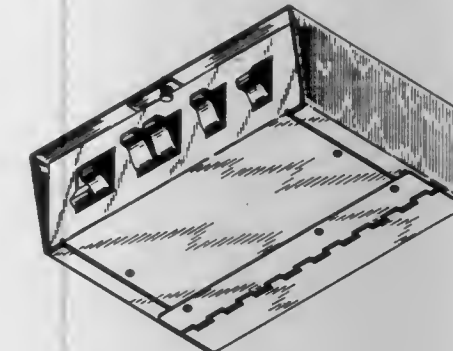
John M. Zizza, 16 Lawson Ave., Revere, Mass. 02151

Filed May 9, 1980, Ser. No. 148,559

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-12



265,478

## PORTABLE TELEPHONE EQUIPMENT CABINET CHASSIS

Gary G. Seaman, and Donald W. Seibold, both of Broomfield, Colo., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 31, 1979, Ser. No. 89,787

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-52



265,477

## LOUDSPEAKER

Takekazu Iijima, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan

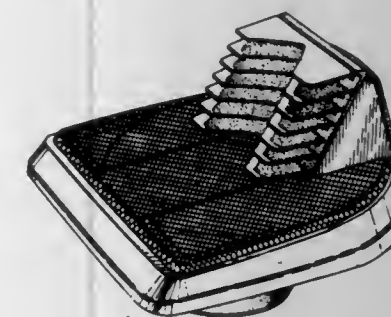
Filed Jul. 1, 1980, Ser. No. 165,193

Claims priority, application Japan, Apr. 9, 1980, 55-13899

Term of patent 14 years

Int. Cl. D14-01

U.S. Cl. D14-34



265,479

## COMBINED BINOCULAR AND DETACHABLE CAMERA

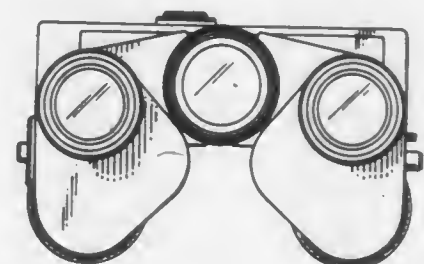
Shogo Yamazaki, Tokyo, Japan, assignor to Ajia Amerikan Boueki Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1979, Ser. No. 41,951

Term of patent 14 years

Int. Cl. D16-01

U.S. Cl. D16-6





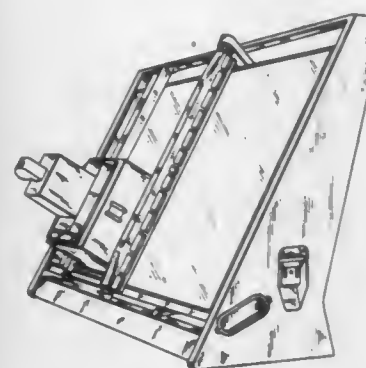
265,480

## PHOTOPROCESSOR

John P. Skrypek, Mahwah, and Robert Williams, Randolph, both of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Sep. 25, 1979, Ser. No. 78,881  
Term of patent 14 years  
Int. Cl. D16—03

U.S. Cl. D16—27



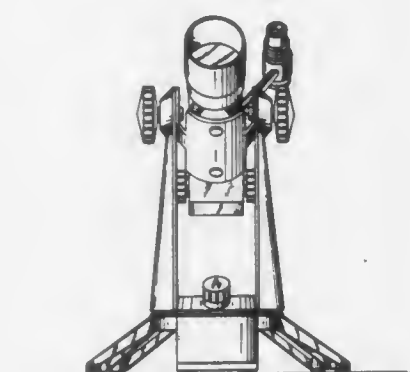
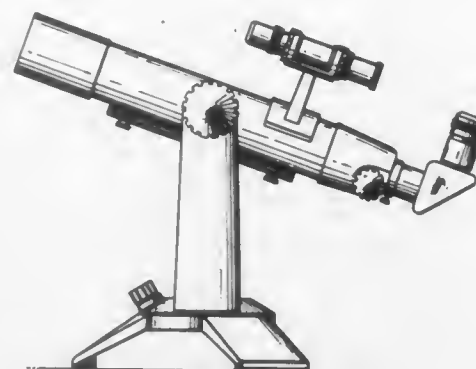
265,482

## TELESCOPE

Peter W. Bressler, Philadelphia, Pa., assignor to Edmund Scientific Company, Barrington, N.J.

Filed Apr. 7, 1980, Ser. No. 137,762  
Term of patent 14 years  
Int. Cl. D16—06

U.S. Cl. D16—132



265,483

## ELECTRONIC ORGAN

Reinhard Franz, Halsenbach, Fed. Rep. of Germany, assignor to WERSI Electronic GmbH & Co., Halsenbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 122,068, Feb. 15, 1980, abandoned, which is a continuation of Ser. No. 786,558, Apr. 14, 1977, abandoned. This application Sep. 24, 1980, Ser. No. 190,400

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1976, 466

Term of patent 14 years  
Int. Cl. D14—01

U.S. Cl. D17—6



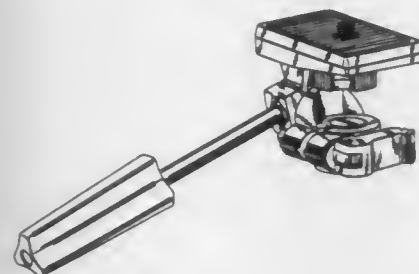
265,481

## TRIPOD HEAD

Osamu Iwasaki, Tokorozawa, Japan, assignor to Slik Tripod Co., Ltd., Saitama, Japan

Filed Jul. 18, 1980, Ser. No. 170,128  
Claims priority, application Japan, May 22, 1980, 55-19865  
Term of patent 7 years  
Int. Cl. D16—05

U.S. Cl. D16—46



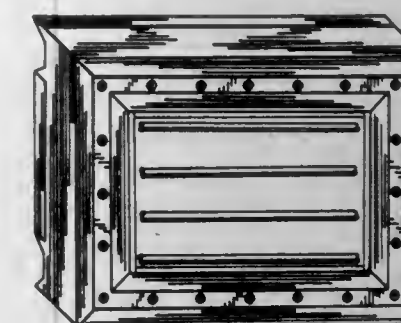
265,484

## ILLUMINATED SIGN WITH CHANNELS FOR MOVEABLE CHARACTER PLATES

Ralph Kutschmende, 395 Manhattan Ave., Brooklyn, N.Y. 11211

Filed Nov. 28, 1979, Ser. No. 98,303  
Term of patent 14 years  
Int. Cl. D20—03

U.S. Cl. D20—10



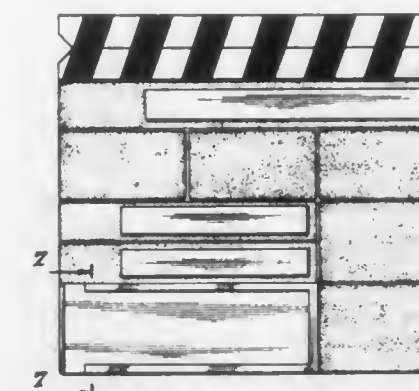
265,486

## CLAPPER SLATE

Neil C. Lundell, 1314 Preston Way, Venice, Calif. 90291, and Gilbert S. Prowler, 10110 Woodman Ave., Mission Hills, Calif. 91345

Filed Jun. 23, 1980, Ser. No. 161,763  
Term of patent 14 years  
Int. Cl. D20—03

U.S. Cl. D20—10



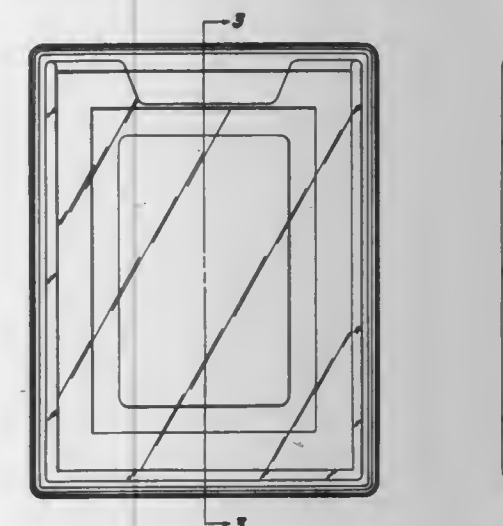
265,485

## DISPLAY SIGN HOLDER

Richard M. Liptak, Parma Heights, Ohio, assignor to Integral Design, Inc., Cleveland, Ohio

Filed Apr. 7, 1980, Ser. No. 137,587  
Term of patent 14 years  
Int. Cl. D20—03; D6—07

U.S. Cl. D20—10



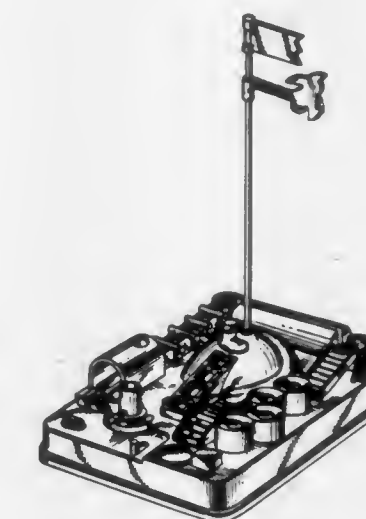
265,487

## BALL TRANSFERRING GAME BOARD

Masaharu Ohki, 13-17-208, Ichikawa Minami 3-chome, Ichikawa-shi, Chiba-ken, Japan

Filed Jun. 3, 1980, Ser. No. 156,170  
Term of patent 14 years  
Int. Cl. D21—01

U.S. Cl. D21—19





265,488

## TOY BLIMP

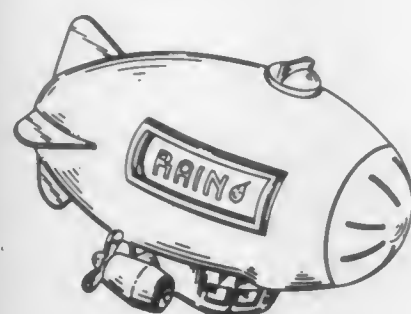
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.

Filed Feb. 17, 1981, Ser. No. 235,430

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D21—87



265,489

## TOY GLIDER

Richard M. Karn, 17 Kenneth Ave., Sandringham, Auckland, and Peter F. Haythornthwaite, 34 Quebec Rd., Milford, Auckland, both of New Zealand

Filed Oct. 3, 1980, Ser. No. 193,582

Term of patent 14 years

Int. Cl. D21—81

U.S. Cl. D21—88



265,490

## TOY SEAL

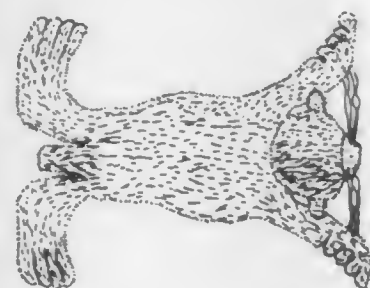
Patricia I. Holstine, 16 N. Main, Conrad, Mont. 59425

Filed Dec. 28, 1979, Ser. No. 107,996

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D21—157



265,491

## TOY ANIMAL

Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Susumu Matsumoto, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1980, Ser. No. 157,730

Claims priority, application Japan, Dec. 12, 1979, 54-51894

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D21—161



265,492

## DOLL

Sandra L. Johanson, 1682 Tiffany Pl., Santa Ana, Calif. 92705

Filed Sep. 2, 1980, Ser. No. 183,148

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D21—173



265,493

## BODY-MOUNTED BASKETBALL BALL SHOOTING AID

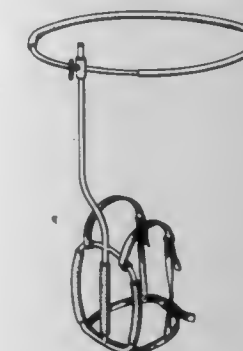
Gerry Kringlie, Box 777, Valley City, N. Dak. 58072

Filed May 5, 1980, Ser. No. 147,344

Term of patent 14 years

Int. Cl. D21—02

U.S. Cl. D21—201



265,494

## GOLF CLUB HEAD

Masashi Kobayashi, Japan, assignor to Maruman Golf Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1980, Ser. No. 165,190

Term of patent 14 years

Int. Cl. D21—02

U.S. Cl. D21—220



265,495

## ROLLER SKATE

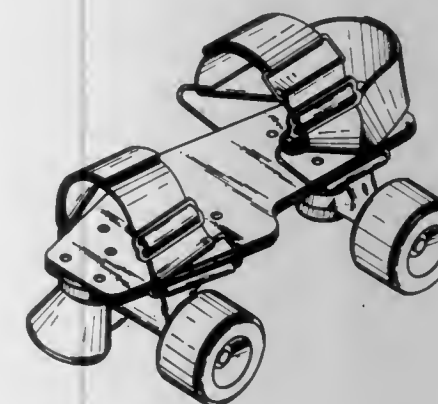
David A. Dominy, Cardiff, and Lawrence M. Balma, Leucadia, both of Calif., assignors to Tracker Designs, Ltd., Carlsbad, Calif.

Filed Jun. 13, 1980, Ser. No. 159,299

Term of patent 14 years

Int. Cl. D21—02

U.S. Cl. D21—226



265,496

## FISHING ROD HANDLE

Robert L. McMickle, Spirit Lake, Iowa, assignor to Berkley and Company, Inc., Spirit Lake, Iowa

Filed Jan. 30, 1980, Ser. No. 164,899

Term of patent 14 years

Int. Cl. D22—05

U.S. Cl. D22—23



265,497

## FISHING REEL

Masakazu Sakamoto, and Takeshi Shohoji, both of Fukuyama, Japan, assignors to Ryobi Ltd., Hiroshima, Japan

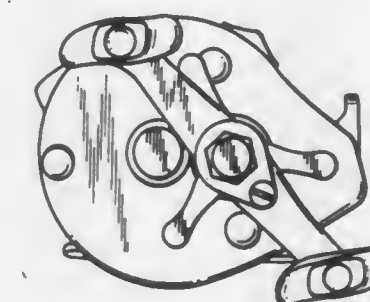
Filed Jul. 17, 1980, Ser. No. 169,557

Claims priority, application Japan, Jan. 28, 1980, 55-2539

Term of patent 14 years

Int. Cl. D22—05

U.S. Cl. D22—25



265,498

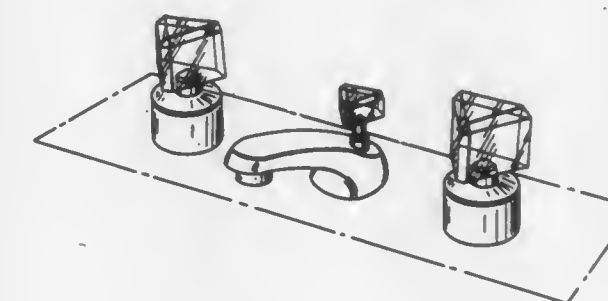
COMBINED SPOUT AND WATER CONTROL HANDLES  
Stanley M. Paul, Rye, N.Y., assignor to American Standard Inc., New York, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,388

Term of patent 14 years

Int. Cl. D23—01

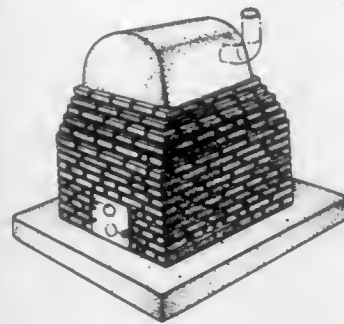
U.S. Cl. D23—25





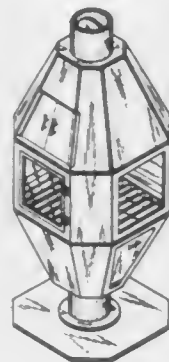
**265,499**  
**FIREPLACE**  
Gunther M. Bartsch, P.O. Box 1935, Zephyr Cove, Nev. 89448  
Filed Jun. 30, 1980, Ser. No. 164,246  
Term of patent 14 years  
Int. Cl. D23—03

U.S. Cl. D23—94



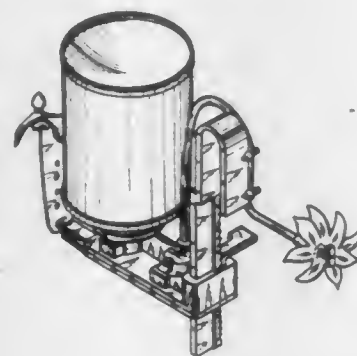
**265,500**  
**FIREPLACE UNIT**  
William T. Smith, 5500 Morro Way #88, La Mesa, Calif. 92041  
Filed Jun. 12, 1980, Ser. No. 158,644  
Term of patent 14 years  
Int. Cl. D23—03

U.S. Cl. D23—97



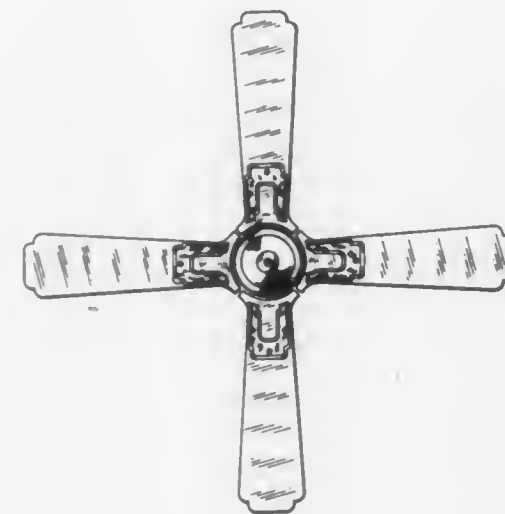
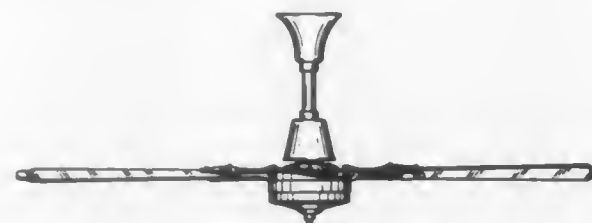
**265,501**  
**DEODORANT DISPENSER FOR A TOILET TANK OR THE LIKE**  
John P. Cotes, 2300 S. Lewis, Space 64, Anaheim, Calif. 92802  
Filed Jul. 30, 1980, Ser. No. 173,483  
Term of patent 14 years  
Int. Cl. D23—04

U.S. Cl. D23—150



**265,502**  
**CEILING FAN**  
Thomas L. Kearnes, Akron, Ohio, assignor to Questor Corporation, Toledo, Ohio  
Filed Jul. 24, 1980, Ser. No. 171,668  
Term of patent 14 years  
Int. Cl. D23—04

U.S. Cl. D23—158



**265,503**  
**HOUSING FOR POWER BLOWER**  
Charles C. Krug, Saginaw, Tex., assignor to K & S Industries, Inc., Fort Worth, Tex.  
Filed Jul. 30, 1980, Ser. No. 173,793  
Term of patent 14 years  
Int. Cl. D23—04

U.S. Cl. D23—163



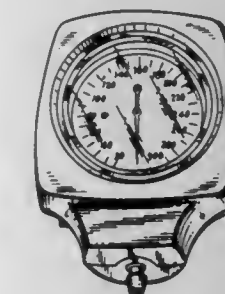
**265,504**  
**OTOSCOPE**  
Lewis H. Nash, P.O. Box 300, Ferndale, Calif. 95536  
Filed May 16, 1980, Ser. No. 150,196  
Term of patent 14 years  
Int. Cl. D24—02

U.S. Cl. D24—9



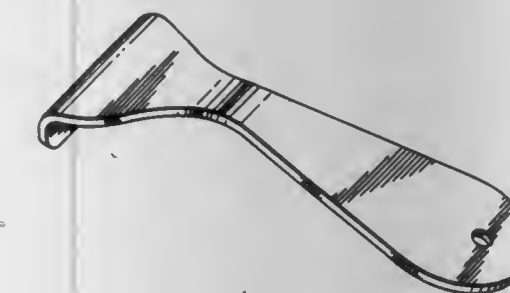
**265,505**  
**ELECTRONIC SPHYGMOMANOMETER**  
Nobuo Kaneda, Tokyo, Japan, assignor to Bristoline, Inc., Freeport, N.Y.  
Filed Jun. 18, 1979, Ser. No. 49,359  
Term of patent 14 years  
Int. Cl. D24—02

U.S. Cl. D24—21



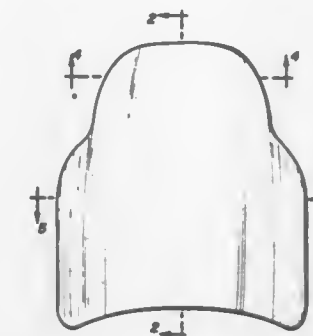
**265,506**  
**TONGUE SCRAPER**  
Peter G. Finamore, 1791 Lakeside Dr., Youngstown, Ohio 44509  
Filed May 30, 1979, Ser. No. 43,712  
Term of patent 14 years  
Int. Cl. D24—02

U.S. Cl. D24—23



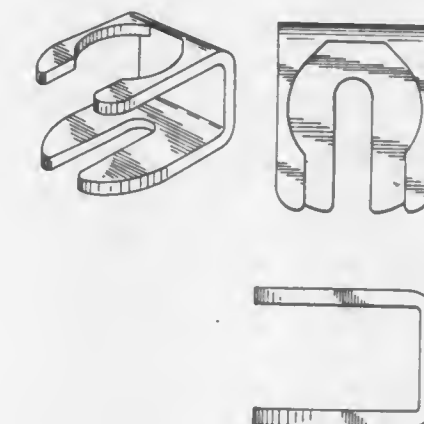
**265,507**  
**PROSTHETIC NAIL**  
E. Olayinka Ogunro, 625 Ray Ave., DeSota, Tex. 75115  
Filed Jun. 2, 1980, Ser. No. 155,436  
Term of patent 14 years  
Int. Cl. D28—03

U.S. Cl. D24—33



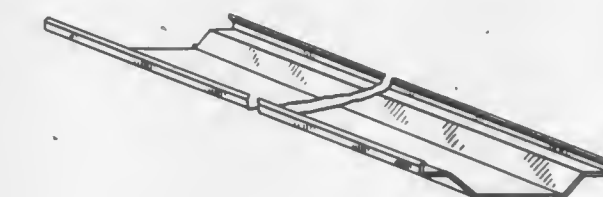
**265,508**  
**COMBINED BOTTLE NECK CLAMP AND TUBE HOLDER**  
Robert K. Rusteberg, Barrington Hills, Ill., assignor to Paulmatic Company, Elk Grove Village, Ill.  
Filed May 27, 1980, Ser. No. 153,549  
Term of patent 14 years  
Int. Cl. D24—02

U.S. Cl. D24—52



**265,509**  
**ELONGATED CEILING PANEL OR SIMILAR ARTICLE**  
Stephen Popek, Warren, Ohio, assignor to Alcan Aluminum Corporation, Cleveland, Ohio  
Filed May 7, 1979, Ser. No. 36,900  
Term of patent 14 years  
Int. Cl. D25—01

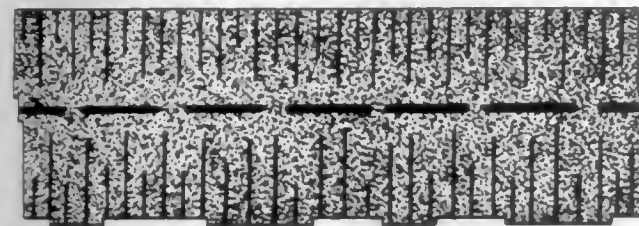
U.S. Cl. D25—74





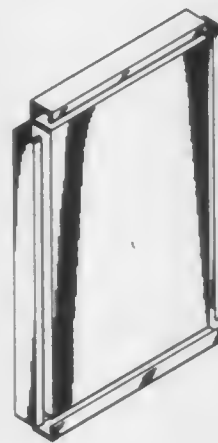
265,510  
**ASPHALT STRIP ROOFING SHINGLE OR SIMILAR ARTICLE**  
 Paul E. Bedwell, Jr., 8235 Acapulco, Riverside, Calif. 92504  
 Filed May 5, 1980, Ser. No. 146,783  
 Term of patent 14 years  
 Int. Cl. D25—01

U.S. Cl. D25—80



265,511  
**PANEL STRUCTURE**  
 Gunnar Svensson, Jonkoping, Sweden, assignor to AB Svenska Flaktfabriken, Nacka, Sweden  
 Division of Ser. No. 831,890, Sep. 9, 1977, abandoned. This application Apr. 2, 1980, Ser. No. 136,563  
 Term of patent 14 years  
 Int. Cl. D25—01

U.S. Cl. D25—92



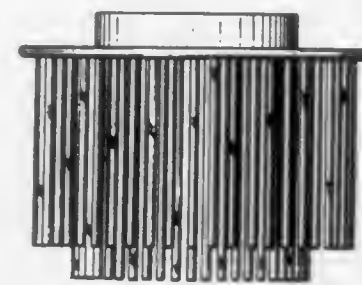
265,512  
**LIGHTING FIXTURE**  
 Gerald E. Thurston, Cranford, N.J., assignor to Lightolier Incorporated, Jersey City, N.J.  
 Filed Jun. 30, 1980, Ser. No. 164,262  
 Term of patent 14 years  
 Int. Cl. D26—05

U.S. Cl. D26—85



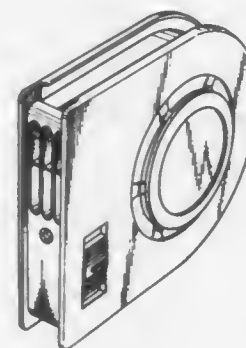
265,513  
**LIGHTING FIXTURE**  
 Gerald E. Thurston, Cranford, N.J., assignor to Lightolier Incorporated, Jersey City, N.J.  
 Filed Jun. 30, 1980, Ser. No. 164,777  
 Term of patent 14 years  
 Int. Cl. D26—05

U.S. Cl. D26—85



265,514  
**HAIR DRYER**  
 Noboru Abe; Akio Goto, both of Kadoma, Japan, and Florian Seiffert, Grunwald, Fed. Rep. of Germany, assignors to Matsushita Electric Works, Ltd., Osaka, Japan  
 Filed Oct. 14, 1980, Ser. No. 196,979  
 Claims priority, application Japan, Apr. 14, 1980, 55-14867  
 Term of patent 14 years  
 Int. Cl. D28—03

U.S. Cl. D28—12



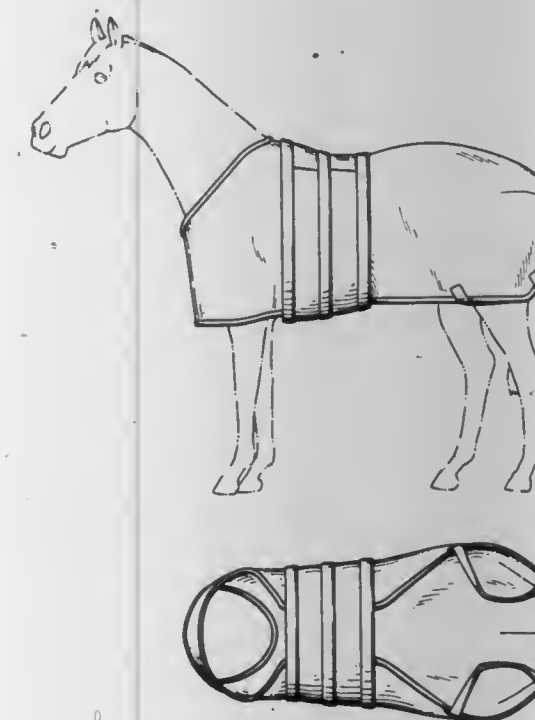
265,515  
**DENTAL FLOSSING INSTRUMENT**  
 Steven K. Levine, 713 Washington St., New York, N.Y. 10014  
 Filed Jan. 15, 1979, Ser. No. 3,338  
 Term of patent 14 years  
 Int. Cl. D24—99; D28—03

U.S. Cl. D28—64



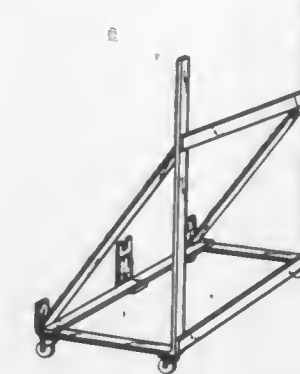
265,516  
**HORSE BLANKET**  
 Roger M. Wacker, Stewart, Minn. 55385  
 Filed May 5, 1980, Ser. No. 146,502  
 Term of patent 14 years  
 Int. Cl. D30—01

U.S. Cl. D30—37



265,517  
**STORAGE CART**  
 Richard S. Dunchock, Farmington Hills, Mich., assignor to SL Container Corporation, Southfield, Mich.  
 Filed May 2, 1980, Ser. No. 145,891  
 Term of patent 14 years  
 Int. Cl. D12—02

U.S. Cl. D34—17



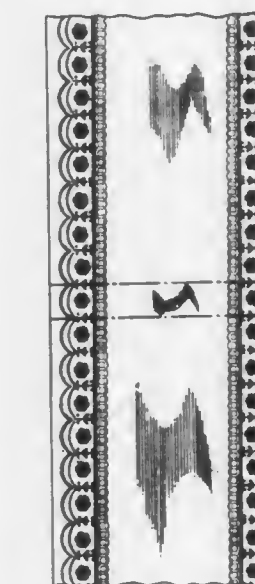
265,518  
**STORAGE-PREVENTING BASE FOR SHOPPING CART**  
 Daniel Berlin, Rydal, Pa., assignor to Roblin Industries, Inc., Battle Creek, Mich.  
 Filed May 2, 1980, Ser. No. 146,539  
 Term of patent 14 years  
 Int. Cl. D12—02

U.S. Cl. D34—17



265,519  
**CONTINUOUS SHEET MATERIAL OR THE LIKE**  
 Donald T. Appleman, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio  
 Filed Jun. 23, 1980, Ser. No. 162,465  
 Term of patent 14 years  
 Int. Cl. D5—06

U.S. Cl. D59—2 B





# LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF JULY, 1982

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. B. Chance Company: See—  
Klenk, William A.; Atkinson, Albert B.; and Bobbitt, Donald E., 4,339,899, Cl. 52-157.000.
- A.T. Ramot Plastics Ltd.: See—  
Kraus, Menahem A.; Livni, Avinoam; Nemas, Mara; and Frommer, Moshe A., 4,340,475, Cl. 210-232.000.
- AB Carbox: See—  
Pettersson, Bjorn O. A., 4,339,935, Cl. 72-57.000.
- Abascal, David J., to Kaiser Steel Corporation. Adjustable tuyere. 4,340,209, Cl. 266-266.000.
- Abbott Laboratories: See—  
Fukui, George M.; Spencer, Herbert J.; and Williams, Laurens R., II, 4,340,679, Cl. 435-253.000.  
Kriesel, Douglas C.; and Mehta, Shashi P., 4,340,582, Cl. 424-35.000.  
Martin, Jerry R.; Tadanier, John S.; and Johnson, Paulette, 4,340,727, Cl. 536-16.100.
- Abbott, Seth R., to Varian Associates, Inc. Anion exchange chromatographic composition for separation of polyfunctional compounds. 4,340,496, Cl. 252-184.000.
- Abe, Masaru, to Bridgestone Tire Company Limited. Heavy load tire with plural ply groups of different cord diameter. 4,340,105, Cl. 152-354.00R.
- Abe, Mitsuo: See—  
Hashimoto, Hideaki; Abe, Mitsuo; and Morita, Masaharu, 4,340,779, Cl. 179-1.00B.
- Aboelfotoh, Mohamed O.; and Skolnik, Marvin B., to International Business Machines Corporation. DC Gas discharge display panel with internal memory. 4,340,840, Cl. 315-58.000.
- Abramovich, Dan: See—  
Springett, Charles N.; Abramovich, Dan; Uyeda, Stanley T.; and Radu, E. John, 4,340,322, Cl. 405-168.000.
- Abts, Leigh R.; and Beyer, Robert T., to Micro Pure Systems, Inc. Ultrasonic particulate identification. 4,339,944, Cl. 73-19.000.
- Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., to Gulf Oil Corporation. Hot melt adhesive compositions containing an alpha-methylstyrene/vinyl toluene copolymer. 4,340,687, Cl. 525-193.000.
- Adams, Richard C., to Union Carbide Corporation. Galvanic dry cell employing a tapered cathode bobbin. 4,340,653, Cl. 429-133.000.
- Adams, V. Dean; and Reynolds, James H., to International Environmental, Inc. Wastewater treatment process with pH adjustment. 4,340,489, Cl. 210-718.000.
- Adibi, Siamak A. Nutrient compositions and method of administering the same. 4,340,592, Cl. 424-177.000.
- Adlerwerke vorm Heinrich Kleyer A.G.: See—  
Teichmann, Friedrich; and Wenderoth, Karl, 4,340,315, Cl. 400-690.400.
- Adolph, Horst G.: See—  
Lawrence, Gail W.; and Adolph, Horst G., 4,340,755, Cl. 564-233.000.
- Aebi, Hans: See—  
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- Aerosol Service AG: See—  
Obrist, Gerhard, 4,340,155, Cl. 222-135.000.
- Agency of Industrial Science and Technology: See—  
Nishizawa, Jun-ichi; and Hayashi, Yutaka, 4,340,827, Cl. 307-477.000.
- Agfa-Gevaert Aktiengesellschaft: See—  
Fernandez, Avelino; Glass, Josef; and Osegowitsch, Viktor, 4,340,294, Cl. 354-321.000.  
Stemme, Otto; Staudacher, Frank; Lermann, Peter; Danhauser, Justus; Engelsmann, Dieter; and Wagner, Karl, 4,340,288, Cl. 354-171.000.
- Agfa-Gevaert, N.V.: See—  
Monbaliu, Marcel J.; De Winter, Walter F.; and Van Poucke, Raphael K., 4,340,664, Cl. 430-449.000.
- Aiba, Takaaki; Kaji, Hisatsugu; Endo, Tomizo; and Ishihara, Takao, to Kureha Kagaku Kogyo Kabushiki Kaisha; Sumitomo Metal Industries, Ltd.; and Sumikin Coke Co., Ltd. Method for thermal cracking of heavy petroleum oil. 4,340,464, Cl. 208-40.000.
- Aihara, Hisamoto: See—  
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- Airwick Industries, Inc.: See—  
Lee, Ping I., 4,340,491, Cl. 210-764.000.
- Aisin Seiki Company, Ltd.: See—  
Iwasaki, Shinichiro, 4,339,953, Cl. 73-654.000.  
Iwasaki, Shinichiro, 4,339,955, Cl. 73-728.000.  
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- Aisslinger, Dieter E.: See—  
Pusch, Gunter; Aisslinger, Dieter E.; Hoffmann, Alexander; and Pusch, Klaus-Werner, 4,340,634, Cl. 428-134.000.
- Akagami, Akira: See—  
Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,340,646, Cl. 428-429.000.
- Akesson, Rolf A. L.: See—  
Wahren, Douglas; and Akesson, Rolf A. L., 4,340,011, Cl. 118-410.000.
- AKG Akustische u. Kino-Gerate Gesellschaft-mbH: See—  
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- Akiba, Shigeyuki; Suematsu, Yasuharu; Arai, Shigehisa; Kodaira, Masanobu; Itaya, Yoshio; Iga, Kenichi; Ota, Chuichi; Yamamoto, Takaya; and Sakai, Kazuo, to Kokusai Denshin Denwa Kabushiki Kaisha. Semiconductor laser with buffer layer. 4,340,966, Cl. 372-45.000.
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- Akzo NV: See—  
Frassek, Karl-Heinz; and van Ooij, Willy J., 4,340,515, Cl. 524-274.000.  
Kik, Leendert A.; Schuurink, Pieter H. J.; and De Vries, Marinus J., 4,340,622, Cl. 427-299.000.  
Noomem, Arie, 4,340,453, Cl. 204-159.150.
- Alanco, Lars-Erik: See—  
Koutonen, Pauli; and Alanco, Lars-Erik, 4,339,904, Cl. 53-137.000.
- Albany International Corp.: See—  
Skelton, John; Clark, Richard E.; and Davis, Robert B., 4,340,091, Cl. 139-383.00R.
- Albright & Wilson Limited: See—  
Edwards, Alfred G., 4,340,700, Cl. 525-503.000.
- Alcan Research & Development Limited: See—  
Jack, Stanton E.; and Dark, Robert O., 4,340,273, Cl. 350-105.000.
- Alco Electronic Products, Inc.: See—  
Kirchoff, Francis D., 4,340,793, Cl. 200-268.000.
- Alcolac Inc.: See—  
Sandri, Joseph M.; Calentine, John W.; Linder, Seymour M.; and Billioux, Yves J., 4,340,743, Cl. 548-318.000.
- Aldred, Alan C. G.; and Weeks, Brian, to British Petroleum Company Limited. The Polymer/bituminous material blends, process for making articles from such blends and articles made by the process. 4,340,517, Cl. 524-59.000.
- Alexander, John A.: See—  
Lindman, William E.; and Alexander, John A., 4,340,473, Cl. 210-173.000.
- Alfa Farmaceutici, S.p.A.: See—  
Borzatta, Valerio; Cristofori, Manlio; and Brazzi, Angelo, 4,340,585, Cl. 424-79.000.
- Ali, Ramadan A.; Muller, Heinz; Lehmann, Karl-Heinz; Artzt, Peter; and Schenek, Anton, to Schubert & Salzer. Open-end spinning machine. 4,339,910, Cl. 57-411.000.
- Allied Corporation: See—  
Anello, Louis G.; Eibeck, Richard E.; and Robinson, Martin A., 4,340,548, Cl. 260-544.00Y.  
Anello, Louis G.; and Sweeney, Richard F., 4,340,762, Cl. 568-24.000.  
Bridges, Jack E.; and Frazier, Marvin J., 4,340,770, Cl. 174-35.0MS.  
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,339,951, Cl. 374-162.000.
- Allied Paper Incorporated: See—  
Whalen-Shaw, Michael J.; and Thiessen, Robert J., 4,340,659, Cl. 430-64.000.
- Alter, Larry D., to E-Systems, Inc. Continuously variable piezoelectric crystal delay line. 4,340,872, Cl. 333-152.000.
- Altman, Wilbur E.; and McQuay, William C. Multi-purpose water outlet and accessories. 4,339,850, Cl. 17-69.000.
- Aluminum Pechiney: See—  
Hanrot, Jean-Pascal; and Volpeliere, Jacky, 4,340,136, Cl. 193-15.000.
- ALZA Corporation: See—  
Eckenhoff, James B., 4,340,048, Cl. 128-213.00R.  
Michaels, Alan S., 4,340,054, Cl. 128-260.000.
- AM International, Inc.: See—  
Troxel, Donald E., 4,340,912, Cl. 358-283.000.



Amaya, Nestor R.: See—  
Stumpp, Gerhard; Eblen, Ewald; Hofmann, Karl; Amaya, Nestor R.; Schlagenhaut, Josef; and Kopsch, Odon, 4,340,181, Cl. 239-533.000.

Amend, William E.: See—  
Hays, Lance G.; Amend, William E.; and Hokenson, Gustave J., 4,339,923, Cl. 60-673.000.

Amerace Corporation: See—  
Johnson, Glenn W., Jr.; and Heenan, Sidney A., 4,340,319, Cl. 404-16.000.

American Cyanamid Company: See—  
Lovell, James B., 4,340,608, Cl. 424-300.000.  
Tomcufcik, Andrews S.; Wright, William B., Jr.; and Marsico, Joseph W., Jr., 4,340,734, Cl. 544-282.000.  
Wang, Samuel S.; and Scanlon, Michael J., 4,340,467, Cl. 209-166.000.

American Enviro-Port, Inc.: See—  
Mixon, James A., 4,340,472, Cl. 210-104.000.

American Hospital Supply Corporation: See—  
Heil, Donald J., 4,340,366, Cl. 433-82.000.

AMF Incorporated: See—  
Arthur, Ronald H., 4,340,795, Cl. 200-295.000.

Ammann, David W.; and Granzow, Daniel B., to Baxter Travenol Laboratories, Inc. Connector member for sealed conduits, 4,340,097, Cl. 141-98.000.

Anazawa, Shinzo; and Kozu, Hideaki, to Nippon Electric Co., Ltd. Lead connecting structure for a semiconductor device, 4,340,901, Cl. 357-68.000.

Andersen, Clifford H.: See—  
Bazarian, Albert; Scannell, John W.; and Andersen, Clifford H., 4,340,923, Cl. 361-120.000.

Anderson, Ernest L. Three point hitch adaptor for a tractor, 4,340,240, Cl. 280-461.00A.

Anderson, George D., II. Rafter support jig, 4,340,100, Cl. 145-1.00R.

Anderson, Paul R.; and Miller, Wayne J., to United States of America, Energy. Method of forming cavitated objects of controlled dimension, 4,340,407, Cl. 65-21.400.

Anderson, Roland M.: See—  
Klein, Paul E.; and Anderson, Roland M., 4,340,363, Cl. 433-18.000.

Anderson, Thomas E., to General Electric Company. Keep-alive circuit for gas discharge lamp, 4,340,843, Cl. 315-205.000.

Ando, Yujiro: See—  
Ohara, Katsunobu; Tanaka, Keiji; Ando, Yujiro; and Moriyama, Inao, 4,340,296, Cl. 355-35.00C.

Andrews, Donald. Apparatus for drying fish, especially squid, 4,339,884, Cl. 34-93.000.

Anello, Louis G.; Eibeck, Richard E.; and Robinson, Martin A., to Allied Corporation. Process for the preparation of perhaloalkanoil chloride, 4,340,548, Cl. 260-544.00Y.

Anello, Louis G.; and Sweeney, Richard F., to Allied Corporation. Gas phase synthesis of bis(trifluoromethyl) disulfide, 4,340,762, Cl. 568-24.000.

Angel, Boris S.: See—  
Chichkin, Valentin P.; Shpigel, Efraim A.; Gokin, Gennady P.; Matjuschenko, Georgy E.; Kurakov, Nikolai N.; Rabinovich, Grigory B.; Samoilovskiy, Sergei A.; Angel, Boris S.; Ilenko, Vladimir S.; Miterov, Vladimir P.; Zemlyanov, Leonid S.; and Krutkov, Anatoly F., 4,339,906, Cl. 56-327.00R.

Anlauf, Jürgen; and Jonner, Wolf-Dieter, to Robert Bosch GmbH. Method of testing the operativeness of a control system, 4,340,935, Cl. 364-426.000.

Anson, Michael; Chung, Shin-Ho; and Pettigrew, Alan G., to National Research Development Corporation. Measurement of small movements, 4,339,954, Cl. 73-657.000.

Antonik, Steve J., to National Repellents, Inc. Repellent composition and method of use, 4,340,587, Cl. 424-95.000.

Aoki, Tadao; Miyakoshi, Hideo; Hirasawa, Yoshihei; and Nishii, Yasuo, to Chugai Seiyaku Kabushiki Kaisha. Method for inhibiting the lowering of immunological function and agent therefor, 4,340,604, Cl. 424-236.000.

Appel, David W.; and Morman, Michael T., to Kimberly-Clark Corporation. Method for forming nonwoven webs, 4,340,563, Cl. 264-518.000.

Arai, Fuminori: See—  
Kitajima, Masao; Arai, Fuminori; and Kondo, Asaji, 4,340,565, Cl. 422-56.000.

Arai, Shigehisa: See—  
Akiba, Shigeyuki; Suematsu, Yasuharu; Arai, Shigehisa; Kodaira, Masanobu; Itaya, Yoshio; Iga, Kenichi; Ota, Chuichi; Yamamoto, Takaya; and Sakai, Kazuo, 4,340,966, Cl. 372-45.000.

Archer, Fred C., to Spokane Crusher Mfg. Co. Vibratory screen apparatus, 4,340,469, Cl. 209-315.000.

Arco Industries Ltd.: See—  
D'Andrade, Bruce M.; Tsui, Kwok W.; and Yuen, Sing C. J., 4,340,373, Cl. 434-174.000.

Arcomac S.A.: See—  
Demiere, Armand, 4,339,855, Cl. 26-103.000.

Armco Inc.: See—  
Lawson, John E., 4,340,117, Cl. 166-341.000.

Arnal, Claude; Pompon, Jean-Barnard; and Roulet, Robert, to Chloe Chimie. Method of preparing homo and co-polymers of vinyl chloride adapted to give plastisols from a latex containing two populations of particles, 4,340,722, Cl. 528-480.000.

Arnold, William P., to University of Virginia, The. Rapid, semi-automated method for determining dibucaine numbers, 4,340,667, Cl. 435-20.000.

Arora, Manohar L.; Overway, Timothy A.; and Foye, Thomas E., to BASF Wyandotte Corporation. Pigment flushing, 4,340,431, Cl. 106-262.000.

Arthur, Ronald H., to AMF Incorporated. Panel mount adapter for switches, 4,340,795, Cl. 200-295.000.

Artzer, Richard F., to Covington Brothers Technologies. Method and apparatus for welding, 4,340,802, Cl. 219-56.000.

Artzt, Peter: See—  
Ali, Ramadan A.; Muller, Heinz; Lehmann, Karl-Heinz; Artzt, Peter; and Schenek, Anton, 4,339,910, Cl. 57-411.000.

Asahi Denka Kogyo K.K.: See—  
Hata, Naoki; Kojo, Hidehiko; and Akimoto, Koji, 4,340,716, Cl. 528-100.000.

Asahi-Dow Limited: See—  
Wada, Akihiro; Tazaki, Kichiya; Tahara, Tamotsu; Suzuki, Hiroshi; and Mizutani, Yukihisa, 4,340,551, Cl. 264-25.000.

Asahi Glass Company, Limited: See—  
Asawa, Tatsuhiro; Yamabe, Masaaki; and Miyake, Haruhisa, 4,340,680, Cl. 521-27.000.

Yamabe, Masaaki; Kumai, Seisaku; and Munekata, Seiji, 4,340,750, Cl. 560-183.000.

Asahi Kasei Kogyo Kabushiki: See—  
Mishiro, Masahiro; Nishikawa, Tokio; Ohashi, Shigeyasu; and Yokokawa, Yasuo, 4,340,481, Cl. 210-500.200.

Asakawa, Shirow: See—  
Yamashita, Akio; and Asakawa, Shirow, 4,340,624, Cl. 428-1.000.

Asano, Masamichi; and Iwahashi, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Memory device utilizing MOS FETs, 4,340,943, Cl. 365-194.000.

Asano, Tetsumasa; Fujimoto, Mitsuhiro; and Mizukawa, Ryuichi, to Mitsubishi Denki Kabushiki Kaisha. Wind control apparatus for air conditioner, 4,339,991, Cl. 98-40.0VM.

Asawa, Tatsuhiro; Yamabe, Masaaki; and Miyake, Haruhisa, to Asahi Glass Company, Limited. Cation exchange membrane of fluorinated polymer for an electrolysis, 4,340,680, Cl. 521-27.000.

ASEA Aktiebolag: See—  
Hede, Allan, 4,340,432, Cl. 148-11.50P.

Askman, Lars; Wetzel, Pierre; and Isely, Alain, to Societe d'Assistance Technique pour Produits Nestle S.A. Process for spinning fish proteins, 4,340,612, Cl. 426-276.000.

Asnets: See—  
Bernard, Jacques, 4,340,176, Cl. 239-102.000.

Asquith, Dixon R.: See—  
Story, Alfred D.; and Asquith, Dixon R., 4,339,894, Cl. 51-281.00R.

Astakhov, Igor A.: See—  
Romashov, Alexandr A.; Levinsky, Gennady E.; Ivantsov, Vladimir Y.; Astakhov, Igor A.; and Kuznetsov, Vladimir A., 4,340,163, Cl. 228-19.000.

Aston, William C.; and Walker, Derek, to IMI Yorkshire Imperial Plastics Limited. Apparatus for manufacture of thermoplastics pipe, 4,340,344, Cl. 425-149.000.

Atkin, Rupert L., to TRW Inc. Power steering apparatus, 4,339,986, Cl. 91-375.00A.

Atkinson, Albert B.: See—  
Klenk, William A.; Atkinson, Albert B.; and Bobbitt, Donald E., 4,339,899, Cl. 52-157.000.

Audio Dynamics Corporation: See—  
Kuehn, John P., 4,340,957, Cl. 369-256.000.

Aument, Patrick E.: See—  
de la Burde, Roger Z.; and Aument, Patrick E., 4,340,073, Cl. 131-291.000.

Austin, Stewart S.: See—  
Smith, Henry I.; Austin, Stewart S.; and Flanders, Dale C., 4,340,305, Cl. 356-356.000.

Australian Telecommunications Commission: See—  
English, Kevin S., 4,340,875, Cl. 333-166.000.

Austung Proprietary Limited: See—  
Springborn, Karl S., 4,340,350, Cl. 425-409.000.

Automatic Connector, Inc.: See—  
Ott, Conrad L.; and Ris, George E., 4,340,265, Cl. 339-14.00R.

Avco Corporation: See—  
DeBolt, Harold E.; Suplinakas, Raymond J.; Cornie, James A.; Henze, Thomas W.; and Hauze, Albert W., 4,340,636, Cl. 428-215.000.

Awadalla, Makary M., to Northern Telecom Limited. Ringing signal supply, 4,340,785, Cl. 179-51.0AA.

Aya, Toshihiko; and Kubo, Yasushi, to Toray Industries, Inc. Heat resistant molding resin composition, 4,340,697, Cl. 525-420.000.

Ayers, William M.: See—  
Maheshwary, Ashok K.; and Ayers, William M., 4,340,321, Cl. 405-66.000.

Azegami, Hitoshi: See—  
Ota, Hiroshi; Horigome, Eiji; and Azegami, Hitoshi, 4,340,644, Cl. 428-423.700.

B.A.G., Inc.: See—  
Smith, Dennis M., 4,340,042, Cl. 128-87.00R.

B. F. Goodrich Company, The: See—  
Conrady, James A.; and Driscoll, William J., 4,340,648, Cl. 428-518.000.

Huddleston, George R., Jr.; and Turner, James W., 4,340,702, Cl. 526-70.000.

Kim, Heung T., 4,340,342, Cl. 425-72.00R.

B.P.A. Enterprises, Inc.: See—  
Dopkowski, William J., 4,340,227, Cl. 273-77.00R.

Baba, Keiichi: See—  
Tsuchihashi, Michihiro; Saito, Masato; Baba, Keiichi; and Matsu-shima, Yusaku, 4,340,844, Cl. 315-283.000.

Babcock-BSH AG: See—  
Bahner, Friedrich; and Pleva, Harry, 4,339,949, Cl. 73-204.000.

Babel, Werner, to Maho Werkzeugmaschinenbau Babel & Co. Switching device for variable speed gears in machine tools, 4,339,962, Cl. 74-335.000.

Backhouse, Alan J.; and Palluel, Auguste L., to Imperial Chemical Industries Limited. Production of polymer microparticles and coating compositions containing them, 4,340,511, Cl. 524-504.000.

Baer, Gerhard: See—  
Kuhlmann, Gerhard; Kranzler, Ernst; Baer, Gerhard; Ruetsch, Kurt; Ramseier, Hansruedi; Dubach, Heinz; Lang, Martin; Schwartz, Hans; and Aebi, Hans, 4,340,831, Cl. 310-239.000.

Bahner, Friedrich; and Pleva, Harry, to Babcock-BSH AG. Process and apparatus for the thermal measurement of mass flow, 4,339,949, Cl. 73-204.000.

Bailey, Edward A.; and LeBlanc, Louis H., Jr., to Joy Manufacturing Company. Pneumatic rock drills, 4,340,121, Cl. 173-134.000.

Bakula, Richard E.; Maly, Dennis L.; and Weemhoff, James H., to Harris Corporation. Dual mapping memory expansion unit, 4,340,932, Cl. 364-200.000.

Balasubramanian, N. Optical system for surface topography measurement, 4,340,306, Cl. 356-360.000.

Balding, George H. Photographic printer and color film analyzer apparatus, 4,340,905, Cl. 358-80.000.

Ball Corporation: See—  
Gross, Robert M., 4,340,557, Cl. 264-146.000.

Ball, Geoffrey; Deadman, Harry A.; Smith, John G.; and Vokes, John C., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom. Series-connected two-terminal semiconductor devices and their fabrication, 4,339,870, Cl. 29-576.00B.

Baltes, Herbert; Leupold, Ernst L.; and Wunder, Friedrich, to Hoechst Aktiengesellschaft. Process for the manufacture of glyoxylic acid esters, 4,340,748, Cl. 560-177.000.

Bankes, Kristen E.; Large, Donald M.; and Reinhard, Fred J., to Western Electric Co., Inc. Decelerating and reorienting elongated magnetic articles, 4,340,323, Cl. 406-83.000.

Banks, Kenneth E., to Chemetron Corporation. Welding electrode with a fluoride based slag system, 4,340,805, Cl. 219-146.230.

Bar, Helmut; Mader, Herbert; Muck, Karl-Friedrich; and Zorner, Paul, to Hoechst Aktiengesellschaft. Process and equipment for the continuous manufacture of trioxan, 4,340,542, Cl. 549-368.000.

Bardwell, Robert G. Method and apparatus for extrusion coating of a cable involving guide tip protection from an oversized portion of the cable, 4,340,554, Cl. 264-40.700.

Barmag Barmer Maschinenfabrik: See—  
Dammann, Peter; Schippers, Heinz; and Bauer, Karl, 4,339,915, Cl. 57-339.000.

Schippers, Heinz; Hufer, Norbert; Munnekehoff, Gerd; and Teich, Udo, 4,340,187, Cl. 242-35.50A.

Barnert, Konrad; and Lohner, Ingolf, to Volkswagenwerk Aktiengesellschaft. Internal combustion diesel engine, 4,340,019, Cl. 123-256.000.

Barnes, Gary T., to University of Alabama, The Board of Trustees of the. Scanning grid apparatus for suppressing scatter in radiographic imaging, 4,340,818, Cl. 250-509.000.

Barnes Group Inc.: See—  
Zavatsky, Robert J., 4,340,190, Cl. 242-107.000.

Zavatsky, Robert J., 4,340,191, Cl. 242-107.000.

Barrett, Charles A.: See—  
United States of America, National Aeronautics and Space Administration; Barrett, Charles A.; Lowell, Carl E.; and Khan, Abdus S., 4,340,425, Cl. 148-428.000.

Barrett, Michael G.: See—  
Vaughan, David E. W.; Edwards, Grant C.; and Barrett, Michael G., 4,340,573, Cl. 423-328.000.

Barsi, Karoly; Dorombozi, Laszlo; Forisek, Istvan; Kuburczik, Gyula; and Stuber, Gyorgy, to Tatabanyai Szenbanyak. Method of mining heavy coal seams in two or more benches, 4,340,254, Cl. 299-11.000.

Bart, Max: See—  
Harte, Richard A.; and Bart, Max, 4,340,564, Cl. 422-56.000.

Barton, Lyndon O. Dual timing apparatus, 4,340,947, Cl. 368-93.000.

BASF Aktiengesellschaft: See—  
Derendorf, Walter; and Huber, Manfred, 4,340,188, Cl. 242-68.500.

Dockner, Toni; Kempe, Uwe; Krug, Herbert; Magnussen, Peter; and Praetorius, Werner, 4,340,745, Cl. 548-347.000.

Eicken, Karl; and Wuerzer, Bruno, 4,340,418, Cl. 71-92.000.

Ellingsfeld, Heinz; Hansen, Guenter; and Seybold, Guenter, 4,340,537, Cl. 260-158.000.

Franke, Albrecht; Lenke, Dieter; Gries, Josef; and Lehmann, Hans D., 4,340,595, Cl. 424-244.000.

Kempler, Fritz E.; and Schupp, Eberhard, 4,340,455, Cl. 204-181.00C.

Klahr, Erhard; Hettche, Albert; Trieselt, Wolfgang; Stoeckigt, Dieter; and Trapp, Horst, 4,340,766, Cl. 568-625.000.

Lotach, Wolfgang; and Kemper, Reinhard, 4,340,735, Cl. 544-300.000.

Naarmann, Herbert; Naegle, Dieter; Penzien, Klaus; and Schlag, Johannes, 4,340,507, Cl. 252-512.000.

Ohltinger, Manfred; Vaeth, Guenter; Mueller, Norbert; and Wettstein, Eugen, 4,340,494, Cl. 252-62.560.

Pich, Claus H.; and Moest, Thomas, 4,340,614, Cl. 426-649.000.

Plath, Peter; Eicken, Karl; and Rohr, Wolfgang, 4,340,739, Cl. 548-236.000.

Rapp, Guenther; Jockers, Kurt; and Thomas, Erwin, 4,340,575, Cl. 423-387.000.

Schupp, Eberhard; Kempler, Fritz E.; and Gulbins, Erich, 4,340,714, Cl. 528-99.000.

Schwarz, Helmut; Dockner, Toni; Kempe, Uwe; Krug, Herbert; Praetorius, Werner; Magnussen, Peter; Gallei, Ewald; and Fehr, Erich, 4,340,744, Cl. 548-346.000.

BASF Wyandotte Corporation: See—  
Arora, Manohar L.; Overway, Timothy A.; and Foye, Thomas E., 4,340,431, Cl. 106-262.000.

Bassett, Ronald M. Plant supporting and watering device, 4,339,891, Cl. 47-71.000.

Bastida, Ezio M., to CISE Centro Informazioni Studi Esperienze S.p.A. Periodic transmission structure for slow wave signals, for miniaturized monolithic circuit elements operating at microwave frequency, 4,340,873, Cl. 333-161.000.

Bauer, Brady G.: See—  
Parke, Patrick P.; Bauer, Brady G.; Meitl, Kenneth G.; Thompson, Wayne L.; and Voegeli, Thomas J., 4,340,182, Cl. 239-680.000.

Bauer, Karl: See—  
Dammann, Peter; Schippers, Heinz; and Bauer, Karl, 4,339,915, Cl. 57-339.000.

Bauer, Robert, to Miles Laboratories, Inc. System for the determination of glucose in fluids, 4,340,669, Cl. 435-14.000.

Bauer, Timothy R., to Precision Metalsmiths, Inc. Ceramic shell molding apparatus and methods, 4,340,107, Cl. 164-35.000.

Baughman, Ray H.: See—  
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,339,951, Cl. 374-162.000.

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Hermann, Karl H., 4,340,540, Cl. 548-440.000.

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Eggmann, Jean; Graf, Hans; and Zaba, Tadeusz, 4,339,925, Cl. 60-757.000.

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Diamond, Allen M.; and Ratz, Richard D., 4,340,307, Cl. 356-418.000.

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Darner, James C., 4,340,157, Cl. 222-211.000.

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DeCosta, John; Mallos, James B.; and Roe, David B., 4,340,777, Cl. 178-18.000.



- Dixon, Richard W.; and Schwartz, Bertram, 4,340,967, Cl. 372-46.000.
- Jin, Sungho; and Triefel, Thomas H., 4,340,434, Cl. 148-31.550.
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- Moran, John C., 4,340,960, Cl. 370-62.000.
- Okimaka, Yutaka; and Wolowioduk, Catherine, 4,340,451, Cl. 204-46.000.
- Scalera, Michael, 4,340,268, Cl. 339-18.00R.
- Scordo, Dominick, 4,340,863, Cl. 328-63.000.
- Bellinger, James E., to Florida Data Corporation. Printer arm. 4,340,165, Cl. 228-173.00C.
- Beloit Corporation: See—
- Justus, Edgar J., 4,340,623, Cl. 427-361.000.
- Belongia, Clyde G.: See—
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- Ben-Shmuel, Dan; and Zacuto, Philip, to Woodside Construction, Inc. Process for recovering heat from stack or flue gas. 4,340,572, Cl. 423-242.000.
- Bendix Corporation, The: See—
- Brooks, Mark A.; and Miller, Jane, 4,340,409, Cl. 65-43.000.
- Beneteau, Stanley A.: See—
- Proulx, Sylvester E.; and Beneteau, Stanley A., 4,340,328, Cl. 408-239.00A.
- Beni, Gerardo; Rice, Catherine E.; and Shay, Joseph L., to Bell Telephone Laboratories, Incorporated. Electrochromic device. 4,340,278, Cl. 350-357.000.
- Bennett, M. Owen: See—
- Cowans, Kenneth W.; and Bennett, M. Owen, 4,340,778, Cl. 179-1.00D.
- Bennett Sound Corporation: See—
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- Berg, Floyd L. Warning indicator for a camera. 4,340,291, Cl. 354-215.000.
- Berger, Joel G.: See—
- Gold, Elijah H.; Berger, Joel G.; and Chang, Wei K., 4,340,597, Cl. 424-256.000.
- Berger, Michael A., to Datamarc, Inc. Envelope feeding apparatus. 4,340,314, Cl. 400-625.000.
- Bergman, Rolf S.; and Lake, William H., to General Electric Company. Electrode for miniature high pressure metal halide lamp. 4,340,836, Cl. 313-211.000.
- Bergquist, Frank H., to Harper-Wyman Company. Safety latch control arrangement for self-cleaning oven. 4,340,806, Cl. 219-413.000.
- Bergsoe, Svend, to Paul Bergsoe and Son A/S. Method of recovering lead from lead-acid batteries. 4,340,421, Cl. 75-25.000.
- Berke, Joseph J.; and Gay, Eric L., to Berke, Joseph J. Flexible cranio-tome footplate. 4,340,060, Cl. 128-317.000.
- Berkshire Research Partners: See—
- Levy, Donald; and Rusz, Tibor, 4,340,044, Cl. 128-204.210.
- Bernard, Jacques, to Asnets. All-purpose mobile scouring machine. 4,340,176, Cl. 239-102.000.
- Bernard, William: See—
- Bruhn, Alfred; and Bernard, William, 4,340,207, Cl. 266-155.000.
- Bernhardt, Daniel. Multiple compartment multiple seal container. 4,340,138, Cl. 206-216.000.
- Berry, David A.: See—
- Hillenbrand, Louis J.; Preston, Joseph R.; and Berry, David A., 4,340,629, Cl. 428-64.000.
- Berstermann, Wilhelm: See—
- Grisar, Ulrich; and Berstermann, Wilhelm, 4,340,303, Cl. 356-313.000.
- Beta Corporation of St. Louis: See—
- Volk, Joseph A., Jr., 4,340,937, Cl. 364-468.000.
- Betcher, Robert H. Security device and method for postage meter machines. 4,340,809, Cl. 235-101.000.
- Better Agricultural Goals Corporation: See—
- Williamson, Robert R., 4,340,379, Cl. 493-211.000.
- Beyer, Robert T.: See—
- Abts, Leigh R.; and Beyer, Robert T., 4,339,944, Cl. 73-19.000.
- Bilane, Glenn B.; Rubin, Lawrence M.; Soffa, Albert; and Vilenski, Dan, to Kulicke & Soffa Industries, Inc. High speed wire bonding method. 4,340,166, Cl. 228-179.000.
- Billoux, Yves J.: See—
- Sandri, Joseph M.; Calentine, John W.; Linder, Seymour M.; and Billoux, Yves J., 4,340,743, Cl. 548-318.000.
- BioResearch Inc.: See—
- Kurtz, Leonard D., 4,340,348, Cl. 425-270.000.
- Biphase Energy Systems: See—
- Hays, Lance G.; Amend, William E.; and Hokenson, Gustave J., 4,339,923, Cl. 60-673.000.
- Bishop, John W. H., to Ixex Inking Systems Corp. Business machine printing ribbon spool apparatus and method of inking the type slug impact portion of printing ribbons. 4,340,313, Cl. 400-202.100.
- Bishop, Keith C., III: See—
- Miller, Stephen J.; and Bishop, Keith C., III, 4,340,465, Cl. 208-120.000.
- Bitskey, Jozsef: See—
- Toth, Andras; Toth nee Palotai, Emese; Olah, Jozsef; Bitskey, Jozsef; and Bulkai, Lajos, 4,340,488, Cl. 210-705.000.
- Black, Otis D.: See—
- Packer, Marvin; and Black, Otis D., 4,340,167, Cl. 228-180.00R.
- Blacker, Rose: See—
- Jaffe, Fern; and Blacker, Rose, 4,339,835, Cl. 5-413.000.
- Blanc GmbH & Co.: See—
- Frank, Friedhelm, 4,340,041, Cl. 128-80.00C.
- Blaszczak, Peter P., Jr.: See—
- Kerkenbush, Darle L.; and Blaszczak, Peter P., Jr., 4,340,222, Cl. 273-61.00R.
- Blersch, Arthur, to Zahnradfabrik Friedrichshafen AG. Device for sensing the engagement position of a clutch. 4,340,133, Cl. 192-30.00W.
- Bloch, Daniel R.; Odders, Charles N.; and Rogers, John R., to S. C. Johnson & Son, Inc. Radiation induced graft polymerization. 4,340,057, Cl. 128-284.000.
- Block, Andrew. Lock opening tool. 4,339,863, Cl. 29-426.400.
- Bobbitt, Donald E.: See—
- Klenk, William A.; Atkinson, Albert B.; and Bobbitt, Donald E., 4,339,899, Cl. 52-157.000.
- Boddeker, Karl W.; and Wenzlaff, Axel, to Gesellschaft fur Kernenergieverwertung in Schiffbau und Schifffahrt GmbH. Semi-permeable asymmetrical membrane and process of producing same. 4,340,428, Cl. 106-122.000.
- Bodor, Nicholas S.; Sloan, Kenneth B.; and Pogany, Stefano A., to INTERx Research Corporation. Novel inotropic prodrugs. 4,340,603, Cl. 424-301.000.
- Boeing Company, The: See—
- Robinson, Curtiss W.; and Clingman, Wilbur D., 4,340,271, Cl. 350-16.000.
- Bohm, Georg G. A.; Hamed, Gary R.; and Vescelius, Lee E., to Firestone Tire & Rubber Company, The. Thermoplastic elastomer blends. 4,340,684, Cl. 525-194.000.
- Boldt, Robert R.; and Nelson, Arthur R., to Dickey-john Corporation. Bearing and motor temperature monitor. 4,340,886, Cl. 340-682.000.
- Boliver, Vincent J., to General Electric Company. Electrical switch with melamine loaded thermoplastic ablative material. 4,340,790, Cl. 200-144.00C.
- Bolt, Anthony J. N.; and Chard, Brian C., to Imperial Group Limited. Smokeable device. 4,340,072, Cl. 131-273.000.
- Bond, Gary M.: See—
- Marshall, Albert H.; Shaw, Bon F.; Grimmer, Paul D.; Towle, Herbert C.; and Bond, Gary M., 4,340,370, Cl. 434-22.000.
- Bonnebat, Claude; Roulet, Gilbert; and Vaginay, Yves, to Rhone-Poulenc Industries. Novel polyester for the packaging of comestibles. 4,340,721, Cl. 528-272.000.
- Book, Walter R.; and Putetti, Anthony M., to Textron, Inc. Drawing heavy walled parts. 4,339,939, Cl. 72-349.000.
- Borghesi, Italo; Foschi, Sergio; and Galli, Paolo, to Montedison S.p.A. Thermoplastic rubbers and process for preparing same. 4,340,704, Cl. 526-125.000.
- Borzatta, Valerio; Cristofori, Manlio; and Brazzi, Angelo, to Alfa Farmaceutici, S.p.A. Salified anionic resin for cholesterol and lipid lowering. 4,340,585, Cl. 424-79.000.
- Bose, Biswa N. Cover plates for electrical utility and other boxes as used in concealed wiring system of buildings. 4,340,772, Cl. 174-51.000.
- Bossetti, Renato, to Societa Impianti Termoelettrici Industriali (s.a.s.). Apparatus and process for discharging tiles from high speed ovens for the production of tiles. 4,340,358, Cl. 432-11.000.
- Bourque, Don P., to University Patents, Inc. Method of crystallizing ribulose, 1,5-bisphosphate carboxylase/oxygenase from photosynthetic organisms, particularly plant leaves. 4,340,676, Cl. 433-232.000.
- Boylan, Francis J., to Drew Chemical Corporation. Liquid defoamer and process of use thereof. 4,340,500, Cl. 252-321.000.
- BP Chemicals Limited: See—
- Laverick, Robert G.; and Scotland, James M., 4,340,447, Cl. 203-36.000.
- Bradley, John J.: See—
- Miu, Ming T.; Bradley, John J.; Panepinto, William, Jr.; and Shen, Jian-Kuo, 4,340,933, Cl. 364-200.000.
- Brandenberg Energy Corporation: See—
- Schulz, Helmut, 4,340,397, Cl. 48-74.000.
- Brandenstein, Manfred: See—
- Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Kunkel, Heinrich, 4,340,135, Cl. 192-98.000.
- Brandes, Gunter; Neier, Wilhelm; Wollner, Johannes; Webers, Werner; and deVleeschauwer, Walter F., to Deutsche Texaco Aktiengesellschaft. Process for the continuous production of lower aliphatic alcohols. 4,340,769, Cl. 568-899.000.
- Brassine, Robert L. Educational aid. 4,340,372, Cl. 434-88.000.
- Braun, Ernst; and Braun, Gert, to Halbach & Braun. Roll crusher for crushing lumpy material. 4,340,185, Cl. 241-186.00R.
- Braun, Gert: See—
- Braun, Ernst; and Braun, Gert, 4,340,185, Cl. 241-186.00R.
- Braun, John L.; Smith, Denver W.; and Ekey, William J., to McNeil Corporation. Method of testing the windings and insulation system of a motor by applying the test voltage before completing a path to ground. 4,340,853, Cl. 324-51.000.
- Brazzi, Angelo: See—
- Borzatta, Valerio; Cristofori, Manlio; and Brazzi, Angelo, 4,340,585, Cl. 424-79.000.
- Breland, William M.; Guillinger, Terry R.; and Schechter, Robert S., to United States of America, Interior. Preflush-lxiviant process for solution mining of uranium ore beds. 4,340,253, Cl. 299-5.000.
- Bremer, Robert C., Jr., to Wallace Murray Corporation. Tee-lock viscous damper. 4,339,963, Cl. 74-574.000.
- Brenner, L. Martin; and Wardell, Joe R., Jr., to SmithKline Corporation. Renal dilating methods and compositions using 4-(3,4-dihydroxyphenyl)-1,2,3,4-tetrahydroquinolines. 4,340,600, Cl. 424-258.000.

- Brenner, L. Martin, to SmithKline Corporation. Dopaminergic isquinolines. 4,340,601, Cl. 424-258.000.
- Bridges, Jack E.; and Frazier, Marvin J., to Allied Corporation. Enhancement of the magnetic permeability in glassy metal shielding. 4,340,770, Cl. 174-35.00MS.
- Bridgestone Tire Company Limited: See—
- Abe, Masaru, 4,340,105, Cl. 152-354.00R.
- Brindak, Nicholas J.: See—
- Knudsen, James G.; and Brindak, Nicholas J., 4,339,945, Cl. 73-61.200.
- Bristol-Myers Company: See—
- Gottstein, William J., 4,340,539, Cl. 260-245.20R.
- Bristow, Ian T.; and Petts, Nigel J., to Hobourn-Eaton Limited. Positive displacement pump systems. 4,340,337, Cl. 417-304.000.
- British Petroleum Company Limited, The: See—
- Aldred, Alan C. G.; and Weeks, Brian, 4,340,517, Cl. 524-59.000.
- Broberg, Peter O. Tractor. 4,340,127, Cl. 180-327.000.
- Brock, Rita. Hanging device or catch. 4,340,199, Cl. 248-544.000.
- Brodeur, Rene H.; Terlecky, Boris S.; Selberg, Ronald P.; and Halliar, William R. Articulated railway car. 4,339,996, Cl. 105-3.000.
- Brois, Stanley J.; and Ver Strate, Gary, to Exxon Research & Engineering Co. Crosslinking and chemical modification agents for olefin containing polymers. 4,340,694, Cl. 525-342.000.
- Bronstein-Bonte, Irena Y.; and Lindholm, Edward P., to Polaroid Corporation. Process for preparing cationic polymers. 4,340,522, Cl. 524-766.000.
- Brooks, Mark A.; and Miller, Jane, to Bendix Corporation, The. Method of fabricating a pressure sensor. 4,340,409, Cl. 65-43.000.
- Brooks, Samuel C., to Wayne State University. Compositions inhibiting estrogen sulfotransferase activity. 4,340,602, Cl. 424-238.000.
- Brown, Edgar D., Jr., to General Electric Company. Alkyl siloxane alkoxy siloxane copolymeric hydraulic fluids. 4,340,495, Cl. 252-78.300.
- Brown, Edgar D., Jr., to General Electric Company. Addition cure coating with improved adhesion. 4,340,710, Cl. 528-15.000.
- Brown, Glenn R.; and McMillan, James S., to Plastic Machinery Corporation. Vacuum system. 4,340,340, Cl. 425-71.000.
- Brown, Richard K. Identification means for rolled-up articles, such as drawings and the like. 4,339,885, Cl. 40-309.000.
- Brown & Williamson Tobacco Corporation: See—
- Tudor, Thomas T., 4,340,074, Cl. 131-362.000.
- Brugmans, Johannes T., to Koninklijke Emballage Industrie Van Leer B.V. Metallized labels. 4,340,638, Cl. 428-323.000.
- Bruhn, Alfred; and Bernard, William, to Dravo Corporation. Waste heat recovery apparatus. 4,340,207, Cl. 266-155.000.
- Brunner, Anton; and Jatsch, Werner, to Siemens Aktiengesellschaft. Doppler navigation antenna having automatic land-sea error correction. 4,340,892, Cl. 343-76.000.
- Bucklew, Leonard E., to General Foods Corporation. Jar stabilizer for pick-up assembly. 4,340,249, Cl. 294-95.000.
- Bulkai, Lajos: See—
- Toth, Andras; Toth nee Palotai, Emese; Olah, Jozsef; Bitskey, Jozsef; and Bulkai, Lajos, 4,340,488, Cl. 210-705.000.
- Bullman, Allan R., to Union Carbide Corporation. Water-resistant latex sealants. 4,340,524, Cl. 524-297.000.
- Buonauo, Andrew; and Warner, Richard, to Cooper Industries, Inc. Broken bit detector. 4,340,326, Cl. 408-16.000.
- Burch, Darrel W.; and Wojciechowski, James P., to Garrett Corporation, The. Pneumatic starter overtemperature control. 4,339,916, Cl. 60-39.020.
- Burnett, L. Nelson, Jr., to Reading-Dorma Closer Corporation. Door closer with assist or door operating features. 4,339,843, Cl. 16-62.000.
- Burris, James O., III. Reel for anchoring wild fowl decoys. 4,340,192, Cl. 242-107.600.
- Bush, Harold G.: See—
- United States of America, National Aeronautics and Space Administration; Bush, Harold G.; and Wallsom, Richard E., 4,340,318, Cl. 403-217.000.
- Bychkov, Nikolai M.: See—
- Grishin, Boris P.; Gruznov, Alexandr G.; Romanov, Leonid M.; Vishnyak, Julian I.; Shugacva, Nina A.; Bychkov, Nikolai M.; Lipets, Konstantin V.; and Zotov, Alexandr I., 4,340,720, Cl. 528-232.000.
- Bye, Ashley D., to Imperial Chemical Industries Limited. Transition metal composition. 4,340,502, Cl. 252-429.00B.
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- Wilmes, Manfred; and Marienfeld, Karl, 4,340,270, Cl. 339-95.00D.
- C-I-L Inc.: See—
- Pollock, David C. I.; and Wilson, Malcolm A., 4,340,484, Cl. 210-607.000.
- C. M. Industries: See—
- Voisin, Guy; Jansen, Franz; and Gros, Pierre, 4,340,535, Cl. 260-112.00B.
- Cabeza, Maximino R. Simultaneous connection between handlebar and steering fork of bicycles. 4,340,238, Cl. 280-279.000.
- Cabot Corporation: See—
- Salyers, Edward F., 4,340,129, Cl. 181-200.000.
- Caldicott, Laurence C.; Cameron, Alastair D.; and Felton, George N., to Lucas Industries Limited. Governor mechanism. 4,340,020, Cl. 123-374.000.
- Caldwell, Joseph M. Pulley for compound archery bow. 4,340,025, Cl. 124-86.000.
- Calentine, John W.: See—
- Sandri, Joseph M.; Calentine, John W.; Linder, Seymour M.; and Billoux, Yves J., 4,340,743, Cl. 548-318.000.
- Calvert, Rodney K., to Mead Corporation, The. Article carrier erecting mechanism. 4,340,380, Cl. 493-316.000.
- Cameron, Alastair D.: See—
- Caldicott, Laurence C.; Cameron, Alastair D.; and Felton, George N., 4,340,020, Cl. 123-374.000.
- Cameron, Anson W. Caddy for garment hangers. 4,340,145, Cl. 211-124.000.
- Camilleri, Thomas M. Pin guide arm. 4,340,221, Cl. 273-43.00E.
- Cammarata, Joseph G. Random selection word game. 4,340,231, Cl. 273-243.000.
- Campanile, Armando; Carlomagno, Giovanni M.; De Vita, Angelo; Donsi, Giorgio; Massimilla, Leopoldo; and Scognamiglio, Agostino, to Centro Ricerche Fiat S.p.A.; and Università Degli Studi di Napoli. Fluidized bed filtering and/or heat exchange apparatus particularly for gaseous discharges from internal combustion engines and industrial plants. 4,340,400, Cl. 55-269.000.
- Campbell, George S., to United States of America, Air Force. Decoy missile. 4,340,197, Cl. 244-3.100.
- Campi, James G. Defect-free photomask. 4,340,654, Cl. 430-5.000.
- CAN-ENG Holdings Limited: See—
- Harding, Brian, 4,340,433, Cl. 148-16.000.
- Canada, Atomic Energy of, Limited: See—
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- Canadian Patents & Dev. Ltd.: See—
- Willis, Clive; and McKee, Terrence J., 4,340,968, Cl. 372-60.000.
- Canale, Albert S.: See—
- Canale, Ralph D.; Canale, Albert S.; and Papazian, Harry, 4,340,509, Cl. 252-529.000.
- Canale, Michael A.: See—
- Canale, Ralph D.; Canale, Albert S.; and Papazian, Harry (said Harry Papazian assors. to), 4,340,509, Cl. 252-529.000.
- Canale, Ralph D.; Canale, Albert S.; and Papazian, Harry, to Canale, Michael A., by said Harry Papazian. Composition, concentrate and fountain solution for lithographic printing operations. 4,340,509, Cl. 252-529.000.
- Canon Kabushiki Kaisha: See—
- Hanagata, Takayoshi; and Noda, Atsushi, 4,340,848, Cl. 318-561.000.
- Ikemori, Keiji, 4,340,279, Cl. 350-422.000.
- Isobe, Takashi, 4,340,280, Cl. 350-429.000.
- Kiuchi, Masashi; Takasu, Yoshio; Fukumoto, Hiroshi; Hino, Takashi; Uchiyama, Masaki; and Mitsuhashi, Yasuo, 4,340,660, Cl. 430-106.600.
- Ohara, Katsunobu; Tanaka, Keiji; Ando, Yujiro; and Moriyama, Inao, 4,340,296, Cl. 355-35.00C.
- Yamamoto, Hiroshi, 4,340,287, Cl. 354-128.000.
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- Cardell, Max L., to Fiber Industries, Inc. Apparatus for guiding filaments. 4,340,341, Cl. 425-72.00S.
- Carissimi, Sam. Light assembly for archers arrow. 4,340,930, Cl. 362-204.000.
- Carlton Controls Corporation: See—
- Cummins, Richard D., 4,340,083, Cl. 137-499.000.
- Carlingswitch, Inc.: See—
- Sorenson, Richard W., 4,340,791, Cl. 200-302.000.
- Carlomagno, Giovanni M.: See—
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- Carlson, Gerald E.: See—
- Raskin, Jerome S.; Hall, Warren L.; Holt, Charles P.; and Carlson, Gerald E., 4,340,807, Cl. 219-497.000.
- Carneborn, Leif R.: See—
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- Carr, David L., to Eastman Kodak Company. Photographic film unit. 4,340,286, Cl. 354-105.000.
- Carrier Corporation: See—
- Wright, William E.; and Honnold, Fred V., Jr., 4,340,115, Cl. 165-122.000.
- Carrier, Louis F., to Gulf & Western Manufacturing Company. Shock dampening system for presses. 4,339,975, Cl. 83-617.000.
- Carter, James C., Jr.; and Mansfield, Stanley, to Varian Associates, Inc. Touch detector for electron applicator. 4,340,825, Cl. 307-116.000.
- Cartier, James E., to Saco Tanning Division of Kirslein Leather Co. Process for chrome recovery from industrial waste and the like, as from chrome-laden tannery waste. 4,340,571, Cl. 423-53.000.
- Cary, Larry R. Apparatus for repairing hot spots in a refractory lined wall. 4,340,349, Cl. 425-290.000.
- Cashio, R. Kent. Concrete pipe handling apparatus. 4,340,333, Cl. 414-607.000.
- Cassidy, Stephen: See—
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- Casu, Benito: See—
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- Caterpillar Tractor Co.: See—
- Grillot, John W.; and Young, Teddy R., 4,339,961, Cl. 74-110.000.
- Horton, Edward R.; and Hughes, John L., 4,339,866, Cl. 29-523.000.
- Larson, Donald J., 4,340,126, Cl. 180-305.000.
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- Dischert, Robert A.: See—
- Williams, James J., Jr.; and Dischert, Robert A., 4,340,940, Cl. 364-745.000.
- Discovision Associates: See—
- Elliott, James E., 4,340,955, Cl. 369-213.000.
- Mayer, Bruno F. P., 4,340,353, Cl. 425-548.000.
- Dittrich, Erich: See—
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- Dixon, Richard W.; and Schwartz, Bertram, to Bell Telephone Laboratories, Incorporated. Semiconductor lasers with stable higher-order modes parallel to the junction plane. 4,340,967, Cl. 372-46.000.
- Dobbels, Frans M.: See—
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- Dockner, Toni; Kempe, Uwe; Krug, Herbert; Magnussen, Peter; and Praetorius, Werner, to BASF Aktiengesellschaft. Preparation of 2-imidazolines. 4,340,745, Cl. 548-347.000.
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- Dolan, Calvin M., to Johnson Matthey, Inc. Reducing precious metal use in catalyst substrates. 4,340,505, Cl. 252-466.0PT.
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- Donisi, Giorgio: See—
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- Dory, Jacques, to CGR Ultrasonic. Ultrasonic echographic probe having an acoustic lens and an echograph incorporating said probe. 4,340,944, Cl. 367-96.000.
- Doshi, Kishore J.; and Patel, Kirit M., to Union Carbide Corporation. Pressure swing adsorption recovery. 4,340,398, Cl. 55-25.000.
- Doty, Francis D. Low conductivity gas sealed building insulation. 4,340,630, Cl. 428-74.000.
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- Chisholm, William M.; and Dougherty, James C., 4,340,094, Cl. 140-147.000.
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- McIntyre, James A.; Phillips, Robert F.; and Lefevre, Joseph D., 4,340,459, Cl. 204-258.000.
- Dow Corning Corporation: See—
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- Drake, Cyril F.; and Shreeve, Francesca M., to International Standard Electric Corporation. Titanoborate glass as cross-linking agent in polycarboxylic acid cements. 4,340,693, Cl. 525-337.000.
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- Conrady, James A.; and Driscoll, William J., 4,340,648, Cl. 428-518.000.
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- Foss, Robert P., 4,340,686, Cl. 525-59.000.
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- Hazan, Isidor, 4,340,523, Cl. 524-504.000.
- Ho, Chungfah H., 4,340,550, Cl. 264-13.000.
- Martin, Kenneth E., 4,340,527, Cl. 524-432.000.
- Pechhold, Engelbert, 4,340,719, Cl. 528-230.000.
- Sidwell, Lloyd G., 4,340,665, Cl. 430-539.000.
- Vasta, Joseph A., 4,340,741, Cl. 548-237.000.
- Yang, Hung H., 4,340,559, Cl. 264-181.000.
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- Eastman Kodak Company: See—
- Carr, David L., 4,340,286, Cl. 354-105.000.
- Collins, Richard A.; Tersteeg, Glenn E.; and Jessop, Thomas C., 4,340,390, Cl. 23-230.00B.
- Hollister, Kenneth R.; and Thomas, Harold T., 4,340,655, Cl. 430-14.000.
- Marsh, Harold P., 4,340,528, Cl. 524-513.000.
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- Petke, Frederick D.; and McConnell, Richard L., 4,340,526, Cl. 524-292.000.
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- Eblen, Ewald: See—
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- Eckberg, Richard P., to General Electric Company. Vinyl gum cure accelerators for addition-cure silicone. 4,340,647, Cl. 428-429.000.
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- Edstrom, John O.: See—
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- Eholzer, Ulrich: See—
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- Ehrlich, Josef, to Outboard Marine Corporation. Two-stroke internal combustion engine and method of operation thereof. 4,340,016, Cl. 123-73.00R.
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- Eicken, Karl; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Herbicidal agents based on N-azolylmethylacetanilides and cyclohexane-1,3-dione derivatives. 4,340,418, Cl. 71-92.000.
- Eicken, Karl: See—
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- Ekey, William J.: See—
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- Ekholm, Carl R., Jr., to Baxter Travenol Laboratories, Inc. Method and apparatus for removing the contents of flexible or collapsible containers. 4,340,152, Cl. 222-1.000.
- Eldred, Thomas W. Maintenance lock for aircraft speed brake. 4,340,196, Cl. 244-1.00R.
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- El-Ibiary, Yehia, to Sperry Corporation. Power transmission. 4,340,087, Cl. 137-625.640.
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- Emerson Electric Co.: See—
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- EMPI, Inc.: See—
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- Endo, Takeshi; Sakai, Katsumi; Chou, Kiyooki; Inamoto, Yoshitaka; and Teshigawara, Haruhiko, to Fuji Kagaku Kogyo Kabushiki Kaisha. Nucleoside derivatives and process for preparing same. 4,340,728, Cl. 536-23.000.
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- Erickson, Donald C. Oxygen production by molten alkali metal salts. 4,340,578, Cl. 423-579.000.
- Ericsson, Sven O. Lashing device. 4,340,329, Cl. 410-100.000.
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- Evans, Edwin R., to General Electric Company. Process for the preparation of granular silarylenesiloxane copolymers polymerized under conditions of shear. 4,340,711, Cl. 528-21.000.
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- Farley, Max F., to Mallinckrodt, Inc. Modular incubator control system with self-test capability. 4,340,859, Cl. 324-158.00R.
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- Fassang, Patrick P., to Siemens Corporation. Device for testing digital circuits using built-in logic block observers (BILBO's). 4,340,857, Cl. 324-73.00R.



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- Foss, Robert P., to Du Pont de Nemours, E. I., and Company. Carbamated poly(vinyl alcohol) useful as a binder in elastomeric photopolymer compositions, 4,340,686, Cl. 525-59.000.
- Fosse, Navarro T., to Hydrotile Machinery Company. Machine and method for making concrete product, 4,340,553, Cl. 264-40.700.
- Foster, Francis S., to Ontario Cancer Institute. Cylindrical transducer ultrasonic scanner, 4,339,952, Cl. 73-624.000.
- Foster, Theodore C., to Opcon, Inc. Cant movement and aligning mechanism, 4,340,137, Cl. 198-457.000.
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- Freeman, William T. Sky-light structure having a flexible-tube shaft, 4,339,900, Cl. 52-200.000.
- Freiherr von Arnim, Dietlof; and Dahn, Rolf, to IWK Regler und Kompensatoren GmbH. Bellows element, 4,340,089, Cl. 138-121.000.
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- Friedrich Grohe Armaturenfabrik GmbH, Firma: See—  
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- Fritze, Kurt. Arrangement for telemetrically monitoring moving machine parts, 4,340,890, Cl. 340-870.320.
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- Fuji Photo Film Co., Ltd.: See—  
Kato, Hisatoyo; Ishida, Masamitsu; and Matsumoto, Seiji, 4,340,911, Cl. 358-280.000.
- Kitajima, Masao; Arai, Fuminori; and Kondo, Asaji, 4,340,565, Cl. 422-56.000.
- Matsumiya, Takeshi; and Minoda, Minoru, 4,340,621, Cl. 427-294.000.
- Mikawa, Akikazu; and Naruo, Kyoichi, 4,340,663, Cl. 430-496.000.
- Ono, Shigetoshi; and Fujita, Shinsaku, 4,340,661, Cl. 430-223.000.
- Oono, Hiroshi; and Ohnishi, Masahiro, 4,340,894, Cl. 346-108.000.
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- Fujikawa, Tetsuzo, to Kawasaki Jukogyo Kabushiki Kaisha. Apparatus for cooling an engine, 4,340,123, Cl. 180-54.00A.
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- Fujitsu Limited: See—  
Honda, Norio; and Sugahara, Takehisa, 4,340,902, Cl. 357-74.000.
- Fujiwara, Tamio: See—  
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- Fukui, George M.; Spencer, Herbert J.; and Williams, Laurens R., II, to Abbott Laboratories. Culture media for inactivation of bacterial growth inhibitors, 4,340,679, Cl. 435-253.000.
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- Fukusaki, Megumi: See—  
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- Fuss, Gary. Barbecue grill cover, 4,340,027, Cl. 126-25.00R.
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- G. H. Pfaff Pletzsch Industrieroboter: See—  
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- Gallei, Ewald: See—  
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- Galli, Paolo: See—  
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- Gammon, Michael W., to Metallurgical Processes Limited; and I.S.C. Smelting Limited. Charging of zinc-smelting blast furnaces, 4,340,423, Cl. 75-87.000.
- Ganz, Manfred; and Guelndner, Enrique, to Siemens Corporation. Modular telecommunication system, 4,340,776, Cl. 178-3.000.
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- Garrett, Arthur E. Apportioning control apparatus to control measured dispensing, 4,340,159, Cl. 222-389.000.
- Garrett Corporation, The: See—  
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- LaGrone, Charles H., 4,339,917, Cl. 60-39.28R.
- McCart, Frederick B.; and Silver, Alexander, 4,339,874, Cl. 29-598.000.
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- Gearhart Industries, Inc.: See—  
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- Geary, John T.: See—  
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- Geisow, Bernard H., to Daniel Industries, Inc. Pressure balanced safety valve for wells and flow lines, 4,340,088, Cl. 137-629.000.
- General Electric Company: See—  
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- Bergman, Rolf S.; and Lake, William H., 4,340,836, Cl. 313-211.000.
- Boliver, Vincent J., 4,340,790, Cl. 200-144.00C.
- Brown, Edgar D., Jr., 4,340,495, Cl. 252-78.300.
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- Cella, James A., 4,340,753, Cl. 562-528.000.
- Dennis, Mahlon D.; and Skinner, Frank R., 4,339,896, Cl. 51-298.000.
- Eckberg, Richard P., 4,340,647, Cl. 428-429.000.
- Evans, Edwin R., 4,340,711, Cl. 528-21.000.
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- Jeram, Edward M.; and Smith, Alfred H., Jr., 4,340,709, Cl. 528-15.000.
- Kresge, James S.; and Sakshaug, Eugene C., 4,340,924, Cl. 361-127.000.
- Lasseter, Robert H., 4,340,921, Cl. 361-56.000.
- Liu, Ping Y., 4,340,683, Cl. 525-148.000.
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- Reihl, Robert F.; and Wang, Kang-Lung, 4,339,869, Cl. 29-576.00B.
- Schupp, Lewis J., 4,340,841, Cl. 315-75.000.
- Strong, Herbert M., 4,340,576, Cl. 423-446.000.
- Webb, Jimmy L.; and Mehta, Bharat M., 4,340,545, Cl. 549-241.000.
- White, Dwain M.; and Loucks, George R., 4,340,696, Cl. 525-390.000.
- Wingrove, Earl R., Jr., 4,340,904, Cl. 358-29.000.
- General Electric Company Limited, The: See—  
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- General Foods Corporation: See—  
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- General Instrument Corporation: See—  
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- General Motors Corporation: See—  
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- Creager, John E., 4,340,023, Cl. 123-510.000.
- General Motors Limited: See—  
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- General Technology Applications, Inc.: See—  
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- General Time Corporation: See—  
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- General Tire & Rubber Company, The: See—  
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- Geoffroy-Dechaume, Vincent. Knockdown seats of folded sheet material, 4,340,251, Cl. 297-440.000.
- George, Robert D.; and Hoy, Robert P., to Mechaner, Inc. Apparatus and method for winding armatures, 4,339,872, Cl. 29-597.000.
- Georgia-Pacific Corporation: See—  
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- Germanas, Dalia: See—  
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- Gertsch, Ulrich E., to Egs-Skisport Gesellschaft fur Forschung und Entwicklung mbH. Safety ski binding, 4,340,242, Cl. 280-618.000.
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- Gessman, Lawrence J. Method and apparatus for displaying electrocardiogram signals, 4,340,065, Cl. 128-712.000.
- Gibson, Sandra F., to McDonnell Douglas Corporation. *E. coli* sensitivity broth, 4,340,671, Cl. 435-32.000.
- Giesler, Harold C., to Formica Corporation. Process of using a cushion for laminating operations, 4,340,439, Cl. 156-323.000.
- Gilbertson, John R.; and Crout, Richard J. Antibacterial agent and method, 4,340,628, Cl. 424-49.000.
- Gilks, George E.: See—  
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- Gill, Ronald P.; Tucker, Dempsey G.; and Hull, John E., Jr., to Peabody Coal Company. Mine vehicle safety apparatus, 4,340,920, Cl. 361-49.000.
- Gillis, Robert E. Monkey maze, 4,340,217, Cl. 272-113.000.
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- Giner-Sorolla, Alfredo: See—  
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- Giovanini, Donald R.: See—  
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- Glaenger Spicer: See—  
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- Glass, Josef: See—  
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- Goddridge, Jean. Rotary quadrants of cable-making machines, 4,339,909, Cl. 57-58.520.
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- Godshall, Ned A.: See—  
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- Gokin, Gennady P.: See—  
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- Gonzalez, Fernando C. Front transfer port system, 4,340,015, Cl. 123-73.00R.
- Goodnight, John W., to General Time Corporation. Single-coil balance wheel for driving a mechanical movement, 4,340,948, Cl. 368-158.000.
- Goodwin, Brian; and Middleton, Peter, to Mediasield Corporation Limited. The Apparatus for analysis of absorbed gases, 4,340,615, Cl. 427-2.000.
- Goodyear Tire & Rubber Company, The: See—  
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- Gormley, Robert J.: See—  
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- Gowanlock, Thomas W., to General Electric Co. Cutting insert for deep grooving, 4,340,325, Cl. 407-116.000.
- Gradi, David A.: See—  
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- Gray, Gary M.; Schwartzkopf, George, Jr.; and J. T. Baker Chemical Co. 4-Phenoxy-2-butene derivatives as plant growth regulators, 4,340,765, Cl. 71-123.000.
- Greaves, Gerald G., Jr., to Owens-Corning Fiberglas Corporation. Means for protecting underground tanks from damage by dipsticks, 4,340,009, Cl. 116-227.000.
- Greaves, Jeffrey C.: See—  
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- Greber, Jorg F., and Winkhaus, Gunter, to Vereinigte Aluminium-Werke Aktiengesellschaft. Process for producing modified alumina hydrate crystals, 4,340,579, Cl. 423-625.000.
- Green Cross Corporation, The: See—  
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- Uemura, Yohiro; Nagatomo, Midori; Funakoshi, Satoshi; and Suyama, Tadakazu, 4,340,589, Cl. 424-101.000.
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- Greenberg, William B. Cable stripper with peeler, 4,339,967, Cl. 81-9.510.
- Greene, Edward S.: See—  
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- Greff, Richard J.: See—  
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- Gregg, Hendrick J. Wind power generating system, 4,340,822, Cl. 290-55.000.
- Grier, Nathaniel: See—  
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- Gries, Josef: See—  
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- Griffiths, Kenneth G.; and Woods, Stephen C., to Zipatone Inc. Lettering kit and alignment grid therefor, 4,339,886, Cl. 40-595.000.
- Grillot, John W.; and Young, Teddy R., to Caterpillar Tractor Co. Assembly of a track chain, 4,339,961, Cl. 74-110.000.
- Grimmer, Paul D.: See—  
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- Grisar, Ulrich; and Berstermann, Wilhelm, to Kloeckner-Werke AG. Arrangement for the spectral analysis of substances, 4,340,303, Cl. 356-313.000.
- Grishin, Boris P.; Gruzov, Alexandr G.; Romanov, Leonid M.; Vishnyak, Julian I.; Shugaeva, Nina A.; Bychkov, Nikolai M.; Lipets, Konstantin V.; and Zotov, Alexandr I. Process for producing high-molecular polyacetals, 4,340,720, Cl. 528-232.000.
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- Grosjean, Jean-Claude: See—  
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- Gross, Laurence H.; and Sauer, Marvin E., to Union Carbide Corporation. Process for producing a molded article, 4,340,562, Cl. 264-328.200.
- Gross, Robert M., to Ball Corporation. Method of making unfestooned plastic containers from polygonal blanks, 4,340,557, Cl. 264-146.000.
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- Grovender, Steven L., to Minnesota Mining and Manufacturing Company. Connector system, 4,340,266, Cl. 339-17.0CF.
- Gruber, Werner, to Henkel Komanditgesellschaft auf Aktien. Anaerobically hardening adhesives and sealing compounds, 4,340,708, Cl. 526-313.000.
- GRUNDIG E.M.V. Elektro-Mechanische Versuchsanstalt Max Grundig: See—  
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- Grzybowski, Holger: See—  
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- GTE Products Corporation: See—  
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- GTE Sylvania Incorporated: See—  
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- Guedner, Enrique: See—  
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- Guerrero, Benjamin G.; Troup, Diana C.; and White, Peter C., to Mattel, Inc. Multiple function doll, 4,339,889, Cl. 46-135.00A.
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- Guibord, Ronald D.; Harman, Neil W.; and Hennessy, Richard E., to Honeywell Information Systems Inc. Automatic note dispenser with purge control, 4,340,150, Cl. 221-21.000.
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- Gulf & Western Corporation: See—  
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- Gulf & Western Manufacturing Company: See—  
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- Haberstump, Alfred H.: See—  
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- Hage, Albert. Ratchet wrench, 4,339,969, Cl. 81-57.390.
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- Halbach & Braun: See—  
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- Halcon SD Group, Inc., The: See—  
Davidson, Walter C.; and Porcelli, Richard V., 4,340,569, Cl. 423-22.000.
- Davidson, Walter C., 4,340,570, Cl. 423-22.000.
- Hall, Beverly J.: See—  
Hall, George W., 4,339,880, Cl. 33-293.000.
- Hall, George W., to Hall, Beverly J., a part interest. Device for holding surveyor's instrument, 4,339,880, Cl. 33-293.000.
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- Halliar, William R.: See—  
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- Halliburton Company: See—  
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- Sutton, David L., 4,340,427, Cl. 106-87.000.
- Hallmark, Bobby J., to Gearhart Industries, Inc. Well formation test-treat apparatus and method, 4,339,948, Cl. 73-155.000.
- Hamed, Gary R.: See—  
Bohm, Georg G. A.; Hamed, Gary R.; and Vescelius, Lee E., 4,340,684, Cl. 525-194.000.
- Hamilton, Archie I.: See—  
Johnson, Ted W.; Hamilton, William R.; and Hamilton, Archie I., 4,340,377, Cl. 474-81.000.
- Hamilton Bros. Mfg. Co.: See—  
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- Hamilton, David C.; and Lipton, Kenneth S., to Ferranti Limited. Laser apparatus, 4,340,969, Cl. 372-93.000.
- Hamilton, William R.: See—  
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- Hanagata, Takayoshi; and Noda, Atsushi, to Canon Kabushiki Kaisha. Apparatus for controlling the pulse period of pulses applied to a pulse motor, 4,340,848, Cl. 318-561.000.
- Hanaoka, Naohiro, to Olympus Optical Co., Ltd. Thermomagnetic recording and reproducing apparatus, 4,340,914, Cl. 360-59.000.
- Hanrot, Jean-Pascal; and Volpeliere, Jacky, to Aluminum Pechiney. Apparatus for the dust-free handling of powder substances, 4,340,136, Cl. 193-15.000.
- Hans List: See—  
Kirchweber, Karl, 4,340,014, Cl. 123-41.630.
- Hansen, Guenter: See—  
Eilingsfeld, Heinz; Hansen, Guenter; and Seybold, Guenther, 4,340,537, Cl. 260-158.000.
- Hanyu, Susumu; and Takenoya, Hideaki, to Janome Sewing Machine Co. Ltd. Upper shaft phase detecting system for sewing machines, 4,340,002, Cl. 112-158.00E.
- Hanyu, Susumu; Hara, Kazumasa; and Koike, Mikio, to Janome Sewing Machine Co. Ltd. Lock stitching sewing machine with a thread tightening device, 4,340,003, Cl. 112-191.000.
- Hara, Kazumasa: See—  
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- Hara, Toshizo: See—  
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- Harak, Arnold E., to United States of America, Energy. System for utilizing oil shale fines, 4,340,463, Cl. 208-11.00R.
- Harding, Brian, to CAN-ENG Holdings Limited. Method of heat treating articles, 4,340,433, Cl. 148-16.000.
- Hargraves, David P.; Pauli, Jude A.; and Williams, Steven E., to Emerson Electric Co. Four way valve, 4,340,202, Cl. 251-31.000.
- Harman, Neil W.: See—  
Guibord, Ronald D.; Harman, Neil W.; and Hennessy, Richard E., 4,340,150, Cl. 221-21.000.
- Harper-Wyman Company: See—  
Bergquist, Frank H., 4,340,806, Cl. 219-413.000.
- Harris Corporation: See—  
Bakula, Richard E.; Maly, Dennis L.; and Weemhoff, James H., 4,340,932, Cl. 364-200.000.
- Hart, Jacques M. Diamond planar cutter, 4,340,256, Cl. 299-87.000.
- Hart, John R.; Juergens, Stanley G.; and McCormack, William E., to Champion International Corporation. Starch fibrils useful in enhancing the physical properties of paper, and process of preparing same, 4,340,442, Cl. 162-146.000.
- Hart, Robert J., to Commercial Resins Company. Internal girth coating apparatus, 4,340,010, Cl. 118-306.000.
- Harte, Richard A.; and Bart, Max, to Daryl Laboratories, Inc. Immunoabsorptive surface coating for solid-phase immunosubstrate and solid-phase immunosubstrate, 4,340,564, Cl. 422-56.000.
- Harvey Hubbell Incorporated: See—  
Muehnick, Paul, 4,340,826, Cl. 307-157.000.
- Hashimoto, Hideaki; Abe, Mitsuo; and Morita, Masaharu, to Prince Hotels, Inc. Interpreter intercommunication and public address system, 4,340,779, Cl. 179-1.00B.
- Hassanali-Walji, Ahmed: See—  
Johnson, Alan W.; and Hassanali-Walji, Ahmed, 4,340,732, Cl. 542-426.000.
- Hata, Naoki; Koji, Hidehiko; and Akimoto, Koji, to Asahi Denka Kogyo K.K. Coating composition, 4,340,716, Cl. 528-100.000.
- Hatta, Koichi: See—  
Sakaue, Takashi; Hatta, Koichi; Fukusaki, Megumi; and Kataoka, Yoshiro, 4,340,375, Cl. 434-201.000.
- Hatta, Yoshio; and Suzuki, Shigeo, to Shizuoka Seiki Co., Ltd. Oil combustion type infrared ray generating apparatus, 4,340,028, Cl. 126-92.00R.
- Hauk, Ernest D.; and Kirkpatrick, Jesse C., to Hawk Industries, Inc. Annular casing hammer, 4,340,120, Cl. 173-131.000.
- Hauser, Hans; and Clayborne, William J., to J. B. Foote Foundry Co., The. Transaxle with back-up flange, 4,339,965, Cl. 74-607.000.
- Hauze, Albert W.: See—  
DeBolt, Harold E.; Suplinskas, Raymond J.; Cornie, James A.; Henze, Thomas W.; and Hauze, Albert W., 4,340,636, Cl. 428-215.000.
- Hawk Industries, Inc.: See—  
Hauk, Ernest D.; and Kirkpatrick, Jesse C., 4,340,120, Cl. 173-131.000.
- Hayashi, Keizo, to Toyoda Gosei Co., Ltd. Method of producing channel-shaped trim, 4,339,860, Cl. 29-413.000.
- Hayashi, Yutaka: See—  
Nishizawa, Jun-ichi; and Hayashi, Yutaka, 4,340,827, Cl. 307-477.000.
- Hayberg, Robert S., to Global Precision Inc. Hinge exercising mechanism, 4,340,352, Cl. 425-517.000.
- Hays, Lance G.; Amend, William E.; and Hokenson, Gustave J., to Biphas Energy Systems. Scoop for removing fluid from rotating surface of two-phase reaction turbine, 4,339,923, Cl. 60-673.000.
- Hazan, Isidor, to Du Pont de Nemours, E. I., and Company. Electrocoating composition with polyhydroxyamine and epoxy, 4,340,523, Cl. 524-504.000.
- Hede, Allan, to ASEA Aktiebolag. Method of manufacturing stainless ferritic-austenitic steel, 4,340,432, Cl. 148-11.50P.
- Hedrick, Geoffrey S. M., to Smiths Industries Limited. Pressure transducer cross-check system, 4,339,943, Cl. 73-4.00R.
- Heenan, Sidney A.: See—  
Johnson, Glenn W., Jr.; and Heenan, Sidney A., 4,340,319, Cl. 404-16.000.
- Heffelmire, Brad A.: See—  
Cimochowski, Anthony E.; and Heffelmire, Brad A., 4,339,902, Cl. 52-506.000.
- Hehl, Karl. Mechanical safety cover interlock for injection molding machine, 4,340,346, Cl. 425-152.000.
- Heil, Donald J., to American Hospital Supply Corporation. Water/air spray system for dental handpiece, 4,340,366, Cl. 433-82.000.
- Heiman, Joseph L.; and Reckseit, Bernard S., to Nivison-Weiskopf Co., The. Roll dispenser carton, 4,340,162, Cl. 225-48.000.
- Hein, George N., Jr., to Beckman Instruments, Inc. Air driven centrifuge adjustable rotor seat, 4,340,171, Cl. 233-23.00R.
- Hein, Helmut, to Steag AG. Fluidized bed furnace, 4,340,000, Cl. 110-245.000.
- Heinrichs, Ernst: See—  
Schiffer, Peter; Heinrichs, Ernst; and Helten, Manfred, 4,340,077, Cl. 137-68.00A.
- Heist, Kenneth D., to Sporteach, Inc. Transmitter/receiver teaching apparatus, 4,340,972, Cl. 455-39.000.
- Heitmann, Arnold M.; and Lord, Richard E., Jr., to Northern Research & Engineering Corp. Splines coupling means, 4,340,317, Cl. 403-25.000.
- Heller Designs, Inc.: See—  
Cousins, Morison S., 4,340,144, Cl. 211-87.000.
- Helten, Manfred: See—  
Schiffer, Peter; Heinrichs, Ernst; and Helten, Manfred, 4,340,077, Cl. 137-68.00A.
- Hemm, Ansgar; and Deppner-Hiemesch, Harald, to Sperry Vickers, Division of Sperry GmbH. Hydraulic control valve unit, 4,340,086, Cl. 137-554.000.
- Henderson, Richard E. L.; Malek, Nancy J.; Moormann, Alan E.; and Pitzele, Barnett S., to G. D. Searle & Co. N<sup>6</sup>-Substituted adenosines, 4,340,730, Cl. 536-26.000.
- Hendricks, Charles J.; Hicks, William W.; and Keller, John H., to International Business Machines Corp. Modified RIE chamber for uniform silicon etching, 4,340,461, Cl. 204-298.000.
- Hendrickson, Thomas C., to Colgate-Palmolive Company. Scrim reinforced plastic film, 4,340,558, Cl. 264-151.000.
- Henkel Komanditgesellschaft auf Aktien: See—  
Gruber, Werner, 4,340,708, Cl. 526-313.000.
- Henkes, John L., to General Electric Company. Rear projection screen with patterned lenticular prismatic structure, 4,340,275, Cl. 350-128.000.
- Hennessy, Richard E.: See—  
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- Hennion, Claude: See—  
Lewiner, Jacques; and Hennion, Claude, 4,340,925, Cl. 361-172.000.
- Henrion, R.: See—  
Vaysiere, Pierre; Roederer, Charles; Grosjean, Jean-Claude; Grave, Roland; Schleimer, F.; Goedert, F.; Henrion, R.; Lorang, L.; and Colling, J., 4,340,208, Cl. 266-220.000.
- Henze, Thomas W.: See—  
DeBolt, Harold E.; Suplinskas, Raymond J.; Cornie, James A.; Henze, Thomas W.; and Hauze, Albert W., 4,340,636, Cl. 428-215.000.
- Heraeus Quarzschmelze GmbH: See—  
Herzog, Heinz; Mohn, Heinrich; Schulke, Karl-Albert; and Grzybowski, Holger, 4,340,627, Cl. 428-36.000.
- Herd, David P., to Smith International, Inc. High pressure gate valve with preloaded, stacked, solid lubricated stem seals, 4,340,204, Cl. 251-327.000.



- Herden, Werner, to Robert Bosch GmbH. Hall generator pressure transducer. 4,340,877, Cl. 338-42.000.
- Hermann, Karl H., to Bayer Aktiengesellschaft. Preparation of basic triaryl methane dyestuffs. 4,340,540, Cl. 548-440.000.
- Herron, Lester W.: See—  
Dubetsky, Derry J.; Herron, Lester W.; and Master, Raj N., 4,340,436, Cl. 156-89.000.
- Herzl, Peter J., to Fischer & Porter Company. Vortex-shedding flowmeter with unitary shedder/sensor. 4,339,957, Cl. 73-861.240.
- Herzog, Heinz; Mohn, Heinrich; Schulke, Karl-Albert; and Grzybow-ski, Holger, to Heraeus Quarzschmelze GmbH. Wound and sintered vitreous silica article and method of making. 4,340,627, Cl. 428-36.000.
- Hettche, Albert: See—  
Klahr, Erhard; Hettche, Albert; Trieselt, Wolfgang; Stoeckigt, Dieter; and Trapp, Horst, 4,340,766, Cl. 568-625.000.
- Heveran, John E.: See—  
Focella, Antonino; Heveran, John E.; Teitel, Sidney; and Weigle, Manfred, 4,340,736, Cl. 544-301.000.
- Hibbard, Neil K.; Kinsey, Cliff J.; and Belongia, Clyde G., to Sta-Rite Industries, Inc. Hydromassage apparatus. 4,340,039, Cl. 128-66.000.
- Hicks, William W.: See—  
Hendricks, Charles J.; Hicks, William W.; and Keller, John H., 4,340,461, Cl. 204-298.000.
- Higashiguchi, Takeichi; Fukuoka, Masasuke; Emura, Tomoyuki; and Moriuchi, Yasuhiro, to Sumitomo Bakelite Company Limited; and Sumitomo Chemical Company Limited. Vinyl chloride type resin composition. 4,340,530, Cl. 524-515.000.
- Highlander, Sarah K.: See—  
Manis, Jack J.; and Highlander, Sarah K., 4,340,674, Cl. 435-172.000.
- Highstreet, Edward J.: See—  
Stannard, Forrest B.; and Highstreet, Edward J., 4,340,478, Cl. 210-286.000.
- Higuchi, Noboru; Yano, Teruo; and Ohnishi, Masahiro, to NGK Insulators, Ltd. Ceramic honeycomb filter. 4,340,403, Cl. 55-523.000.
- Hildebrand, Karl J.; and Leeman, John, to Leeman Labs, Inc. Stabilized cathode assembly for arc light source. 4,340,845, Cl. 315-327.000.
- Hillenbrand, Louis J.; Preston, Joseph R.; and Berry, David A., to RCA Corporation. High density information disc. 4,340,629, Cl. 428-64.000.
- Hiltehaus, Karl-Heinz: See—  
Reuter, Franz G.; and Hiltehaus, Karl-Heinz, 4,340,681, Cl. 521-123.000.
- Hilti Aktiengesellschaft: See—  
Koob, Friedrich; and Lang, Gusztav, 4,340,637, Cl. 428-220.000.
- Hinderstein, Philip M.: See—  
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- Hines, Leon F.: See—  
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- Hini, Paul: See—  
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- Hino, Takashi: See—  
Kiuchi, Masashi; Takasu, Yoshio; Fukumoto, Hiroshi; Hino, Takashi; Uchiyama, Masaki; and Mitsuhashi, Yasuo, 4,340,660, Cl. 430-106.000.
- Hiraga, Masaharu; and Terauchi, Kiyoshi, to Sankyo Electric Company Limited. Scroll type compressor with oil passageways through the housing. 4,340,339, Cl. 418-55.000.
- Hirai, Kazuo: See—  
Matsushita, Takao; and Hirai, Kazuo, 4,340,090, Cl. 138-177.000.
- Hirai, Toshio; and Nihara, Koichi, to Research Institute for Iron, Steel and Other Metals of the Tohoku University. The Super hard highly pure silicon nitrides and a process and apparatus for producing the same. 4,340,568, Cl. 422-245.000.
- Hiraoka, Fumio: See—  
Okamura, Koichi; Kusakabe, Susumu; Yoshida, Masahiro; and Hiraoka, Fumio, 4,339,983, Cl. 41-466.000.
- Hirasawa, Yoshihei: See—  
Aoki, Tadao; Miyakoshi, Hideo; Hirasawa, Yoshihei; and Nishii, Yasuo, 4,340,604, Cl. 424-236.000.
- Hirata, Atsumi; and Kayanuma, Kanji, to Victor Company of Japan, Ltd. Special reproducing system in an apparatus for reproducing video signals from a rotary recording medium. 4,340,907, Cl. 358-128.600.
- Hise, Eugene C., Jr.; and Holman, Allen S., to United States of America. Energy. Method and apparatus for separating materials magnetically. 4,340,468, Cl. 209-214.000.
- Hitachi, Ltd.: See—  
Endo, Tsuchihito; and Tazima, Humio, 4,340,931, Cl. 363-44.000.
- Ichikawa, Akira; Nakata, Kazuo; Nakajima, Akira; Ohta, Yoshihiro; and Umemura, Kazuhiro, 4,340,781, Cl. 179-1.05A.
- Kanamaru, Hisanobu; Okabe, Moisei; Tatsumi, Hideo; Tohkairin, Akira; and Kasama, Ryoji, 4,339,873, Cl. 29-598.000.
- Maio, Kenji; and Sudo, Tsuneta, 4,340,882, Cl. 340-347.00C.
- Sugiyama, Tomonori; and Suehiro, Akio, 4,340,783, Cl. 179-2.00A.
- Hitchiner Manufacturing Co., Inc.: See—  
Chandley, George D.; and Sharkey, Richard L., 4,340,108, Cl. 164-63.000.
- Hitzman, Donald O., to Phillips Petroleum Company. Fermentation process. 4,340,677, Cl. 435-246.000.
- Ho, Chung-fah H., to Du Pont de Nemours, E. I., and Company. Oligomer pellets of ethylene terephthalate. 4,340,550, Cl. 264-13.000.
- Hobourn-Eaton Limited: See—  
Bristow, Ian T.; and Petts, Nigel J., 4,340,337, Cl. 417-304.000.
- Hobson, Russell B., Jr.; and Vannelli, Roger B. Vacuum sludge receiver. 4,340,477, Cl. 210-241.000.
- Hochner, Walter L.: See—  
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- Hodogaya Chemical Co., Ltd.: See—  
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- Hoechst Aktiengesellschaft: See—  
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- Bar, Helmut; Mader, Herbert; Muck, Karl-Friedrich; and Zorner, Paul, 4,340,542, Cl. 549-368.000.
- Mayer, Reinhart, 4,340,429, Cl. 106-164.000.
- Rohrer, Helmut, 4,340,383, Cl. 8-494.000.
- Schein, Eberhard, 4,340,596, Cl. 424-251.000.
- Semler, Gunther; and Schaeffer, Georg, 4,340,746, Cl. 549-78.000.
- Wieser, Hartmut; and Pfahler, Gerhard, 4,340,534, Cl. 524-99.000.
- Hoedl, Fritz; Kimura, Morihiro; and Yasuda, Yoshio, to Veitscher Magnesitwerke-Aktiengesellschaft; and Shinagawa Refractories Co., Ltd. Fire brick for a rotary kiln. 4,340,360, Cl. 432-119.000.
- Hoffmann, Alexander: See—  
Pusch, Gunter; Aisslinger, Dieter E.; Hoffmann, Alexander; and Pusch, Klaus-Werner, 4,340,634, Cl. 428-134.000.
- Hoffmann-La Roche Inc.: See—  
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- Focella, Antonino; Heveran, John E.; Teitel, Sidney; and Weigle, Manfred, 4,340,736, Cl. 544-301.000.
- Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,340,754, Cl. 562-584.000.
- Hofmann, Eberhard; to Schubert & Salzer. Open-end spinning rotor consisting of a basic member and a rotor member. 4,339,911, Cl. 57-416.000.
- Hofmann, Karl: See—  
Stumpp, Gerhard; Eblen, Ewald; Hofmann, Karl; Amaya, Nestor R.; Schlagenhaut, Josef; and Kopse, Odon, 4,340,181, Cl. 239-533.300.
- Hogan, Paul. Portable locking and alarm system. 4,340,007, Cl. 116-81.000.
- Hohmann, Thomas, Jr. Rotatable vehicle headlights. 4,340,928, Cl. 362-49.000.
- Hokenson, Gustave J.: See—  
Hays, Lance G.; Amend, William E.; and Hokenson, Gustave J., 4,339,923, Cl. 60-673.000.
- Hollingsworth GmbH: See—  
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- Hollister, Kenneth R.; and Thomas, Harold T., to Eastman Kodak Company. Thermal and mechanical barrier layers for optical recording elements. 4,340,655, Cl. 430-14.000.
- Holman, Allen S.: See—  
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- Holt, Charles P.: See—  
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- Honda, Akira; Ishikawa, Masaru; Mizuoka, Seishi; and Ono, Katsunori, to Nippon Kokan Kabushiki Kaisha. Apparatus for connecting tunnel and mold for horizontal continuous casting of metal. 4,340,110, Cl. 164-435.000.
- Honda Giken Kogyo Kabushiki Kaisha: See—  
Kato, Yoshitaka; Maesaka, Kiyotomi; Matsui, Seiichi; and Iizuka, Yoshitoku, 4,340,017, Cl. 123-182.000.
- Watanabe, Masaki; Shimoyama, Hiroshi; and Suzuki, Keiji, 4,340,125, Cl. 180-215.000.
- Honda, Norio; and Sugahara, Takehisa, to Fujitsu Limited. Semiconductor device. 4,340,902, Cl. 357-74.000.
- Honeywell Inc.: See—  
Kompelien, Arlon D., 4,340,173, Cl. 236-46.00R.
- Nelson, Lorne W.; and Torborg, Ralph H., 4,340,355, Cl. 431-20.000.
- Honeywell Information Systems Inc.: See—  
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- Miu, Ming T.; Bradley, John J.; Panepinto, William, Jr.; and Shen, Jian-Kuo, 4,340,933, Cl. 364-200.000.
- Honnold, Fred V., Jr.: See—  
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- Hooke, Helen; and Lerner, David. Loop tape recorder. 4,339,980, Cl. 84-1.280.
- Hoover Universal, Inc.: See—  
Mizelle, Ned W., 4,339,834, Cl. 5-255.000.
- Straus, Albert E., 4,340,082, Cl. 137-426.000.
- Hopper, Thomas P. Solar energy collecting apparatus. 4,340,034, Cl. 126-438.000.
- Hori, Mikio: See—  
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- Horigome, Eiji: See—  
Ota, Hiroshi; Horigome, Eiji; and Azegami, Hitoshi, 4,340,644, Cl. 428-423.700.
- Hornby, William E.; and Morris, David L., to Miles Laboratories, Inc. Heme-labeled specific binding assay. 4,340,668, Cl. 435-7.000.

- Hornle, Reinhold: See—  
Nonn, Konrad; Laser, Joachim; Wolf, Karlheinz; Hornle, Reinhold; and Istel, Erich, 4,340,389, Cl. 8-620.000.
- Horton, Edward R.; and Hughes, John L., to Caterpillar Tractor Co. Method of connecting a tube to a flange. 4,339,866, Cl. 29-523.000.
- Hoshino Gakki Ten, Inc.: See—  
Hoshino, Masao, 4,339,982, Cl. 84-415.000.
- Hoshino, Masao, to Hoshino Gakki Ten, Inc. Snare bed strainer for snare drum. 4,339,982, Cl. 84-415.000.
- Hottes, Carl J., to Perkin-Elmer Corporation. The Manufacture of glass base lamp. 4,340,264, Cl. 316-19.000.
- Houdaille Industries, Inc.: See—  
McLean, Ronald L.; and Kamman, Gordon W., 4,339,862, Cl. 29-424.000.
- Snow, John P., 4,340,084, Cl. 137-512.000.
- Housel, David S., to Interstab Chemicals Inc. Non-toxic liquid stabilizer for halogenated hydrocarbon resins and process for stabilizing such resins. 4,340,514, Cl. 524-77.000.
- Howanietz, Friedrich; and Kozlowski, Alexander. Concrete mixtures or mortar mixtures or concretes or mortars and process for their production. 4,340,510, Cl. 260-8.000.
- Howard, William G.; Strohkirc, John C.; and Pehl, Marilyn A., to Medtronic, Inc. Cathode material and high capacity lithium-iodine cells. 4,340,651, Cl. 429-101.000.
- Hoy, Robert P.: See—  
George, Robert D.; and Hoy, Robert P., 4,339,872, Cl. 29-597.000.
- Hoyer-Ellefson, Sigurd, to SCM Corporation. Electric motor assembly. 4,340,830, Cl. 310-89.000.
- Hubbard, S. Eugene, to Kawneer Company, Inc. System for improving heat insulating characteristics of a building wall structure. 4,339,901, Cl. 52-202.000.
- Huber, Manfred: See—  
Derendorf, Walter; and Huber, Manfred, 4,340,188, Cl. 242-68.500.
- Huber, Markus, to Friedrich Grohe Armaturenfabrik GmbH, Firma. Shower device. 4,340,177, Cl. 239-242.000.
- Hubner, Wolfgang; Schroers, Otto; and Sladeck, Hans J., to Chemische Fabrik Stockhausen & Cie. Additive for deep-well cement slurries. 4,340,525, Cl. 252-8.55B.
- Huddleston, George R., Jr.; and Turner, James W., to B. F. Goodrich Company. The Ultrafiltration of vinyl resin latices and reuse of permeate in emulsion polymerization. 4,340,702, Cl. 526-70.000.
- Hudson Oxygen Therapy Sales Company: See—  
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- Hufer, Norbert: See—  
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- Huggins, Robert A.: See—  
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- Hughes, John L.: See—  
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- Hughes Tool Company: See—  
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- Huhne, Gerd, to G. H. Pfaff Plettsch Industriroboter. Drive, particularly for an industrial manipulator. 4,339,984, Cl. 91-42.000.
- Hull, John E., Jr.: See—  
Gill, Ronald P.; Tucker, Dempsey G.; and Hull, John E., Jr., 4,340,920, Cl. 361-49.000.
- Hurd, William A.: See—  
McQueen, Wayne F.; Schansman, Raymond R.; Hurd, William A.; Fischer, Joerg; and Dunn, Billy W., 4,340,784, Cl. 179-6.120.
- Husimi, Kazuo; and Kim, Chisu. Epitaxial integrated E-dE solid state detector telescope. 4,340,899, Cl. 357-29.000.
- Hydrotile Machinery Company: See—  
Fosse, Navarro T., 4,340,553, Cl. 264-40.700.
- I.S.C. Smelting Limited: See—  
Gammon, Michael W., 4,340,423, Cl. 75-87.000.
- Ibex Inking Systems Corp.: See—  
Bishop, John W. H., 4,340,313, Cl. 400-202.100.
- Ichikawa, Akira; Nakata, Kazuo; Nakajima, Akira; Ohta, Yoshihiro; and Umemura, Kazuhiro, to Hitachi, Ltd. Speech analysing device. 4,340,781, Cl. 179-1.05A.
- Iga, Kenichi: See—  
Akiba, Shigeoyuki; Suematsu, Yasuharu; Arai, Shigehisa; Kodaira, Masanobu; Itaya, Yoshio; Iga, Kenichi; Ota, Chuichi; Yamamoto, Takaya; and Sakai, Kazuo, 4,340,966, Cl. 372-45.000.
- Iizuka, Yoshitoku: See—  
Kato, Yoshitaka; Maesaka, Kiyotomi; Matsui, Seiichi; and Iizuka, Yoshitoku, 4,340,017, Cl. 123-182.000.
- Ikeda, Yoriyumi; and Tsujimoto, Yasuhiro, to Takeda Chemical Industries, Ltd. Countercurrent liquid-solid contacting apparatus. 4,340,485, Cl. 210-675.000.
- Ikedo, Yuji, to Pioneer Electronic Corporation. Automatic disc loading mechanism. 4,340,952, Cl. 369-77.000.
- Ikegami, Teruhiro: See—  
Sugawara, Kohichi; Matsui, Isamu; Ishimaru, Naoki; and Ikegami, Teruhiro, 4,340,577, Cl. 423-450.000.
- Ikemori, Keiji, to Canon Kabushiki Kaisha. Rear attachment lens. 4,340,279, Cl. 350-422.000.
- Ikesue, Haruyuki, to NSK-Warner K.K. Buckle assembly for seat belt. 4,339,854, Cl. 24-230.0AL.
- Ikimi, Kiyoshi: See—  
Suzukamo, Gohu; Takano, Tetsuo; Tamura, Mitsuhsa; and Ikimi, Kiyoshi, 4,340,544, Cl. 549-356.000.
- Ilienkov, Vladimir S.: See—  
Chichkin, Valentin P.; Shpigel, Efraim A.; Gokin, Gennady P.; Matjuschenko, Georgy E.; Kurakov, Nikolai N.; Rabinovich, Grigory B.; Samoilovsky, Sergei A.; Angel, Boris S.; Ilienkov, Vladimir S.; Miterev, Vladimir P.; Zemlyanov, Leonid S.; and Krutkov, Anatoly F., 4,339,906, Cl. 56-327.00R.
- Imai, Hiroshi: See—  
Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,340,646, Cl. 428-429.000.
- Imamura, Akio, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with programmed accompaniment function. 4,339,978, Cl. 84-1.030.
- IMI Yorkshire Imperial Plastics Limited: See—  
Aston, William C.; and Walker, Derek, 4,340,344, Cl. 425-149.000.
- Imperial Chemical Industries Limited: See—  
Backhouse, Alan J.; and Palluel, Auguste L., 4,340,511, Cl. 524-504.000.
- Bye, Ashley D., 4,340,502, Cl. 252-429.00B.
- Davidson, Peter J., 4,340,501, Cl. 252-373.000.
- Milner, David J., 4,340,764, Cl. 568-386.000.
- Willmore, Bruce A. E.; and Greaves, Jeffrey C., 4,340,701, Cl. 526-68.000.
- Imperial Group Limited: See—  
Bolt, Anthony J. N.; and Chard, Brian C., 4,340,072, Cl. 131-273.000.
- Inamoto, Yoshitaka: See—  
Endo, Takeshi; Sakai, Katsumi; Chou, Kiyooki; Inamoto, Yoshitaka; and Teshigawara, Haruhiko, 4,340,728, Cl. 536-23.000.
- Inooka, Masayoshi, to Chiyoda Chemical Engineering & Construction Co., Ltd. Process for hydrotreating heavy oils containing metals. 4,340,466, Cl. 208-210.000.
- Inoue, Eiichi; and Shimizu, Isamu, to Mita Industrial Co., Ltd. Laminated ZnO photosensitive material. 4,340,658, Cl. 430-58.000.
- Inoue, Hideo, to Shima Idea Center, Co., Ltd. Racking device for flat knitting machine. 4,339,933, Cl. 66-69.000.
- Institut de Recherches de la Siderurgie Francaise: See—  
Vayssiere, Pierre; Roederer, Charles; Grosjean, Jean-Claude; Grave, Roland; Schleimer, F.; Goedert, F.; Henrion, R.; Lorang, L.; and Colling, J., 4,340,208, Cl. 266-220.000.
- Institut Francais du Pétrole: See—  
Courty, Philippe; Rabinovich, Georgy L.; Mojaiko, Victor N.; and Le Page, Jean-Francois, 4,340,504, Cl. 252-465.000.
- International Business Machines Corporation: See—  
Aboufotouh, Mohamed O.; and Skolnik, Marvin B., 4,340,840, Cl. 315-58.000.
- Delaporte, Francois X.; Lebesnerais, Gerard M.; and Pantani, Jean-Pierre, 4,340,922, Cl. 361-91.000.
- Dubetsky, Derry J.; Herron, Lester W.; and Master, Raj N., 4,340,436, Cl. 156-89.000.
- Fury, Michael A.; and Kumar, Ananda H., 4,340,618, Cl. 427-96.000.
- Hendricks, Charles J.; Hicks, William W.; and Keller, John H., 4,340,461, Cl. 204-298.000.
- Paysen, Kenneth E.; and Petrovick, James M., 4,340,855, Cl. 324-72.000.
- Voegeli, Otto, 4,340,942, Cl. 365-16.000.
- International Coatings Co., Inc.: See—  
Wells, Herbert A.; Hochner, Walter L.; and Matacek, George F., 4,340,632, Cl. 428-90.000.
- International Environmental, Inc.: See—  
Adams, V. Dean; and Reynolds, James H., 4,340,489, Cl. 210-718.000.
- International Port-A-Call: See—  
McQueen, Wayne F.; Schansman, Raymond R.; Hurd, William A.; Fischer, Joerg; and Dunn, Billy W., 4,340,784, Cl. 179-6.120.
- International Standard Electric Corporation: See—  
Drake, Cyril F.; and Shreeve, Francesca M., 4,340,693, Cl. 525-337.000.
- International Telephone and Telegraph Corporation: See—  
McGeary, Peter G., 4,340,269, Cl. 339-90.00C.
- Internationale Octrooi Maatschappij "Octropa" B.V.: See—  
De Jongh, Rudolph O.; Visser, Adrianus; and Van der Linde, Robert, 4,340,698, Cl. 525-438.000.
- InterNorth, Inc.: See—  
Dickey, Leland C.; and Tayter, Maya, 4,339,882, Cl. 34-9.000.
- Interstab Chemicals Inc.: See—  
Housel, David S., 4,340,514, Cl. 524-77.000.
- INTERX Research Corporation: See—  
Bodor, Nicholas S.; Sloan, Kenneth B.; and Pogany, Stefano A., 4,340,603, Cl. 424-301.000.
- Ion Tech Limited: See—  
Franks, Joseph, 4,340,815, Cl. 250-307.000.
- Irick, Gether, Jr.: See—  
Zannucci, Joseph S.; Sublett, Bobby J.; and Irick, Gether, Jr., 4,340,718, Cl. 528-128.000.
- Isabel, John R. Golf club bags. 4,340,102, Cl. 150-1.50R.
- Isaka, Yoshiharu, to Yamaha Hatsudoki Kabushiki Kaisha. Internal combustion engine with combined transmission case and crankshaft case, and intermediate shaft. 4,339,964, Cl. 74-606.00R.
- Ise, Yoji, to Myotoku Ltd. Flow regulating valve and fluid feeding apparatus using same. 4,340,234, Cl. 279-3.000.



- Isely, Alain: See—  
Askman, Lars; Wetzel, Pierre; and Isely, Alain, 4,340,612, Cl. 426-276.000.
- Ishibashi, Kazuhisa; and Omi, Hidehiko, to Toyo Seikan Kaisha, Ltd. Continuous heating apparatus for metal caps. 4,340,801, Cl. 219-10.710.
- Ishida, Masamitsu: See—  
Kato, Hisatoyo; Ishida, Masamitsu; and Matsumoto, Seiji, 4,340,911, Cl. 358-280.000.
- Ishidoshiro, Hiroshi: See—  
Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Minakata, Matsuo, 4,339,856, Cl. 28-155.000.
- Ishihara, Takao: See—  
Aiba, Takaaki; Kaji, Hisatsugu; Endo, Tomizo; and Ishihara, Takao, 4,340,464, Cl. 208-40.000.
- Ishihara, Toshio: See—  
Taira, Tadaaki; Ishihara, Toshio; Itoshima, Hiromichi; Mihara, Yutaka; and Kogawa, Takashi, 4,339,941, Cl. 72-412.000.
- Ishikawa, Masaru: See—  
Honda, Akira; Ishikawa, Masaru; Mizuoka, Seishi; and Ono, Katsumori, 4,340,110, Cl. 164-435.000.
- Ishimaru, Naoki: See—  
Sugawara, Kohichi; Matsui, Isamu; Ishimaru, Naoki; and Ikegami, Teruhiko, 4,340,577, Cl. 423-450.000.
- Ishioka, Tetsuo: See—  
Yamaue, Yasunobu; and Ishioka, Tetsuo, 4,340,128, Cl. 180-900.000.
- Ishizuka, Hiroyuki: See—  
Takahashi, Atsushi; Muratsubaki, Yoshiharu; and Ishizuka, Hiroyuki, 4,340,422, Cl. 75-58.000.
- Isobe, Takashi, to Canon Kabushiki Kaisha. Drive connection mechanism for adjustable lens system. 4,340,280, Cl. 350-429.000.
- Istel, Erich: See—  
Nonn, Konrad; Laser, Joachim; Wolf, Karlheinz; Hornle, Reinhold; and Istel, Erich, 4,340,389, Cl. 8-620.000.
- Italtel Societa Italiana Telecomunicazioni S.p.A.: See—  
Sbuelz, Anes, 4,340,788, Cl. 179-175.30R.
- Itaya, Yoshio: See—  
Akiba, Shigeyuki; Suematsu, Yasuhiro; Arai, Shigehisa; Kodaira, Masanobu; Itaya, Yoshio; Iga, Kenichi; Ota, Chuichi; Yamamoto, Takaya; and Sakai, Kazuo, 4,340,966, Cl. 372-45.000.
- Itoshima, Hiromichi: See—  
Taira, Tadaaki; Ishihara, Toshio; Itoshima, Hiromichi; Mihara, Yutaka; and Kogawa, Takashi, 4,339,941, Cl. 72-412.000.
- ITT Industries, Inc.: See—  
Belart, Juan, 4,340,257, Cl. 303-114.000.
- Schanz, Johannes, 4,339,921, Cl. 60-547.00R.
- Ivanov, Vladimir Y.: See—  
Romashov, Alexander A.; Levinsky, Gennady E.; Ivanov, Vladimir Y.; Astakhov, Igor A.; and Kuznetsov, Vladimir A., 4,340,163, Cl. 228-19.000.
- Iwahashi, Hiroshi: See—  
Asano, Masamichi; and Iwahashi, Hiroshi, 4,340,943, Cl. 365-194.000.
- Iwai, Yasuyuki: See—  
Tamura, Takashi; and Iwai, Yasuyuki, 4,340,297, Cl. 355-50.000.
- Iwamura, Soichi; Nishida, Yasuaki; Yamato, Toshimi; Sawazaki, Norikazu; Nishi, Yoshio; Watanabe, Masaharu; and Endo, Norio, to Nippon Hoso Kyokai; and Tokyo Shibaura Denki Kabushiki Kaisha. Information recording medium and recording and reproducing system using the same. 4,340,953, Cl. 369-126.000.
- Iwasaki, Shinichi, to Aisin Seiki Company, Ltd. Position sensor. 4,339,953, Cl. 73-654.000.
- Iwasaki, Shinichi, to Aisin Seiki Company, Ltd. Pressure sensor. 4,339,955, Cl. 73-728.000.
- Iwasaki, Shinichi, to Aisin Seiki Company, Ltd. Pressure sensor. 4,339,956, Cl. 73-728.000.
- Iwata, Yasuhiro; Usami, Kiyoshi; Nabeta, Teiichi; Naganoma, Masanori; and Kojima, Yasuhumi, to Nippondenso Co., Ltd. Electric control method and apparatus for automobile air conditioning system. 4,340,113, Cl. 165-25.000.
- IWK Regler und Kompensatoren GmbH: See—  
Freiherr von Arnim, Dietlof; and Dahn, Rolf, 4,340,089, Cl. 138-121.000.
- Izumi, Kaichi, to Kao Soap Company Limited. Apparatus for supervising and controlling the output power of induction motors. 4,340,847, Cl. 318-490.000.
- J. B. Foote Foundry Co., The: See—  
Hauser, Hans; and Clayborne, William J., 4,339,965, Cl. 74-607.000.
- Reiss, Garry K., 4,340,134, Cl. 192-67.00R.
- J.F.C. Investments, Inc.: See—  
Cerna, Juan F., 4,340,132, Cl. 190-18.00A.
- J. M. Huber Corporation: See—  
Wason, Satish K., 4,340,583, Cl. 424-52.000.
- Wason, Satish K., 4,340,584, Cl. 424-52.000.
- J. P. Tool, Ltd.: See—  
Proulx, Sylvester E.; and Beneteau, Stanley A., 4,340,328, Cl. 408-239.00A.
- J. Stoddard & Sons Limited: See—  
Stoddard, James R., 4,340,096, Cl. 141-1.000.
- J. T. Baker Chemical Co.: See—  
Gray, Gary M.; Schwartzkopf, George, Jr.; and J. T. Baker Chemical Co., 4,340,765, Cl. 71-123.000.
- Jack, Stanton E.; and Dark, Robert O., to Alcan Research & Development Limited. Retro-reflecting sheet material. 4,340,273, Cl. 350-105.000.
- Jaffe, Fern; and Blacker, Rose. Sleeping sack. 4,339,835, Cl. 5-413.000.
- Jager, Ernst H., to Messerschmitt-Bolkow-Blohm GmbH. Method for destroying structures such as concrete walls. 4,339,995, Cl. 102-310.000.
- Jahn, Gerhard. Binding system. 4,340,316, Cl. 402-68.000.
- Janome Sewing Machine Co. Ltd.: See—  
Hanyu, Susumu; and Takenoya, Hideaki, 4,340,002, Cl. 112-158.00E.
- Hanyu, Susumu; Hara, Kazumasa; and Koike, Mikio, 4,340,003, Cl. 112-191.000.
- Jansen, Franz: See—  
Voisin, Guy; Jansen, Franz; and Gros, Pierre, 4,340,535, Cl. 260-112.00B.
- Jansen, Herbert, to GRUNDIG E.M.V. Elektro-Mechanische Versuchsanstalt Max Grundig. Pivoted magnetic head mount with adjustable limit. 4,340,918, Cl. 360-109.000.
- Janssen Pharmaceutica, N.V.: See—  
Sipido, Victor, 4,340,738, Cl. 548-151.000.
- Japan Synthetic Rubber Co., Ltd.: See—  
Takeuchi, Yasumasa; Obata, Yutaka; Ohshima, Noboru; Shibata, Tooru; and Nakako, Kaoru, 4,340,685, Cl. 525-247.000.
- Jatsch, Werner: See—  
Brunner, Anton; and Jatsch, Werner, 4,340,892, Cl. 343-768.000.
- Jensen, Gerald A., to Pako Corporation. Print stacking apparatus with print deflecting flap. 4,340,213, Cl. 271-219.000.
- Jeram, Edward M.; and Smith, Alfred H., Jr., to General Electric Company. Addition curing silicone compositions. 4,340,709, Cl. 528-15.000.
- Jessop, Thomas C.: See—  
Collins, Richard A.; Tersteeg, Glenn E.; and Jessop, Thomas C., 4,340,390, Cl. 23-230.00B.
- Jin, Sungho; and Tiefert, Thomas H., to Bell Telephone Laboratories, Incorporated. High remanence Fe-Mo-Ni alloys for magnetically actuated devices. 4,340,434, Cl. 148-31.550.
- Jin, Sungho; and Tiefert, Thomas H., to Bell Telephone Laboratories, Incorporated. Isotropic and nearly isotropic permanent magnet alloys. 4,340,435, Cl. 148-31.570.
- Jimbo, Susumu; Kohno, Shoichi; and Onishi, Masatoshi, to Hodogaya Chemical Co., Ltd. Process for producing 4,4'-dihydroxybiphenyl. 4,340,768, Cl. 568-730.000.
- Jirka, Howard F.: See—  
den Toonder, Pieter; Selteneijer, Johannes C.; Stubbs, Graham S.; Fondse, Pieter J.; and Jirka, Howard F., 4,340,906, Cl. 358-124.000.
- Jobling, Lancelot A.; Sabec, Charles J.; and Stump, Ronald C., to Towmotor Corporation. Flexible muffler mounting. 4,339,919, Cl. 60-322.000.
- Jockers, Kurt: See—  
Rapp, Guenther; Jockers, Kurt; and Thomas, Erwin, 4,340,575, Cl. 423-387.000.
- Joffron, Ralph K., to Copolymer Rubber & Chemical Corporation. Method of grafting EPM and EPDM polymers. 4,340,689, Cl. 525-263.000.
- Johansen, Jack T., to De Forenede Bryggerier A/S. Process for recovering Cu,Zn-superoxide dismutase from yeast. 4,340,675, Cl. 435-189.000.
- Johnson, Alan W.; and Hassanali-Walji, Ahmed. Butenolide herbicides and process for their preparation. 4,340,732, Cl. 542-426.000.
- Johnson, Glenn W., Jr.; and Heenan, Sidney A., to Amerace Corporation. Pavement marker. 4,340,319, Cl. 404-16.000.
- Johnson, Keith M., to Medtronic, Inc. Dynamic annulus heart valve and reconstruction ring. 4,339,831, Cl. 3-1.500.
- Johnson, Larry K., to Lawrence Brothers, Inc. Latch assembly. 4,340,246, Cl. 292-113.000.
- Johnson Matthey, Inc.: See—  
Dolan, Calvin M., 4,340,505, Cl. 252-466.0PT.
- Johnson, Michael R., to Pfizer Inc. 9-Hydroxyoctahydrobenzo[C]quinolines and intermediates thereof. 4,340,737, Cl. 546-108.000.
- Johnson, Paulette: See—  
Martin, Jerry R.; Tadanier, John S.; and Johnson, Paulette, 4,340,727, Cl. 536-16.100.
- Johnson, Richard M. Vegetation clearing devices. 4,339,908, Cl. 56-503.000.
- Johnson, Ted W.; Hamilton, William R.; and Hamilton, Archie I., to Hamilton Bros. Mfg. Co.; and Johnson, Ted W., a part interest. Speed change device. 4,340,377, Cl. 474-81.000.
- Johnston, Ian R. W. Converging flow filter. 4,340,474, Cl. 210-199.000.
- Jones, Wayne W.; and Stone, Roger. Distortion measurement system. 4,340,854, Cl. 324-57.0DE.
- Jonner, Wolf-Dieter: See—  
Anlauf, Jurgen; and Jonner, Wolf-Dieter, 4,340,935, Cl. 364-426.000.
- Jordan, Otis D., to Sun-Ohio Inc. System and apparatus for the continuous destruction and removal of polychlorinated biphenyls from fluids. 4,340,471, Cl. 210-101.000.
- Joslin Diabetes Center, Inc.: See—  
Lerner, Harry; Giner, Jose D.; and Soeldner, John S., 4,340,458, Cl. 204-195.00R.
- Joy Manufacturing Company: See—  
Bailey, Edward A.; and LeBlanc, Louis H., Jr., 4,340,121, Cl. 173-134.000.
- Juergens, Stanley G.: See—  
Hart, John R.; Juergens, Stanley G.; and McCormack, William E., 4,340,442, Cl. 162-146.000.
- Junkermann, Helmut; and Kruger, Horst, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the detoxification of

- waste water containing phenol, phenol derivative or phenol and formaldehyde. 4,340,490, Cl. 210-759.000.
- Junkosha Co., Ltd.: See—  
Nomi, Haruo, 4,340,384, Cl. 8-495.000.
- Justus, Edgar J., to Beloit Corporation. High speed size press. 4,340,623, Cl. 427-361.000.
- Kabushiki Kaisha Mikuni Seisakusho: See—  
Moteki, Tsutomu; Yamaguchi, Kunihiro; and Nakajima, Yoshikazu, 4,340,513, Cl. 524-13.000.
- Kabushiki Kaisha Morita Seisakusho: See—  
Furuichi, Shuhei; and Suzuki, Masakazu, 4,340,971, Cl. 378-40.000.
- Kaiser Steel Corporation: See—  
Abascal, David J., 4,340,209, Cl. 266-266.000.
- Kaiserswerth, Rudolf: See—  
Sprick, Erhard; and Kaiserswerth, Rudolf, 4,340,964, Cl. 371-38.000.
- Kaji, Hisatsugu: See—  
Aiba, Takaaki; Kaji, Hisatsugu; Endo, Tomizo; and Ishihara, Takao, 4,340,464, Cl. 208-40.000.
- Kajima Corporation: See—  
Shiraishi, Hiroshi; and Moriguchi, Shigeru, 4,339,861, Cl. 29-416.000.
- Kalal, Jaroslav: See—  
Lukas, Jaromir; Kalal, Jaroslav; and Svec, Frantisek, 4,340,483, Cl. 210-502.000.
- Kamiya, Soji: See—  
Nara, Tamotsu; and Kamiya, Soji, 4,340,649, Cl. 428-653.000.
- Kamman, Gordon W.: See—  
McLean, Ronald L.; and Kamman, Gordon W., 4,339,862, Cl. 29-424.000.
- Kanamaru, Hisanobu; Okabe, Moisei; Tatsumi, Hideo; Tohkairin, Akira; and Kasama, Ryoji, to Hitachi, Ltd. Method of making rotor of rotary machines. 4,339,873, Cl. 29-598.000.
- Kanayama, Katsumi: See—  
Motoyama, Kazuyasu; Nakao, Toshihiro; Kanayama, Katsumi; and Furuta, Kenji, 4,340,951, Cl. 369-53.000.
- Kane, Yutaka. High-speed ship. 4,340,004, Cl. 114-67.00A.
- Kangyo Denikiki Kabushiki Kaisha: See—  
Sudo, Michio; and Miura, Hitoshi, 4,340,833, Cl. 310-268.000.
- Kanno, Fumio; and Nakajima, Fumio, to Citizen Watch Company Limited. Electronic timepiece. 4,340,946, Cl. 368-76.000.
- Kansas State University Research Foundation: See—  
Parke, Patrick P.; Bauer, Brady G.; Meitl, Kenneth G.; Thompson, Wayne L.; and Voegeli, Thomas J., 4,340,182, Cl. 239-680.000.
- Kao Soap Company Limited: See—  
Izumi, Kaichi, 4,340,847, Cl. 318-490.000.
- Kaplan, Isaac R.: See—  
Demaison, Gerard J.; and Kaplan, Isaac R., 4,340,391, Cl. 23-230.0EP.
- Kapp, Dennis R. Parallel-ruling straightedge. 4,339,881, Cl. 33-444.000.
- Kasama, Ryoji: See—  
Kanamaru, Hisanobu; Okabe, Moisei; Tatsumi, Hideo; Tohkairin, Akira; and Kasama, Ryoji, 4,339,873, Cl. 29-598.000.
- Kataoka, Yoshiro: See—  
Sakae, Takashi; Hatta, Koichi; Fukusaki, Megumi; and Kataoka, Yoshiro, 4,340,375, Cl. 434-201.000.
- Katayama, Shitomi: See—  
Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,340,646, Cl. 428-429.000.
- Kater, John A. R. Ion selective electrodes. 4,340,457, Cl. 204-195.00R.
- Kato, Hisatoyo; Ishida, Masamitsu; and Matsumoto, Seiji, to Fuji Photo Film Co., Ltd. Image gradation processing method and apparatus for mammogram copying system. 4,340,911, Cl. 358-280.000.
- Kato, Tetsukazu, to Olympus Optical Co., Ltd. Head adjustment mechanism. 4,340,919, Cl. 360-109.000.
- Kato, Yoshitaka; Maesaka, Kiyotomi; Matsui, Seiichi; and Iizuka, Yoshitoku, to Honda Giken Kogyo Kabushiki Kaisha. Starting decompression device for a four cycle engine. 4,340,017, Cl. 123-182.000.
- Katoh, Koshi; and Shimizu, Takayoshi, to Daido Tokushoku Kabushiki Kaisha. Ferritic stainless steel having excellent machinability and local corrosion resistance. 4,340,424, Cl. 75-126.00E.
- Kaufman, Joseph, to Becton, Dickinson and Company. Multiple sample needle with vein entry indicator. 4,340,068, Cl. 128-766.000.
- Kaufmann, Meinolph; and Kmetz, Allan R., to BBC Brown, Boveri & Company, Limited. Liquid crystal display and method of making. 4,340,277, Cl. 350-347.00E.
- Kawabata, Kenji: See—  
Yamaguchi, Masumi; Kawabata, Kenji; and Kumagai, Yoshimi, 4,340,796, Cl. 219-10.55B.
- Kawamatsu, Yutaka; and Fujita, Takeshi, to Takeda Chemical Industries, Ltd. Thiazolidine derivatives. 4,340,605, Cl. 424-263.000.
- Kawasaki Junkogyo Kabushiki Kaisha: See—  
Fujikawa, Tetsuzo, 4,340,123, Cl. 180-54.00A.
- Kawneer Company, Inc.: See—  
Hubbard, S. Eugene, 4,339,901, Cl. 52-202.000.
- Kayanuma, Kanji: See—  
Hirata, Atsumi; and Kayanuma, Kanji, 4,340,907, Cl. 358-128.600.
- Keech, Andrew E.: See—  
Smith, Bryan; Keech, Andrew E.; and Dawson, Patricia A., 4,340,079, Cl. 137-207.000.
- Keeney, Allen J., to Ford Motor Company. Compounding mica and resin with heat sensitive additives. 4,340,516, Cl. 523-216.000.
- Kees, George, Jr.; and Shahbadian, Set, to Mayfield Education and Research Fund. Aneurysm clip. 4,340,061, Cl. 128-325.000.
- Kegel, Richard L.; Pugh, Burton J.; and Steury, Thomas R., to Sargent Mfg. Co., Inc. Corner system addition for a center pivot irrigation system. 4,340,183, Cl. 239-710.000.
- Keitel, John. Roll-holding means for a corn-husking bed. 4,340,070, Cl. 130-5.00D.
- Kel-Co Industries, Inc.: See—  
Kelly, Thomas J., Jr., 4,340,029, Cl. 126-237.000.
- Kelleher, Kevin C., to RCA Corporation. Processor controlled video disc servo system. 4,340,949, Cl. 369-33.000.
- Keller, John H.: See—  
Hendricks, Charles J.; Hicks, William W.; and Keller, John H., 4,340,461, Cl. 204-298.000.
- Kelly, Thomas J., Jr., to Kel-Co Industries, Inc. Portable soldering iron heater system. 4,340,029, Cl. 126-237.000.
- Kempe, Uwe: See—  
Dockner, Toni; Kempe, Uwe; Krug, Herbert; Magnussen, Peter; and Praetorius, Werner, 4,340,745, Cl. 548-347.000.
- Schwarz, Helmut; Dockner, Toni; Kempe, Uwe; Krug, Herbert; Praetorius, Werner; Magnussen, Peter; Gallei, Ewald; and Fehr, Erich, 4,340,744, Cl. 548-346.000.
- Kemper, Reinhard: See—  
Lutsch, Wolfgang; and Kemper, Reinhard, 4,340,735, Cl. 544-300.000.
- Kempermann, Theo: See—  
Schubart, Rudiger; Eholzer, Ulrich; Kempermann, Theo; and Roos, Ernst, 4,340,695, Cl. 525-350.000.
- Kempter, Fritz E.; and Schupp, Eberhard, to BASF Aktiengesellschaft. Polyadduct/polycondensate containing basic nitrogen groups, and its use. 4,340,455, Cl. 204-181.00C.
- Kempter, Fritz E.: See—  
Schupp, Eberhard; Kempter, Fritz E.; and Gulbins, Erich, 4,340,714, Cl. 528-99.000.
- Kennametal Inc.: See—  
McCreery, James F., 4,340,324, Cl. 407-114.000.
- Kent, Alan W.: See—  
Crawford, Ronald H.; and Kent, Alan W., 4,340,085, Cl. 137-514.000.
- Kerkenbush, Darle L.; and Blaszcak, Peter P., Jr., to Wham-O Mfg. Co. Game ball. 4,340,222, Cl. 273-61.00R.
- Kernforschungsanlage Julich GmbH: See—  
Schiffer, Peter; Heinrichs, Ernst; and Helten, Manfred, 4,340,077, Cl. 137-68.00A.
- Khan, Abdus S.: See—  
United States of America, National Aeronautics and Space Administration; Barrett, Charles A.; Lowell, Carl E.; and Khan, Abdus S., 4,340,425, Cl. 148-428.000.
- Kidd, Ralph E.: See—  
Fio Rito, William M.; and Kidd, Ralph E., 4,339,999, Cl. 110-226.000.
- Kierstead, Richard W.: See—  
Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,340,754, Cl. 562-584.000.
- Kik, Leendert A.; Schuurink, Pieter H. J.; and De Vries, Marinus J., to AKZO NV. Process for applying a coating to that part of a structure in a marine environment which projects above the surface of water. 4,340,622, Cl. 427-299.000.
- Kikuchi, Masatsugu, to Xerox Corporation. Degassing ink supply apparatus for ink jet printer. 4,340,895, Cl. 346-140.00R.
- Kim, Chisu: See—  
Husimi, Kazuo; and Kim, Chisu, 4,340,899, Cl. 357-29.000.
- Kim, George A.: See—  
Chio, Shiu-Shin; and Kim, George A., 4,340,954, Cl. 369-173.000.
- Kim, Heung T., to B. F. Goodrich Company, The. Apparatus for processing elastomeric materials. 4,340,342, Cl. 425-72.00R.
- Kimberly-Clark Corporation: See—  
Appel, David W.; and Morman, Michael T., 4,340,563, Cl. 264-518.000.
- Kimura, Morihiro: See—  
Hoedl, Fritz; Kimura, Morihiro; and Yasuda, Yoshio, 4,340,360, Cl. 432-119.000.
- King, John L., Jr.: See—  
Rugh, Clyde J.; and King, John L., Jr., 4,340,262, Cl. 308-187.000.
- King, Paul M.; and Spector, George. Christmas tree decoration. 4,340,842, Cl. 315-186.000.
- Kinsey, Cliff J.: See—  
Hibbard, Neil K.; Kinsey, Cliff J.; and Belongia, Clyde G., 4,340,039, Cl. 128-66.000.
- Kircher, Morton S., to Olin Corporation. Internal downcomer for electrolytic recirculation. 4,340,460, Cl. 204-258.000.
- Kirchoff, Francis D., to Alco Electronic Products, Inc. Sub-miniature, two position double pole switch. 4,340,793, Cl. 200-268.000.
- Kirchweiger, Karl, to Hans List. Ventilation blower for a noise-suppressing encapsulated internal combustion engine. 4,340,014, Cl. 123-41.630.
- Kirk, J. David, to Outboard Marine Corporation. Internal combustion engine having a wet-type cylinder liner and process for manufacturing same. 4,340,018, Cl. 123-193.00C.
- Kirkpatrick, Jesse C.: See—  
Hauk, Ernest D.; and Kirkpatrick, Jesse C., 4,340,120, Cl. 173-131.000.
- Kirts, Richard E., to United States of America, Navy. Control system for solar-assisted heat pump system. 4,339,930, Cl. 62-235.100.
- KIS France: See—  
Crasnianski, Serge; and Soriano, Louis, 4,339,994, Cl. 101-4.000.



Kishimoto, Shoji: See—  
Furukawa, Yoshiyasu; Kishimoto, Shoji; and Nishikawa, Kohei, 4,340,598, Cl. 424-273.00R.

Kiss, Joseph: See—  
D'Souza, Richard; and Kiss, Joseph, 4,340,729, Cl. 536-23.000.

Kitajima, Masao; Arai, Fuminori; and Kondo, Asaji, to Fuji Photo Film Co., Ltd. Hematocrit value determining element, 4,340,565, Cl. 422-56.000.

Kito, Michimasa; and Nomura, Toshiyuki, to Rinnai Kabushiki Kaisha Rinnai Corporation. Infrared radiation gas burner plate, 4,340,357, Cl. 431-328.000.

Kiuchi, Hideo: See—  
Ninomiya, Masakazu; Kiuchi, Hideo; Suzuki, Atsushi; and Kobayashi, Nobuyuki, 4,340,022, Cl. 123-453.000.

Kiuchi, Masashi; Takasu, Yoshio; Fukumoto, Hiroshi; Hino, Takashi; Uchiyama, Masaki; and Mitsuhashi, Yasuo, to Canon Kabushiki Kaisha. Toner for development having crosslinked polymers, 4,340,660, Cl. 430-106.600.

Klahr, Erhard; Hettche, Albert; Trieselt, Wolfgang; Stoeckigt, Dieter; and Trapp, Horst, to BASF Aktiengesellschaft. Dishwashing agents and cleaning agents containing oxybutylated higher alcohol/ethylene oxide adducts as low-foaming surfactants, 4,340,766, Cl. 568-625.000.

Klaus, Benjamin, Jr.; and MacKenzie, Gordon C., to Raytheon Company. Rate gyroscope having an optical sensor system, 4,339,959, Cl. 74-5.60A.

Klein, Paul E.; and Anderson, Roland M., to Modcom, Inc. Orthodontic rotation wedge with twist-preventing mounds, 4,340,363, Cl. 433-18.000.

Klenk, William A.; Atkinson, Albert B.; and Bobbitt, Donald E., to A. B. Chance Company. Adjustable connector for coupling tower leg to foundation support anchor, 4,339,899, Cl. 52-157.000.

Kling-Tecs, Inc.: See—  
Roberts, John S., 4,340,552, Cl. 264-39.000.

Kloekner-Werke AG: See—  
Grisar, Ulrich; and Berstermann, Wilhelm, 4,340,303, Cl. 356-313.000.

Kloster, Kenneth D. Lead screw threading assembly, 4,339,836, Cl. 10-123.00P.

Kluger, Edward W., to Milliken Research Corporation. Nitrogen-containing compounds, 4,340,717, Cl. 528-111.000.

Kmetz, Allan R.: See—  
Kaufmann, Meinolph; and Kmetz, Allan R., 4,340,277, Cl. 350-347.00E.

Knapp, Philip B. Lawn and garden feeding apparatus, 4,340,179, Cl. 239-310.000.

Kniel, Roger: See—  
Baumann, Eduard; and Kniel, Roger, 4,340,880, Cl. 340-310.00R.

Knight, Eric M.; and Greene, Edward S., to Ford Motor Company. Method and apparatus for coordinate dimming of electronic displays, 4,340,889, Cl. 340-793.000.

Knights, Brooks and Partners Limited: See—  
Knights, Robert E., 4,339,839, Cl. 15-250.040.

Knights, Robert E., to Knights, Brooks and Partners Limited. Wind-screen wipers, 4,339,839, Cl. 15-250.040.

Knopf, Robert J., to Union Carbide Corporation. (N-Substituted carbamoyloxy) alkanoyloxyalkyl acrylate esters, 4,340,497, Cl. 252-188.30R.

Knotter, David G.: See—  
Dale, John D.; and Knotter, David G., 4,340,095, Cl. 141-1.000.

Knudsen, James G.; and Brindak, Nicholas J., to Drew Chemical Corporation. Process and apparatus for testing fluids for fouling, 4,339,945, Cl. 73-61.200.

Kobale, Manfred; Littwin, Burkhard; and Wenger, Rolf, to Siemens Aktiengesellschaft. Control plate for a gas discharge display device, 4,340,838, Cl. 313-348.000.

Kobayashi, Nobuyuki: See—  
Ninomiya, Masakazu; Kiuchi, Hideo; Suzuki, Atsushi; and Kobayashi, Nobuyuki, 4,340,022, Cl. 123-453.000.

Koch, Carl; Meyer, Rolf; and Zehnder, Richard, to Koch, Carl. Photographic apparatus for using roll films, 4,340,292, Cl. 354-275.000.

Koch, George R., to Lam Research Corporation. Adjustable electrode plasma processing chamber, 4,340,462, Cl. 204-298.000.

Koda, Akihito; Hori, Mikio; Yasumoto, Mitsugi; Yamawaki, Ichiro; Yamada, Yuji; and Takikawa, Katsuo, to Taiho Pharmaceutical Company Limited. Sulfonium compounds, 4,340,543, Cl. 549-414.000.

Kodaira, Masanobu: See—  
Akiba, Shigeyuki; Suematsu, Yasuharu; Arai, Shigehisa; Kodaira, Masanobu; Itaya, Yoshio; Iga, Kenichi; Ota, Chuichi; Yamamoto, Takaya; and Sakai, Kazuo, 4,340,966, Cl. 372-45.000.

Koehler, David L.: See—  
Stephenson, Dwight B.; and Koehler, David L., 4,339,987, Cl. 91-426.000.

Koenig, Bruce E.; and Niswander, Thomas E., to Koenig, Bruce E.; and Niswander, Thomas E., a part interest. Dry seeding mulch and process of making same, 4,339,890, Cl. 47-9.000.

Kogawa, Takashi: See—  
Taira, Tadaaki; Ishihara, Toshio; Itoshima, Hiromichi; Mihara, Yutaka; and Kogawa, Takashi, 4,339,941, Cl. 72-12.000.

Kohn, Shoichi: See—  
Jinbo, Susumu; Kohn, Shoichi; and Onishi, Masatoshi, 4,340,768, Cl. 568-730.000.

Koike, Mikio: See—  
Hanyu, Susumu; Hara, Kazumasa; and Koike, Mikio, 4,340,003, Cl. 112-191.000.

Kojima, Yasuhumi: See—  
Iwata, Yasuhiro; Usami, Kiyoshi; Nabeta, Teiichi; Naganoma, Masanori; and Kojima, Yasuhumi, 4,340,113, Cl. 165-25.000.

Kojo, Hidehiko: See—  
Hata, Naoki; Kojo, Hidehiko; and Akimoto, Koji, 4,340,716, Cl. 528-100.000.

Kokusai Denshin Denwa Kabushiki Kaisha: See—  
Akiba, Shigeyuki; Suematsu, Yasuharu; Arai, Shigehisa; Kodaira, Masanobu; Itaya, Yoshio; Iga, Kenichi; Ota, Chuichi; Yamamoto, Takaya; and Sakai, Kazuo, 4,340,966, Cl. 372-45.000.

Kolomayets, George: See—  
Dennis, James T.; and Kolomayets, George, 4,340,958, Cl. 369-267.000.

Komatsu, Yasuhiro: See—  
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,340,760, Cl. 564-462.000.

Kompelien, Arlon D., to Honeywell Inc. Low voltage power supply, 4,340,173, Cl. 236-46.00R.

Kondo, Asaji: See—  
Kitajima, Masao; Arai, Fuminori; and Kondo, Asaji, 4,340,565, Cl. 422-56.000.

Kondo, Eiji; Mitsugi, Takashi; Fujiwara, Tamio; and Muneyuki, Ryonosuke, to Shionogi & Co., Ltd. Enzymatic synthesis of  $\beta$ -lactam antibacterials, 4,340,672, Cl. 435-45.000.

Konig, Klaus: See—  
Reichmann, Wolfgang; Konig, Klaus; and Schonfelder, Manfred, 4,340,712, Cl. 528-45.000.

Konikoff, Robert S. K.; Rudolph, Richard G.; and Gill, George H., to Sico Incorporated. Illuminated portable floor, 4,340,929, Cl. 362-153.000.

Koninklijke Emballage Industrie Van Leer B.V.: See—  
Brugmans, Johannes T., 4,340,638, Cl. 428-323.000.

Konishiroku Photo Industry Co., Ltd.: See—  
Nakamura, Hiroya, 4,340,295, Cl. 355-14.00R.

Tamura, Takashi; and Iwai, Yasuyuki, 4,340,297, Cl. 355-50.000.

Koob, Friedrich; and Lang, Gusztav, to Hilti Aktiengesellschaft. Two-component material, 4,340,637, Cl. 428-220.000.

Kopaska, Arnold F.; and Kopaska, Larry A. Endless belt changing in a rotary crop baler, 4,339,907, Cl. 56-341.000.

Kopaska, Larry A.: See—  
Kopaska, Arnold F.; and Kopaska, Larry A., 4,339,907, Cl. 56-341.000.

Kopse, Odon: See—  
Stumpp, Gerhard; Eblen, Ewald; Hofmann, Karl; Amaya, Nestor R.; Schlagenhauf, Josef; and Kopse, Odon, 4,340,181, Cl. 239-533.300.

Kosaka, Minoru, to Universal Pioneer Corporation. Video disc player, 4,340,950, Cl. 369-44.000.

Kotera, Nobukazu; Mizumura, Yutaka; and Miyake, Hideo, to Toyo Boseki Kabushiki Kaisha. Polyester resin aqueous dispersion, 4,340,519, Cl. 523-414.000.

Koutonen, Pauli; and Alanco, Lars-Erik, to Oy Wartsila Ab. Roll packaging arrangement, 4,339,904, Cl. 53-137.000.

Kowalski, Xavier, to Monsanto Company. Dyeing of textile materials, 4,340,388, Cl. 8-584.000.

Koyama, Hiroyasu: See—  
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,340,760, Cl. 564-462.000.

Kozlowski, Alexander: See—  
Howanietz, Friedrich; and Kozlowski, Alexander, 4,340,510, Cl. 260-8.000.

Kozu, Hideaki: See—  
Anazawa, Shinzo; and Kozu, Hideaki, 4,340,901, Cl. 357-68.000.

Kraftwerk Union Aktiengesellschaft: See—  
Fischer, Gustav, 4,340,499, Cl. 252-628.000.

Meyer-Pittroff, Roland; Becker, Bernard; and Finckh, Hermann, 4,340,820, Cl. 290-40.00R.

Kranzler, Ernst: See—  
Kuhlmann, Gerhard; Kranzler, Ernst; Baer, Gerhard; Ruetsch, Kurt; Ramseier, Hansruedi; Dubach, Heinz; Lang, Martin; Schwartz, Hans; and Aebi, Hans, 4,340,831, Cl. 310-239.000.

Kraus, Charles E., to Excelsomatic Inc. Infinitely variable transmission drive arrangement especially for automobiles, 4,339,966, Cl. 74-650.000.

Kraus, Menahem A.; Livni, Avinoam; Nemas, Mara; and Frommer, Moshe A., to A.T. Ramot Plastics Ltd. Membrane separation cell, 4,340,475, Cl. 210-232.000.

Kresge, James S.; and Sakshaug, Eugene C., to General Electric Company. Grading means for high voltage metal enclosed gas insulated surge arresters, 4,340,924, Cl. 361-127.000.

Krieg, Adrian H., to Widder Corporation. Welding nozzle, 4,340,804, Cl. 219-137.410.

Krieger, Willard. Hydraulic torque multiplier wrench, 4,339,968, Cl. 81-57.390.

Kriesel, Douglas C.; and Mehta, Shashi P., to Abbott Laboratories. Erythromycin base tablets, 4,340,582, Cl. 424-35.000.

Kron, Gerald J., to United States of America, Air Force. Upper and lower arm load simulator, 4,340,371, Cl. 434-59.000.

Krug, Herbert: See—  
Dockner, Toni; Kempe, Uwe; Krug, Herbert; Magnussen, Peter; and Praetorius, Werner, 4,340,745, Cl. 548-347.000.

Schwarz, Helmut; Dockner, Toni; Kempe, Uwe; Krug, Herbert; Praetorius, Werner; Magnussen, Peter; Gallei, Ewald; and Fehr, Erich, 4,340,744, Cl. 548-346.000.

Kruger, Hans-Rudolf, to Schering AG. Process for making 5-mercapto-1,2,3-triazoles, 4,340,742, Cl. 548-255.000.

Kruger, Horst: See—  
Junkermann, Helmut; and Kruger, Horst, 4,340,490, Cl. 210-759.000.

Krutkov, Anatoly F.: See—  
Chichkin, Valentin P.; Shpigel, Efraim A.; Gokin, Gennady P.; Matjuschenko, Georgy E.; Kurakov, Nikolai N.; Rabinovich, Grigory B.; Samoilovsky, Sergei A.; Angel, Boris S.; Iliencko, Vladimir S.; Miterov, Vladimir P.; Zemlyanov, Leonid S.; and Krutkov, Anatoly F., 4,339,906, Cl. 56-327.00R.

Kuan, Tiong H., to General Tire & Rubber Company, The. Deflated tire lubricant, 4,340,104, Cl. 152-330.00L.

Kubo, Yasushi: See—  
Aya, Toshihiko; and Kubo, Yasushi, 4,340,697, Cl. 525-420.000.

Kubota, Ltd.: See—  
Tanaka, Yoshio; Togawa, Susumu; and Sakoda, Akinori, 4,340,361, Cl. 432-128.000.

Yamaue, Yasunobu; and Ishioka, Tetsuo, 4,340,128, Cl. 180-900.000.

Kubota, Reiko: See—  
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,340,760, Cl. 564-462.000.

Kuburczik, Gyula: See—  
Barsi, Karoly; Dorombozi, Laszlo; Forisek, Istvan; Kuburczik, Gyula; and Stuber, Gyorgy, 4,340,254, Cl. 299-11.000.

Kucher, Valery N.; Popenko, Alexandr Z.; Reiman, Georgy R.; Dura-chenko, Mikhail I.; and Zhovtobryukh, Grigory D. Car for receiving incandescent coke, 4,340,445, Cl. 202-262.000.

Kuehn, John P., to Audio Dynamics Corporation. Cartridge and head-shell assembly, 4,340,957, Cl. 369-256.000.

Kuhlmann, Gerhard; Kranzler, Ernst; Baer, Gerhard; Ruetsch, Kurt; Ramseier, Hansruedi; Dubach, Heinz; Lang, Martin; Schwartz, Hans; and Aebi, Hans, to Robert Bosch GmbH. Brush holder for fractional horsepower motors, 4,340,831, Cl. 310-239.000.

Kuhn, Edgar, to Robert Bosch GmbH. Ripple-compensated voltage regulator, particularly for automotive use, 4,340,849, Cl. 322-28.000.

Kulicke & Soffa Industries, Inc.: See—  
Bilane, Glenn B.; Rubin, Lawrence M.; Soffa, Albert; and Vilenski, Dan, 4,340,166, Cl. 228-179.000.

Kumagai, Yoshimi: See—  
Yamaguchi, Masumi; Kawabata, Kenji; and Kumagai, Yoshimi, 4,340,796, Cl. 219-10.55B.

Kumai, Seisaku: See—  
Yamabe, Masaaki; Kumai, Seisaku; and Muneoka, Seiji, 4,340,750, Cl. 560-183.000.

Kumar, Ananda H.: See—  
Fury, Michael A.; and Kumar, Ananda H., 4,340,618, Cl. 427-96.000.

Kuna, Wayne A.; and Oberth, Christian H., to Marvin Glass & Associates. Microcomputer controlled reaction game, 4,340,223, Cl. 273-1.00C.

Kunkel, Heinrich: See—  
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Kunkel, Heinrich, 4,340,135, Cl. 192-98.000.

Kurakov, Nikolai N.: See—  
Chichkin, Valentin P.; Shpigel, Efraim A.; Gokin, Gennady P.; Matjuschenko, Georgy E.; Kurakov, Nikolai N.; Rabinovich, Grigory B.; Samoilovsky, Sergei A.; Angel, Boris S.; Iliencko, Vladimir S.; Miterov, Vladimir P.; Zemlyanov, Leonid S.; and Krutkov, Anatoly F., 4,339,906, Cl. 56-327.00R.

Kureha Kagaku Kogyo Kabushiki Kaisha: See—  
Aiba, Takaaki; Kaji, Hisatsugu; Endo, Tomizo; and Ishihara, Takao, 4,340,464, Cl. 208-40.000.

Kurland, Elaine J. Stirring apparatus, 4,339,992, Cl. 99-348.000.

Kurtz, Leonard D., to BioResearch Inc. Glove molding apparatus, 4,340,348, Cl. 425-270.000.

Kusakabe, Susumu: See—  
Okamura, Koichi; Kusakabe, Susumu; Yoshida, Masahiro; and Hiraka, Fumio, 4,339,983, Cl. 41-466.000.

Kuznetsov, Vladimir A.: See—  
Romashov, Alexandr A.; Levinsky, Gennady E.; Ivantsov, Vladimir Y.; Astakhov, Igor A.; and Kuznetsov, Vladimir A., 4,340,163, Cl. 228-19.000.

Kwikform America, Inc.: See—  
Payne, George E.; and Meehan, Richard G., 4,340,130, Cl. 182-179.000.

Kyo, Suizo: See—  
Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,340,646, Cl. 428-429.000.

Kyowa Chemical Industry Co. Ltd.: See—  
Miyata, Shigeo, 4,340,493, Cl. 252-18.000.

Kyowa Hakko Kogyo Co., Ltd.: See—  
Tomita, Fusao; Matsuda, Yuzuru; Shirahata, Kunikatsu; Takahashi, Keiichi; Nakano, Hirofumi; Sato, Tomoyasu; Okubo, Shuji; and Nakamura, Nobuo, 4,340,725, Cl. 536-1.100.

Laanio, Verena; Forj, Werner; and Schurter, Rolf, to Ciba-Geigy Corporation. Esters of 1,2-diphenyl-cyclohex-1-ene-4-carboxylic acid, 4,340,415, Cl. 71-76.000.

Laanio, Verena; Forj, Werner; and Schurter, Rolf, to Ciba-Geigy Corporation. Esters of 1,2-diphenyl-cyclohex-1-ene-4-carboxylic acid, 4,340,747, Cl. 560-102.000.

Laboratoires d'Hygiene et de Dietetique (L.H.D.): See—  
Grouiller, Herve, 4,340,699, Cl. 525-460.000.

Laflamme, Daniel. Personnel in and out indicator, 4,340,879, Cl. 340-286.00R.

Lagerquist, Rolf E. Luff feeder assembly for grooved jibstay foils, 4,340,005, Cl. 114-105.000.

LaGrone, Charles H., to Garrett Corporation. The. Fuel delivery system and method, 4,339,917, Cl. 60-39.28R.

Lake, William H.: See—  
Bergman, Rolf S.; and Lake, William H., 4,340,836, Cl. 313-211.000.

Lakshmanan, Pallavoor R.: See—  
Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., 4,340,687, Cl. 525-193.000.

Lal, Joginder; and Senyck, Michael L., to Goodyear Tire & Rubber Company, The. Cyclic organo carbonate and sulfite coupling agents for living polymers of conjugated dienes, 4,340,690, Cl. 525-271.000.

Lal, Joginder; and Senyck, Michael L., to Goodyear Tire & Rubber Company, The. Linear organo carbonate coupling agents for living polymers of conjugated dienes, 4,340,691, Cl. 525-271.000.

Lal, Joginder; and Senyck, Michael L., to Goodyear Tire & Rubber Company, The. Preparation of interpolymers of alpha-olefins and nonconjugated alpha, omega-polyenes, 4,340,705, Cl. 526-139.000.

Lam, Bing L., to SmithKline Corporation. Process for preparing 3-chloro-6-(2-hydroxyphenyl)-pyridazines, 4,340,733, Cl. 544-224.000.

Lam Research Corporation: See—  
Koch, George R., 4,340,462, Cl. 204-298.000.

Lambda Energy Products, Inc.: See—  
Levy, Marco, 4,340,114, Cl. 165-110.000.

Landa, Ben Zion, to Savin Corporation. Barrelless gun for microballistic printer, 4,340,312, Cl. 400-118.000.

Lang, Gusztav: See—  
Koob, Friedrich; and Lang, Gusztav, 4,340,637, Cl. 428-220.000.

Lang, Martin: See—  
Kuhlmann, Gerhard; Kranzler, Ernst; Baer, Gerhard; Ruetsch, Kurt; Ramseier, Hansruedi; Dubach, Heinz; Lang, Martin; Schwartz, Hans; and Aebi, Hans, 4,340,831, Cl. 310-239.000.

Langman, Richard A.; Giovannini, Donald R.; and Letzig, Michael P., to Coors Porcelain Company. Ceramic substrate for fine-line electrical circuitry, 4,340,635, Cl. 428-164.000.

LaPlante, William J.: See—  
Rizzo, Salvatore P.; and LaPlante, William J., 4,340,164, Cl. 228-57.000.

Lapporte, Seymour J.; and Marquis, David M., to Chevron Research Company. Nitration process for the preparation of 2,6-dialkylaniline, 4,340,758, Cl. 564-409.000.

Large, Donald M.: See—  
Banks, Kristen E.; Large, Donald M.; and Reinhard, Fred J., 4,340,323, Cl. 406-83.000.

Larson, Donald J., to Caterpillar Tractor Co. Overspeed control for a vehicle drive system, 4,340,126, Cl. 180-305.000.

Laser, Joachim: See—  
Nonn, Konrad; Laser, Joachim; Wolf, Karlheinz; Hornle, Reinhold; and Isel, Erich, 4,340,389, Cl. 8-620.000.

Lasseter, Robert H., to General Electric Company. HVDC Power transmission system with metallic return conductor, 4,340,921, Cl. 361-56.000.

Laverick, Robert G.; and Scotland, James M., to BP Chemicals Limited. Process for the recovery of pure acetone from cumene hydroperoxide cleavage reaction product, 4,340,447, Cl. 203-36.000.

Lawrence Brothers, Inc.: See—  
Johnson, Larry K., 4,340,246, Cl. 292-113.000.

Newlon, Robert L.; and McNinch, Delmar, 4,339,845, Cl. 16-300.000.

Lawrence, Gail W.; and Adolph, Horst G., to United States of America, Navy. Biguanide diperchlorate and process for preparation thereof, 4,340,755, Cl. 564-233.000.

Lawrence, Robert L. Method and apparatus for cutting electrical outlet openings in panels, 4,339,973, Cl. 83-30.000.

Lawson, Dale W. R., to Rohr Industries, Inc. Thrust reverser - cascade type, 4,340,178, Cl. 239-265.310.

Lawson, John E., to Armco Inc. Underwater well installations and handling string joint therefor, 4,340,117, Cl. 166-341.000.

Lebesnerais, Gerard M.: See—  
Delaporte, Francois X.; Lebesnerais, Gerard M.; and Pantani, Jean-Pierre, 4,340,922, Cl. 361-91.000.

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- Lucas Industries Limited: See—  
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- MacDonald, Jack G., to Champion Road Machinery Limited. Motor grader with bar linkage blade positioning apparatus. 4,340,119, Cl. 172-789.000.
- Machida Endoscope Co., Ltd.: See—  
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- Mack-Wayne Plastics Company: See—  
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- Marinoff, Gerald P. Radial keratotomy device. 4,340,059, Cl. 128-305.000.
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- Martins, Jose, to Gulf & Western Manufacturing Co. Tool support and drilling tool. 4,340,327, Cl. 408-59.000.
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- Masbruch, Richard D.: See—  
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- Massimilla, Leopoldo: See—  
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- Matsushima, Yusaku: See—  
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- Maupas, Bernard V. Semi-conductor for high continuous currents. 4,340,794, Cl. 200-289.000.
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- May, Earl L., to PPG Industries, Inc. Float glass forming chamber with auxiliary heating modules. 4,340,411, Cl. 65-182.300.
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- Mayer, Bruno F. P., to Discovision Associates. Hot sprue valve assembly for an injection molding machine. 4,340,353, Cl. 425-548.000.
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- McNinney, Richard P.: See—  
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- Mendelson, Ralph R. Tilt indicator for shipping containers. 4,340,008, Cl. 116-215.000.
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- Menge, Richard J. Metal cross support. 4,339,903, Cl. 52-657.000.
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- Mennona, Francis A.: See—  
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- Merck & Co., Inc.: See—  
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- Stoudt, Thomas H.; and Nollstadt, Karl H., 4,340,673, Cl. 435-97.000.
- Messerschmitt-Bolkow-Blohm GmbH: See—  
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- Metex Corporation: See—  
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- Meyer, Thomas W., to United States of America, Air Force. Low volume, lightweight, high voltage electron gun. 4,340,837, Cl. 313-259.000.
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- Michikawa, Hirokuni. Means for accelerating the discharge of exhaust gas from an internal combustion engine. 4,339,918, Cl. 60-316.000.
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- Miles Laboratories, Inc.: See—  
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- Miller, Wayne J.: See—  
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- Milliken Research Corporation: See—  
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- Millipore Corporation: See—  
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- Peterson, Stanley G., 4,339,858, Cl. 29-131.000.
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- Mitsubishi, Yasuo: See—  
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- Miura, Hitoshi: See—  
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- Miyake, Haruhisa: See—  
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- Miyake, Hideo: See—  
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- Miyazawa, Yoshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Uninterruptible power supply. 4,340,823, Cl. 307-66.000.
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- Stourmas, Stamoulis, 4,340,492, Cl. 252-8.55D.
- Weiner, Milton L., 4,340,640, Cl. 428-349.000.
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- Mongeon, Robert J., to United Technologies Corporation. Optical doppler radar system using a conically scanned laser beam. 4,340,299, Cl. 356-28.500.
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- Kowalski, Xavier, 4,340,388, Cl. 8-584.000.
- Van Eenam, Donald N., 4,340,692, Cl. 525-329.000.
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- Moore, Michael R. P. Method of cooking shellfish. 4,340,613, Cl. 426-456.000.
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Naarmann, Herbert; Naegel, Dieter; Penzien, Klaus; and Schlag, Johannes, 4,340,507, Cl. 252-512.000.

Naganoma, Masanori: See—  
Iwata, Yasuhiro; Usami, Kiyoshi; Nabeta, Teiichi; Naganoma, Masanori; and Kojima, Yasuhumi, 4,340,113, Cl. 165-25.000.

Nagashima, Shigeru: See—  
Mori, Fumio; Matsuda, Gunji; Yoshida, Toshihiko; and Nagashima, Shigeru, 4,340,149, Cl. 215-343.000.

Nagatomo, Midori: See—  
Uemura, Yahiho; Nagatomo, Midori; Funakoshi, Satoshi; and Suyama, Tadakazu, 4,340,589, Cl. 424-101.000.

Nakagawa, Makoto; and Mori, Takeshi, to Nippon Steel Corporation. Method and apparatus for forming metal pipes and tubes. 4,339,938, Cl. 72-178.000.

Nakagawa, Noboru: See—  
Oonishi, Toshiyuki; Tsutsumi, Masato; and Nakagawa, Noboru, 4,340,404, Cl. 62-198.000.

Nakagawa, Yasuhiko: See—  
Suzuki, Suzuo; Nakagawa, Yasuhiko; Aihara, Hisamoto; Matsumoto, Yasuo; and Sato, Yoji, 4,340,024, Cl. 123-538.000.

Nakahashi, Ken-ichi: See—  
Yamashita, Nobuo; and Nakahashi, Ken-ichi, 4,340,811, Cl. 250-201.000.

Nakajima, Akira: See—  
Ichikawa, Akira; Nakata, Kazuo; Nakajima, Akira; Ohta, Yoshihiro; and Umemura, Kazuhiro, 4,340,781, Cl. 179-1.0SA.

Nakajima, Fumio: See—  
Kanno, Fumio; and Nakajima, Fumio, 4,340,946, Cl. 368-76.000.

Nakajima, Yoshikazu: See—  
Moteki, Tsutomu; Yamaguchi, Kunihiro; and Nakajima, Yoshikazu, 4,340,513, Cl. 524-13.000.

Nakako, Kaoru: See—  
Takeuchi, Yasumasa; Obata, Yutaka; Ohshima, Noboru; Shibata, Tooru; and Nakako, Kaoru, 4,340,685, Cl. 525-247.000.

Nakamura, Hiroya, to Konishiroku Photo Industry Co., Ltd. Composite information recording device. 4,340,295, Cl. 355-14.00R.

Nakamura, Morio: See—  
Obayashi, Shigeji; Nakamura, Morio; Fujiki, Koichi; and Yamamoto, Takushi, 4,340,706, Cl. 526-207.000.

Nakamura, Nobuo: See—  
Tomita, Fusao; Matsuda, Yuzura; Shirahata, Kunikatsu; Takahashi, Keiichi; Nakano, Hirofumi; Sato, Tomoyasu; Okubo, Shuji; and Nakamura, Nobuo, 4,340,725, Cl. 536-1.100.

Nakamura, Takeshi; and Yamashita, Yoshimasa, to Murata Manufacturing Co., Ltd. Piezoelectrically driven tuning fork with integral damper member. 4,340,835, Cl. 310-321.000.

Nakamura, Toshiaki; and Yamamoto, Akira, to Olympus Optical Co., Ltd. Microphone sensitivity-changing apparatus. 4,340,915, Cl. 360-61.000.

Nakano, Hirofumi: See—  
Tomita, Fusao; Matsuda, Yuzura; Shirahata, Kunikatsu; Takahashi, Keiichi; Nakano, Hirofumi; Sato, Tomoyasu; Okubo, Shuji; and Nakamura, Nobuo, 4,340,725, Cl. 536-1.100.

Nakao, Toshihiro: See—  
Motoyama, Kazuyasu; Nakao, Toshihiro; Kanayama, Katsumi; and Furuta, Kenji, 4,340,951, Cl. 369-53.000.

Nakata, Kazuo: See—  
Ichikawa, Akira; Nakata, Kazuo; Nakajima, Akira; Ohta, Yoshihiro; and Umemura, Kazuhiro, 4,340,781, Cl. 179-1.0SA.

Nara, Tamotsu; and Kamiya, Soji, to Taiho Kogyo Co., Ltd. Aluminum-tin base bearing alloy and composite. 4,340,649, Cl. 428-653.000.

Naruo, Kyoichi: See—  
Mikawa, Akikazu; and Naruo, Kyoichi, 4,340,663, Cl. 430-496.000.

National Repellents, Inc.: See—  
Antonik, Steve J., 4,340,587, Cl. 424-95.000.

National Research Development Corporation: See—  
Anson, Michael; Chung, Shin-Ho; and Pettigrew, Alan G., 4,339,954, Cl. 73-657.000.

McMillan, Peter W.; and Maddison, Ronald, 4,340,408, Cl. 65-31.000.

National Semiconductor Corporation: See—  
Dias, Francis F., II, 4,340,887, Cl. 340-711.000.

Navarro, Bernard J. Dual turbine turbo-supercharger. 4,339,922, Cl. 60-602.000.

Neier, Wilhelm: See—  
Brandes, Gunter; Neier, Wilhelm; Wollner, Johannes; Webers, Werner; and deVleeschauwer, Walter F., 4,340,769, Cl. 568-899.000.

Nelson, Arthur R.: See—  
Boldt, Robert R.; and Nelson, Arthur R., 4,340,886, Cl. 340-682.000.

Nelson, Lorne W.; and Torborg, Ralph H., to Honeywell Inc. Furnace control using induced draft blower, exhaust gas flow rate sensing and density compensation. 4,340,355, Cl. 431-20.000.

Nemas, Mara: See—  
Kraus, Menahem A.; Livni, Avinoam; Nemas, Mara; and Frommer, Moshe A., 4,340,475, Cl. 210-232.000.

Netting, David L.; Spivack, Bruce D.; and Cunnion, James P., Jr., to PQ Corporation. Surface modified hollow microspheres. 4,340,642, Cl. 428-402.000.

Neubauer, Jeffrey A.; and Reese, Walter J., to PPG Industries, Inc. Pressurized gas accelerators for reciprocating device. 4,340,406, Cl. 65-9.000.

Neuzil, Richard W.; and Priegnitz, James W., to UOP Inc. Process for separating a ketone from an aldose by selective adsorption. 4,340,724, Cl. 536-127.000.

Newlon, Robert L.; and McNinch, Delmar, to Lawrence Brothers, Inc. Spring hinge. 4,339,845, Cl. 16-300.000.

Newport Pharmaceuticals International, Inc.: See—  
Simon, Lionel N.; Giner-Sorolla, Alfredo; and Guttig, Alvin, 4,340,726, Cl. 536-17.400.

NGK Insulators, Ltd.: See—  
Higuchi, Noboru; Yano, Teruo; and Ohnishi, Masahiro, 4,340,403, Cl. 55-523.000.

NHK Spring Co., Ltd.: See—  
Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,340,646, Cl. 428-429.000.

Niccolls, Paul L. Dressed fowl leg hold-down means. 4,339,847, Cl. 17-1.00S.

Nicoletti, Alberto: See—  
Colombo, Virginia; Nicoletti, Alberto; and Casu, Benito, 4,340,731, Cl. 536-87.000.

Niedermeyer, William P. High ratio solar energy concentrating collector. 4,340,031, Cl. 126-424.000.

Nield, Philip N.: See—  
Cooke, Billy O.; and Nield, Philip N., 4,340,974, Cl. 455-258.000.

Niihara, Koichi: See—  
Hirai, Toshio; and Niihara, Koichi, 4,340,568, Cl. 422-245.000.

Nilsson, Nils-Ake. Porous Tread and method of making same. 4,340,103, Cl. 152-209.00R.

Nilsson, Soren G.; and Carneborn, Leif R. Device for mounting circuit components on a circuit board. 4,340,774, Cl. 174-138.00G.

Ninomiya, Masakazu; Kiuchi, Hideo; Suzuki, Atsushi; and Kobayashi, Nobuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel injection device of an internal combustion engine. 4,340,022, Cl. 123-453.000.

Nioras, Robert L., to RJR Foods, Inc. Flexible pouch and thermocouple locator therefor. 4,340,610, Cl. 426-88.000.

Nippon Carbide Kogyo Kabushiki Kaisha: See—  
Takahashi, Atsushi; Muratsubaki, Yoshiharu; and Ishizuka, Hiroyuki, 4,340,422, Cl. 75-58.000.

Nippon Chemical Industrial Co., Ltd.: See—  
Tabei, Seikichi; and Sasaki, Shigeo, 4,340,426, Cl. 75-257.000.

Nippon Electric Co., Ltd.: See—  
Anazawa, Shinzo; and Kozu, Hideaki, 4,340,901, Cl. 357-68.000.

Umetzu, Shinjiro, 4,340,973, Cl. 455-228.000.

Nippon Gakki Seizo Kabushiki Kaisha: See—  
Imamura, Akio, 4,339,978, Cl. 84-1.030.

Nippon Hoso Kyokai: See—  
Iwamura, Soichi; Nishida, Yasuaki; Yamato, Toshimi; Sawazaki, Norikazu; Nishi, Yoshio; Watanabe, Masaharu; and Endo, Norio, 4,340,953, Cl. 369-126.000.

Nippon Kogaku K.K.: See—  
Maida, Osamu, 4,340,289, Cl. 354-173.000.

Matsukawa, Nobuo; and Sekine, Kenji, 4,340,290, Cl. 354-173.000.

Ogasawara, Akira; Shirasu, Hiroshi; and Utagawa, Ken, 4,340,819, Cl. 250-578.000.

Ohtsubo, Yoshiaki; and Watanabe, Sakuji, 4,340,284, Cl. 354-50.000.

Nippon Kokan Kabushiki Kaisha: See—  
Honda, Akira; Ishikawa, Masaru; Mizuoka, Seishi; and Ono, Katsunori, 4,340,110, Cl. 164-435.000.

Taira, Tadaaki; Ishihara, Toshio; Itoshima, Hiromichi; Mihara, Yutaka; and Kogawa, Takashi, 4,339,941, Cl. 72-412.000.

Nippon Steel Corporation: See—  
Nakagawa, Makoto; and Mori, Takeshi, 4,339,938, Cl. 72-178.000.

Nippon Telegraph and Telephone Public Corporation: See—  
Maio, Kenji; and Sudo, Tsuneta, 4,340,882, Cl. 340-347.0CC.

Nippondenso Co., Ltd.: See—  
Iwata, Yasuhiro; Usami, Kiyoshi; Nabeta, Teiichi; Naganoma, Masanori; and Kojima, Yasuhumi, 4,340,113, Cl. 165-25.000.

Nishi, Yoshio: See—  
Iwamura, Soichi; Nishida, Yasuaki; Yamato, Toshimi; Sawazaki, Norikazu; Nishi, Yoshio; Watanabe, Masaharu; and Endo, Norio, 4,340,953, Cl. 369-126.000.

Nishida, Yasuaki: See—  
Iwamura, Soichi; Nishida, Yasuaki; Yamato, Toshimi; Sawazaki, Norikazu; Nishi, Yoshio; Watanabe, Masaharu; and Endo, Norio, 4,340,953, Cl. 369-126.000.

Nishii, Yasuo: See—  
Aoki, Tadao; Miyakoshi, Hideo; Hirasawa, Yoshihei; and Nishii, Yasuo, 4,340,604, Cl. 424-236.000.

Nishikawa, Kohei: See—  
Furukawa, Yoshiyasu; Kishimoto, Shoji; and Nishikawa, Kohei, 4,340,598, Cl. 424-273.00R.

Nishikawa, Tokio: See—  
Mishiro, Masahiro; Nishikawa, Tokio; Ohashi, Shigeyasu; and Yokokawa, Yasuo, 4,340,481, Cl. 210-500.200.

Nishikawa, Yukio, to Precision Monolithics, Inc. Powerless starting circuit. 4,340,851, Cl. 323-311.000.

Nishizawa, Jun-ichi; and Hayashi, Yutaka, to Zaidan Hojin Handotai Kenkyu Shinkokai; and Agency of Industrial Science and Technology. Semiconductor integrated circuit. 4,340,827, Cl. 307-477.000.

Nissan Motor Company, Ltd.: See—  
Oshige, Katsunori; and Ezoe, Mitsuhiro, 4,340,021, Cl. 123-425.000.

Suzuki, Suzuo; Nakagawa, Yasuhiko; Aihara, Hisamoto; Matsumoto, Yasuo; and Sato, Yoji, 4,340,024, Cl. 123-538.000.

Nishin Flour Milling Co., Ltd.: See—  
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,340,760, Cl. 564-462.000.

Niswander, Thomas E.: See—  
Koenig, Bruce E.; and Niswander, Thomas E., 4,339,890, Cl. 47-9.000.

Nitta, Tsuneharu: See—  
Fujita, Yosuke; Fukushima, Fumio; Fukuda, Yoji; and Nitta, Tsuneharu, 4,340,839, Cl. 313-466.000.

Nivison-Weiskopf Co., The: See—  
Heiman, Joseph L.; and Reckseit, Bernard S., 4,340,162, Cl. 225-48.000.

Nixon, Jedy D., to Maurer Engineering, Inc. Turbodrill with rubber rotor bearings. 4,340,334, Cl. 415-172.00A.

Noda, Atsushi: See—  
Hanagata, Takayoshi; and Noda, Atsushi, 4,340,848, Cl. 318-561.000.

Nohira, Hiroyuki; Fujii, Hiroshi; Yajima, Masami; and Fujimura, Rieko, to Nohira, Hiroyuki. Method of optical resolution of (±)-2-amino-1-butanol and/or (±)-mandelic acid. 4,340,751, Cl. 562-401.000.

Noles, Douglas G., to Delmed Inc. Medical fluid flow rate indicating/controlling device. 4,340,050, Cl. 128-214.00C.

Nolet, Giovanni: See—  
Lee, Henry L., Jr.; and Nolet, Giovanni, 4,340,529, Cl. 524-105.000.

Lee, Henry L., Jr.; and Nolet, Giovanni, 4,340,532, Cl. 524-854.000.

Nollstadt, Karl H.: See—  
Stoudt, Thomas H.; and Nollstadt, Karl H., 4,340,673, Cl. 435-97.000.

Nolte, Wilfried; and Esser, Heinz, to Bayer Aktiengesellschaft. Process for the production of a cationic polychloroprene latex and a mixture of this latex with bitumen emulsion. 4,340,518, Cl. 524-61.000.

Nomi, Haruo, to Junkosha Co., Ltd. Colored, porous fluorocarbon material and method for its manufacture. 4,340,384, Cl. 8-495.000.

Nomura, Suguru: See—  
Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,340,646, Cl. 428-429.000.

Nomura, Toshiyuki: See—  
Kito, Michimasa; and Nomura, Toshiyuki, 4,340,357, Cl. 431-328.000.

Nonn, Konrad; Laser, Joachim; Wolf, Karlheinz; Hornle, Reinhold; and Istel, Erich, to Bayer Aktiengesellschaft. Process for the preparation of water-soluble dyestuffs with a low salt content. 4,340,389, Cl. 8-620.000.

Noonem, Arie, to Akzo N.V. U.V.-Curable resin with amine accelerator. 4,340,453, Cl. 204-159.150.

Norman, Travis. Electronic music instrument. 4,339,979, Cl. 84-1.230.

North American Philips Corporation: See—  
Schreurs, Willy P., 4,340,512, Cl. 523-122.000.

Northern Research & Engineering Corp.: See—  
Heitmann, Arnold M.; and Lord, Richard E., Jr., 4,340,317, Cl. 403-25.000.

Northern Telecom Limited: See—  
Awadalla, Makary M., 4,340,785, Cl. 179-51.0AA.

NSK-Warner K.K.: See—  
Ikesue, Haruyuki, 4,339,854, Cl. 24-230.0AL.

Nukaga, Tokuji. Safety electrical plug. 4,340,267, Cl. 339-42.000.

Oak Industries Inc.: See—  
den Toonder, Pieter; Seltensrijck, Johannes C.; Stubbs, Graham S.; Fondse, Pieter J.; and Jirka, Howard F., 4,340,906, Cl. 358-124.000.

Obata, Yutaka: See—  
Takeuchi, Yasumasa; Obata, Yutaka; Ohshima, Noboru; Shibata, Tooru; and Nakako, Kaoru, 4,340,685, Cl. 525-247.000.

Obayashi, Shigeji; Nakamura, Morio; Fujiki, Koichi; and Yamamoto, Takushi, to Seitetsu Kagaku Co., Ltd. Alkali metal acrylate or ammonium acrylate polymer excellent in salt solution-absorbency and process for producing same. 4,340,706, Cl. 526-207.000.

Oberth, Christian H.: See—  
Kuna, Wayne A.; and Oberth, Christian H., 4,340,223, Cl. 273-1.0GC.

Obrist, Gerhard, to Aerosol Service AG. Two-compartment pack. 4,340,155, Cl. 222-135.000.

O'Connor, Eugene F., to Mobay Chemical Corporation. Leadless glazes for whiteware. 4,340,645, Cl. 428-428.000.

Odders, Charles N.: See—  
Bloch, Daniel R.; Odders, Charles N.; and Rogers, John R., 4,340,057, Cl. 128-284.000.

Odlen, Lars, to Transcale AB. Self-correcting audio equalizer. 4,340,780, Cl. 179-1.00D.

Oediger, Hermann: See—  
Lieb, Folker; Oediger, Hermann; and Streible, Gert, 4,340,599, Cl. 424-212.000.

Oerlikon-Burhle U.S.A. Inc.: See—  
Sarcia, Domenico S., 4,339,927, Cl. 62-6.000.

Officine Savio, S.p.A.: See—  
Pfeifer, Hermann, 4,339,914, Cl. 57-302.000.

Ogasawara, Akira; Shirasu, Hiroshi; and Utagawa, Ken, to Nippon Kogaku K.K. Photoelectric element array with automatic control of the charge storage time. 4,340,819, Cl. 250-578.000.



Ogura, Katsuyuki: See—  
Tsuchihashi, Genichi; Mitamura, Shuichi; and Ogura, Katsuyuki, 4,340,740, Cl. 548-169.000.

Ohara, Katsunobu; Tanaka, Keiji; Ando, Yujiro; and Moriyama, Inao, to Canon Kabushiki Kaisha. Electrophotographic apparatus. 4,340,296, Cl. 355-35.00C.

Ohashi, Shigeyasu: See—  
Mishiro, Mashahiro; Nishikawa, Tokio; Ohashi, Shigeyasu; and Yokokawa, Yasuo, 4,340,481, Cl. 210-500.200.

Ohba, Yozo: See—  
Toyota, Takashi; Ohba, Yozo; and Yamanaka, Masaaki, 4,340,639, Cl. 428-338.000.

Ohlinger, Manfred; Vaeth, Guenter; Mueller, Norbert; and Wettstein, Eugen, to BASF Aktiengesellschaft. Process for the manufacture of ferromagnetic chromium dioxide. 4,340,494, Cl. 252-62.560.

Ohnishi, Masahiro: See—  
Higuchi, Noboru; Yano, Teruo; and Ohnishi, Masahiro, 4,340,403, Cl. 55-523.000.

Oono, Hiroshi; and Ohnishi, Masahiro, 4,340,894, Cl. 346-108.000.

Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, to NHK Spring Co., Ltd.; and Yokohama Kiko Co., Ltd. Multi-layer reflectors. 4,340,646, Cl. 428-429.000.

Ohshima, Noboru: See—  
Takeuchi, Yasumasa; Obata, Yutaka; Ohshima, Noboru; Shibata, Toru; and Nakako, Kaoru, 4,340,685, Cl. 525-247.000.

Ohta, Yoshihiro: See—  
Ichikawa, Akira; Nakata, Kazuo; Nakajima, Akira; Ohta, Yoshihiro; and Umemura, Kazuhiro, 4,340,781, Cl. 179-1.05A.

Ohtsubo, Yoshiaki; and Watanabe, Sakuji, to Nippon Kogaku K.K. Temperature-compensated signal transmitting device. 4,340,284, Cl. 354-50.000.

Ohwada, Yoshiaki: See—  
Shimada, Sachio; and Ohwada, Yoshiaki, 4,340,186, Cl. 242-7.05B.

Oji Yuka Goseishi Co., Ltd.: See—  
Toyota, Takashi; Ohba, Yozo; and Yamanaka, Masaaki, 4,340,639, Cl. 428-338.000.

Okabe, Moisei: See—  
Kanamaru, Hisanobu; Okabe, Moisei; Tatsumi, Hideo; Tohkairin, Akira; and Kasama, Ryoji, 4,339,873, Cl. 29-598.000.

Okamura, Koichi; Kusakabe, Susumu; Yoshida, Masahiro; and Hiraoka, Fumio, to Matsushita Electric Industrial Co., Ltd. Clamping device for clamping plate-like members. 4,339,983, Cl. 41-466.000.

Okinaka, Yutaka; and Wolowodiuk, Catherine, to Bell Telephone Laboratories, Incorporated. Method of replenishing gold/in plating baths. 4,340,451, Cl. 204-46.00G.

Oku, Toshio, to Machida Endoscope Co., Ltd. Endoscope with sensor. 4,340,302, Cl. 356-241.000.

Okubo, Shuji: See—  
Tomita, Fusao; Matsuda, Yuzuru; Shirahata, Kunikatsu; Takahashi, Keiichi; Nakano, Hirofumi; Sato, Tomoyasu; Okubo, Shuji; and Nakamura, Nobuo, 4,340,725, Cl. 536-1.100.

Olah, Jozsef: See—  
Toth, Andras; Toth nee Palotai, Emese; Olah, Jozsef; Bitskey, Jozsef; and Bulkai, Lajos, 4,340,488, Cl. 210-705.000.

Oldenburger Betonsteinwerke GmbH: See—  
Schneider, Egon, 4,340,247, Cl. 294-63.00R.

Olin Corporation: See—  
Kircher, Morton S., 4,340,460, Cl. 204-258.000.

Olmo Emerson S.p.A.: See—  
Magnaghi, Adriano, 4,339,871, Cl. 29-596.000.

Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Kunkel, Heinrich, to SKF Kugellagerfabriken GmbH. Clutch release device. 4,340,135, Cl. 192-98.000.

Olympus Optical Co., Ltd.: See—  
Furuta, Kenzi, 4,340,917, Cl. 360-74.200.

Hanaoka, Naohiro, 4,340,914, Cl. 360-59.000.

Kato, Toshikazu, 4,340,919, Cl. 360-109.000.

Motoyama, Kazuyasu; Nakao, Toshihiro; Kanayama, Katsumi; and Furuta, Kenzi, 4,340,951, Cl. 369-53.000.

Nakamura, Toshiaki; and Yamamoto, Akira, 4,340,915, Cl. 360-61.000.

Saitou, Sinichi, 4,340,194, Cl. 242-199.000.

Yamashita, Nobuo; and Nakahashi, Ken-ichi, 4,340,811, Cl. 250-201.000.

Omi, Hidehiko: See—  
Ishibashi, Kazuhisa; and Omi, Hidehiko, 4,340,801, Cl. 219-10.710.

Omodei-Sale, Amedeo: See—  
Toja, Emilio; Omodei-Sale, Amedeo; and Selva, Domenica, 4,340,607, Cl. 424-273.00B.

Onishi, Hiroshi; and Yamashita, Sadahiko, to Matsushita Electric Industrial Company, Limited. Microwave mixing circuit and a VHF-UHF tuner having the mixing circuit. 4,340,975, Cl. 455-315.000.

Onishi, Masatoshi: See—  
Jinbo, Susumu; Kohno, Shoichi; and Onishi, Masatoshi, 4,340,768, Cl. 568-730.000.

Ono, Katsunori: See—  
Honda, Akira; Ishikawa, Masaru; Mizuoka, Seishi; and Ono, Katsunori, 4,340,110, Cl. 164-435.000.

Ono, Shigetoshi; and Fujita, Shinsaku, to Fuji Photo Film Co., Ltd. Photographic light sensitive sheet for color diffusion transfer process. 4,340,661, Cl. 430-223.000.

Ontario Cancer Institute: See—  
Foster, Francis S., 4,339,952, Cl. 73-624.000.

Oonishi, Toshiyuki; Tsutsumi, Masato; and Nakagawa, Noboru, to Tokyo Shibaura Denki Kabushiki Kaisha. Refrigerating apparatus. 4,340,404, Cl. 62-198.000.

Oono, Hiroshi; and Ohnishi, Masahiro, to Fuji Photo Film Co., Ltd. Laser beam recording system. 4,340,894, Cl. 346-108.000.

Opcon, Inc.: See—  
Foster, Theodore C., 4,340,137, Cl. 198-457.000.

Orain, Michel A., to Glaenger Spicer. Axially retained homokinetic joint. 4,339,931, Cl. 464-111.000.

Orlandi, Giorgio, to Societa Italiana Telecomunicazioni Siemens S.p.A. Apparatus for testing an analog/digital converter. 4,340,856, Cl. 324-73.00R.

Orlando, Franklin P., to FMC Corporation. Lifting and steering system for a vehicle and a vehicle using the same. 4,340,237, Cl. 280-92.000.

Orlowski, Friedrich-August: See—  
List, Ferdinand; and Orlowski, Friedrich-August, 4,340,752, Cl. 562-485.000.

Oronzio deNora Elettrochimici S.p.A.: See—  
deNora, Oronzio, 4,340,452, Cl. 204-129.000.

Ort, Donald L., to Xerox Corporation. Scanning dryer for ink jet printers. 4,340,893, Cl. 346-1.100.

Osborne, Vernon E.: See—  
Wahlers, Richard L.; and Osborne, Vernon E., 4,340,508, Cl. 252-520.000.

Osegowitsch, Viktor: See—  
Fernandez, Avelino; Glass, Josef; and Osegowitsch, Viktor, 4,340,294, Cl. 354-321.000.

Osgood, Richard M.: See—  
Deutsch, Thomas F.; Ehrlich, Daniel J.; and Osgood, Richard M., 4,340,617, Cl. 427-53.100.

Oshige, Katsunori; and Ezoe, Mitsuhiro, to Nissan Motor Company, Ltd. Ignition advance angle controlling device. 4,340,021, Cl. 123-425.000.

Ota, Chuichi: See—  
Akiba, Shigeyuki; Suematsu, Yasuhiro; Arai, Shigehisa; Kodaira, Masanobu; Itaya, Yoshio; Iga, Kenichi; Ota, Chuichi; Yamamoto, Takaya; and Sakai, Kazuo, 4,340,966, Cl. 372-45.000.

Ota, Hiroshi; Horigome, Eiji; and Azegami, Hitoshi, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,340,644, Cl. 428-423.700.

Ott, Conrad L.; and Ris, George E., to Automatic Connector, Inc. Multi-coaxial/power pin connector assembly having integral ground. 4,340,265, Cl. 339-14.00R.

Outboard Marine Corporation: See—  
Ehrlich, Josef, 4,340,016, Cl. 123-73.00R.

Kirk, J. David, 4,340,018, Cl. 123-193.00C.

Overton, William C., Jr.: See—  
Steyert, William A., Jr.; and Overton, William C., Jr., 4,340,405, Cl. 62-514.00R.

Overway, Timothy A.: See—  
Arora, Manohar L.; Overway, Timothy A.; and Foye, Thomas E., 4,340,431, Cl. 106-262.000.

Ovshinsky, Stanford R.; Hines, Leon F.; Citkowski, Ronald W.; and Yu, Terry T., to Energy Conversion Devices, Inc. Tellurium imaging composition. 4,340,662, Cl. 430-270.000.

Owens-Corning Fiberglass Corporation: See—  
Beckman, John T.; and Sanik, Paul S., 4,340,965, Cl. 371-62.000.

Greaves, Gerald G., Jr., 4,340,009, Cl. 116-227.000.

Owens, Joe M. Vibratory concrete screed with eccentric drive shaft. 4,340,351, Cl. 425-456.000.

Oy Wartsila Ab: See—  
Koutonen, Pauli; and Alanco, Lars-Erik, 4,339,904, Cl. 53-137.000.

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Pace, Gary L., to Motorola, Inc. Current mode biquadratic active filter. 4,340,868, Cl. 330-294.000.

Pacesetter Systems, Inc.: See—  
McKean, Brian D., 4,340,038, Cl. 128-1.300.

Packer, Marvin; and Black, Otis D., to RCA Corporation. Coated printed circuit wiring board and method of soldering. 4,340,167, Cl. 228-180.00R.

Pako Corporation: See—  
Jensen, Gerald A., 4,340,213, Cl. 271-219.000.

Pall Corporation: See—  
Pall, David B., 4,340,479, Cl. 210-490.000.

Pall, David B.; and Model, Frank, 4,340,480, Cl. 210-490.000.

Pall, David B., to Pall Corporation. Process for preparing hydrophilic polyamide membrane filter media and product. 4,340,479, Cl. 210-490.000.

Pall, David B.; and Model, Frank, to Pall Corporation. Process for preparing lipophilic polyamide membrane filter media and product. 4,340,480, Cl. 210-490.000.

Pallios, Ferenc M.: See—  
MacDonald, Alan A.; Pallios, Ferenc M.; and Teach, Eugene G., 4,340,419, Cl. 71-93.000.

Palluel, Auguste L.: See—  
Backhouse, Alan J.; and Palluel, Auguste L., 4,340,511, Cl. 524-504.000.

Palmisano, John J.: See—  
Ford, John M. B.; Magers, Wallace F.; and Palmisano, John J., 4,340,158, Cl. 222-321.000.

Panepinto, William, Jr.: See—  
Miu, Ming T.; Bradley, John J.; Panepinto, William, Jr.; and Shen, Jian-Kuo, 4,340,933, Cl. 364-200.000.

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Papezian, Harry: See—  
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Pape, Heinz: See—  
Quella, Ferdinand; and Pape, Heinz, 4,340,817, Cl. 250-458.000.

Papet-Motoren KG: See—  
Muller, Rolf, 4,339,875, Cl. 29-602.00R.

Papuchon, Michel; and Puech, Claude, to Thomson-CSF. Light intensity modulator in an integrated optical circuit with feedback means. 4,340,272, Cl. 350-96.140.

Parke, Patrick P.; Bauer, Brady G.; Meitl, Kenneth G.; Thompson, Wayne L.; and Voegeli, Thomas J., to Kansas State University Research Foundation. Manure spreading apparatus. 4,340,182, Cl. 239-680.000.

Pasley, Harry M., to Eaton Investment Company, a part interest. Tank for a fluid system. 4,340,078, Cl. 137-205.500.

Pate, Daniel R.; Delaney, Robert R.; and Shuleva, John J., to SCM Corporation. Process for concentrating a flow of lipids in solvent. 4,340,547, Cl. 260-428.500.

Patel, Gordhanbhai N.: See—  
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,339,951, Cl. 374-162.000.

Patel Kalyanji U., to Minnesota Mining and Manufacturing Company. Carpet treatment. 4,340,749, Cl. 560-182.000.

Patel, Kirit M.: See—  
Doshi, Kishore J.; and Patel, Kirit M., 4,340,398, Cl. 55-25.000.

Patriarca, William C.; and McGraw, Leonard J. Semi-automatic bailer plug. 4,340,006, Cl. 114-197.000.

Pattanaik, Surya; and Mizuhara, Howard, to GTE Products Corporation. Multi-layer composite brazing alloy. 4,340,650, Cl. 428-675.000.

Paul Bergsoe and Son A/S: See—  
Bergsoe, Svend, 4,340,421, Cl. 75-25.000.

Pauli, Jude A.: See—  
Hargraves, David P.; Pauli, Jude A.; and Williams, Steven E., 4,340,202, Cl. 251-31.000.

Payne, George E.; and Meehan, Richard G., to Kwikform America, Inc. Scaffold frame header. 4,340,130, Cl. 182-179.000.

Payne, John M. Device for electrostatically charging sheet material. 4,340,926, Cl. 361-229.000.

Paysen, Kenneth E.; and Petrovick, James M., to International Business Machines Corporation. Apparatus for enabling corona current measurement. 4,340,855, Cl. 324-72.000.

Peabody Coal Company: See—  
Gill, Ronald P.; Tucker, Dempsey G.; and Hull, John E., Jr., 4,340,920, Cl. 361-49.000.

Pechhold, Engelbert, to Du Pont de Nemours, E. I., and Company. Oligomeric formal diols of poly(tetramethylene ether) glycol and polyurethanes prepared therefrom. 4,340,719, Cl. 528-230.000.

Peddinghaus, Rolf: See—  
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Pehl, Marilyn A.: See—  
Howard, William G.; Strohkirch, John C.; and Pehl, Marilyn A., 4,340,651, Cl. 429-101.000.

Pekarek, Gerald P. Squegee. 4,339,838, Cl. 15-245.000.

Penzien, Klaus: See—  
Naarmann, Herbert; Naegel, Dieter; Penzien, Klaus; and Schlag, Johannes, 4,340,507, Cl. 252-512.000.

Pepe, Enrico J.: See—  
Marsden, James G.; and Pepe, Enrico J., 4,340,520, Cl. 523-209.000.

Percival, William S.; and Walters, Peter E., to Picker International Limited. Imaging systems. 4,340,862, Cl. 324-309.000.

Perkin-Elmer Corporation, The: See—  
Hottes, Carl J., 4,340,264, Cl. 316-19.000.

Permag Corporation: See—  
Lipschitz, Henry, 4,339,853, Cl. 24-155.00R.

Perreault, Aime J., to Champlain Cable Corporation. Coaxial cables with foam dielectric. 4,340,773, Cl. 174-107.000.

Personal Products Company: See—  
Ciencewicz, Evelyn, 4,340,556, Cl. 264-119.000.

Peterson, Stanley G., to Minnesota Mining and Manufacturing Company. Dampener roll cover. 4,339,858, Cl. 29-131.000.

Petke, Frederick D.; and McConnell, Richard L., to Eastman Kodak Company. Polyester adhesive. 4,340,526, Cl. 524-292.000.

Petrovick, James M.: See—  
Paysen, Kenneth E.; and Petrovick, James M., 4,340,855, Cl. 324-72.000.

Pettersson, Bjorn O. A., to AB Carbox. Method for calibrating tubular articles. 4,339,935, Cl. 72-57.000.

Pettigrew, Alan G.: See—  
Anson, Michael; Chung, Shin-Ho; and Pettigrew, Alan G., 4,339,934, Cl. 73-657.000.

Petts, Nigel J.: See—  
Bristow, Ian T.; and Petts, Nigel J., 4,340,337, Cl. 417-304.000.

Pfaff Industriemaschinen GmbH: See—  
Willenbacher, Erich, 4,340,001, Cl. 112-143.000.

Pfahler, Gerhard: See—  
Wieber, Hartmut; and Pfahler, Gerhard, 4,340,534, Cl. 524-99.000.

Pfeifer, Hermann, to Officine Savio, S.p.A. Method and apparatus for cleaning an open-end spinning rotor. 4,339,914, Cl. 57-302.000.

Pfizer Inc.: See—  
Johnson, Michael R., 4,340,737, Cl. 546-108.000.

Wernau, William C.; and Wernau, William C., 4,340,678, Cl. 435-253.000.

Wernau, William C.; and Wernau, William C., 4,340,678, Cl. 435-253.000.

Wuesthoff, Michael T., 4,340,763, Cl. 568-344.000.

Philip Morris, Incorporated: See—  
de la Burde, Roger Z.; and Aument, Patrick E., 4,340,073, Cl. 131-291.000.

de la Burde, Roger Z.; Mait, Russell B.; and Utsch, Francis V., 4,340,142, Cl. 209-11.000.

Philipanko, Walt R.: See—  
Catron, George W., 4,340,402, Cl. 55-487.000.

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Phillips Petroleum Company: See—  
Hitzman, Donald O., 4,339,677, Cl. 435-246.000.

Wiley, Bruce F., 4,339,947, Cl. 73-151.000.

Phillips, Robert F.: See—  
McIntyre, James A.; Phillips, Robert F.; and Lefevre, Joseph D., 4,340,459, Cl. 204-258.000.

Pich, Claus H.; and Moest, Thomas, to BASF Aktiengesellschaft. Stringently sodium-restricted dietetic salt and its preparation. 4,340,614, Cl. 426-649.000.

Pichette, Carol. Combination fascia and J-trim. 4,339,898, Cl. 52-94.000.

Picker International Limited: See—  
Percival, William S.; and Walters, Peter E., 4,340,862, Cl. 324-309.000.

Pierce, Donald C. Hand-held cutter for cutting mounting board and the like. 4,339,877, Cl. 30-293.000.

Pierce, June S.: See—  
Pierce, Larry L.; and Pierce, June S., 4,340,058, Cl. 128-287.000.

Pierce, Larry L.; and Pierce, June S. Sanitary napkin. 4,340,058, Cl. 128-287.000.

Pioneer Electronic Corporation: See—  
Ikeda, Yuji, 4,340,952, Cl. 369-77.000.

Pisanu, Antonio. Spraying and suction cleansing device. 4,340,365, Cl. 433-80.000.

Pitney Bowes Inc.: See—  
Cruz-Urbe, Antonio S.; and Check, Frank T., Jr., 4,340,896, Cl. 346-140.00R.

Miller, Peter T., 4,340,897, Cl. 346-140.00R.

Pitzele, Barnett S.: See—  
Henderson, Richard E. L.; Malek, Nancy J.; Moormann, Alan E.; and Pitzele, Barnett S., 4,340,730, Cl. 536-26.000.

Plastic Forming Company, Inc. The: See—  
Schurman, Peter T., 4,340,345, Cl. 425-150.000.

Plastic Machinery Corporation: See—  
Brown, Glenn R.; and McMillan, James S., 4,340,340, Cl. 425-71.000.

Plath, Peter; Eicken, Karl; and Rohr, Wolfgang, to BASF Aktiengesellschaft. N-Halomethylanilides. 4,340,739, Cl. 548-236.000.

Pleva, Harry: See—  
Bahner, Friedrich; and Pleva, Harry, 4,339,949, Cl. 73-204.000.

Pneumatic Scale Corporation: See—  
Scully, John W., 4,339,905, Cl. 53-437.000.

Poculuyko, Alex, to Scott Paper Company. Cationic dyestuff printing inks. 4,340,386, Cl. 8-541.000.

Pogany, Stefano A.: See—  
Bodor, Nicholas S.; Sloan, Kenneth B.; and Pogany, Stefano A., 4,340,603, Cl. 424-301.000.

Polaroid Corporation: See—  
Bronstein-Bonte, Irena Y.; and Lindholm, Edward P., 4,340,522, Cl. 524-766.000.

Walworth, Vivian K., 4,340,666, Cl. 430-569.000.

Pollock, David C. I.; and Wilson, Malcolm A., to C-I-L Inc. Method for the froth flotation separation and treatment of slowly biodegradable components in waste treatment. 4,340,484, Cl. 210-607.000.

Polychrome Corporation: See—  
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Pompon, Jean-Barnard: See—  
Arnal, Claude; Pompon, Jean-Barnard; and Roulet, Robert, 4,340,722, Cl. 528-480.000.

Poore, Edward C., to General Motors Limited. Internal combustion engine air intake control systems. 4,340,172, Cl. 236-13.000.

Popenko, Alexandr Z.: See—  
Kucher, Valery N.; Popenko, Alexandr Z.; Reiman, Georgy R.; Durachenko, Mikhail I.; and Zhovtobryukh, Gngory D., 4,340,445, Cl. 202-262.000.

Porcelli, Richard V.: See—  
Davidson, Walter C.; and Porcelli, Richard V., 4,340,569, Cl. 423-22.000.

Poss Design Limited: See—  
Poss, Werner, 4,340,184, Cl. 241-82.300.

Poss, Werner, to Poss Design Limited. Apparatus for mechanical separation of a combination of meat and bone into useful fractions. 4,340,184, Cl. 241-82.300.

Potz, Karl; and Schutz, Rudolf, to Faudi Feinbau GmbH. Arrangement for mounting dividing or separating elements in a filtering water separator. 4,340,476, Cl. 210-232.000.

PPG Industries, Inc.: See—  
May, Earl L., 4,340,410, Cl. 65-182.300.

May, Earl L., 4,340,411, Cl. 65-182.300.

May, Earl L., 4,340,412, Cl. 65-182.300.

Neubauer, Jeffrey A.; and Reese, Walter J., 4,340,406, Cl. 65-9.000.

PQ Corporation: See—  
Netting, David I.; Spivack, Bruce D.; and Cunnion, James P., Jr., 4,340,642, Cl. 428-402.000.



- Praetorius, Werner: See—  
Dockner, Toni; Kempe, Uwe; Krug, Herbert; Magnussen, Peter; and Praetorius, Werner, 4,340,745, Cl. 548-347.000.  
Schwarz, Helmut; Dockner, Toni; Kempe, Uwe; Krug, Herbert; Praetorius, Werner; Magnussen, Peter; Gallei, Ewald; and Fehr, Erich, 4,340,744, Cl. 548-346.000.
- Precipitator Corporation: See—  
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- Precision Metalsmiths, Inc.: See—  
Bauer, Timothy R., 4,340,107, Cl. 164-35.000.
- Precision Monolithics, Inc.: See—  
Nishikawa, Yukio, 4,340,851, Cl. 323-311.000.
- Pressman, John R., to UOP Inc. Annular corrugator, 4,339,936, Cl. 72-77.000.
- Preston, Joseph R.: See—  
Hillenbrand, Louis J.; Preston, Joseph R.; and Berry, David A., 4,340,629, Cl. 428-64.000.
- Preziosi, Anthony F.: See—  
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,339,951, Cl. 374-162.000.
- Prichard, Evan S., to Challenge-Cook Bros., Incorporated. Trailer transit mixer, 4,340,309, Cl. 366-62.000.
- Priebe, Waldemar: See—  
Horton, Derek; and Priebe, Waldemar, 4,340,593, Cl. 424-180.000.
- Priegnitz, James W.: See—  
Neuzil, Richard W.; and Priegnitz, James W., 4,340,724, Cl. 536-127.000.
- Prince Hotels, Inc.: See—  
Hashimoto, Hideaki; Abe, Mitsuo; and Morita, Masaharu, 4,340,779, Cl. 179-1.00B.
- Procter, James W. Manufacture of ceramic articles, 4,340,555, Cl. 264-65.000.
- Proulx, Sylvester E.; and Beneteau, Stanley A., to J. P. Tool, Ltd. Rotary cutting tool and tool driver, 4,340,328, Cl. 408-239.00A.
- Puech, Claude: See—  
Papuchon, Michel; and Puech, Claude, 4,340,272, Cl. 350-96.140.
- Pugh, Burton J.: See—  
Kegel, Richard L.; Pugh, Burton J.; and Steury, Thomas R., 4,340,183, Cl. 239-710.000.
- Pusch, Gunter; Aisslinger, Dieter E.; Hoffmann, Alexander; and Pusch, Klaus-Werner. Heat-reflective wall-paper or wall liner, 4,340,634, Cl. 428-134.000.
- Pusch, Klaus-Werner: See—  
Pusch, Gunter; Aisslinger, Dieter E.; Hoffmann, Alexander; and Pusch, Klaus-Werner, 4,340,634, Cl. 428-134.000.
- Putetti, Anthony M.: See—  
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- Putt, J. William. Magnetic apparatus for producing movement, 4,340,846, Cl. 318-135.000.
- Q-Dot, Inc.: See—  
Linnenbrink, Thomas E.; and Gradl, David A., 4,340,874, Cl. 333-165.000.
- Qualeati, Gail M.; and Germanas, Dalia, to UOP Inc. Process for the reduction of unsaturated carboxylic acids, 4,340,546, Cl. 260-409.000.
- Quarz-Zeit AG: See—  
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- Quella, Ferdinand; and Pape, Heinz, to Siemens Aktiengesellschaft. Signal element without a lamp, 4,340,817, Cl. 250-458.000.
- Quis, Peter; and Schroth, Theodor, to Rohm GmbH. Liquid, UV-hardenable coating agent and binder, 4,340,707, Cl. 526-289.000.
- Rabinovich, Georgy L.: See—  
Court, Philippe; Rabinovich, Georgy L.; Mojaiko, Victor N.; and Le Page, Jean-Francois, 4,340,504, Cl. 252-465.000.
- Rabinovich, Grigory B.: See—  
Chichkin, Valentin P.; Shpigel, Efraim A.; Gokin, Gennady P.; Matjuschenko, Georgy E.; Kurakov, Nikolai N.; Rabinovich, Grigory B.; Samoilovsky, Sergei A.; Angel, Boris S.; Ilienkov, Vladimir S.; Miterov, Vladimir P.; Zemlyanov, Leonid S.; and Krutkov, Anatoly F., 4,339,906, Cl. 56-327.00R.
- Racal Research Limited: See—  
Munday, Peter J., 4,340,963, Cl. 371-37.000.
- Racek, Alfred. Gas lighter, 4,340,356, Cl. 431-254.000.
- Radu, E. John: See—  
Springett, Charles N.; Abramovich, Dan; Uyeda, Stanley T.; and Radu, E. John, 4,340,322, Cl. 405-168.000.
- Raistrick, Ian D.; Godshall, Ned A.; and Huggins, Robert A., to United States of America. Energy. Ternary compound electrode for lithium cells, 4,340,652, Cl. 429-112.000.
- Raj, Kuldeep: See—  
Yamamura, Akira; and Raj, Kuldeep, 4,340,233, Cl. 277-1.000.
- Ramseier, Hansruedi: See—  
Kuhlmann, Gerhard; Kranzler, Ernst; Baer, Gerhard; Ruetsch, Kurt; Ramseier, Hansruedi; Dubach, Heinz; Lang, Martin; Schwartz, Hans; and Aebi, Hans, 4,340,831, Cl. 310-239.000.
- Rao, V. Udaya S.; and Gormley, Robert J., to United States of America. Energy. Catalyst for converting synthesis gas to light olefins, 4,340,503, Cl. 252-459.000.
- Rapp, Guenther; Jockers, Kurt; and Thomas, Erwin, to BASF Aktiengesellschaft. Manufacture of hydroxylammonium salts, 4,340,575, Cl. 423-387.000.
- Raskin, Jerome S.; Hall, Warren L.; Holt, Charles P.; and Carlson, Gerald E., to Xerox Corporation. Open loop fuser control, 4,340,807, Cl. 219-497.000.
- Rattenborg, Christen C. Blood collection syringe, 4,340,067, Cl. 128-763.000.
- Ratz, Richard D.: See—  
Diamond, Allen M.; and Ratz, Richard D., 4,340,307, Cl. 356-418.000.
- Raytheon Company: See—  
Klaus, Benjamin, Jr.; and MacKenzie, Gordon C., 4,339,959, Cl. 74-5.60A.
- Sparks, Richard A., 4,340,861, Cl. 324-205.000.
- RCA Corporation: See—  
Chio, Shiu-Shin; and Kim, George A., 4,340,954, Cl. 369-173.000.
- Coyle, Peter J., 4,340,803, Cl. 219-56.220.
- Hillenbrand, Louis J.; Preston, Joseph R.; and Berry, David A., 4,340,629, Cl. 428-64.000.
- Kelleher, Kevin C., 4,340,949, Cl. 369-33.000.
- Levin, Leonard J., 4,340,959, Cl. 369-275.000.
- Miller, Michael E., 4,340,956, Cl. 369-244.000.
- Packer, Marvin; and Black, Otis D., 4,340,167, Cl. 228-180.00R.
- Williams, James J., Jr.; and Dischert, Robert A., 4,340,940, Cl. 364-745.000.
- Reading-Dorma Closer Corporation: See—  
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- Realex Corporation: See—  
Ford, John M. B.; Magers, Wallace F.; and Palmisano, John J., 4,340,158, Cl. 222-321.000.
- Reckseit, Bernard S.: See—  
Heiman, Joseph L.; and Reckseit, Bernard S., 4,340,162, Cl. 225-48.000.
- Redifon Simulation Limited: See—  
Spoonier, Archer M., 4,340,274, Cl. 350-128.000.
- Spoonier, Archer M.; and Murray, Paul M., 4,340,878, Cl. 340-27.00R.
- Reeborg, Christian. Paint brush accessory, 4,339,837, Cl. 15-169.000.
- Reese, Walter J.: See—  
Neubauer, Jeffrey A.; and Reese, Walter J., 4,340,406, Cl. 65-9.000.
- Regan, James. Water heating apparatus, water and heating system and improved boiler, 4,340,174, Cl. 237-19.000.
- Reichmann, Wolfgang; Konig, Klaus; and Schonfelder, Manfred, to Bayer Aktiengesellschaft. Process for the preparation of polyisocyanates containing biuret and/or higher polyurethane groups and use thereof as synthesis component in the preparation of polyurethane plastics, 4,340,712, Cl. 528-45.000.
- Reidel, Josef, to Tox-Dubel-Werk Richard W. Heckhausen KG. Straddling dowel, 4,340,330, Cl. 411-33.000.
- Reihl, Robert F.; and Wang, Kang-Lung, to General Electric Company. Method of making low resistance contacts in semiconductor devices by ion induced silicides, 4,339,869, Cl. 29-576.00B.
- Reiman, Georgy R.: See—  
Kucher, Valery N.; Popenko, Alexandr Z.; Reiman, Georgy R.; Durachenko, Mikhail I.; and Zhovtobryukh, Grigory D., 4,340,445, Cl. 202-262.000.
- Reinhard, Fred J.: See—  
Bankes, Kristen E.; Large, Donald M.; and Reinhard, Fred J., 4,340,323, Cl. 406-83.000.
- Reiss, Garry K., to J. B. Foote Foundry Co., The. Ball shift mechanism, 4,340,134, Cl. 192-67.00R.
- Research Corporation: See—  
Woodard, Lynn F., 4,340,588, Cl. 424-92.000.
- Research Institute for Iron, Steel and Other Metals of the Tohoku University, The: See—  
Hirai, Toshio; and Niihara, Koichi, 4,340,568, Cl. 422-245.000.
- Resonant Technology Company: See—  
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- Reuter, Franz G.; and Hiltnerhaus, Karl-Heinz, to Reuter Technologie GmbH; and Chemie-Anlagenbau Bischofsheim GmbH. Process for the manufacture of foamed or non-foamed compositions, 4,340,681, Cl. 521-123.000.
- Reuter Technologie GmbH: See—  
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- Rexnord Inc.: See—  
Lemke, Gregory D., 4,340,338, Cl. 418-26.000.
- Reynolds, James H.: See—  
Adams, V. Dean; and Reynolds, James H., 4,340,489, Cl. 210-718.000.
- Reynolds Metals Company: See—  
Mitchell, Randolph N., 4,339,934, Cl. 72-17.000.
- Reznik, Barry D. Method for fixturing workpieces for heat effected joining of same, 4,339,867, Cl. 29-559.000.
- Rhone-Poulenc Agrochimie: See—  
Cordier, Georges, 4,340,759, Cl. 564-412.000.
- Theissen, Robert J., 4,340,417, Cl. 71-91.000.
- Rhone-Poulenc Industries: See—  
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- Deleuil, Michel, 4,340,521, Cl. 524-2.000.
- Rice, Catherine E.: See—  
Beni, Gerardo; Rice, Catherine E.; and Shay, Joseph L., 4,340,278, Cl. 350-357.000.
- Riedel, Peter. Movable wall for a pneumatic booster, 4,339,990, Cl. 92-99.000.

- Rietvink, Adrianus H.: See—  
van Weelden, Jan H.; and Rietvink, Adrianus H., 4,340,401, Cl. 55-305.000.
- Rinderle, Heinz: See—  
Malinowski, Christopher W.; and Rinderle, Heinz, 4,340,864, Cl. 328-133.000.
- Rinnai Kabushiki Kaisha Rinnai Corporation: See—  
Kito, Michimasa; and Nomura, Toshiyuki, 4,340,357, Cl. 431-328.000.
- Ris, George E.: See—  
Ott, Conrad L.; and Ris, George E., 4,340,265, Cl. 339-14.00R.
- Riutta, Irving. Device for lowering ceramic liners into a chimney, 4,340,248, Cl. 294-93.000.
- Rizzo, Salvatore P.; and LaPlante, William J., to Texas Instruments Incorporated. Mask for an attachable, circuit-terminating, circuit board edge member, 4,340,164, Cl. 228-57.000.
- RJR Foods, Inc.: See—  
Nioras, Robert L., 4,340,610, Cl. 426-88.000.
- Robbins, Edward S.; and Forster, Robert S. Number generating device and gaming apparatus incorporating same, 4,340,228, Cl. 273-138.00R.
- Robbins, Edward S., Jr. Mat anchoring apparatus and method, 4,340,633, Cl. 428-99.000.
- Robert Bosch GmbH: See—  
Anlauf, Jurgen; and Jonner, Wolf-Dieter, 4,340,935, Cl. 364-426.000.
- Herden, Werner; 4,340,877, Cl. 338-42.000.
- Kuhlmann, Gerhard; Kranzler, Ernst; Baer, Gerhard; Ruetsch, Kurt; Ramseier, Hansruedi; Dubach, Heinz; Lang, Martin; Schwartz, Hans; and Aebi, Hans, 4,340,831, Cl. 310-239.000.
- Kuhn, Edgar, 4,340,849, Cl. 322-28.000.
- Stump, Gerhard; Eblen, Ewald; Hofmann, Karl; Amaya, Nestor R.; Schlagenhauf, Josef; and Kops, Odon, 4,340,181, Cl. 239-533.300.
- Roberts, John S., to Kling-Tecs, Inc. Melt spinning solution dyed filaments and improved spin pack therefor, 4,340,552, Cl. 264-39.000.
- Roberts, Peter B.: See—  
White, David J.; and Roberts, Peter B., 4,339,924, Cl. 60-733.000.
- Robertson, Joseph D. Scrap recovery system, 4,340,347, Cl. 425-217.000.
- Robinson, Curtiss W.; and Clingman, Wilbur D., to Boeing Company. The. Internal body mounted system for isolation of, in one degree of freedom, a beam projected from an optical system which is subject to rotational vibration, 4,340,271, Cl. 350-16.000.
- Robinson, Frederick J.; and Tracy, Clarence J., to Motorola, Inc. Method for detecting the end point of a plasma etching reaction, 4,340,456, Cl. 204-192.00E.
- Robinson, Martin A.: See—  
Anello, Louis G.; Eibeck, Richard E.; and Robinson, Martin A., 4,340,548, Cl. 260-544.00Y.
- Robinson-Todd, David W., to Stablex A.G. Process for disposal of ammonium jarosite, 4,340,396, Cl. 23-293.00R.
- Rockwell International Corporation: See—  
Massie, Norbert A., 4,340,304, Cl. 356-351.000.
- Roddy, Joseph T., to Emerson Electric Co. Process of die casting with a particulate inert filler uniformly dispersed through the casting, 4,340,109, Cl. 164-97.000.
- Rodriguez, Silvio A.; and Catino, Sigmund C., deceased (by Catino, Esther E., executor), to Sandoz, Inc. Stable, concentrated, aqueous compositions containing para-sulphophenyl-azo-substituted 1,4-phenylene-azo-para-2-hydroxypropoxyphenyl dyes, 4,340,385, Cl. 8-527.000.
- Rody, Jean, to Ciba-Geigy Corporation. Novel stabilizers, 4,340,533, Cl. 524-99.000.
- Roe, David B.: See—  
DeCosta, John; Mallos, James B.; and Roe, David B., 4,340,777, Cl. 178-18.000.
- Roederer, Charles: See—  
Vayssiere, Pierre; Roederer, Charles; Grosjean, Jean-Claude; Grave, Roland; Schleimer, F.; Goedert, F.; Henrion, R.; Lorange, L.; and Colling, J., 4,340,208, Cl. 266-220.000.
- Rogers Holster Co., Inc.: See—  
Rogers, William H., 4,340,437, Cl. 156-224.000.
- Rogers, John R.: See—  
Bloch, Daniel R.; Odders, Charles N.; and Rogers, John R., 4,340,057, Cl. 128-284.000.
- Rogers, William H., to Rogers Holster Co., Inc. Method of producing a moisture-insensitive molded leather holster, 4,340,437, Cl. 156-224.000.
- Rohm GmbH: See—  
Quis, Peter; and Schroth, Theodor, 4,340,707, Cl. 526-289.000.
- Rohner AG Pratteln: See—  
Wegmann, Jacques, 4,340,531, Cl. 524-556.000.
- Rohr Industries, Inc.: See—  
Lawson, Dale W. R., 4,340,178, Cl. 239-265.310.
- Rohr, Wolfgang: See—  
Plath, Peter; Eicken, Karl; and Rohr, Wolfgang, 4,340,739, Cl. 548-236.000.
- Rohser, Helmut, to Hoechst Aktiengesellschaft. Process for simultaneous dyeing and bonding of sewing silks made from polyester filaments, 4,340,383, Cl. 8-494.000.
- Roma, Carlo, to SQUARE S.A. Plant for retorting oil products contained in shales and sands, 4,340,444, Cl. 202-99.000.
- Romanov, Leonid M.: See—  
Grishin, Boris P.; Gruzov, Alexandr G.; Romanov, Leonid M.; Vishnyak, Julian I.; Shugaeva, Nina A.; Bychkov, Nikolai M.; Lipets, Konstantin V.; and Zotov, Alexandr I., 4,340,720, Cl. 528-232.000.
- Romashov, Alexandr A.; Levinsky, Gennady E.; Ivantsov, Vladimir Y.; Astakhov, Igor A.; and Kuznetsov, Vladimir A. Apparatus for removal of internal flash from electric-welded pipes, 4,340,163, Cl. 228-19.000.
- Roos, Ernst: See—  
Schubart, Rudiger; Eholzer, Ulrich; Kempermann, Theo; and Roos, Ernst, 4,340,695, Cl. 525-350.000.
- Rosert, Michael; and Rhein, Rolf, to Bayer Aktiengesellschaft. Process for the preparation of maleinate oils, 4,340,688, Cl. 525-256.000.
- Rosso, John B., to Combustion Engineering, Inc. Net oil computer, 4,340,938, Cl. 364-510.000.
- Roueché, Armand, to Ciba-Geigy Corporation. Azo pigments, process for their production and their use, 4,340,430, Cl. 106-176.000.
- Rouillet, Gilbert: See—  
Bonnebat, Claude; Rouillet, Gilbert; and Vaginay, Yves, 4,340,721, Cl. 528-272.000.
- Rouillet, Robert: See—  
Arnal, Claude; Pompon, Jean-Barnard; and Rouillet, Robert, 4,340,722, Cl. 528-480.000.
- Rowe, William, to Polychrome Corporation. Novel radiation-sensitive articles, 4,340,657, Cl. 430-56.000.
- Rowland, Roger G., to E. R. Lattimer Limited. Transfer mechanism in a glassware forming machine, 4,340,413, Cl. 65-375.000.
- RSP Co.: See—  
Erb, Robert A., 4,340,056, Cl. 128-272.100.
- Rubin, Lawrence M.: See—  
Bilane, Glenn B.; Rubin, Lawrence M.; Soffa, Albert; and Vilenski, Dan, 4,340,166, Cl. 228-179.000.
- Rudolph, Richard G.: See—  
Konikoff, Robert S. K.; Rudolph, Richard G.; and Gill, George H., 4,340,929, Cl. 362-153.000.
- Rudy, Marion F. Diffusion pumping apparatus self-inflating device, 4,340,626, Cl. 428-35.000.
- Ruell, Hartwig, to Siemens Corporation. Input sensor unit for a fingerprint identification system, 4,340,300, Cl. 356-71.000.
- Ruetsch, Kurt: See—  
Kuhlmann, Gerhard; Kranzler, Ernst; Baer, Gerhard; Ruetsch, Kurt; Ramseier, Hansruedi; Dubach, Heinz; Lang, Martin; Schwartz, Hans; and Aebi, Hans, 4,340,831, Cl. 310-239.000.
- Rugh, Clyde J.; and King, John L., Jr., to MWA Company. Spindle bearing and lubrication system, 4,340,262, Cl. 308-187.000.
- Russ, Paul E., Sr., to Gates Rubber Company, The. V-Block component and belt, 4,340,378, Cl. 474-244.000.
- Russotti, Enzo. Foldable support for continuous background for use in photographing objects, 4,340,293, Cl. 354-291.000.
- Rusz, Tibor: See—  
Levy, Donald; and Rusz, Tibor, 4,340,044, Cl. 128-204.210.
- S. C. Johnson & Son, Inc.: See—  
Bloch, Daniel R.; Odders, Charles N.; and Rogers, John R., 4,340,057, Cl. 128-284.000.
- Sabec, Charles J.: See—  
Jobling, Lancelot A.; Sabec, Charles J.; and Stump, Ronald C., 4,339,919, Cl. 60-322.000.
- Sabo, Bert M.: See—  
Vadas, Leslie; and Sabo, Bert M., 4,340,367, Cl. 433-89.000.
- Saco Tanning Division of Kirslein Leather Co.: See—  
Carrier, James E., 4,340,571, Cl. 423-53.000.
- Sagami Chemical Research Center: See—  
Tsuchihashi, Genichi; Mitamura, Shuichi; and Ogura, Katsuyuki, 4,340,740, Cl. 548-169.000.
- Saint Gobain Vitrage: See—  
Sauer, Gerd, 4,340,813, Cl. 250-221.000.
- Saito, Isamu; and Watanabe, Hiroyuki. Toy with interlocking object and obstacle, 4,340,219, Cl. 273-1.0GA.
- Saito, Masato: See—  
Tsuchihashi, Michihiro; Saito, Masato; Baba, Keiichi; and Matsu-shima, Yasaku, 4,340,844, Cl. 315-283.000.
- Saito, Susumu, to Shinku Laboratory Co., Ltd. Method for plating rollers and apparatus for mounting rollers utilized in the method, 4,340,450, Cl. 204-25.000.
- Saitoh, Shigemitsu: See—  
Endo, Tadakazu; and Saitoh, Shigemitsu, 4,340,631, Cl. 428-89.000.
- Saitou, Sinichi, to Olympus Optical Co., Ltd. Tape cassette, 4,340,194, Cl. 242-199.000.
- Sakai, Katsumi: See—  
Endo, Takeshi; Sakai, Katsumi; Chou, Kiyooki; Inamoto, Yoshitaka; and Teshigawara, Haruhiko, 4,340,728, Cl. 536-23.000.
- Sakai, Kazuo: See—  
Akiba, Shigeyuki; Suematsu, Yasuharu; Arai, Shigehisa; Kodaira, Masanobu; Itaya, Yoshio; Iga, Kenichi; Ota, Chuichi; Yamamoto, Takaya; and Sakai, Kazuo, 4,340,966, Cl. 372-45.000.
- Sakaue, Takashi; Hattai, Koichi; Fukusaki, Megumi; and Kataoka, Yoshiro, to Sharp Kabushiki Kaisha. Electronic learning aid, 4,340,375, Cl. 434-201.000.
- Sakoda, Akinori: See—  
Tanaka, Yoshio; Togawa, Susumu; and Sakoda, Akinori, 4,340,361, Cl. 432-128.000.
- Sakshaug, Eugene C.: See—  
Kresge, James S.; and Sakshaug, Eugene C., 4,340,924, Cl. 361-127.000.
- Salysers, Edward F., to Cabot Corporation. Acoustical laminate construction and attenuated systems comprising same, 4,340,129, Cl. 181-200.000.



Salzgitter Maschinen und Anlagen Aktiengesellschaft: See—  
Manten, Heinrich, 4,340,122, Cl. 175-78.000.

Samoilovsky, Sergei A.: See—  
Chichkin, Valentin P.; Shpigel, Efraim A.; Gokin, Gennady P.; Matjuschenko, Georgy E.; Kurakov, Nikolai N.; Rabinovich, Grigory B.; Samoilovsky, Sergei A.; Angel, Boris S.; Ilenko, Vladimir S.; Miterov, Vladimir P.; Zemlyanov, Leonid S.; and Krutkov, Anatoly F., 4,339,906, Cl. 56-327.00R.

Sandhu, Mohammad A.: See—  
Martin, Thomas W.; Sandhu, Mohammad A.; and Savage, Dennis J., 4,340,454, Cl. 204-159.160.

Sando Iron Works Co., Ltd.: See—  
Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Minakata, Matsuo, 4,339,856, Cl. 28-155.000.

Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Minakata, Matsuo, to Sando Iron Works Co., Ltd. Apparatus for continuous untwisting and crimping of a cloth. 4,339,856, Cl. 28-155.000.

Sandoz, Inc.: See—  
Rodriguez, Silvio A.; and Catino, Sigmund C., deceased, 4,340,385, Cl. 8-527.000.

Sandoz Ltd.: See—  
Troxler, Franz; and Seemann, Fritz, 4,340,541, Cl. 548-503.000.

Sandri, Joseph M.; Calentine, John W.; Linder, Seymour M.; and Billioux, Yves J., to Alcolac Inc. Derivatives of mono-(alkylene ureido alkyl) ureas, and bis-(alkylene ureido alkyl) ureas. 4,340,743, Cl. 548-318.000.

Sanik, Paul S.: See—  
Beckman, John T.; and Sanik, Paul S., 4,340,965, Cl. 371-62.000.

Sankyo Electric Company Limited: See—  
Hiraga, Masaharu; and Terauchi, Kiyoshi, 4,340,339, Cl. 418-55.000.

Sano, Jun-ichi, to GTE Laboratories Incorporated. Inverter amplifier. 4,340,867, Cl. 330-277.000.

Santa Fe International Corporation: See—  
Springett, Charles N.; Abramovich, Dan; Uyeda, Stanley T.; and Radu, E. John, 4,340,322, Cl. 405-168.000.

Santen, Sven; and Edstrom, John O., to SKF Steel Engineering Aktiebolag. Method of manufacturing stainless steel. 4,340,420, Cl. 75-10.00R.

Sarcia, Domenico S., to Oerlikon-Burhle U.S.A. Inc. Gas-driven fluid flow control valve and cryopump incorporating the same. 4,339,927, Cl. 62-6.000.

Sargent Mfg. Co., Inc.: See—  
Kegel, Richard L.; Pugh, Burton J.; and Steury, Thomas R., 4,340,183, Cl. 239-710.000.

Sarui, Kiichiro. Molded body comprising vegetable oil for generating aerosol for treating athlete's foot. 4,340,053, Cl. 128-260.000.

Sasaki Kabushiki Kaisha: See—  
Sasaki, Kyoza, to Sasaki Kabushiki Kaisha. Baseball glove. 4,339,830, Cl. 2-19.000.

Sasaki, Shigeo: See—  
Tabei, Seikichi; and Sasaki, Shigeo, 4,340,426, Cl. 75-257.000.

Sato, Kouji, to Tokyo Shibaura Denki Kabushiki Kaisha. Surface acoustic wave resonator device. 4,340,834, Cl. 310-313.00D.

Sato, Kozo. Fluid antioxidant. 4,340,643, Cl. 428-403.000.

Sato, Tomoyasu: See—  
Tomita, Fusao; Matsuda, Yuzura; Shirahata, Kunikatsu; Takahashi, Keiichi; Nakano, Hirofumi; Sato, Tomoyasu; Okubo, Shuji; and Nakamura, Nobuo, 4,340,725, Cl. 536-1.100.

Sato, Yoiji: See—  
Suzuki, Suazo; Nakagawa, Yasuhiko; Aihara, Hisamoto; Matsumoto, Yasuo; and Sato, Yoiji, 4,340,024, Cl. 123-538.000.

Sauer, Gerd, to Saint Gobain Vitrage. Switch panel with touch switches. 4,340,813, Cl. 250-221.000.

Sauers, Marvin E.: See—  
Gross, Laurence H.; and Sauers, Marvin E., 4,340,562, Cl. 264-328.200.

Savage, Dennis J.: See—  
Martin, Thomas W.; Sandhu, Mohammad A.; and Savage, Dennis J., 4,340,454, Cl. 204-159.160.

Savin Corporation: See—  
Landa, Benzion, 4,340,312, Cl. 400-118.000.

Savino, Dominick J. Staple and anvilless stapling apparatus therefor. 4,340,331, Cl. 411-457.000.

Sawazaki, Norikazu: See—  
Iwamura, Soichi; Nishida, Yasuaki; Yamato, Toshimi; Sawazaki, Norikazu; Nishi, Yoshio; Watanabe, Masaharu; and Endo, Norio, 4,340,953, Cl. 369-126.000.

Sbuelz, Anes, to Italtel Societa Italiana Telecomunicazioni S.p.A. Method of and system for measuring electrical characteristics of circuit elements included in time-sharing telecommunication network. 4,340,788, Cl. 179-175.30R.

Scalera, Michael, to Bell Telephone Laboratories, Incorporated. Sneak current protector module. 4,340,268, Cl. 339-18.00R.

Scanlon, Michael J.: See—  
Wang, Samuel S.; and Scanlon, Michael J., 4,340,467, Cl. 209-166.000.

Scannell, John W.: See—  
Bazarian, Albert; Scannell, John W.; and Andersen, Clifford H., 4,340,923, Cl. 361-120.000.

Schaeffer, Georg: See—  
Semler, Gunther; and Schaeffer, Georg, 4,340,746, Cl. 549-78.000.

Schansman, Raymond R.: See—  
McQueen, Wayne F.; Schansman, Raymond R.; Hurd, William A.; Fischer, Joerg; and Dunn, Billy W., 4,340,784, Cl. 179-6.120.

Schanz, Johannes, to ITT Industries, Inc. Brake booster for an automotive vehicle. 4,339,921, Cl. 60-547.00R.

Schar, Anton. Nailing tool. 4,340,101, Cl. 145-30.00R.

Schechter, Robert S.: See—  
Breland, William M.; Guiling, Terry R.; and Schechter, Robert S., 4,340,253, Cl. 299-5.000.

Schein, Eberhard, to Hoechst Aktiengesellschaft. Preparations for the treatment of theileriosis and their use. 4,340,596, Cl. 424-251.000.

Schenck, Anton: See—  
Ali, Ramadan A.; Muller, Heinz; Lehmann, Karl-Heinz; Artzt, Peter; and Schenck, Anton, 4,339,910, Cl. 57-411.000.

Schering AG: See—  
Kruger, Hans-Rudolf, 4,340,742, Cl. 548-255.000.

Schering Corporation: See—  
Gold, Elijah H.; Berger, Joel G.; and Chang, Wei K., 4,340,597, Cl. 424-256.000.

Schiffer, Peter; Heinrichs, Ernst; and Helten, Manfred, to Kernforschungsanlage Julich GmbH. Method of and apparatus for remotely controlling orifice-opening and orifice-closing operations. 4,340,077, Cl. 137-68.00A.

Schiller, Julian G.; Wingard, Lemuel B., Jr.; and Liu, Chung-Chiun, to University of Pittsburgh. Potentiometric detection of hydrogen peroxide and apparatus therefor. 4,340,448, Cl. 204-1.00T.

Schippers, Heinz; Hufer, Norbert; Munnekehoff, Gerd; and Teich, Udo, to Barmag Barmer Maschinenfabrik. Bobbin changing apparatus. 4,340,187, Cl. 242-35.50A.

Schippers, Heinz: See—  
Dammann, Peter; Schippers, Heinz; and Bauer, Karl, 4,339,915, Cl. 57-339.000.

Schlag, Johannes: See—  
Naarmann, Herbert; Naegle, Dieter; Penzien, Klaus; and Schlag, Johannes, 4,340,507, Cl. 252-512.000.

Schlagenhauf, Josef: See—  
Stumpp, Gerhard; Eblen, Ewald; Hofmann, Karl; Amaya, Nestor R.; Schlagenhauf, Josef; and Kops, Odon, 4,340,181, Cl. 239-533.300.

Schleimer, F.: See—  
Vayssiere, Pierre; Roederer, Charles; Grosjean, Jean-Claude; Grave, Roland; Schleimer, F.; Goedert, F.; Henrion, R.; Lorange, L.; and Colling, J., 4,340,208, Cl. 266-220.000.

Schlumberger Technology Corporation: See—  
Segesman, Francis F., 4,340,934, Cl. 364-422.000.

Schmidt Manufacturing, Inc.: See—  
Thompson, Robert E.; and McNinney, Richard P., 4,339,897, Cl. 51-436.000.

Schmolke, Karl-Heinz, to Hollingsworth GmbH. Beater roll for open-end spinning machines. 4,339,851, Cl. 19-97.000.

Schnier, Egon, to Oldenburger Betonsteinwerke GmbH. Gripper unit for clamping and aligning a layer of concrete paving bricks with compound elements for forming a stretcher bond of the bricks into a setting unit. 4,340,247, Cl. 294-63.00R.

Schonfelder, Manfred: See—  
Reichmann, Wolfgang; Konig, Klaus; and Schonfelder, Manfred, 4,340,712, Cl. 528-45.000.

Schott, Ottfried, to Siemens Aktiengesellschaft. Method of producing tomograms with x-rays or similarly penetrating radiation. 4,340,816, Cl. 250-445.00T.

Schreurs, Willy P., to North American Philips Corporation. Method of providing a universal coating for fluorescent lamps. 4,340,512, Cl. 523-122.000.

Schroers, Otto: See—  
Hubner, Wolfgang; Schroers, Otto; and Sladeck, Hans J., 4,340,525, Cl. 252-8.55B.

Schroth, Theodor: See—  
Quis, Peter; and Schroth, Theodor, 4,340,707, Cl. 526-289.000.

Schubart, Rudiger; Eholzer, Ulrich; Kempermann, Theo; and Roos, Ernst, to Bayer Aktiengesellschaft. Vulcanization system, rubber mixture containing said system and a process of vulcanization. 4,340,695, Cl. 525-350.000.

Schubert & Salzer: See—  
Ali, Ramadan A.; Muller, Heinz; Lehmann, Karl-Heinz; Artzt, Peter; and Schenck, Anton, 4,339,910, Cl. 57-411.000.

Hofmann, Eberhard, 4,339,911, Cl. 57-416.000.

Schulke, Karl-Albert: See—  
Herzog, Heinz; Mohn, Heinrich; Schulke, Karl-Albert; and Grzybowski, Holger, 4,340,627, Cl. 428-36.000.

Schulz, Helmut, to Brandenburg Energy Corporation. Slagging gasifier. 4,340,397, Cl. 48-74.000.

Schupp, Eberhard; Kempter, Fritz E.; and Gulbins, Erich, to BASF Aktiengesellschaft. Preparation of curable polyadducts, containing basic nitrogen groups, and use of the products. 4,340,714, Cl. 528-99.000.

Schupp, Eberhard: See—  
Kempter, Fritz E.; and Schupp, Eberhard, 4,340,455, Cl. 204-181.00C.

Schupp, Lewis J., to General Electric Company. Internal shunt for series connected lamps. 4,340,841, Cl. 315-75.000.

Schurman, Peter T., to Plastic Forming Company, Inc., The. Apparatus for preparing a parison and transferring it to a molding machine. 4,340,345, Cl. 425-150.000.

Schurter, Rolf: See—  
Laanio, Verena; Fory, Werner; and Schurter, Rolf, 4,340,415, Cl. 71-76.000.

Laanio, Verena; Fory, Werner; and Schurter, Rolf, 4,340,747, Cl. 560-102.000.

Schutz, Rudolf: See—  
Potz, Karl; and Schutz, Rudolf, 4,340,476, Cl. 210-232.000.

Schutzer, Bjorn E. Training apparatus for skaters. 4,340,214, Cl. 272-70.000.

Schuurink, Pieter H. J.: See—  
Kik, Leendert A.; Schuurink, Pieter H. J.; and De Vries, Marinus J., 4,340,622, Cl. 427-299.000.

Schwab, Jean-Francois: See—  
Sudler, Roland; and Schwab, Jean-Francois, 4,340,828, Cl. 310-49.00R.

Schwab, Kurt, to D. Swarovski & Co. Retroreflector plate and a method for its manufacture. 4,340,301, Cl. 350-106.000.

Schwartz, Bertram: See—  
Dixon, Richard W.; and Schwartz, Bertram, 4,340,967, Cl. 372-46.000.

Schwartz, Hans: See—  
Kuhlmann, Gerhard; Kranzler, Ernst; Baer, Gerhard; Ruetsch, Kurt; Ramseier, Hansruedi; Dubach, Heinz; Lang, Martin; Schwartz, Hans; and Aebi, Hans, 4,340,831, Cl. 310-239.000.

Schwartzkopf, George, Jr.: See—  
Gray, Gary M.; Schwartzkopf, George, Jr.; and J. T. Baker Chemical Co., 4,340,765, Cl. 71-123.000.

Schwarz, Anton. Oil burner. 4,340,354, Cl. 431-12.000.

Schwarz, Helmut; Dockner, Toni; Kempe, Uwe; Krug, Herbert; Praetorius, Werner; Magnussen, Peter; Gallei, Ewald; and Fehr, Erich, to BASF Aktiengesellschaft. Preparation of imidazoles. 4,340,744, Cl. 548-346.000.

SCM Corporation: See—  
Hoyer-Ellefsen, Sigurd, 4,340,830, Cl. 310-89.000.

Pate, Daniel R.; Delaney, Robert R.; and Shuleva, John J., 4,340,547, Cl. 260-428.500.

Scognamiglio, Agostino: See—  
Campanile, Armando; Carlomagno, Giovanni M.; De Vita, Angelo; Donsi, Giorgio; Massimilla, Leopoldo; and Scognamiglio, Agostino, 4,340,400, Cl. 55-269.000.

Scordo, Dominick, to Bell Telephone Laboratories, Incorporated. Smooth pulse sequence generator. 4,340,863, Cl. 328-63.000.

Scotland, James M.: See—  
Laverick, Robert G.; and Scotland, James M., 4,340,447, Cl. 203-36.000.

Scott, George K. Log splitter and attachment for tractor. 4,340,098, Cl. 144-193.00A.

Scott, Kenneth W. Clip for slip-joint tube connections. 4,340,244, Cl. 285-8.000.

Scott Paper Company: See—  
Poculuyko, Alex, 4,340,386, Cl. 8-541.000.

Sears, Ralph E.: See—  
Cheetham, Robert A.; and Sears, Ralph E., 4,340,832, Cl. 310-239.000.

Seemann, Fritz: See—  
Troxler, Franz; and Seemann, Fritz, 4,340,541, Cl. 548-503.000.

Segars, Ronald A., to United States of America, Army. Temperature responsive control circuit. 4,340,850, Cl. 323-218.000.

Segesman, Francis F., to Schlumberger Technology Corporation. Method of generating subsurface characteristic models. 4,340,934, Cl. 364-422.000.

Seino, Kuniki; and Ozaki, Yoshihiro, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying method with residual charge erasing step. 4,340,656, Cl. 430-48.000.

Seitetsu Kagaku Co., Ltd.: See—  
Obayashi, Shigeji; Nakamura, Morio; Fujiki, Koichi; and Yamamoto, Takushi, 4,340,706, Cl. 526-207.000.

Sekine, Kenji: See—  
Matsukawa, Nobuo; and Sekine, Kenji, 4,340,290, Cl. 354-173.000.

Sellberg, Ronald P.: See—  
Brodeur, Rene H.; Terlecky, Boris S.; Sellberg, Ronald P.; and Halliar, William R., 4,339,996, Cl. 105-3.000.

Selleri, Narciso, to Finike Italiana Marpos, S.p.A. Method for adjusting the position of the probes of a plug gauge and relevant plug gauge. 4,339,879, Cl. 33-178.00E.

Seltenrijch, Johannes C.: See—  
den Toonder, Pieter; Seltenrijch, Johannes C.; Stubbs, Graham S.; Fondse, Pieter J.; and Jirka, Howard F., 4,340,906, Cl. 358-124.000.

Selva, Domenico: See—  
Toja, Emilio; Omodei-Sale, Amedeo; and Selva, Domenico, 4,340,607, Cl. 424-273.00B.

Semler, Gunther; and Schaeffer, Georg, to Hoechst Aktiengesellschaft. Process for the preparation of thiochloroformates. 4,340,746, Cl. 549-78.000.

Senaha, Susumu: See—  
Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,340,646, Cl. 428-429.000.

Senft, James R., to Sunpower, Inc. Drive mechanism for Stirling engine displacer and piston and other reciprocating bodies. 4,339,960, Cl. 74-50.000.

Senyck, Michael L.: See—  
Lal, Joginder; and Senyck, Michael L., 4,340,690, Cl. 525-271.000.

Lal, Joginder; and Senyck, Michael L., 4,340,691, Cl. 525-271.000.

Lal, Joginder; and Senyck, Michael L., 4,340,705, Cl. 526-139.000.

Seregely, Daniel W. Method of forming interlocking pipe joint. 4,339,864, Cl. 29-450.000.

Seroskie, James M., to Martin Marietta Corporation. Scan linerization method and device. 4,340,888, Cl. 340-755.000.

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Seymour, Donald E., to Smith & Nephew Research Ltd. Adhesive-coated sheet material incorporating anti-bacterial substances. 4,340,043, Cl. 128-132.00D.

Shah, Nayan S., to Sherwood Medical Industries Inc. Medical device for collecting a body sample. 4,340,066, Cl. 128-749.000.

Shahbadian, Set: See—  
Kees, George, Jr.; and Shahbadian, Set, 4,340,061, Cl. 128-325.000.

Shapiro, Myron: See—  
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Sharkey, Richard L.: See—  
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Sakaue, Takashi; Hatta, Koichi; Fukusaki, Megumi; and Kataoka, Yoshiro, 4,340,375, Cl. 434-201.000.

Yamaguchi, Masumi; Kawabata, Kenji; and Kumagai, Yoshimi, 4,340,796, Cl. 219-10.55B.

Shatters, Dale R., to Caterpillar Tractor Co. Assembly for holding open a door or the like. 4,339,844, Cl. 16-82.000.

Sauger, Herbert A., to Fischer & Porter Co. Analog-to-digital converter for electromagnetic flowmeter. 4,339,958, Cl. 73-861.170.

Shaw, Bon F.: See—  
Marshall, Albert H.; Shaw, Bon F.; Grimmer, Paul D.; Towle, Herbert C.; and Bond, Gary M., 4,340,370, Cl. 434-22.000.

Shaw, James K. Abacus chess game. 4,340,232, Cl. 273-260.000.

Shaw, Mark L., to Motorola, Inc. Auxiliary steering wheel command system. 4,340,824, Cl. 307-115.000.

Shay, Joseph L.: See—  
Beni, Gerardo; Rice, Catherine E.; and Shay, Joseph L., 4,340,278, Cl. 350-357.000.

Sheller Globe Corporation: See—  
McCoy, Billy R., 4,340,829, Cl. 310-71.000.

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Miu, Ming T.; Bradley, John J.; Panepinto, William, Jr.; and Shen, Jian-Kuo, 4,340,933, Cl. 364-200.000.

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Sherwood Medical Industries Inc.: See—  
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Takeuchi, Yasumasa; Obata, Yutaka; Ohshima, Noboru; Shibata, Tooru; and Nakako, Kaoru, 4,340,685, Cl. 525-247.000.

Shima Idea Center, Co., Ltd.: See—  
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Shimada, Sachio; and Ohwada, Yoshiaki, to Sony Corporation. Flyer-type coil winding machine. 4,340,186, Cl. 242-7.05B.

Shimizu, Isamu: See—  
Inoue, Eiichi; and Shimizu, Isamu, 4,340,658, Cl. 430-58.000.

Shimizu, Takayoshi: See—  
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Shimomura, Susumu: See—  
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Shimoyama, Hiroshi: See—  
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Shinagawa Refractories Co., Ltd.: See—  
Hoedl, Fritz; Kimura, Morihiro; and Yasuda, Yoshio, 4,340,360, Cl. 432-119.000.

Shinku Laboratory Co., Ltd.: See—  
Saito, Susumu, 4,340,450, Cl. 204-25.000.

Shionogi & Co., Ltd.: See—  
Kondo, Eiji; Mitsugi, Takashi; Fujiwara, Tamio; and Muneyuki, Ryonosuke, 4,340,672, Cl. 435-45.000.

Shirahata, Kunikatsu: See—  
Tomita, Fusao; Matsuda, Yuzura; Shirahata, Kunikatsu; Takahashi, Keiichi; Nakano, Hirofumi; Sato, Tomoyasu; Okubo, Shuji; and Nakamura, Nobuo, 4,340,725, Cl. 536-1.100.

Shiraishi, Hiroshi; and Moriguchi, Shigeru, to Kajima Corporation; and Mitsui Engineering and Shipbuilding Co. Continuous working process of steel bars for reinforced concrete and apparatus therefor. 4,339,861, Cl. 29-416.000.

Shirasu, Hiroshi: See—  
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Shizuoka Seiki Co., Ltd.: See—  
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Shoemaker, George T.: See—  
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Shotwell, Kenneth E.: See—  
Fitzpatrick, Peter R.; Meyerand, Russell G., Jr.; and Shotwell, Kenneth E., 4,339,929, Cl. 62-79.000.

Shoup, Kenneth E. Farm implement with two-way hitch. 4,340,239, Cl. 280-415.00R.



- Show-Pak, Incorporated: See—  
Wilcox, Donald G.; and Zambrano, Nobile, 4,340,139, Cl. 206-349.000.  
Wilcox, Donald G.; and Zambrano, Nobile, 4,340,140, Cl. 206-373.000.
- Shpigel, Efraim A.: See—  
Chichkin, Valentin P.; Shpigel, Efraim A.; Gokin, Gennady P.; Matjuschenko, Georgy E.; Kurakov, Nikolai N.; Rabinovich, Grigory B.; Samoilovsky, Sergei A.; Angel, Boris S.; Il'enko, Vladimir S.; Miterov, Vladimir P.; Zemlyanov, Leonid S.; and Krutkov, Anatoly F., 4,339,906, Cl. 56-327.00R.
- Shreeve, Francesca M.: See—  
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- Shugaeva, Nina A.: See—  
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- Shuleva, John J.: See—  
Pate, Daniel R.; Delaney, Robert R.; and Shuleva, John J., 4,340,547, Cl. 260-428.500.
- Shultz, William E. Apparatus and method for inserting and removing bushings and bearings, 4,339,865, Cl. 29-525.000.
- Sico Incorporated: See—  
Konikoff, Robert S. K.; Rudolph, Richard G.; and Gill, George H., 4,340,929, Cl. 362-153.000.
- Sidwell, Lloyd G., to Du Pont de Nemours, E. I., and Company. Silver halide film, 4,340,665, Cl. 430-539.000.
- Siecor Corporation: See—  
Watts, William M., 4,340,771, Cl. 174-36.000.
- Siemens Aktiengesellschaft: See—  
Brunner, Anton; and Jatsch, Werner, 4,340,892, Cl. 343-768.000.  
Forster, Helmut; Hini, Paul; and Stransky, Gerd, 4,340,260, Cl. 308-10.000.  
Kobale, Manfred; Littwin, Burkhard; and Wengert, Rolf, 4,340,838, Cl. 313-348.000.  
Quella, Ferdinand; and Pape, Heinz, 4,340,817, Cl. 250-458.000.  
Schott, Otfried, 4,340,816, Cl. 250-445.00T.  
Sprick, Erhard; and Kaiserswerth, Rudolf, 4,340,964, Cl. 371-38.000.  
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- Siemens Aktiengesellschaft: See—  
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- Siemens Corporation: See—  
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Ganz, Manfred; and Guldner, Enrique, 4,340,776, Cl. 178-3.000.  
Gesek, William; and Major, James M., 4,340,775, Cl. 178-3.000.  
Ruell, Hartwig, 4,340,300, Cl. 356-71.000.
- Siewert, Helmut: See—  
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- Silver, Alexander: See—  
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- Simon, Lionel N.; Giner-Sorolla, Alfredo; and Guttig, Alvin, to Newport Pharmaceuticals International, Inc.; and Sloan-Kettering Institute for Cancer Research. Esters, 4,340,726, Cl. 536-17.400.
- Simon, Walter A. Method and apparatus for producing sheet-like printed products having a folded portion, 4,340,212, Cl. 270-5.000.
- Sipido, Victor, to Janssen Pharmaceutica, N.V. 2,3-Dihydroimidazo[2,1-b]benzothiazoles, 4,340,738, Cl. 548-151.000.
- Skala, Stephen F. Evaporative cooling of containers in a pressure vessel, 4,340,111, Cl. 165-2.000.
- Skelton, John; Clark, Richard E.; and Davis, Robert B., to Albany International Corp.; and Washington University. Elastomeric sheet materials for heart valve and other prosthetic implants, 4,340,091, Cl. 139-383.00R.
- SKF Kugellagerfabriken GmbH: See—  
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- SKF Steel Engineering Aktiebolag: See—  
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- Skinner, Frank R.: See—  
Dennis, Mahlon D.; and Skinner, Frank R., 4,339,896, Cl. 51-298.000.
- Skolnik, Marvin B.: See—  
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- Sladeck, Hans J.: See—  
Hubner, Wolfgang; Schroers, Otto; and Sladeck, Hans J., 4,340,525, Cl. 252-8.55B.
- Sloan, Kenneth B.: See—  
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- Sloan-Kettering Institute for Cancer Research: See—  
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- Slonim, David M. Apparatus for harnessing wave energy, 4,340,821, Cl. 290-53.000.
- Smith, Alfred H., Jr.: See—  
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- Smith, Bryan; Keech, Andrew E.; and Dawson, Patricia A., to Grove Valve and Regulator Company. Energy dissipating pipeline surge relief system, 4,340,079, Cl. 137-207.000.
- Smith, Dennis M., to B.A.G., Inc. Inflatable splint, 4,340,042, Cl. 128-87.00R.
- Smith, Denver W.: See—  
Braun, John L.; Smith, Denver W.; and Ekey, William J., 4,340,853, Cl. 324-51.000.
- Smith, Henry I.; Austin, Stewart S.; and Flanders, Dale C., to Massachusetts Institute of Technology. Plate aligning, 4,340,305, Cl. 356-356.000.
- Smith International, Inc.: See—  
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- Smith, James. Solar heating system, 4,340,032, Cl. 126-430.000.
- Smith, James H. Wood burning stove, 4,340,026, Cl. 126-5.000.
- Smith, John G.: See—  
Ball, Geoffrey; Deadman, Harry A.; Smith, John G.; and Vokes, John C., 4,339,870, Cl. 29-576.00B.
- Smith & Nephew Research Ltd.: See—  
Seymour, Donald E., 4,340,043, Cl. 128-132.00D.
- Smith, Robert L. Change-a-bowl pipe, 4,340,071, Cl. 131-202.000.
- Smith, Walter E. Soft body guitar, 4,339,981, Cl. 84-291.000.
- Smith, Walton J. Plant hibernation, 4,340,414, Cl. 71-59.000.
- Smith, Wanda S.: See—  
Doorakian, George A.; and Smith, Wanda S., 4,340,761, Cl. 568-11.000.
- SmithKline Corporation: See—  
Brenner, L. Martin; and Wardell, Joe R., Jr., 4,340,600, Cl. 424-258.000.  
Brenner, L. Martin, 4,340,601, Cl. 424-258.000.  
Lam, Bing L., 4,340,733, Cl. 544-224.000.
- Smiths Industries Limited: See—  
Hedrick, Geoffrey S. M., 4,339,943, Cl. 73-4.00R.
- Sneider, Vincent R. Impregnated tampon and method of fabricating same, 4,340,055, Cl. 128-270.000.
- Snow, John P., to Houdaille Industries, Inc. Check valve, 4,340,084, Cl. 137-512.000.
- Societa Impianti Termoelettrici Industriali (s.a.s.): See—  
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- Societa Italiana Telecomunicazioni Siemens S.p.A.: See—  
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- Societe Alsacienne de Constructions Mecaniques de Mulhouse: See—  
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- Societe Coturnix: See—  
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- Societe d'Assistance Technique pour Produits Nestle S.A.: See—  
Askman, Lars; Wetzel, Pierre; and Isely, Alain, 4,340,612, Cl. 426-276.000.
- Soeldner, John S.: See—  
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- Soffa, Albert: See—  
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- Solar Turbines Incorporated: See—  
White, David J.; and Roberts, Peter B., 4,339,924, Cl. 60-733.000.
- Solartron Electronic Group Limited, The: See—  
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- Sony Corporation: See—  
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Wakabayashi, Hideo; and Teraoka, Kenro, 4,340,908, Cl. 358-194.100.
- Sorenson, Richard W., to Carlingswitch, Inc. Environmentally sealed rocker switch, 4,340,791, Cl. 200-302.000.
- Soriano, Louis: See—  
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- Spacil, Henry S.: See—  
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- Spademan, Richard G. Releasable ski binding with mechanical time integrator, 4,340,243, Cl. 280-624.000.
- Sparks, Richard A., to Raytheon Company. Method of measuring magnetic field characteristics of magnetic materials, 4,340,861, Cl. 324-205.000.
- Spector, George: See—  
Danek, Ladislav; and Spector, George, 4,340,175, Cl. 239-33.000.  
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- Spencer, Herbert J.: See—  
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- Sperry Corporation: See—  
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- Sperry Vickers, Division of Sperry GmbH: See—  
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- Spivack, Bruce D.: See—  
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- Spivey, David L. Method and apparatus for medication dispensing, 4,340,153, Cl. 222-1.000.
- Spokane Crusher Mfg. Co.: See—  
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- Spooner, Archer M., to Redifon Simulation Limited. Visual display apparatus, 4,340,274, Cl. 350-128.000.

- Spooner, Archer M.; and Murray, Paul M., to Redifon Simulation Limited. Visual display apparatus, 4,340,878, Cl. 340-27.00R.
- Sportech, Inc.: See—  
Heist, Kenneth D., 4,340,972, Cl. 455-39.000.
- Sprick, Erhard; and Kaiserswerth, Rudolf, to Siemens Aktiengesellschaft. Method and an arrangement for automatic access optimization in random access memories, 4,340,964, Cl. 371-38.000.
- Springborn, Karl S., to Austung Proprietary Limited. Process and apparatus for the manufacture of sintered tungsten carbide tool tips, 4,340,350, Cl. 425-409.000.
- Springett, Charles N.; Abramovich, Dan; Uyeda, Stanley T.; and Radu, E. John, to Santa Fe International Corporation. Self propelled dynamically positioned reel pipe laying ship, 4,340,322, Cl. 405-168.000.
- SQUARE S.A.: See—  
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- Srinivasan, Venkataraman; Cassidy, Stephen; and Grassie, Charles, to Texas Instruments Incorporated. Method for selectively electroplating portions of articles, 4,340,449, Cl. 204-15.000.
- Sta-Rite Industries, Inc.: See—  
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- Staats, Hilton S. Goalkeeper's hockey stick, 4,340,224, Cl. 273-67.00A.
- Stablex A.G.: See—  
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- Stack, Timothy F.; and Shoemaker, George T., to United Technologies Corporation. Universal analog signal to digital signal interface, 4,340,881, Cl. 340-347.00R.
- Stafford, William G. Wallpaper preparation board, 4,340,161, Cl. 225-18.000.
- Stalder, John L., to Conoco Inc. Insulated prestressed conduit string for heated fluids, 4,340,245, Cl. 285-53.000.
- Stamcarbon, B.V.: See—  
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- Stannard, Forrest B.; and Highstreet, Edward J., to DeHydro Corporation, The. Filter media and filter apparatus, 4,340,478, Cl. 210-286.000.
- Staudacher, Frank: See—  
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- Stauffer Chemical Company: See—  
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- Steag AG: See—  
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- Steele, Duane F., to Ford Motor Company. Free eccentric reciprocating piston device, 4,339,988, Cl. 91-493.000.
- Stegmeier, William J. Spring clip and molding form utilizing same, 4,340,200, Cl. 249-3.000.
- Stein, Marc T.: See—  
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- Steiner, Artur; and Frank, Howard G. Dental articulating paper for-caps, 4,340,369, Cl. 433-162.000.
- Stemme, Otto; Staudacher, Frank; Lermann, Peter; Danhauser, Justus; Engelsmann, Dieter; and Wagner, Karl, to Agfa-Gevaert Aktiengesellschaft. Film cassette and method of making the same, 4,340,288, Cl. 354-171.000.
- Stephenson, Dwight B.; and Koehler, David L., to Deere & Company. Pressure detent mechanism, 4,339,987, Cl. 91-426.000.
- Sternberg, Shmuel, to Millipore Corporation. Process for grafting amino acid molecules onto preformed polymer surfaces and products prepared thereby, 4,340,482, Cl. 210-500.200.
- Steuery, Thomas R.: See—  
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- Stewart, James M. Heat collecting, utilizing and storage apparatus and method, 4,340,033, Cl. 126-437.000.
- Stewart-Warner Corporation: See—  
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- Steyert, William A., Jr.; and Overton, William C., Jr., to United States of America, Energy. Apparatus and method for maintaining low temperatures about an object at a remote location, 4,340,405, Cl. 62-514.00R.
- Stoddard, James R., to J. Stoddard & Sons Limited. Feed device and method for supplying free-flowing material to a container, 4,340,096, Cl. 141-1.000.
- Stoeckigt, Dieter: See—  
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- Stone, Roger: See—  
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- Stork PMT B.V.: See—  
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- Story, Alfred D.; and Asquith, Dixon R., to Teepak, Inc. Convuluted shirring wheel, 4,339,894, Cl. 51-281.00R.
- Stoudt, Thomas H.; and Nollstadt, Karl H., to Merck & Co., Inc. Process of producing modified glucans as anti-caries agent, 4,340,673, Cl. 435-97.000.
- Stournas, Stamoulis, to Mobil Oil Corporation. Oil recovery by surfactant waterflooding, 4,340,492, Cl. 252-8.55D.
- Straith, Richard E. Nose splint, 4,340,040, Cl. 128-76.00C.
- Stransky, Gerd: See—  
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- Stratton, John R. Disposable coaster, 4,340,146, Cl. 215-100.500.
- Straus, Albert E., to Hoover Universal, Inc. Adjustable ballcock stand-pipe assembly, 4,340,082, Cl. 137-426.000.
- Streeter, Robert D.: See—  
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- Streeter, Wesley R. Decoy, mold and method of construction, 4,339,887, Cl. 43-2.000.
- Streible, Gert: See—  
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- Strohkirsch, John C.: See—  
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- Strong, Herbert M., to General Electric Company. High pressure reaction vessel for growing diamond on diamond seed and method therefor, 4,340,576, Cl. 423-446.000.
- Struckmann, Holger. Apparatus and method of heating particulate material, 4,340,359, Cl. 432-14.000.
- Strugala, Alfred; Dittrich, Erich; and Siewert, Helmut, to Thyssen Industrie AG. Ring rolling mill, 4,339,937, Cl. 72-110.000.
- Stubbs, Graham S.: See—  
den Toonder, Pieter; Seltensrijck, Johannes C.; Stubbs, Graham S.; Fondse, Pieter J.; and Jirka, Howard F., 4,340,906, Cl. 358-124.000.
- Stuber, Gyorgy: See—  
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- Stuff, Alfred O., Jr. Golf club including alignment device, 4,340,229, Cl. 273-164.000.
- Stump, Ronald C.: See—  
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- Stumpp, Gerhard; Eblen, Ewald; Hofmann, Karl; Amaya, Nestor R.; Schlagenhauf, Josef; and Kopse, Odon, to Robert Bosch GmbH. Fuel injection nozzle for internal combustion engines, 4,340,181, Cl. 239-533.300.
- Sublett, Bobby J.: See—  
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- Sudler, Roland; and Schwab, Jean-Francois, to Quarz-Zeit AG. Single phase stepping motor, 4,340,828, Cl. 310-49.00R.
- Sudo, Michio; and Miura, Hitoshi, to Kangyo Denikiki Kabushiki Kaisha. Miniature motor coil, 4,340,833, Cl. 310-268.000.
- Sudo, Tsuneta: See—  
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- Suehiro, Akio: See—  
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- Suematsu, Yasuharu: See—  
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- Sugahara, Takehisa: See—  
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- Sugawara, Kohichi; Matsui, Isamu; Ishimaru, Naoki; and Ikegami, Teruhiro, to Denki Kagaku Kogyo Kabushiki Kaisha. Process for producing carbon black, 4,340,577, Cl. 423-450.000.
- Sugimori, Shigeru, to Chisso Corporation. Halogenated ester derivatives, 4,340,498, Cl. 252-299.500.
- Sugiyama, Tomonori; and Suehiro, Akio, to Hitachi, Ltd. Voice frequency response system, 4,340,783, Cl. 179-2.00A.
- Sullivan, Ann C.: See—  
Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,340,754, Cl. 562-584.000.
- Sumikawa, Seiji: See—  
Sutoh, Shinji; Sumikawa, Seiji; and Hara, Toshizo, 4,340,112, Cl. 165-16.000.
- Sumikin Coke Co., Ltd.: See—  
Aiba, Takaaki; Kaji, Hisatsugu; Endo, Tomizo; and Ishihara, Takao, 4,340,464, Cl. 208-40.000.
- Sumitomo Bakelite Company Limited: See—  
Higashiguchi, Takeichi; Fukuoka, Masasuke; Emura, Tomoyuki; and Moriuchi, Yasuhiro, 4,340,530, Cl. 524-515.000.
- Sumitomo Chemical Company Limited: See—  
Higashiguchi, Takeichi; Fukuoka, Masasuke; Emura, Tomoyuki; and Moriuchi, Yasuhiro, 4,340,530, Cl. 524-515.000.  
Suzukamo, Gohu; Takano, Tetuo; Tamura, Mitsuhsa; and Ikimi, Kiyoshi, 4,340,544, Cl. 549-356.000.
- Sumitomo Metal Industries, Ltd.: See—  
Aiba, Takaaki; Kaji, Hisatsugu; Endo, Tomizo; and Ishihara, Takao, 4,340,464, Cl. 208-40.000.
- Sun-Ohio Inc.: See—  
Jordan, Otis D., 4,340,471, Cl. 210-101.000.
- Sunpower, Inc.: See—  
Senft, James R., 4,339,960, Cl. 74-50.000.
- Super Shops, Inc.: See—  
Chavis, Leon A.; and Moseley, Gordon P., 4,340,885, Cl. 340-632.000.
- Suplinskas, Raymond J.: See—  
DeBolt, Harold E.; Suplinskas, Raymond J.; Cornie, James A.; Henze, Thomas W.; and Hauze, Albert W., 4,340,636, Cl. 428-215.000.
- Sutoh, Shinji; Sumikawa, Seiji; and Hara, Toshizo, to Diesel Kiki Company, Ltd. Vehicle air temperature control apparatus, 4,340,112, Cl. 165-16.000.



- Sutton, David L., to Halliburton Company. Well cementing process and gasified cements useful therein. 4,340,427, Cl. 106-87.000.
- Suyama, Tadakazu: See—  
Mizushima, Yutaka; Yokoyama, Kazumasa; Nabeta, Kiichiro; Yamada, Noboru; and Suyama, Tadakazu, 4,340,594, Cl. 424-238.000.
- Uemura, Yahiyo; Nagatomo, Midori; Funakoshi, Satoshi; and Suyama, Tadakazu, 4,340,589, Cl. 424-101.000.
- Suzukamo, Gohu; Takano, Tetsuo; Tamura, Mitsuhiisa; and Ikimi, Kiyoshi, to Sumitomo Chemical Company, Limited. Process for producing 2-(2'-methyl-1'-propenyl)-4-methyltetrahydropyran. 4,340,544, Cl. 549-356.000.
- Suzuki, Atsushi: See—  
Ninomiya, Masakazu; Kiuchi, Hideo; Suzuki, Atsushi; and Kobayashi, Nobuyuki, 4,340,022, Cl. 123-453.000.
- Suzuki, Hiroshi: See—  
Wada, Akihiro; Tazaki, Kichiya; Tahara, Tamotsu; Suzuki, Hiroshi; and Mizutani, Yukihisa, 4,340,551, Cl. 264-25.000.
- Suzuki, Keiji: See—  
Watanabe, Masaki; Shimoyama, Hiroshi; and Suzuki, Keiji, 4,340,125, Cl. 180-215.000.
- Suzuki, Masahiro. Method of producing hydrogen. 4,340,580, Cl. 423-657.000.
- Suzuki, Masakazu: See—  
Furuichi, Shuhei; and Suzuki, Masakazu, 4,340,971, Cl. 378-40.000.
- Suzuki, Ryuji: See—  
Ueda, Shigeki; Takano, Teruhisa; and Suzuki, Ryuji, 4,340,799, Cl. 219-10.55C.
- Suzuki, Shigeo: See—  
Hatta, Yoshio; and Suzuki, Shigeo, 4,340,028, Cl. 126-92.00R.
- Suzuki, Shigeto, to Chevron Research Company. Process for the preparation of 2,6-dialkylaniline from brominated dialkyl t-butylbenzene. 4,340,757, Cl. 564-407.000.
- Suzuki, Suzuo; Kikagawa, Yasuhiko; Aihara, Hisamoto; Matsumoto, Yasuo; and Sato, Yoji, to Nissan Motor Company, Limited. Internal combustion engine. 4,340,024, Cl. 123-538.000.
- Svec, Frantisek: See—  
Lukas, Jaromir; Kalal, Jaroslav; and Svec, Frantisek, 4,340,483, Cl. 210-502.000.
- Svensson, Uno. Hydraulically operated crimping tool. 4,339,942, Cl. 72-453.160.
- Swanson, Clare E., to Conwed Corporation. Oil sorbent structures and method of picking up oil. 4,340,486, Cl. 210-693.000.
- Sweeley, Gordon F.: See—  
Tapper, Robert; and Sweeley, Gordon F., 4,340,047, Cl. 128-207.210.
- Sweeney, Richard F.: See—  
Anello, Louis G.; and Sweeney, Richard F., 4,340,762, Cl. 568-24.000.
- Synthetic Surfaces, Inc.: See—  
Legue, Norris R.; and Shapiro, Myron, 4,340,682, Cl. 524-507.000.
- Tabb, David L.: See—  
Magers, Thomas A.; and Tabb, David L., 4,340,392, Cl. 23-230.00B.
- Magers, Thomas A.; and Tabb, David L., 4,340,393, Cl. 23-230.00B.
- Magers, Thomas A.; and Tabb, David L., 4,340,394, Cl. 23-230.00B.
- Magers, Thomas A.; and Tabb, David L., 4,340,395, Cl. 23-230.00B.
- Tabi, Seikichi; and Sasaki, Shigeo, to Nippon Chemical Industrial Co., Ltd. Additives for continuous casting of steel. 4,340,426, Cl. 75-257.000.
- Tadanier, John S.: See—  
Martin, Jerry R.; Tadanier, John S.; and Johnson, Paulette, 4,340,727, Cl. 536-16.100.
- Tahara, Tamotsu: See—  
Wada, Akihiro; Tazaki, Kichiya; Tahara, Tamotsu; Suzuki, Hiroshi; and Mizutani, Yukihisa, 4,340,551, Cl. 264-25.000.
- Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, to Nishin Flour Milling Co., Ltd. Monophenylamine derivatives. 4,340,760, Cl. 564-462.000.
- Taiho Kogyo Co., Ltd.: See—  
Nara, Tamotsu; and Kamiya, Soji, 4,340,649, Cl. 428-653.000.
- Taiho Pharmaceutical Company Limited: See—  
Koda, Akihiko; Hori, Mikio; Yasumoto, Mitsugi; Yamawaki, Ichiro; Yamada, Yuji; and Takikawa, Katsuo, 4,340,543, Cl. 549-414.000.
- Taira, Tadaaki; Ishihara, Toshio; Itoshima, Hiromichi; Mihara, Yutaka; and Kogawa, Takashi, to Nippon Kokan Kabushiki Kaisha. Method and apparatus for producing thick welded steel pipe. 4,339,941, Cl. 72-412.000.
- Takahashi, Atsushi; Muratsubaki, Yoshiharu; and Ishizuka, Hiroyuki, to Nippon Carbide Kogyo Kabushiki Kaisha. Powdery desulfurizer composition. 4,340,422, Cl. 75-58.000.
- Takahashi, Keiichi: See—  
Tomita, Fusao; Matsuda, Yuzura; Shirahata, Kunikatsu; Takahashi, Keiichi; Nakano, Hirofumi; Sato, Tomoyasu; Okubo, Shuji; and Nakamura, Nobuo, 4,340,725, Cl. 536-1.100.
- Takahashi, Koji: See—  
Toda, Kohji; Takahashi, Koji; and Matsufuji, Isao, 4,340,506, Cl. 252-501.100.
- Takahashi, Toshihiro: See—  
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,340,760, Cl. 564-462.000.
- Takano, Teruhisa; and Ueda, Shigeki, to Matsushita Electric Industrial Co., Ltd. Voice actuated heating apparatus. 4,340,797, Cl. 219-10.55B.
- Takano, Teruhisa: See—  
Ueda, Shigeki; and Takano, Teruhisa, 4,340,798, Cl. 219-10.55B.
- Ueda, Shigeki; Takano, Teruhisa; and Suzuki, Ryuji, 4,340,799, Cl. 219-10.55C.
- Ueda, Shigeki; and Takano, Teruhisa, 4,340,800, Cl. 219-10.55B.
- Takano, Tetsuo: See—  
Suzukamo, Gohu; Takano, Tetsuo; Tamura, Mitsuhiisa; and Ikimi, Kiyoshi, 4,340,544, Cl. 549-356.000.
- Takasu, Yoshio: See—  
Kiuchi, Masashi; Takasu, Yoshio; Fukumoto, Hiroshi; Hino, Takashi; Uchiyama, Masaki; and Mitsuhashi, Yasuo, 4,340,660, Cl. 430-106.600.
- Takeda Chemical Industries, Ltd.: See—  
Furukawa, Yoshiyasu; Kishimoto, Shoji; and Nishikawa, Kohei, 4,340,598, Cl. 424-273.00R.
- Ikedo, Yorifumi; and Tsujimoto, Yasuhiro, 4,340,485, Cl. 210-675.000.
- Kawamatsu, Yutaka; and Fujita, Takeshi, 4,340,605, Cl. 424-263.000.
- Takenoya, Hideaki: See—  
Hanyu, Susumu; and Takenoya, Hideaki, 4,340,002, Cl. 112-158.00E.
- Takeuchi, Yasumasa; Obata, Yutaka; Ohshima, Noboru; Shibata, Tooru; and Nakako, Kaoru, to Japan Synthetic Rubber Co., Ltd. Process for preparing polybutadiene having a 1,2-configuration content of 5-40% and a cis-1,4-configuration content of 60% or more. 4,340,685, Cl. 525-247.000.
- Takikawa, Katsuo: See—  
Koda, Akihiko; Hori, Mikio; Yasumoto, Mitsugi; Yamawaki, Ichiro; Yamada, Yuji; and Takikawa, Katsuo, 4,340,543, Cl. 549-414.000.
- Talamon, Jerome: See—  
Lucotte, Gerard; and Talamon, Jerome, 4,340,591, Cl. 424-177.000.
- Tamura, Eiji, to Sony Corporation. Television camera. 4,340,903, Cl. 358-10.000.
- Tamura, Mitsuhiisa: See—  
Suzukamo, Gohu; Takano, Tetsuo; Tamura, Mitsuhiisa; and Ikimi, Kiyoshi, 4,340,544, Cl. 549-356.000.
- Tamura, Takashi; and Iwai, Yasuyuki, to Konishiroku Photo Industry Co., Ltd. Device for driving copy board of a copying machine. 4,340,297, Cl. 355-50.000.
- Tanaka, Hiromichi: See—  
Yamada, Takahiro; and Tanaka, Hiromichi, 4,340,909, Cl. 358-213.000.
- Tanaka, Keiji: See—  
Ohara, Katsunobu; Tanaka, Keiji; Ando, Yujiro; and Moriyama, Inao, 4,340,296, Cl. 355-35.00C.
- Tanaka, Yoshio; Togawa, Susumu; and Sakoda, Akinori, to Kubota, Ltd. Apparatus for heat-treating cast iron pipes. 4,340,361, Cl. 432-128.000.
- Tapper, Robert; and Sweeley, Gordon F., to Tapper, Robert. Ionophoretic treatment apparatus. 4,340,047, Cl. 128-207.210.
- Tatabanyai Szentbanyak: See—  
Barsi, Karoly; Dorombozi, Laszlo; Forisek, Istvan; Kuburczik, Gyula; and Stuber, Gyorgy, 4,340,254, Cl. 299-11.000.
- Tatsumi, Hideo: See—  
Kanamaru, Hisanobu; Okabe, Moisei; Tatsumi, Hideo; Tohkairin, Akira; and Kasama, Ryoji, 4,339,873, Cl. 29-598.000.
- Tayter, Maya: See—  
Dickey, Leland C.; and Tayter, Maya, 4,339,882, Cl. 34-9.000.
- Tazaki, Kichiya: See—  
Wada, Akihiro; Tazaki, Kichiya; Tahara, Tamotsu; Suzuki, Hiroshi; and Mizutani, Yukihisa, 4,340,551, Cl. 264-25.000.
- Tazima, Humio: See—  
Endo, Tsunehiro; and Tazima, Humio, 4,340,931, Cl. 363-44.000.
- TBS International, Inc.: See—  
Cave, Ellis K., 4,340,913, Cl. 360-40.000.
- TDK Electronics Co., Ltd.: See—  
Ota, Hiroshi; Horigome, Eiji; and Azegami, Hitoshi, 4,340,644, Cl. 428-423.700.
- Toda, Kohji; Takahashi, Koji; and Matsufuji, Isao, 4,340,506, Cl. 252-501.100.
- Teach, Eugene G.: See—  
MacDonald, Alan A.; Pallos, Ferenc M.; and Teach, Eugene G., 4,340,419, Cl. 71-93.000.
- Teepak, Inc.: See—  
Story, Alfred D.; and Asquith, Dixon R., 4,339,894, Cl. 51-281.00R.
- Teepie, Lawrence R., Jr., to Trigon. Integrated circuit carrier package test probe. 4,340,860, Cl. 324-158.00F.
- Teich, Udo: See—  
Schippers, Heinz; Hufer, Norbert; Munnekehoff, Gerd; and Teich, Udo, 4,340,187, Cl. 242-35.50A.
- Teichmann, Friedrich; and Wenderoth, Karl, to Adlerwerke vorm Heinrich Kleyer A.G. Printing area cover plate for typewriters or like machines. 4,340,315, Cl. 400-690.400.
- Teitel, Sidney: See—  
Focella, Antonino; Heveran, John E.; Teitel, Sidney; and Weigle, Manfred, 4,340,736, Cl. 544-301.000.
- Tektronix, Inc.: See—  
Metz, Arthur J., 4,340,866, Cl. 330-254.000.
- Teldix GmbH: See—  
Webbe, Heinz, 4,340,261, Cl. 308-10.000.
- Teraoka, Kenro: See—  
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- Terauchi, Kiyoshi: See—  
Hiraga, Masaharu; and Terauchi, Kiyoshi, 4,340,339, Cl. 418-55.000.
- Terlecky, Boris S.: See—  
Brodeur, Rene H.; Terlecky, Boris S.; Sellberg, Ronald P.; and Halliar, William R., 4,339,996, Cl. 105-3.000.
- Tersteeg, Glenn E.: See—  
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- Teshigawara, Haruhiko: See—  
Endo, Takeshi; Sakai, Katsumi; Chou, Kiyooki; Inamoto, Yoshitaka; and Teshigawara, Haruhiko, 4,340,728, Cl. 536-23.000.
- Tester, Norman W. Piezo-electric film manufacture. 4,340,786, Cl. 179-110.00A.
- Texas Instruments Incorporated: See—  
Culley, Bobby G., 4,340,374, Cl. 434-201.000.
- Rizzo, Salvatore P.; and LaPlante, William J., 4,340,164, Cl. 228-57.000.
- Srinivasan, Venkataraman; Cassidy, Stephen; and Grassie, Charles, 4,340,449, Cl. 204-15.000.
- Teza, Jeffrey R., 4,340,871, Cl. 331-111.000.
- Texton, Inc.: See—  
Book, Walter R.; and Putetti, Anthony M., 4,339,939, Cl. 72-349.000.
- Teza, Jeffrey R., to Texas Instruments Incorporated. Low power oscillator having clamping transistors across its timing capacitors. 4,340,871, Cl. 331-111.000.
- Tharp, Billy J. Method and apparatus for producing fluidized lime. 4,340,308, Cl. 366-2.000.
- Theissen, Robert J., to Rhone-Poulenc Agrochimie. Herbicidal 1-(5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoyl)-3-isopropyl-2,1,3-benzothiadiazin-4-one, 2,2-dioxide. 4,340,417, Cl. 71-91.000.
- Theunissen, Walther A. H.: See—  
van Geel, Jacobus N. C.; Dobbels, Frans M.; and Theunissen, Walther A. H., 4,340,160, Cl. 222-595.000.
- Thiessen, Robert J.: See—  
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- Thoma, Martin: See—  
Mielsch, Gotz; Dunker, Rolf; and Thoma, Martin, 4,340,620, Cl. 427-292.000.
- Thomas, Erwin: See—  
Rapp, Guenther; Jockers, Kurt; and Thomas, Erwin, 4,340,575, Cl. 423-387.000.
- Thomas, Harold T.: See—  
Hollister, Kenneth R.; and Thomas, Harold T., 4,340,655, Cl. 430-14.000.
- Thompson, David L.; McDonald, Ray S.; Lee, Yan S.; and Stein, Marc T., to Medtronic, Inc. Body stimulator having selectable stimulation energy levels. 4,340,062, Cl. 128-419.00P.
- Thompson, Gregory J.; and Vickers, Anthony G., to UOP Inc. Catalyst regeneration apparatus. 4,340,566, Cl. 422-143.000.
- Thompson, Norman D., to Towmotor Corporation. Load responsive damping system. 4,340,235, Cl. 280-6.00H.
- Thompson, Robert E.; and McInney, Richard P., to Schmidt Manufacturing, Inc. Sandblasting methods and apparatus. 4,339,897, Cl. 51-436.000.
- Thompson, Wayne L.: See—  
Parke, Patrick P.; Bauer, Brady G.; Meitl, Kenneth G.; Thompson, Wayne L.; and Voegeli, Thomas J., 4,340,182, Cl. 239-680.000.
- Thomson-CSF: See—  
Papuchon, Michel; and Puech, Claude, 4,340,272, Cl. 350-96.140.
- Thornton, John N.: See—  
Thwaites, Peter J.; and Thornton, John N., 4,340,441, Cl. 156-512.000.
- Thwaites, Peter J.; and Thornton, John N., to DuFaylite Developments Limited. Slicing web material. 4,340,441, Cl. 156-512.000.
- Thysen Industrie AG: See—  
Strugala, Alfred; Dittich, Erich; and Siewert, Helmut, 4,339,937, Cl. 72-110.000.
- Tiefel, Thomas H.: See—  
Jin, Sungho; and Tiefel, Thomas H., 4,340,434, Cl. 148-31.550.
- Jin, Sungho; and Tiefel, Thomas H., 4,340,435, Cl. 148-31.570.
- Tijssen, Jan: See—  
Duyzings, Wilhelmus G.; van der Loos, Jozef L. M.; and Tijssen, Jan, 4,340,723, Cl. 528-497.000.
- Timex Corporation: See—  
Migeon, Jean P., 4,340,560, Cl. 264-249.000.
- Timpl, Rupert, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Process for the immunological determination of basal membrane material and new basal membrane suitable therefor. 4,340,581, Cl. 424-1.000.
- Tipper Tie, Inc.: See—  
MacKay, Frederic M.; Winders, Gordon R.; and Whitteley, Thomas E., 4,339,940, Cl. 72-402.000.
- Toby, John J. Copyholder. 4,340,298, Cl. 355-75.000.
- Toda, Kohji; Takahashi, Koji; and Matsufuji, Isao, to TDK Electronics Co., Ltd., and Toda, Kohji. Photoelectric transfer device. 4,340,506, Cl. 252-501.100.
- Togawa, Susumu: See—  
Tanaka, Yoshio; Togawa, Susumu; and Sakoda, Akinori, 4,340,361, Cl. 432-128.000.
- Togneri, Mauro G. Scanning system using alternating current for indicating the open, closed and ground condition of a contact. 4,340,852, Cl. 324-51.000.
- Tohkairin, Akira: See—  
Kanamaru, Hisanobu; Okabe, Moisei; Tatsumi, Hideo; Tohkairin, Akira; and Kasama, Ryoji, 4,339,873, Cl. 29-598.000.
- Toja, Emilio; Omodei-Sale, Amedeo; and Selva, Domenico, to Gruppo Lepetit S.p.A. Antimicrobial 3H-naphtho[1,2-d]imidazoles. 4,340,607, Cl. 424-273.00B.
- Tokyo Shibaura Denki Kabushiki Kaisha: See—  
Asano, Masamichi; and Iwahashi, Hiroshi, 4,340,943, Cl. 365-194.000.
- Iwamura, Soichi; Nishida, Yasuaki; Yamato, Toshimi; Sawazaki, Norikazu; Nishi, Yoshio; Watanabe, Masaharu; and Endo, Norio, 4,340,953, Cl. 369-126.000.
- Miyazawa, Yoshiaki, 4,340,823, Cl. 307-66.000.
- Oonishi, Toshiyuki; Tsutsumi, Masato; and Nakagawa, Noboru, 4,340,404, Cl. 62-198.000.
- Sato, Kouji, 4,340,834, Cl. 310-313.00D.
- Tomcufcik, Andrews S.; Wright, William B., Jr.; and Marsico, Joseph W., Jr., to American Cyanamid Company. 3-( $\alpha$ -Substituted-benzyl)-2,3-dihydrothiazolo [3,2-a][1,3]diazacyclan-3-ol derivatives. 4,340,734, Cl. 544-282.000.
- Tomita, Fusao; Matsuda, Yuzura; Shirahata, Kunikatsu; Takahashi, Keiichi; Nakano, Hirofumi; Sato, Tomoyasu; Okubo, Shuji; and Nakamura, Nobuo, to Kyowa Hakko Kogyo Co., Ltd. Novel compound DC-38-V and process for production thereof. 4,340,725, Cl. 536-1.100.
- Toray Industries, Inc.: See—  
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- Endo, Tadakazu; and Saitoh, Shigemitsu, 4,340,631, Cl. 428-89.000.
- Toray Silicone Company, Ltd.: See—  
Matsushita, Takao; and Hirai, Kazuo, 4,340,090, Cl. 138-177.000.
- Torborg, Ralph H.: See—  
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- Toth, Andras; Toth nee Palotai, Emese; Olah, Jozsef; Bitskey, Jozsef; and Bulkai, Lajos, to Vizgazdalkodasi Tudomanyos Kutatokozpont. Process and equipment for ultrasonic conditioning of sewage sludges. 4,340,488, Cl. 210-705.000.
- Toth nee Palotai, Emese: See—  
Toth, Andras; Toth nee Palotai, Emese; Olah, Jozsef; Bitskey, Jozsef; and Bulkai, Lajos, 4,340,488, Cl. 210-705.000.
- Towle, Herbert C.: See—  
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- Towmotor Corporation: See—  
Jobling, Lancelot A.; Sabec, Charles J.; and Stump, Ronald C., 4,339,919, Cl. 60-322.000.
- Thompson, Norman D., 4,340,235, Cl. 280-6.00H.
- Townsend, Peter, to Metex Corporation. File driver cushion. 4,340,210, Cl. 267-137.000.
- Tox-Dubel-Werk Richard W. Heckhausen KG: See—  
Reidel, Josef, 4,340,330, Cl. 411-33.000.
- Toyo Boseki Kabushiki Kaisha: See—  
Kotera, Nobukazu; Mizumura, Yutaka; and Miyake, Hideo, 4,340,519, Cl. 523-414.000.
- Toyo Seikan Kaisha, Ltd.: See—  
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- Mori, Fumio; Matsuda, Gunji; Yoshida, Toshihiko; and Nagashima, Shigeru, 4,340,149, Cl. 215-343.000.
- Toyoda Gosei Co., Ltd.: See—  
Hayashi, Keizo, 4,339,860, Cl. 29-413.000.
- Toyoda, Takashi; Ohba, Yozo; and Yamanaka, Masaaki, to Oji Yuka Goseishi Co., Ltd. Synthetic paper comprising an olefin-based resin and an adduct. 4,340,639, Cl. 428-338.000.
- Toyota Jidosha Kogyo Kabushiki Kaisha: See—  
Ninomiya, Masakazu; Kiuchi, Hideo; Suzuki, Atsushi; and Kobayashi, Nobuyuki, 4,340,022, Cl. 123-453.000.
- Tozzi, Vincenzo G. A. Device for cutting flowers, fruit and the like. 4,339,878, Cl. 30-298.000.
- Tracy, Clarence J.: See—  
Robinson, Frederick J.; and Tracy, Clarence J., 4,340,456, Cl. 204-192.00E.
- Transcale AB: See—  
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- Trapp, Horst: See—  
Klahr, Erhard; Hettche, Albert; Trieselt, Wolfgang; Stoeckigt, Dieter; and Trapp, Horst, 4,340,766, Cl. 568-625.000.
- Trieselt, Wolfgang: See—  
Klahr, Erhard; Hettche, Albert; Trieselt, Wolfgang; Stoeckigt, Dieter; and Trapp, Horst, 4,340,766, Cl. 568-625.000.
- Trigon: See—  
Teepie, Lawrence R., Jr., 4,340,860, Cl. 324-158.00F.
- Troup, Diana C.: See—  
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- Trout, Jerry: See—  
Moskowsky, Jerome F.; and Trout, Jerry, 4,340,143, Cl. 209-158.000.
- Troxel, Donald E., to AM International, Inc. Random screen generator apparatus for producing halftone images. 4,340,912, Cl. 358-283.000.
- Troxler, Franz; and Seemann, Fritz, to Sandoz Ltd. 4-(2-Benzoyloxy-3-tert-butylaminopropoxy)-2-methyl indole. 4,340,541, Cl. 548-503.000.
- TRW Inc.: See—  
Atkin, Rupert L., 4,339,986, Cl. 91-375.00A.
- Wahlers, Richard L.; and Osborne, Vernon E., 4,340,508, Cl. 252-520.000.



Tsuchihashi, Genichi; Mitamura, Shuichi; and Ogura, Katsuyuki, to Sagami Chemical Research Center. Alpha-thio-alpha-aryl-substituted alkanonitrile and process for preparing alpha-aryl-substituted alkanonitrile therefrom. 4,340,740, Cl. 548-169.000.

Tsuchihashi, Michihiro; Saito, Masato; Baba, Keiichi; and Matsushima, Yusaku, to Mitsubishi Denki Kabushiki Kaisha. Lighting equipment. 4,340,844, Cl. 315-283.000.

Tsui, Kwok W.: See—  
D'Andrade, Bruce M.; Tsui, Kwok W.; and Yuen, Sing C. J., 4,340,373, Cl. 434-174.000.

Tsujimoto, Yasuhiro: See—  
Ikeda, Yofumi; and Tsujimoto, Yasuhiro, 4,340,485, Cl. 210-675.000.

Tsutsumi, Masato: See—  
Onishi, Toshiyuki; Tsutsumi, Masato; and Nakagawa, Noboru, 4,340,404, Cl. 62-198.000.

Tucker, Dempsey G.: See—  
Gill, Ronald P.; Tucker, Dempsey G.; and Hull, John E., Jr., 4,340,920, Cl. 361-49.000.

Tudor, Thomas T., to Brown & Williamson Tobacco Corporation. Cigarette material having non-lipsticking properties. 4,340,074, Cl. 131-362.000.

Turner, James W.: See—  
Huddleston, George R., Jr.; and Turner, James W., 4,340,702, Cl. 526-70.000.

Uchiyama, Masaki: See—  
Kiuchi, Masashi; Takasu, Yoshio; Fukumoto, Hiroshi; Hino, Takashi; Uchiyama, Masaki; and Mitsuhashi, Yasuo, 4,340,660, Cl. 430-106.600.

Ueda, Shigeki; and Takano, Teruhisa, to Matsushita Electric Industrial Co., Ltd. Voice-controlled safety arrangement heating apparatus. 4,340,798, Cl. 219-10.55B.

Ueda, Shigeki; Takano, Teruhisa; and Suzuki, Ryuji, to Matsushita Electric Industrial Co., Ltd. Heating apparatus with voice actuated door opening mechanism. 4,340,799, Cl. 219-10.55C.

Ueda, Shigeki; and Takano, Teruhisa, to Matsushita Electric Industrial Co., Ltd. Heating apparatus having voice command control operative in a conversational processing manner. 4,340,800, Cl. 219-10.55B.

Ueda, Shigeki: See—  
Takano, Teruhisa; and Ueda, Shigeki, 4,340,797, Cl. 219-10.55B.

Uemura, Yahiho; Nagatomo, Midori; Funakoshi, Satoshi; and Suyama, Tadakazu, to Green Cross Corporation. The Antithrombin preparation and process for the production thereof. 4,340,589, Cl. 424-101.000.

Ulbricht, Roger; and Cavallucci, Ralph, to Flour City Architectural Metals. Safety window of the tilt and turn type. 4,339,892, Cl. 49-192.000.

Umemura, Kazuhiro: See—  
Ichikawa, Akira; Nakata, Kazuo; Nakajima, Akira; Ohta, Yoshihiro; and Umemura, Kazuhiro, 4,340,781, Cl. 179-1.05A.

Umetsu, Shinjiro, to Nippon Electric Co., Ltd. Selective calling receiver including a voltage converter with low power consumption. 4,340,973, Cl. 455-228.000.

Union Carbide Corporation: See—  
Adams, Richard C., 4,340,653, Cl. 429-133.000.

Bullman, Allan R., 4,340,524, Cl. 524-297.000.

Coleman, Larry M., 4,340,574, Cl. 423-347.000.

Doshi, Kishore J.; and Patel, Kirit M., 4,340,398, Cl. 55-25.000.

Gross, Laurence H.; and Sauers, Marvin E., 4,340,562, Cl. 264-328.200.

Knopf, Robert J., 4,340,497, Cl. 252-188.30R.

Marsden, James G.; and Pepe, Enrico J., 4,340,520, Cl. 523-209.000.

Morlino, Robert J.; Decker, Quintin W.; and Marcus, Erich, 4,340,382, Cl. 8-137.000.

United Kingdom Atomic Energy Authority: See—  
Clayton, Colin G.; and Wormald, Malcolm R., 4,340,443, Cl. 376-342.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: See—  
Ball, Geoffrey; Deadman, Harry A.; Smith, John G.; and Vokes, John C., 4,339,870, Cl. 29-576.00B.

United States of America  
Air Force: See—  
Campbell, George S., 4,340,197, Cl. 244-3.100.

Goronkin, Herbert, 4,340,900, Cl. 357-56.000.

Kron, Gerald J., 4,340,371, Cl. 434-59.000.

Meyer, Thomas W., 4,340,837, Cl. 313-259.000.

Army: See—  
Segars, Ronald A., 4,340,850, Cl. 323-218.000.

Energy: See—  
Anderson, Paul R.; and Miller, Wayne J., 4,340,407, Cl. 65-21.400.

Harak, Arnold E., 4,340,463, Cl. 208-11.00R.

Hise, Eugene C., Jr.; and Holman, Allen S., 4,340,468, Cl. 209-214.000.

Raistrick, Ian D.; Godshall, Ned A.; and Huggins, Robert A., 4,340,652, Cl. 429-112.000.

Rao, V. Udaya S.; and Gormley, Robert J., 4,340,503, Cl. 252-459.000.

Steyert, William A., Jr.; and Overton, William C., Jr., 4,340,405, Cl. 62-514.00R.

Interior: See—  
Breland, William M.; Guilinger, Terry R.; and Schechter, Robert S., 4,340,253, Cl. 299-5.000.

National Aeronautics and Space Administration; administrator; with respect to an invention of:  
Barrett, Charles A.; Lowell, Carl E.; and Khan, Abdus S. Ni-CrAl ternary alloy having improved cyclic oxidation resistance. 4,340,425, Cl. 148-428.000.

Bush, Harold G.; and Wallom, Richard E. Mechanical end joint system for structural column elements. 4,340,318, Cl. 403-217.000.

Navy: See—  
Kirts, Richard E., 4,339,930, Cl. 62-235.100.

Lawrence, Gail W.; and Adolph, Horst G., 4,340,755, Cl. 564-233.000.

U.S. Philips Corporation: See—  
Van Mil, Job F. P., 4,340,869, Cl. 330-310.000.

United States Steel Corporation: See—  
Weinert, James D., 4,340,616, Cl. 427-47.000.

United Technologies Corporation: See—  
Cheney, Marvin C., 4,340,335, Cl. 416-138.000.

Fitzpatrick, Peter R.; Meyerand, Russell G., Jr.; and Shotwell, Kenneth E., 4,339,929, Cl. 62-79.000.

Mongeon, Robert J., 4,340,299, Cl. 356-28.500.

Stack, Timothy F.; and Shoemaker, George T., 4,340,881, Cl. 340-347.000.

Universal Pioneer Corporation: See—  
Kosaka, Minoru, 4,340,950, Cl. 369-44.000.

Universita' Degli Studi di Napoli: See—  
Campanile, Armando; Caromagnano, Giovanni M.; De Vita, Angelo; Donsi, Giorgio; Massimilla, Leopoldo; and Scognamiglio, Agostino, 4,340,400, Cl. 55-269.000.

University of Alabama, The Board of Trustees of the: See—  
Barnes, Gary T., 4,340,818, Cl. 250-509.000.

University of Pittsburgh: See—  
Schiller, Julian G.; Wingard, Lemuel B., Jr.; and Liu, Chung-Chiun, 4,340,448, Cl. 204-1.00T.

University of Virginia, The: See—  
Arnold, William P., 4,340,667, Cl. 435-20.000.

University Patents, Inc.: See—  
Bourque, Don P., 4,340,676, Cl. 435-232.000.

UOP Inc.: See—  
Neuzil, Richard W.; and Priegnitz, James W., 4,340,724, Cl. 536-127.000.

Pressman, John R., 4,339,936, Cl. 72-77.000.

Qualeatti, Gail M.; and Germanas, Dalia, 4,340,546, Cl. 260-409.000.

Thompson, Gregory J.; and Vickers, Anthony G., 4,340,566, Cl. 422-143.000.

Upjohn Company, The: See—  
Manis, Jack J.; and Highlander, Sarah K., 4,340,674, Cl. 435-172.000.

Shepherd, Kenneth P., 4,340,538, Cl. 260-239.55D.

Usami, Kiyoshi: See—  
Iwata, Yasuhiro; Usami, Kiyoshi; Nabeta, Teiichi; Naganoma, Masanori; and Kojima, Yasuhumi, 4,340,113, Cl. 165-25.000.

Utagawa, Ken: See—  
Ogasawara, Akira; Shirasu, Hiroshi; and Utagawa, Ken, 4,340,819, Cl. 250-578.000.

Utsch, Francis V.: See—  
de la Burde, Roger Z.; Mait, Russell B.; and Utsch, Francis V., 4,340,142, Cl. 209-11.000.

Uyeda, Stanley T.: See—  
Springett, Charles N.; Abramovich, Dan; Uyeda, Stanley T.; and Radu, E. John, 4,340,322, Cl. 405-168.000.

Vadas, Leslie; and Sabo, Bert M. Loader and dispenser for dental amalgam. 4,340,367, Cl. 433-89.000.

Vaeth, Guenter: See—  
Ohlinger, Manfred; Vaeth, Guenter; Mueller, Norbert; and Wettstein, Eugen, 4,340,494, Cl. 252-62.560.

Vaginay, Yves: See—  
Bonnebat, Claude; Rouillet, Gilbert; and Vaginay, Yves, 4,340,721, Cl. 528-272.000.

Valdes, Silverio A., to GTE Sylvania Incorporated. CRT Spot suppression circuit. 4,340,910, Cl. 358-243.000.

Vale, Pearl R.: See—  
Vale, Peter R., 4,340,064, Cl. 128-496.000.

Vale, Peter R., to Vale, Peter R.; and Vale, Pearl R. Brassiere. 4,340,064, Cl. 128-496.000.

van der Lely, Cornelis. Soil cultivating implements. 4,340,118, Cl. 172-49.500.

Van der Linde, Robert: See—  
De Jongh, Rudolph O.; Visser, Adrianus; and Van der Linde, Robert, 4,340,698, Cl. 525-438.000.

van der Loos, Jozef L. M.: See—  
Duyzings, Wilhelmus G.; van der Loos, Jozef L. M.; and Tijssen, Jan, 4,340,723, Cl. 528-497.000.

Van Enam, Donald N., to Monsanto Company. Wet strength polymers. 4,340,692, Cl. 525-329.000.

van Geel, Jacobus N. C.; Dobbels, Frans M.; and Theunissen, Walther A. H., to Deutsche Gesellschaft für Wiederaufarbeitung. Overflow system having pneumatic pressure control. 4,340,160, Cl. 222-595.000.

Van Horn, William E., II, to Cool Curtain, Inc. Strip door hanging system. 4,340,106, Cl. 160-332.000.

VanManen, Dick T., to Voplex Corporation. Caulker for dispensing two viscous components. 4,340,154, Cl. 222-94.000.

Van Mil, Job F. P., to U.S. Philips Corporation. Amplifier for use in a line circuit. 4,340,869, Cl. 330-310.000.

van Mil, Martinus P. G., to Stork PMT B.V. Method of cutting a slaughtered bird from vent to breast. 4,339,849, Cl. 17-52.000.

Van Mol, John D. Liquid filter. 4,340,470, Cl. 210-94.000.

Vannelli, Roger B.: See—  
Hobson, Russell B., Jr.; and Vannelli, Roger B., 4,340,477, Cl. 210-241.000.

van Ooij, Willy J.: See—  
Frassek, Karl-Heinz; and van Ooij, Willy J., 4,340,515, Cl. 524-274.000.

Van Poucke, Raphael K.: See—  
Monbaliu, Marcel J.; De Winter, Walter F.; and Van Poucke, Raphael K., 4,340,664, Cl. 430-449.000.

van Weelden, Jan H.; and Rietvink, Adrianus H., to Estel Hoogovens B.V. Bag-filter type dust collector. 4,340,401, Cl. 55-305.000.

Varian Associates, Inc.: See—  
Abbott, Seth R., 4,340,496, Cl. 252-184.000.

Carter, James C., Jr.; and Mansfield, Stanley, 4,340,825, Cl. 307-116.000.

Vasta, Joseph A., to Du Pont de Nemours, E. I., and Company. Process for making vinyl oxazoline drying oil esters. 4,340,741, Cl. 548-237.000.

Vaughan, David E. W.; Edwards, Grant C.; and Barrett, Michael G., to W. R. Grace & Co. Preparation of zeolites. 4,340,573, Cl. 423-328.000.

Vayssiere, Pierre; Roederer, Charles; Grosjean, Jean-Claude; Grave, Roland; Schleimer, F.; Goedert, F.; Henrion, R.; Lorange, L.; and Colling, J., to Institut de Recherches de la Siderurgie Francaise. Refractory piece permeable to gases. 4,340,208, Cl. 266-220.000.

VDO Adolf Schindling AG: See—  
Gothe, Diethard, 4,340,945, Cl. 368-6.000.

Veitscher Magnesitwerke-Aktiengesellschaft: See—  
Hoedl, Fritz; Kimura, Morihiro; and Yasuda, Yoshio, 4,340,360, Cl. 432-119.000.

Vereinigte Aluminium-Werke Aktiengesellschaft: See—  
Greber, Jorg F.; and Winkhaus, Gunter, 4,340,579, Cl. 423-625.000.

Ver Strate, Gary: See—  
Brois, Stanley J.; and Ver Strate, Gary, 4,340,694, Cl. 525-342.000.

Vescelius, Lee E.: See—  
Bohm, Georg G. A.; Hamed, Gary R.; and Vescelius, Lee E., 4,340,684, Cl. 525-194.000.

Vickers, Anthony G.: See—  
Thompson, Gregory J.; and Vickers, Anthony G., 4,340,566, Cl. 422-143.000.

Victor Company of Japan, Ltd.: See—  
Hirata, Atsumi; and Kayanuma, Kanji, 4,340,907, Cl. 358-128.600.

Vilenski, Dan: See—  
Bilane, Glenn B.; Rubin, Lawrence M.; Soffa, Albert; and Vilenski, Dan, 4,340,166, Cl. 228-179.000.

Vishnyak, Julian I.: See—  
Grishin, Boris P.; Gruzov, Alexandr G.; Romanov, Leonid M.; Vishnyak, Julian I.; Shugaeva, Nina A.; Bychkov, Nikolai M.; Lipets, Konstantin V.; and Zotov, Alexandr I., 4,340,720, Cl. 528-232.000.

Visser, Adrianus: See—  
De Jongh, Rudolph O.; Visser, Adrianus; and Van der Linde, Robert, 4,340,698, Cl. 525-438.000.

Vizgaldalkodasi Tudomanyos Kutatkozpont: See—  
Toth, Andras; Toth nee Palotai, Emese; Olah, Jozsef; Bitskey, Jozsef; and Bulkai, Lajos, 4,340,488, Cl. 210-705.000.

Voegeli, Otto, to International Business Machines Corporation. Permalloy-first bubble switch. 4,340,942, Cl. 365-16.000.

Voegeli, Thomas J.: See—  
Parke, Patrick P.; Bauer, Brady G.; Meil, Kenneth G.; Thompson, Wayne L.; and Voegeli, Thomas J., 4,340,182, Cl. 239-680.000.

Vogelsberg, Dieter, to Siemens Aktiengesellschaft. Device for SZ twisting of twist elements of electric cables and wires. 4,339,913, Cl. 57-294.000.

Voisin, Guy; Jansen, Franz; and Gros, Pierre, to C.M. Industries. Cytotoxic products formed by covalent bonding of the A chain of ricin with an antibody and the process for their preparation and use. 4,340,535, Cl. 260-112.00B.

Vokes, John C.: See—  
Ball, Geoffrey; Deadman, Harry A.; Smith, John G.; and Vokes, John C., 4,339,870, Cl. 29-576.00B.

Volk, Joseph A., Jr., to Beta Corporation of St. Louis. Automatic control for a pellet producing apparatus. 4,340,937, Cl. 364-468.000.

Volkert, Bernd; and Dorbandt, Klaus, to Deutsche Angelgerate Manufaktur (DAM) Hellmuth Kuntze Gesellschaft & Co. KG. Return feed locking mechanism for fishing reels. 4,340,189, Cl. 242-84.10R.

Volkswagenwerk Aktiengesellschaft: See—  
Barnert, Konrad; and Lohner, Ingolf, 4,340,019, Cl. 123-256.000.

Volpeliere, Jacky: See—  
Hanrot, Jean-Pascal; and Volpeliere, Jacky, 4,340,136, Cl. 193-15.000.

von Sichart, Frithjof: See—  
Wintzer, Klaus; Zemanek, Josef; and von Sichart, Frithjof, 4,340,962, Cl. 370-100.000.

Voplex Corporation: See—  
VanManen, Dick T., 4,340,154, Cl. 222-94.000.

W. R. Grace & Co.: See—  
Vaughan, David E. W.; Edwards, Grant C.; and Barrett, Michael G., 4,340,573, Cl. 423-328.000.

Wada, Akihiko; Kachiya, Tahara, Tamotsu; Suzuki, Hiroshi; and Mizutani, Yukihisa, to Asahi-Dow Limited. Injection molded articles with improved surface characteristics, production of same and apparatus therefor. 4,340,551, Cl. 264-25.000.

Waddle, Russell E.: See—  
Moshofsky, Jerome F.; and Trout, Jerry, 4,340,143, Cl. 209-158.000.

Wagner, Karl: See—  
Stemme, Otto; Staudacher, Frank; Lermann, Peter; Danhauser, Justus; Engelsmann, Dieter; and Wagner, Karl, 4,340,288, Cl. 354-171.000.

Wahlers, Richard L.; and Osborne, Vernon E., to TRW Inc. Resistance material, resistor and method of making the same. 4,340,508, Cl. 252-520.000.

Wahren, Douglas; and Akesson, Rolf A. L., to Aktiebolaget Karlstads Mekaniska Werkstad. Flow distributor for a liquid film discharging device. 4,340,011, Cl. 118-410.000.

Wakabayashi, Hideo; and Teraoka, Kenro, to Sony Corporation. Control level displaying apparatus. 4,340,908, Cl. 358-194.100.

Waldhauser, Steven J. A.; and Masbruch, Richard D., to Wetrol, Inc. Squeegee support assembly for automatic floor cleaning machines. 4,339,841, Cl. 15-359.000.

Waldmann, Gunter. Process and apparatus for the separation of harmful substances from waste gases, particularly in the drying of wood chips. 4,339,883, Cl. 34-27.000.

Walker, Derek: See—  
Aston, William C.; and Walker, Derek, 4,340,344, Cl. 425-149.000.

Wallace Murray Corporation: See—  
Bremer, Robert C., Jr., 4,339,963, Cl. 74-574.000.

Wallis, Bernard J. Punch retainer. 4,339,976, Cl. 83-684.000.

Wallson, Richard E.: See—  
United States of America, National Aeronautics and Space Administration; Bush, Harold G.; and Wallson, Richard E., 4,340,318, Cl. 403-217.000.

Walter, Lothar: See—  
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Kunkel, Heinrich, 4,340,135, Cl. 192-98.000.

Walters, Peter E.: See—  
Percival, William S.; and Walters, Peter E., 4,340,862, Cl. 324-309.000.

Walworth, Vivian K., to Polaroid Corporation. Method for making photosensitive silver halide emulsion layers. 4,340,666, Cl. 430-569.000.

Wang, Kang-Lung: See—  
Reihl, Robert F.; and Wang, Kang-Lung, 4,339,869, Cl. 29-576.00B.

Wang, Samuel S.; and Scanlon, Michael J., to American Cyanamid Company. Flotation of coal with latex emulsions of hydrocarbon animal or vegetable based oil. 4,340,467, Cl. 209-166.000.

Ward, Gene R., to Minnesota Mining and Manufacturing Company. Platform rocking chair springs. 4,340,250, Cl. 297-264.000.

Wardell, Joe R., Jr.: See—  
Brenner, L. Martin; and Wardell, Joe R., Jr., 4,340,600, Cl. 424-258.000.

Warner, Richard: See—  
Buonauro, Andrew; and Warner, Richard, 4,340,326, Cl. 408-16.000.

Warner & Swasey Company, The: See—  
Fournier, Roger H., 4,339,893, Cl. 51-168.000.

Washington University: See—  
Skelton, John; Clark, Richard E.; and Davis, Robert B., 4,340,091, Cl. 139-383.00R.

Wason, Satish K., to J. M. Huber Corporation. High fluoride compatibility dentifrice abrasives and compositions. 4,340,583, Cl. 424-52.000.

Wason, Satish K., to J. M. Huber Corporation. Therapeutic dentifrices in unlined container and methods. 4,340,584, Cl. 424-52.000.

Watanabe, Hiroyuki: See—  
Saito, Isamu; and Watanabe, Hiroyuki, 4,340,219, Cl. 273-1.0GA.

Watanabe, Masaharu: See—  
Iwamura, Soichi; Nishida, Yasuaki; Yamato, Toshimi; Sawazaki, Norikazu; Nishi, Yoshio; Watanabe, Masaharu; and Endo, Norio, 4,340,953, Cl. 369-126.000.

Watanabe, Masaki; Shimoyama, Hiroshi; and Suzuki, Keiji, to Honda Giken Kogyo Kabushiki Kaisha. Stabilized motor vehicle. 4,340,125, Cl. 180-215.000.

Watanabe, Sakuji: See—  
Ohtsubo, Yoshiaki; and Watanabe, Sakuji, 4,340,284, Cl. 354-50.000.

Watson, Wade B. Irrigation valve apparatus. 4,340,081, Cl. 137-364.000.

Watts, William M., to Secor Corporation. Communications cable having combination shielding-armor member. 4,340,771, Cl. 174-36.000.

Wayne State University: See—  
Brooks, Samuel C., 4,340,602, Cl. 424-238.000.

Wear, Frederick C.: See—  
McKinney, Howard F.; Gardner, David R.; and Wear, Frederick C., 4,340,611, Cl. 426-241.000.

Webb, Jimmy L.; and Mehta, Bharat M., to General Electric Company. Method for making aromatic bis(ether anhydrides). 4,340,545, Cl. 549-241.000.

Webb, Lloyd E. Machine for chilling drinking glasses. 4,340,263, Cl. 312-266.000.

Webers, Werner: See—  
Brandes, Gunter; Neier, Wilhelm; Wollner, Johannes; Webers, Werner; and deVleeschauwer, Walter F., 4,340,769, Cl. 568-899.000.

Webinger, George, to Champion International Corporation. Carton with locking mechanism for slidable top and bottom. 4,340,168, Cl. 229-23.0BT.

Webinger, George P., to Champion International Corporation. Collapsible tray. 4,340,169, Cl. 229-31.00R.



- Webster, Raymond G. Hydraulic rams. 4,339,989, Cl. 92-53.000.  
 Weeks, Brian: See—  
 Aldred, Alan C. G.; and Weeks, Brian, 4,340,517, Cl. 524-59.000.  
 Weemhoff, James H.: See—  
 Bakula, Richard E.; Maly, Dennis L.; and Weemhoff, James H., 4,340,932, Cl. 364-200.000.  
 Wegmann, Jacques, to Rohner AG Pratteln. Aqueous-media dispersible, highly-concentrated, finely-disperse, low-dispersant or free-of-dispersant preparation of hardly water-soluble to water-insoluble active substances in solid form, process for their preparation and their application. 4,340,531, Cl. 524-556.000.  
 Wehde, Heinz, to Teldix GmbH. Magnetic bearing arrangement. 4,340,261, Cl. 308-10.000.  
 Weigand, James R.; and Streeter, Robert D., to Magnavox Consumer Electronics Co. Circuit for demodulating amplitude and angle modulated broadcast signals. 4,340,782, Cl. 179-1.0GS.  
 Weigle, Manfred: See—  
 Focella, Antonino; Heveran, John E.; Teitel, Sidney; and Weigle, Manfred, 4,340,736, Cl. 544-301.000.  
 Weiner, Milton L., to Mobil Oil Corporation. Heat sealable packaging film comprising propylene polymer substrate and a surface layer blend of ethylene copolymer and propylene copolymer. 4,340,640, Cl. 428-349.000.  
 Weiner, Milton L., to Mobil Oil Corporation. Heat sealable packaging film comprising propylene polymer substrate and a surface layer blend of ethylene copolymer and propylene copolymer. 4,340,641, Cl. 428-349.000.  
 Weinert, Friedrich. Power wheel. 4,340,970, Cl. 376-208.000.  
 Weinert, James D., to United States Steel Corporation. Method for decreasing the wear on a surface. 4,340,616, Cl. 427-47.000.  
 Weise, Stanley A., to Dresser Industries, Inc. Slip deployment mechanism. 4,340,116, Cl. 166-215.000.  
 Weitzen, William, to General Technology Applications, Inc. Dissolving polymers in compatible liquids and uses thereof. 4,340,076, Cl. 137-13.000.  
 Weld, Richard G., to Weldwheels, Inc. Wire spoke automotive wheel manufacturing method. 4,339,859, Cl. 29-159.030.  
 Weldwheels, Inc.: See—  
 Weld, Richard G., 4,339,859, Cl. 29-159.030.  
 Wells, Herbert A.; Hochner, Walter L.; and Macek, George F., to International Coatings Co., Inc. Manufacture of flock transfers. 4,340,632, Cl. 428-90.000.  
 Wenderoth, Karl: See—  
 Teichmann, Friedrich; and Wenderoth, Karl, 4,340,315, Cl. 400-690.400.  
 Wengenroth, Kurt: See—  
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 Wengert, Rolf: See—  
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 Wenzlaff, Axel: See—  
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 Wepner, Joachim; Wengenroth, Kurt; and Zuhlke, Jochen, to Peddinghaus, Rolf. Method and apparatus for volumetric partitioning of rod-like material. 4,339,972, Cl. 83-13.000.  
 Wernau, William C.; and Wernau, William C., to Pfizer Inc.; and Pfizer Inc. Xanthomonas biopolymer for use in displacement of oil from partially depleted reservoirs. 4,340,678, Cl. 435-253.000.  
 Wernau, William C.: See—  
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 West, Rodney J.: See—  
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 Western Electric Co., Inc.: See—  
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 Chisholm, William M., 4,340,092, Cl. 140-147.000.  
 Chisholm, William M.; Davis, George S.; and Dougherty, James C., 4,340,093, Cl. 140-147.000.  
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 Wetrok, Inc.: See—  
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 Wettstein, Eugen: See—  
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 Wetzel, Pierre: See—  
 Askman, Lars; Wetzel, Pierre; and Isely, Alain, 4,340,612, Cl. 426-276.000.  
 Whalen-Shaw, Michael J.; and Thiessen, Robert J., to Allied Paper Incorporated. Electrostatic masters. 4,340,659, Cl. 430-64.000.  
 Wham-O Mfg. Co.: See—  
 Kerkenbush, Darle L.; and Blaszcak, Peter P., Jr., 4,340,222, Cl. 273-61.00R.  
 White, David J.; and Roberts, Peter B., to Solar Turbines Incorporated. Combustion systems. 4,339,924, Cl. 60-733.000.  
 White, Dwain M.; and Loucks, George R., to General Electric Company. Formal-coupled polyphenylene oxides. 4,340,696, Cl. 525-390.000.  
 White, Peter C.: See—  
 Guerrero, Benjamin G.; Troup, Diana C.; and White, Peter C., 4,339,889, Cl. 46-135.00A.  
 Whittlesey, Thomas E.: See—  
 MacKay, Frederic M.; Winders, Gordon R.; and Whittlesey, Thomas E., 4,339,940, Cl. 72-402.000.  
 Widder Corporation: See—  
 Krieg, Adrian H., 4,340,804, Cl. 219-137.410.  
 Wiezer, Hartmut; and Pfahler, Gerhard, to Hoechst Aktiengesellschaft. Ethers based on polyalkyl-1-oxadiazaspirodecane. 4,340,534, Cl. 524-99.000.  
 Wilcox, Donald G.; and Zambrano, Nobile, to Show-Pak, Incorporated. Blow molded carrying case. 4,340,139, Cl. 206-349.000.  
 Wilcox, Donald G.; and Zambrano, Nobile, to Show-Pak, Incorporated. Package construction. 4,340,140, Cl. 206-373.000.  
 Wilden, James K., to Wilden Pump & Engineering Co., Inc. Air driven reciprocating device. 4,339,985, Cl. 91-307.000.  
 Wilden Pump & Engineering Co., Inc.: See—  
 Wilden, James K., 4,339,985, Cl. 91-307.000.  
 Wiley, Bruce F., to Phillips Petroleum Company. Downhole sampling method and apparatus. 4,339,947, Cl. 73-151.000.  
 Wilkinson, William T. Resilient type exerciser for simulating climbing. 4,340,218, Cl. 272-136.000.  
 Willenbacher, Erich, to Pfaff Industriemaschinen GmbH. Sewing machine with work guiding device. 4,340,001, Cl. 112-143.000.  
 William H. Rorer, Inc.: See—  
 Chou, Billy J., 4,340,609, Cl. 424-322.000.  
 Williams, James J., Jr.; and Dischert, Robert A., to RCA Corporation. Hardware reduction by truncation of selected number of most significant bits for digital video system using subsampling and adaptive reconstruction. 4,340,940, Cl. 364-745.000.  
 Williams, Laurens R., II: See—  
 Fukui, George M.; Spencer, Herbert J.; and Williams, Laurens R., II, 4,340,679, Cl. 435-253.000.  
 Williams, Robert A. Chaff-flare test adapter switching system. 4,340,789, Cl. 200-11.00R.  
 Williams, Robert H., to Meadowbrook Resort, Inc. Solar heating system for a greenhouse or other building. 4,340,036, Cl. 126-452.000.  
 Williams, Steven E.: See—  
 Hargraves, David P.; Pauli, Jude A.; and Williams, Steven E., 4,340,202, Cl. 251-31.000.  
 Williams, Warren S. Surfboard locking device. 4,340,376, Cl. 441-74.000.  
 Williamson, Robert R., to Better Agricultural Goals Corporation. Reinforced container for bulk material. 4,340,379, Cl. 493-211.000.  
 Willinger, Allan H., to Willinger Bros., Inc. Artificial aquarium plant. 4,340,625, Cl. 428-17.000.  
 Willinger Bros., Inc.: See—  
 Willinger, Allan H., 4,340,625, Cl. 428-17.000.  
 Willis, Clive; and McKee, Terrence J., to Canadian Patents & Dev. Ltd. Rare-gas hydrogen-halide excimer laser with hydrogen additive. 4,340,968, Cl. 372-60.000.  
 Willmore, Bruce A. E.; and Greaves, Jeffrey C., to Imperial Chemical Industries Limited. Removal of olefin monomer from olefin polymer. 4,340,701, Cl. 526-68.000.  
 Wilson, Richard F.: See—  
 Maffitt, Kent N.; and Wilson, Richard F., 4,340,276, Cl. 350-164.000.  
 Wilmes, Manfred; and Marienfeld, Karl, to C. A. Weidmuller KG. Electrical terminal unit. 4,340,270, Cl. 339-95.00D.  
 Wilson, Craig R. Game racket and apparatus for adjusting the tension in the strings of a game racket. 4,340,225, Cl. 273-73.00E.  
 Wilson, Malcolm A.: See—  
 Pollock, David C. I.; and Wilson, Malcolm A., 4,340,484, Cl. 210-607.000.  
 Winders, Gordon R.: See—  
 MacKay, Frederic M.; Winders, Gordon R.; and Whittlesey, Thomas E., 4,339,940, Cl. 72-402.000.  
 Wingard, Lemuel B., Jr.: See—  
 Schiller, Julian G.; Wingard, Lemuel B., Jr.; and Liu, Chung-Chiun, 4,340,448, Cl. 204-1.00T.  
 Wingrove, Earl R., Jr., to General Electric Company. Automatic gray scale tracking system for cathode ray display devices. 4,340,904, Cl. 358-29.000.  
 Winkhaus, Gunter: See—  
 Greber, Jorg F.; and Winkhaus, Gunter, 4,340,579, Cl. 423-625.000.  
 Wintzer, Klaus; Zemanek, Josef; and von Sichart, Frithjof, to Siemens Aktiengesellschaft. Circuit arrangement for the synchronization of a digital subscriber station by a digital exchange in a PCM telecommunication network. 4,340,962, Cl. 370-100.000.  
 Witzel, Bruce E.: See—  
 Dybas, Richard A.; Grier, Nathaniel; and Witzel, Bruce E., 4,340,756, Cl. 564-367.000.  
 Wojciehowski, James P.: See—  
 Burch, Darrel W.; and Wojciehowski, James P., 4,339,916, Cl. 60-39.020.  
 Wolf, Karlheinz: See—  
 Nonn, Konrad; Laser, Joachim; Wolf, Karlheinz; Hornle, Reinhold; and Istel, Erich, 4,340,389, Cl. 8-620.000.  
 Wolf, Ludwig, Jr.: See—  
 Dennehey, T. Michael; Greff, Richard J.; and Wolf, Ludwig, Jr., 4,340,052, Cl. 128-247.000.  
 Wollner, Johannes: See—  
 Brandes, Gunter; Neier, Wilhelm; Wollner, Johannes; Webers, Werner; and deVleeschauwer, Walter F., 4,340,769, Cl. 568-899.000.

- Wolowodiuk, Catherine: See—  
 Okinaka, Yutaka; and Wolowodiuk, Catherine, 4,340,451, Cl. 204-46.00G.  
 Wood, Kenneth O., to Gulf & Western Corporation. Supporting anvil for movable cutting platen. 4,339,974, Cl. 83-100.000.  
 Woodard, Lynn F., to Research Corporation. Brucellosis vaccine for cattle containing mycolate esters of trehalose. 4,340,588, Cl. 424-92.000.  
 Woodhead, Peter, to General Electric Company Limited, The. Electric amplifier circuits that respond to an input signal of either polarity to produce an output signal having a polarity corresponding to that of the input signal. 4,340,865, Cl. 330-69.000.  
 Woods, Stephen C.: See—  
 Griffiths, Kenneth G.; and Woods, Stephen C., 4,339,886, Cl. 40-595.000.  
 Woodside Construction, Inc.: See—  
 Ben-Shmuel, Dan; and Zacuto, Philip, 4,340,572, Cl. 423-242.000.  
 Wormald, Malcolm R.: See—  
 Clayton, Colin G.; and Wormald, Malcolm R., 4,340,443, Cl. 376-342.000.  
 Wright, William B., Jr.: See—  
 Tomcufcik, Andrews S.; Wright, William B., Jr.; and Marsico, Joseph W., Jr., 4,340,734, Cl. 544-282.000.  
 Wright, William E.; and Honnold, Fred V., Jr., to Carrier Corporation. Wrapper for a heat exchange unit. 4,340,115, Cl. 165-122.000.  
 Wuerzer, Bruno: See—  
 Eicken, Karl; and Wuerzer, Bruno, 4,340,418, Cl. 71-92.000.  
 Wuesthoff, Michael T., to Pfizer Inc. Winning bitter substances from hops. 4,340,763, Cl. 568-344.000.  
 Wunder, Friedrich: See—  
 Baltes, Herbert; Leopold, Ernst I.; and Wunder, Friedrich, 4,340,748, Cl. 560-177.000.  
 Xerox Corporation: See—  
 Kikuchi, Masatsugu, 4,340,895, Cl. 346-140.00R.  
 Ort, Donald L., 4,340,893, Cl. 346-1.100.  
 Raskin, Jerome S.; Hall, Warren L.; Holt, Charles P.; and Carlson, Gerald E., 4,340,807, Cl. 219-497.000.  
 Yajima, Masami: See—  
 Nohira, Hiroyuki; Fujii, Hiroshi; Yajima, Masami; and Fujimura, Rieko, 4,340,751, Cl. 562-401.000.  
 Yamabe, Masaaki; Kumai, Seisaku; and Muncata, Seiji, to Asahi Glass Company, Ltd. Process for producing fluorovinyl ether. 4,340,750, Cl. 560-183.000.  
 Yamabe, Masaaki: See—  
 Asawa, Tatsuro; Yamabe, Masaaki; and Miyake, Haruhisa, 4,340,680, Cl. 521-27.000.  
 Yamada, Noboru: See—  
 Mizushima, Yutaka; Yokoyama, Kazumasa; Nabeta, Kiichiro; Yamada, Noboru; and Suyama, Tadakazu, 4,340,594, Cl. 424-238.000.  
 Yamada, Takahiro; and Tanaka, Hiromichi, to Matsushita Electric Industrial Co., Ltd. Solid state area imaging apparatus. 4,340,909, Cl. 358-213.000.  
 Yamada, Yuji: See—  
 Koda, Akihide; Hori, Mikio; Yasumoto, Mitsugi; Yamawaki, Ichiro; Yamada, Yuji; and Takikawa, Katsuo, 4,340,543, Cl. 549-414.000.  
 Yamaguchi, Kunihiro: See—  
 Moteki, Tsutomu; Yamaguchi, Kunihiro; and Nakajima, Yoshikazu, 4,340,513, Cl. 524-13.000.  
 Yamaguchi, Masumi; Kawabata, Kenji; and Kumagai, Yoshimi, to Sharp Kabushiki Kaisha. Wireless temperature-sensing system inclusive of thermally-responsive oscillator. 4,340,796, Cl. 219-10.55B.  
 Yamaha Hatsudoki Kabushiki Kaisha: See—  
 Isaka, Yoshiharu, 4,339,964, Cl. 74-606.00R.  
 Yamamoto, Akira: See—  
 Nakamura, Toshiaki; and Yamamoto, Akira, 4,340,915, Cl. 360-61.000.  
 Yamamoto, Hiroshi, to Canon Kabushiki Kaisha. Camera system using stroboscope. 4,340,287, Cl. 354-128.000.  
 Yamamoto, Takaya: See—  
 Akiba, Shigeyuki; Suematsu, Yasuharu; Arai, Shigehisa; Kodaira, Masanobu; Itaya, Yoshio; Iga, Kenichi; Ota, Chuichi; Yamamoto, Takaya; and Sakai, Kazuo, 4,340,966, Cl. 372-45.000.  
 Yamamoto, Takushi: See—  
 Obayashi, Shigeji; Nakamura, Morio; Fujiki, Koichi; and Yamamoto, Takushi, 4,340,706, Cl. 526-207.000.  
 Yamamura, Akira; and Raj, Kuldip, to Ferrofluidics Corporation. Ferrofluid seal apparatus. 4,340,233, Cl. 277-1.000.  
 Yamanaka, Masaaki: See—  
 Toyota, Takashi; Ohba, Yozo; and Yamanaka, Masaaki, 4,340,639, Cl. 428-338.000.  
 Yamashita, Akio; and Asakawa, Shirow, to Matsushita Electric Industrial Co., Ltd. Electrochromic display device. 4,340,624, Cl. 428-1.000.  
 Yamashita, Nobuo; and Nakahashi, Ken-ichi, to Olympus Optical Co., Ltd. Focusing method and apparatus for use in an optical system. 4,340,811, Cl. 250-201.000.  
 Yamashita, Sadahiko: See—  
 Onishi, Hiroshi; and Yamashita, Sadahiko, 4,340,975, Cl. 455-315.000.  
 Yamashita, Yoshimasa: See—  
 Nakamura, Takeshi; and Yamashita, Yoshimasa, 4,340,835, Cl. 310-321.000.  
 Yamato, Toshimi: See—  
 Iwamura, Soichi; Nishida, Yasuaki; Yamato, Toshimi; Sawazaki, Norikazu; Nishi, Yoshio; Watanabe, Masaharu; and Endo, Norio, 4,340,953, Cl. 369-126.000.  
 Yamaue, Yasunobu; and Ishioka, Tetsuo, to Kubota, Ltd. Offset type tractor. 4,340,128, Cl. 180-900.000.  
 Yamawaki, Ichiro: See—  
 Koda, Akihide; Hori, Mikio; Yasumoto, Mitsugi; Yamawaki, Ichiro; Yamada, Yuji; and Takikawa, Katsuo, 4,340,543, Cl. 549-414.000.  
 Yan, George: See—  
 Capel, Antony C.; Yan, George; Gilks, George E.; and West, Rodney J., 4,340,961, Cl. 370-84.000.  
 Yan, Tsoung-yuan: See—  
 Espenscheid, Wilton F.; and Yan, Tsoung-yuan, 4,340,252, Cl. 299-4.000.  
 Yang, Hung H., to Du Pont de Nemours, E. I., and Company. Spinning process. 4,340,559, Cl. 264-181.000.  
 Yano, Teruo: See—  
 Higuchi, Noboru; Yano, Teruo; and Ohnishi, Masahiro, 4,340,403, Cl. 55-523.000.  
 Yasuda, Yoshio: See—  
 Hoedl, Fritz; Kimura, Morihiro; and Yasuda, Yoshio, 4,340,360, Cl. 432-119.000.  
 Yasumoto, Mitsugi: See—  
 Koda, Akihide; Hori, Mikio; Yasumoto, Mitsugi; Yamawaki, Ichiro; Yamada, Yuji; and Takikawa, Katsuo, 4,340,543, Cl. 549-414.000.  
 Yeaple Corporation: See—  
 Yeaple, Ronald N., 4,340,069, Cl. 128-776.000.  
 Yeaple, Ronald N., to Yeaple Corporation. Force-sensitive probe and method of use. 4,340,069, Cl. 128-776.000.  
 Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., to Allied Corporation. Temperature measurement and display of indicia using thermochromic polyacetylenes. 4,339,951, Cl. 374-162.000.  
 Yokohama Kiko Co., Ltd.: See—  
 Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,340,646, Cl. 428-429.000.  
 Yokokawa, Yasuo: See—  
 Mishihiro, Mashahiro; Nishikawa, Tokio; Ohashi, Shigeyasu; and Yokokawa, Yasuo, 4,340,481, Cl. 210-500.200.  
 Yokoyama, Kazumasa: See—  
 Mizushima, Yutaka; Yokoyama, Kazumasa; Nabeta, Kiichiro; Yamada, Noboru; and Suyama, Tadakazu, 4,340,594, Cl. 424-238.000.  
 Yoshida, Masahiro: See—  
 Okamura, Koichi; Kusakabe, Susumu; Yoshida, Masahiro; and Hiraoka, Fumio, 4,339,983, Cl. 41-466.000.  
 Yoshida, Toshihiko: See—  
 Mori, Fumio; Matsuda, Gunji; Yoshida, Toshihiko; and Nagashima, Shigeru, 4,340,149, Cl. 215-343.000.  
 Young, Teddy R.: See—  
 Grillo, John W.; and Young, Teddy R., 4,339,961, Cl. 74-110.000.  
 Yu, Terry T.: See—  
 Ovshinsky, Stanford R.; Hines, Leon F.; Citkowski, Ronald W.; and Yu, Terry T., 4,340,662, Cl. 430-270.000.  
 Yuen, Sing C. J.: See—  
 D'Andrade, Bruce M.; Tsui, Kwok W.; and Yuen, Sing C. J., 4,340,373, Cl. 434-174.000.  
 Zaba, Tadeusz: See—  
 Eggmann, Jean; Graf, Hans; and Zaba, Tadeusz, 4,339,925, Cl. 60-757.000.  
 Zacuto, Philip: See—  
 Ben-Shmuel, Dan; and Zacuto, Philip, 4,340,572, Cl. 423-242.000.  
 Zahnradfabrik Friedrichshafen AG: See—  
 Biersch, Arthur, 4,340,133, Cl. 192-30.00W.  
 Zaidan Hojin Handotai Kenkyu Shinkokai: See—  
 Nishizawa, Jun-ichi; and Hayashi, Yutaka, 4,340,827, Cl. 307-477.000.  
 Zambrano, Nobile: See—  
 Wilcox, Donald G.; and Zambrano, Nobile, 4,340,139, Cl. 206-349.000.  
 Wilcox, Donald G.; and Zambrano, Nobile, 4,340,140, Cl. 206-373.000.  
 Zamiara, Anthony W., to Maplecrest Foods, Inc. Sausage coiling machine. 4,339,846, Cl. 17-1.00R.  
 Zannucci, Joseph S.; Sublett, Bobby J.; and Irick, Gether, Jr., to Eastman Kodak Company. Stabilized copolyester material. 4,340,718, Cl. 528-128.000.  
 Zatorre, Alfredo E. Fastener and driving tool. 4,339,971, Cl. 81-436.000.  
 Zavatsky, Robert J., to Barnes Group Inc. Seat belt retractor spring assembly. 4,340,190, Cl. 242-107.000.  
 Zavatsky, Robert J., to Barnes Group Inc. Seat belt retractor spring assembly. 4,340,191, Cl. 242-107.000.  
 Zebtron Corporation: See—  
 Crandal, Edwin L., 4,340,311, Cl. 366-336.000.  
 Zehnder, Richard: See—  
 Koch, Carl; Meyer, Rolf; and Zehnder, Richard, 4,340,292, Cl. 354-275.000.  
 Zellweger Limited: See—  
 Baumann, Eduard; and Kniel, Roger, 4,340,880, Cl. 340-310.00R.



- Zemanek, Josef: See—  
Wintzer, Klaus; Zemanek, Josef; and von Sichart, Frithjof, 4,340,962, Cl. 370-100.000.
- Zemlyanov, Leonid S.: See—  
Chichkin, Valentin P.; Shpigel, Efraim A.; Gokin, Gennady P.; Matjuschenko, Georgy E.; Kurakov, Nikolai N.; Rabinovich, Grigory B.; Samoilovsky, Sergei A.; Angel, Boris S.; Ilienkov, Vladimir S.; Miterev, Vladimir P.; Zemlyanov, Leonid S.; and Krutkov, Anatoly F., 4,339,906, Cl. 56-327.00R.
- Zhovtobryukh, Grigory D.: See—  
Kucher, Valery N.; Popenko, Alexandr Z.; Reiman, Georgy R.; Durachenko, Mikhail I.; and Zhovtobryukh, Grigory D., 4,340,445, Cl. 202-262.000.
- Zipatone Inc.: See—  
Griffiths, Kenneth G.; and Woods, Stephen C., 4,339,886, Cl. 40-595.000.
- Zitzman, George E. Variable capacity feed reel for coiled wire, 4,340,193, Cl. 242-129.720.
- Zorner, Paul: See—  
Bar, Helmut; Mader, Herbert; Muck, Karl-Friedrich; and Zorner, Paul, 4,340,542, Cl. 549-368.000.
- Zotov, Alexandr I.: See—  
Grishin, Boris P.; Gruznov, Alexandr G.; Romanov, Leonid M.; Vishnyak, Julian I.; Shugaeva, Nina A.; Bychkov, Nikolai M.; Lipets, Konstantin V.; and Zotov, Alexandr I., 4,340,720, Cl. 528-232.000.
- Zuhlke, Jochen: See—  
Wepner, Joachim; Wengenroth, Kurt; and Zuhlke, Jochen, 4,339,972, Cl. 83-13.000.
- Zurbuchen, Jacques: See—  
Evans, David G.; Zurbuchen, Jacques; and Leutenegger, Willi, 4,340,387, Cl. 8-580.000.

## LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF JULY, 1982

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Briles, Franklin S. Taper headed fastener to increase work fatigue life. Re. 30,997, Cl. 403-388.000.
- Dolgos, Charles: See—  
Pobuta, Walter; and Dolgos, Charles, Re. 30,996, Cl. 140-123.600.
- Owens-Illinois, Inc.: See—  
Peters, Homer D. F., Re. 30,998, Cl. 65-163.000.
- Peters, Homer D. F., to Owens-Illinois, Inc. Hot gob detector for controlling a glassware forming machine. Re. 30,998, Cl. 65-163.000.
- Pobuta, Walter; and Dolgos, Charles, to Thomas & Betts Corporation. Strap tension sensing and cut off mechanism. Re. 30,996, Cl. 140-123.600.
- Thomas & Betts Corporation: See—  
Pobuta, Walter; and Dolgos, Charles, Re. 30,996, Cl. 140-123.600.
- Tinsler, Theodore E., to White-Westinghouse Corporation. Humidifier drive system. Re. 30,999, Cl. 261-92.000.
- White-Westinghouse Corporation: See—  
Tinsler, Theodore E., Re. 30,999, Cl. 261-92.000.

## LIST OF DESIGN PATENTEEES

- AB Svenska Flaktfabriken: See—  
Svensson, Gunnar, 265,511, Cl. D25-92.000.
- Abe, Noboru; Goto, Akio; and Seiffert, Florian, to Matsushita Electric Works, Ltd. Hair dryer. 265,514, 7-20-82, Cl. D28-12.000.
- Ajia Amerikan Boueki Kabushiki Kaisha: See—  
Yamazaki, Shogo, 265,479, Cl. D16-6.000.
- Alcan Aluminum Corporation: See—  
Popek, Stephen, 265,509, Cl. D25-74.000.
- Alpha Racing Boats, Inc.: See—  
Pape, Timothy W., 265,475, Cl. D12-303.000.
- American International Industries, Inc.: See—  
Menashe, J. Nissim, 265,441, Cl. D6-17.000.
- American Standard Inc.: See—  
Paul, Stanley M., 265,498, Cl. D23-25.000.
- Andrulionis, Algis S.; and Mancini, Dereck V., to Consumers Glass Company Limited. Packaging cup. 265,462, 7-20-82, Cl. D9-429.000.
- Antocks Lairm Limited: See—  
Webb, Roger L., 265,443, Cl. D6-67.000.
- Appel, Mel; and Kress, George, to Appel, Mel. Toy blimp. 265,488, 7-20-82, Cl. D21-87.000.
- Appleman, Donald T., to Procter & Gamble Company, The. Continuous sheet material or the like. 265,519, 7-20-82, Cl. D59-2.00B.
- Aqualine Products Limited: See—  
Littlefield, Reg, 265,457, Cl. D8-351.000.
- Archer, Brice B. Plaque. 265,472, 7-20-82, Cl. D11-135.000.
- Baldwin, John G., to Thomas Ashworth & Co. Limited. Moisture tester. 265,465, 7-20-82, Cl. D10-56.000.
- Baldwin, John G., to Thomas Ashworth & Co. Limited. Moisture tester. 265,466, 7-20-82, Cl. D10-56.000.
- Balma, Lawrence M.: See—  
Dominy, David A.; and Balma, Lawrence M., 265,495, Cl. D21-226.000.
- Bannwart, Rene, to Corum, Ries, Bannwart & Co. Watch case. 265,464, 7-20-82, Cl. D10-38.000.
- Bartsch, Gunther M. Fireplace. 265,499, 7-20-82, Cl. D23-94.000.
- Bedwell, Paul E., Jr. Asphalt strip roofing shingle or similar article. 265,510, 7-20-82, Cl. D25-80.000.
- Berkley and Company, Inc.: See—  
McMickle, Robert L., 265,496, Cl. D22-23.000.
- Berlin, Daniel, to Roblin Industries, Inc. Storage-preventing base for shopping cart. 265,518, 7-20-82, Cl. D34-17.000.
- Berryman, Denise. Coffee table. 265,450, 7-20-82, Cl. D6-175.000.
- Bressler, Peter W., to Edmund Scientific Company. Telescope. 265,482, 7-20-82, Cl. D16-132.000.
- Bristoline, Inc.: See—  
Kaneda, Nobuo, 265,505, Cl. D24-21.000.
- Clanton, Robert A.: See—  
Winslow, Donald L.; and Clanton, Robert A., 265,456, Cl. D8-99.000.
- Combi Co., Ltd.: See—  
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, 265,491, Cl. D21-161.000.
- Consumers Glass Company Limited: See—  
Andrulionis, Algis S.; and Mancini, Dereck V., 265,462, Cl. D9-429.000.
- Continental Group, Inc., The: See—  
Hasegawa, Gary K., 265,463, Cl. D9-438.000.
- Corum, Ries, Bannwart & Co.: See—  
Bannwart, Rene, 265,464, Cl. D10-38.000.
- Cotes, John P. Deodorant dispenser for a toilet tank or the like. 265,501, 7-20-82, Cl. D23-150.000.
- Dominy, David A.; and Balma, Lawrence M., to Tracker Designs, Ltd. Roller skate. 265,495, 7-20-82, Cl. D21-226.000.
- Downs, Rictor J. Enclosure for the bed of a pick-up truck. 265,474, 7-20-82, Cl. D12-156.000.
- Duggan, James E. Combined towel rack and shelf. 265,445, 7-20-82, Cl. D6-91.000.
- Dunchock, Richard S., to SL Container Corporation. Storage cart. 265,517, 7-20-82, Cl. D34-17.000.
- Economics Laboratory, Inc.: See—  
Wilson, James L., 265,460, Cl. D9-378.000.
- Edmund Scientific Company: See—  
Bressler, Peter W., 265,482, Cl. D16-132.000.
- Finamore, Peter G. Tongue scraper. 265,506, 7-20-82, Cl. D24-23.000.
- Franz, Reinhard, to WERSI Electronic GmbH & Co. Electronic organ. 265,483, 7-20-82, Cl. D17-6.000.
- Fritzke, Audrey L. Novelty statuette or the like. 265,470, 7-20-82, Cl. D11-131.000.
- Goto, Akio: See—  
Abe, Noboru; Goto, Akio; and Seiffert, Florian, 265,514, Cl. D28-12.000.
- Grossman, Robert D. Article display stand. 265,442, 7-20-82, Cl. D6-27.000.
- Harris, Warren D., to Jedseth Products. Storage unit for locker or the like. 265,447, 7-20-82, Cl. D6-131.000.
- Hasegawa, Gary K., to Continental Group, Inc., The. End closure for a container. 265,463, 7-20-82, Cl. D9-438.000.
- Haythornthwaite, Peter F.: See—  
Karn, Richard M.; and Haythornthwaite, Peter F., 265,489, Cl. D21-88.000.
- Hegnes, Candace S.: See—  
Hegnes, Lois E.; Hegnes, Candace S.; and Hegnes, Herbert S., 265,469, Cl. D11-75.000.
- Hegnes, Herbert S.: See—  
Hegnes, Lois E.; Hegnes, Candace S.; and Hegnes, Herbert S., 265,469, Cl. D11-75.000.
- Hegnes, Lois E.; Hegnes, Candace S.; and Hegnes, Herbert S. Coffee bean pendant. 265,469, 7-20-82, Cl. D11-75.000.
- Holstine, Patricia I. Toy seal. 265,490, 7-20-82, Cl. D21-157.000.
- Iijima, Takekazu, to Pioneer Kabushiki Kaisha. Loudspeaker. 265,477, 7-20-82, Cl. D14-34.000.
- Integral Design, Inc.: See—  
Liptak, Richard M., 265,448, Cl. D6-140.000.
- Liptak, Richard M., 265,485, Cl. D20-10.000.
- Ishii, Yoshiyasu: See—  
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, 265,491, Cl. D21-161.000.
- Iwasaki, Osamu, to Slik Tripod Co., Ltd. Tripod head. 265,481, 7-20-82, Cl. D16-46.000.
- J. B. Originals, Inc.: See—  
Lanahan, John B., 265,471, Cl. D11-133.000.
- Jaffe, Myron. Runner's shoe plate. 265,438, 7-20-82, Cl. D2-317.000.
- Jedseth Products: See—  
Harris, Warren D., 265,447, Cl. D6-131.000.
- Johanson, Sandra L. Doll. 265,492, 7-20-82, Cl. D21-173.000.
- K & S Industries, Inc.: See—  
Krug, Charles C., 265,503, Cl. D23-163.000.
- Kaneda, Nobuo, to Bristoline, Inc. Electronic sphygmomanometer. 265,505, 7-20-82, Cl. D24-21.000.
- Karn, Richard M.; and Haythornthwaite, Peter F. Toy glider. 265,489, 7-20-82, Cl. D21-88.000.
- Kearnes, Thomas L., to Questor Corporation. Ceiling fan. 265,502, 7-20-82, Cl. D23-158.000.
- Keller, Huey T., to Vaughan Furniture Company, The. Mirror frame. 265,452, 7-20-82, Cl. D6-234.000.
- Kobayashi, Masashi, to Maruman Golf Kabushiki Kaisha. Golf club head. 265,494, 7-20-82, Cl. D21-220.000.



- Kress, George: See—  
Appel, Mel; and Kress, George, 265,488, Cl. D21-87.000.  
Kringlie, Gerry, Body-mounted basketball ball shooting aid. 265,493, 7-20-82, Cl. D21-201.000.  
Krug, Charles C., to K & S Industries, Inc. Housing for power blower. 265,503, 7-20-82, Cl. D23-163.000.  
Kutschmende, Ralph, Illuminated sign with channels for moveable character plates. 265,484, 7-20-82, Cl. D20-10.000.  
Lanahan, John B., to J. B. Originals, Inc. Trophy plaque. 265,471, 7-20-82, Cl. D11-133.000.  
Levine, Steven K. Dental flossing instrument. 265,515, 7-20-82, Cl. D28-64.000.  
Lightolier Incorporated: See—  
Thurston, Gerald E., 265,512, Cl. D26-85.000.  
Thurston, Gerald E., 265,513, Cl. D26-85.000.  
Liptak, Richard M., to Integral Design, Inc. Display holder for cards and the like. 265,448, 7-20-82, Cl. D6-140.000.  
Liptak, Richard M., to Integral Design, Inc. Display sign holder. 265,485, 7-20-82, Cl. D20-10.000.  
Littlefield, Reg. to Aqualine Products Limited. Wall plate. 265,457, 7-20-82, Cl. D8-351.000.  
Lopez-Benitez, Carlos L., to Monarch Furniture Corp. Desk. 265,449, 7-20-82, Cl. D6-161.000.  
Lundell, Neil C.; and Prowler, Gilbert S. Clapper slate. 265,486, 7-20-82, Cl. D20-10.000.  
M & M Luggage Co., Inc.: See—  
Stark, Ted, 265,439, Cl. D3-71.000.  
Mancini, Derek V.: See—  
Andrulionis, Algis S.; and Mancini, Derek V., 265,462, Cl. D9-429.000.  
Martin, Nick P. Simulative photo frame. 265,454, 7-20-82, Cl. D6-245.000.  
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Kobayashi, Masashi, 265,494, Cl. D21-220.000.  
Matsumoto, Susumu: See—  
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, 265,491, Cl. D21-161.000.  
Matsushita Electric Works, Ltd.: See—  
Abe, Noboru; Goto, Akio; and Seiffert, Florian, 265,514, Cl. D28-12.000.  
McMickle, Robert L., to Berkley and Company, Inc. Fishing rod handle. 265,496, 7-20-82, Cl. D22-23.000.  
Menashe, J. Nissim, to American International Industries, Inc. Pedicure table. 265,441, 7-20-82, Cl. D6-17.000.  
Monarch Furniture Corp.: See—  
Lopez-Benitez, Carlos L., 265,449, Cl. D6-161.000.  
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, to Combi Co., Ltd. Toy animal. 265,491, 7-20-82, Cl. D21-161.000.  
Nash, Lewis H. Oscope. 265,504, 7-20-82, Cl. D24-9.000.  
Nii, Takeshi. Chair. 265,444, 7-20-82, Cl. D6-68.000.  
Ogunro, E. Olayinka. Prosthetic nail. 265,507, 7-20-82, Cl. D24-33.000.  
Ohki, Masaharu. Ball transferring game board. 265,487, 7-20-82, Cl. D21-19.000.  
Orenstein, Henry. Chair. 265,440, 7-20-82, Cl. D6-12.000.  
Ornatek, Larry B. Pennant. 265,473, 7-20-82, Cl. D11-166.000.  
Osmos Plast AB: See—  
Thomasson, Harry, 265,458, Cl. D8-373.000.  
Panlmatic Company: See—  
Rustenberg, Robert K., 265,508, Cl. D24-52.000.  
Pape, Timothy W., to Alpha Racing Boats, Inc. Sailboat. 265,475, 7-20-82, Cl. D12-303.000.  
Parfums Christian Dior S.: See—  
Picot, Bernard T., 265,459, Cl. D9-300.000.  
Paul, Stanley M., to American Standard Inc. Combined spout and water control handles. 265,498, 7-20-82, Cl. D23-25.000.  
Perrier, Robert, to Testut-Aequitas. Scale. 265,467, 7-20-82, Cl. D10-91.000.  
Picot, Bernard T., to Parfums Christian Dior S. Dispensing container. 265,459, 7-20-82, Cl. D9-300.000.  
Pinnacle Furniture Company, Inc.: See—  
Wistehuff, Daniel D., 265,451, Cl. D6-177.000.  
Pioneer Kabushiki Kaisha: See—  
Iijima, Takekazu, 265,477, Cl. D14-34.000.  
Popek, Stephen, to Alcan Aluminum Corporation. Elongated ceiling panel or similar article. 265,509, 7-20-82, Cl. D25-74.000.  
Procter & Gamble Company, The: See—  
Appleman, Donald T., 265,519, Cl. D59-2.00B.  
Prowler, Gilbert S.: See—  
Lundell, Neil C.; and Prowler, Gilbert S., 265,486, Cl. D20-10.000.  
Questor Corporation: See—  
Kearnes, Thomas L., 265,502, Cl. D23-158.000.  
Roblin Industries, Inc.: See—  
Berlin, Daniel, 265,518, Cl. D34-17.000.  
Rustenberg, Robert K., to Panlmatic Company. Combined bottle neck clamp and tube holder. 265,508, 7-20-82, Cl. D24-52.000.  
Ryobi Ltd.: See—  
Sakamoto, Masakazu; and Shohoji, Takeshi, 265,497, Cl. D22-25.000.  
Sakamoto, Masakazu; and Shohoji, Takeshi, to Ryobi Ltd. Fishing reel. 265,497, 7-20-82, Cl. D22-25.000.  
Seaman, Gary G.; and Seibold, Donald W., to Western Electric Company, Incorporated. Portable telephone equipment cabinet chassis. 265,478, 7-20-82, Cl. D14-52.000.  
Seibold, Donald W.: See—  
Seaman, Gary G.; and Seibold, Donald W., 265,478, Cl. D14-52.000.  
Seiffert, Florian: See—  
Abe, Noboru; Goto, Akio; and Seiffert, Florian, 265,514, Cl. D28-12.000.  
Shohoji, Takeshi: See—  
Sakamoto, Masakazu; and Shohoji, Takeshi, 265,497, Cl. D22-25.000.  
Skrypek, John P.; and Williams, Robert, to Sun Chemical Corporation. Photoprocessor. 265,480, 7-20-82, Cl. D16-27.000.  
SL Container Corporation: See—  
Dunchock, Richard S., 265,517, Cl. D34-17.000.  
Slik Tripod Co., Ltd.: See—  
Iwasaki, Osamu, 265,481, Cl. D16-46.000.  
Smith, Donald B. Picture display frame. 265,453, 7-20-82, Cl. D6-235.000.  
Smith, William T. Fireplace unit. 265,500, 7-20-82, Cl. D23-97.000.  
Societe Technisynthese (S.A.R.L.): See—  
Vernonet, Christian, 265,435, Cl. D2-309.000.  
Vernonet, Christian, 265,436, Cl. D2-309.000.  
Vernonet, Christian, 265,437, Cl. D2-309.000.  
Stark, Ted, to M & M Luggage Co., Inc. Luggage. 265,439, 7-20-82, Cl. D3-71.000.  
Sun Chemical Corporation: See—  
Skrypek, John P.; and Williams, Robert, 265,480, Cl. D16-27.000.  
Svensson, Gunnar, to AB Svenska Flakfabriken. Panel structure. 265,511, 7-20-82, Cl. D25-92.000.  
Testut-Aequitas: See—  
Perrier, Robert, 265,467, Cl. D10-91.000.  
Thomas Ashworth & Co. Limited: See—  
Baldwin, John G., 265,465, Cl. D10-56.000.  
Baldwin, John G., 265,466, Cl. D10-56.000.  
Thomasson, Harry, to Osmos Plast AB. Mounting bracket. 265,458, 7-20-82, Cl. D8-373.000.  
Thurston, Gerald E., to Lightolier Incorporated. Lighting fixture. 265,512, 7-20-82, Cl. D26-85.000.  
Thurston, Gerald E., to Lightolier Incorporated. Lighting fixture. 265,513, 7-20-82, Cl. D26-85.000.  
Tracker Designs, Ltd.: See—  
Dominy, David A.; and Balma, Lawrence M., 265,495, Cl. D21-226.000.  
Valley, Earl M. Dart container. 265,461, 7-20-82, Cl. D9-425.000.  
Valli & Colombo S.p.A.: See—  
Valli, Pasquale, 265,446, Cl. D6-122.000.  
Valli, Pasquale, to Valli & Colombo S.p.A. Coathook. 265,446, 7-20-82, Cl. D6-122.000.  
Vaughan Furniture Company, The: See—  
Keller, Huey T., 265,452, Cl. D6-234.000.  
Vernonet, Christian, to Societe Technisynthese (S.A.R.L.). Shoe. 265,435, 7-20-82, Cl. D2-309.000.  
Vernonet, Christian, to Societe Technisynthese (S.A.R.L.). Shoe. 265,436, 7-20-82, Cl. D2-309.000.  
Vernonet, Christian, to Societe Technisynthese (S.A.R.L.). Shoe. 265,437, 7-20-82, Cl. D2-309.000.  
Wacker, Roger M. Horse blanket. 265,516, 7-20-82, Cl. D30-37.000.  
Wallace, Dan F.: See—  
Wallace, Robert S., 265,455, Cl. D6-246.000.  
Wallace, Robert S., to Wallace, Dan F. Support for picture or the like. 265,455, 7-20-82, Cl. D6-246.000.  
Webb, Roger L., to Antocks Laim Limited. Seat. 265,443, 7-20-82, Cl. D6-67.000.  
WERSI Electronic GmbH & Co.: See—  
Franz, Reinhard, 265,483, Cl. D17-6.000.  
Western Electric Company, Incorporated: See—  
Seaman, Gary G.; and Seibold, Donald W., 265,478, Cl. D14-52.000.  
Williams, Robert: See—  
Skrypek, John P.; and Williams, Robert, 265,480, Cl. D16-27.000.  
Wilson, James L., to Economics Laboratory, Inc. Jug. 265,460, 7-20-82, Cl. D9-378.000.  
Winslow, Donald L.; and Clanton, Robert A. Housing for cutting implement. 265,456, 7-20-82, Cl. D8-99.000.  
Wistehuff, Daniel D., to Pinnacle Furniture Company, Inc. Table. 265,451, 7-20-82, Cl. D6-177.000.  
Yamazaki, Shogo, to Ajia Amerikan Boueki Kabushiki Kaisha. Combined binocular and detachable camera. 265,479, 7-20-82, Cl. D16-6.000.  
Yeager, William. Highway signal. 265,468, 7-20-82, Cl. D10-115.000.  
Zizza, John M. Racing car control panel. 265,476, 7-20-82, Cl. D13-12.000.

## LIST OF PLANT PATENTEES

- Conard-Pyle Company: See—  
Meilland, Marie L., 4,868, Cl. 15.000.  
Meilland, Marie L., to Conard-Pyle Company. Rose plant — Meirilocra variety. 4,868, 7-20-82, Cl. 15.000.  
Moore, Ralph S. Rose plant. 4,867, 7-20-82, Cl. 7.000.

## LIST OF REEXAMINATION PATENTEES

TO WHOM

## CERTIFICATES WERE ISSUED

- Strauss, Herbert S. and Sheinberg, Lawrence, to Duro-Test Corp., The High Intensity Discharge Lamp with Integral Means for Arc Extinguishing. B1 4,156,830, Cl. 315—73.  
Duro-Test Corp., The: See—  
Strauss, Herbert S. and Sheinberg, Lawrence. B1 4,156,830, Cl. 315—73.  
Rumbaugh, Paul S., to Altec Corporation. Input Decoupling Circuit for Transistor Differential Amplifier. B1 4,180,780, Cl. 330—252.  
Altec Corporation: See—  
Rumbaugh, Paul S. B1 4,180,780, Cl. 330—252.  
Schuurs, Antonius Hermanus Wilbelmus Maria and Van Weemen, Bauke Klaas, to Organon, Inc. Method for the Determination of Antigens and Antibodies. B1 3,654,090, Cl. 435—7.  
Organon, Inc.: See—  
Schuurs, Antonius Hermanus Wilbelmus Maria and Van Weemen, Bauke Klaas. B1 3,654,090, Cl. 435—7.



ISSUED JULY 20, 1982

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NOTE.—First number, class; second number, subclass; third number, patent number

		CLASS 2		298	4,339,878	235.1	4,339,930	CLASS 91		66	4,340,039	CLASS 152	
19	4,339,830	CLASS 33		178 E	4,339,879	514 R	4,340,405	42	4,339,984	76 C	4,340,040	209 R	4,340,103
CLASS 3		293	4,339,880	CLASS 65		9	4,340,406	307	4,339,985	80 C	4,340,041	330 L	4,340,104
1.5	4,339,831	444	4,339,881	CLASS 40		21.4	4,340,407	375 A	4,339,986	132 D	4,340,042	334 R	4,340,105
CLASS 4		9	4,339,882	CLASS 41		31	4,340,408	426	4,339,987	204.21	4,340,044	CLASS 156	
287	4,339,832	27	4,339,883	CLASS 42		43	4,340,409	493	4,339,988	204.24	4,340,045	89	4,340,436
542	4,339,833	93	4,339,884	CLASS 43		163	Re.30,998	CLASS 92		207.17	4,340,046	224	4,340,437
CLASS 5		27	4,339,885	CLASS 44		182.3	4,340,410	53	4,339,989	207.21	4,340,047	234	4,340,438
255	4,339,834	93	4,339,886	CLASS 45		375	4,340,411	99	4,339,990	213 R	4,340,048	323	4,340,439
413	4,339,835	309	4,339,887	CLASS 46		182.5	4,340,412	CLASS 98		214 C	4,340,050	330.9	4,340,440
CLASS 8		595	4,339,888	CLASS 47		375	4,340,413	40 VM	4,339,991	214 R	4,340,049	512	4,340,441
CLASS 10		466	4,339,889	CLASS 48		28	4,339,932	CLASS 99		215	4,340,051	CLASS 160	
114.5	4,340,381	69	4,339,933	CLASS 49		69	4,339,933	348	4,339,992	247	4,340,052	332	4,340,106
137	4,340,382	CLASS 51		CLASS 50		59	4,340,414	354	4,339,993	260	4,340,053	CLASS 162	
494	4,340,383	2	4,339,887	CLASS 52		76	4,340,415	CLASS 101		270	4,340,054	146	4,340,442
495	4,340,384	26.1	4,339,888	CLASS 53		81	4,340,416	4	4,339,994	272.1	4,340,055	CLASS 164	
527	4,340,385	CLASS 54		CLASS 55		92	4,340,417	310	4,339,995	284	4,340,057	35	4,340,107
541	4,340,386	135 A	4,339,889	CLASS 56		93	4,340,418	CLASS 102		287	4,340,058	63	4,340,108
580	4,340,387	CLASS 57		CLASS 58		123	4,340,419	CLASS 103		305	4,340,059	97	4,340,109
584	4,340,388	9	4,339,890	CLASS 59		157	4,339,934	3	4,339,996	421	4,340,063	435	4,340,110
620	4,340,389	71	4,339,891	CLASS 60		17	4,339,935	216	4,339,997	496	4,340,064	CLASS 165	
123 P	4,339,836	74	4,340,397	CLASS 61		77	4,339,936	CLASS 104		712	4,340,065	2	4,340,111
CLASS 15		192	4,339,892	CLASS 62		110	4,339,937	CLASS 105		749	4,340,066	16	4,340,112
169	4,339,837	CLASS 51		CLASS 63		178	4,339,938	87	4,340,427	763	4,340,067	25	4,340,113
245	4,339,838	168	4,339,893	CLASS 64		349	4,339,939	122	4,340,428	766	4,340,068	110	4,340,114
250.04	4,339,839	281 R	4,339,894	CLASS 65		402	4,339,940	164	4,340,429	776	4,340,069	122	4,340,115
321	4,339,840	287	4,339,895	CLASS 66		412	4,339,941	262	4,340,431	CLASS 130		CLASS 166	
359	4,339,841	298	4,339,896	CLASS 67		453.16	4,339,942	CLASS 110		5 D	4,340,070	215	4,340,116
CLASS 16		436	4,339,897	CLASS 68		4 R	4,339,943	186	4,339,998	CLASS 131		341	4,340,117
32	4,339,842	168	4,339,893	CLASS 52		19	4,339,944	226	4,339,999	202	4,340,071	CLASS 172	
62	4,339,843	281 R	4,339,894	CLASS 53		61.2	4,339,945	245	4,339,999	273	4,340,072	49.5	4,340,118
82	4,339,844	287	4,339,895	CLASS 54		151	4,339,946	CLASS 112		291	4,340,073	789	4,340,119
300	4,339,845	298	4,339,896	CLASS 55		155	4,339,947	143	4,340,001	362	4,340,074	CLASS 173	
CLASS 17		436	4,339,897	CLASS 56		157	4,339,948	158 E	4,340,002	CLASS 135		131	4,340,120
1 R	4,339,846	94	4,339,898	CLASS 57		155	4,339,949	191	4,340,003	15 PQ	4,340,075	134	4,340,121
1 S	4,339,847	157	4,339,899	CLASS 58		200	4,339,950	CLASS 114		CLASS 137		CLASS 174	
11	4,339,848	200	4,339,900	CLASS 59		204	4,339,951	67 A	4,340,004	13	4,340,076	35 MS	4,340,770
52	4,339,849	202	4,339,901	CLASS 60		310	4,339,952	105	4,340,005	68 A	4,340,077	36	4,340,771
69	4,339,850	624	4,339,902	CLASS 61		624	4,339,953	197	4,340,006	205.5	4,340,078	51	4,340,772
CLASS 19		506	4,339,903	CLASS 62		657	4,339,954	CLASS 116		207	4,340,079	107	4,340,773
97	4,339,851	657	4,339,903	CLASS 63		728	4,339,955	81	4,340,007	223	4,340,080	138 G	4,340,774
264	4,339,852	CLASS 53		CLASS 64		861.17	4,339,956	215	4,340,008	364	4,340,081	CLASS 175	
CLASS 23		137	4,339,904	CLASS 65		861.24	4,339,957	227	4,340,009	426	4,340,082	78	4,340,122
230 B	4,340,390	CLASS 55		CLASS 66		CLASS 74		CLASS 118		499	4,340,083	CLASS 178	
	4,340,392	25	4,340,398	CLASS 67		CLASS 75		306	4,340,010	512	4,340,084	3	4,340,775
	4,340,393	269	4,340,399	CLASS 68		5.6 A	4,339,959	410	4,340,011	514	4,340,085	18	4,340,776
	4,340,394	305	4,340,400	CLASS 69		110	4,339,961	CLASS 119		625.64	4,340,087	CLASS 179	
230 EP	4,340,391	335	4,340,402	CLASS 70		335	4,339,962	103	4,340,012	629	4,340,088	1 B	4,340,779
293 R	4,340,396	574	4,339,963	CLASS 71		604 R	4,339,964	CLASS 123		121	4,340,089	1 D	4,340,778
CLASS 24		523	4,340,403	CLASS 72		607	4,339,965	3	4,340,013	177	4,340,090	1 GS	4,340,782
155 BR	4,339,853	CLASS 56		CLASS 73		650	4,339,966	41.63	4,340,014	383 R	4,340,091	1 SA	4,340,781
230 AL	4,339,854	327 R	4,339,906	CLASS 74		10 R	4,340,420	73 R	4,340,015	CLASS 140		2 A	4,340,783
CLASS 26		341	4,339,907	CLASS 75		25	4,340,421	182	4,340,017	123.6	Re.30,996	6.12	4,340,784
103	4,339,855	503	4,339,908	CLASS 76		58	4,340,422	193 C	4,340,018	147	4,340,097	51 AA	4,340,785
CLASS 28		58.52	4,339,909	CLASS 77		87	4,340,423	256	4,340,019	CLASS 141		110 A	4,340,786
155	4,339,856	275	4,339,912	CLASS 78		126 E	4,340,424	374	4,340,020	1	4,340,098	121 D	4,340,787
CLASS 29		294	4,339,913	CLASS 79		257	4,340,425	425	4,340,021	98	4,340,099	175.3 R	4,340,788
26 A	4,339,857	302	4,339,914	CLASS 80		9.51	4,339,967	453	4,340,022	CLASS 142		CLASS 180	
131	4,339,858	339	4,339,915	CLASS 81		57.39	4,339,968	510	4,340,023	1	4,340,095	54 A	4,340,123
193.03	4,339,859	411	4,339,916	CLASS 82		436	4,339,969	538	4,340,024	98	4,340,096	208	4,340,124
419	4,339,860	416	4,339,917	CLASS 83		60	4,339,970	CLASS 124		CLASS 144		215	4,340,125
416	4,339,861	39.02	4,339,918	CLASS 84		13	4,339,971	86	4,340,025	193 A	4,340,098	305	4,340,126
424	4,339,862	39.28 R	4,339,917	CLASS 85		30	4,339,972	5	4,340,026	220	4,340,099	327	4,340,127
426.4	4,339,863	316	4,339,918	CLASS 86		100	4,339,973	25 R	4,340,027	CLASS 145		327	4,340,128
430	4,339,864	332	4,339,919	CLASS 87		13	4,339,974	92 R	4,340,028	1 R	4,340,100	CLASS 181	
523	4,339,865	533	4,339,920	CLASS 88		30	4,339,975	237	4,340,029	30 R	4,340,101	200	4,340,129
525	4,339,866	547 R	4,339,921	CLASS 89		100	4,339,976	421	4,340,030	CLASS 146		CLASS 182	
559	4,339,867	602	4,339,922	CLASS 90		617	4,339,977	424	4,340,031	11.5 P	4,340,432	179	4,340,130
564.1	4,339,868	673	4,339,923	CLASS 91		684	4,339,978	430	4,340,032	16	4,340,433	CLASS 187	
576 B	4,339,869	753	4,339,924	CLASS 92		848	4,339,979	438	4,340,033	31.55	4,340,434	29 R	4,340,131
CLASS 24		596	4,339,870	CLASS 93		1.03	4,339,978	452	4,340,034	31.57	4,340,435	CLASS 190	
596	4,339,871	5	4,339,926	CLASS 94		1.23	4,339,979	CLASS 128		428	4,340,436	18 A	4,340,132
597	4,339,872	6	4,339,927	CLASS 95		1.28	4,339,980	1 R	4,340,037	CLASS 148		CLASS 192	
598	4,339,873	79	4,339,928	CLASS 96		291	4,339,981	1.3	4,340,038	1.5 R	4,340,102	30 W	4,340,133
602 R	4,339,874	198	4,340,404	CLASS 97		415	4,339,982	CLASS 129		CLASS 149		CLASS 193	
CLASS 30		62	4,339,928	CLASS 98		1.03	4,339,983	CLASS 130		CLASS 150		CLASS 194	
90	4,339,876	79	4,339,929	CLASS 99		1.03	4,339,984	CLASS 131		CLASS 151		CLASS 195	
293	4,339,877	198	4,340,404	CLASS 100		1.03	4,339,985	CLASS 132		CLASS 152		CLASS 196	



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67 R	4,340,134	497	4,340,807	184	4,340,496	53	4,340,245	252	B1 4,180,780	124	4,340,906
98	4,340,135		CLASS 221	188.3 R	4,340,497		CLASS 290		CLASS 331	128.6	4,340,907
	CLASS 193	21	4,340,150	299.5	4,340,498	40 R	4,340,820	56	4,340,870	194.1	4,340,908
15	4,340,136	93	4,340,151	321	4,340,500	53	4,340,821	111	4,340,871	213	4,340,909
	CLASS 196		CLASS 222	373	4,340,501	55	4,340,822		CLASS 333	243	4,340,910
457	4,340,137	1	4,340,152	429 B	4,340,502		CLASS 292	152	4,340,872	280	4,340,911
	CLASS 200	94	4,340,153	459	4,340,503	113	4,340,246	161	4,340,873	283	4,340,912
11 R	4,340,789	135	4,340,154	466 PT	4,340,504		CLASS 294	165	4,340,874		CLASS 360
144 C	4,340,790	146 HE	4,340,155	501.1	4,340,506	63 R	4,340,247	166	4,340,875	40	4,340,913
268	4,340,793	211	4,340,156	512	4,340,507	93	4,340,248		CLASS 335	59	4,340,914
289	4,340,794	321	4,340,157	520	4,340,508	95	4,340,249	276	4,340,876	61	4,340,915
295	4,340,795	389	4,340,158	529	4,340,509		CLASS 297		CLASS 338	72.2	4,340,916
302	4,340,791	595	4,340,159	628	4,340,509		CLASS 299	42	4,340,877	74.2	4,340,917
304	4,340,792		CLASS 254		CLASS 254	264	4,340,250		CLASS 339	109	4,340,918
	CLASS 202	18	4,340,161	98	4,340,205	440	4,340,251		CLASS 361		4,340,919
99	4,340,444	48	4,340,162	199	4,340,206		CLASS 299		CLASS 362	49	4,340,920
262	4,340,445		CLASS 228		CLASS 260		CLASS 299	14 R	4,340,265	56	4,340,921
	CLASS 203	19	4,340,163	8	4,340,510	4	4,340,252	17 CF	4,340,266	91	4,340,922
19	4,340,446	57	4,340,164	112 B	4,340,535	5	4,340,253	18 R	4,340,268	120	4,340,923
36	4,340,447	173 C	4,340,165	145 A	4,340,536	11	4,340,254	90 C	4,340,269	127	4,340,924
	CLASS 204	179	4,340,166	158	4,340,537	37	4,340,255	95 D	4,340,270	172	4,340,925
1 T	4,340,448	180 R	4,340,167	239.55 D	4,340,538	87	4,340,256		CLASS 340	229	4,340,926
15	4,340,449		CLASS 229	245.2 R	4,340,539		CLASS 303	27 R	4,340,878		CLASS 362
25	4,340,450		CLASS 229	428.5	4,340,547	114	4,340,257	286 R	4,340,879	49	4,340,928
46 G	4,340,451	23 BT	4,340,168	544 Y	4,340,548	115	4,340,258	310 R	4,340,880	153	4,340,929
129	4,340,452	31 R	4,340,169		CLASS 261	66	4,340,823	347 CC	4,340,881	204	4,340,930
159.15	4,340,453	52 B	4,340,170	92	Re.30,999	115	4,340,824	347 NT	4,340,882		CLASS 363
159.16	4,340,454		CLASS 225	144	4,340,349	116	4,340,825	347 R	4,340,883	44	4,340,931
181 C	4,340,455	23 R	4,340,171		CLASS 264	157	4,340,826	548	4,340,884		CLASS 364
192 E	4,340,456		CLASS 235	13	4,340,550	477	4,340,827	632	4,340,885	200	4,340,932
195 R	4,340,457	92 AC	4,340,808	25	4,340,551		CLASS 308	682	4,340,886	422	4,340,933
	4,340,458	39	4,340,809	39	4,340,552	4 A	4,340,259	711	4,340,887	426	4,340,934
258	4,340,459	101	4,340,810	40.7	4,340,553	10	4,340,260	755	4,340,888	443	4,340,935
298	4,340,460	375	4,340,810		4,340,554	187	4,340,261	793	4,340,889	468	4,340,936
	4,340,462		CLASS 236	65	4,340,555	187	4,340,262	870.32	4,340,890	510	4,340,937
216	4,340,138	13	4,340,172	119	4,340,556	49 R	4,340,828	713	4,340,891	603	4,340,938
349	4,340,139	46 R	4,340,173	146	4,340,557	71	4,340,829	768	4,340,892	745	4,340,940
373	4,340,140	19	4,340,174	151	4,340,558	89	4,340,830		CLASS 346		CLASS 365
531	4,340,141		CLASS 237	181	4,340,559	239	4,340,831	1.1	4,340,893	16	4,340,942
	CLASS 239	328.2	4,340,562	297	4,340,560	239	4,340,832	108	4,340,894	194	4,340,943
11 R	4,340,463	518	4,340,563	328.2	4,340,562	268	4,340,833	140 R	4,340,895	2	4,340,944
40	4,340,464		CLASS 266	518	4,340,563	313 D	4,340,834		CLASS 350	62	4,340,945
120	4,340,465	33	4,340,175		CLASS 266	321	4,340,835	16	4,340,271	261	4,340,946
210	4,340,466	102	4,340,176	155	4,340,207		CLASS 312	96.14	4,340,272	336	4,340,947
	CLASS 209	242	4,340,177	220	4,340,208	266	4,340,263	105	4,340,273		CLASS 366
11	4,340,142	265.31	4,340,178	266	4,340,209		CLASS 313	106	4,340,301	2	4,340,948
158	4,340,143	422	4,340,180		CLASS 267	211	4,340,836	128	4,340,274	261	4,340,949
166	4,340,467	533.3	4,340,181	137	4,340,210	259	4,340,837		CLASS 346	33	4,340,949
214	4,340,468	680	4,340,182		CLASS 269	348	4,340,838	164	4,340,276	44	4,340,950
315	4,340,469	710	4,340,183	110	4,340,211	466	4,340,839	347 E	4,340,277	53	4,340,951
	CLASS 210	82.3	4,340,184		CLASS 270		CLASS 315	357	4,340,278	158	4,340,952
94	4,340,470	186 R	4,340,185	5	4,340,212		CLASS 316	422	4,340,279		CLASS 367
101	4,340,471		CLASS 242		CLASS 271	58	4,340,840	429	4,340,280	6	4,340,945
104	4,340,472	7.05 B	4,340,186		CLASS 271	75	4,340,841		CLASS 351	76	4,340,946
173	4,340,473	35.5 A	4,340,187	219	4,340,213	186	4,340,842		CLASS 351	93	4,340,947
199	4,340,474	55.3	4,340,188		CLASS 272	205	4,340,843	6	4,340,281	158	4,340,948
232	4,340,475	68.5	4,340,188		CLASS 272	283	4,340,844	154	4,340,282		CLASS 369
241	4,340,476	84.1 R	4,340,189	70	4,340,214	327	4,340,845	161	4,340,283	33	4,340,949
286	4,340,477	107	4,340,190	109	4,340,215	73	B1 4,156,830		CLASS 354	44	4,340,950
490	4,340,478	107.6	4,340,192	113	4,340,217		CLASS 316	50	4,340,284	53	4,340,951
	4,340,479	129.72	4,340,193	136	4,340,218	19	4,340,264	105	4,340,285	126	4,340,952
500.2	4,340,480	199	4,340,194		CLASS 273		CLASS 318	128	4,340,287	173	4,340,953
	4,340,481		CLASS 244	1 GA	4,340,219	135	4,340,846	171	4,340,288	213	4,340,954
502	4,340,482	1 R	4,340,196	1 GC	4,340,223	490	4,340,847	173	4,340,289	244	4,340,955
607	4,340,483	3.1	4,340,197	1 GF	4,340,220	561	4,340,848	215	4,340,290	256	4,340,956
675	4,340,484		CLASS 248	43 E	4,340,221		CLASS 322	275	4,340,291	267	4,340,957
693	4,340,485		CLASS 248	61 R	4,340,222	28	4,340,849	291	4,340,292	275	4,340,958
705	4,340,486	122	4,340,198	67 A	4,340,224		CLASS 323	321	4,340,293		CLASS 370
	4,340,487	544	4,340,199	73 E	4,340,225	218	4,340,850		CLASS 355	62	4,340,960
718	4,340,488		CLASS 249	73 F	4,340,226	311	4,340,851	14 R	4,340,295	84	4,340,961
759	4,340,489	3	4,340,200	77 R	4,340,227		CLASS 324	35 C	4,340,296	100	4,340,962
764	4,340,490		CLASS 250	138 R	4,340,228		CLASS 324	50	4,340,297		CLASS 371
	4,340,491		CLASS 250	164	4,340,229	51	4,340,852	75	4,340,298	37	4,340,963
87	4,340,144	201	4,340,811	171	4,340,230		CLASS 356		CLASS 356	38	4,340,964
124	4,340,145	203 R	4,340,812	243	4,340,231		CLASS 356		CLASS 356	62	4,340,965
	CLASS 215	221	4,340,813	260	4,340,232	57 DE	4,340,854	28.5	4,340,299		CLASS 372
100.5	4,340,146	231 SE	4,340,814		CLASS 277	72	4,340,855	71	4,340,300	45	4,340,966
226	4,340,147	307	4,340,815	1	4,340,233	73 R	4,340,856	241	4,340,302	46	4,340,967
329	4,340,148	445 T	4,340,816		CLASS 279	158 F	4,340,860	313	4,340,303	60	4,340,968
343	4,340,149	458	4,340,817	3	4,340,234	158 P	4,340,858	351	4,340,304	93	4,340,969
	CLASS 219	509	4,340,818		CLASS 280	158 R	4,340,859	356	4,340,305		CLASS 374
10.55 B	4,340,796	578	4,340,819		CLASS 280	205	4,340,861	360	4,340,306	162	4,339,951
	4,340,797		CLASS 251	6 H	4,340,235	309	4,340,862	418	4,340,307		CLASS 376
10.55 C	4,340,799	6	4,340,201		CLASS 252		CLASS 328		CLASS 357	208	4,340,970
56	4,340,802	31	4,340,202		CLASS 252	63	4,340,863	10	4,340,898	342	4,340,443
56.22	4,340,803	322	4,340,203		CLASS 252	133	4,340,864	29	4,340,899		CLASS 378
137.41	4,340,804	327	4,340,204		CLASS 252		CLASS 330	56	4,340,900	40	4,340,971
146.23	4,340,805		CLASS 252	461 A	4,340,241		CLASS 330	68	4,340,901		CLASS 400
413	4,340,806	8.55 B	4,340,525		CLASS 252	69	4,340,865	74	4,340,902	118	4,340,312
		8.55 D	4,340,492		CLASS 252	254	4,340,866		CLASS 358	202.1	4,340,313
		18	4,340,493		CLASS 252	277	4,340,867				
		62.56	4,340,494		CLASS 252	294	4,340,868				
		78.3	4,340,495		CLASS 252	310	4,340,869				

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625	4,340,314	387	4,340,575	228	4,340,619	CLASS 433	77	4,340,514	17.4	4,340,726	
690.4	4,340,315	446	4,340,576	292	4,340,620		99	4,340,533	23	4,340,728	
	CLASS 402	450	4,340,577	294	4,340,621	18	4,340,363	4,340,534		4,340,729	
68	4,340,316	579	4,340,578	299	4,340,622	80	4,340,365	4,340,539	26	4,340,730	
	CLASS 403	657	4,340,580	361	4,340,623	82	4,340,366	4,340,515	87	4,340,731	
						88	4,340,367	272	4,340,526	127	4,340,724
25	4,340,317		CLASS 424	1	4,340,624	89	4,340,367	297	4,340,524		
217	4,340,318	35	4,340,581	17	4,340,625	99	4,340,368	432	4,340,527	CLASS 542	
388	Re 30,997	1	4,340,582	35	4,340,626	162	4,340,369	504	4,340,511	426	4,340,732
	CLASS 404	49	4,340,628	36	4,340,627		CLASS 434		4,340,523		CLASS 544
16	4,340,319	52	4,340,630	64	4,340,629	22	4,340,370	507	4,340,682		
122	4,340,320	79	4,340,584	74	4,340,630	29	4,340,371	513	4,340,528	224	4,340,733
	CLASS 405	92	4,340,585	89	4,340,631	88	4,340,372	515	4,340,530	282	4,340,734
66	4,340,321	95	4,340,586	90	4,340,632	174	4,340,373	556	4,340,531	300	4,340,735
168	4,340,322	101	4,340,588	99	4,340,633	201	4,340,374	766	4,340,522	301	4,340,736
	CLASS 406	132	4,340,589	134	4,340,634		4,340,375	854	4,340,532		CLASS 546
83	4,340,323	177	4,340,590	164	4,340,635	7	4,340,668	59	4,340,686	108	4,340,737
	CLASS 407	212	4,340,591	215	4,340,636	7	4,340,669	148	4,340,683		CLASS 548
114	4,340,324	236	4,340,592	220	4,340,637	14	4,340,670	193	4,340,687	151	4,340,738
116	4,340,325	238	4,340,593	323	4,340,638	20	4,340,671	194	4,340,684	169	4,340,740
	CLASS 408	244	4,340,594	338	4,340,639	35	4,340,672	247	4,340,685	236	4,340,739
16	4,340,326	251	4,340,602	349	4,340,640	45	4,340,673	256	4,340,688	237	4,340,741
59	4,340,327	256	4,340,595	402	4,340,641	97	4,340,674	263	4,340,689	255	4,340,742
239 A	4,340,328	258	4,340,596	403	4,340,642	172	4,340,675	271	4,340,690	318	4,340,743
	CLASS 410	263	4,340,597	423.7	4,340,643	189	4,340,676	329	4,340,691	346	4,340,744
100	4,340,329	272	4,340,598	428	4,340,644	232	4,340,677	337	4,340,692	347	4,340,745
	CLASS 411	273 B	4,340,600	429	4,340,645	246	4,340,678	342	4,340,693	440	4,340,746
33	4,340,330	300	4,340,601		4,340,646	253	4,340,679	350	4,340,694	503	4,340,747
457	4,340,331	301	4,340,602		4,340,647		4,340,680	390	4,340,695		CLASS 549
	CLASS 414	322	4,340,603		4,340,648	7	4,340,681	420	4,340,696	78	4,340,748
467	4,340,332		4,340,604		4,340,649	74	4,340,376	438	4,340,697	241	4,340,749
607	4,340,333		4,340,605		4,340,650		CLASS 441	460	4,340,698	356	4,340,750
	CLASS 415	71	4,340,340		4,340,651		CLASS 455	503	4,340,700	368	4,340,751
172 A	4,340,334	72 R	4,340,342		4,340,652	39	4,340,972		CLASS 526	414	
		72 S	4,340,343		4,340,653	228	4,340,973	68	4,340,701		CLASS 560
138	4,340,335	91	4,340,344		4,340,654	258	4,340,974	70	4,340,702	102	4,340,747
	CLASS 416	92	4,340,345		4,340,655	315	4,340,975	79	4,340,703	177	4,340,748
189	4,340,336	149	4,340,346		4,340,656		CLASS 464	125	4,340,704	182	4,340,749
304	4,340,337	150	4,340,347		4,340,657	111	4,339,931	139	4,340,705	183	4,340,750
	CLASS 417	152	4,340,348		4,340,658		CLASS 474	207	4,340,706		CLASS 562
26	4,340,338	217	4,340,349		4,340,659	81	4,340,377	289	4,340,707	401	4,340,751
55	4,340,339	270	4,340,350		4,340,660	244	4,340,378	313	4,340,708	485	4,340,752
	CLASS 418	290	4,340,351		4,340,661		CLASS 493	15	4,340,709	528	4,340,753
		409	4,340,352		4,340,662	211	4,340,379		CLASS 528	584	4,340,754
	CLASS 422	456	4,340,353		4,340,663	316	4,340,380	21	4,340,710		CLASS 564
56	4,340,364	517	4,340,354		4,340,664		CLASS 521	45	4,340,712	233	4,340,755
143	4,340,365	548	4,340,355		4,340,665			89	4,340,713	367	4,340,756
245	4,340,368		4,340,356		4,340,666	27	4,340,680	99	4,340,714	407	4,340,757
	CLASS 423	649	4,340,357		4,340,667	123	4,340,681		4,340,715	409	4,340,758
			4,340,358		4,340,668		CLASS 523	100	4,340,716	412	4,340,759
22	4,340,369		4,340,359		4,340,669			111	4,340,717	462	4,340,760
53	4,340,370		4,340,360		4,340,670		CLASS 524	118	4,340,718		CLASS 568
242	4,340,371		4,340,361		4,340,671	122	4,340,512	128	4,340,719	11	4,340,761
328	4,340,373		4,340,362		4,340,672	209	4,340,513	230	4,340,720	24	4,340,762
347	4,340,374		4,340,363		4,340,673	216	4,340,514	232	4,340,721	344	4,340,763
			4,340,364		4,340,674	414	4,340,515	272	4,340,722	386	4,340,764
	CLASS 427		4,340,365		4,340,675		CLASS 525	480	4,340,723	625	4,340,765
53	4,340,375		4,340,366		4,340,676			497	4,340,724	720	4,340,766
242	4,340,376		4,340,367		4,340,677	2	4,340,516		4,340,725	799	4,340,767
328	4,340,377		4,340,368		4,340,678	13	4,340,517	1.1	4,340,726		4,340,768
347	4,340,378		4,340,369		4,340,679	59	4,340,518	16.1	4,340,727	899	4,340,769



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01 : 4,340,633	4,340,291	09 : 4,339,842	4,340,872	4,340,727	4,340,613
4,340,818	4,340,304	4,339,929	4,340,878	4,340,730	4,340,645
4,340,372	4,340,306	4,339,939	4,340,888	4,340,770	4,340,743
02 : 4,339,916	4,340,307	4,339,974	4,340,929	4,340,806	4,340,755
4,339,917	4,340,309	4,340,034	4,340,932	4,340,874	4,339,893
4,340,081	4,340,322	4,340,050	4,340,055	4,340,886	4,339,927
4,340,095	4,340,326	4,340,139	4,340,058	4,340,891	4,339,959
4,340,200	4,340,336	4,340,140	4,340,347	4,340,920	4,339,971
4,340,456	4,340,343	4,340,141	4,340,377	4,340,923	4,339,993
4,340,676	4,340,353	4,340,190	4,340,380	4,340,960	4,340,091
4,340,824	4,340,364	4,340,191	4,340,442	4,339,963	4,340,150
4,340,870	4,340,367	4,340,195	4,340,442	4,340,042	4,340,164
4,340,900	4,340,376	4,340,197	4,340,442	4,340,231	4,340,231
06 : Re.30,997	4,340,391	4,340,264	4,340,159	4,340,180	4,340,233
4,339,832	4,340,402	4,340,335	4,340,349	4,340,299	4,340,299
4,339,833	4,340,419	4,340,345	4,340,392	4,340,305	4,340,305
4,339,864	4,340,457	4,340,467	4,339,845	4,340,317	4,340,317
4,339,874	4,340,462	4,340,678	4,339,865	4,340,394	4,340,327
4,339,877	4,340,465	4,340,737	4,339,866	4,340,449	4,340,449
4,339,878	4,340,473	4,340,763	4,339,886	4,340,557	4,340,458
4,339,889	4,340,496	4,340,791	4,339,891	4,340,669	4,340,482
4,339,922	4,340,529	4,340,804	4,339,894	4,340,670	4,340,512
4,339,923	4,340,532	4,340,826	4,339,900	4,340,782	4,340,522
4,339,924	4,340,549	4,340,830	4,339,961	4,340,832	4,340,617
4,339,926	4,340,564	4,340,881	4,339,975	4,340,949	4,340,636
4,339,928	4,340,626	4,340,896	4,339,992	4,340,954	4,340,666
4,339,930	4,340,632	4,340,897	4,339,996	4,340,956	4,340,761
4,339,977	4,340,650	4,340,934	4,340,018	4,339,880	4,340,790
4,339,985	4,340,652	4,340,957	4,340,037	4,339,907	4,340,793
4,339,999	4,340,654	4,340,218	4,340,049	4,339,987	4,340,814
4,340,015	4,340,726	4,340,606	4,340,052	4,340,362	4,340,845
4,340,025	4,340,757	4,340,686	4,340,067	4,340,553	4,340,850
4,340,038	4,340,758	4,340,741	4,340,111	4,340,182	4,340,861
4,340,047	4,340,778	4,340,947	4,340,126	4,340,201	4,340,867
4,340,048	4,340,802	4,340,030	4,340,145	4,340,487	4,340,912
4,340,054	4,340,807	4,339,838	4,340,148	4,339,834	4,340,924
4,340,078	4,340,825	4,339,876	4,340,152	4,340,061	4,340,933
4,340,106	4,340,851	4,340,114	4,340,203	4,340,074	4,339,881
4,340,120	4,340,858	4,340,132	4,340,205	4,339,887	4,339,890
4,340,124	4,340,860	4,340,153	4,340,223	4,340,029	4,339,901
4,340,130	4,340,884	4,340,165	4,340,239	4,340,228	4,339,903
4,340,171	4,340,885	4,340,229	4,340,246	4,340,259	4,339,953
4,340,178	4,340,887	4,340,274	4,340,320	4,340,333	4,339,955
4,340,209	4,340,916	4,340,352	4,340,351	4,340,689	4,339,956
4,340,211	4,340,942	4,340,370	4,340,366	4,340,571	4,339,970
4,340,217	4,340,955	4,340,437	4,340,546	4,340,842	4,339,973
4,340,222	4,339,902	4,340,460	4,340,566	4,340,006	4,339,976
4,340,237	4,339,968	4,340,472	4,340,582	4,340,046	4,339,986
4,340,244	4,340,097	4,340,478	4,340,587	4,340,076	4,339,988
4,340,245	4,340,378	4,340,603	4,340,611	4,340,573	4,340,023
4,340,256	4,340,635	4,340,795	4,340,683	4,340,578	4,340,040
4,340,269	4,340,822	4,340,809	4,340,724	4,340,583	4,340,060
	4,340,855	4,340,868		4,340,584	

## GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

4,340,087	33 :	4,340,108	4,339,920	4,340,910	4,340,363	4,340,088
4,340,220		4,340,121	4,339,950	4,340,939	4,340,366	4,340,116
4,340,227		4,340,414	4,339,980	4,340,970	4,339,843	4,340,146
4,340,236	34 :	Re.30,996	4,339,998	4,339,850	4,339,943	4,340,175
4,340,241		4,339,951	4,340,059	4,339,940	4,339,957	4,340,204
4,340,248		4,340,044	4,340,064	4,340,036	4,339,958	4,340,225
4,340,262		4,340,065	4,340,065	4,340,071	4,339,967	4,340,249
4,340,325		4,340,068	4,340,069	4,340,341	4,340,007	4,340,252
4,340,409		4,340,210	4,340,083	4,340,406	4,340,026	4,340,253
4,340,431		4,340,268	4,340,098	4,340,550	4,340,056	4,340,285
4,340,459		4,340,278	4,340,115	4,340,665	4,340,082	4,340,311
4,340,516		4,340,300	4,340,144	4,340,771	4,340,100	4,340,314
4,340,538		4,340,313	4,340,151	4,340,948	4,340,129	4,340,321
4,340,602		4,340,319	4,340,154	Re.30,998	4,340,157	4,340,324
4,340,619		4,340,359	4,340,174	Re.30,999	4,340,166	4,340,340
4,340,659		4,340,373	4,340,179	4,339,836	4,340,167	4,340,374
4,340,662		4,340,417	4,340,193	4,339,872	4,340,177	4,340,379
4,340,674		4,340,434	4,340,207	4,339,896	4,340,323	4,340,679
4,340,889		4,340,435	4,340,212	4,339,919	4,340,324	4,340,681
4,340,930		4,340,451	4,340,221	4,339,960	4,340,381	4,340,713
27 : 4,339,831		4,340,477	4,340,265	4,339,965	4,340,386	4,340,789
4,339,858		4,340,492	4,340,275	4,339,969	4,340,411	4,340,852
4,340,005		4,340,500	4,340,286	4,340,008	4,340,412	4,340,871
4,340,062		4,340,514	4,340,331	4,340,084	4,340,448	4,340,893
4,340,063		4,340,523	4,340,348	4,340,104	4,340,503	4,340,913
4,340,168		4,340,524	4,340,371	4,340,107	4,340,505	4,339,997
4,340,169		4,340,552	4,340,382	4,340,134	4,340,508	4,340,161
4,340,170		4,340,556	4,340,390	4,340,162	4,340,592	4,340,196
4,340,173		4,340,558	4,340,397	4,340,298	4,340,600	4,340,489
4,340,213		4,340,562	4,340,398	4,340,342	4,340,601	4,340,905
4,340,230		4,340,569	4,340,399	4,340,407	4,340,609	4,340,928
4,340,250		4,340,570	4,340,436	4,340,425	4,340,628	4,340,075
4,340,266		4,340,597	4,340,438	4,340,439	4,340,642	4,340,138
4,340,276		4,340,608	4,340,454	4,340,471	4,340,719	4,340,773
4,340,355		4,340,625	4,340,461	4,340,547	4,340,733	4,339,885
4,340,486		4,340,657	4,340,479	4,340,612	4,340,765	4,340,073
4,340,616		4,340,673	4,340,480	4,340,629	4,340,792	4,340,092
4,340,651		4,340,682	4,340,491	4,340,648	4,340,805	4,340,093
4,340,749		4,340,694	4,340,495	4,340,684	4,340,846	4,340,094
4,340,808		4,340,715	4,340,509	4,340,690	4,340,921	4,340,142
4,340,192		4,340,734	4,340,520	4,340,691	4,340,928	4,340,232
4,340,554	28 :	4,340,756	4,340,539	4,340,702	4,340,959	4,340,283
4,339,847		4,340,754	4,340,545	4,340,705	4,340,238	4,340,318
4,339,859	29 :	4,340,755	4,340,548	4,340,836	4,339,944	4,340,440
4,340,032		4,340,775	4,340,572	4,340,841	4,340,836	4,340,527
4,340,066		4,340,777	4,340,574	4,340,843	4,340,841	4,340,559
4,340,109		4,340,803	4,340,576	4,340,853	4,340,853	4,340,667
4,340,158		4,340,857	4,340,590	4,340,859	4,340,859	4,339,946
4,340,202		4,340,863	4,340,610	4,340,965	4,340,717	4,340,183
4,340,215		4,340,940	4,340,618	4,339,947	4,340,767	4,340,271
4,340,216		4,340,967	4,340,640	4,340,010	4,340,446	4,340,281
4,340,308		4,340,405	4,340,641	4,340,427	4,340,468	4,340,469
4,340,388	35 :	4,340,837	4,340,647	4,340,427	4,340,526	4,340,469
4,340,416		4,339,835	4,340,655	4,340,427	4,340,528	4,340,206
4,340,671	36 :	4,339,837	4,340,696	4,340,938	4,340,653	4,340,497
4,340,692		4,339,841	4,340,709	4,340,958	4,340,718	4,340,011
4,340,770		4,339,846	4,340,710	4,340,958	4,340,829	4,340,027
4,340,937		4,339,853	4,340,711	4,339,945	4,340,829	4,340,031
4,340,972		4,339,862	4,340,753	4,340,099	4,340,899	4,340,039
4,339,882	30 :	4,339,863	4,340,762	4,340,137	4,339,897	4,340,057
4,340,310	31 :	4,339,867	4,340,762	4,340,143	4,339,899	4,340,057
4,340,243	32 :	4,339,869	4,340,810	4,340,235	4,339,948	4,340,338
4,340,255		4,339,892	4,340,840	4,340,263	4,339,966	4,340,363
			4,340,904		4,339,979	4,340,623
					4,340,009	4,340,463

## DESIGN PATENTS

06 :	265,441	265,501	25 :	265,476	36 :	265,512	38 :	265,493	42 :	265,468	
	265,447	265,504	26 :	265,517		265,513	39 :	265,438		265,482	
	265,454	265,510	27 :	265,460		265,450		265,448		265,518	
	265,455	08 :	265,478	30 :		265,516	265,484		265,461	48 :	265,503
	265,456	12 :	265,442	32 :		265,490	265,498		265,485		265,507
	265,470	13 :	265,445	30 :		265,499	265,515		265,502	49 :	265,472
	265,486	17 :	265,463	34 :		265,439	265,449		265,506	53 :	265,469
	265,492		265,473			265,480	265,451		265,509		265,475
	265,495		265,508			265,488	265,452		265,519	55 :	265,471
	265,500	19 :	265,496								



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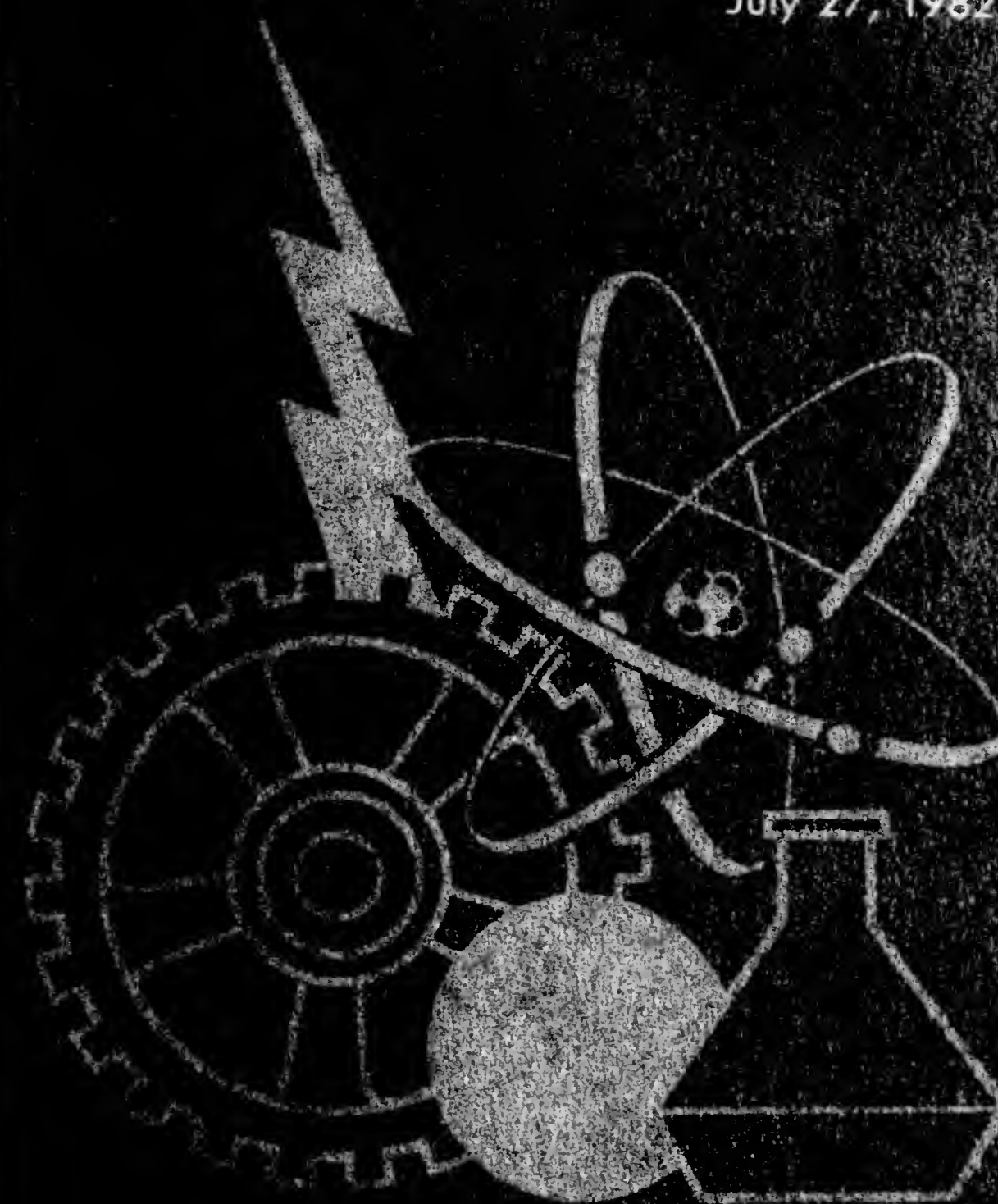
Vol. 1020 Number 4

# OFFICIAL GAZETTE

of the  
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

July 27, 1982



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Gerald B. Mossinghoff, Commissioner



# OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

July 27, 1982

Volume 1020

Number 4

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## Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

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International Fees	
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Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,  
Commissioner of Patents  
and Trademarks.  
Jan. 19, 1982.

## REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

**3,944,876**, Re. S.N. 380,074, Filed May 20, 1982, Cl. 315/205, RAPID STARTING OF GAS DISCHARGE LAMPS, James G. Helmuth, Owner of Record: *Chadwick Helmuth Co., Inc., Monrovia, Calif.*, Attorney or Agent: William W. Haefliger, Ex. Gp.: 256

**4,092,867**, Re. S.N. 381,002, Filed May 21, 1982, Cl. 73/609, ULTRASONIC SCANNING APPARATUS, Terrance Matzuk, Owner of Record: *Inventor*, Attorney or Agent: Robert D. Yeager, et al., Ex. Gp.: 244

**4,204,256**, Re. S.N. 380,340, Filed May 20, 1982, Cl. 364/431, INPUT-OUTPUT UNIT FOR A MICRO-PROCESSOR ENGINE CONTROL SYSTEM, Winfried Klotzner, Owner of Record: *Robert Bosch, G.M.B.H., Stuttgart Germany*, Attorney or Agent: Stephen H. Frishauf, et al., Ex. Gp.: 236

**4,261,810**, Re. S.N. 382,515, Filed May 27, 1982, Cl. 208/138, STARTUP PROCEDURE FOR REFORMING CATALYSTS, William D. McHale, et al., Owner of Record: *Mobil Oil Corp., New York, N.Y.*, Attorney or Agent: Charles A. Huggett, et al., Ex. Gp.: 116

**4,290,433**, Re. S.N. 381,170, Filed May 24, 1982, Cl. 128/665, METHOD AND APPARATUS FOR DETECTING THE PRESENCE OF CARIES IN TEETH USING VISIBLE LUMINESCENCE, Robert R. Alfano, Owner of Record: *Philips Medical System, Inc., Shelton, Conn.*, Attorney or Agent: S.C. Yuter, et al., Ex. Gp.: 335

**4,319,988**, Re. S.N. 382,150, Filed May 26, 1982, Cl. 209/172.5, SEPARATION OF HIGH GRADE MAGNETITE FROM FLY ASH, Robert G. Aldrich, Owner of Record: *Halomet, Inc., Manlius, N.Y.*, Attorney or Agent: Bert J. Lewen, et al., Ex. Gp.: 312

## REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the

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requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

**3,434,165**, Reexam. No. 90/000,219, Requested: June 17, 1982, Cl. 5/61, HOSPITAL BED, Francis X. Keane, Owner of Record: *Kinco, Ltd., Chicago, Ill.*, Attorney or Agent: Kurt Kelman, Ex. Gp.: 350, Requester: Robert A. Lundquist, Jonesboro, Ga.

**4,146,489**, Reexam. No. 90/000,220, Requested: June 23, 1982, Cl. 225/50, POLYOLEFIN GRAFT COPOLYMERS, Robert L. Stambaugh, et al., Owner of Record: *Rohm & Haas Co., Philadelphia, Pa.*, Attorney or Agent: Patrick C. Baker, Ex. Gp.: 324, Requester: James H. Callahan, Esq., Kenyon & Kenyon, New York, N.Y.

**4,291,597**, Reexam. No. 90/000,217, Requested: June 10, 1982, Cl. 81/3.48, CORK EXTRACTOR, Herbert Allen, Owner of Record: *Hallen Co., Houston, Tex.*, Attorney or Agent: Margret Anderson, Ex. Gp.: 320, Requester: Hallen Co., Houston, Tex.

**4,313,485**, Reexam. No. 90/000,221, Requested: June 24, 1982, Cl. 160/328, TRANSPARENT ACCESS CURTAIN FOR COOLERS AND THE LIKE, Kenneth Gidge, et al., Owner of Record: *BSL Corp., Nashua, N.H.*, Attorney or Agent: Morse, Altman, Oates & Dacey, Ex. Gp.: 350, Requester: Necor Corp., Menlo Park, Calif.

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THERESA A. BRELSFORD,  
Acting Assistant Commissioner  
for Administration.  
June 24, 1982.

## Patents Available for Licensing or Sale

**4,319,748**, SPORT TRAINING DEVICE, *Efim Alter*, 7533 Horrocks St., 1st Floor, Philadelphia, Pa., 19152.

JULY 27, 1982

U.S. PATENT AND TRADEMARK OFFICE

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**4,255,697**, CASH REGISTER POWER SUPPLY SYSTEM, *James A. Oliff, Esq., Stevens, Davis, Miller & Mosher*, 1911 Jefferson Davis Hwy., Suite 600, Crystal Mall 1, Arlington, Va. 22202, 703-920-8900.

**4,154,444**, GAME BOARD, *Nathan D. Grenell*, 815 Hanson St., Whitehall, Mich. 49461, 616-894-6350.

**3,392,127**, COMPOSITION OF POLYESTER RESIN AND SODIUM SILICATE. (Inquiries to) *Michael I. Wolfson, Esq., Blum, Kaplan, Friedman, Silberman & Beran*, 730 Third Ave., New York, N.Y. 10017 (212-867-2200).

**4,341,730**, BEAM DANCER FUSION DEVICE, *Henry B. Maier*, 6 Sealey Ave., 3K, Hempstead, L. I., New York 11550.

**4,253,690**, SAFETY KNOB, *Nathan Hollander*, 644 Salem Ave., Elizabeth, N.J., 07208.

General Electric Co., is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Application for license may be addressed to: Patent Counsel, Aerospace Control Systems Department, General Electric Co., P.O. Box 5000, Binghamton, New York 10390.

**4,082,949**, VARIABLE INTENSITY FLUORESCENT DISPLAY.

Applications for license may be addressed to: General Electric Co., Component Motor Division, 1635 Broadway, P.O. Box 2204, Fort Wayne, Ind., 46801-2204, Attention: Patent Counsel.

**4,276,690**, METHOD OF ASSEMBLING COMPONENTS OF A THERMOSTAT.

**4,286,188**, AMRPHOUS METAL HYSTERESIS MOTOR.

General Electric Co., is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed to: Group Patent Counsel, Lighting Business Group, General Electric Co., Nela Park, Cleveland, Ohio 44112.

**3,517,198**, LIGHT EMITTING AND ABSORBING DEVICES.

**3,532,931**, PHOTOFLASH ASSEMBLY FOR SEQUENTIALLY FLASHING LAMPS UTILIZING VOLTAGE AND CURRENT RESPONSIVE DEVICES.

**3,672,992**, METHOD OF FORMING GROUP III-V COMPOUND PHOTOEMITTERS HAVING A HIGH QUANTUM EFFICIENCY AND LONG WAVELENGTH RESPONSE.

**3,676,314**, METHOD OF ELECTRODEPOSITING VITREOUS COATINGS ATOP A MULTIAPERTURED SUBSTRATE.

**3,679,385**, MANUFACTURE OF INTERIOR COATED BULBS FOR HIGH TEMPERATURE GLASS LAMPS.

**3,689,799**, METHOD OF DOSING LAMPS.

**3,715,245**, SELECTIVE LIQUID PHASE EPITAXIAL GROWTH PROCESS.

**3,724,990**, PHOTOFLASH LAMP.

**3,724,991**, PHOTOFLASH LAMP.

**3,732,460**, CIRCUIT FOR INSTANT RESTART OF HIGH PRESSURE DISCHARGE LAMP.

**3,737,960**, REFLECTOR ALIGNMENT APPARATUS.

**3,739,221**, ELECTRIC LAMP BASE END STRUCTURE.

**3,753,024**, GLOW LAMP WITH NICKEL-PLATED ELECTRODES.

**3,759,602**, INHIBITING D-C NOTCHING EFFECT IN INCANDESCENT LAMP FILAMENTS.

**3,760,237**, SOLID STATE LAMP ASSEMBLY HAVING CONICAL LIGHT DIRECTOR.

**3,769,694**, OHMIC CONTACT FOR GROUP III-V P-TYPE SEMICONDUCTORS.

**3,774,086**, SOLID STATE LAMP HAVING VISIBLE-EMITTING PHOSPHOR AT EDGE OF INFRARED-EMITTING ELEMENT.

**3,776,685**, FLASHLAMP PRIMER PRECOATING.

**3,783,437**, LAMP AND SOCKET FOR DECORATIVE STRING SET.

**3,785,020**, METHOD OF BASING ELECTRICAL DEVICES.

**3,805,347**, SOLID STATE LAMP CONSTRUCTION.

**3,814,971**, FILL GAS MIXTURE FOR GLOW LAMPS.

**3,821,616**, MONOLITHIC SEMICONDUCTOR DISPLAY DEVICES.

**3,833,802**, WIDE ANGLE OPTICAL SYSTEM FOR UNIFORM PLANAR ILLUMINATION.

**3,850,688**, OHMIC CONTACT FOR P-TYPE GROUP III-V SEMICONDUCTORS.

**3,864,598**, INCANDESCENT LAMP WITH INTERNAL FUSE.

**3,871,008**, REFLECTIVE MULTIPLE CONTACT FOR SEMICONDUCTOR LIGHT CONVERSION ELEMENTS.

**3,871,016**, REFLECTIVE COATED MULTIPLE CONTACT FOR SEMICONDUCTOR LIGHT CONVERSION ELEMENTS.

**3,873,175**, MINIATURE LAMP CONSTRUCTION AND METHOD OF MANUFACTURE.

**3,889,286**, TRANSPARENT MULTIPLE CONTACT FOR SEMICONDUCTOR LIGHT CONVERSION ELEMENTS.

**3,893,798**, PHOTOFLASH LAMP.

**3,905,078**, METHOD OF MANUFACTURING MINIATURE LAMPS.

**3,909,929**, METHOD OF MAKING CONTACTS TO SEMICONDUCTOR LIGHT CONVERSION ELEMENTS.

**3,914,143**, PHOTOFLASH LAMP PRIMER COMPOSITION.

**3,956,625**, MULTIPLE FLASHLAMP ARRAY.

**3,959,684**, MINIATURE LAMP CONSTRUCTION AND METHOD OF MANUFACTURE.

**3,959,860**, METHOD OF MAKING NON-SHORTING PHOTOFLASH LAMP.

**3,972,626**, AUTORANGING DIGITAL LUX-METER.

**3,982,185**, LAMP BASING USING UV CURABLE ADHESIVE.

**3,989,970**, METAL HALIDE HIGH-INTENSITY DISCHARGE LAMP HAVING IMPROVED RESTART CAPABILITY.

**3,997,808**, MOUNTING FOR SINGLE-ENDED LAMP.

**4,006,377**, FILTER ATTACHMENT FOR PARABOLIC REFLECTOR LAMPS.

**4,035,631**, PROJECTOR LAMP REFLECTOR.

**4,039,889**, BLUE-WHITE GLOW LAMP.

**4,052,638**, FLARE-WEDGE LAMP.



- 4,076,489. METHOD FOR COATING PHOTOFLASH LAMPS.
- 4,111,562. HYDRAULIC GIMBAL SYSTEM FOR BEAM PROJECTION LAMPS.
- 4,139,794. WEDGE-PIN GLASS HALOGEN LAMP WITH TRANSVERSE REFERENCE FEATURE.
- 4,144,418. VOLTAGE RESPONSIVE SWITCH.
- 4,146,814. PINCH AND BASE STRUCTURE FOR SINGLE-ENDED LAMPS.
- 4,182,607. PHOTOFLASH LAMP UNIT UTILIZING RADIATION AND VOLTAGE RESPONSIVE SWITCH DEVICES.
- 4,182,608. PHOTOFLASH LAMP UNIT UTILIZING RADIATION AND VOLTAGE RESPONSIVE SWITCH DEVICES.
- 4,208,609. SQUIRM RESISTANT FILAMENT.
- 4,210,841. ALL PLASTIC HEADLAMP.
- 4,223,373. PHOTOFLASH LAMP ARRAY HAVING REFLECTIVE COATING MEANS.
- 4,233,023. PHOTOFLASH LAMP HAVING EXPANDABLE BURNING VOLUME.
- 4,233,543. INTERNAL SHUNT FOR SERIES CONNECTED LAMPS.
- 4,234,915. ORNAMENTAL ATTACHMENT FOR DECORATIVE STRING SETS.
- 4,235,336. FLASH ARRAY PACKAGE.
- 4,259,712. SEALED, PREFOCUSED MOUNT FOR PLASTIC PAR LAMP.
- 4,280,173. HEAT SHIELD FOR PLASTIC HEADLAMP.
- 4,282,565. SEALED, PREFOCUSED MOUNT FOR PLASTIC PAR LAMP.
- 4,287,448. MECHANICAL STOP MEANS FOR A PREFOCUSED PLASTIC PAR LAMP.
- 4,290,747. PHOTOFLASH LAMP ARRAY CIRCUIT BOARD HAVING RADIATION SENSITIVE FUSE ELEMENTS.
- 4,290,748. PHOTOFLASH LAMP ARRAY CIRCUIT BOARD HAVING RADIATION SENSITIVE FUSE ELEMENTS.
- 4,318,161. SNAP IN COUPLING ASSEMBLY FOR A VEHICLE HEADLAMP HAVING A TRIM RIM INTEGRAL THEREWITH.
- 4,318,162. SNAP IN COUPLING ASSEMBLY FOR A VEHICLE HEADLAMP.
- 4,322,784. VEHICLE HEADLAMP HAVING AN INTEGRALLY MOLDED TRIM REFERENCE PLANE.
- Re. 27,879. OHMIC CONTACT FOR GROUP III-V P-TYPE SEMICONDUCTORS.
- Des. 250,816. PHOTOFLASH LAMP UNIT.
- Des. 250,817. PHOTOFLASH LAMP UNIT.
- Des. 250,818. PHOTOFLASH LAMP UNIT.
- Des. 250,819. PHOTOFLASH LAMP UNIT.
- Des. 250,820. PHOTOFLASH LAMP UNIT.
- Des. 250,821. PHOTOFLASH LAMP UNIT.
- Des. 250,822. PHOTOFLASH LAMP UNIT.
- Des. 251,091. PHOTOFLASH LAMP UNIT.
- Des. 251,092. PHOTOFLASH LAMP UNIT.
- Des. 256,397. PHOTOFLASH LAMP UNIT.
- Des. 260,266. PHOTOFLASH LAMP UNIT.
- Des. 260,268. PHOTOFLASH LAMP UNIT.
- Des. 260,269. PHOTOFLASH LAMP UNIT.
- Des. 260,270. PHOTOFLASH LAMP UNIT.
- Des. 260,398. PHOTOFLASH LAMP UNIT.
- The RCA Corp., offers to grant non-exclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under RCA patents should be addressed to RCA Corp., Sr. Vice President, Licensing, 30 Rockefeller Plz., New York, N.Y. 10020.
- Re. 30,948. DYNAMIC CURRENT SUPPLY.
- 4,327,830. RECORD STAMPER PROTECTOR.
- 4,328,068. METHOD FOR END POINT DETECTION IN A PLASMA ETCHING PROCESS.
- 4,328,463. ENCODER FOR RECORDING INCREMENTAL CHANGES.
- 4,328,508. III-V QUATERNARY ALLOY PHOTODIODE.
- 4,328,575. DISC PLAYER HAVING TURNABLE HEIGHT VARYING APPARATUS.
- 4,328,614. METHOD FOR THE MANUFACTURE OF PROCELAIN COATED METAL BOARDS HAVING INTERCONNECTIONS BETWEEN THE TOP AND BOTTOM SURFACES.
- 4,328,646. METHOD FOR PREPARING AN ABRASIVE COATING.
- 4,329,575. VIDEO DISC HAVING A LABEL FOR IDENTIFYING MATERIAL RECORDED THEREON.
- 4,329,600. OVERLOAD PROTECTION CIRCUIT FOR OUTPUT DRIVER.
- 4,329,618. HORIZONTAL DEFLECTION ENHANCEMENT FOR KINESCOPIES.
- 4,329,648. METHOD OF CHECKING FOR ELECTRICAL FRIT BREAKDOWN IN KINESCOPIES AND APPARATUS THEREFOR.
- 4,329,671. ALIGNMENT-INSENSITIVE SELF-CONVERGING IN-LINE COLOR DISPLAY.
- 4,329,697. INFORMATION RECORD.
- 4,329,702. LOW COST REDUCED BLOOMING DEVICE AND METHOD FOR MAKING THE SAME.
- 4,329,712. ADAPTIVE DISTORTION ELIMINATION CIRCUITRY FOR A VIDEO DISC PLAYER.
- 4,329,713. TELEVISION AUTOMATIC GAIN CONTROL SYSTEM.
- 4,329,714. AUDIO DISTORTION ELIMINATOR.
- 4,329,724. TAPE TRANSDUCER CARRIER WITH DIHEDRAL AND PROTRUSION ADJUSTMENT.
- 4,329,729. SIDE PINCUSHION MODULATOR CIRCUIT WITH OVERSTRESS PROTECTION.
- 4,330,213. OPTICAL LINE WIDTH MEASURING APPARATUS AND METHOD.
- 4,330,583. HIGH DENSITY INFORMATION RECORD LUBRICANTS.
- 4,330,671. POSITIVE RESIST FOR ELECTRON BEAM AND X-RAY LITHOGRAPHY AND METHOD OF USING SAME.
- 4,330,735. BEAM GUIDE STRUCTURE FOR A FLAT PANEL DISPLAY DEVICE.
- 4,330,792. VIDEO BLANKING CIRCUIT WITH CONTROLLED RATE OF UNBLANKING.
- 4,330,866. ARRANGEMENT FOR SELECTIVELY ROUTING A SIGNAL INDICA-

- 4,330,879. TIVE OF RECEIVED SIGNAL STRENGTH TO DIFFERENT PORTIONS OF A RADIO RECEIVER IN RESPONSE TO DIFFERENT LEVELS OF A CONTROL SIGNAL.
- 4,330,879. ADAPTIVE STYLUS KICKER USING DISC TRACK AND DISC INFORMATION.
- 4,330,881. VIDEO DISC APPARATUS FOR CLEARING FOREIGN MATTER FROM THE SIGNAL PICKUP STYLUS DURING PLAYBACK.
- 4,330,882. APPARATUS FOR MONITORING A WIDEBAND ELECTROMECHANICAL RECORDING SYSTEM.
- 4,330,915. TECHNIQUE FOR UNIFORM STYLUS CONFIGURATION.
- 4,331,700. METHOD FOR MAKING A COMPOSITE SUBSTRATE.
- 4,331,701. RUBIDIUM-CESIUM-ANTIMONY PHOTOCATHODE.
- 4,331,907. DEFLECTION CIRCUIT LINEARITY COIL.
- 4,331,938. INJECTION LASER DIODE ARRAY HAVING HIGH CONDUCTIVITY REGIONS IN THE SUBSTRATE.
- 4,331,979. LINE-SCAN STILL IMAGE REPRODUCER.
- 4,331,981. LINEAR HIGH GAIN SAMPLING AMPLIFIER.
- 4,331,982. SAMPLE AND HOLD CIRCUIT PARTICULARLY FOR SMALL SIGNALS.

DEPARTMENT OF COMMERCE  
Patent and Trademark Office  
37 CFR Part 2  
[Docket No. 2512-96]

Trademark Applications and Examination  
Proceedings; Trademark Interference, Concurrent  
Use, Opposition and Cancellation Proceedings;  
Trademark Post-Registration Proceedings

Agency: Patent and Trademark Office, Commerce.

Action: Proposed rulemaking.

**Summary:** Patent and Trademark Office proposes amendments of the rules of practice in trademark cases to clarify and to revise procedures for the examination of applications; appeals from final refusals of registration; the institution and conduct of trademark interference, concurrent use, opposition and cancellation proceedings; the examination of affidavits or declarations under §8 of the Trademark Act; the examination of applications to renew registrations under 9 of the Trademark Act; amendments to registrations under 7(d) of the Trademark Act; and petitions to the Commissioner. The proposed procedures revise or codify existing practices, or simplify procedures, or establish periods of time, to assist the orderly and prompt resolution of issues.

**Date:** Written comments by Sept. 27, 1982. Hearing, beginning at 10:00 a.m. Sept. 27, 1982.

**Addresses:** Address written comments to the Commissioner of Patents and Trademark, Washington, D.C. 20231. The hearing will be held in Room 11C24 of Bldg. 3, Crystal Plz., 2021 Jefferson Davis Hwy., Arlington, Va. Written comments and transcript of hearing will be available for public inspection in Room 11E10 of Bldg.,

3, Crystal Plz., 2021 Jefferson Davis Hwy., Arlington, Va.

**For Further Information Contact:** Miss Janet E. Rice by telephone at (703) 557-3551 or by mail marked to her attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

**Supplementary Information:** The Patent and Trademark Office is considering amendments to the rules of practice in trademark cases to revise, simplify, rearrange, or delete existing rules, or to codify in rules certain practices which are currently in effect. The rules involved include those which concern the examination and amendment of ex parte applications; appeals to the Trademark Trial and Appeal Board from the final refusal of registration in ex parte applications; the institution and conduct of interference, concurrent use, opposition and cancellation proceedings before the Trademark Trial and Appeal Board; the examination of affidavits or declarations under §8 of the Trademark Act and subsequent proceedings if an affidavit or declaration is refused; the examination of applications for the renewal of registrations under §9 of the Trademark Act and subsequent proceedings if an application for renewal is refused; amendments of registrations under §7(d) of the Trademark Act; and petitions to the Commissioner.

The rules for which amendments are proposed are discussed below. (The designation "S" is used in the Code of Federal Regulations to denominate a rule; lettered ["(a)", "(b)", etc.] subdivisions are subsections of rules; numbered ["(1)", "(2)", etc.] subdivisions are paragraphs within sections or subsections.)

In this preamble to the proposed rulemaking, "Patent and Trademark Office" is abbreviated as "PTO" and "Trademark Trial and Appeal Board" is abbreviated as "TTAB."

Section 2.20. Subsection (b) is proposed to be added to codify the practice whereby a nonofficer of a corporation or association who is authorized to sign a notice of opposition or petition for cancellation may verify the pleading by a declaration in lieu of an oath or affirmation.

Section 2.27(e) is proposed to be added to permit the PTO to retain in confidence, not available for public inspection, any fruits in discovery filed under seal [see proposed amended §2.120(f)] pursuant to a protective order or any testimony filed under seal [see proposed amended §2.125(e)]. Conforming amendments are made in subsections (b) and (d).

Section 2.63 is proposed to be clarified and designated as subsection (a).

Section 2.63(b) is proposed to be added to codify the practice of allowing an applicant to petition to the Commissioner for relief from either an examiner's repeated but nonfinal formal requirement or a final requirement which is limited to subject matter which is appropriate for petitions to the Commissioner, as an alternative to appeal to the TTAB. The proposed rule also requires that a petition be timely and sets a time limit for action after denial of a petition. See proposed §2.146(b) for a description of nonpetitionable subject matter and proposed §2.146(d) for the time limit (thirty days) for a petition.

Section 2.64 is proposed to be designated as subsection (a) and revised to agree with the provision in §2.63(b), permitting petitions to the Commissioner concerning some requirements which have been made final.

Section 2.64(b) is proposed to be added to clarify the existing practice of replying to requests for reconsideration after final action, and to permit entry of amendments accompanying such requests if they place the application in condition for publication or in better form for appeal.

Section 2.65 is proposed to be amended by the addition of a sentence to provide that a timely and proper petition under §2.63(b) avoids the abandonment of an application. An additional provision is proposed to permit the examiner to allow an applicant additional time to explain and supply an inadvertent omission which would other-



wise have resulted in the application being held abandoned.

Section 2.72 is proposed to be revised to allow non-material changes in the drawing to be supported by specimens which were not necessarily in use at the time the original application was filed.

Section 2.81 is proposed to be revised to clarify the language of the rule.

Section 2.83 is proposed to be deleted because requests to consolidate applications are very rare and the procedure is unworkable. See Official Gazette notice of July 19, 1981, 1009 TMOG 17.

Section 2.94 is proposed to be deleted because interferences are declared only upon petition [see §2.91], which assumes proper review before an interference is declared, and existing §2.94 is unnecessary.

Section 2.95 is proposed to be deleted because the deletion of §2.94 makes §2.95 unnecessary.

Section 2.96 is proposed to be amended to codify existing practice on the issues determinable in an interference and the order of the parties and burden of proof. The last sentence in the amended rule states who is the junior party if two applications have the same filing date but different dates of execution of the applications.

Section 2.97 is proposed to be deleted because it is unnecessary in view of the codification in §2.96.

Section 2.98 is proposed to be amended to make the rule consistent with existing §2.91.

Section 2.99 is proposed to be amended in several respects. The rule has been reorganized to describe the procedure more clearly and logically. Subsection (a) of the proposed amended rule permits the examiner to require an applicant to make a prima facie showing of entitlement to a concurrent use registration if the application and other papers in the file do not show that there are conditions or limitations on the mode or place of use of the marks or the goods in connection with which the marks are used so as to make confusion, mistake, or deception not likely or that the applicant is relying upon a determination by a court of competent jurisdiction [see Trademark Act §2(d) proviso].

Section 2.99(b), (c), and (d)(1), as proposed, describe the procedure to be used to institute a concurrent use proceeding.

Section 2.99(d)(2) and (3), as proposed, codify existing practice on who must file an answer to a notice of institution of a concurrent use proceeding and the effect of not filing an answer.

Section 2.99(e), as proposed, codifies existing practice on the order of the parties and the burden of proof and states who is the junior party if two applications have the same filing date but different dates of execution of the applications. A person specified as an excepted user but who has not filed an application is stated to be a senior party to every party that has an application involved in the proceeding because a party without an application is seeking no relief and therefore has no burden of proving entitlement to relief.

Section 2.99(f), as proposed, provides for the issuance of a concurrent use registration upon the basis of a court's determination of the right of the parties to use their marks in commerce, without the institution of a proceeding by the TTAB, when all of the conditions specified in the rule are fulfilled.

Section 2.99(g), as proposed, codifies existing law that registrations and applications to register on the Supplemental Register and registrations under the Act of 1920 are not subject to concurrent use registration proceedings and implements §26 of the Trademark Act, which provides, inter alia, that applications for the registrations on the Supplemental Register shall not be subject to §17 of the Act, which is the statutory authority for a concurrent use registration proceeding [cf. existing §2.91(b)].

Sections 2.101 and 2.102 are proposed to be interchanged so that those two rules begin with the provisions for obtaining extensions of time to file an opposition and then provide for filing an opposition, thereby describing the procedures in their chronological sequence.

Section 2.101(a) and (b), as proposed, repeat, with revisions to clarify the provisions, existing §2.102(a).

Section 2.101(c), as proposed, codifies the existing practice under existing §2.102(b). In addition, proposed §2.101(c) provides for a maximum extended period, not to exceed 120 days from the date of publication of an application, within which to file a notice of opposition, except when there is a written stipulation or a showing of extraordinary circumstances, so as to avoid inordinate delays caused by ex parte requests for extensions of time.

Section 2.101(d), as proposed, codifies an existing practice which expedites the notification of the TTAB's action on a request for an extension of time.

Section 2.102(a), as proposed, states when an opposition proceeding is commenced, which is important for the application of §2.135.

Section 2.102(b), as proposed, indicates that a notice of opposition should be addressed to the TTAB, which helps to route mail within the PTO.

Section 2.102(c), as proposed, requires that a notice of opposition be filed within thirty days after publication of the application or prior to the expiration of a granted extension of time for filing a notice of opposition.

Section 2.102(d), as proposed, implements the requirement of 13 of the Trademark Act that a notice of opposition be verified, which requirement is contained in existing §2.101(a).

Section 2.102(e), as proposed, requires the payment of the statutory fee for an opposition, provides for the allocation of the fees that are submitted if they are insufficient for the number of classes being opposed or for the number of persons joined as party opposer, and permits the payment of additional fees for additional persons joined as party opposer in the notice of opposition in the same manner as the payment of additional fees for opposing additional classes in the application.

Section 2.102(f), as proposed, provides for the late payment of the opposition fee or fees, subject to the payment of one service charge on behalf of each person joined as a party opposer, when a notice of opposition is not accompanied by at least one full fee to oppose one class by one person, thereby continuing the practice provided by existing §2.101(c). Proposed §2.102(f), further, codifies the practice that, when the notice of opposition is filed without any fee or with a fee insufficient for at least one person to oppose one class in the application, all of the required fees must be submitted within the time fixed by the notice of defect, which will be issued by the TTAB.

Section 2.103, as proposed, clarifies existing §2.103.

Section 2.104, as proposed, clarifies existing §2.104.

Section 2.105, as proposed, clarifies existing §2.105 and codifies the practice thereunder.

Section 2.106(c), as proposed, codifies the practice under existing §2.106(c) that, after an answer is filed, a notice of opposition may be withdrawn without prejudice only with the written consent of the applicant.

Section 2.107, as proposed, codifies the practice under existing §2.107 whereby any pleading, including the answer, may be amended.

Section 2.111(a), as proposed, states when a cancellation proceeding is commenced, which is important for the application of §2.134.

Section 2.111(b), as proposed, indicates that a petition for cancellation should be addressed to the TTAB, which helps to route mail within the PTO.

Section 2.111(c), as proposed, implements the requirement of 14 and 24 of the Trademark Act that a petition for cancellation be verified, which requirement is contained in existing §2.112.

Section 2.111(d), as proposed, states the requirement for the payment of the fee(s) due upon filing a petition for cancellation, and, parallel to proposed amended §2.102(e), provides for the allocation of fees and payment of additional fees when more than one class is sought to be cancelled or more than one person is joined as a party petitioner or when both situations exist.

Section 2.112, as proposed, removes the reference to

verification of a petition for cancellation, which is placed in proposed §2.111(c), to clarify the language of the rule, and to state in proposed §2.112(b) the conditions for filing a consolidated petition for cancellation of different registrations owned by the same party.

Section 2.113 is proposed, to be amended to describe the procedure for notifying a registrant of the filing of a petition for cancellation of his registration. The provision in existing §2.113 for notifying a party of the need to correct a formally defective petition has been deleted. It is, and will continue to be, the practice of the TTAB to notify a party when he files a petition without the fee for cancelling at least one class in the registration sought to be cancelled or when a verification has been omitted or is defective. Problems arise when a defective petition for cancellation is filed near the end of the statute of limitations provided by 14(a) or (b) of the Trademark Act. If no fee, or a fee insufficient for a petition to cancel at least one class in respondent's registration, is received prior to the critical fifth anniversary, the TTAB is without jurisdiction to entertain the petition and the minimum jurisdictional fee cannot be paid after the five-year statute of limitations is effective. Jurisdiction to accept provisionally a defectively executed or verified petition and to prescribe a time to file a properly executed document resides exclusively with the Commissioner pursuant to 35 U.S.C. 26. A petition to the Commissioner is governed by existing §2.146(a)(2) or proposed §2.146(a)(2).

Section 2.115 is proposed, to be amended in the same manner as proposed amended §2.107.

Section 2.116(b) is proposed to be amended to clarify the language and intent of existing §2.116(b).

Section 2.116(c) is proposed to be amended to clarify existing §2.116(c). Any complaint filed by a party in an interference or concurrent use proceeding would be a petition for cancellation, and the position of the parties in the consolidated proceeding will be set by the TTAB as required.

Section 2.117 is proposed to be amended by the addition of subsections (b) and (c) to codify existing practice when a suspension of proceedings is considered.

Section 2.117(d) is proposed to be added to permit a party to move, or parties to stipulate, for suspension, which usually occurs when negotiations for settlement are undertaken and the parties want proceedings suspended for that purpose.

Section 2.120 is proposed to be amended in several respects commencing with a reorganization of the rule to state how discovery may be taken, then how discovery may be compelled, then how admissions may be requested and the sufficiency of admissions or objectives to requests therefor may be tested, and then how the results of discovery may be used in a proceeding.

Section 2.120(a), as proposed, clarifies the language of the introductory paragraph of existing §2.120.

Section 2.120(b), as proposed, is made applicable to domestic parties, clarifies existing §2.120(a)(1), and codifies the practice thereunder.

Section 2.120(c)(1), as proposed, restates in modified form the provisions of existing §2.120(a)(2), and in addition, proposed §2.120(c)(1) permits oral discovery depositions in foreign countries on motion for good cause or by stipulation of the parties.

Section 2.120(c)(2), as proposed, provides for oral discovery depositions within the United States of foreign parties or their officers, etc. if they will be in the United States during a discovery period.

Section 2.120(d), as proposed, makes specific provision for requests for production and codifies the practice for this kind of discovery.

Section 2.120(e) as proposed, clarifies existing §2.120(c)(1) and codifies the practices on motions to compel discovery.

Section 2.120(f), as proposed, adds provisions pertaining to protective orders during discovery.

Section 2.1120(g), as proposed, clarifies existing §2.120(c)(2) and codifies the practice on sanctions for failing to obey orders pertaining to discovery.

Section 2.120(h), as proposed, adds to the discovery

rules provisions pertaining to requests for admissions and codifies the practice pertaining to requests for admissions.

Section 2.120(i), as proposed, codifies the practice on pre-trial conferences to resolve dispute over pre-trial questions or issues.

Section 2.120(j), as proposed, clarifies existing §2.120(a)(3) and codifies the practice on the filing with the TTAB of matter obtained during discovery and the use thereof at trial.

Section 2.121, as proposed, clarifies existing §2.121 and codifies the practice thereunder.

Section 2.122, as proposed, consolidates in one section the rules governing the introduction and admission of evidence in inter partes proceedings before the TTAB.

Section 2.122(a), as proposed, identifies the sources of the law of evidence to be applied in inter partes proceedings.

Section 2.122(b)(1), as proposed, clarifies the language and codifies the practice under existing §2.122(a).

Section 2.122(b)(2) and (3), as proposed, clarify existing §2.126 and codify the practice under existing §2.126.

Section 2.122(c)(1), as proposed, clarifies and adds to the provisions of existing §2.122(c) relating to printed publications. Proposed §2.122(c) would require that an official record or copy thereof offered under the rule be an authentic record or copy pursuant to the Federal Rules of Evidence and would also require that, when a copy of a relevant portion of a printed publication is offered, the copy include the title page and any other page needed to show the place and date of publication, the name and address of the publisher, and the name of the author or the editor, which information is intended to enable the party against whom the evidence is offered to identify what it is.

Section 2.122(c)(2), as proposed, would amend existing §2.122(b) insofar as the existing rule governs the introduction of a copy of a registration owned by any party to a proceeding. An important change would be that a copy of a registration introduction by a party on his own behalf would have to be a certified copy (see 7(e) of the Trademark Act). A second important change would be the elimination of the practice, under existing §2.122(b), of filing, as evidence in a proceeding, two copies showing status and title of a registration pleaded by an opposer or petitioner for cancellation, or filing an order for such copies, with the notice of opposition or petition for cancellation. The procedure whereby an opposer or cancellation petitioner could submit an order for copies of his registration for subsequent attaching to his pleading has not worked well in practice. As a result, a number of opposition and cancellation proceedings have gone to final hearing without a copy of the opposer's or cancellation petitioner's registration, which had to be obtained at that point, provided that the party relying thereon could show that a timely correct order has been sent to the PTO. Since, it is more likely than not that an order for two certified copies of a registration showing status and title would not be filled in time for filing with a notice of opposition or petition for cancellation §2.122 is proposed to be amended to provide for the filing thereof only with a notice of reliance during a testimony period. This would not preclude attaching a copy of a pleaded registration as an exhibit to a notice of opposition or petition for cancellation purely for informational purposes but not for evidentiary purposes.

Section 2.122(d), as proposed, codifies the practice that copies of third-party registrations need not be certified to be offered in evidence.

Section 2.122(e), as proposed, clarifies existing §2.122(d) and codifies the practice under existing §2.122(d).

Section 2.123(a)(1), as proposed, provides that testimony may be taken by depositions upon oral questions or upon written questions and further provides that a party against whom a testimonial deposition will be taken may move to have the deposition taken upon oral questions if the witness, even though he may be a foreign party or a person who usually resides in a foreign country, is, or at the time of the deposition will be, in the United States



or any territory under the control and jurisdiction of the United States.

Section 2.123(a)(2), as proposed, provides that testimony in a foreign country is ordinarily to be taken by a deposition upon written questions but that the party against whom a testimonial deposition will be taken may move to have it taken by oral questions in a foreign country and further provides that the parties may stipulate to have testimony taken by an oral deposition in a foreign country.

Section 2.123(e)(3), as proposed, codifies the practice that a party who did not receive a proper notice of the taking of a deposition with respect to any witness may cross-examine that witness under protest while preserving his right to move to strike the whole of the testimony of that witness.

Section 2.123(k), as proposed, codifies the practice that objections to testimony on grounds of alleged lack of relevancy, materiality, or competency should be raised in a brief at final hearing but should not be raised by a motion to strike testimony regularly taken.

Section 2.124, as proposed, sets out the procedure to be followed in taking a discovery deposition or a testimonial deposition upon written questions.

Section 2.124(a), as proposed, provides that a deposition upon written questions may be taken before any of the persons described in Rule 28 of the Federal Rules of Civil Procedure.

Section 2.124(b)(1) as proposed, provides for the kind of notice which must be served by a party desiring to take a testimonial deposition upon written questions and further provides that a copy of the notice, without the questions, must be filed with the TTAB.

Section 2.124(b)(2), as proposed, provides for the kind of notice which must be served by a party desiring to take a discovery deposition upon written questions and further provides that a copy of the notice, without the questions, must be filed with the TTAB. This paragraph also provides that, if the name of the person to be deposed is not known to the party who will take the deposition, a general description sufficient to identify the class or group to whom the prospective witness belongs shall be stated in the notice and the party to be deposed shall designate one or more discovery witnesses.

Section 2.124(c), as proposed requires that every notice of deposition upon written questions name or describe by title the officer before whom the deposition will be taken.

Section 2.124(d)(1), as proposed, specifies the procedure and timetable for serving the questions, objections, and substitute questions for a deposition upon written questions.

Section 2.124(d)(2), as proposed, provides that the TTAB may reset the times specified in proposed §2.124(d)(1), and, when a testimonial deposition is to be taken upon written questions, may suspend or reschedule other proceedings in the matter to allow for the completion of the deposition.

Section 2.124(e), as proposed, provides the procedure for sending the notice and questions to the officer designated in the notice, the taking of the deposition, and the certification and mailing of the transcript to the party who took the deposition.

Section 2.124(f), as proposed, provides for the service of copies of the transcript and exhibits, states that the party who took the deposition is responsible for the correctness of the transcript, permits the use of a discovery deposition as provided by proposed §2.120(j), and provides for the filing with the TTAB of a testimonial deposition, a copy thereof, and the exhibits.

Section 2.124(g), as proposed, states that objections to questions and answers may be considered at final hearing.

Section 2.125(a), as proposed, provides for the service of a transcript of an oral testimonial deposition and the exhibits, and, in respect of that requirement, continues the rule of existing §2.125(a).

Section 2.125(b), as proposed, makes the party who took a deposition responsible for its correctness and for

serving the adverse party with a corrected transcript or corrected pages.

Section 2.125(c), as proposed, continues the requirement of existing §2.125(a) that a certified transcript, a copy of the transcript, and the exhibits be filed promptly with the TTAB and further provides that notice of filing be served on the adverse party and that a copy of the notice be filed with the TTAB.

Section 2.125(d), as proposed, continues the requirements of existing §2.125(b).

Section 2.125(e), as proposed, provides that the TTAB, on motion, may order that any part of a deposition transcript or exhibits that directly disclose a trade secret or other confidential research development, or commercial information may be filed under seal and kept confidential and provides for sanctions for failure to comply with the order.

Section 2.126 is proposed to be deleted because the substance of the existing section has been shifted to proposed §2.122(b)(2) and (3).

Section 2.127(a), (b), and (c), as proposed, clarify existing §2.127(a), (b), and (c) and codify the practice under existing §2.127(a), (b), and (c).

Section 2.127(d), as proposed, codifies the practice with respect to suspending all matters in a case not germane to a potentially dispositive motion until the determination thereof.

Section 2.128(a)(1), as proposed, clarifies existing §2.128(a) except that the rule requiring copies of a brief is shifted to proposed §2.128(b).

Section 2.128(a)(2), as proposed, codifies the practice of having the TTAB set the briefing schedule by order when proceedings are consolidated, or when there is a counterclaim, or when more than two parties are involved.

Section 2.128(a)(3), as proposed, contains a new provision enabling the TTAB to decide that a case has been conceded, resulting in an adverse judgment, when a party fails to file a brief at final hearing.

Section 2.128(b), as proposed, clarifies and codifies the practice under the last sentence of existing §2.128(a) and existing §2.128(b).

Section 2.129(a), as proposed, clarifies and codifies the practice under §2.128(c) and existing §2.129(a).

Section 2.129(b), as proposed, clarifies existing §2.129(b).

Section 2.129(c), as proposed, clarifies existing §2.129(c), from which the language referring to a decision on a motion which is finally dispositive of a case has been deleted because any requests for reconsideration or modification of a decision issued on a motion would be made under proposed §2.127(b).

Section 2.131, as proposed, clarifies and codifies the practice under existing §2.131. The effect is to eliminate the dichotomy between inter partes and ex parte issues and to provide for the determination by the TTAB of all issues that have been expressly pleaded by the parties or tried by their express or implied consent and to reserve for remand to the examiner for reexamination only issues neither pleaded nor tried but which appear to make the mark of an applicant unregistrable.

Section 2.132(a), as proposed, changes the practice under existing §2.132(a) by eliminating the step of having the TTAB issue an order to the plaintiff to show cause why judgment should not be entered against him. Under the proposed §2.132(a), the plaintiff will have fifteen days from the date of service of the defendant's motion for dismissal within which to show why judgment should not be rendered against the plaintiff.

Section 2.132(b), as proposed, clarifies existing §2.132(b).

Section 2.134(a), as proposed, codifies the practice under existing §2.134 that the written consent of the adverse party is required to avoid judgment against a cancellation respondent who applies to cancel his registration under §7(d) of the Trademark Act while the registration is involved in a proceeding.

Section 2.134(b), as proposed, provides that, after the commencement of a cancellation proceeding, if a re-

spondent (registrant) permits his registration to be cancelled under §8 of the Trademark Act or fails to renew his registration under §9 of the Act, the resulting demise of the registration shall be deemed to be the equivalent of a cancellation of the registration by request of the respondent without the written consent of the adverse party and will result in judgment against the respondent §2.134(b) is proposed to avoid situations where a respondent in a cancellation proceeding may moot the case and avoid judgment because of the fortuitous circumstance that his registration happens to reach its sixth anniversary or twentieth anniversary while a proceeding is pending and the respondent exploits this situation by simply failing to file an affidavit under §8 of the Act or a renewal application under §9 of the Act.

Section 2.135, as proposed, codifies the practice under existing §2.135, which is parallel to the parties under existing §2.134 and proposed §2.134(a), that the written consent of the adverse party is required to avoid judgment against an applicant who abandons his application or mark while the application is involved in an opposition.

Section 2.142(a), as proposed, clarifies existing §2.142(a).

Section 2.142(b), as proposed, requires the examiner to file with the TTAB a statement answering every point in the appellant's brief and requires the examiner to file the statement within sixty days after appellant's brief is sent to the examiner by the TTAB.

Section 2.142(c), as proposed, codifies the practice that all requirements made by the examiner and not the subject of appeal shall be compiled with prior to the filing of an appeal.

Section 2.142(d), as proposed, provides that the record in the application should be complete prior to the filing of an appeal, states that the TTAB will ordinarily not consider additional evidence filed with the TTAB by the appellant or by the examiner after an appeal is filed, and provides that either the appellant or the examiner may request the TTAB to suspend the appeal and remand the application for further examination if the appellant or the examiner desires to introduce additional evidence. The usual situations where additional evidence may be offered arise under 2(e) or 2(f) of the Trademark Act where the examiner desires to introduce more evidence to support a refusal of registration or the appellant desires to introduce more evidence in support of a claim of acquired distinctiveness (secondary meaning).

Section 2.142(e)(1), as proposed, amends existing §2.142(c), and codifies the practice under the existing rule, by changing the due date for a request for an oral hearing on an appeal from the date when the appellant's brief is filed to a date ten days after the due date for a reply brief.

Section 2.142(e)(2), as proposed, requires the examiner to present an oral argument if an oral argument is requested by the appellant.

Section 2.142(e)(3), as proposed, allots twenty minutes to the appellant for oral argument and ten minutes to the examiner for oral argument.

Section 2.142(f), as proposed, provides for situations, where, during an appeal, it appears to the TTAB that an issue not previously raised may render the mark of the appellant unregistrable, that is, when something on the face of the record on appeal indicates that a question concerning the registrability of the mark may exist but has not been considered. The proposed subsection provides the procedure to be followed by the TTAB, the examiner, and the appellant when the TTAB suspends an appeal and remands an application on the TTAB's own motion.

Section 2.146, as proposed, collects in one section the rules on petitions to the Commissioner in existing §§2.146, 2.147, and 2.148. For this reason it is proposed to delete §§2.147 and 2.148.

Section 2.142(a), as proposed, reflects the proposed change in §2.63(b) permitting petitions concerning some requirements which have been made final.

Section 2.146(b), as proposed, delineates classes of

questions which are not considered to be appropriate subject matter for petitions to the Commissioner. These questions are substantive issues of registrability of marks and are considered to be appropriate for appeal to the TTAB.

Section 2.146(c), as proposed, specifies the contents of a petition to the Commissioner, and in this respect clarifies existing §2.146(b).

Section 2.146(d), as proposed, specifies the time limit for filing a petition on any matter except from a denial of a request for an extension of time to file an opposition, or from an interlocutory order of the TTAB, or from the refusal of an affidavit or declaration filed pursuant to §8 of the Trademark Act, or from the refusal of an application for the renewal of a registration filed under §9 of the Trademark Act.

Section 2.146(e), as proposed, provides time limits and specifies the procedure for a petition to the Commissioner from the denial of a request for an extension of time to file an opposition or from an interlocutory order of the TTAB. Proposed §2.146(e)(1) contains a new requirement that a petition from the denial of a request for an extension of time to oppose must be served on the applicant or his attorney and provides for a response by the applicant to the petition.

Section 2.146(f), as proposed, clarifies existing §2.146(c).

Section 2.146(g), as proposed, clarifies and codifies the practice under existing §2.146(d) and, in addition, makes §2.146 consistent with proposed §§2.63(b) and 2.65.

Section 2.146(h), as proposed, codifies the practice under existing §2.146(e) whereby authority to act on classes of petitions, in addition to any particular petition, has been delegated.

Section 2.145, as proposed, specifies the procedure when an affidavit or declaration filed under §8 of the Trademark Act is refused. The steps to be taken by the registrant to request reconsideration and to petition to the Commissioner and the time limits for such requests and petitions are stated.

Section 2.145(d), as proposed, states that a petition to the Commissioner for review of the action refusing the affidavit or declaration under the Trademark Act shall be a condition precedent to an appeal to or action for review by any court. This implements 21(a)(1) and (b)(1) of the Act, which provide, inter alia, that a registrant who has filed an affidavit under §8 of the Act who is dissatisfied with the decision of the Commissioner may appeal to the Court of Customs and Patent Appeals or may have remedy by a civil action.

Section 2.173(b), as proposed, clarifies the circumstances in which an amendment of the identification of goods or services of a registration is permitted. The proposed rule states that an identification of goods or services can be restricted or can be otherwise changed in ways that would not require republication of the mark.

Section 2.184, as proposed, specifies procedures and time limits for relief when an application for renewal of a registration under §9 of the Trademark Act is refused, in parallel with proposed §2.165.

Section 2.184(d), as proposed, is parallel to proposed §2.165(d) and has the same statutory basis.

Section 2.186, as proposed, clarifies and codifies the practice under existing §2.186 that action with respect to an assigned application or registration may be taken by the assignee provided that the assignment has been recorded.

Environmental, energy, and other considerations: The proposed rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The proposed rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96-354) for several reasons. The rule change includes no additional or increased fees. Substantive rights to use valuable trademarks are not adversely affected. In general, the rule change will expedite proceedings before the Patent and Trademark Office, changing existing proce-



dures only where then can be made more equitable or simpler.

The proposed rule change does not impose a record keeping or reporting burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.* No additional information is required from the public. No additional records are required to be maintained by the Patent and Trademark Office because there are no additional fees or proceedings to monitor.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant, adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

#### List of Subject Terms in 37 CFR Part 2:

Administrative practice and procedure, Courts, Lawyers, Trademarks.

Notice is hereby given that pursuant to the authority contained in Section 41 of the Trademark Act of July 5, 1946, as amended, (60 Stat. 427, 88 Stat. 1949, 15 U.S.C. 1123, as amended), the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by amending §§2.20, 2.27, 2.63, 2.64, 2.65, 2.72, 2.81, 2.96, 2.98, 2.99, 2.101, 2.102, 2.103, 2.104, 2.105, 2.106, 2.107, 2.111, 2.112, 2.113, 2.115, 2.116, 2.117, 2.120, 2.121, 2.122, 2.123, 2.124, 2.125, 2.127, 2.128, 2.129, 2.131, 2.132, 2.134, 2.135, 2.142, 2.146, 2.165, 2.173, 2.184, and 2.186, and by removing §§2.88, 2.94, 2.95, 2.97, 2.126, 2.147, and 2.148, as set forth below. Additions are indicated by arrows and deletions by brackets.

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#### PART 2—RULES OF PRACTICE IN TRADEMARK COVERS

1. Section 2.20 is proposed to be amended by designating the present section as subsection (a) and adding a new subsection (b) to read as follows:

##### §2.20 Declaration(s) in lieu of oath.

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► (b) A notice of opposition or petition for cancellation signed on behalf of a corporation or an association by a person who is authorized to sign the document but who is not an officer may be accompanied by a declaration as provided in subsection (a).

2. Section 2.27 is proposed to be amended by revising subsections (b) and (d) and adding a subsection (e) to read as follows:

##### §2.27 Pending trademark application index; access to applications

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(b) ► Except as provided in subsection (e), access to the file of a particular pending application will be permitted prior to publication under rule 2.80 upon written request.

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(d) ► Except as provided in subsection (e), after a mark has been registered, or published for opposition, the file of the application and all proceedings relating thereto are available for public inspection and copies of the papers may be furnished upon paying the fee therefor.

► (e) Any documents, tangible things, answer to interrogatories, or all or part of any discovery or testimonial deposition transcripts ordered to be filed under seal pursuant to a protective order issued or made by any

court or by the Trademark Trial and Appeal Board in any proceeding involving an application or a registration shall be kept confidential and shall not be made available for public inspection or copying unless otherwise ordered by the court or the Board, or unless the party protected by the order voluntarily discloses the matter subject thereto.

3. Section 2.63 is proposed to be revised to read as follows:

##### §2.63 Reexamination. [Reexamination]

► (a) After response by the applicant, the application will be ► reexamined [re-examined] or reconsidered ► If [ , and if the] registration is again refused or ► any formal requirements[s] ► is repeated, [insisted upon.] but ► the examiner's action is ► not stated to be final ► , the applicant may respond again.

► (b) After reexamination the applicant may respond by filing a timely petition to the Commissioner for relief from a formal requirement if: (1) The formal requirement is repeated but the Examiner's action is not made final; or (2) the examiner's action is made final and the action is limited to subject matter appropriate for petitions to the Commissioner (see §2.146(b)). If the petition is denied, the applicant shall have until six months from the date of the Office action which repeated the requirement or made it final or thirty days from the date of the decision on the petition, whichever date is later, to comply with the requirement. A formal requirement which is the subject of a petition decided by the Commissioner may not subsequently be the subject of an appeal to the Trademark Trial and Appeal Board.

4. Subject 2.64 is proposed to be amended by amending the present section and designating it as subsection (a) and adding a new subsection (b) to read as follows:

##### §2.64 Final Action.

► (a) On the first or any subsequent reexamination or reconsideration the refusal of the registration or the insistence upon a requirement may be stated to be final, whereupon applicant's response is limited to an appeal ► , ► or to a compliance with any requirement ► , or to a petition to the Commissioner if permitted by §2.63(b).

► (b) During the period between a final action and expiration of the time for filing an appeal, the applicant may request the examiner to reconsider the final action. The filing of a request for reconsideration will not extend the time for filing an appeal or petitioning the Commissioner, but the examiner will reply to every request for reconsideration. Amendments accompanying requests for reconsideration after final action will be entered if they place the application in condition for publication or in better form for appeal.

5. Section 2.65 is proposed to be amended by revising the existing rule and identifying it as subsection (a) and adding a subsection (b) to read as follows:

##### §2.65 Abandonment.

► (a) If an applicant fails to respond, or to respond completely, within six months after the date an action is mailed, the application shall be deemed to have been abandoned. ► A timely petition to the Commissioner pursuant to §2.63(b) is a response which avoids abandonment of an application.

► (b) When action by the applicant is a bona fide attempt to advance the examination of the application and is substantially a complete response to the examiner's action, but consideration of some matter or compliance with some requirement has been inadvertently omitted, opportunity to explain and supply the omission may be given before the question of abandonment is considered.

6. Section 2.72 is proposed to be revised to read as follows:

##### §2.72 Amendments to description or drawing of the mark.

Amendments to the description or drawing of the mark may be permitted only if warranted by the specimens (or facsimiles) as originally filed, or supported by additional specimens (or facsimiles) and a supplemental affidavit or declaration in accordance with rule 2.20 alleging that the mark shown in the amended drawing ► is in use ► [was in actual use prior to the filing date of the application]. Amendments may not be made if the ► character ► [nature] of the mark is ► materially altered ► [changed thereby].

7. Section 2.81 is proposed to be revised to read as follows:

##### §2.81 Allowance of application.

If no opposition is filed with the time permitted [(§§2.101 and 2.102),] or ► any opposition is ► [if filed and] dismissed, and if no interference is declared ► and no ► [ , or] concurrent use proceeding ► is ► instituted, the application will be prepared for issuance of the certificate of registration as provided in §2.151.

##### §2.88 [Removed]

8. It is proposed to remove §2.88, Applications may be combined.

##### §2.94 [Removed]

9. It is proposed to remove §2.94, Interference motions.

##### §2.95 [Removed]

10. It is proposed to remove §2.95, Decision on motion to dissolve.

11. Section 2.96 is proposed to be revised to read as follows:

##### §2.96 Issue; burden of proof.

The issue in an interference between applications ► is normally priority of use, but the rights of the parties to registration may also be determined. The party whose application involved in the interference has the latest filing date is the junior party and has the burden of proof. When there are more than two parties in an interference, a party whose application involved in the interference has a filing date between the filing dates of the earliest involved application and the latest involved application is a junior party to every party whose involved application has an earlier filing date and has the burden of proof as against every party whose application has an earlier filing date. If any applications involved in an interference have the same filing date, the application with the latest date of execution will be deemed to have the latest filing date and that applicant will be the junior party. The issue in an interference between an application and a registration shall be the same, but in the event the final decision is adverse to the registrant, a registration to the applicant will not be authorized so long as the interfering registration remains on the register. ► [shall be the respective rights of the parties to registration. The issue in an interference between an application and a registration shall be the same, but in the event the final decision is adverse to the registrant, a registration to the applicant will not be authorized so long as the interfering registration remains on the register. The party whose applications or registration involved in the interference has the latest filing date (the junior party) will be regarded as having the burden of proof.]

##### §2.97 [Removed]

12. It is proposed to remove Section 2.97, Enlargement of issue.

13. Section 2.98 is proposed to be revised to read as follows:

##### §2.98 Adding party to interference.

► A party may be added to an interference only upon petition to the Commissioner by that party. ► [If, during the pendency of an interference, another case appears involving substantially the same registrable subject matter, the Examiner of Trademarks may request the suspension of the interference for the purpose of adding said case. Such suspension will be granted as a matter of course if no testimony has been taken. If any testimony has been taken or is about to be taken, the case will not be added except upon approval of a member of the Trademark Trial and Appeal Board.] If ► an application which is or might be the subject of a petition for addition to an interference ► [the case] is not added, the ► examiner ► [Examiner of Trademarks] may suspend action on ► the application ► [such case] pending termination of the interference proceeding.

14. Section 2.99 is proposed to be revised to read as follows:

##### §2.99 Application to register as concurrent user.

(a) An application for registration as a lawful concurrent user will be examined in the same manner as other applications for registration. ► The examiner may require an applicant for registration as a concurrent user to make a prima facie showing that the applicant is entitled to a concurrent use registration. ► [When it is determined that the mark is ready for publication or allowance, except for questions relating to concurrent registration, the applicant may be required to furnish as many copies of his written application, specimens and drawing, as may be necessary. The Examiner of Trademarks shall prepare notices for the applicant and for each applicant, registrant, or user specified in the application for registration as a concurrent user. Such notices for the specified parties shall give the names and address of the applicant and of his attorney or other authorized representative, if any, together with the serial number and filing date of the application.]

(b) ► When it is determined that the mark is ready for publication, the applicant may be required to furnish as many copies of his application, specimens and drawing as may be necessary for the preparation of notices for each applicant, registrant or user specified as a concurrent user in the application for registration. ► [The notices shall be sent to each of the parties, in care of their attorneys or other representatives, if they have attorneys or other representatives of record, and if one of the parties is a registrant, a notice shall also be sent to him or his assignee of record. A copy of the application shall be forwarded with the notices to the parties specified in the application. An answer to the notice is not required in the case of an applicant or registrant whose application or registration is specified in the application to register as concurrent user but a statement, if desired, may be filed within forty days after the mailing of the notice; in the case of other parties specified in the application to register as concurrent user, answer must be filed within forty days after the mailing of the notice.]

(c) ► Upon receipt of the required by subsection (b), the examiner shall forward the application for concurrent use registration for publication in the Official Gazette as provided by §2.80. If no opposition is filed, or if any opposition that is filed is dismissed or withdrawn, the Trademark Trial and Appeal Board shall prepare a notice for the applicant for concurrent use registration and for each applicant, registrant or user specified as a concurrent user in the application. The notices for the specified parties shall state the name and address of the applicant and of the applicant's attorney or other authorized representative, if any, together with the serial number and filing date of the application. ► [The procedure shall follow the practice in interference proceedings insofar as it is applicable and the time limitations prescribed in such practice shall be applicable herein.]

(d) ► (1) The notices shall be sent to each applicant, in care of his attorney or other authorized representative, if any, to each user, and to each registrant. A copy



of the application shall be forwarded with the notice to each party specified in the application.

(2) An answer to the notice is not required in the case of an applicant or registrant whose application or registration is specified as a concurrent user in the application, but a statement, if desired, may be filed within forty days after the mailing of the notice; in the case of any other party specified as a concurrent user in the application, an answer must be filed within forty days after the mailing of the notice.

(3) If an answer, when required, is not filed, judgment will be entered precluding the specified user from claiming any right more extensive than that acknowledged in the application(s) for concurrent use registration, but the applicant(s) will remain with the burden of proving entitlement to registration(s). ◀ [When concurrent registration is sought on the basis of a court determination of the rights of the parties to use the marks in commerce, the application shall be examined by the Examiner of Trademarks. If the applicant is entitled to registration subject only to the concurrent lawful use of a party to the court proceeding, the Examiner of Trademark may publish or allow the application, provided the court decree specifies the rights of the parties.]

▶ (e) The applicant for a concurrent use registration has the burden of proving entitlement thereto. If there are two or more applications for concurrent use registration involved in a proceeding, the party whose application has the latest filing date is the junior party. A party whose application has a filing date between the filing dates of the earliest involved application and the latest involved application is a junior party to every party whose involved application has an earlier filing date. If any applications have the same filing date, the application with the latest date of execution will be deemed to have the latest filing date and that applicant will be the junior party. A person specified as an excepted user in a concurrent use application but who has not filed an application shall be considered a party senior to every party that has an application involved in the proceeding. ◀

▶ (f) When a concurrent use registration is sought on the basis of a court's determination of the rights of the parties to use the marks in commerce, a concurrent use registration proceeding will not be instituted if all of the following conditions are fulfilled:

(1) The applicant is entitled to registration subject only to the concurrent lawful use of a party to the court proceeding; and

(2) The court decree specifies the rights of the parties; and

(3) A true copy of the court decree is submitted to the examiner; and

(4) The concurrent use application complies fully and exactly with the court decree; and

(5) The excepted use specified in the concurrent use application does not involve a registration.

If any of the conditions specified in this subsection is not satisfied, a concurrent use registration proceeding shall be prepared and instituted as provided in subsections (a) through (e). ◀

▶ (g) Registrations and applications to register on the Supplemental Register and registrations under the Act of 1920 are not subject to concurrent use registration proceedings. ◀

15. Section 2.101 is proposed to be revised to read as follows:

**§2.101 ▶ Extension of time for filing ◀ [Filing] an opposition.**

(a) Any person who believes that he would be damaged by the registration of a mark ▶ on ◀ [upon] the Principal Register may ▶ file a written request to extend the time for filing an opposition. The written request may be signed by the potential opposer or by an attorney at law or other person authorized to represent a party. ◀ [oppose the same by filing an opposition in the Patent and Trademark Office within thirty days after publication of the mark sought to be registered (§2.80),

or within an extension of the time for filing an opposition (§2.102). The opposition must be verified, or include a declaration in accordance with §2.20, unless the opposition as filed by an attorney at law or other authorized representative in accordance with §2.108.]

(b) ▶ The written request to extend the time for filing an opposition must identify the potential opposer with reasonable certainty. Any opposition filed during an extension of time should be in the name of the person to whom the extension was granted, but an opposition may be accepted if the person in whose name the extension was requested was misidentified through mistake or if the opposition is filed in the name of a person in privity with the person who requested and was granted the extension of time. ◀ [An opposition must include the required fee for each class sought to be opposed in the application. If fees insufficient to cover all classes in the application are submitted, the particular class or classes in which opposition is sought should be specified. If persons are joined in an opposition, a fee for each class sought to be opposed in the application for each person so joined is required.]

(c) ▶ A written request to extend the time for filing an opposition must be filed in the Patent and Trademark Office before the expiration of thirty days from the date of publication or within any extension of time previously granted under this section, should specify the period of extension desired, and should be addressed to the Trademark Trial and Appeal Board. A first extension of time for not more than thirty days will be granted upon request. Further extensions of time may be granted by the Board for good cause. Extensions of time to file an opposition aggregating more than 120 days from the date of publication of the application will not be granted except upon written stipulation signed by the applicant and the potential opposer, or their authorized representatives, or upon a showing of extraordinary circumstances. ◀ [If no fee, or a fee insufficient to cover at least one class, is filed within 30 days after publication of the mark to be opposed or within an extension of the time for filing an opposition, the opposition will not be refused if the required fee(s) and service charge (see §2.6(g)) are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office. In situations covered by this paragraph, §2.85(e) may not be utilized.]

▶ (d) Every request to extend the time for filing a notice of opposition should be submitted in triplicate (original plus two copies). ◀

16. Section 2.102 is proposed to be revised to read as follows:

**§2.102 ▶ Filing an ◀ [Extension of time for filing] opposition.**

(a) ▶ An opposition proceeding is commenced by the filing of a notice of opposition in the Patent and Trademark Office. ◀ [A request to extend the time for filing an opposition must be made by a person who believes that he would be damaged by the registration of the mark on the Principal Register, but an attorney at law or other person authorized to represent a party may file the request on behalf of a potential opposer. The potential opposer must be identified with reasonable certainty in the request. Any opposition filed during an extension of time should be in the name of the person to whom the extension was granted, but an opposition may be accepted if the person to whom the extension was granted was misidentified through mistake, or an opposition filed in a different name may be accepted if the person filing the opposition is in privity with the person to whom the extension was granted.]

(b) ▶ Any person who believes that he would be damaged by the registration of a mark on the Principal Register may oppose the same by filing a notice of opposition, which should be addressed to the Trademark Trial and Appeal Board. ◀ [A written request to extend the time for filing an opposition must be received in the Patent and Trademark Office before the expiration of

thirty days from the date of publication, and should specify the period of extension desired. A first extension of time will be granted upon request if the extension is for not more than thirty days. Other extensions of time may be granted by the Commissioner for good cause.]

▶ (c) The notice of opposition must be filed within thirty days after publication (§2.80) of the application being opposed or within an extension of time (§2.101) for filing an opposition. ◀

▶ (d) The notice of opposition must be verified by oath or affirmation or by a declaration in accordance with §2.20. ◀

▶ (e)(1) The notice of opposition must be accompanied by the required fee for each class in the application for which registration is opposed (see §2.85(e)). If the fees submitted are insufficient for an opposition against all of the classes in the application, the particular class or classes against which the opposition is filed should be specified. If the class or classes are not specified, the opposition will be presumed to be against the class or classes in ascending order, beginning with the class having the lowest number, and including the number of classes in the application for which the fees submitted are sufficient to pay the fee due for each class.

(2) If persons are joined as party opposers, a fee is required for each person for each class for which registration is opposed. If the fees submitted are insufficient for each named party opposer, the first named party will be presumed to be the party opposer and additional parties will be deemed to be party opposers to the extent that the fees submitted are sufficient to pay the fee due for each party opposer. If persons are joined as parties opposer against the registration of a mark in more than one class and the fees submitted are insufficient, the fees submitted will be applied first on behalf of the first named opposer against as many of the classes in the application as the submitted fees are sufficient to pay, and any excess will be applied on behalf of the second named party to the opposition against the classes in the application in ascending order. The payment of fees for parties opposer in excess of one may be made as though they are the payment of fees for additional classes in accordance with §2.85(e) subject to the exception that §2.85(e) may not be utilized after a service charge is paid pursuant to §2.6(g). ◀

▶ (f) If no fee, or a fee insufficient to pay for one person to oppose the registration of a mark in at least one class, is submitted within thirty days after publication of the mark to be opposed or within an extension of time for filing an opposition, the opposition will not be refused if the required fee(s) and service charge (see §2.6(g)) are submitted to the Patent and Trademark Office within the time limit set in the notification of this defect by the Office. In situations covered by this subsection, §2.85(e) may not be utilized. Only one service charge need be paid by each party opposer regardless of the number of classes for which registration is opposed. ◀

17. Section 2.103 is proposed to be revised to read as follows:

**§2.103 Opposition filed by attorney at law or other authorized representative.**

▶ A notice of ◀ [An] opposition may be filed in the Patent and Trademark Office by an attorney at law or other person authorized to represent a party, either within thirty days after publication of the mark sought to be registered (§2.80) [,] or within an extension of the time for filing an opposition [§ ▶ 2.101 ◀ [2.102]], but the opposition will be null and void unless ▶ verified ◀ [confirmed] by the opposer by ▶ oath or affirmation ◀ [verification,] or by ▶ a ◀ declaration in accordance with §2.20 [,] within thirty days after the filing of the ▶ notice of ◀ opposition [,] or within such further time as may be fixed by the Commissioner upon request made before the expiration of the thirty days.

18. Section 2.104 is proposed to be revised to read as follows:

**§2.104 Contents of ▶ notice of ◀ opposition.**

The ▶ notice of ◀ opposition must set forth a short and plain statement showing how the opposer would be damaged by the registration of the opposed mark and state the grounds for opposition. A duplicate copy of the ▶ notice of ◀ opposition, including exhibits ▶, ◀ shall be filed ▶ with the notice of opposition ◀.

19. Section 2.105 is proposed to be revised to read as follows:

**§2.105 Notification of opposition proceeding[s].**

▶ When a notice of opposition in proper form has been filed and the correct fee(s) (and service charge(s), if any) have been submitted, a notification shall be prepared by the Trademark Trial and Appeal Board, which shall identify the title and number of the proceeding and the application involved and shall designate a time, not less than thirty days from the mailing date of the notification, within which an answer must be filed. A copy of the notification shall be forwarded to the attorney or other authorized representative of the opposer, if any, or to the opposer. The duplicate copy of the notice of opposition and exhibits shall be forwarded with a copy of the notification to the attorney or other authorized representative of the applicant, if any, or to the applicant. ◀ [A notification of an opposition which has been regularly filed shall be prepared, identifying the title and number of the proceeding and the application involved, and designating a time, not less than thirty days from the mailing date of such notification, within which answer must be filed. Copies of this notification shall be forwarded by the Trademark Trial and Appeal Board to the parties in care of their attorney or other representatives, if they have attorneys or other representatives of record. The duplicate copy of the opposition and exhibits shall be forwarded with the notification to the applicant.]

20. Section 2.106 is proposed to be amended by revising paragraph (c) to read as follows:

**§2.106 Answer.**

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(c) The opposition may be withdrawn without prejudice before the answer is filed. After the answer is filed ▶, ◀ the opposition may not be withdrawn without prejudice except with the ▶ written ◀ consent of the applicant.

21. Section 2.107 is proposed to be revised to read as follows:

**§2.107 Amendment of ▶ pleadings in an ◀ opposition ▶ proceeding ◀.**

▶ Pleadings in an ◀ [An] opposition ▶ proceeding ◀ may be amended in the same manner and to the same extent as [a complaint] in a civil action ▶ in ◀ [before] a United States district court. [See Rule 15 of the Federal Rules of Civil Procedure.]

22. Section 2.111 is proposed to be revised to read as follows:

**§2.111 ▶ Filing ◀ [Time for filing] petition for cancellation.**

▶ (a) A cancellation proceeding is commenced by the filing of a petition for cancellation, together with at least the fee for petitioning to cancel one class, in the Patent and Trademark Office. ◀ [Any person who believes that he is or will be damaged by a registration may, upon payment of the required fee for each class sought to be cancelled in the registration, apply to the Commissioner to cancel said registration as to the specified class or classes. A petition to cancel which includes insufficient fees to cover all classes in the registration should specify the particular class or classes or which cancellation is sought. Such petition may be made at any time in the case of registrations on the Supplemental Register or under the Act of 1920, or registrations under



the Act of 1881 or the Act of 1905 which have not been published under section 12(c) of the Act (§2.153), and in cases involving the grounds specified in section 14(c), (d) and (e) of the Act. In all other cases such petition must be made within five years from the date of registration of the mark under the Act of 1946 or from the date of publication under section 12(c) of the Act.]

► (b) Any person who believes that he is or will be damaged by a registration may file a petition, which should be addressed to the Trademark Trial and Appeal Board, to cancel the registration in its entirety or for each class in the registration specified in the petition. The petition may be filed at any time in the case of registrations on the Supplemental Register or under the Act of 1920, or registrations under the Act of 1881 or the Act of 1905 which have not been published under §12(c) of the Trademark Act of 1946, or on any ground specified in §14(c) or (e) of the Trademark Act of 1946. In all other cases the petition must be filed within five years from the date of registration of the mark under the Trademark Act of 1946 or from the date of publication under 12(c) of the Trademark Act of 1946. ◀

► (c) The petition must be verified by oath or affirmation or by declaration in accordance with §2.20. ◀

► (d)(1) The petition must be accompanied by the required fee for each class in the registration for which cancellation is sought (see §2.85(e)). If the fees submitted are insufficient for a cancellation against all of the classes in the registration, the particular class or classes against which the cancellation is filed should be specified. If the class or classes are not specified, the cancellation will be presumed to be against the class or classes in ascending order, beginning with the lowest numbered class, and including the number of classes in the registration for which the fees submitted are sufficient to pay the fee due for each class.

((2) If persons are joined as party petitioners, each must submit a fee for each class for which cancellation is sought. If the fees submitted are insufficient for each named party petitioner, the first named party will be presumed to be the party petitioner and additional parties will be deemed to be party petitioners to the extent that the fees submitted are sufficient to pay the fee due for each party petitioner. If persons are joined as party petitioners against a registration sought to be cancelled in more than one class and the fees submitted are insufficient, the fees submitted will be applied first on behalf of the first-named petitioner against as many of the classes in the registration as the submitted fees are sufficient to pay, and any excess will be applied on behalf of the second-named party to the petition against the classes in the registration in ascending order. The payment of fees for additional party petitioners may be made as though they are the payment of additional fees for additional classes in accordance with §2.85(e). ◀

23. Section 2.112 is proposed to be revised to read as follows:

**§2.112 ► Contents of petition ◀ [Petition] for cancellation.**

► (a) ◀ The petition to cancel [which must be verified, or include a declaration in accordance with §2.20], must set forth a short and plain statement showing how the petitioner is or will be damaged by the registration, state the grounds for cancellation, and indicate the respondent party to whom notification shall be sent. A duplicate copy of the petition, including exhibits, shall be filed with the petition. [Applications to cancel different registrations owned by the same party may be joined in one petition when appropriate, but the required fee must be included for each class sought to be cancelled in each registration against which each application to cancel is filed. If persons are joined in a petition to cancel, a fee for each class sought to be cancelled for each person so joined is required.]

► (b) Petitions to cancel different registrations owned by the same party may be joined in a consolidated petition when appropriate, but the required fee must be in-

cluded for each party joined as petitioner for each class sought to be cancelled in each registration against which the petition to cancel is filed. ◀

24. Section 2.113 is proposed to be revised to read as follows:

**§2.113 Notification of ► cancellation proceeding ◀ [filing of petition].**

[(a)] When a petition for cancellation ► has been filed in proper form and the correct fees(s) have been submitted, a notification shall be prepared by the Trademark Trial and Appeal Board, which shall identify the title and number of the proceeding and the registration or registrations involved and shall designate a time, not less than thirty days from the mailing date of the notification, within which an answer must be filed. A copy of the notification shall be forwarded to the attorney or other authorized representative of the petitioner, if any, or to the petitioner. The duplicate copy of the petition for cancellation and exhibits shall be forwarded with a copy of the notification to the respondent. ◀ [is filed, it shall be transmitted to the Trademark Trial and Appeal Board, which shall make examination thereof to determine if it is formally correct.] If the petition is found to be defective as to form, the party filing the ► petition ◀ [same] shall be so advised and allowed a reasonable time for correcting the informality.

[(b) When the petition is correct as to form, a notification shall be prepared, identifying the title and number of the proceeding and the registration involved, and designating a time, not less than thirty days from the mailing date of such notification, within which answer must be filed. A copy of this notification shall be forwarded to the petitioner in care of his attorney or other representative, if he has an attorney or other representative of record. The duplicate copy of the petition and exhibits shall be forwarded with a copy of such notification to the respondent party.]

25. Section 2.115 is proposed to be revised to read as follows:

**§2.115 Amendment of ► pleadings in a ◀ [petition for] cancellation ► proceeding ◀ .**

► Pleadings in a ◀ [A petition for] cancellation ► proceeding ◀ may be amended in the same manner and to the same extent as [a complaint] in a civil action ► in ◀ [before] a United States district court. [See Rule 15 of the Federal Rules of Civil Procedure.]

26. Section 2.116 is proposed to be amended by revising paragraphs (b) and (c) to read as follows:

**§2.116 [Federal] Rules of [Civil] Procedure.**

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(b) ► The opposer in an opposition proceeding or the petitioner in a cancellation proceeding shall be in the position of plaintiff, and the applicant in an opposition proceeding or the respondent in a cancellation proceeding shall be in the position of defendant. A party that is a junior party in an interference proceeding or in a concurrent use registration proceeding shall be in the position of plaintiff against every party that is senior, and the party that is a senior party in an interference proceeding or in a concurrent use registration proceeding shall be a defendant against every party that is junior. ◀ [The party having the latest filing date in an interference, the opposer in an opposition proceeding, the petitioner in a cancellation proceeding, and the applicant to register as a concurrent lawful user (or such applicant having the latest filing date), shall be deemed to be in the position of plaintiff, and the other parties to such proceedings shall be deemed to be in the position of defendants.]

(c) The ► notice of ◀ opposition ► or ◀ [and] the petition ► for cancellation ◀ [to cancel,] and the ► answer ◀ [answer thereto] correspond to ► the ◀ complaint and answer in ► a ◀ court proceeding[s]. [Such pleadings as may be filed in interference and concurrent

registration proceedings will be treated as complaints or affirmative defenses, depending upon the party filing, but the filing of a pleading in such proceedings shall not operate to change the position of the parties as set forth in the preceding paragraph.]

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27. Section 2.117 is proposed to be amended by designating the present section as subsection (a) and adding new subsections (b), (c) and (d), to read as follows:

**§2.117 Suspension of proceedings.**

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► (b) Issue must be joined in the civil action and in the proceeding pending before the Trademark Trial and Appeal Board before the question of suspension of proceedings will be considered. ◀

► (c) Whenever there is pending, at the time when the question of the suspension of proceedings is raised, a motion which is potentially dispositive of the case, the motion will be decided before the question of suspension will be considered. ◀

► (d) Proceedings may also be suspended, for good cause, upon motion or a stipulation of the parties approved by the Board. ◀

28. Section 2.120 is proposed to be revised to read as follows:

**§2.120 Discovery [procedure].**

► (a) In general. ◀ The provisions of the Federal Rules of Civil Procedure relating to discovery shall apply in ► opposition, cancellation, interference and concurrent use registration proceedings ◀ [in inter partes trademark cases] except as otherwise provided in this section. The Trademark Trial and Appeal Board will specify the closing date for the taking of discovery:

► (b) Discovery deposition within the United States. ◀ [(a) Depositions for discovery—(1) Procedure.] The deposition of a ► natural ◀ person shall be taken in the Federal judicial district where ► the person ◀ [he] resides or is regularly employed ► or at any place on which the parties agree by stipulation ◀ . The responsibility ► rest wholly with the party taking discovery to secure ◀ [for securing] the attendance of a proposed deponent [,] other than a party or anyone who ►, ◀ at the time set for the taking of the deposition ►, is ◀ [was] an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) of Rule 31(a) of the Federal Rules of Civil Procedure ►, ◀ [to testify on behalf of a party, rests wholly with the interested party] See 35 U.S.C. 24.

► (c) ◀ (2) Discovery ► disposition ◀ in foreign countries. ► (1) ◀ The discovery deposition of a ► natural person residing in a foreign country who is a ► party or ► who, at the time set for the taking of the deposition is ◀ an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or ► Rule ◀ 31(a) of the Federal Rules of ► Civil ◀ Procedure ►, shall if taken in a foreign country, ◀ [to testify on behalf of a party, domiciled in a foreign country may] be taken in the manner prescribed by §2.124 [.]

► unless the Trademark Trial and Appeal Board, upon motion for good cause, orders or the parties stipulate, that the deposition be taken by oral examination.

(2) Whenever a foreign party is or will be, during a time set for discovery, present within the United States or any territory which is under the control and jurisdiction of the United States, such party may be deposed by oral examination upon notice by the party seeking discovery. Whenever a foreign party has or will have, during a time set for discovery, an officer, director, managing agent, or other person who consents to testify on its behalf, present within the United States or any territory which is under the control and jurisdiction of the United States, such officer, director, managing agent, or other person who consents to testify in its behalf may be deposed by oral examination upon notice by the party

seeking discovery. The party seeking discovery may have one or more officers, directors, managing agents or other persons who consent to testify on behalf of the adverse party, designated under Rule 39(b)(6) of the Federal Rules of Civil Procedure. The deposition of a person under this paragraph shall be taken in the Federal judicial district where the witness resides or is regularly employed, or, if the witness neither resides nor is regularly employed in a Federal judicial district, where the witness is at the time of the deposition. This paragraph does not preclude the taking of a discovery deposition of a foreign party by any other procedure provided by paragraph (1). ◀ [(3) Use of discovery depositions. A discovery deposition shall not be considered as part of the record in the case unless the party offering the deposition, or any part thereof, files the same before the close of his testimony period (testimony-in-chief or rebuttal as appropriate) and also files a notice of reliance thereon. A discovery deposition should not be filed in the Patent and Trademark Office in the absence of a notice of reliance. Objections, including any made during the examination, will be considered only if made or renewed at the hearing.]

► (d) Request for production. The production of documents and things under the provisions of Rule 34 of the Federal Rules of Civil Procedure will be made at the place where the documents and things are usually kept, or where the parties agree, or where and in the manner which the Trademark Trial and Appeal Board, upon motion, orders. ◀ [(b) Use of admission or answer to interrogatory. No admission or answer to an interrogatory shall be considered as part of the record in the case unless the party propounding the request for admission or interrogatory files, before the close of his testimony period (testimony-in-chief or rebuttal, as appropriate), a copy of the admission and the request therefor and/or a copy of the interrogatory and its answer and also files a notice of reliance thereon.]

► (e) Motion for an order to compel discovery. If a party fails to designate a person pursuant to Rule 30(b)(6) or Rule 31(a) of the Federal Rules of Civil Procedure, or if a party, or such designated person, or an officer, director or managing agent of a party fails to attend a deposition or fails to answer any question propounded in a discovery deposition, or any interrogatory, or fails to produce and permit the inspection and copying of any document or thing, the party seeking discovery may file a motion before the Trademark Trial and Appeal Board for an order to compel a designation, or attendance at a deposition, or an answer, or production and an opportunity to inspect and copy. The motion shall include a copy of the request for designation or of the relevant portion of the discovery deposition; or a copy of the interrogatory with any answer or objection that was made; or a copy of the request for production, any proffer of production or objection to production in response to the request, and a list and brief description of the documents or things that were not produced for inspection and copying. The motion must be supported by a written statement from the moving party that such party or the attorney therefor has made a good faith effort, by conference or correspondence, to resolve with the other party or the attorney therefor the issues presented in the motion and has been unable to reach agreement. If issues raised in the motion are subsequently resolved by agreement of the parties, the moving party should inform the Board in writing of the issues in the motion which no longer require adjudication. ◀ [(c) Failure to make discovery: Sanctions. (1) If any party fails or refuses to answer any proper question in taking discovery depositions or fails or refuses to answer any proper question propounded by interrogatories or fails or refuses to comply with a request to produce and permit the inspection and copying of designated things, the party seeking discovery may file a motion with the Trademark Trial and Appeal Board for an order compelling discovery. Such a motion must be supported by a written statement by the attorney for the moving party that the moving party or its attorney has conferred with the opposing party or



its attorney in an effort in good faith to resolve by agreement the issues raised by the motion and has been unable to reach agreement. If issues raised by the motion are subsequently resolved between the parties, the attorney for the moving party should advise the Trademark Trial and Appeal Board in writing of the matters in the motion which no longer require decision by the Board.

(2) If a party or an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure to testify on behalf of a party, fails to obey an order to provide or permit discovery, the Trademark Trial and Appeal Board may strike out all or any part of any pleading of that party, dismiss the action or proceeding, or deny any part thereof, enter judgment as by default against that party or take any such other action as may be deemed appropriate.]

► (f) *Motion for a protective order.* Upon motion by a party from whom discovery is sought, and for good cause, the Trademark Trial and Appeal Board may make any order which justice requires to protect a party from annoyance, embarrassment, oppression, or undue burden or expense, including one or more of the types of orders provided by clauses (1) through (8), inclusive of Rule 26(c) of the Federal Rules of Civil Procedure. If the motion for a protective order is denied in whole or in part, the Board may, on such conditions (other than an award of expenses to the party prevailing on the motion) as are just, order that any party provide or permit discovery. ◀

► (g) *Failure to comply with order.* If a party fails to comply with an order of the Trademark Trial and Appeal Board relating to discovery, including a protective order, the Board may make any appropriate order, including any of the orders provided in Rule 37(b)(2) of the Federal Rules of Civil Procedure, except that the Board does not have authority to hold any person in contempt or to award any expenses to any party. The Board may impose against a party any of the sanctions provided by this subsection in the event that said party or any attorney agent, or designated witness of that party fails to comply with a protective order made pursuant to Rule 26(c) of the Federal Rules of Civil Procedure. ◀

► (h) *Request for admissions.* Requests for admissions shall be governed by Rule 36 of the Federal Rules of Civil Procedure except that the Trademark Trial and Appeal Board does not have authority to award any expenses to any party. A motion by a party to determine the sufficiency of an answer or objection to a request made by that party for an admission shall include a copy of the request for admission and any exhibits thereto and of the answer or objection. The motion must be supported by a written statement from the moving party that such party or the attorney therefor has made a good faith effort, by conference or correspondence, to resolve with the other party or the attorney therefor the issues presented in the motion and has been unable to reach agreement. If issues raised in the motion are subsequently resolved by agreement of the parties, the moving party should inform the Board in writing of the issues in the motion which no longer require adjudication. ◀

► (i) *Pre-trial conference.* Whenever it appears to the Trademark Trial and Appeal Board that questions or issues arising during the interlocutory phase of an inter partes proceeding have become so complex that their resolution by correspondence or telephone conference is not practical and that resolution would be likely to be facilitated by a conference in person of the parties or their attorneys with a Member or Attorney-Examiner of the Board, the Board may at its discretion request that the parties or their attorneys, under circumstances which will not result in undue hardship for any party, meet with the Board at its offices for a pre-trial conference. ◀

► (j) *Use of discovery deposition, admission, or answer to interrogatory.* (1) A party who took a discovery deposition, or who obtained an answer to an interrogatory, or who obtained an admission, may make the same of record in the case by filing the deposition or any part

thereof with any exhibit identified in the part that is filed, or a copy of the interrogatory and the answer thereto with any exhibit made part of the answer, or a copy of the request for admission and any exhibit thereto and the admission (or a statement that the party from whom an admission was requested failed to respond thereto), together with a notice of reliance. The notice of reliance and the material submitted thereunder shall be filed during the testimony period of the party who files the notice of reliance. An objection made at a discovery deposition by a party answering a question subject to the objection will be considered at final hearing.

(2) A discovery deposition or part thereof, or an answer to an interrogatory, or an admission, may be submitted and made part of the record by only the inquiring party except that, if only part of a discovery deposition, or fewer than all of the answers to interrogatories, or fewer than all of the admissions, are offered in evidence by the inquiring party, the responding party may introduce under a notice of reliance any other part of the discovery deposition, or any other answers to interrogatories, or any other admissions, which should in fairness be considered so as to make not misleading what was offered by the inquiring party.

(3) A deposition, taken during the discovery period, of a person who is not a party, or an officer, director or managing agent of a party, or a person designated by a party pursuant to Rule 30(b)(6) or Rule 31(a) of the Federal Rules of Civil Procedure, shall not be offered in evidence except when the person whose discovery deposition was taken is, during the testimony period of the party offering the deposition: dead; or out of the United States (unless it appears that the absence of the witness was procured by the party offering the deposition); or unable to testify because of age, illness, infirmity, or imprisonment; or cannot be served with a subpoena to compel attendance at a testimonial deposition; or there is a stipulation by the parties; or upon a showing of extraordinary circumstances and necessity in the interest of justice. The use of a discovery deposition under this paragraph will be allowed only by order of the Trademark Trial and Appeal Board on motion, which shall be filed promptly after the circumstances claimed to justify use of the deposition become known, or by stipulation of the parties approved by the Board.

(4) Subsection (1) will not be interpreted to preclude the reading or the use of a discovery deposition, or answer to an interrogatory, or admission as part of the examination or cross-examination of any witness during the testimony period of any party.

(5) Interrogatories, requests for production, requests for admissions, and materials or depositions obtained during the discovery period should not be filed with the Board except when submitted with a motion to compel discovery, or in support of or response to a motion for summary judgment, or under a notice of reliance during a party's testimony period. ◀

29. Section 2.171 is proposed to be revised to read as follows:

#### §2.121 Assignment of times for taking testimony.

(a) ► (1) The Trademark Trial and Appeal Board will issue a trial order assigning to each party the time for taking testimony. No ◀ [Times will be assigned for the taking of testimony in behalf of each of the parties, and no] testimony shall be taken except during the time assigned ►, unless by stipulation of the parties approved by the Board or, upon motion, by order of the Board. Testimony periods may be rescheduled by stipulation of the parties approved by the Board or, upon motion, by order of the Board. The resetting of the closing date for discovery will result in the rescheduling of the testimony periods without action by any party.

(2) The initial trial order will be mailed by the Board after issue is joined. ◀ [If there be no more than two parties to an interference, the times for taking testimony will be so arranged that each shall have an opportunity to prove his case against prior parties, to rebut their evidence, and to meet the evidence of junior parties.]

(b) ► (1) The Trademark Trial and Appeal will schedule a testimony period for the plaintiff to present its case in chief, a testimony period for the defendant to present its case and to meet the case of the plaintiff, and a testimony period for the plaintiff, and testimony period for the plaintiff to present evidence in rebuttal.

(2) When there is a counterclaim, or when proceedings have been consolidated and one party is in the position of plaintiff in one of the involved proceedings and in the position of defendant in another of the involved proceedings, or when there is an interference or a concurrent use registration proceeding involving more than two parties, the Board will schedule testimony periods so that each party in the position of plaintiff will have a period for presenting its case in chief against each party in the position of defendant, each party in the position of defendant will have a period for presenting its case and meeting the case of each plaintiff, and each party in the position of plaintiff will have a period for representing evidence in rebuttal. ◀ [The times will ordinarily be assigned in the notices sent by the Patent and Trademark Office in interferences and in concurrent use proceedings, and in a notice sent after the answers have been filed in cases of opposition and cancellation.]

► (c) A testimony period which is solely for rebuttal will be set for thirty days. The periods may be extended by stipulation of the parties, approved by the Trademark Trial and Appeal Board, or, upon motion, by order of the Board. ◀

► (d) When parties stipulate to the rescheduling of testimony periods or to the rescheduling of the closing date for discovery and the rescheduling of testimony periods, a stipulation presented in the form used in a trial order, signed by the parties, or a motion in said form signed by one party and including a statement that every other party has agreed thereto, and submitted in one original plus as many photocopies as there are parties, will, if approved, be so stamped, signed, and dated, and the copies will be promptly returned to the parties. ◀

30. Section 2.122 is proposed to be revised to read as follows:

#### §2.122 Matters in evidence.

(a) ► The rules of evidence for proceedings before the Trademark Trial and Appeal Board are the Federal Rules of Evidence, the relevant provisions of the Federal Rules of Civil Procedure, the relevant provisions of Title 28 of the United States Code, and the provisions of this Part of Title 37 of the Code of Federal Regulations. ◀ [The files of the applications or registrations specified in the declaration of interference or in the notice in case of concurrent registration proceedings, of the application against which an opposition is filed, and of the registration against which a petition for cancellation or an affirmative defense requesting]

► (b)(1) The file of each application specified in a declaration of interference, of each application or registration specified in the notice of a concurrent use registration proceeding, of the application against which a notice of opposition is filed, or of each registration against which a petition or counterclaim for ◀ cancellation is filed [,] ► forms ◀ [form] part of the record of the proceeding without any action by the parties ► and reference may be made to the file ◀ [, and may be referred to] for any relevant and competent purpose.

► (2) The allegation in an application for registration, or in a registration, of a date of use is not evidence on behalf of the applicant or registrant; a date of use of a mark must be established by evidence. Specimens in the file of an application for registration, or in the file of a registration, are not evidence on behalf of the applicant or registrant unless identified and introduced in evidence as are other exhibits during the period for the taking of testimony.

(3) An exhibit attached to a pleading is not evidence on behalf of the party to whose pleading the exhibit is attached unless identified and introduced in evidence as are other exhibits during the period for the taking of tes-

timony. ◀ [(b) A registration of the opposer or petitioner pleaded in an opposition or petition to cancel will be received in evidence and made part of the record if two copies showing status and title of the printed registration or an order for such copies accompany the opposition or petition.]

(c) ► (1) ◀ Printed publications, such as books and periodicals, available to the general public in libraries or of general circulation ► among members of the public or that segment of the public which is relevant under an issue in a proceeding ◀, and official records, if ► the publication or official record is ◀ competent evidence and ► relevant ◀ [pertinent] to ► an ◀ [the] issue, may be introduced in evidence by filing [in the Patent and Trademark Office] a notice ► of reliance on the material being offered, which notice shall specify the printed publication or the official record and the pages to be read, indicate generally the relevance of the material being offered, and be accompanied by the official record or a copy thereof whose authenticity is established under the Federal Rules of Evidence, or by the printed publication or a copy of the relevant portion thereof, including the title page and any other page needed to show the place and date of publication, the name and address of the publisher, and the name of the author or the editor. The notice of reliance shall be filed during the testimony period of the party that files the notice.

(2) A registration owned by any party to a proceeding may be made of record in the proceeding by that party by filing a notice of reliance, which shall be accompanied by a certified copy of the registration prepared and issued by the Patent and Trademark Office showing both the current status of and current title to the registration. For the cost of a certified copy of a registration showing status and title, see the second item under §2.6(a). The notice of reliance shall be filed during the testimony period of the party that files the notice. ◀ [to that effect during the period for the taking of the testimony of the party [during the period for taking of testimony-in-chief if such matters are not in rebuttal], specifying the record or the printed publication, the page or pages to be used, indicating generally, its relevance, and accompanied by the record or authenticated copy or the printed publication or a copy. When a copy of an official record of the Patent and Trademark Office is filed, it need not be a certified copy. The notice and copy of the record or publication must be served on each of the other parties].

(d) ► A copy of an official record of the Patent and Trademark Office other than a copy of a registration owned by a party to a proceeding need not be certified to be offered in evidence. ◀ [Upon motion duly made and granted, testimony taken in another proceeding, or testimony taken in a suit between the same parties or those in interest, may be used in a proceeding, so far as relevant and material, subject, however, to the right of any contesting party to recall or demand the recall of witnesses whose testimony has been taken, and to take other testimony in rebuttal of the testimony.]

► (e) By order of the Trademark Trial and Appeal Board, on motion, testimony taken in another proceeding, or testimony taken in a suit or action in a court, between the same parties or those in privity may be used in a proceeding, so far as relevant and material, subject, however, to the right of any adverse party to recall or demand the recall for examination or cross-examination of any witness whose prior testimony has been offered and to rebut the testimony. ◀

31. Section 2.123 is proposed to be amended by revising paragraphs (a), (e)(3), (j) and (k) to read as follows:

#### §2.123 Trial testimony in inter partes cases.

(a) (1) The testimony [Manner of taking testimony. Testimony] of witnesses in inter partes cases may be taken: (1) by depositions upon oral examination as provided by this section [,] or [(2)] by depositions upon written questions as provided by [in accordance with the requirements of this section and] §2.124. If a party serves



notice of the taking of a testimonial deposition upon written questions of a witness who is, or will be at the time of the deposition, present within the United States or any territory which is under the control and jurisdiction of the United States, any adverse party may, within fifteen days from the date of service of the notice, file a motion with the Trademark Trial and Appeal Board, for good cause, for an order that the deposition be taken by oral examination.

(2) A testimonial deposition taken in a foreign country shall be taken by deposition upon written questions as provided by §2.124, unless the Board, upon motion for good cause, orders that the deposition be taken by oral examination, or the parties so stipulate.

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(e) *Examination of witnesses*:[.]

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(3) Every adverse [The opposing] party shall have full opportunity to cross-examine each witness. [the witnesses.] If the notice of examination of witnesses which is served pursuant to subsection (c) is improper or inadequate with respect to any witness, an adverse party may cross-examine that witness under protest while reserving the right to object to the receipt of the testimony in evidence. Promptly after the testimony is completed, the adverse party, if he wishes to preserve the objection, shall move to strike the testimony from the record, which motion will be decided on the basis of all of the relevant circumstances. A motion to strike the testimony of a witness for lack of proper or adequate notice of examination must request the exclusion of the entire testimony of that witness and not only a part of that testimony. [opposing party shall attend the examination of witnesses not named in the notice, and shall either cross-examine such witnesses or fail to object to their examination, he shall be deemed to have waived his right to object to such examination for want of notice.]

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(j) *Effect of errors and irregularities in depositions* : [.] Notice will not be taken of merely formal or technical objections which shall not appear to have wrought a substantial injury to the party raising them; and in case of such injury it must be made to appear that, as soon as the party became aware of the ground of objection, he gave notice thereof. Rule 32(d) (1), (2), and (3) (A) and (B) [a] and [b] of the Federal Rules of Civil Procedure shall apply to errors and irregularities in depositions.

(k) *Objections to admissibility* : [.] Subject to the provisions of [.] subsection [paragraph] (j) [of this section], objection may be made to receiving in evidence any deposition [.] or part thereof, or any other evidence, for any reason which would require the exclusion of the evidence [.] from consideration. Objections based on grounds of alleged lack of relevancy, materiality, or competency should be raised in the brief filed under §2.128, but not by a motion to strike testimony regularly taken pursuant to these rules. Objections will be considered at final hearing. [according to the established rules of evidence, which will be applied strictly by the Office.]

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32. Section 2.124 is proposed to be revised to read as follows:

**§2.124 Depositions** [Testimony by depositions] upon written questions.

(a) A deposition upon written questions may be taken before any person before whom depositions may be taken as provided by Rule 28 of the Federal Rules of Civil Procedure. [A party may take the testimony of a witness by written questions to be propounded by an officer before whom depositions may be taken. See Rule 28 of the Federal Rules of Civil Procedure. The questions shall be served upon the other party within 10 days after the opening date set for taking the testimony of the party submitting the questions, together with a

notice stating the name and address of the person who is to answer them and the name or descriptive title and address of the officer before whom the deposition is to be taken. Within 10 days thereafter, a party so served may serve cross questions upon the party proposing to take the deposition. Within 5 days thereafter, the latter may serve redirect questions upon a party who has served cross questions. Within 3 days after being served with redirect questions a party may serve recross questions upon the party proposing to take the depositions. Written objections to questions may be served on the party propounding the questions, and in response thereto substitute questions may be served, within 3 days.]

(b) (1) A party desiring to take a testimonial deposition upon written questions shall serve notice thereof upon each adverse party within ten days from the opening date of the testimony period of the party who serves the notice. The notice shall state the name and address of the witness. A copy of the notice, but not copies of the questions, shall be filed with the Trademark Trial and Appeal Board.

(2) A party desiring to take a discovery deposition upon written questions shall serve notice thereof upon each adverse party and shall file a copy of the notice, but not copies of the questions, with the Board. The notice shall state the name and address, if known, of the person whose deposition is to be taken. If the name of the person is not known, a general description sufficient to identify him or the particular class or group to which he belongs shall be stated in the notice, and the party from whom the discovery deposition is to be taken shall designate one or more persons to be deposed in the same manner as is provided by Rule 30(b)(6) of the Federal Rules of Civil Procedure. [A copy of the notice and copies of all questions served shall be delivered by the party taking the testimony to the officer designated in the notice, who shall proceed to take the testimony of the witness in response to the questions and to prepare each answer immediately preceded by its corresponding question, then certify, and file the deposition, attaching thereto the copy of the notice and the questions received by him. Such depositions are subject to the same rulings for filing and serving copies as other depositions.]

(c) Every notice given under the provisions of subsection (b) shall be accompanied by the name or descriptive title of the officer before whom the deposition is to be taken. [On motion made within ten days after service of the notice and written questions, it may be ordered, for good cause shown, that the testimony be not taken in accordance with the section but by oral examination of the witness.]

(d) (1) Every notice served on any adverse party under the provisions of subsection (b) shall be accompanied by the written questions to be propounded on behalf of the party who proposes to take the deposition. Within twenty days from the date of service of the notice, any adverse party may serve cross questions upon the party who proposes to take the deposition; any party who serves cross questions shall also serve every other adverse party. Within ten days from the date of service of the cross questions, the party who proposes to take the deposition may serve redirect questions on every adverse party. Within ten days from the date of service of the redirect questions, any party who served cross questions may serve recross questions upon the party who proposes to take the deposition; any party who serves recross questions shall also serve every other adverse party. Written objections to questions may be served on a party propounding questions; any party who objects shall serve a copy of the objections on every other adverse party. In response to objections, substitute questions may be served on the objecting party within ten days of the date of service of the objections; substitute questions shall be served on every other adverse party.

(2) Upon motion for good cause by any party, or upon its own motion, the Trademark Trial and Appeal Board may extend any of the time periods provided by paragraph (1) of this subsection (d) and may, when one

or more testimonial depositions are to be taken upon written questions, suspend or reschedule other proceedings in the matter to allow for the orderly completion of the depositions upon written questions. [Testimony in foreign countries shall be taken only be depositions upon written questions unless the parties stipulate otherwise in writing. Rule 28(b) of the Federal Rules of Civil Procedure shall apply to the taking of testimony in foreign countries.]

(e) Within ten days after the last date when questions, objections, or substitute questions may be served, the party who proposes to take the deposition shall mail a copy of the notice and copies of all the questions to the officer designated in the notice; a copy of the letter to the officer shall be served on every adverse party. The officer designated in the notice shall take the testimony of the witness in response to the questions and shall record each answer immediately after the corresponding question. The officer shall then certify the transcript and mail the transcript and exhibits to the party who took the deposition.

(f) the party who took the deposition shall promptly serve a copy of the transcript, copies of documentary exhibits, and duplicates or photographs of physical exhibits on every adverse party. It is the responsibility of the party who takes the deposition to assure that the transcript is correct. If the deposition is a discovery deposition, it may be made of record as provided by §2.120(j).

If the deposition is a testimonial deposition, the original and one copy, together with copies of documentary exhibits and duplicates or photographs of physical exhibits, shall be filed promptly with the Trademark Trial and Appeal Board.

(g) Objections to questions and answers in depositions upon written questions may be considered at final hearing.

33. Section 2.125 is proposed to be revised to read as follows:

**§2.125 Filing and Service** [Copies] of testimony.

(a) One copy of the transcript of testimony [(i) taken in accordance with §2.123 [(e) through (h) or §2.124)], together with copies of documentary exhibits [.] and duplicates or photographs of physical exhibits [.] shall be served on each adverse party within [.] thirty [.] [30] days after completion of the taking of [.] that [.] [such] testimony. [The certified transcript and exhibits and one copy of the transcript shall be filed in the Patent and Trademark Office as promptly as possible.]

(b) The party who takes testimony is responsible for having all typographical errors in the transcript and all errors of arrangement, indexing and form of the transcript corrected, on notice to each adverse party, prior to the filing of one certified transcript and one copy of the transcript with the Trademark Trial and Appeal Board. The party who takes testimony is responsible for serving on each adverse party one copy of the corrected transcript or, if reasonably feasible, corrected pages to be inserted into the transcript previously served. [(b) Each transcript and the copies thereof shall comply with §2.123(g) as to arrangement, indexing and form.]

(c) One certified transcript and exhibits and one copy of the transcript shall be filed promptly with the Trademark Trial and Appeal Board. Notice of such filing shall be served on each adverse party and a copy of each notice shall be filed with the Board.

(d) Each transcript and the copies thereof shall comply with §2.123(g) with respect to arrangement, indexing and form.

(e) Upon motion by any party, for good cause, the Trademark Trial and Appeal Board may order that any part of a deposition transcript or any exhibits that directly disclose any trade secret or other confidential research, development, or commercial information may be filed under seal and kept confidential under the provisions of §2.27(e). If any party or any attorneys or agent of a party fails to comply with an order made under this

paragraph, the Board may impose any of the sanctions authorized by §2.120(g).

**§2.126 [Removed].**

34. It is proposed to remove §2.126. Allegations in application not evidence on behalf of applicant.

35. Section 2.127 is proposed to be revised to read as follows:

**§2.127 Motions.**

(a) Every motion [Motions] shall be made in writing [.] [and] shall contain a full statement of the [.] grounds, and shall embody or be accompanied by a brief. [.] [grounds therefor. Any brief or memorandum in support of a motion shall accompany or be embodied in the motion.] A brief in response [Brieffs in opposition] to a motion shall be filed within fifteen days from the date of service of the motion unless another time is specified by the Trademark Trial and Appeals Board or the time is extended [.] by order of the Board on motion for good cause. [on request] When [Where] a party fails to file a brief in [.] response [opposition] to a motion, the Trademark Trial and Appeal Board may treat the motion as conceded. An oral hearing [Oral hearings] will not be held on [.] a motion [motions] except on order [.] by [of] the [Trademark Trial and Appeal] Board.

(b) Any request, for [rehearing or] reconsideration [.] or modification of [.] an order or [a] decision [.] issued [.] on a motion [which is not finally dispositive of the case,] must be filed within thirty days from the date thereof. A brief in response must [Any brief in opposition shall] be filed within fifteen days [from the date of [after] service of the request.

(c) Interlocutory motions, requests, and other matters not [.] actually or potentially dispositive of a [.] [finally determinative in the] proceeding may be acted upon by a [.] single Member [member] of the Trademark Trial and Appeal Board [.] or by an Attorney-Examiner of the Board to whom authority so to act has been delegated.

(d) When any party files a motion to dismiss, or a motion for judgment on the pleadings, or a motion for summary judgment, or any other motion which is potentially dispositive of a proceeding, the case will be suspended by the Trademark Trial and Appeal Board with respect to all matters not germane to the motion and no party should file any paper which is not germane to the motion. If the case is not disposed of as a result of the motion, proceedings will be resumed pursuant to an order of the Board when the motion is decided.

36. Section 2.128 is proposed to be amended by revising paragraphs (a) and (b) to read as follows:

**§2.128 Briefs at final hearing.** [Final hearings and briefs.]

(a) (1) The brief of [.] the [a] party in the position of plaintiff shall be filed not later than sixty days after the [closing] date set for [.] the close of [.] rebuttal testimony [.] . The [.] [the] brief of [.] the [a] party in the position of defendant shall be filed [.] not later than thirty days after the due date of the first brief [.] . A [.] [a] reply brief by [.] the [a] party in the position of plaintiff [.] may be [.] [if] filed [.] not later than [.] [shall be due] fifteen days after the due date of the [.] defendant's [.] brief [to which it is a reply]. [Three copies of all briefs should be filed.]

(2) When there is a counterclaim, or when proceedings have been consolidated and one party is in the position of plaintiff in one of the involved proceedings and in the position of defendant in another of the involved proceedings, or when there is an interference or concurrent use registration proceeding involving more than the two parties, the Trademark Trial and Appeal Board will set the due dates for the filing of the main brief, and the answering brief, and the rebuttal brief by the parties.

(3) When a party in the position of plaintiff fails to file a main brief or a party in the position of defendant fails



to file a brief, the Board may treat such failure as a concession of the case. ◀

(b) Briefs shall be submitted in typewritten or printed form, double spaced ▶, ◀ on letter or legal size paper. Without leave of the Trademark Trial and Appeal Board, no brief shall contain more than ▶ fifty ◀ [50] pages of argument and, in the case of a reply brief, the entire brief shall not exceed ▶ twenty-five ◀ [25] pages. Each brief shall not exceed ▶ twenty-five ◀ [25] pages. Each brief shall contain an alphabetical index of cases ▶ cited ◀ therein. ▶ One original and two legible copies, on good quality paper, of each brief shall be filed. ◀

37. Section 2.129 is proposed to be revised to read as follows:

**§2.129 Oral argument[s and] ▶ ; ◀ reconsideration.**

(a) ▶ If a party desires to have an oral argument at final hearing, the party shall request such argument by a separate notice filed not later than ten days after the due date for the filing of the last reply brief in the proceeding. ◀ Oral arguments will be heard by [at least] three Members of the Trademark Trial and Appeal Board at the time ▶ specified ◀ [stated] in the notice ▶ of hearing ◀. If any party appears at the specified time, ▶ that party ◀ [he] will be heard. If the Board is prevented from hearing the case at the ▶ specified time ◀ [time specified], a new ▶ hearing date will be set. ◀ [assignment will be made, or the case will be continued from day to day until heard.] Unless otherwise permitted, oral arguments ▶ in an inter partes case ◀ will be limited to ▶ thirty minutes ◀ [one-half hour] for each party. ▶ A party in the position of plaintiff may reserve part of the time allowed for oral argument to present a rebuttal argument. ◀

(b) ▶ The date of time of a hearing may be reset, so ◀ [Hearings may be advanced or adjourned, as] far as is convenient and proper, to meet the wishes of the parties and their attorneys or other authorized representatives.

(c) Any request for rehearing or reconsideration [.] or modification of a decision ▶ issued after final hearing ◀ [including a decision on a motion which is finally dispositive of a case,] must be filed within thirty days from the date ▶ of the decision ◀ [thereof] . ▶ A ◀ [Any] brief in ▶ response must ◀ [opposition shall] be filed within fifteen days ▶ from the date of ◀ [after] service of the request. The times specified [herein] may be extended by ▶ order of ◀ the Trademark Trial and Appeal Board ▶ on motion for good cause ◀ [upon a showing of sufficient cause].

38. Section 2.131 is proposed to be revised to read as follows:

**§2.131 ▶ Remand after decision ◀ [Ex parte matter] in [an] inter partes ▶ proceeding ◀ [case].**

▶ If, during an inter partes proceeding, facts are disclosed which appear to render the mark of an applicant unregistrable, but such matter has not been tried under the pleadings as filed by the parties or as they might be deemed to be amended under Rule 15 [b] of the Federal Rules of Civil Procedure to conform to the evidence, the Trademark Trial and Appeal Board, in lieu of determining the matter in the decision on the proceeding, may refer the application to the examiner for reexamination in the event the applicant ultimately prevails in the inter partes proceeding. Upon receiving the application, the examiner shall withhold registration pending reexamination of the application in the light of the reference by the Board. ◀ [If, in considering an inter partes case involving an application, facts appear which, in the opinion of the Trademark Trial and Appeal Board, render the mark of the applicant unregistrable on one or more ex parte grounds, the Board shall in its decision on the inter partes issues in the case recommend that if the applicant finally prevails in the case, registration be withheld pending a reexamination by the Examiner to Trademarks of the application in the light of such facts.]

If, upon [such] reexamination [following termination of the inter partes case the ▶ examiner ◀ [Examiner of Trademarks] finally refuses registration to the applicant, an appeal may be taken as provided by §§2.141 and 2.142.

39. Section 2.132 is proposed to be revised to read as follows:

**§2.132 ▶ Involuntary dismissal for failure ◀ [Failure] to take testimony.**

(a) ▶ If the time for taking testimony by any party in the position of plaintiff has expired and that party has not taken testimony or offered any other evidence, any party in the position of defendant may, without waiving the right to offer evidence in the event the motion is denied, move for dismissal on the ground of the failure of the plaintiff to prosecute. The party in the position of plaintiff shall be allowed fifteen days from the date of service of the motion to show cause why judgment should not be rendered against him. In the absence of a showing of good and sufficient cause, judgment may be rendered against the party in the position of plaintiff. If the motion is denied, testimony periods will be reset for the party in the position of defendant and for rebuttal. ◀ [Upon the filing of a statement by any party in the position of defendant, that the time for taking testimony on behalf of any party in the position of plaintiff has expired and that no testimony has been taken by him and no other evidence offered, an order may be entered that such party show cause within a time set therein, not less than ten days, why judgment should not be rendered against him, and in the absence of a showing of good and sufficient cause judgment may be rendered as by default.]

(b) If no evidence other than a copy of copies of Patent and Trademark Office records is offered by ▶ any ◀ [the] party in the position of plaintiff, any party in the position of defendant ▶ may ◀, without waiving the right to offer evidence in the event the motion is denied, [may] move for dismissal on the ground that upon the law and the facts the party in the position of plaintiff has shown no right to relief. The party in the position of plaintiff shall be allowed fifteen days ▶ from the date of ◀ [after] service of the motion to file ▶ a brief in response ◀ [his argument in opposition] to the motion. ▶ The Trademark Trial and Appeal Board may render judgment ◀ [Judgment may be rendered] against the party in the position of plaintiff, or the [Trademark Trial and Appeal] Board may decline to render judgment until all of the evidence is in ▶ the record ◀.

▶ If judgment is not rendered, ◀ [In the latter event,] testimony periods will be reset for the party in ▶ the ◀ position of defendant and for rebuttal.

▶ (c) Any motion filed under subsection (a) or (b) must be filed before the opening of the testimony period of the moving party. ◀

40. Section 2.134 is proposed to be revised to read as follows:

**§2.134 Surrender or ▶ voluntary ◀ cancellation of registration.**

▶ (a) After the commencement of a cancellation proceeding, if the respondent ◀ [If a registrant involved in a proceeding] applies ▶ for cancellation of the involved ◀ [to cancel his] registration under ▶ § ◀ [section] 7(d) of the ▶ Trademark ◀ Act without [first obtaining] the written consent [thereto] of ▶ every ◀ [the] adverse party, judgment shall be entered against ▶ the respondent ◀ [him].

▶ (b) After the commencement of a cancellation proceeding, if the respondent permits his involved registration to be cancelled under §8 of the Trademark Act or fails to renew his involved registration under §9 of the Trademark Act, such cancellation or failure to renew shall be deemed to be the equivalent of a cancellation by request of respondent without the consent of the adverse party and shall result in judgment against respondent as provided by subsection (a). ◀

41. Section 2.135 is proposed to be revised to read as follows:

**§2.135 Abandonment of application or mark.**

▶ After the commencement of an opposition proceeding, if the ◀ [If, in a proceeding, an] applicant files a written abandonment of the application or of the mark without the ▶ written ◀ consent [thereto] of ▶ every ◀ [the] adverse party, judgment shall be entered against ▶ the ◀ [such] applicant.

42. Section 2.142 is proposed to be revised to read as follows:

**§2.142 Time and manner of ex parte appeals.**

(a) ▶ Any ◀ [such] appeal ▶ filed under the provisions of §2.141 ◀ must be ▶ filed ◀ [taken] within six months from the date of final refusal or [from] the date of the action from which ▶ the ◀ appeal is taken. ▶ An appeal ◀ [Appeal] is taken [simply] by filing a notice of appeal and ▶ paying ◀ [payment of] the appeal fee.

(b) The [appellant's] brief ▶ of appellant ◀ shall be filed within sixty days ▶ from ◀ [after] the date of appeal. If the brief is not filed within the time allowed, the appeal may be dismissed. The examiner ▶ shall ◀ [may], within ▶ sixty days after the brief of appellant is sent to the examiner ◀ [such time as may be directed by the Commissioner], ▶ filed with the Trademark Trial and Appeal Board ◀ [furnish] a written statement ▶ answering every point in the brief of appellant and shall mail ◀ [in answer to appellant's brief, supplying] a copy ▶ of the statement ◀ to the appellant. The appellant may file a reply brief within twenty days from the date of ▶ mailing of the statement of the examiner ◀ [such answer].

(c) ▶ All requirements made by the examiner and not the subject of appeal shall be complied with prior to the filing of an appeal. ◀ [If the appellant desires an oral hearing, he should so state by separate notice filed not later than his brief; and due notice of the time for such hearing will be given. Oral argument will be limited to one-half hour unless otherwise permitted. If no request for oral hearing is made, the appeal will be considered on brief.]

(d) ▶ The record in the application should be complete prior to the filing of an appeal. The Trademark Trial and Appeal Board will ordinarily not consider additional evidence filed with the Board by the appellant or by the examiner after the appeal is filed. After an appeal is filed, if the appellant or the examiner desires to introduce additional evidence, the appellant or the examiner may request the Board to suspend the appeal and to remand the application for further examination. ◀ [Applications which have been considered and decided on appeal will not be reopened except by order of the Commissioner and then only for consideration of matters not already adjudicated, sufficient cause being shown.]

▶ (e)(1) If the appellant desires an oral hearing, a request therefore should be made by a separate notice filed not later than ten days after the due date for a reply brief. Oral argument will be heard by three Members of the Trademark Trial and Appeal Board at the time specified in the notice of hearing, which may be reset if the Board is prevented from hearing the argument at the specified time, or so far as is convenient and proper, to meet the wish of the appellant or his attorney or other authorized representative.

(2) If the appellant requests an oral argument, the examiner who issued the refusal of registration or the requirement from which the appeal is taken, or in lieu thereof another examiner from the same examining division as designated by the supervisory attorney thereof, shall present an oral argument.

If no request for an oral hearing is made by the appellant, the appeal will be decided on the record, briefs and statement.

(3) Oral argument will be limited to twenty minutes by the appellant and ten minutes by the examiner. The appellant may reserve part of the time allowed for oral argument to present a rebuttal argument.

▶ (f)(1) If, during an appeal from a refusal of registration, it appears to the Trademark Trial and Appeal Board that an issue not previously raised may render the mark of the appellant unregistrable, the Board may suspend the appeal and remand the application to the examiner for further examination within thirty days.

(2) If the further examination does not result in an additional ground for refusal or registration, the examiner shall promptly return the application to the Board, for resumption of the appeal, with a written statement that further examination did not result in an additional ground for refusal of registration.

(3) If the further examination does result in an additional ground for refusal of registration, the examiner and appellant shall proceed as provided by §§2.61, 2.62, 2.63, and 2.64. If the ground for refusal of registration is made final, the examiner shall return the application to the Board, which shall thereupon issue an order allowing the appellant sixty days from the date of the order to file a supplemental brief limited to the additional ground for the refusal of registration. If the supplemental brief is not filed by the appellant within the time allowed, the appeal may be dismissed.

(4) If the supplemental brief of the appellant is filed, the examiner shall, within sixty days after the supplemental brief of the appellant is sent to the examiner, file with the Board a written statement answering every point in the supplemental brief of appellant and shall mail a copy of the statement to the appellant. The appellant may file a reply brief within twenty days from the date of mailing of the statement of the examiner.

(5) If an oral hearing on the appeal had been requested prior to the remand of the application but not yet held, an oral hearing will be set and heard as provided in subsection (e). If an oral hearing had been held prior to the remand or had not been previously requested by the appellant, an oral hearing may be requested by the appellant by a separate notice filed not later than ten days after the due date for a reply brief on the additional ground for refusal of registration. If the appellant files a request for an oral hearing, one will be set and heard as provided in subsection (e). ◀

▶ (g) An application which has been considered and decided on appeal will not be reopened except for the entry of a disclaimer under §6 of the Trademark Act or upon order of the Commissioner, but a petition to the Commissioner to reopen an application will be considered only upon a showing of sufficient cause for consideration of any matter not already adjudicated. ◀

43. Section 2.146 is proposed to be revised to read as follows:

**§2.146 ▶ Petitions ◀ [Petition] to the Commissioner.**

(a) Petition may be taken to the Commissioner:

(1) From any repeated ▶ or final formal ◀ [action or] requirement of the ▶ examiner ◀ [Examiner of Trademarks, not subject to appeal under §2.141,] in the ex parte prosecution of an application ▶ if permitted by §2.63(b) ◀ :

(2) IN ▶ any case for ◀ [cases in] which the ▶ Trademark Act, or title 35 of the United States Code, or this Part of Title 37 of the Code of Federal Regulations specifies ◀ [statute or the rules specify] that the matter is to be determined directly [by] or reviewed by the Commissioner; [and]

(3) To invoke the supervisory authority of the Commissioner in appropriate circumstances ▶ ; ◀ [.]

▶ (4) In any case not specifically defined and provided for by this Part of Title 37 of the Code of Federal Regulations;

(5) In an extraordinary situation, when justice requires and no other party is injured thereby, to request a suspension or waiver of any requirement of the rules not being a requirement of the Trademark Act. ◀

(b) ▶ Questions arising under §§2, 3, 4, 5, 6 and 23 of the Trademark Act during the ex parte prosecution of applications are not considered to be appropriate subject matter for petitions to the Commissioner. ◀ [Any such



petition must contain a statement of the facts involved and the point or points to be reviewed and the action requested. Any brief in support thereof should accompany or be embodied in the petition; in contested cases any brief in opposition shall be filed within fifteen days after service of the petition. Where facts are to be proved in ex parte cases (as in a petition to revive an abandoned application), the proof in the form of affidavits or declarations in accordance with §2.20 (and exhibits, if any) must accompany the petition.]

(c) Every petition to the Commissioner shall include a statement of the facts relevant to the petition, the points to be reviewed, and the action or relief that is requested. Any brief in support of the petition shall be embodied in or accompany the petition. When facts are to be proved in ex parte cases (as in a petition to revive an abandoned application), the proof in the form of affidavits or declarations in accordance with §2.20, and any exhibits, shall accompany the petition. [An oral hearing will not be held except when considered necessary by the Commissioner.]

(d) A petition on any matter not specifically provided for by subsection (e) or by §2.165(b) or §2.184(b) shall be filed within sixty days from the date of mailing of the action from which relief is requested. [The mere filing of a petition will not stay the period for replying to an examiner's action, nor stay other proceedings.]

(e) (1) A petition from the denial of a request for an extension of time to file a notice of opposition shall be filed within fifteen days from the date of mailing of the denial of the request and shall be served on the attorney or other authorized representative of the applicant, if any, or on the applicant. Proof of service of the petition shall be made as provided by §2.119(a). The applicant may file a response within fifteen days from the date of service of the petition and shall serve a copy of the response on the petitioner, with proof of service as provided by §2.119(a). No further paper relating to the petition shall be filed.

(2) A petition from an interlocutory order of the Trademark Trial and Appeal Board shall be filed within thirty days after the date of mailing of the order from which relief is requested. Any brief in response to the petition shall be filed, with any supporting exhibits, within fifteen days from the date of service of the petition. Petitions and responses to petitions, and any papers accompanying a petition or response, under this subsection shall be served on every adverse party pursuant to §2.119(a). [Authority to act on a petition may, when appropriate, be delegated by the Commissioner.]

(f) An oral hearing will not be held on a petition except when considered necessary by the Commissioner. [No fee is required for a petition to the Commissioner.]

(g) The mere filing of a petition to the Commissioner will not act as a stay in any appeal or inter partes proceeding that is pending before the Trademark Trial and Appeal Board nor stay the period for replying to an Office action in an application except when a stay is specifically requested and is granted or when §§2.63(b) and 2.65 are applicable to an ex parte application.

(h) Authority to act on petitions, or on any petition, may be delegated by the Commissioner.

#### §2.147 [Removed]

44. It is proposed to remove §2.147 Cases not specifically defined.

#### §2.148 [Removed]

45. It is proposed to remove §2.148 Commissioner may suspend certain rules.

46. Section 2.165 is proposed to be revised to read as follows:

#### §2.165 Reconsideration of affidavit or declaration.

(a) (1) If the affidavit or declaration filed pursuant to §2.612 is insufficient or defective, the affidavit or declaration will be refused and [the] the registrant will be notified of the reason. [reasons by the examiner.] Reconsideration of the [such] refusal may be requested within six months from the date of the mailing of the action [notice]. The request for reconsideration must state the grounds for the request. A [therefore; a] supplemental or substitute affidavit or declaration required by § [section] 8 of the Trademark Act cannot be considered unless it is filed [received] before the expiration of six years from the date of the registration [or] from the date of publication under § [section] 12(c) of the Act.

(2) A request for reconsideration shall be a condition precedent to a petition to the Commissioner to review the refusal of the affidavit or declaration unless the first action refusing the affidavit or declaration directs the registrant to petition the Commissioner for relief, in which event the petition must be filed within six months from the date of mailing of the action.

(b) If the refusal of the affidavit or declaration is adhered to, the registrant may petition the Commissioner to review the action under §2.146(a)(2). The petition to the Commissioner requesting review of the action adhering to the refusal of the affidavit or declaration must be filed within six months from the date of mailing of the action which denied reconsideration. [If the registrant is dissatisfied with the action of the examiner holding the affidavit or declaration insufficient, he may request the Commissioner to review the action under §2.146. The decision of the Commissioner on such a request constitutes the final action of the Patent Trademark Office. If there is no review by the Commissioner, the Commissioner will notify the registrant of the insufficiency of the affidavit or declaration after the expiration of the sixth year, which notice will constitute such final action. See §2.145 for appeal to or review by court.]

(c) The decision of the Commissioner on the petition will constitute the final action of the Patent and Trademark Office. If there is no petition to the Commissioner, the Commissioner will notify the registrant of the refusal of the affidavit or declaration after the expiration of six years from the date of registration or from the date of publication under §12(c) of the Trademark Act, and such notice will constitute the final action of the Office.

(d) A petition to the Commissioner for review of the action shall be a condition precedent to an appeal to or action for review by any court.

47. Section 2.173 is proposed to be amended by revising paragraph (b) to read as follows:

#### §2.173 Amendment ▶; [and] disclaimer in part.

\*\*\*\*\*

(b) No amendment in the identification of goods or services in a registration will be permitted except to restrict the identification or otherwise to change it in ways that would not require republication of the mark. [Changes in the identification of goods other than in the nature of deletions will not be permitted except under the provisions of §2.175.] No amendment seeking the elimination of a disclaimer will be permitted.

\*\*\*\*\*

48. Section 2.184 is proposed to be revised to read as follows:

#### §2.184 Refusal of renewal.

(a) If the application for renewal is incomplete or defective, the renewal will be refused [by the Examiner of Trademarks]. The application may be completed or amended in response to a refusal, subject to the provisions of § [§§2.62 and] 2.183. If a response to a refusal or renewal is not filed within six months from the date of mailing of the action, the application for renewal will be considered abandoned. A response to a refusal of renewal shall be a condition precedent to a petition to the Commissioner to review the refusal of renewal.

(b) If the refusal to renewal is adhered to, the registrant may petition the Commissioner to review the action under §2.146(a)(2). The petition to the Commissioner requesting review of the action adhering to the refusal of the renewal must be filed within six months from the date of mailing of the action which adhered to the refusal. If a timely petition to the Commissioner is not filed, the application for renewal will be considered abandoned. [If the registrant is dissatisfied with the action of the examiner considering the application for renewal incomplete or defective, he may request the Commissioner to review the action under §2.146. If response to an adverse action of the examiner is not made within six months, the application for renewal will be considered abandoned.]

(c) The decision of the Commissioner on the petition will constitute the final action of the Patent and Trademark Office.

(d) A petition to the Commissioner for review of the action shall be a condition precedent to an appeal to or action for review by any court.

49. Section 2.186 is proposed to be revised to read as follows:

§2.186 Action may be taken by assignee of record.

Any action with respect to an assigned application or registration which may or must be taken by a registrant or applicant may be taken by the assignee [.] provided that the assignment has been recorded.

GERALD J. MOSSINGHOFF,  
Commissioner of Patents  
and Trademarks.

May 10, 1982.  
[FR Doc. 82-17525 Filed 6-28-82; 8:45 am]  
BILLING CODE 35 10-10 M



## Status of PTO Services

The following is an update of the status of PTO services as of July 2, 1982:

Service Item	FY 1982 Performance Goal (Calendar Days)	Actual	Comment
Internal Mail Processing & Delivery	4	3.5	See note below.
Filing Receipts: Patents	22	66	Reduction of 33 days since February.
Trademarks	30	43	Temporary backlog due to study of productivity stan- dards. Expected to return to 30 days by Mid-July.
Patent Copies: Window Coupons	5	80% within 5 days 96% within 10 days	
Mail Coupons*	15	99% within 15 days 99% within 20 days	
Letter Orders*	20	86% within 20 days	
Certified Copies: Trademark Regs.	30	17	
Applications-As-Filed*	20	95% within 15 days 20% within 15 days	
File-Wrapper/Contents*		85% within 30 days 99% within 1 day	
Walk-up Certification	1		Service now includes applications-as-filed.
Trademark Search Room: Filing Drawings	21	33	Temporary backlog due to changeover to new type of paper for drawings.
Filing Reg. Certificates	3	5	
Patent Assignments	15	56	Backlog due to unavailable funding. Expect reduction in FY 1983.
Trademark Assignments	21	95	Backlog due to unavailable funding. Expect reduction in FY 1983.
Patent Official Gazette	Issue Date	On Schedule	
Patent Grants	Issue Date	On Schedule	
Trademark Official Gazette	Issue Date	On Schedule	
Trademark Registrations	Issue Date	On Schedule	

\*Figures exclude mail processing and delivery time.

## Note: Mail Processing and Delivery

The statistics for mail processing and delivery indicate the average time required to process mail from the time it is received in the Mail Room of the Patent and Trademark Office until it is delivered to the organization. For example, it reflects the time it takes for a paper to be delivered to an Examining Group, not the Examiner. Mail

often receives additional clerical processing in the Group, depending on the type of document. It is not unusual for mail to take a few weeks to actually reach the Examiner. However, the official receipt date is that which is stamped in the Mail Room, reflecting the date the mail was received in the Office.

July 2, 1982.

THERESA A. BRELSFORD,  
Acting Assistant Commissioner  
for Administration.

Department of Commerce  
Patent and Trademark Office  
37 CFR Parts 1-4

## Revision of Patent and Trademark Fees

AGENCY: Patent and Trademark Office, Commerce

ACTION: Proposed rule; extension of comment period.

SUMMARY: On June 28, 1982, notices of proposed rulemaking were published in the Federal Register (47 FR 28042-28065) advising that the Patent and Trademark Office was proposing to amend the rules of practice in patent and trademark cases to establish procedures and fees in amounts which comply with the requirements of Public Law 96-517 or which would apply with enactment of H.R. 6260 as a Public Law.

Those notices provided that comments regarding the proposed rulemakings must be submitted on or before July 9, 1982.

At the hearings on the proposed rule changes relating to the "Revision of Patent and Trademark Fees" held on July 9, 1982, several persons requested additional time to comment on the proposed rules (§§1.9(c)-(f), 1.27 and 1.28) for implementing the procedures for the payment of lower fees by independent inventors, small business concerns, and nonprofit organizations. Requests were also received for additional time to comment on the proposed deletion of Parts 3 and 4 of Title 37, Code of Federal Regulations, which parts relate to patent and trademark forms.

In view of the requests, the Patent and Trademark Office is extending the period for written comments only on §§1.9, 1.27 and 1.28 and the proposed deletion of Parts 3 and 4 of Title 37, Code of Federal Regulations, until August 13, 1982. Adoption of these changes is being deferred at this time to permit receipt of additional comments.

DATE: The time for filing comments on §§1.9(c)-(f), 1.27, and 1.28, and the proposed deletion of Parts 3 and 4 is hereby extended to and including August 13, 1982.

ADDRESSES: FOR FURTHER INFORMATION AND SUBMISSION OF WRITTEN COMMENTS AS TO §§1.9, 1.27, 1.28 AND THE PROPOSED DELETION OF PART 3, CONTACT: R. Franklin Burnett by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington D.C. 20231.

FOR FURTHER INFORMATION AND SUBMISSION OF WRITTEN COMMENTS AS TO THE PROPOSED DELETION OF PART 4, CONTACT: Miss Maude Williams by telephone at (703) 557-2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Room 3-11C17, Washington, D.C. 20231.

July 21, 1982  
Date

Gerald J. Mossinghoff  
Commissioner of Patents and Trademarks



PATENT NOTICES

Certificates of Correction for the Week of July 27, 1982

D. 257,876	4,299,848	4,313,011	4,324,000
D. 264,725	4,300,153	4,313,205	4,324,031
4,080,040	4,302,217	4,314,260	4,324,808
4,087,176	4,302,488	4,314,589	4,324,873
4,197,308	4,302,582	4,314,724	4,324,958
4,205,108	4,303,958	4,314,945	4,325,186
4,214,084	4,304,675	4,316,713	4,325,328
4,220,531	4,304,805	4,317,198	4,325,758
4,224,662	4,305,667	4,318,184	4,326,240
4,235,919	4,305,834	4,318,825	4,326,267
4,236,069	4,305,835	4,319,258	4,326,388
4,241,877	4,305,849	4,319,497	4,326,655
4,254,759	4,306,733	4,319,831	4,326,994
4,260,422	4,306,857	4,319,945	4,327,240
4,260,534	4,306,915	4,320,274	4,328,034
4,267,308	4,306,969	4,320,503	4,328,588
4,271,254	4,306,970	4,320,811	4,328,718
4,272,966	4,307,170	4,321,368	4,328,748
4,275,965	4,307,629	4,321,584	4,329,065
4,278,100	4,307,766	4,321,948	4,329,235
4,278,676	4,307,881	4,322,435	4,329,302
4,282,407	4,308,952	4,322,668	4,330,721
4,283,891	4,308,956	4,322,808	4,330,798
4,287,093	4,309,409	4,323,516	
4,293,416	4,311,523	4,323,862	
4,295,414	4,312,588	4,323,863	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the

table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	Name of Library	Telephone Contact
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

\*Collection organized by subject matter.  
\*\*Call only between the hours of 10:00 a.m. and 5:00 p.m.



**PATENT EXAMINING CORPS**  
**RENE D. TEGTMEYER, Assistant Commissioner**  
**WILLIAM FELDMAN, Deputy Assistant Commissioner**  
**CONDITION OF PATENT APPLICATIONS AS OF June 12, 1982**

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director . . . . .	6-23-80
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal- lurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director . . . . .	1-04-80
Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director . . . . .	4-03-81
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director . . . . .	4-20-81
Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170— R. F. WHITE, Director . . . . .	2-12-81
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufac- ture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director . . . . .	9-11-80
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director . . . . .	8-29-80
Ordnance; Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics; Communications, Op- tics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Composi- tions; Thermal and Photoelectric Batteries.	
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director . . . . .	6-20-80
Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240— G. M. FORLENZA, Director . . . . .	12-07-79
Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director . . . . .	11-26-79
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGN, GROUP 290—KENNETH L. CAGE, Director . . . . .	6-22-80
Industrial Arts; Household, Personal and Fine Arts.	
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director . . . . .	10-09-80
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing, Fluid Sprin- kling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director . . . . .	10-03-80
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding; Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330— R. E. AEGERTER, Director . . . . .	2-13-80
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Infor- mation Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director . . . . .	5-01-80
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Genera- tion and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350— A. L. SMITH, Director . . . . .	7-24-80
Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscel- laneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	

**Expiration of patents:** The patents within the range of numbers indicated below expire during May 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,186,004 to 3,192,535, inclusive

Plant Patents . . . . . Numbers 2,522 to 2,542 inclusive

## REISSUES

JULY 27, 1982

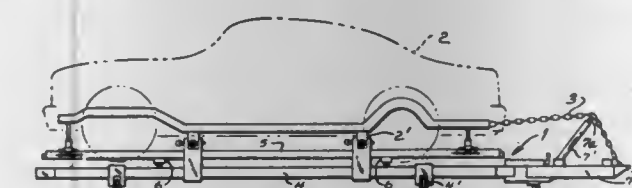
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

**Re. 31,000**  
**METHOD AND APPARATUS FOR REFORMING AND**  
**STRAIGHTENING VEHICLES**

**Pierre N. LeGrand, Soumagne, Belgium, and Dirk J. van Dalen, Palm Beach, Fla., assignors to Applied Power, Milwaukee, Wis.**

**Original No. 4,193,203, dated Mar. 18, 1980, Ser. No. 896,186, Apr. 14, 1978. Division of Ser. No. 831,508, Sep. 8, 1977, Pat. No. 4,174,673. Application for reissue Apr. 3, 1981, Ser. No. 242,056**

**Int. Cl.<sup>3</sup> B21D 1/14; G01B 5/24**  
**U.S. Cl. 33—180 AT** **11 Claims**



1. A measuring bridge for use in an apparatus for straightening and reforming a vehicle for indicating and monitoring the magnitude of correction in the repair of the vehicle, said measuring bridge being supported on a surface below the vehicle and comprising:

- a plurality of interconnected tracks,
- a plurality of independent support means movably mounted on said tracks for at least longitudinal and lateral movement,
- a plurality of reference elements mounted on said independent support means and engageable with datum points on undamaged portions of the vehicle to provide predetermined reference positioning of the measuring bridge with respect to the vehicle,
- a plurality of indicating elements mounted on said independent support means and [in coupling relationship with datum points on damaged and unaligned portions of the vehicle, said indicating elements responding to the application of corrective forces to provide a continuous] providing an indication of the [magnitude of] correction of the vehicle,
- and means disposed between the tracks and the supporting surface for positioning the tracks and elements mounted thereon relative the vehicle before and during repair thereof and the reference elements in engagement with the vehicle, said positioning means including roller means for permitting rolling movement between the tracks and the supporting surface.

**Re. 31,001**  
**DAMPER ASSEMBLY OF PIANOS**

**Hiroyoshi Takahashi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan**

**Original No. 4,203,341, dated May 20, 1980, Ser. No. 897,404, Apr. 18, 1978. Application for reissue Jul. 28, 1980, Ser. No. 172,564**

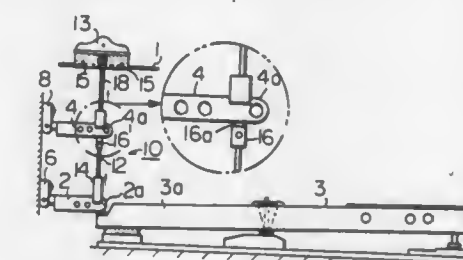
**Claims priority, application Japan, Apr. 26, 1977, 52-52181[U]**

**Int. Cl.<sup>3</sup> G10C 3/22** **4 Claims**  
**U.S. Cl. 84—255**

4. An improved damper assembly of pianos comprising:  
a lower lever having one end pivoted to a fixed support and having a free end operationally related to the rear end portion of an associated key, such that motion of the key causes the rear end portion thereof to pivot said lower lever; an upper damper lever having a respective one end pivoted to a fixed

support and being spaced from and arranged over said lower damper lever;

a motion transmitting damper wire carried at the bottom end thereof by the free end of said upper damper lever, said damper wire being relatively short and fixedly connected with said upper damper lever so that said damper wire is raised and lowered by said upper damper lever; and as it is raised and lowered, said damper wire also maintains the same tilt orientation as said upper damper lever as said upper damper lever pivots; an upwardly held damper head raisable off and lowerable onto an associated string for respectively permitting



and damping vibration of that string, and said damper wire at the upper end thereof holding said damper head for movement to raise and lower said damper head as said damper wire is raised and lowered, respectively, and  
a linking element interposed between said upper and lower damper levers for linking said levers to pivot together, said linking element being fixedly connected to said lower lever at one end thereof and having a supporting part at the other end thereof, the free end of said upper damper lever resting on and supported by said supporting part, whereby said linking element does not move rigidly with the said upper damper lever with respect to which said linking element is pivotable.

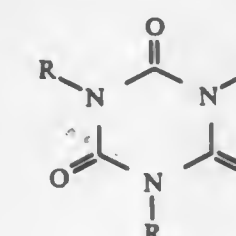
**Re. 31,002**  
**N-(3-HYDROXYARYL-PROPYL)-IMIDES**  
**Hanns Lind, Liestel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.**

**Original No. 3,956,298, dated May 11, 1976, Ser. No. 452,763, Mar. 19, 1974. Application for reissue May 10, 1978, Ser. No. 904,640**

**Claims priority, application Switzerland, Apr. 11, 1973, 5163/73**

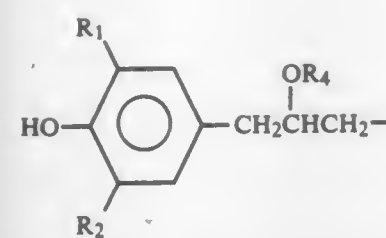
**Int. Cl.<sup>3</sup> C07D 251/34** **4 Claims**  
**U.S. Cl. 544—221**

7. A compound of the formula



wherein each R is





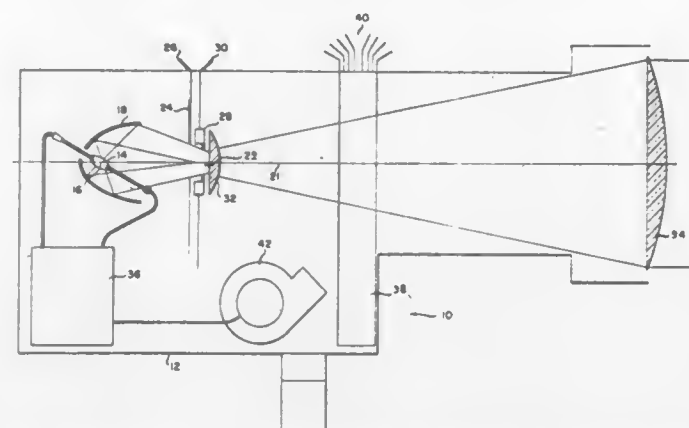
in which each of  $R_1$  and  $R_2$  is alkyl of 1 to 8 carbon atoms and  $R_4$  is hydrogen or

$\text{—CR}_5$   
in which  $R_5$  is alkyl of 1 to 17 carbon atoms or 2-(3,5-di-*t*-butyl-4-hydroxyphenyl)ethyl.

Re. 31,003  
**HIGH INTENSITY SPOTLIGHT**  
Thomas M. Lemons, Marblehead, Mass., assignor to ARC Sales, Inc., Salem, Mass.  
Original No. 3,940,606, dated Feb. 24, 1976, Ser. No. 490,052, Jul. 19, 1974. Continuation of Ser. No. 915,683, Mar. 21, 1978, abandoned. Application for reissue Nov. 10, 1980, Ser. No. 205,641

Int. Cl.<sup>3</sup> F21V 21/29  
U.S. Cl. 362—287  
4 Claims  
8. A spotlight for projecting light comprising  
(a) a concave, substantially prolate-spheroidal reflector having on the major axis thereof a first and a second focal point within and remote from the reflector respectively, said reflector having a front circular opening lying in a plane perpendicular to said major axis, the radius of said circular opening

being less than the semi-minor axis of a prolate-spheroid of the same dimension as the reflector,  
(b) a high intensity halide source having a donut radiation pattern positioned at said first focal point, the source having opposed electrodes generating an arc within a discharge bulb, the electrodes defining a source axis which is inclined with respect to said major axis at an angle between 25° and 35°, whereby the reflector views the shortest length of said arc and gathers a maximum amount of emitted light energy.



(c) the image of said arc source being re-imaged at said second focal point by said reflector,  
(d) the intersecting source axis and major axis defining a substantially vertical plane,  
(e) said reflector having a rear circular opening for one electrode of said source,  
(f) and a controlled aperture positioned at said second focal point,  
(g) said reflector having a focal length between one half to one and a quarter times the length of said arc source.

## PLANT PATENTS

GRANTED JULY 27, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

### 4,869 WHITE FLOWERING DOGWOOD— WORLD'S FAIR VARIETY

J. Austin Boyd, McMinnville, Tenn., assignor to The Boyd Brothers Company, McMinnville, Tenn.

Filed Mar. 16, 1981, Ser. No. 244,078  
Int. Cl.<sup>3</sup> A01H 5/00

U.S. Cl. Plt.—51

1 Claim

1. A new and distinct variety of white Flowering Dogwood tree, botanically known as *Cornus florida*, substantially as illustrated and described, characterized particularly as to novelty by the unique combination of (1) a compact and upright growth habit, (2) stocky trunk, (3) strong limbs of relatively large diameter, (4) the display of attractive white blossoms often in relatively closely disposed clusters, (5) the display of more white blossoms than the Cloud 9 variety and the Imperial White variety, (6) the display of white blossoms which are slightly smaller than those of the Cloud 9 variety and the Imperial White variety, (7) the display of white blossoms ap-

proximately one week later than the Cloud 9 variety, (8) good hardiness, and (9) improved resistance to drought.

### 4,870 AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag über die Erfindergemeinschaft "OP-TIMARA", Isselburg, Fed. Rep. of Germany

Filed Jul. 25, 1980, Ser. No. 172,464  
Int. Cl.<sup>3</sup> A01H 5/00

U.S. Cl. Plt.—69

1 Claim

1. A new and distinct cultivar of African violet known by the cultivar name Illinois, as described and illustrated, and particularly characterized by its large pink, star-shaped flowers; strong, upright flower stems each carrying 7-10 flowers; heavy and prominent yellow pollen sacs; vigorous and uniform growth habit, producing a plant in full flower in 9-10 weeks.



# PATENTS

GRANTED JUL. 27, 1982

## ERRATA

For CLASS	See PATENT NO.
374-170.....	4,341,117
116-221.....	4,341,118
416-134.....	4,341,499
525-211.....	4,341,667
524-297.....	4,341,668
523-205.....	4,341,669
528-338.....	4,341,670
528-324.....	4,341,671
523-451.....	4,341,672
524-272.....	4,341,673
524-156.....	4,341,674
524-266.....	4,341,675
523-417.....	4,341,676
523-421.....	4,341,677
523-414.....	4,341,678
524-833.....	4,341,679
525-329.....	4,341,680
524-555.....	4,341,681
523-409.....	4,341,682
524-503.....	4,341,683
523-175.....	4,341,684
524-104.....	4,341,685
427-244.....	4,341,686
524-500.....	4,341,687
524-592.....	4,341,688
523-211.....	4,341,689
524-451.....	4,341,690
523-116.....	4,341,691
524-263.....	4,341,692
524-093.....	4,341,693
524-342.....	4,341,695
524-139.....	4,341,696
549-272.....	4,341,709
549-214.....	4,341,710
549-500.....	4,341,711
373-022.....	4,341,915
373-128.....	4,341,916



# PATENTS

GRANTED JULY 27, 1982

## GENERAL AND MECHANICAL

4,340,976

### FILIGREED BELT AND PROCESS

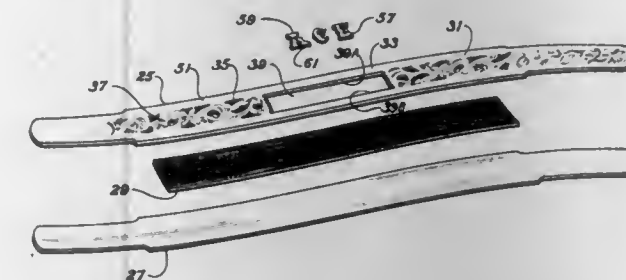
Jerry D. Wright, Comanche, Tex., assignor to Wright Leather Goods Manufacturing Co., Comanche, Tex.

Filed Oct. 9, 1979, Ser. No. 82,870

Int. Cl.<sup>3</sup> A41F 9/00; B32B 9/02; A41D 27/08; G09F 9/30

U.S. Cl. 2—338

57 Claims



1. A leather product, comprising:  
an outer layer attached to second layer means,  
an opening formed through said outer layer,  
said opening having first and second opposite edges, and  
separate indicia means having front and back sides and first  
and second opposite edges,  
said separate indicia means being located in said opening  
with the back side of said indicia means engaging and  
being bonded with glue to the layer exposed through said  
opening and with said first and second opposite edges of  
said indicia means engaging and being bonded with glue  
to said first and second opposite edges respectively of said  
opening.

15. A belt, comprising:  
an outer layer attached to second layer means,  
an opening formed through said outer layer,  
said opening having top and bottom edges, and  
separate indicia means having front and back sides and top  
and bottom edges,  
said separate indicia means being located in said opening  
with said back side of said indicia means engaging and  
being bonded with glue to the layer exposed through said  
opening and with said top and bottom edges of said indicia  
means engaging and being bonded with glue to said top  
and bottom edges respectively of said opening.

4,340,977

### CATENARY MITRAL VALVE REPLACEMENT

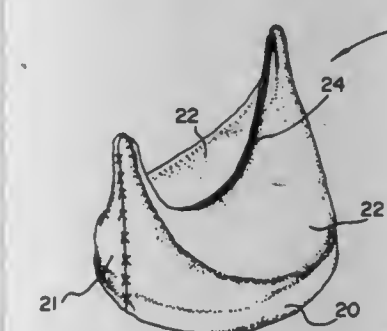
Richard T. Brownlee, #101, 1780 Fort St., Victoria, British Columbia, Canada (V8R 1J5); Lawrence N. Scotten, 814-Langham Ct., Victoria, British Columbia, Canada (V8V 4J2), and David K. Walker, 1576 Cedarglen Rd., Victoria, British Columbia, Canada (V8N 2B2)

Filed Sep. 19, 1980, Ser. No. 188,817

Int. Cl.<sup>3</sup> A61F 1/22

U.S. Cl. 3—1.5

10 Claims



1. A mitral heart valve comprising: a stent including a circu-

lar base and a pair of upstanding diametrically opposed struts, separating a pair of diametrically opposed arcuately shaped depressed reliefs, each said said relief being bounded by a smooth curve interconnecting the struts to the circular base; a flexible, durable, biocompatible covering secured to said stent and providing two equal opposed preset flappably movable valve cusps secured along said smooth curve defining the perimeter of said reliefs; said valve cusps each being preformed and preset so that the perimeter of said biocompatible covering along the free edge of each of said cusps between the tips of each associated strut being so related to the circumference of the circular base that, when the valve is in its forced open position, the cross-sectional area of the exit is substantially equal to the cross-sectional area of the inside of said circular base, and, when said valve is in its relaxed and natural closed position, the shape of said cusps is such that the free edges of the cusps sealingly meet in substantially wrinkle-free form at a line of apposition in the plane defined by the tips of said struts and the axis of the valve and follow the approximate shape of a catenary curve.

4,340,978

### NEW JERSEY MENISCAL BEARING KNEE REPLACEMENT

Frederick F. Buechel, and Michael J. Pappas, both of Irvington, N.J., assignors to Biomedical Engineering Corp., Newark, N.J.

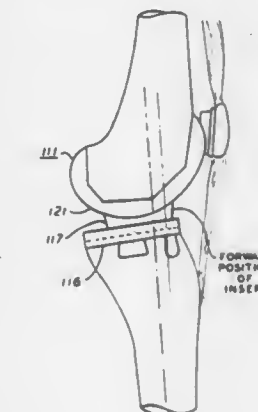
Division of Ser. No. 53,694, Jul. 2, 1979, Pat. No. 4,309,778.

This application Jun. 23, 1980, Ser. No. 162,070

Int. Cl.<sup>3</sup> A61F 1/03

U.S. Cl. 3—1.911

6 Claims



- 1: An improved prosthetic knee joint for implantation in the knee of the type including:

- (a) tibial platform means having a first superior bearing surface at least a portion of which has no substantial curvature in the anterior-posterior direction, the tibial platform means for replacing tibial portions of a knee;
- (b) bearing insert means having a first inferior bearing surface for slidably engaging at least the portion of the first superior bearing surface of the tibial platform means which has no substantial curvature in the anterior-posterior direction, the bearing insert means having a second superior bearing surface, the bearing insert means for providing an articulated joint between the tibial platform means and a femoral component means;
- (c) femoral component means having a second inferior bearing surface for slidably engaging the second superior bearing surface of the bearing insert means, the femoral component means for replacing femoral portions of the knee;

wherein the improvement comprises

- (d) the bearing insert means experiencing anterior-posterior



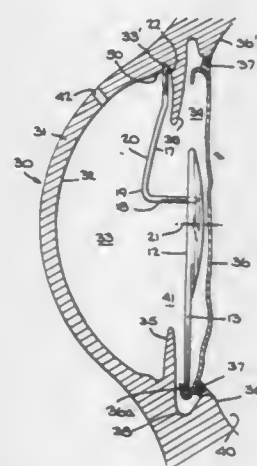
shift relative to at least the portion of the first superior bearing surface of the tibial platform means which has no substantial curvature in the anterior-posterior direction during flexion and extension of the knee; and wherein the improvement comprises:

(e) the second inferior bearing surface of the femoral component means comprising a plurality of surface segments defined by rotating a common plane generating curve about a plurality of parallel axes of rotation whereby the second inferior bearing surface of the femoral component upon slidably engaging the second superior bearing surface of the bearing insert means facilitates control of the anterior-posterior shift of the bearing insert means relative to at least the portion of the first superior bearing surface of the tibial platform means which has no substantial curvature in the anterior-posterior direction during flexion and extension of the knee.

**4,340,979**  
**INTRAOCCULAR LENS**  
Charles D. Keiman, 269-70 Grand Central Pkwy., Floral Park, N.Y. 11005

Filed Mar. 18, 1981, Ser. No. 244,930  
Int. Cl.<sup>3</sup> A61F 1/16, 1/24  
U.S. Cl. 3—13

14 Claims



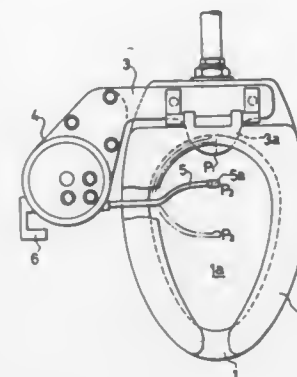
1. An intraocular lens suitable for use as an artificial lens implant, the lens comprising:  
a medial, light-focusing, lens body intended to be positioned adjacent the pupil on one side of the iris; and  
at least a pair of position fixation elements connected with said lens body;  
one of said position fixation elements having a first portion contiguous to and extending generally laterally outwardly from a first region of the periphery of said lens body and intended to extend to and seat adjacent the periphery of the iris on said one side thereof;  
the other of said position fixation elements having a first portion extending from the lens body and intended to extend through the pupil of the eye from said one side of the iris to the other side of the iris and another portion extending from said first portion generally laterally outwardly from a second region of the periphery of said lens body spaced from said first region and in a direction generally opposite that of said first portion of said one position fixation element and intended to extend to and seat adjacent the periphery of the iris on said other side thereof.

**4,340,980**  
**WATER CLOSET WITH TOPICAL BODY WASHER**  
Takehiko Fushimi; Shinji Kawai, and Kazutaka Kuwana, all of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Jan. 22, 1981, Ser. No. 227,498  
Claims priority, application Japan, Feb. 19, 1980, 55-19889[U]  
Int. Cl.<sup>3</sup> A47K 4/00, 4/03

U.S. Cl. 4—448

5 Claims



1. A water closet having a bowl, a pump and a topical body washing means, comprising:  
a container for holding washing water;  
a spout pipe having a jet nozzle at the distal end thereof, rotatably supported in said container and extending perpendicularly to the longitudinal center line of said bowl of said water closet.  
means for movably shifting said jet pipe and for shifting said jet nozzle at the distal end thereof fixably to at least three positions along said longitudinal center line of said bowl;  
a rotatable operating lever for shifting the position of said spout pipe between a first, second and third position;  
a switch operated in relation with the rotation of said operating lever to close at said second and third position of said spout pipe;  
a motor for driving said pump for pushing forward washing water in said container toward said spout pipe; and  
a motor drive control circuit comprising a switching element connected in series to said motor and said switch and a delay circuit for actuating said switching element upon lapse of a predetermined time period after actuation of said switch.

**4,340,981**  
**BATHING DEVICE**  
Paul Vanags, Swansea, Wales, assignor to Portasaua Limited, Merthyr Tydfil, Wales  
Filed Aug. 27, 1980, Ser. No. 181,837  
Claims priority, application United Kingdom, Aug. 30, 1979, 7930108

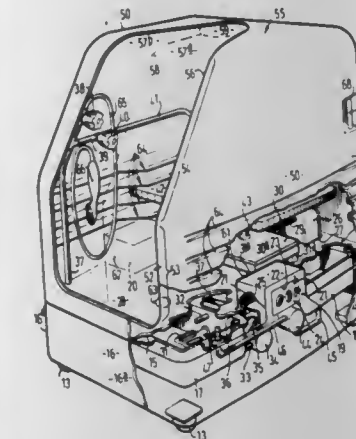
Int. Cl.<sup>3</sup> A61H 33/06

U.S. Cl. 4—536

10 Claims

1. A portable bathing device comprising a cabinet having an upper casing part with an access opening, means at least substantially to close the opening, a seat within the upper part on which a person can sit, and means providing an aperture through which the head of the person can project, and a lower casing part having a substantially horizontal top wall substantially separating said lower casing from said upper casing, said lower casing containing a reservoir for water, a heating element, means to supply water from the reservoir to the heating element to generate steam, means to supply water from the

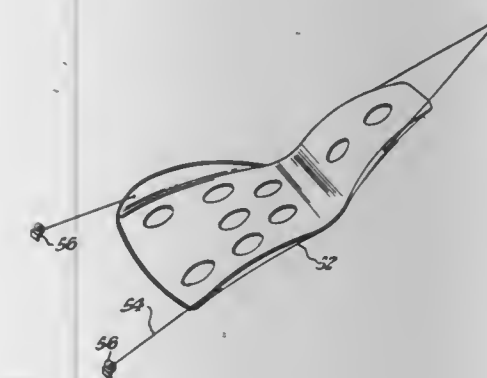
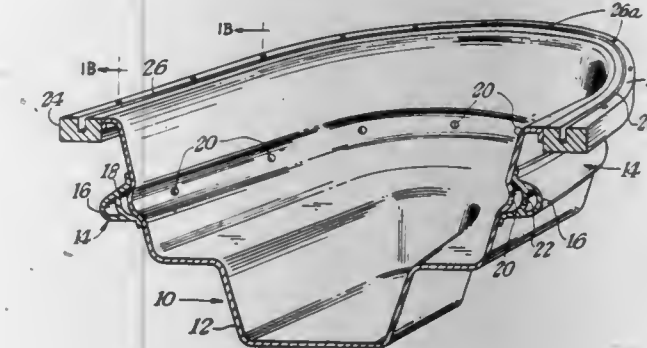
reservoir to the interior of said upper casing part to wash a person, a holding tank in said lower casing for used water, and



means to collect the used water from said upper casing and deliver it to the holding tank.

**4,340,982**  
**HYDROTHERAPY BATH OR SPA**  
James F. Hart, and Deborah L. Hart, both of 2012 NE. 17th Ter., Fort Lauderdale, Fla. 33305  
Filed Mar. 24, 1981, Ser. No. 246,957  
Int. Cl.<sup>3</sup> E03C 1/02; A47K 3/02  
U.S. Cl. 4—541

10 Claims

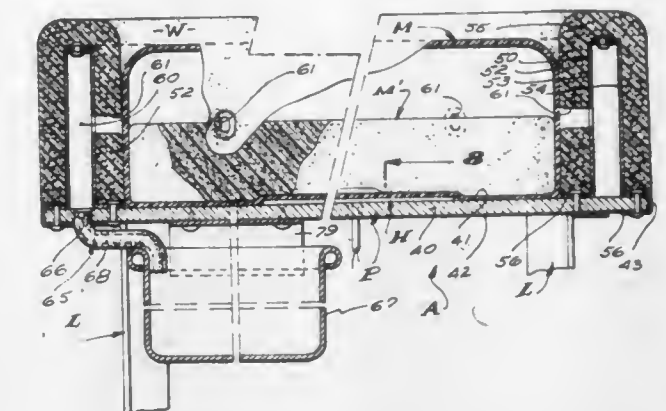


1. A hydrotherapy system having:  
a waterproof shell defining a receptacle for use as a spa, tub or swimming pool, said shell having means forming a plurality of first holes spaced apart along its interior;  
and multiple jet manifold means defining a water passageway extending along the outside of said shell at said holes and an air passageway located between said water passageway and the outside of said shell and opening into the interior of the shell through said holes, said manifold means having a second hole leading from said water passageway into said air passageway at each of said first holes to provide aerated impact water through said first holes;  
said shell forming a wall of said manifold means.

**4,340,983**  
**CRIB FLOTATION BED**  
James P. McMullan, 2630 Seaman Ave., El Monte, Calif. 91733; Rudy E. Lindsay, Garden Grove, and Jerry E. Land, Huntington Beach, both of Calif., assignors to James P. McMullan, Garden Grove, Calif.

Filed Oct. 19, 1979, Ser. No. 86,406  
Int. Cl.<sup>3</sup> A47C 27/08; A47D 7/00, 13/06  
U.S. Cl. 5—93 R

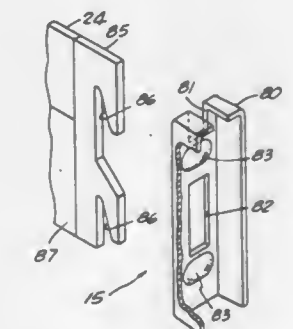
12 Claims



1. A water bed crib including a water bed structure comprising an elongate flat, horizontal rectangular platform with an upwardly projecting weir about its perimeter, a water filled flexible bladder mattress in supported engagement atop the platform and contained about its perimeter by said weir, elongate vertical platform legs fixed to and depending from the four corner portions of the platform, crib frame supporting brackets on and projecting outwardly from the platform legs; and a rectangular crib frame comprising longitudinally spaced, transversely extending vertical end boards, laterally spaced longitudinally extending vertical side gates extending between and connected with related sides of the end boards and elongate vertical crib legs at and depending from the four corners of the frame, said crib frame is positioned substantially freely about the water bed structure with said crib frame legs in supported engagement on said brackets.

**4,340,984**  
**HEADBOARD COUPLING FOR KNOCK-DOWN BED**  
Stanley T. Marcy, 515 W. Windsor Rd., Glendale, Calif. 91204  
Division of Ser. No. 923,243, Jul. 10, 1978, Pat. No. 4,202,062.  
This application Jun. 14, 1979, Ser. No. 48,649  
Int. Cl.<sup>3</sup> A47C 19/02; A61G 7/10  
U.S. Cl. 5—296

4 Claims



1. A separable coupling for holding a bed side rail separately to the leg of a bed head board comprising:  
a channel-shaped female coupling member adapted to have each edge of its side flanges welded to a respective one of the opposite lateral edges of a head board supporting leg; said channel-shaped member having a pair of elongated slots extending lengthwise of the web portion thereof with the lower end of each overlying a respective inwardly projecting dimple providing a camming surface; and  
an elongated male coupling member having a pair of inverted V-shaped notches opening downwardly through



one longer lateral edge thereof forming a pair of hooks adapted to be inserted through a respective one of the slots in the web of said channel member, the innermost edge of said notches being vertically aligned and the other pair of edges being similarly inclined to the vertical and engageable with the camming surface of a respective one of said dimples as said male member is pressed downwardly in said slots thereby clamping said coupling members firmly and immovably together.

4,340,985

## MECHANIC'S TOOL BOX AND HEAD REST

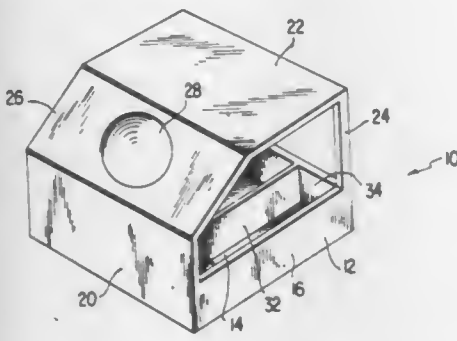
John H. Potter, 1237 N. 27 St., Camden, N.J. 08105

Filed Dec. 16, 1980, Ser. No. 217,141

Int. Cl.<sup>3</sup> A47G 9/00; A47B 81/00

U.S. Cl. 5-442

3 Claims



1. Combination tool box and head rest comprising: a hollow container having a top and a bottom, which are rigidly and fixed with respect to each other, said top wall having a front portion and a horizontal rear portion parallel to said bottom, spaced apart side walls rising from said bottom and terminating at a point spaced from said top so as to form large openings on opposite sides of said container, a front wall extending between and connecting said side walls and said top and bottom, a back wall rising from said bottom and terminating at a point spaced from said top, a pair of pillars extending from intersections of said side walls and said back wall to said top and forming a large opening between said top and back wall, the front portion of said top wall being downwardly inclined and provided with a centrally located depression adapted to receive a human head, and at least one divider having an edge fixed to said bottom and extending between said front wall and said back wall to form a plurality of compartments for containing tools, replacement parts, or the like.

4,340,986

## METHOD FOR WET PROCESSING OF TEXTILE MATERIAL IN ENDLESS ROPE FORM

William C. Sturkey, Charlotte, N.C., assignor to Gaston County Dyeing Machine Company, Mount Holly, N.C.

Division of Ser. No. 169,145, Jul. 15, 1980, Pat. No. 4,318,286.

This application Oct. 29, 1981, Ser. No. 316,229

Int. Cl.<sup>3</sup> D06B 3/28

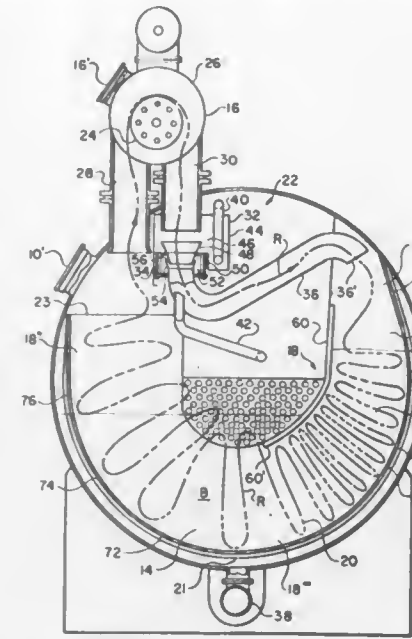
U.S. Cl. 8-152

3 Claims

1. A method of wet processing textile material in endless rope form comprising the steps of:

- providing a treating bath of processing liquid;
- circulating the rope through said treating bath of processing liquid by transiently storing a plaited accumulation of a major portion of the rope in said treating bath along a curved path extending downwardly to a lowermost point within said treating bath and upwardly therefrom while progressively withdrawing the rope from said treating bath at one end of said curved path and returning it to said treating bath at the other end of said curved path under the entraining influence of a moving cycled portion of said processing liquid;
- partially confining the rope and said portion of said processing liquid along said curved path as they are returned to said treating bath, the confinement extending

downwardly into said treating bath and being sufficient to maintain a significant quantity of said portion of said processing liquid in columnar form extending substantially above the level of the treating bath whereby the gravitational forces generated thereby will assist in moving the rope into and through said treating bath; and



- releasing the confinement of the rope at a location along said curved path upstream of said lowermost point thereof whereby said plaited accumulation of the rope can expand as it reaches said lowermost point and begins to progress upwardly along said curved path.

4,340,987

## ELEMENT FOR CLEANING COKING-OVEN DOORS AND DOORJAMB

Karl Gregor, Bochum, and Karl Feldhaus, Gelsenkirchen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Schalker Eisenhütte, Gelsenkirchen, Fed. Rep. of Germany

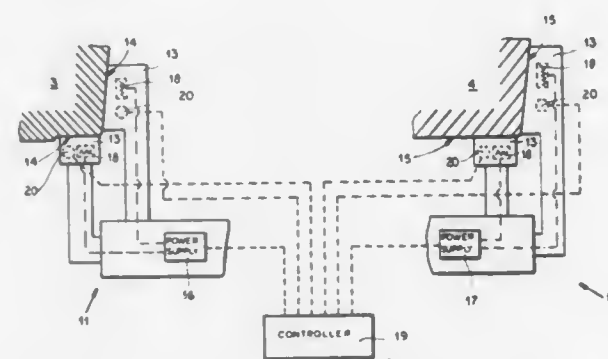
Filed Jul. 25, 1980, Ser. No. 172,267

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1979, 2930350

Int. Cl.<sup>3</sup> C10B 43/04

U.S. Cl. 15-93 A

5 Claims



- In an apparatus having an element for cleaning deposits from the edge of a doorjamb or door of a coking oven, the improvement comprising: means for heating said element to a temperature above the softening point of said deposits; and control means including a temperature sensor in said element for detecting the actual temperature thereof and means for applying heat to said element to heat same sufficiently to raise its temperature from its actual temperature to a temperature between 100° C. and 200° C. for maintaining said temperature between 100° C. and 200° C.

4,340,988

## CANISTER AUGER

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510,

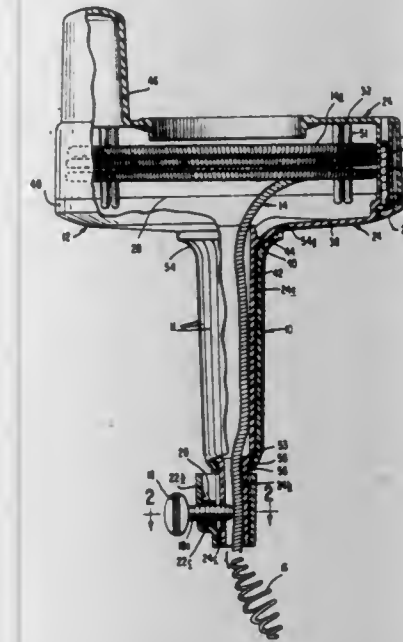
and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed Mar. 11, 1981, Ser. No. 242,463

Int. Cl.<sup>3</sup> B08B 9/02

U.S. Cl. 15-104.3 SN

9 Claims



- In an auger device that includes an elongated, helically wound, auger wire with an enlarged head at the exposed working end of said auger wire, driver means for selectively rotating said exposed working end of said auger wire, said driver means including a laterally enlarged storage housing, for storing the excess length of the auger wire, with an axially elongated tubular guide extending therefrom and from which the working end of the auger wire projects, and an elongated tubular journal sleeve surrounding a portion of said tubular guide and being of a length to be conveniently held in one hand while the driver means and said exposed working end of the auger wire are rotated by the other hand; the improvement comprising, in combination:

- an end of the tubular guide projecting beyond said journal sleeve and having a first laterally opening aperture therein;
- a nut holder constructed for encirclement of a portion of said tubular guide that projects beyond said journal sleeve;
- a second lateral aperture in said nut holder adapted to be axially aligned with said first laterally opening aperture; said nut holder being shaped and arranged to provide therein a pocket means adapted to receive and properly position therein a nut-shaped element;
- a threaded nut held in said pocket means with its bore aligned with and spaced between said first and second lateral apertures; and an elongated, threaded clamp pin shank with a manually actuatable head at the outer end thereof, said pin being threaded through said nut, and with its inner end extending freely through said first lateral aperture to provide for selective clamping of the auger wire between the terminus of the inner end of the clamp pin and the tubular guide.

4,340,989

## CLEANING SYSTEM FOR CHIMNEYS

Frank A. Rotondi, Dore Hill Rd., Box 288, Athens, Me. 04912,

and Howard W. Salley, P.O. Box 406, Pittsfield, Me. 04967

Filed Jan. 22, 1981, Ser. No. 227,318

Int. Cl.<sup>3</sup> F23J 3/00

U.S. Cl. 15-249

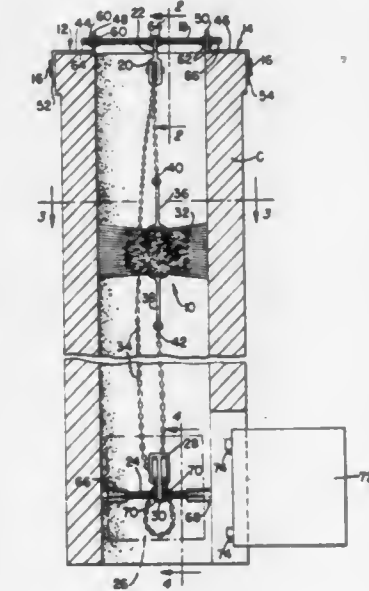
4 Claims

- A readily removable cleaning system in a chimney comprising in combination:

- adjacent the top of a chimney a pair of bracket members each having a generally horizontally extending center portion disposed on an upper edge surface of the chimney oppositely from the upper edge surface on which the other center portion is disposed, a generally vertically

extending upwardly directed inner portion with an aperture, and a generally vertically extending downwardly directed outer portion embracing an outer chimney wall surface oppositely from that embraced by the other downwardly directed outer portion;

- means extending around the downwardly directed portions of both of said bracket members and the outside of the chimney to removably secure said bracket members to the chimney;
- an upper threaded rod extending outside of and across the top of the chimney and through the apertures of said inner portions of said bracket members with means disposed adjacent opposite ends of said upper rod adjustably securing said upper rod on opposite sides of said upwardly directed inner portions whereby the effective length of said upper rod may be adjusted to secure said upper rod in position;
- an upper single pulley block unit extending down into the chimney from a mounting flange suspended on said upper threaded rod and a pair of nuts, one each of which is threaded on said upper rod on opposite sides of said mounting flange to cooperatively adjustably secure said pulley block unit in position;
- a lower threaded rod extending within the chimney,



- below said upper threaded rod generally parallel thereto, and adjacent to a chimney cleanout opening;
- abutment members threadedly secured on opposite ends of said lower threaded rod and in pressure relationship against opposite inner wall surfaces of the chimney;
- a lower double pulley block unit extending upwardly from a mounting plate adjustably secured on said lower threaded rod with a further pair of nuts threaded on said lower threaded rod in clamping relationship against opposite sides of said mounting plate;
- chimney cleaning means disposed within the chimney between said upper and lower pulley block units, said cleaning means including upwardly and downwardly directed connecting links; and
- a chain, cable, or like member having a first end connected to said upwardly directed link, extending up from said upwardly directed link to the upper single pulley, through a front side, over the upper pulley to a back side of the upper pulley, down to the lower double pulley unit, in the back of the lower unit, under and partially around one of the lower pulley members, up the front of the lower block, under the other lower pulley member, and out the back of the lower block, and up to and connected to the downwardly directed connecting link, whereby said brush may be pulled up and down the chimney to clean it.



4,340,990

**OBJECT INTENDED TO BE HELD IN THE HAND, IN PARTICULAR A SUITCASE HANDLE, AND A PROCESS FOR MANUFACTURING SAME**

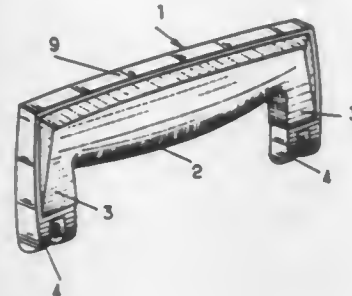
Andre G. Seynhaeve, Senlis, France, assignor to Societe Delsey, Bobigny, France

Filed Dec. 18, 1979, Ser. No. 104,805

Claims priority, application France, Dec. 28, 1978, 78 36695  
Int. Cl.<sup>3</sup> A45C 13/26

U.S. Cl. 16—126

12 Claims

**1. A handle for a portable object, comprising:**

- a body formed from a compact moulded plastic material, said body having a grasping zone whose hardness is less than that of the remainder of said body;
- an expanded plastic material entirely located within said body and only in said grasping zone; and
- a frame formed by a U-shape metal section having a flat web including inner and outer edges, said outer edge having a transverse web extending along the base and legs of said U-shape frame, the ends of said legs including means for fitting said handle to said portable object, wherein said flat web is located within said body with said means for fitting extending outside of said body, wherein said transverse web is located along the outer periphery of said body, and wherein said expanded plastic material is positioned inward from said inner edge of the base of said U-shape frame.

4,340,991

**DEMOUNTABLE HINGE**

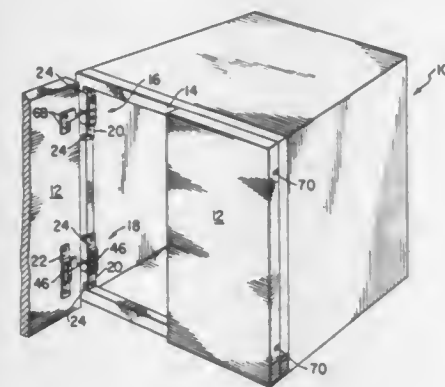
Edward D. Gldseg, 22 Park Pl., Great Neck, N.Y. 11021

Filed Jul. 17, 1979, Ser. No. 58,294

Int. Cl.<sup>3</sup> E05D 1/06, 7/10

U.S. Cl. 16—254

31 Claims

**1. A hinge for mounting a door or the like to a frame or the like, which comprises:**

- (a) first receiver means attachable to the frame, said first receiver means including guide means to position said receiver means with respect to the frame;
- (b) a first hinge section defining a tab portion, said tab portion being configured for mating engaged reception by a portion of said receiver means to facilitate selective engaged attachment and/or detachment with respect to the frame;

- (c) second receiver means attachable to the door;
- (d) a second hinge section pivotally attached to said first hinge section, said second hinge section defining a tab portion configured for mating engaged reception by a portion of said second receiver means to facilitate selective engaged attachment and/or detachment with respect to the door;
- (e) resilient spring means positioned for engagement with at least one of said first and second sections to retain the hinge in at least one of an open and closed door position, said resilient spring means being positioned to engage at least a portion of at least one of said hinge sections to retain the sections in at least one of open and closed door relative positions; and
- (f) at least one of said first and second sections defining a portion in an area adjacent the pivot axis raised away from adjacent portions of the other section to facilitate pivotal rotation of at least one section with respect to the other section to prevent interference of the sections.

4,340,992

**HINGE CATCH**

Aldolfo Lombardi, 288 Cunningham Ave., Ottawa, Canada K1H 6B4

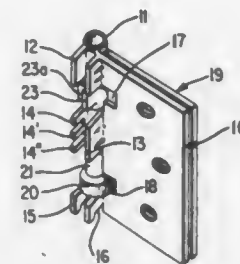
Filed Jun. 10, 1980, Ser. No. 158,279

Claims priority, application Canada, Oct. 19, 1979, 338040

Int. Cl.<sup>3</sup> E05D 11/06

U.S. Cl. 16—349

12 Claims

**1. A lockable butt hinge comprising:**

- (a) a first butt plate including along one side edge thereof at least three axially spaced gudgeons for receiving a pintle, pairs of diametrically spaced axially extending rigid flanges projecting outwardly from said gudgeons with one flange of one of said pairs of flanges containing at least two horizontal slots,
- (b) a second butt plate including along one side edge thereof at least two axially spaced gudgeons adapted to fit between the first butt plate gudgeons and receive a common pintle, one of said gudgeons including a radially projecting axially extending rigid abutment flange,
- (c) a pintle adapted to pass through said gudgeons to hold said first and second butt plates in pivotal relationship,
- (d) a slide bolt adapted to slide within a vertical gap formed between said first butt plate rigid flanges and to move into engagement with said second butt plate rigid abutment flange to thereby limit the opening of the door or move out of engagement with the abutment flange to permit free opening of the door, said slide bolt including a radial pin projecting outwardly therefrom for manipulating the bolt and
- (e) a cover plate adapted to cover the vertical gap containing the bolt.

4,340,993

**ELECTRICAL STIMULATION BAR FOR AN ANIMAL CARCASS**

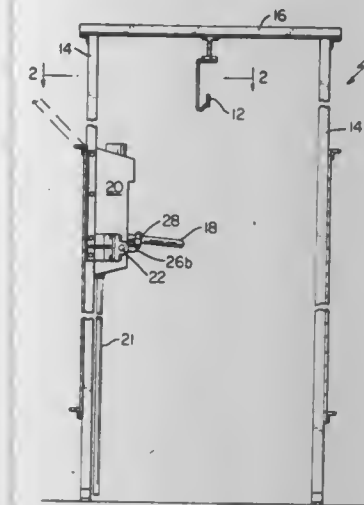
Franklin M. Cook, San Mateo, Calif., assignor to LeFiell Company, San Francisco, Calif.

Filed Feb. 21, 1980, Ser. No. 123,479

Int. Cl.<sup>3</sup> A22C 9/00

U.S. Cl. 17—25

10 Claims

**1. An apparatus for applying an electrical stimulation to an animal carcass, comprising:**

- (a) a base;
- (b) a transport mechanism operative to move an animal carcass along a predetermined path relative to said base;
- (c) a sterilization chamber mounted upon said base;
- (d) an elongated electrical stimulation bar extending substantially in the direction of said predetermined path and pivotally mounted with respect to said sterilization chamber for movement about an axis non-coincident to said elongated bar and substantially parallel to said predetermined path between a first position in which the stimulation bar extends along the predetermined path for contact with an animal carcass and a second position in which the stimulation bar is disposed within the sterilization chamber; and
- (e) means for moving the stimulation bar between the first and second positions.

4,340,994

**APPARATUS AND METHOD FOR PRODUCING SIMULATED CUTS OF MEAT**

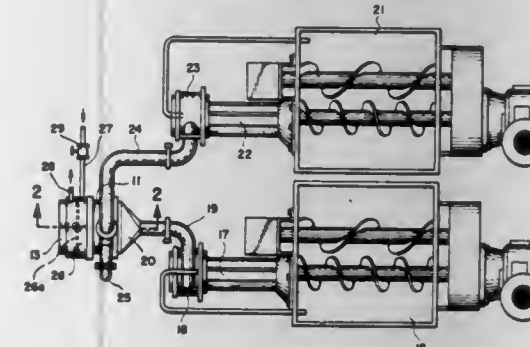
Claudio dos Santos, and Archie R. McFarland, both of Salt Lake County, Utah, assignors to Beehive Machinery, Inc., Sandy, Utah

Filed Feb. 22, 1980, Ser. No. 123,661

Int. Cl.<sup>3</sup> A22C 7/00; A23J 1/14

U.S. Cl. 17—45

11 Claims



- 1. In apparatus for forming a composite meat and fat product simulating the pattern of a natural commercial cut of meat, which apparatus includes an extrusion die having separate passages for meat and fat, respectively, collectively forming a pattern conforming to a natural commercial cut of meat;

means for supplying massed pieces of meat mixed with a binder; means for supplying a mass of fat; meat conduit means leading from said meat supplying means to the die meat passages; means for forcing meat from said meat supplying means through said meat conduit means to and through said die meat passages; means for forcing fat from said fat supplying means through said fat conduit means to and through said fat die passages; and means at the discharge end of said extrusion die for consolidating the separately extruded meat and fat into a column which may be cut transversely at intervals to form simulated natural commercial cuts of meat, the improvement comprising means associated with one or more of said consolidating means, die, and conduit means for heating selected parts thereof which are contacted by said fat relative to other parts thereof which are contacted by said meat to a controlled temperature sufficient to ease the flow of said fat therethrough relative to said meat, the parts contacted by said meat being free of heating means so as to remain unheated relative to the heated parts contacted by the fat.

7. In a method of fabricating simulated cuts of meat which includes continuously feeding meat material and fat material through respective conduit structures to separate portions of a coextrusion die structure, respectively, and extruding said materials through said die structure and through material-consolidating product discharge structure, the improvement comprising heating portions of one or more of the product discharge structure, the die structure, and the conduit structure contacted by said fat material relative to other portions thereof contacted by said meat material, to a temperature substantially no greater than will melt fat interfaced with one or more of said structures and thereby facilitate pattern control, the portions contacted by said meat remaining unheated relative to the heated portions contacted by the fat.

4,340,995

**APPARATUS FOR SKINNING FISH**

Horst Braeger, Lübeck, Fed. Rep. of Germany, assignor to Nordischer Maschinenbau Rud. Baader GmbH and Co Kg, Lübeck, Fed. Rep. of Germany

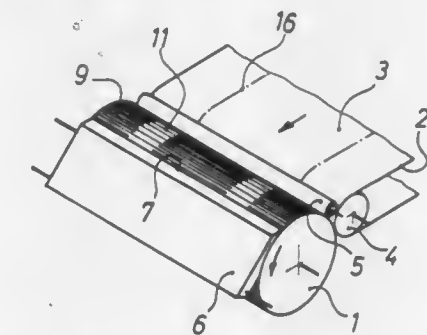
Filed Apr. 2, 1981, Ser. No. 250,306

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1980, 3021151

Int. Cl.<sup>3</sup> A22C 25/17

U.S. Cl. 17—62

12 Claims



- 1. Apparatus for skinning fish fillets, said apparatus including feed means, a skinning roller adapted to be rotated in a direction of rotation, said skinning roller having a longitudinal axis and a peripheral surface, a skinning knife having a cutting edge, said cutting edge being spaced by a small distance from said peripheral surface, and presser means situated below said cutting edge and adjacent said peripheral surface, said peripheral surface carrying an array of first grooves extending around said peripheral surface, said first grooves being spaced apart by a first distance, said first distance not exceeding 68 thousandths of an inch, said peripheral surface also carrying at least one array of second grooves extending around said peripheral surface and disposed adjacent said array of first grooves, said second grooves being spaced apart by a second distance, said first grooves and said second grooves extending.



substantially parallel to said longitudinal axis and said second distance being greater than said first distance.

4,340,996

## ADJUSTABLE CABLE CLAMP

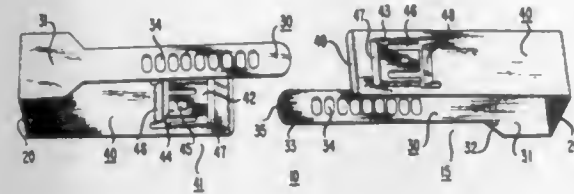
Jeremia P. Starace, Randolph Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1979, Ser. No. 106,004

Int. Cl.<sup>3</sup> B65D 63/02; H01R 5/02; A44B 21/00

U.S. Cl. 24—20 R

5 Claims



1. A clamping device comprising a pair of clips, each of said clips being U-shaped and having laterally disposed first and second legs

characterized by

a ratchet mechanism and slotted beam mechanism formed, respectively, with said first and second legs, said beam mechanism from each one of said clips adapted to slidably interlock with said ratchet mechanism from the other of said clips, said ratchet mechanism including a pair of spaced-apart, laterally disposed shoulders, a platform joined to said shoulders and oriented in a parallel relation to said first leg, said platform being partially cut away to form a laterally disposed flexible finger, and a raised nub arranged on said finger for grasping said slotted beam.

4,340,997

## ROPE CLAMPING DEVICE COMPRISING TWO TOOTHED CLAMPING ELEMENTS ADAPTED TO BE PRESSED AGAINST THE ROPE

Gunther M. Voss, Ziegelstadel 10, 8918 Diessen, Fed. Rep. of Germany

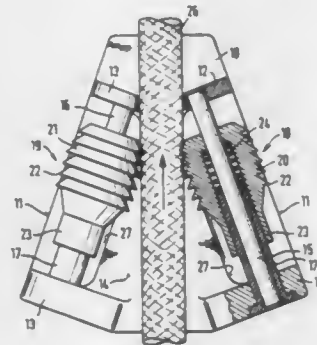
Filed Jul. 9, 1979, Ser. No. 55,884

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1978, 2830429; Apr. 4, 1979, 2914992

Int. Cl.<sup>3</sup> F16G 11/04; B63B 21/04

U.S. Cl. 24—115 L

21 Claims



1. In a rope-clamping device having two opposing clamping elements with teeth and means mounting the clamping elements above a bearing surface for varying the distance therebetween to allow a rope to be inserted and removed and wherein the distance is reducible in response to a tensile force applied to the rope to press the clamping elements thereagainst, the improvement wherein the clamping elements comprise rollers having an axis of rotation and the mounting means comprises means mounting the rollers with their axes of rotation subtending an acute angle therebetween for free rotational movement

4,340,998

## HOOK FOR ELASTIC CABLE

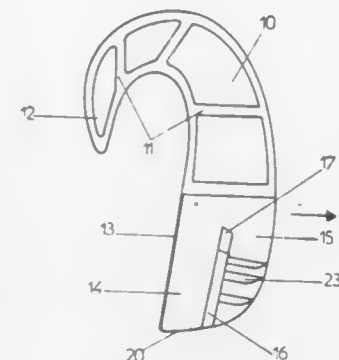
Guy Liberge, Charbonnieres-les-Bains, France, assignor to Joubert S.A., France

Filed Mar. 10, 1980, Ser. No. 128,917

Claims priority, application France, Mar. 16, 1979, 79 07223

Int. Cl.<sup>3</sup> F16G 11/00

15 Claims



1. A sandow comprising:

an elastic cable;

a monoblock mechanism including:

a hook,

a joint base plate integrally connected to said hook having interior and exterior parallel canals longitudinal with said base plate for holding the ends of said cable, said interior canal located in close proximity to the hook holding the stretched end of said cable, while said exterior canal holds the nonstretched free end of said cable, a partitioned wall separating said interior and exterior canals, said wall having an upper and lower portion, with said upper portion including a V like profile gap whose point is directed away from said hook, and a means for maintaining said free end of said cable disposed in said exterior canal said means further located below the point of said V gap.

4,340,999

## METAL CLASP

Mario Chini, Arezzo, Italy, assignor to Fratelli Chini Egidio & Mario S.N.C., Laterina, Italy

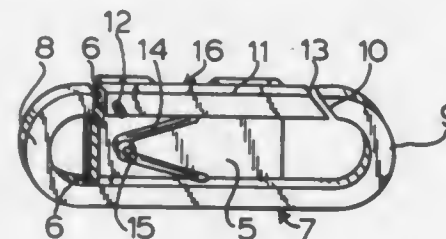
Filed Jul. 16, 1980, Ser. No. 169,342

Claims priority, application Italy, Jan. 18, 1980, 1205/79[U]

Int. Cl.<sup>3</sup> A44B 13/02

U.S. Cl. 24—241 P

7 Claims



1. A metal jewelry clasp comprising:

an outer housing made of a single sheet of metal foil folded about a fold line at its center portion which is narrower relative to the remaining portion thereof so as to define a generally U-shaped housing having two opposed surface portions defining two opposite, lateral openings therebetween; and

a pair of cooperating clasp elements comprising a C-shaped element mounted in a fixed manner between said opposed surface portions of said U-shaped housing and disposed to

close one of said lateral openings and an elongated, spring-loaded latching bar pivotably mounted at one end thereof between said opposed surface portions of said U-shaped housing and disposed to normally extend generally between the ends of said C-shaped element and to normally close the other of said lateral openings.

4,341,000

## METHOD OF CHARGING HEAT PIPE

Richard F. Stockman, Friendship, N.Y., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 24, 1980, Ser. No. 132,958

Int. Cl.<sup>3</sup> B23P 15/26; F28D 15/00

U.S. Cl. 29—157.3 H

3 Claims



1. The method of providing a heat pipe with an evacuated space above a vaporizable fluid comprising the steps of:

- supplying the heat pipe with an inlet at the upper end and a valved outlet at the lower end thereof,
- disposing an open-ended standpipe within said heat pipe at the lower end thereof, the standpipe connected at its lower end to said valved outlet and extending upwardly therefrom into the interior of the heat pipe,
- with said valved outlet closed, injecting a quantity of vaporizable fluid into the interior of said heat pipe through said inlet and withdrawing a quantity of air displaced by said fluid so as to completely fill the interior with the vaporizable fluid,
- closing the inlet to preclude the further passage of fluid therethrough, and
- with the interior of the heat pipe completely fluid and the inlet closed, opening said outlet valve and withdrawing therethrough a portion of the vaporizable fluid from the heat pipe to provide an evacuated space lying above the fluid that remains in the heat pipe, the fluid being withdrawn from the interior of the heat pipe through the standpipe connected to said valved outlet thereby precluding evacuation below the upper end of the standpipe.

4,341,001

## HUB FOR USE IN FLYWHEELS FOR KINETIC ENERGY STORAGE

Bruce E. Swartout, San Juan Capistrano, Calif., assignor to U.S. Flywheels, Inc., Irvine, Calif.

Division of Ser. No. 942,054, Sep. 13, 1978, abandoned. This

application Aug. 11, 1980, Ser. No. 176,746

Int. Cl.<sup>3</sup> B21K 1/40, 1/28; B60B 9/26, 27/00

U.S. Cl. 29—159.3

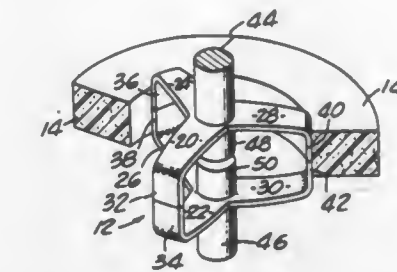
5 Claims

1. A method of fabricating a hub for use in conjunction with a rotating flywheel apparatus for storing kinetic energy, the method comprising the steps of:

interconnecting a pair of opposed, coaxial, convex surfaces of substantially equal dimensions, each such surface having an equal plurality of legs spaced equidistantly around the periphery thereof at locations corresponding to the locations of the legs of the opposing surface;

said legs of said respective convex surfaces abutting to form a plurality of arcuate radially outward facing surfaces for

support of a cylindrical flywheel rim, the axis of which is collinear with the axes of said convex surfaces; affixing an axle, coaxially, to each of said convex surfaces upon the outer face thereof; and



4,341,002

## TOOL FOR FLEXIBLE TUBE INSTALLATION

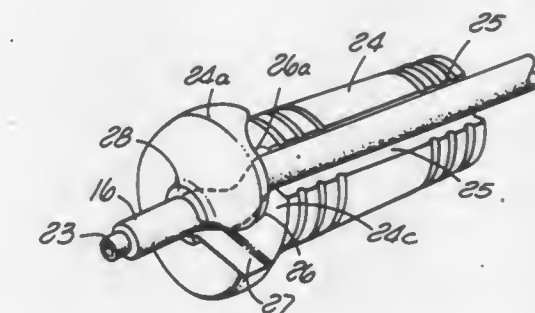
Keyvan T. Diba, Los Angeles, Calif., assignor to Bio-Energy Systems, Inc., Ellenville, N.Y.

Filed Nov. 28, 1980, Ser. No. 211,407

Int. Cl.<sup>3</sup> B23P 19/02

U.S. Cl. 29—235

4 Claims



1. A hand tool for radial installation of a flexible tube having rigid inner liner within a first predetermined length from a first end of said flexible tube, through an opening of circular cross-section in the wall of a rigid tube of larger size, comprising:

a generally cylindrical, elongated handle being a central axis; a head portion integral with said handle at a first axial end thereof, said head portion comprising a flange of diameter greater than that of said handle and an axial bore substantially concentric with said central axis to a depth at least equal to the axial dimension of said flange, said bore being of a diameter at least equal to the outer diameter of said flexible tubing;

a surface groove extending over the axial length of said handle from the second end of said handle to said flange, said groove having a cross-sectional shape for containing said flexible tube laid therein;

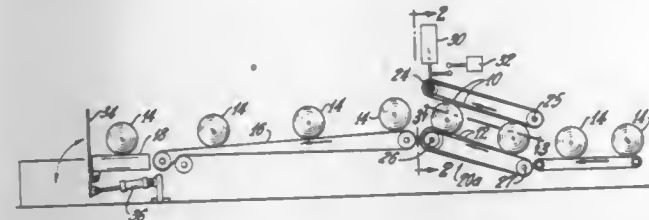
first means within said flange comprising a shaped cut-away for leading said flexible tube laid axially in said handle surface groove generally radially inward into alignment with said bore in said head portion, said flexible tube protruding axially from said axial bore by an amount substantially equal to the length of said flexible tube to be inserted into said rigid tube.



**4,341,003**  
**METHOD AND APPARATUS FOR SEPARATING ROLLS**  
**OF WEB MATERIAL**

David M. Kopena, Grand Rapids, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio  
 Filed Aug. 4, 1980, Ser. No. 175,111  
 Int. Cl.<sup>3</sup> B23P 19/04

U.S. Cl. 29—239

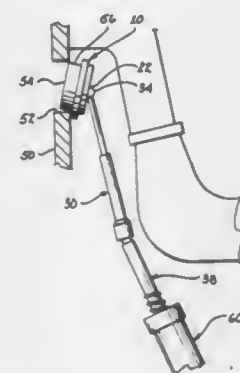


1. Apparatus for separating rolls of web material of the type in which two or more rolls are attached at the side edges thereof, wherein the improvement comprises:

- a first conveyor means having an upper and a lower conveyor defining a first path of travel for the first of said rolls; and
- additional conveyor means for each roll attached to said first roll, each additional conveyor means having an upper and a lower conveyor defining a path of travel for an attached roll, each of said paths being vertically aligned at the inlet end of the conveyor, and each of said paths being sufficiently vertically separated from its immediately adjacent path at the outlet end of the conveyor, that the rolls passing therethrough are separated.

**4,341,004**  
**TOOL FOR INSTALLING FREEZE PLUGS**  
 Charles R. Echols, 15841 N. 66th Ave., Glendale, Ariz. 85306  
 Filed Aug. 29, 1980, Ser. No. 182,837  
 Int. Cl.<sup>3</sup> B23P 19/04

U.S. Cl. 29—275



1. A tool for seating a shrouded freeze plug in response to impact forces received from a source of impact forces, said tool comprising in combination:

- (a) a disc member for imparting an impact force to the freeze plug to seat the freeze plug;
- (b) a first circular land disposed on one side of said disc member for engaging the shroud of the freeze plug and a second circular land disposed upon another side of said disc member, said second circular land being sized different from said first circular land to accommodate a freeze plug sized differently than the freeze plug engageable by said first circular land; and
- (c) means for interconnecting said member with the source of impact forces at any angle of interconnection within a cone of angles of interconnection and for transmitting the impact forces to the freeze plug to seat the freeze plug regardless of the angle of interconnection, said interconnecting and transmitting means comprising a first depression disposed within said first circular land, a second depression disposed within said second circular land and

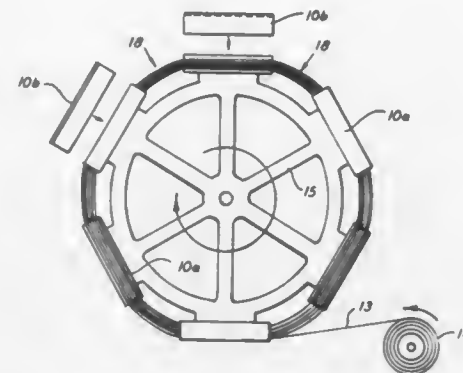
wherein said driver includes an end for mating with either of said first depression or said second depression.

**4,341,005**  
**MANUFACTURE OF HOLLOW FIBER FLUID**  
**FRACTIONATING CELLS**

Rolf A. Oscarsson, Andover, Mass., assignor to Strimbeck, Davis & Soloway, Manchester, N.H., a part interest  
 Filed Nov. 6, 1980, Ser. No. 204,465  
 Int. Cl.<sup>3</sup> B23P 17/00, 3/00, 19/04

U.S. Cl. 29—411

6 Claims



1. A method of making fluid fractionating cells the cores of which have a multiplicity of permeable hollow fibers contained within fluid tight casings, comprising the steps of:

- (a) affixing a series of longitudinal sections of fractionating cell casings to the periphery of a winding means having a central axis of rotation;
- (b) winding filaments of said hollow fiber over and onto said longitudinal sections on said periphery and building up a bundle thereof in each section;
- (c) assembling another of said longitudinal sections about said bundles in each section and forming a cell core firmly holding the fibers in place in said bundle;
- (d) severing the fibers between each cell core and removing the cell cores from said winding means;
- (e) potting said fibers at each end of a cell core by introducing a liquid potting compound thereabout and centrifugally casting the potting compound in each end in situ by rotating said cell core about a transverse axis of rotation thereof;
- (f) cutting the ends of the fibers at each said end in the area of said potting compound and laying open the cores thereof; and
- (g) placing an endcap on each end so potted to complete said cells.

4. A method of making fluid fractionating cells, which cells have a multiplicity of generally parallel laid permeable hollow fibers contained within fluid tight casings, comprising the steps of:

- (a) preparing a series of longitudinal sections of fractionating cell casings each section of which comprises at least two abutting relatively straight side walls of a cell;
- (b) affixing said series of longitudinal sections to the periphery of a winding means having a central axis of rotation with one wall of said side walls being tangential to said periphery and the other facing outwardly and with the outwardly facing side walls alternating from one side to the other from longitudinal section to longitudinal section about said periphery;
- (c) winding filaments of said hollow fiber over and onto said longitudinal sections on said periphery keeping said filaments within said outwardly facing side walls, and building up a bundle thereof in each said longitudinal section;
- (d) assembling another of said longitudinal sections over each section so filled with said hollow fiber and forming a cell core;
- (e) cutting the fiber bundle between each such cell core on said winding means and freeing the cell core;

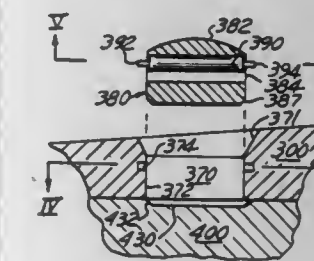
- (f) potting said hollow fibers at each end of said cell cores by centrifugal casting a limited amount of liquid potting compound in each end in situ about said courses by spinning said cell cores about a transverse axis of revolution;
- (g) cutting the ends of the fibers at each said end in the area of said potting compound and laying open the cores thereof; and
- (h) placing an endcap on each end so potted to complete said cells.

**4,341,006**  
**CHUCK ASSEMBLY AND COLLET**

John C. Staron, Melrose Park, Ill., assignor to The Bendix Corporation, Southfield, Mich.  
 Division of Ser. No. 2,119, Jan. 9, 1979, abandoned. This application Sep. 10, 1979, Ser. No. 73,986  
 Int. Cl.<sup>3</sup> B23P 19/00

U.S. Cl. 29—434

1 Claim



1. A method of making a collet for retaining a tool against axial pullout, the steps of the method comprising:

- providing a tool locking pin and a radially-resilient collet body having a central tool-receiving bore and an outer surface;
- forming a radial aperture extending through the collet body of suitable size and shape for receiving the pin;
- making an undercut in at least a portion of the radial collet aperture to provide a larger dimensioned portion intermediate the bore and the outer surface, said undercut extending partially toward, but not communicating with, the outer surface of the collet;
- forming a hole extending transversely through the pin;
- mounting a spring bar within the hole in the pin, said spring bar being smaller than the hole in the pin to allow the pin to move toward and away from the central tool-receiving bore of the collet;
- compressing the spring bar to a length less than the size of the radial aperture;
- inserting the pin and the compressed spring bar into the radial aperture; and
- aligning the compressed spring bar with the undercut to allow the spring bar to expand into the undercut and thereby retain the pin in the aperture.

**4,341,007**  
**METHOD OF ROLLER INSERTING FILLER MATERIAL**  
**IN CREVICES**

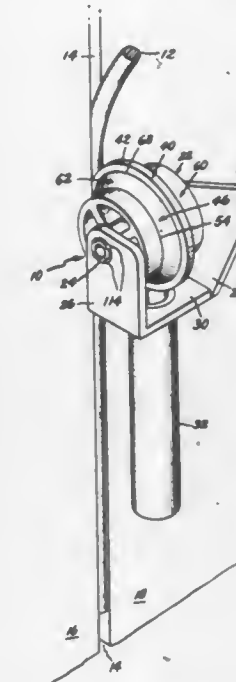
Edward G. Kruszona, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.  
 Continuation of Ser. No. 974,193, Dec. 26, 1978, abandoned, which is a division of Ser. No. 797,972, May 18, 1977, Pat. No. 4,169,305. This application Sep. 29, 1980, Ser. No. 192,121  
 Int. Cl.<sup>3</sup> B23P 11/02

U.S. Cl. 29—451

4 Claims

1. A process for inserting filler material to the proper depth in a crevice comprising rolling filler materials in a crevice with a roller comprising (a) a circular structure having a central circular section being at least 1/16 of an inch, but less than 1/4 of an inch thick, a first and second truncated right angle cone section of a smaller diameter than said central section and appended on each side of said circular section where the bases of said truncated cone sections are adjacent to the central

section and a third and fourth circular section of uniform thickness appended to the truncated part of said cone sections and having a diameter which is as large as the diameter of cones at their truncated sides and having a thickness of at least 1/16 of an inch wherein the center lines of said central section, said truncated cone sections and said third and fourth circular sections coincide and wherein said circular section is symmetrical on either side of the center lines passing through said cen-



tral circular section, (b) a shaft passing through an opening in said circular structure so as to support said circular structure and allowing it to rotate, the axis of said shaft being coincident with the axis of said circular structure; (c) two support members supporting said shaft on both sides of said circular structure and allowing said circular structure to rotate about said shaft and (d) a base plate connected to said support members, such that circular structure is free to rotate and being supported by said support members and said base plate.

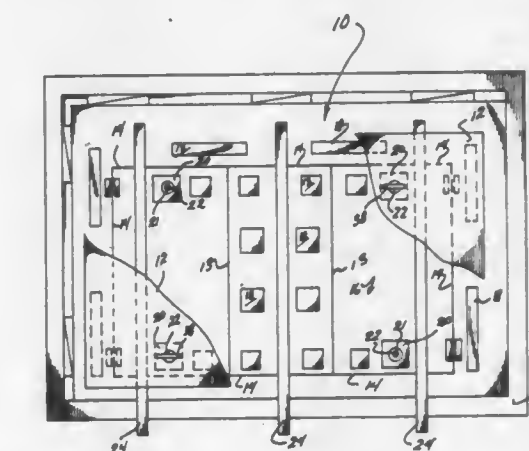
**4,341,008**  
**METHOD OF REGISTERING A STEEL RULE DIE AND**  
**COUNTERPLATE**

Herman A. Graboyes, Mishawaka, and Frank D. Helman, Elkhart, both of Ind., assignors to Atlas Steel Rule Die, Inc., Elkhart, Ind.

Filed Dec. 29, 1980, Ser. No. 220,373  
 Int. Cl.<sup>3</sup> B23Q 3/00

U.S. Cl. 29—467

2 Claims



1. In a reciprocating cutter utilizing a steel rule die and cooperating counterplate, said die including a body, a plurality of rules protruding from said body, said counterplate having a plurality of grooves, said die and counterplate having a plural-



ity of alignable openings formed therein, said counterplate grooves being aligned with said die rules when said die and counterplate openings are aligned, a handled pin insertable through each aligned opening in said die and counterplate whereby said counterplate groove will be maintained with alignment with said die rules, the method of registering said die and counterplate within said cutter comprising the steps of:

- securing adhesive support pads upon said die about the rules thereof;
- supporting said counterplate above said die with said die and counterplate openings in alignment;
- inserting said handled pins into said aligned openings for securing said counterplate against transverse movement relative to said die;
- pressing said counterplate into binding contact with said support pads with said handled pins remaining inserted into said aligned openings;
- removing each handled pin from said aligned openings;
- inserting a locating pin into each aligned opening after removal of the handled pin therefrom to form a die and counterplate unit;
- placing said die and counterplate unit between reciprocal platens of said cutter and securing each die and counterplate to a platen, and
- separating said counterplate and die and removing said support pads.

4,341,009

#### METHOD FOR MAKING AN ELECTRICAL CONTACT TO A SILICON SUBSTRATE THROUGH A RELATIVELY THIN LAYER OF SILICON DIOXIDE ON THE SURFACE OF THE SUBSTRATE

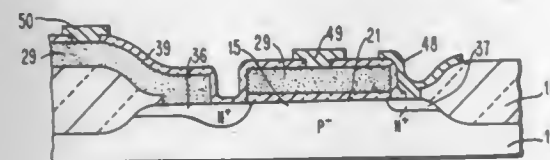
Robert F. Bartholomew, Poughkeepsie, N.Y.; Paul L. Garbarino, Ridgefield, Conn.; James R. Gardiner, Wappingers Falls, N.Y.; Martin Revitz, Poughkeepsie, N.Y., and Joseph F. Shepard, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 5, 1980, Ser. No. 213,526

Int. Cl.<sup>3</sup> H01L 21/285

U.S. Cl. 29—571

11 Claims



1. A method of making at least one electrical contact to a substrate of silicon having a relatively thin layer of silicon dioxide on a surface to which the electrical contact is to be made through the relatively thin layer of silicon dioxide including:

- forming a thin layer of polycrystalline silicon over the relatively thin layer of silicon dioxide on the surface of the substrate;
- forming at least one opening in the thin layer of polycrystalline silicon where an electrical contact is to be made to the substrate;
- etching an opening in the relatively thin layer of silicon dioxide through the opening in the thin layer of polycrystalline silicon to expose the surface of the substrate;
- depositing a second layer of polycrystalline silicon over the thin layer of polycrystalline silicon and the exposed surface of the substrate so that the second layer of polycrystalline silicon makes electrical contact with the exposed surface of the substrate through the opening in the relatively thin layer of silicon dioxide;
- and doping at least the second layer of polycrystalline silicon to the opposite conductivity of the conductivity of the substrate to provide conductivity thereto so that it can

function as an electrical contact to the exposed surface of the substrate.

4,341,010

#### FABRICATION OF ELECTROLUMINESCENT SEMICONDUCTOR DEVICE UTILIZING SELECTIVE ETCHING AND EPITAXIAL DEPOSITION

Rudolf P. Tjburg, and Teunis van Dongen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

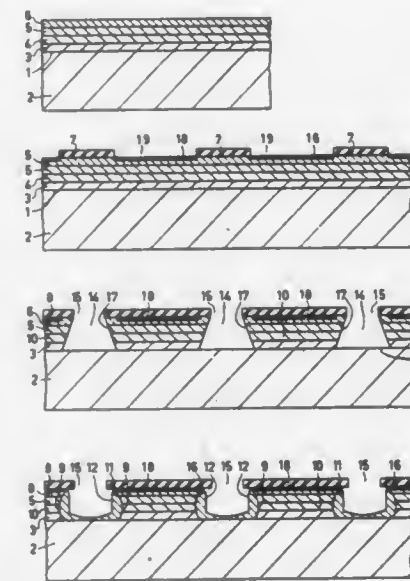
Filed Apr. 18, 1980, Ser. No. 141,511

Claims priority, application Netherlands, Apr. 24, 1979, 7903197

Int. Cl.<sup>3</sup> H01L 21/308, 21/20

U.S. Cl. 29—580

6 Claims



1. A method of manufacturing a semiconductor laser device, which comprises: providing a semiconductor substrate having a major surface; growing a plurality of monocrystalline epitaxial layers, including an active layer, on said major surface; providing an etching mask on top of said monocrystalline epitaxial layers; etching the masked monocrystalline epitaxial layers to form a plurality of epitaxial layer segments having nonplanar mirror surfaces which bound segments of said active layer in the lateral direction; and then growing epitaxial monocrystalline protective layers having substantially planar and parallel surfaces on said nonplanar mirror surfaces from the gaseous phase.

4,341,011

#### METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

Sadao Okano, and Hideo Homma, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 3, 1980, Ser. No. 193,456

Claims priority, application Japan, Oct. 5, 1979, 54/127966

Int. Cl.<sup>3</sup> H01L 21/92

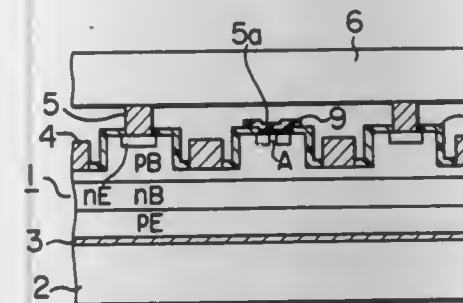
U.S. Cl. 29—590

10 Claims

1. A method of manufacturing a semiconductor device comprising the steps of:

- preparing a semiconductor substrate which includes at least three semiconductor layers of alternately different conductivity types and in which one of said semiconductor layers is exposed in a main surface of the substrate and is divided into a plurality of respectively independent regions, at least one of said plural regions having a defect therein;
- depositing electrode films on exposed surfaces of said plural regions respectively; and
- removing a substantial partial portion of said electrode film, including the whole of a top surface layer thereof,

deposited on a region having a defect, among said plural regions in said semiconductor substrate, so that said region



having a defect is remained covered with an unremoved layer of said electrode film, thereby lowering the surface level of said electrode film relative to that of the others.

4,341,012

#### PYROELECTRIC DETECTOR ARRAYS

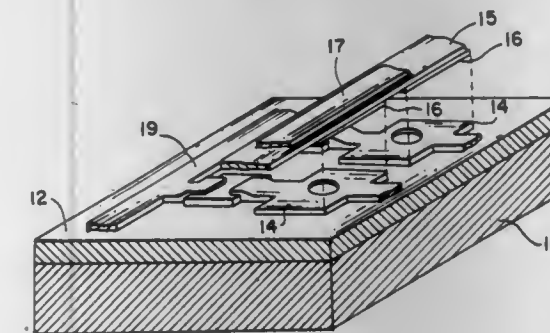
Archibald L. Fripp, Williamsburg; James B. Robertson, and Roger A. Breckenridge, both of Yorktown, all of Va., assignors to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 29, 1980, Ser. No. 191,748

Int. Cl.<sup>3</sup> H01C 17/06

U.S. Cl. 29—620

7 Claims



1. A method for mounting a pyroelectric detector array on silicon integrated circuits comprising the steps of: forming a silicon dioxide layer on a silicon substrate; forming a series of holes in said silicon dioxide layer; coating said silicon dioxide layer with a series of nontouching strips of soft metal with each strip being over and around one of said holes, wherein each strip is the output terminal for a pyroelectric detector; coating one side of a pyroelectric detector strip with a series of strips of soft metal; mounting said pyroelectric detector strip over said series of holes such that said series of strips of soft metal on said detector strips are in contact with said series of strips on said silicon dioxide layers; and forming a metal layer on the side opposite said one side of said pyroelectric detector strip to provide a ground connection for the pyroelectric detector array.

4,341,013

#### METHOD FOR ATTACHING AND SECURING POWER SUPPLY WIRES TO ELECTRICAL COMPONENTS

Erich Haidinger, Deutschlandsberg, Austria, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 10, 1980, Ser. No. 195,945

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948319

Int. Cl.<sup>3</sup> H01G 7/00; H01R 43/00; H05K 13/00

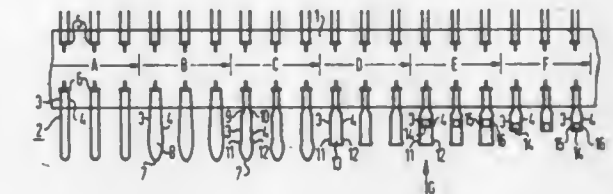
U.S. Cl. 29—854

4 Claims

1. A method for attaching and securing power supply leads

aligned parallel to one another to opposite lateral surfaces of electrical components, comprising the steps of:

- continuously inserting one-piece U-shaped power supply leads into slots of a band-shaped transport carrier of an automatically functioning assembly system, the power supply leads comprising two parallel legs and a U-shaped portion coplanar with the legs, the U-shaped portion projecting laterally beyond an edge of the transport carrier;
- bending the U-shaped portion downwardly out of the plane of said legs so as to form a connection bow to permit



insertion of a component between the two legs in a direction substantially parallel to the two legs and the plane of the transport carrier without influence from the connection bow;

- inserting the components between the power supply leads formed by the two parallel legs in a direction substantially parallel to the two legs and soldering the leads to opposing component surfaces;
- removing the connection bow in a proximity of the component; and
- completing processing of the components.

4,341,014

#### METHOD AND APPARATUS FOR INTERCONNECTING PAIRS OF TERMINALS WITH A PRETWISTED PAIR OF INSULATED WIRES

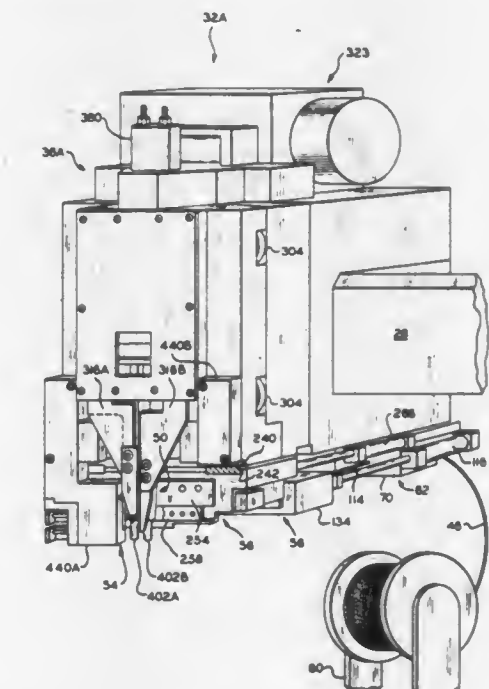
Fred W. Loy, Whitehall, and Robert B. Senior, Grand Haven, both of Mich., assignors to Cooper Industries, Inc., Houston, Tex.

Filed May 7, 1980, Ser. No. 147,370

Int. Cl.<sup>3</sup> H01R 43/00; B23P 19/00

U.S. Cl. 29—857

44 Claims



1. An apparatus for interconnecting first and second groups of terminals with a twisted set of wires comprising, in combination,

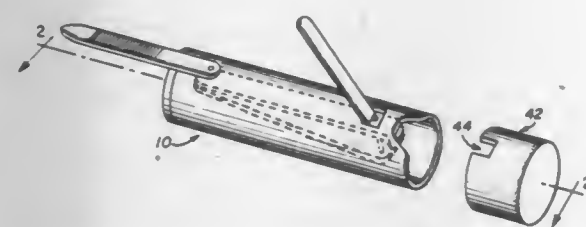
- first means for supplying such wires and securing one end of each wire of such set of wires to a terminal of such first group of terminals;
- second means for receiving and securing the other end of



each wire of such set of wires to a terminal of such second group of terminals, said first and said second means each including means for biaxially and bi-directionally translating said first and said second means, means for untwisting an end adjacent portion of such twisted set of wires, means for identifying at least all but one of said wires, and means for removing insulation from a length of each of such wires of such set, means for directing such identified wires to said securing means.

36. A method of interconnecting two groups of terminals with a set of pretwisted insulated wires comprising the steps of providing a substantially continuous set of pretwisted wires having a free end, gripping such set of pretwisted wires at such free end and at a first location disposed a finite distance from such free end, routing such set of wires between a first group of terminals and a second group of terminals, gripping such set of pretwisted wires at a second location disposed a finite distance from such first location, gripping and severing such set of pretwisted wires at a third location disposed a finite distance from such second location, providing tension to such length of wire disposed between such gripped free end and such first location, and such length of wire disposed between such second location and such third location, untwisting such wires disposed between such gripped free end and such first location and such wires disposed between such second location and such third location, removing an end adjacent portion of insulation from each wire of such set of wires, identifying at least all but one of such set of wires adjacent such free end and such severed end, and securing each end of such wires of such set of wires to one terminal of such groups of terminals.

**4,341,015**  
**NAIL CLIPPER ASSEMBLY**  
Patrick Young, 4055 Bismark Dr., San Jose, Calif. 95130  
Filed Sep. 18, 1981, Ser. No. 303,205  
Int. Cl.<sup>3</sup> A45D 29/02  
U.S. Cl. 30—28

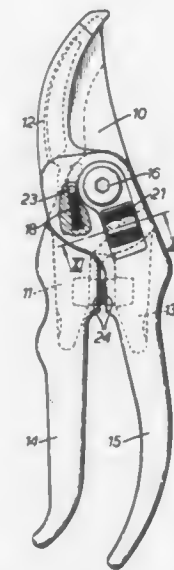


1. A clipper assembly for clipping nails having an upper and a lower blade arm with a jaw blade at a first end of each, a lifting post and a lever arm wherein the lower blade arm is rigidly joined to the upper blade arm at a second end opposite of the jaw blades, and the lifting post is connected to the lower blade arm and extends upward through an aperture in the upper blade arm where the lever arm is pivotally connected to the lifting post and said lever arm can rotate about the axis of said lifting post and about an axis normal to the axis of said lifting post, the improvement comprising of a flexible housing having a first and second end of inside cross-sectional dimension exceeding the widest dimension of said blade arms and a longitudinal dimension exceeding the length of said blade arms, the housing being positioned about said upper and lower blade arms; a ridged blade pivotally connected to said blade arms by a fastener post extending through said blade arms about said second end and the flexible housing near said second end;

the ridged blade being positioned about the exterior of the housing; and an opening in the flexible housing near said first end such that said lever arm and lifting post are uncovered by the flexible housing.

**4,341,016**  
**HAND TOOLS**  
Christopher R. B. Harrison, Porthcawl, and Alan K. Pittaway, High Wycombe, both of England, assignors to Wilkinson Sword Limited, Buckinghamshire, England  
Filed Sep. 7, 1979, Ser. No. 73,444  
Claims priority, application United Kingdom, Sep. 9, 1978, 36250/78

Int. Cl.<sup>3</sup> B26B 13/00  
U.S. Cl. 30—262



1. A hand tool comprising two cooperating members, two handles each secured to a separate one of said members, means interconnecting the members in mutually overlapping relationship to permit movement of the members relatively to one another by said handles, one said member having a slot therein, the other member having a recess therein, and a catch pin movable within said slot into engagement with said recess to lock the members together, characterised in that the catch pin forms part of a catch unit comprising a mounting plate having an elongate slot therein, a catch button slidable on one side of the mounting plate, a spring plate slidable on the mounting plate in sprung engagement therewith on the opposite side to the catch button, and means extending through said elongate slot and securing the catch button to said spring plate, said catch unit being mounted on said one member, and said catch pin being in permanent engagement with said catch button.

**4,341,017**  
**TREE-PRUNING AND CLEARING APPARATUS**  
Jerzy Janczak, St Mickelsgatan 71, S-126 54 Hägersten, Sweden  
Filed May 1, 1981, Ser. No. 259,781  
Claims priority, application Sweden, May 14, 1980, 8003659  
Int. Cl.<sup>3</sup> B27B 17/02, 17/08

U.S. Cl. 30—381

1. A saw equipment, especially for pruning of trees and clearing work, comprising a guide bar mounted on a handle and provided with a saw chain driven by a hydraulic motor arranged at the end of the handle, a portable hydraulic pump separated from the handle and directly driven by an internal combustion engine coupled to the hydraulic pump such that the flow discharged from the pump and supplied to the hydraulic motor is controlled solely by the speed of the engine, and an oil cooler receiving return oil from the hydraulic motor

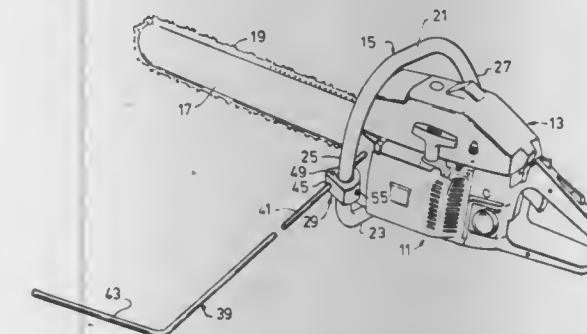
and from which cooler oil is supplied to the hydraulic pump, said hydraulic motor being connected to the hydraulic pump



the handle.

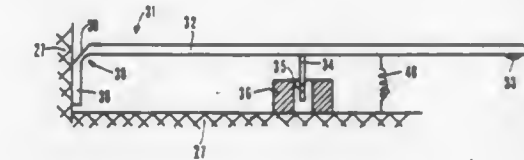
**4,341,018**  
**WORK LENGTH GAUGE ATTACHMENT FOR CHAIN SAWS**

James F. Nelson, 263 Euclid Ave., Kenmore, N.Y. 14217, and Robert W. Nelson, 36 Lake Ave., Lancaster, N.Y. 14086  
Filed Jul. 7, 1980, Ser. No. 166,542  
Int. Cl.<sup>3</sup> B27B 17/00  
U.S. Cl. 30—383



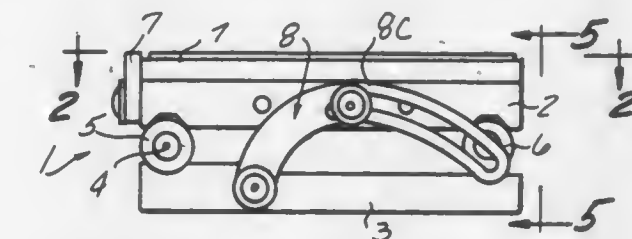
1. A gauge attachment for a chain saw, suitable for attachment to transverse, vertical and longitudinal handles or handle portions of chain saws and to which a work length gauge which is a rod, tube or wire is fastenable in such position that with respect to such chain saw handles or portions thereof, when the attachment is attached thereto and the gauge is fastened to it, the gauge extends transversely with respect to the saw chain, which comprises a body portion which includes a substantially teardrop shaped opening through it, rounded on one end and converging toward a point at the other end, with a threaded opening at the rounded end to accommodate a set screw, a set screw for screwing into said opening to bear against a chain saw handle or handle portion so as to hold the attachment in desired position thereon, a plurality of openings in the attachment body suitable for selective insertion of the work length gauge and for holding it in desired gauging position, said openings being walled passageways through the body portion of the article, and having threaded portions coplanar and intersecting at right angles, and set screws for screwing in the threaded passageway portions for holding the gauge in place in one of such passageways when the corresponding screw is tightened.

**4,341,019**  
**GAUGE FOR CHECKING LINEAR DIMENSIONS**  
Mario Possati, Bologna, Italy, assignor to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy  
Filed Jul. 22, 1980, Ser. No. 171,159  
Claims priority, application Italy, Jul. 24, 1979, 3463 A/79  
Int. Cl.<sup>3</sup> G01B 7/00  
U.S. Cl. 33—172 E



1. A gauge for checking linear dimensions, including: a support; fulcrum means carried by the support; an arm associated with the fulcrum means and movable with respect to the support; a probe associated with the movable arm in order to transmit to the arm measurement displacements; and transducer means for providing a signal depending on the position of the movable arm; the fulcrum means including an element with a lightened section that is resiliently flexible for defining a geometrical axis of rotation, the element including a first and a second portion and a joining portion between the first and the second portion, wherein the joining portion is bent and has at its convex side a chamfer adapted to locally reduce the thickness of the joining portion, in order to define the lightened section.

**4,341,020**  
**PRECISION TOOLS AND PRECISION TOOL SETS, AND METHODS OF CONSTRUCTING AND UTILIZING SAME**  
Donald H. Bailey, Bloomfield Hills, Mich., assignor to Suburban Tool, Inc., Birmingham, Mich.  
Filed Feb. 22, 1980, Ser. No. 123,835  
Int. Cl.<sup>3</sup> B23Q 3/00  
U.S. Cl. 33—174 TA



1. A precision tool set, comprising:  
(a) a sine plate including a top plate hingedly connected to a bottom plate, the top plate having a plurality of particularly dimensioned apertures formed therein according to a predetermined pattern;  
(b) at least a pair of side rails removably secured to the top plate and each being movable between an upper, operative position and a lower, inoperative position, the side rails projecting above the upper surface of the top plate when in their operative position;  
(c) a plurality of individual precision tools, each adapted to be removably mountable onto the top plate, each tool being interchangeable with any other tool, each tool having a plurality of particularly dimensioned apertures formed therein according to a predetermined pattern;  
(d) a fastener for removably mounting a precision tool onto the top plate, and  
(e) wherein when at least one precision tool is brought into abutment with the side rails, when in their operative position, (1) at least one aperture formed in the at least one tool will align and mate with at least one aperture formed in the top plate, the fastener being projectible through the



mating apertures to enable removable mounting and (2) the at least one tool is precisely squared and paralleled.

**22. A precision tool set comprising:**

a plurality of separate precision tools, each adapted for individual use in precisely orienting and securing a work-piece thereon;

each said separate precision tool of said precision tool set being provided with a plurality of mating apertures;

said plurality of mating apertures of each said precision tool being particularly dimensioned and particularly arranged so as to define a mating hole pattern; and

said mating hole pattern defined by said mating apertures of each said precision tool of said precision tool set being adapted to permit selective and interchangeable interconnection of desired ones of said precision tools by means of fastening members received through relative cooperating mating apertures of desired ones of said precision tools; one of said plurality of separate tools comprising a sine plate which includes a top plate hingedly connected to a bottom plate;

said plurality of mating apertures being provided in said top plate of said sine plate; and

said sine plate being provided with a locking strap; said locking strap being formed so as to be substantially flat, with a substantially constant width and thickness, and having a predetermined arcuate configuration;

said locking strap being affixed at a portion thereof to a side of said bottom plate of said sine plate, and at a portion thereof to a matching side of said sine plate immediately adjacent the top surface of the upper plate, so as to permit selective pivotal movement of said top plate relative to said bottom plate;

said predetermined arcuate configuration of said locking strap being such that the locking strap never rises above the planar upper surface of said top plate of said sine plate, regardless of the angular position of said top plate relative to said bottom plate.

**27. A locking strap for a precision tool, comprising:**

a substantially flat body having a substantially constant width and thickness and a predetermined arcuate configuration;

a first end portion of said locking strap being provided with a through hole, and an arcuate elongated slot extending from substantially a central portion of said strap to a portion of said strap adjacent a second end thereof; and the radius of curvature of said locking strap varying substantially along the length thereof such that the arcuate portion between said first end and said central portion thereof has a substantially lesser radius of curvature than the radius of curvature of the arcuate portion of said locking strap between said central portion and said second end thereof.

4,341,021

**WHEEL ALIGNMENT MEASURING APPARATUS**

Osmond Beissbarth, Sulzbacher Str. 15, 8000 Munich 40, Fed. Rep. of Germany

Filed Aug. 22, 1980, Ser. No. 180,240

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934411; Jun. 12, 1980, 3022071

Int. Cl.<sup>3</sup> G01B 5/255

U.S. Cl. 33—203.18

19 Claims

1. A wheel alignment measuring apparatus designed for measuring wheel alignment angles of a vehicle having front and rear wheels and comprising:

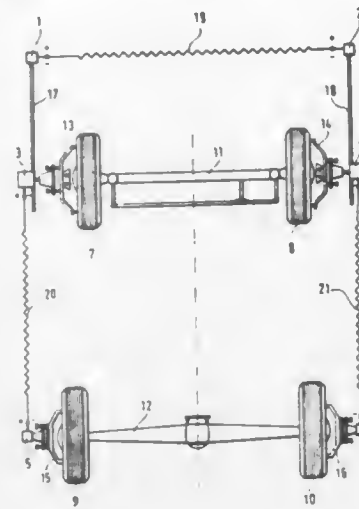
six angle measuring units,

first and second said angle measuring units adapted for connection respectively to the left and right front wheels of the vehicle and including angle pickup means for measuring and producing signals indicating the total tracking angles of both front wheels,

third and fifth said angle measuring units adapted for connection respectively to the left front wheel and a left rear wheel and including angle pickup means for measuring

and producing signals indicating the angles of these wheels,

and fourth and sixth said angle measuring units adapted for connection respectively to the right front wheel and a right rear wheel and including angle pickup means for measuring and producing signals indicating the angles of these wheels,



means rigidly joining the first said angle measuring unit with said third angle measuring unit

means rigidly joining said second angle measuring unit with said fourth angle measuring unit, and

an electrical circuit means for receiving signals from said angle pickup means and for producing a reading for wheel alignment data from the angles measured by said angle measuring units.

4,341,022

**DETACHABLE ZERO-SET SCOPE MOUNT FOR HAND GUNS AND OTHER FIREARMS**

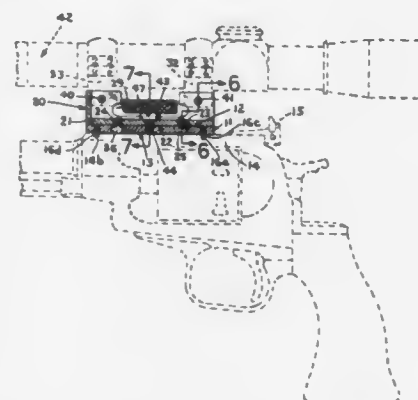
Arnold D. Santoro, 419 Brookside Pl., Cranford, N.J. 07016

Filed Oct. 8, 1980, Ser. No. 195,171

Int. Cl.<sup>3</sup> F41G 1/38

U.S. Cl. 33—245

16 Claims



1. A detachable zero-set scope mount assembly for use on hand guns having a barrel and an upper supporting surface and other like firearms comprising,

a. a base plate means having an upper surface, and a lower surface adapted to fit the upper supporting surface of the associated hand gun,

b. means for connecting the base plate means to the upper supporting surface to precisely align the longitudinal center line thereof with the center line of the barrel of the associated hand gun,

c. said base plate means having at least one tapered guide opening in the upper surface disposed in predetermined spaced relation to the connecting means and to the center line of the base plate means, and threaded bore means at the

mid point of the longitudinal center line of said base plate means,

d. scope bracket assembly means having, a lower surface, and a depending tapered projection, in said lower surface, and

e. detachable means disposed to engage the scope bracket assembly means and to so connect and to reconnect the same into the threaded bore of the base plate means that the lower surface of the scope bracket assembly means and the depending tapered projection are in precise alignment with the upper surface of the base plate means and the at least one tapered guide opening.

9. In a detachable zero-set scope mount assembly for hand guns and other firearms wherein said hand guns and other firearms have a frame and standard sights on said frames in the longitudinal line of sight for the given firearm, the combination therewith of;

a. sized base plate means having, a generally upper planar surface, and a lower surface to fit the frame of the given firearm so as not to interfere with the normal use of the standard sights thereon,

b. said base plate means including, a centrally disposed threaded bore, and at least one tapered guide opening disposed in the upper surface thereof for precise alignment relative the threaded bore,

c. connector means for connecting the center line of said base plate means in the longitudinal line of said firearm,

d. scope bracket assembly means having, bracket means for connecting a scope thereon, and a generally planar lower surface to fit the upper surface of the base plate in assembled position thereon,

e. said scope bracket assembly means having an opening extending therethrough and at least one tapered projection formed on said lower planar face of the scope bracket assembly means so that in assembled position, said opening is in alignment with the threaded bore in said base plate means and the depending tapered projection is matched, aligned and mated to the at least one tapered guide opening in the base plate means, and

f. detachable connecting means in engagement with the scope bracket assembly means and extending through the opening therein for detachable engagement with the threaded bore in the base plate means to connect and reconnect the scope bracket assembly means to the base plate means for use in connection with the operation of the associated firearm and to permit easy removal thereof from the firearm.

4,341,023

**DIGITAL COMPASS**

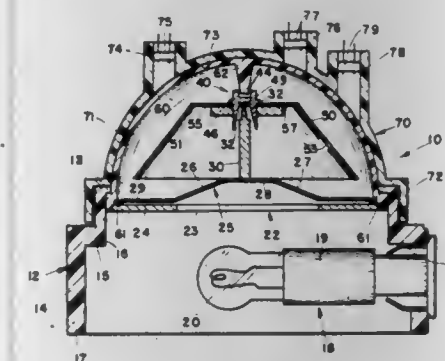
Konrad H. Marcus, Holland, and Robert D. Hochreiter, Saugatuck, both of Mich., assignors to Prince Corporation, Holland, Mich.

Filed Jan. 25, 1980, Ser. No. 115,218

Int. Cl.<sup>3</sup> G01C 17/26

U.S. Cl. 33—363 K

7 Claims



1. A magnetically responsive sensor for use in a compass system for a vehicle comprising:

a base;

a light source mounted to said base;

a cup-shaped opaque encoder disc including a permanent magnet, said disc freely and rotatably mounted to said

base so as to move with respect thereto permitting alignment with a magnetic field, said disc including a plurality of slots permitting the selective transmission of light through said disc as a function of the position of said disc with respect to said base;

an opaque diffusion cover including a hemispherical recess for enclosing said encoder disc, said diffusion cover mounted to said base and including a plurality of recessed apertures defining receptacles for receiving a plurality of light detectors, said receptacles positioned opposite one side of said encoder disc and said light source positioned opposite the other side of said encoder disc;

circuit means coupled to said light detectors for providing direction indicating signals in response to the sensing of light by said light detectors; and

display means coupled to said circuit means and responsive to signals therefrom for displaying the direction of orientation of said disc with respect to said base.

4,341,024

**TUBE DRYER ASSEMBLY**

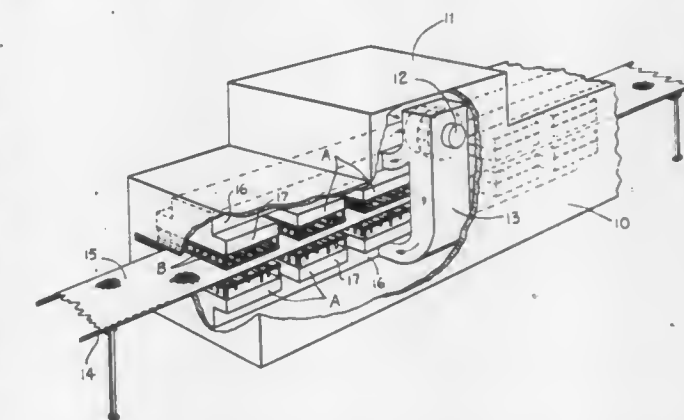
Philip M. Witkin, 110 Lowood La., Greenville, S.C. 29605

Filed Jul. 14, 1980, Ser. No. 168,535

Int. Cl.<sup>3</sup> F26B 13/02

U.S. Cl. 34—155

3 Claims



1. For use in an elongated oven and the like for subjecting flat material moving therethrough on conveyor means to the action of heated air;

an improved tube assembly comprising:

a pair of plenums spaced vertically with said flat material on conveyor means moving therebetween;

a plurality of longitudinally spaced rows of transversely spaced

tubes of substantially equal length extending from said plenums for carrying heated air from the plenums inwardly toward said conveyor means;

said tubes having connection on one end thereof with a respective plenum for receiving heated air and extending outwardly thereof toward said flat material;

a plurality of longitudinally spaced inverted channel-shaped members having web portions with transversely spaced openings therein for accommodating and securing said tubes adjacent an open discharge end, opposite said one end, of said tubes therein for discharging heated air from the tubes of substantially equal length therethrough against said flat material, said plurality of longitudinally spaced inverted channel-shaped members providing spaced openings to accommodate airflow between said channel-shaped members, and said tubes being substantially unsupported between said connection on said one end and said channel-shaped members on said open discharge end of said tubes; and marginal longitudinal stiffener members interconnecting end portions of said channel-shaped members.



4,341,025

## POWER DRIVE FOR TREE TRANSPLANTING SPOONS

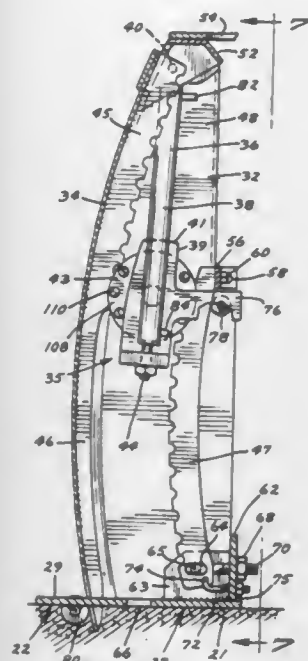
Walbert A. Stocker, 301 Sunset Dr., Jordan, Minn. 55352

Filed Feb. 9, 1981, Ser. No. 232,438

Int. Cl.<sup>3</sup> A01G 23/06

U.S. Cl. 37—2 R

11 Claims



1. In association with a machine for digging trees from the earth including:

- (a) a ring stand;
- (b) means for situating said stand in encircling relation to a tree to be transplanted;
- (c) a plurality of stanchions extending upwardly from said stand;
- (d) a plurality of digging spoons, each mounted for guided movement with respect to one of said stanchions and with respect to said stand between an upper position situated out of the earth in substantially parallel alignment with its stanchion, and a lower position wherein its lowermost portion meets with the lowermost portions of the other spoons when in said lower position;
- (e) guide means on each of said stanchions for guiding the path of each of said digging spoons as it moves between its upper and lower positions;
- (f) power digging means including a pinion for selectively moving each spoon between said upper and lower position, the improvement wherein said guide means includes:
  - (1) a pair of digging spoon guide tracks adjustably mounted with respect to each stanchion and each extending outwardly therefrom in an opposite direction from the other to lie in a surface perpendicular to a plane normal to the axis of said pinion;
  - (2) a pair of upper digging spoon guide wheels rotatably mounted on opposite upper edge portions of each of said digging spoons in position to encompass said guide tracks between outer edge portions of said digging spoons and said upper digging spoon guide wheels; and
  - (3) a force bearing roller permanently but rotatably mounted with respect to the ring stand in position to contact an outside face portion of the digging spoon opposite the digging spoon rack and to limit and precisely determine the position of that portion of the digging spoon in contact with it whenever the spoon is moving up or down or is being lifted under a tree transplanting load.

4,341,026

## BUCKET ASSEMBLY FOR EARTHMOVING MACHINES CAPABLE OF SIDE DUMPING AS WELL

Tomio Uchida, Ebetsu, and Kisaburo Otake, Isehara, both of Japan, assignors to Caterpillar Mitsubishi Ltd. and Hokkaido Construction Equipment Sales, Ltd., both of Japan

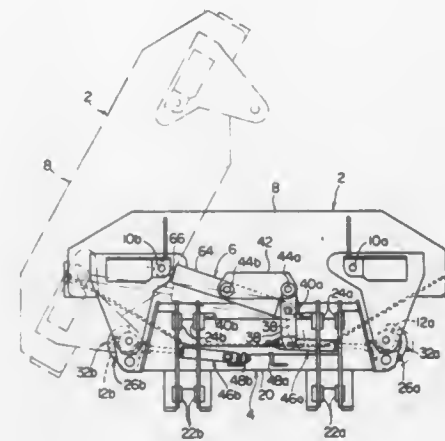
Filed Nov. 3, 1980, Ser. No. 203,722

Claims priority, application Japan, Nov. 30, 1979, 54-154425; Sep. 24, 1980, 55-131599

Int. Cl.<sup>3</sup> E02F 3/76

U.S. Cl. 37—117.5

8 Claims



1. In a bucket assembly for earth moving machines which is capable of side dumping as well and comprises a bucket, a bucket support and a hydraulic cylinder mechanism having a cylinder and a rod and interposed between the bucket and the bucket support, the improvement;

wherein the bucket includes a bucket body, a first receiving portion and a second receiving portion provided at opposite upper side portions of the rear surface of the bucket body, and a first support portion and a second support portion provided at opposite lower side portions of the rear surface of the bucket body and having a first pivot pin and a second pivot pin extending nearly at right angles to the widthwise direction of the bucket body;

wherein the bucket support comprises a support body to be mounted on lift arms and tilt links of an earthmoving machine, a first supporting portion and a second supporting portion provided in the support body for receiving the first and second support portions of the bucket respectively from above and supporting them therein, a first hook member and a second hook member mounted such that they pivot between an operating position at which they respectively come into engagement with the first and second support portions of the bucket to hold the first and second support portions in the first and second supporting portions and an inoperative position at which they move away from the first and second support portions of the bucket respectively, a pivot member pivotably mounted on the support body, a first stop surface and a second stop surface for restricting the pivotal movement of the pivot member within a predetermined range, a first power transmission member having one end connected to the first hook member and the other end selectively connected to the pivot member or the support body, and a second power transmission member having one end connected to the second hook member and the other end selectively connected to the support body or the pivot member; and

wherein one of the cylinder and the rod of the hydraulic cylinder mechanism is pivotably connected selectively to either the second or first receiving portion of the bucket, and the other of the cylinder and the rod of the hydraulic cylinder mechanism is pivotably connected to the pivot member.

4,341,027

## SNOW TREATMENT APPARATUS FOR GROOMING SKIING SLOPES, TRAILS OR THE LIKE AND A METHOD OF OPERATING SAME

Karl Rohner, Herisau, Switzerland, assignor to Kempf &amp; Co. AG Förder- und Lagertechnik, Herisau, Switzerland

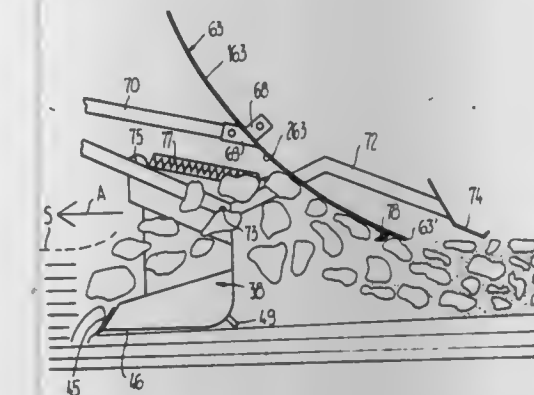
Filed Oct. 28, 1980, Ser. No. 201,622

Claims priority, application Switzerland, Nov. 6, 1979, 9949/79

Int. Cl.<sup>3</sup> E01H 4/00

U.S. Cl. 37—197

23 Claims



1. A snow treatment apparatus for grooming skiing trails, slopes or the like as the apparatus travels on the treated surface, with at least one trailing scraper member freely swingable in a vertical plane, said scraper member including a scraper blade and a normally downwardly facing scraper base adjacent to the former and disposed at an acute angle relative to same, the angle of the scraper base relative to the treated snow surface being adjustable from a working position in which the scraper member scrapes snow off the surface, to a sliding position, in which the scraper base slides on the treated surface, a scoop being associated with the scraper member and being limited by two upright side walls parallel with the direction of travel of the apparatus, and by at least one shield adapted to be lowered towards and lifted away from the scraper member by means of at least one lifting arm in order to collect within the scoop the snow removed by the scraper member, to transport same and then to discharge same; wherein the shield is arcuately curved about a generally horizontal axis extending transversely of the direction of travel of the apparatus, whereby the shield has a convex face and a concave face, said shield being adapted for securement to the respective arm in selective fashion either with its concave or with its convex face turned in the direction of travel of the apparatus.

4,341,028

## VISIBLE INFORMATION MANAGEMENT SYSTEM

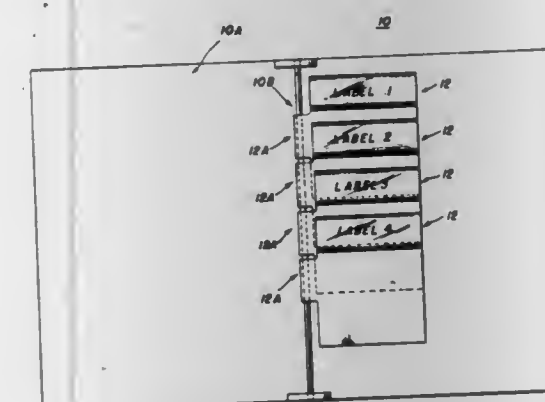
Keith Brown, 8116 Kenova La., Springfield, Va. 22153

Filed May 5, 1981, Ser. No. 260,753

Int. Cl.<sup>3</sup> G09F 19/00

U.S. Cl. 40—534

6 Claims



1. A visible information management system adapted to firmly hold a plurality of cards therein and to enable the easy

removal of said cards therefrom for replacement thereof, comprising:

a plurality of pressure clip means for holding the respective cards therein, each of the pressure clip means including, a back side surface for providing a support surface for one of said cards held by the pressure clip means, an overlapping means integrally connected to said back side surface along a top edge thereof for receiving said respective cards therein and for exerting pressure on said cards when said cards are inserted therein, a plate integrally connecting said back side surface to said overlapping means are disposed approximately perpendicularly to said back side surface along a side edge thereof for preventing said one of said cards from slipping out of a side end of the pressure clip means after the card has been inserted beneath said overlapping means, and sleeve means integrally connected to said back side surface along said side edge thereof for enabling said pressure clip means to pivot about a longitudinal axis passing through said sleeve means; and securing means disposed along said longitudinal axis and passing through each of said sleeve means of said plurality of pressure clip means for securing each of said pressure clip means in place along said longitudinal axis thereby permitting said pressure clip means to pivot clockwise and counterclockwise about said longitudinal axis.

4,341,029

## MOUNTING FOR OFFSET SIGNS

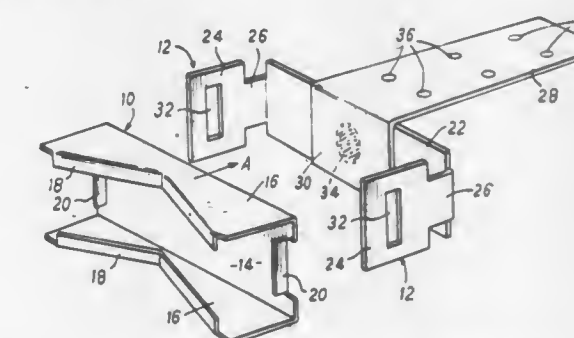
Robert A. H. Heard, Church Farm, 63 Church La., Backwell, Bristol, BS19, 3JJ, England

Continuation of Ser. No. 35,913, May 4, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,130

Int. Cl.<sup>3</sup> G09F 15/00

U.S. Cl. 40—607

10 Claims



1. A device for mounting a radially offset sign plate to a supporting post, comprising a channel shaped saddle member formed from sheet metal and having a pair of opposite side elements of similar form and spaced apart by a base element and adapted along their edges remote from the base element to seat against a supporting post, a pair of sheet metal attachment elements separate from the saddle and at opposite ends of the saddle member adapted for connection to a portion of a supporting post seated against the saddle member, a transverse elongate plate-like element of sheet metal joining the attachment elements and lying adjacent to the base of the channel of the saddle member on the side thereof remote from said edges of the side elements thereof, whereby the transverse element is urged toward the base of the saddle member when the attachment elements are secured to a supporting post, and a sheet metal mounting plate of L-form providing two limbs, a first shorter limb disposed between the transverse element and the base of the saddle member so as to be clamped between them when the transverse element is urged toward the base of the saddle member, and a second longer limb extending in the direction opposite to the channel mouth in a plane at right angles to that of the transverse element and the base of the saddle member and parallel to the length of the channel, the longer limb being apertured to receive means for securing thereto a flange at a radially extending edge of the sign plate.



4,341,030

## HUNTING DOG TRAINING DEVICE

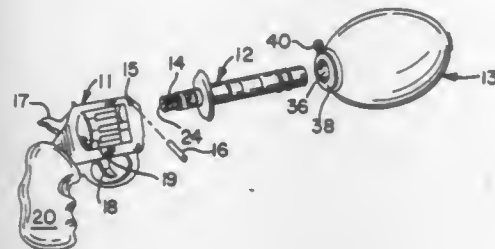
Ronald L. Little, Lakewood, Calif., assignor to Little Launcher, Inc., Irvine, Calif.

Filed May 14, 1980, Ser. No. 149,574

Int. Cl.<sup>3</sup> F41C 27/06

U.S. Cl. 42-1 F

14 Claims



1. A hunting dog training device having a readily adjustable launching stroke length, comprising:
  - a launching shaft having an outside surface, a discharge end, and a mounting end, said launching shaft having a longitudinal bore therethrough beginning at its mounting end and terminating in a plurality of vent openings at its discharge end, said longitudinal bore being in gas-passing communication with means for discharging a blank cartridge into the mounting end, through the longitudinal bore, and out of said plurality of vent openings, said launching shaft having a plurality of grooves on its said outside surface;
  - a projectile having a body and a rigid sleeve generally along its longitudinal axis, said rigid sleeve having a mouth and an internal surface generally complementary in shape and slightly oversized with respect to said outside surface of the launching shaft, said rigid sleeve having a rigid plug member at its end opposite its said mouth, said projectile being mounted onto said launching shaft by means of said projectile rigid sleeve, and said projectile includes a scent carrying insert within a pocket of said projectile; and
  - one or more O-rings nested within one or more of said plurality of grooves on the outside surface of the launching shaft, each said O-ring being extended beyond said launching shaft outside surface and being in sealed contact with said internal surface of the projectile.

4,341,031

## PERCUSSION FIRING MECHANISM FOR INDUSTRIAL GUNS

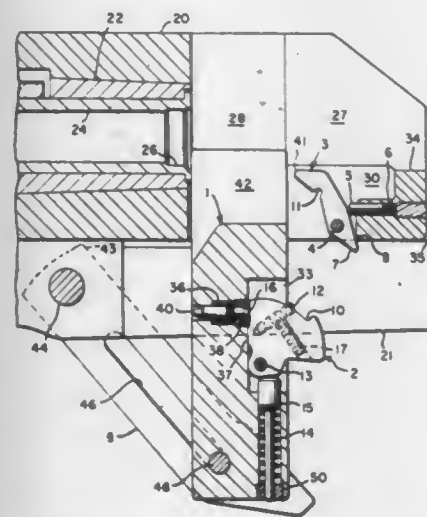
John R. Palmer, and Kenneth C. Rowlands, both of Utica, N.Y., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Jun. 26, 1980, Ser. No. 163,306

Int. Cl.<sup>3</sup> F41C 11/04

U.S. Cl. 42-23

12 Claims



1. In an industrial gun which includes a barrel having a

shell-receiving chamber; a breechblock; a yoke secured to said barrel and formed with a passage extending transversely to the length of said barrel and opening into said chamber, said passage receiving said breechblock for sliding movement therein; and means for displacing said breechblock in said passage transversely of said barrel, between an open position in which said chamber is open for loading, and a closed position; a firing pin; a hammer movably mounted in said breechblock and resiliently biased for movement from a cocked position toward a fired position contacting said firing pin; a sear mounted in said yoke for releasably latching said hammer in said cocked position; said sear and said hammer being constructed and arranged for mutual latching engagement at an intermediate stage of movement of said breechblock from said open toward said closed position, said sear acting, during subsequent movement of said breechblock toward said closed position, to displace said hammer toward said cocked position; the improved firing mechanism which comprises:

cooperating cam means formed on said hammer and said sear, said cam means being mutually engageable by said displacement of said hammer toward said cocked position, said cam surfaces being constructed and arranged to disengage said hammer from latching engagement with said sear for movement to said fired position substantially coincident with the completion of movement of said breechblock to said closed position.

4,341,032

## FISHING LURE WITH INHERENT ORIENTING BALLAST

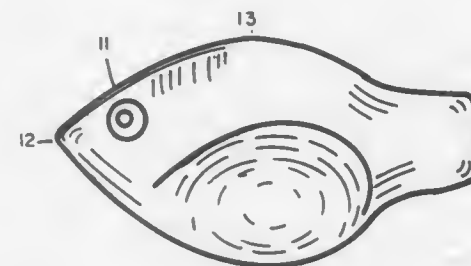
Daniel P. Olszewski, Indialantic, Fla., assignor to Ego Lures Company, Melbourne, Fla.

Filed Apr. 24, 1980, Ser. No. 142,870

Int. Cl.<sup>3</sup> A01K 85/00

U.S. Cl. 43-42.45

7 Claims



1. A fishing lure, comprising a body, including:
  - an upper section including a flat top surface starting at the nose of the lure and ending at the top of the back of the lure, the plane of said flat top surface creating an angle greater than 0° and less than 90° to the longitudinal axis of the body;
  - a lower section including a front and a tail section of approximately the same average thickness as said upper section and a bulbous section positioned in the longitudinal center and lower half of the lure body, said bulbous section thicker in cross section than said upper section, said difference in thickness selected to cause the center of gravity of said body to be within said lower section; and
  - a concave surface configuration between the side edges of said flat top surface and said bulbous section dimensioned to create a boundary layer effect in the surface flow over said body which increases drag as the flow direction approaches the direction perpendicular to the plane of said flat top surface.

4,341,033

## RELEASING AND RESETTING MECHANISM FOR USE IN A RAT TRAP

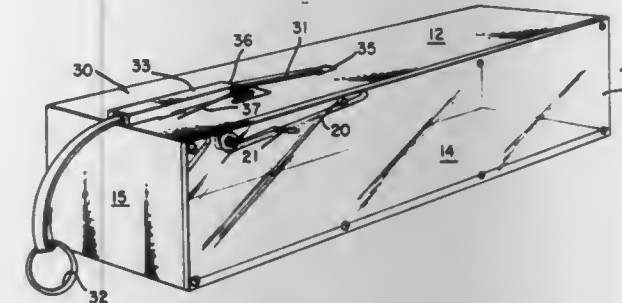
David B. Siegel, 3450 Sawtelle Blvd., Apartment 212, Los Angeles, Calif. 90066

Filed Jan. 19, 1980, Ser. No. 199,111

Int. Cl.<sup>3</sup> A01M 23/30

U.S. Cl. 43-81

3 Claims



1. An improved releasing and resetting mechanism for use in a rat trap which includes a rectangular shell having an entrance opening, a top, a bottom, a pair of sides and a back, said improved releasing and resetting mechanism comprising:
  - a. trapping means pivotally attached to the top of the rectangular shell within the rectangular shell and which is disposed so that said trapping means is parallel to the top of the rectangular shell when said trapping means is in its set position and so that when said trapping means has been triggered said trapping means contacts the bottom of the rectangular shell;
  - b. a spring which is biased between said trapping means and the top of the rectangular shell downwardly biasing said trapping means toward the bottom of the rectangular shell;
  - c. a plastic band which has a plurality of parallel disposed teeth, said plastic band being mechanically coupled to said trapping means;
  - d. securing means for securing said plastic band so that said plastic band holds said trapping means in its set position;
  - e. an integral member having a first end which is pivotally coupled to the top of the rectangular shell and which is disposed adjacent to said spring and a second end to which the bait is attached; and
  - f. a latch which is mechanically coupled to said integral member adjacent to the first end of said integral member, said latch restrains said securing means so that said plastic band holds said trapping means in its set position whereby said improved releasing and resetting mechanism is triggered when said integral member pivots about the first end of said integral member as the bait is touched by a rat which causes said latch to release said securing means thereby releasing said plastic band.

4,341,034

## TOY WASHING MACHINE

Kwok W. Tsui, and Sing C. J. Yuen, both of Hong Kong, Hong Kong, assignors to Arco Industries Ltd., Hong Kong, Hong Kong

Filed Apr. 9, 1981, Ser. No. 252,310

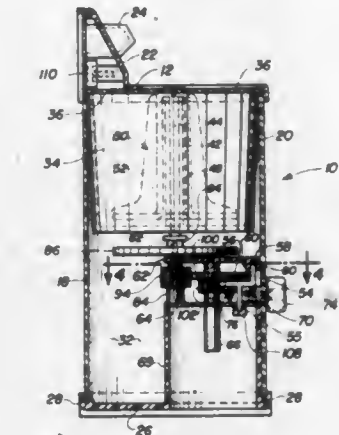
Int. Cl.<sup>3</sup> A63H 3/52

U.S. Cl. 46-14

8 Claims

1. A toy washing machine comprising in combination, a generally rectangular box-like cabinet including a top having an opening therein for loading and unloading and a vertical front panel, a cover for said opening hinged at one end to said top, a cup-shaped tub supported by and extending downward from said top and contained within the upper portion of said cabinet, said tub being provided with a central sleeve integral with and extending upward from the bottom of said tub, an agitator member having an elongated thimble mounted upon and receiving said central sleeve of said tub and adapted for rotary movement therearound, a drive shaft extending upward

through said sleeve of said tub and connected at the upper end thereof to the top of said thimble of said agitator for driving relationship therewith, a manually operable horizontally slidable actuating slide member within said cabinet in spaced relationship below the bottom of said tub and having a finger-engengageable projection extending through a slot in said front panel, horizontal guide grooves formed respectively in a pair of horizontal mounting plates spaced vertically and fixedly supported in said cabinet below said tub, said grooves supporting opposite edges of said actuating slide member for recipro-



catory movement in opposite driving and return directions, an elongated rack formed on one edge of said actuating slide member, a spur gear on the lower end of said drive shaft, a gear train mounted between said spur gear and the rack of said actuating slide member and operable when said actuating slide member is moved in driving direction to rotate said agitator in said tub, and power release means operable to disengage said actuating slide member and said spur gear on said drive shaft to permit movement of said actuating slide member in return direction without interfering with continual unidirectional rotation of said agitator.

4,341,035

## GRAPHIC TOY

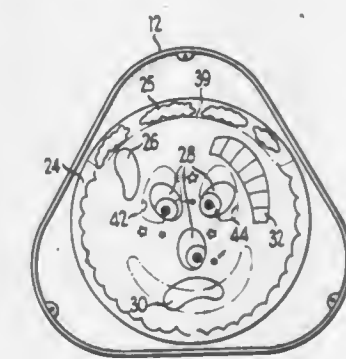
Eugene Jaworski, Park Ridge, and Harry Disko, South Barrington, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 1, 1980, Ser. No. 117,541

Int. Cl.<sup>3</sup> A63H 11/00

U.S. Cl. 46-135 R

15 Claims



15. A graphic toy, comprising:
  - a multi-sided housing wherein each side defines a base upon which said toy may be positioned;
  - said housing also including a front and back;
  - first and second discs rotatably mounted in said housing, each of said first and second discs including indicia thereon;
  - said second disc being weighted to rotate less than one full revolution upon rotation of said housing from one side to another;



drive means mounted in said housing and secured to said first disc; and  
weight means secured to said drive means for rotating said first disc upon rotation of the housing to being positioned on another base.

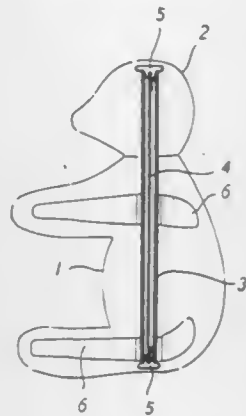
#### 4,341,036 STUFFED TOY

Nam J. Yeu, 16-35 Hwayang-Dong, Seongdong-Ku, Seoul, Rep. of Korea

Filed Oct. 20, 1980, Ser. No. 198,650  
Int. Cl.<sup>3</sup> A63H 3/00

U.S. Cl. 46—151

5 Claims



1. A toy comprising in combination a one-piece body portion and an integral head portion; and restoring means extending longitudinally through both said head and said body portions for restoring the toy to its original condition after having been deformed, said means comprising:

an elongated, one-piece flexible, plastic tube extending longitudinally from a portion of said head and continuously through said body and terminating at a bottom portion of said body, a one-piece flexible element extending through said flexible tube and being secured at opposite ends to means at the opposite ends of the tube whereby radical deformations of said head relative to said body are obviated and the original condition and position of said head relative to the toy body is restored by the force of said flexible tube and flexible element.

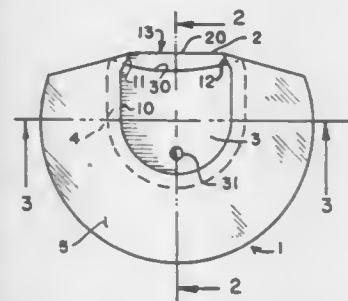
#### 4,341,037 GAME CALL

Robert R. Moss, Rte. 2, Cole Camp, Mo. 65325  
Filed Apr. 20, 1981, Ser. No. 255,889

U.S. Cl. 46—178

Int. Cl.<sup>3</sup> A63H 5/00

6 Claims



1. A game call comprising a plurality of planar, thin, flexible diaphragms separated from one another by at least one U-shaped, flat-sided frame of a thickness greater than said diaphragms, whereby said diaphragms lie in parallel planes, each of said diaphragms having a free open edge and being sealed around the remaining portion of its edge, the free edges of adjacent diaphragms being of different effective lengths.

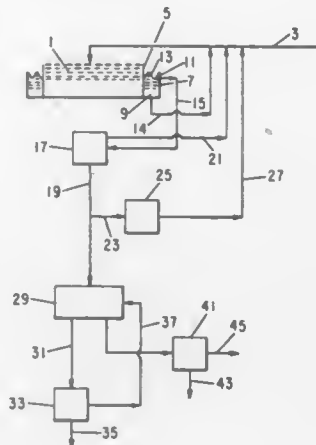
#### 4,341,038 OIL PRODUCTS FROM ALGAE

Moshe R. Bloch, 11 Assaf Simchoni, Beer Sheva; Joel Sasson, Hapalmach 30, Jerusalem; Margaret E. Ginzburg, 1 Dakar Alley, French Hill, Jerusalem, all of Israel; Zvi Goldman, 24 Diamond Ledge Rd., Stafford Springs, Conn. 06076; Ben Z. Ginzburg, 1 Dakar Alley, French Hill, Jerusalem, Israel; Nissim Garti, Alroi 5-B, Jerusalem, Israel, and Asher Porath, Kubovi 12, Jerusalem, Israel

Filed Jul. 2, 1980, Ser. No. 165,251  
Claims priority, application Israel, Jul. 3, 1979, 57712  
Int. Cl.<sup>3</sup> A01G 7/00

U.S. Cl. 47—1.4

23 Claims



1. A process for obtaining oil products from algae, which process comprises:

- growing halophilic, unicellular, swimming algae, having no cell walls, in a saline solution and in the presence of carbonic anhydrase enzyme derived from such algae;
- harvesting said algae to obtain an algae-salt water slurry;
- extracting oil products from said slurry employing a solvent for said products; and
- recovering said oil products and an algae residue.

#### 4,341,039

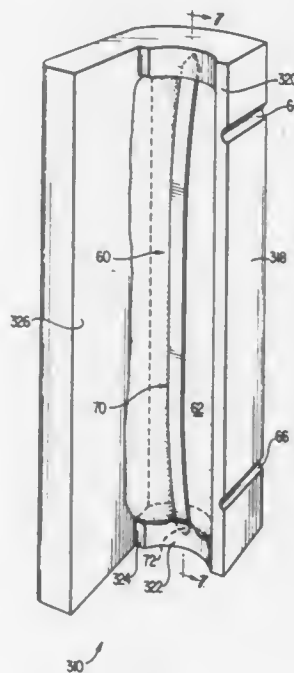
#### SELF-ADJUSTING PLANT INSULATOR WITH LIQUID CONTAINER

Stanton L. Reese, 726 Laurel La., Lakeland, Fla. 33803  
Continuation-in-part of Ser. No. 971,184, Dec. 20, 1978, abandoned. This application Oct. 31, 1979, Ser. No. 90,079

Int. Cl.<sup>3</sup> A01G 13/00

U.S. Cl. 47—2

28 Claims



1. An insulating device for thermally insulating the trunk of

a plant which includes a heat sink means positionable in close proximity to the portion of the trunk to be insulated, said heat sink means containing a liquid that freezes at a temperature slightly above the temperature at which damage to the plant occurs and that has a high latent heat of fusion; and means for holding said heat sink means in close proximity to the portion of the trunk to be insulated, said holding means being formed by two semirigid, thermally insulating elements which are self-adjusting so that the size of a cavity within said holding means increases as the size of the trunk increases, said latent heat of fusion being given up to the plant trunk during periods of reduced ambient temperature below that which would cause damage to the plant.

#### 4,341,040 CABINET

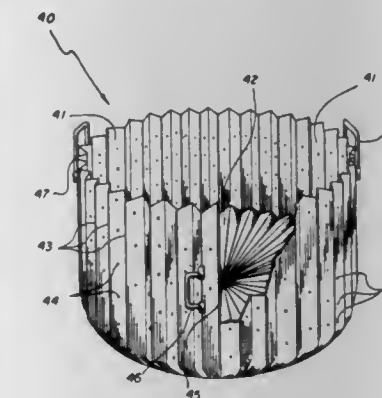
Ronald W. Smith, 2300 Lazy Hollow #343-D, Houston, Tex. 77063

Division of Ser. No. 53,071, Jun. 28, 1979, Pat. No. 4,260,206.  
This application Jan. 2, 1981, Ser. No. 222,248

Int. Cl.<sup>3</sup> A01G 9/02

U.S. Cl. 47—73

2 Claims



1. A planter comprising:

- a bottom rigidly joined to a plurality of vertical sides, said planter being open at its top; and
- a plant container removably positionable atop said bottom and intermediate said sides, said plant container comprising:
  - a unitary member of biodegradable material having a bottom and side portion said bottom and sides including uniformly spaced ridges with apertures intermediate said ridges, said side portion further including means for manually dividing adjacent portions of said side portion, whereby a plant contained therein may easily be removed.

#### 4,341,041

#### EXPLOSION RELIEF MEANS

Dennis G. Bloomfield, Stourbridge, England, assignor to Steel-ley Engineering Limited, West Midlands, England

Filed Mar. 21, 1980, Ser. No. 133,492

Int. Cl.<sup>3</sup> E05B 65/10

U.S. Cl. 49—141

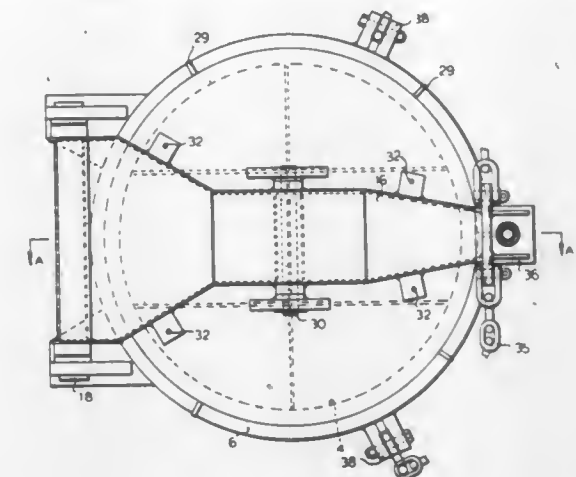
19 Claims

1. In or for a processing plant, explosion relief means adapted to be mounted over an opening in the processing plant, to provide relief for the plant in the event of an internal explosion, said relief means comprising

- a mounting device adapted to be secured to the plant adjacent to the opening;
- a securing device adapted to be secured to the plant on the side of the opening generally opposite to the mounting device;
- a door assembly adapted to be mounted on the mounting device for pivotal movement relative thereto;
- closing mechanism operative between the door assembly and the securing device to hold the door assembly in a closed position relative to the opening, said closing mechanism being adapted to allow the door assembly to open

when the pressure within the plant rises above a predetermined pressure; and

- an elongate tension member adapted to be mounted so as to extend across the door assembly and which is operative,



subsequent to initial opening movement of the door assembly, to engage the door assembly and to apply a force to the door assembly acting to move the door assembly towards its closed position.

#### 4,341,042

#### SLIDING DOOR SPACER

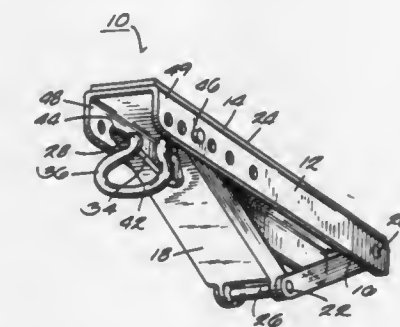
Donald A. Schulz, Wauwatosa, Wis., assignor to S-B Manufacturing Co., Ltd., Milwaukee, Wis.

Filed Aug. 29, 1980, Ser. No. 182,721

Int. Cl.<sup>3</sup> E05D 15/06

U.S. Cl. 49—404

7 Claims



1. A door spacer to prevent vertical movement of a sliding door into the space adjacent its top track member comprising:

- a rigid, elongate base member;
- mounting means to mount said base member generally horizontally within said space; and
- first and second rigid legs attached to said base member by first and third means of attachment and to each other by second means of attachment to form a triangle with a generally horizontal base and an apex, adjacent said second means of attachment, extending vertically into said space,
- wherein said first and second means of attachment are respectively first and second pivotal linkages allowing rotation around first and second transverse axes,
- and wherein said third means of attachment comprises locking means which is fixed to one end of said second leg and lock receiving means on said base member to receive said locking means at a selected one of at least two longitudinally separated points, whereby to allow adjustment of the vertical distance between said apex and said base member by adjusting said locking means of said third means of attachment longitudinally relative to said base member.



4,341,043

**WEATHERTIGHT SLIDING SASH WINDOW ASSEMBLY**

Yukio Yamamoto, and Takeo Uehara, both of Uozu, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

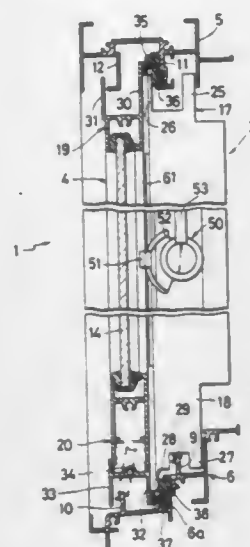
Filed Aug. 12, 1980, Ser. No. 177,402

Claims priority, application Japan, Aug. 16, 1979, 54-103542

Int. Cl.<sup>3</sup> E05D 13/04

U.S. Cl. 49-449

7 Claims



1. A weathertight sliding sash window assembly comprising:
  - (a) an outer frame defining a window opening;
  - (b) a pair of relatively movable, overlapping interior and exterior sashes mounted within said outer frame for opening and closing said window opening, said interior and exterior sashes having a pair of meeting first and second stiles, respectively;
  - (c) a pair of mating first and second fastener members mounted on said first and second stiles at respective mid-positions thereof, said first fastener member being movable between a locked position in which said first fastener member engages said second fastener member to keep said interior and exterior sashes closed and an unlocked position in which said first fastener member releases said second fastener member to be opened;
  - (d) a pair of first and second engaging members disposed on and extending longitudinally of said first and second stiles, respectively, said first engaging member being movable between a first position in which said first engaging member pulls said second engaging member interiorly to force said second stile firmly on to said first stile throughout their lengths and a second position in which said first engaging member releases said second engaging member to allow said second stile off said first stile; and
  - (e) means on said first stile for moving said first engaging member between said first and second positions in response to said first fastener member's movement between said locked and unlocked positions.

4,341,044

**MACHINE FOR GRINDING GASHES IN END MILL CUTTERS**

James R. Cross, Florissant, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed May 19, 1980, Ser. No. 151,269

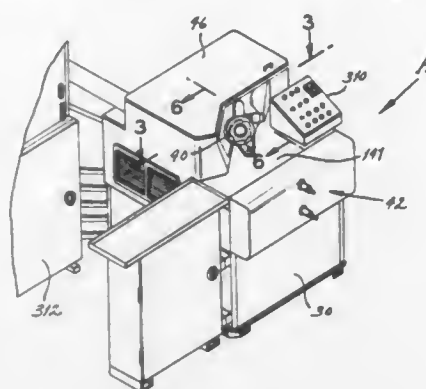
Int. Cl.<sup>3</sup> B24B 3/06

U.S. Cl. 51-5 D

22 Claims

6. A machine for grinding gashes into the end of a rotary cutting tool blank, such as the blank from which an end mill is derived, said machine comprising: a base; a grinding wheel that revolves about an axis; means for supporting the grinding wheel on the base and for moving the grinding wheel such that its periphery repeatedly passes through a grind point that is fixed in position with respect to the base; a work head for holding a cutting tool blank; indexing means on the work head for rotating the blank incrementally about the tool axis as the tool is held in the work head; means for supporting the work

head on the base such that the end of a blank that is held by the work head is at the grind point, and for further permitting the work head to pivot for purposes of adjustment about a first axis that is parallel to the axis of the grinding wheel and about a second axis that is perpendicular to the first axis; and first feed means for incrementally advancing the work head so that the cutting tool blank carried by it moves into the grind point, thus enabling the grinding wheel to cut into the blank and create



gashes that open out of the end of the blank; the first feed means and the indexing means being correlated with the means for supporting and moving the grinding wheel such that the first feed means and indexing means change the position of the blank with respect to the base only when the grinding wheel is remote from the grind point and out of contact with the blank, whereby that the blank is held in a fixed position with respect to the base as the grinding wheel cuts into its end.

4,341,045

**ADAPTER CHUCK FOR MOUNTING LENS BLANKS**

Frank D. Sorrells, Knoxville, Tenn., assignor to Cole National Corporation, Cleveland, Ohio

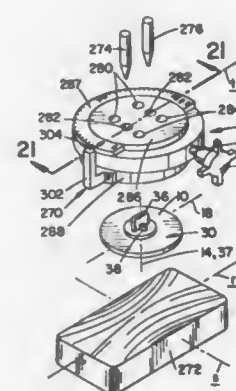
Division of Ser. No. 44,991, Jun. 4, 1979, Pat. No. 4,267,672.

This application Nov. 18, 1980, Ser. No. 207,924

Int. Cl.<sup>3</sup> B24B 13/02

U.S. Cl. 51-216 LP

9 Claims



1. An adapter chuck for use in orienting a lens blank so that a predetermined axis angle for said lens blank angularly disposed from a lens blank base line may be placed in general parallel alignment with the base curve of a lap in lens blank fining and polishing apparatus to accommodate any axis previously incorporated into said lens blank during a lens surface generating operation and wherein said lens blank has a lens block affixed thereto at the lens blank frame center axis so as to extend outwardly from the opposite lens blank face which is to be fined and polished, said adapter chuck comprising: a generally cup-shaped adapter body having an upper end wall and a side wall with a cylindrical receiving cavity extending coaxially inward into said body from a lower end wall thereof, said upper end wall including mounting means adapted to fixedly position said adapter chuck relative to said fining and polishing apparatus and with said adapter body further including an angle measuring scale fixedly

secured thereto; a generally cylindrical seat block having at least a longitudinal portion thereof received in said receiving cavity for selective rotation about the longitudinal axis of said chuck, said seat block including indicator means cooperable with said scale for indicating the relative rotated position of said seat block to said adapter body from a first normal position and a predetermined second position angularly spaced therefrom by an amount equal to said lens blank axis angle; means cooperating between said adapter body and seat block for retaining said seat block in said receiving cavity while allowing selective rotation therebetween and substantially preventing relative lateral, longitudinal and angular movement therebetween; receiving means in the outermost end wall of said seat block for receiving said lens block with said lens blank frame center axis positioned substantially coaxial with said adapter chuck longitudinal axis and with said lens block substantially fixed against lateral, angular and rotational movement relative to said seat block while being freely longitudinally separable therefrom, said lens blank base line and said lap base curve being substantially aligned parallel to each other when said chuck is fixedly positioned relative to said fining and polishing apparatus by said mounting means with said seat block in said first normal position; and, locking means penetrating said adapter body side wall and being selectively movable into and out of locking engagement with said seat block for respectively preventing and allowing relative rotation between said adapter body and seat block.

4,341,046

**TOOL GRIND FIXTURE**

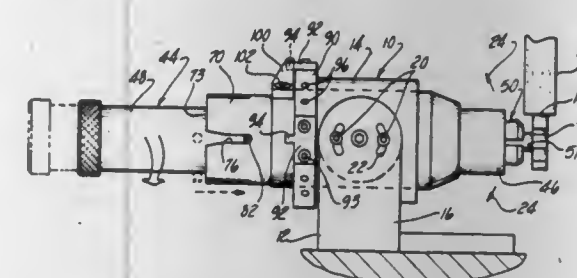
Bernard M. Pollington, 110 6th St., Marion, Mich. 49665

Filed Aug. 25, 1980, Ser. No. 180,825

Int. Cl.<sup>3</sup> B24B 3/22

U.S. Cl. 51-225

8 Claims



1. A tool sharpening fixture comprising: a housing having a throughbore, a bushing having a throughbore and rotatably mounted in said housing throughbore, stop means for limiting the rotation of said bushing between two preselected rotational positions, an elongated member insertable through said bushing throughbore so that a portion of the elongated member extends outwardly from each end of the housing throughbore, a pin secured to and extending radially outwardly from one side of said elongated member, means at one end of said elongated member for holding a tool to be sharpened, and means for locking said member to said bushing at preselected rotational positions of said member with respect to said bushing, said locking means comprising an indexing ring having a plurality of axially extending slots formed through it at circumferentially spaced positions around the ring, said slots being open to one axial end of the ring, means for detachably securing the other axial end of said ring to said bushing, wherein each of said slots is dimensioned to axially slidably receive said pin therein so that, upon insertion of said pin into one of said slots, said elongated member is locked to said bushing.

4,341,047

**METHOD FOR GRINDING THREAD CUTTING TOOLS**

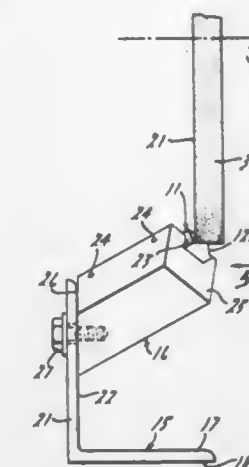
Joseph F. St. Denis, Roseville, Mich.

Division of Ser. No. 120,906, Feb. 12, 1980, abandoned. This application Apr. 13, 1981, Ser. No. 252,791

Int. Cl.<sup>3</sup> B24B 1/00

U.S. Cl. 51-288

2 Claims



1. A method of sharpening a cutting edge and grinding a relief angle on an elongated thread cutting tool, comprising the steps of holding said tool in a tool holder with the cutting edges of the tool exposed at one end of said tool holder, and holding the tool holder with the longitudinal axis of said tool inclined from a supporting surface at the thread angle by means of a flat positioning surface formed on the other end of said holder also at the thread angle with respect to said longitudinal axis and for angular adjustment about an axis disposed at right angles to said supporting and positioning surfaces, releasably clamping said supporting and positioning surfaces solidly together sharpening a cutting edge of said tool by a back and forth motion using the periphery of a grinding wheel, unclamping and angularly adjusting said tool holder in one direction about said axis until the relief angle for said cutting edge is obtained, reclamping the tool holder in the angularly adjusted position, and grinding a relief angle for the sharpened cutting edge again by a back and forth motion of said grinding wheel.

4,341,048

**METHOD AND ASSEMBLY FOR CLADDING A WINDOW FRAME**

Mearl J. Minter, Oskaloosa, Iowa, assignor to Rolscreen Company, Pella, Iowa

Filed May 27, 1980, Ser. No. 153,448

Int. Cl.<sup>3</sup> E06B 1/04, 3/00

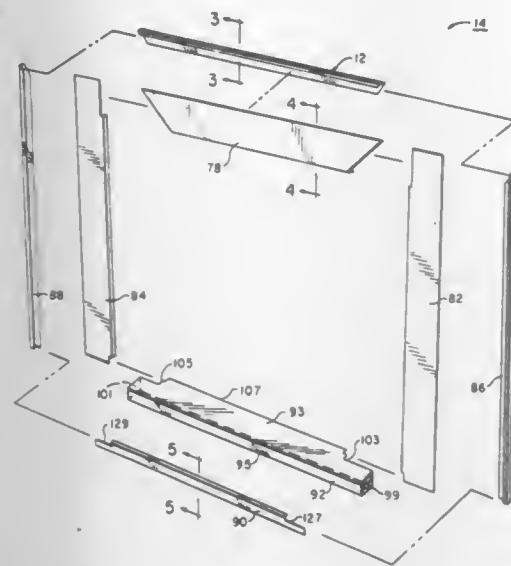
U.S. Cl. 52-211

7 Claims

1. An assembly for the exterior cladding of an existing window frame having a plurality of window frame members the assembly comprising: a plurality of window frame expanders each including an elongated, generally planar cladding portion adapted to clad a window frame member of the window frame and further adapted to overlie a hereinafter defined fastener flange, the window frame expander further including an elongated receptor-received end adapted to be received by a hereinafter-defined receptor, the cladding portion of the window frame expander having a back surface adapted to be disposed adjacent the said window frame member of the window frame and a front, display surface adapted to be displayed to the environment; and a plurality of window frame expander receptors each including an elongated fastener flange adapted to receive fasteners therein and an elongated, flexible receptor flange adapted to define a frame expander receiving zone along the fastener flange and further adapted to receive and retain the receptor-received end of the frame expander in the frame expander receiving zone;



whereby the window frame members of the existing, exterior window frame may be clad, the fasteners covered by



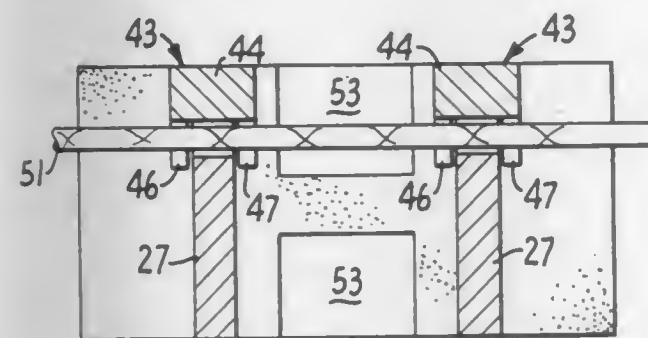
the frame expanders and a moisture barrier created between the environment and the fasteners.

**4,341,049**  
**SYSTEM FOR BUILDING WALL CONSTRUCTION**  
Peter H. Y. Hsi, Honolulu, HI., assignor to MPH Ltd., Honolulu, HI.

Filed Jun. 21, 1979, Ser. No. 50,600  
Int. Cl.<sup>3</sup> F04B 2/38

U.S. Cl. 52-421

9 Claims



1. A system for building wall construction, comprising a plurality of hollow cast concrete blocks of rectilinear form laid up in stacked courses to define a wall, said blocks being formed with spaced transverse webs defining vertically aligned openings extending substantially the height of said wall, the upper portions of said webs being relieved to define grooves providing openings for horizontal reinforcing rods, cast concrete closure members positioned at selected of said grooves and formed for preventing communication thereat between adjacent of said vertically aligned openings, and an epoxy bonding agent securing together confronting surfaces of said blocks.

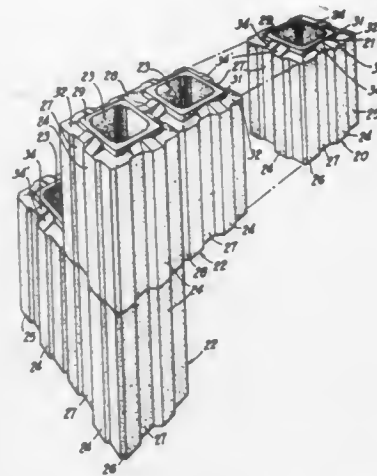
**4,341,050**  
**CONSTRUCTION MODULE**  
Leonard L. Long, 2025 Peachtree Rd., NE., Suite 7, Atlanta, Ga. 30309  
Continuation of Ser. No. 23,261, Mar. 23, 1979, abandoned. This application Oct. 23, 1980, Ser. No. 199,846  
Int. Cl.<sup>3</sup> E04C 1/10

U.S. Cl. 52-589

11 Claims

1. A construction module in the general form of a rectangular parallelepiped including side faces which are arranged upright in use and are corrugated for interlocking engagement

with the corrugations of like modules in a structure, and the module having male and female end faces, the female end face comprising the relief negative of the male end face, whereby opposing male and female end faces of plural modules in stacked relationship in a structure may interfit in positively locked relationship, the male and female end faces of the module including concentrically arranged inner and outer shoulder surfaces extending continuously around the margin of the module with the inner shoulder surface being substantially rectangular and the outer shoulder surface extending to and joining said corrugated side faces of the module, each corru-



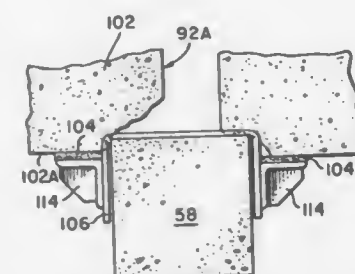
gated side face of the module having at least one rib projecting from the normal plane of the side face and at least one adjacent recess parallel to the rib and being formed inwardly from the normal plane of the side face with the outer surface of said rib and the inner surface of said recess being flat, and the module having a flat end face normal to said side faces at each opposite end thereof, and defining planes of maximum projection of the male end face of the module and maximum relief for the female end face of the module so that said module provides positive interlocking and self-aligning means on all side surfaces as well as on the opposite end faces thereof that present a flat abutment surface.

**4,341,051**  
**BUILDING STRUCTURE AND PROCESS OF BEAM ASSEMBLY THEREIN**

William J. Sim, 4068 Arjay Cir., Ellicott City, Md. 21043, and Ronald M. Marth, 5409 Lucy Dr., Waldorf, Md. 20601  
Division of Ser. No. 136,390, Apr. 1, 1980, Pat. No. 4,296,048.  
This application Dec. 18, 1980, Ser. No. 217,695  
Int. Cl.<sup>3</sup> E04B 1/38

U.S. Cl. 52-702

15 Claims



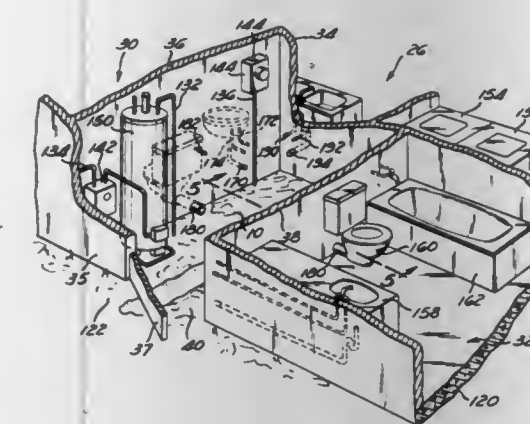
1. The method of supporting an end of a first precast concrete beam on an underlying supportive second precast concrete beam at an angle to said first beam, comprising placing inverted straps over the second underlying beam adjacent the ends of said first beam, fixedly attaching an angle member to and between said straps, said angle having a vertical leg which is attached to said straps and a horizontal leg in operative underlying supportive engagement with the underside of first beam.

**4,341,052**  
**BUILDING UTILITY CORE**  
John C. Douglass, Jr., 863 Ave. Acapulco, San Clemente, Calif. 92672

Filed Jun. 17, 1980, Ser. No. 160,425  
Int. Cl.<sup>3</sup> E04B 5/48

U.S. Cl. 52-742

3 Claims



1. An improved method of constructing a residential structure, comprising:  
pouring a concrete slab on the ground at a building site to form the floor of several rooms within the perimeter of said residential structure, and to form a recessed area within said perimeter at which concrete is not poured in which said ground forms the floor;  
erecting on site the walls and roof of said several rooms to arrange utility intensive rooms around said recessed area, the walls of said utility intensive rooms at least partially enclosing said area;  
before or after pouring said slab extending main service utility connections below the ground into said area;  
extending piping through said walls enclosing said area and connecting it to one or more fixtures disposed in said utility intensive rooms;  
connecting said piping to said main service utility connections in said area; and  
after completion of the building said piping being readily accessible from the interior of said area.

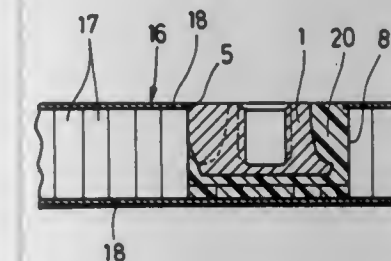
**4,341,053**  
**BUILT-IN CONNECTOR ELEMENT FOR SANDWICH TYPE COMPOUND PANELS**  
Karl Dettfurth, and Bernd Dettfurth, both of Hamburg, Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Filed Mar. 10, 1980, Ser. No. 128,558  
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911058

U.S. Cl. 52-787

Int. Cl.<sup>3</sup> E04C 2/00

11 Claims



1. A connector element adapted for anchoring into a sandwich type compound panel, comprising a single piece body having a central opening and anchoring means in the form of anchoring fins extending integrally and radially out of said single piece body, said anchoring fins extending substantially concentrically relative to said central opening for holding said

connector element in said panel, threaded means in said central opening of said single piece body, said single piece body further comprising an upper part with fin corners formed by said anchoring fins, said single piece body further comprising a single substantially rounded flange located as an integral part of said single piece body opposite said fin corners, said anchoring fins merging into said lower substantially rounded single flange, said fin corners defining a first circle having a given diameter, said first circle extending concentrically with said central opening, said single flange defining a second circle, said given diameter of said first circle being equal to or larger than said second circle, whereby said anchoring fins merge into said lower flange.

**4,341,054**  
**APPARATUS FOR FILLING AND HEAT SEALING A BAG**  
Michel P. G. Courtheoux, Chateaufort, France, assignor to Etablissements Courtheoux, Bondy, France  
Filed Apr. 30, 1980, Ser. No. 145,358  
Claims priority, application France, Jun. 13, 1979, 79 15167  
Int. Cl.<sup>3</sup> B65B 3/16

U.S. Cl. 53-268

2 Claims



1. An apparatus for manufacturing a closed flexible plastic bag filled with a liquid product and having a bottom, a top with an opening and two edges, comprising a basket into which said bag is placed; means for closing the top of the bag by heat welding; means for holding the top of the bag at a constant level, said holding means including edge moving means for bringing the two edges of the opening in contact with each other, said edge moving means comprising two vertical fingers engaged at the centre of the opening and moved away from each other by a mechanism to opposite zones in said opening as far as possible from each other; means for raising the basket for raising the bottom of the bag; means for filling the bag with a liquid product through the opening; and means for operating simultaneously the means for raising the basket for raising the bottom of the filled bag and the means for holding the top of the filled bag at a constant level.

**4,341,055**  
**METHOD FOR FORMING PAPER BOXES AND THE LIKE**  
Donald F. Williams, 15 W. Mason St., Santa Barbara, Calif. 93102, and Charles L. Phy, Rte. 2, Box 143, McEwen, Tenn. 37101  
Division of Ser. No. 786,955, Apr. 12, 1977, Pat. No. 4,194,441.  
This application Jan. 30, 1980, Ser. No. 116,898  
Int. Cl.<sup>3</sup> B65B 11/18

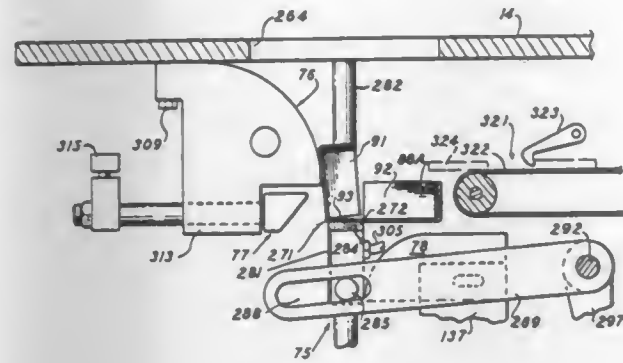
U.S. Cl. 53-462

2 Claims

1. A method of forming a folded box from a blank having a hinge panel joining cover and receptacle sections with each section having end and side flaps including the steps in order of forming the blank into a tray, joining the end and side flaps at the junctures thereof, grasping said formed tray at the hinge



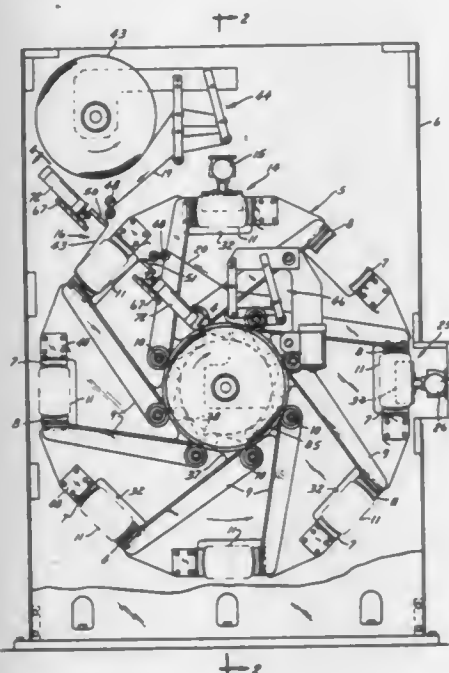
panel, and carrying said tray into engagement with folding elements to bend said cover and receptacle sections toward



each other along said hinge panel until said respective section end and side flaps overlap.

**4,341,056**  
**MACHINE FOR COMPRESSION BAND PACKAGING**  
 Dale D. Leanna, Little Suamico; Allen R. Jorgensen, Abrams, and Eugene W. Wittkopf, Suamico, all of Wis., assignors to Magna-Graphics Corporation, Oconto Falls, Wis.  
 Filed Mar. 17, 1980, Ser. No. 130,814  
 Int. Cl.<sup>3</sup> B65B 11/30, 13/20

U.S. Cl. 53—529



1. Apparatus for forming packages, each comprising a band of thermoplastic sheet material that snugly surrounds a quantity of a resiliently compressible product and maintains it under substantial compression, said apparatus being characterized by:
  - A. a turret rotatable about an axis and having a radially outwardly opening bay in its periphery that extends axially therethrough to have open ends and is carried in one orbital direction by turret rotation successively past a loading station, a banding station and an unloading station;
  - B. a pair of elongated, blade-like carrier jaws, each having at one of its ends a connection with said turret,
    - (1) said connections disposing the carrier jaws
      - (a) at circumferentially opposite sides of said bay,
      - (b) both projecting lengthwise in one axial direction from said turret, and
      - (c) with a lengthwise extending surface of each in opposing relation to a surface of the other, and
    - (2) the connection of one of said carrier jaws with the turret comprising a lever having
      - (a) an attachment portion to which said one end of said one carrier jaw is fixed,

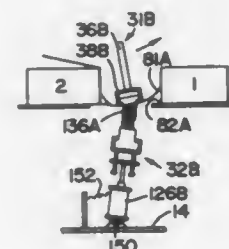
- (b) a fulcrum connection with the turret that is spaced from said attachment portion, and
  - (c) a cam follower spaced from said attachment portion and said fulcrum connection;
- C. a loading pusher at said loading station;
- D. means for moving said load pusher in a direction parallel to said opposing surfaces of the carrier jaws for inserting a quantity of product between them;
- E. banding means at said banding station for
  - (1) causing a portion of a web of thermoplastic sheet material to form a loop embracing the carrier jaws and product between them,
  - (2) producing at least one seam which forms the loop into a closed band surrounding the carrier jaws and product between them, and
  - (3) severing said band from the remainder of the web;
- F. a cam substantially concentric with said turret and confined against rotation, said cam being engaged by said cam follower and being arranged to swing said lever
  - (1) to move said one carrier jaw towards the other when the carrier jaws are between the loading station for compressing the product that has been inserted between the jaws and the banding station and
  - (2) to move said one carrier jaw away from the other when the carrier jaws are between the banding station and the unloading station for tensioning the band into contact with the portions of the product that are exposed between the jaws;
- G. an unloading pusher at said unloading station; and
- H. means for moving said unloading pusher in said one axial direction through the open ends of said bay and between said carrier jaws to effect simultaneous disengagement from them of product inserted between them at the loading station and a band installed around them at the banding station.

4 Claims

**4,341,057**  
**WRAPPING MACHINE**  
 Jean-Louis Limousin, Clearwater, Fla., assignor to Pet, Inc., St. Louis, Mo.  
 Continuation of Ser. No. 944,858, Sep. 22, 1978, abandoned. This application Jun. 18, 1980, Ser. No. 160,615  
 Int. Cl.<sup>3</sup> B65B 11/10

U.S. Cl. 53—553

9 Claims



1. A machine for wrapping heat sealable sheet material about at least a portion of an object, comprising:
  - a conveyor having a forward terminal end, the conveyor establishing a transport path in a given direction to continuously move said object;
  - a first sealing member on one side of said path having a central hub, a plurality of discrete arms each extending from the hub to a terminal end and a sealing element carried by each of the terminal ends;
  - means mounting and continuously driving the first sealing member to rotate the terminal end sealing elements in a path substantially aligned with and tangential to the transport path for sequentially placing the sealing elements at a work station aligned with the transport path in space beyond the conveyor terminal end;
  - a second sealing member on opposite side of said path with a sealing element;
  - passive means for mounting the second sealing member to

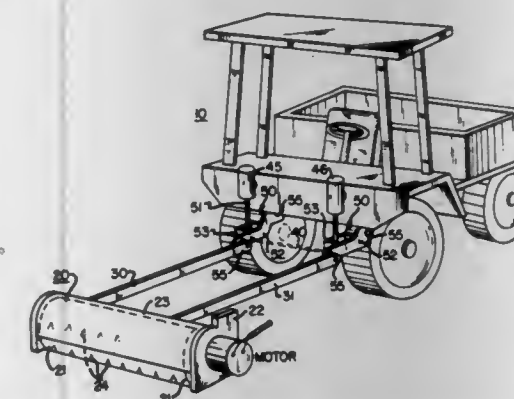
permit the sealing element thereof to swing through an arcuate segment path; the passive means lacking integral driving means for advancing the second sealing member; means for moving the element of the second sealing member in substantially perpendicular direction to said transport path into and out of contact with a sealing element of said first sealing member in the work station, the second sealing element being pulled along in said arcuate segment path in said direction due to only its contact with and the continuous movement of the element of the first sealing member; means urging the second sealing member in a direction opposite to said given direction to a position aligned with the work station whereby the second sealing member will return after the first sealing means loses contact therewith; means for directing a supply of the sheet material in descending alignment over the conveyor to the work station; one of the sealing members presenting a heated fuser element for sealing and severing said heat sealable sheet upon contact of said first and second sealing elements; control means for driving the conveyor, for rotating said first sealing member and for moving the element of said second sealing member in a programmed sequence to bring the sealing elements into working contact at the work station when each terminal sealing element of the first sealing member is positioned in the work station whereby the sheet material is tucked over the object by the cooperative action of two sequential arms of the first sealing member, and a series of objects may flow through the work station uninterrupted and the sheet material in severed in proportion to the object size.

**4,341,058**  
**EXERCYCLE MOWER APPARATUS**  
 Andrew Chun, 1410 172nd Pl., SW., Alderwood Manor, Wash. 98036

Filed Feb. 5, 1981, Ser. No. 231,808  
 Int. Cl.<sup>3</sup> A01D 53/00

U.S. Cl. 56—2

5 Claims



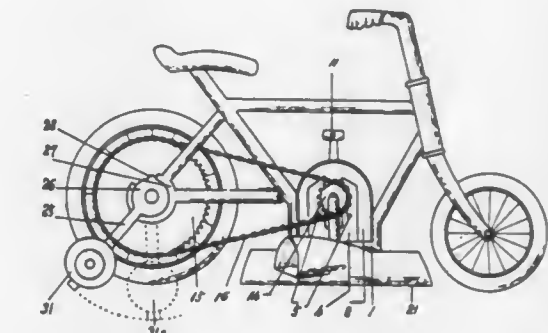
1. A pedal powered exercycle mower apparatus for cutting ground cover, said apparatus comprising in combination:
  - a mobile vehicle member having a main supporting frame including a pair of major wheels, front and rear, and an auxiliary frame including a pair of rear minor wheels, left and right;
  - means for cutting ground cover within a path traversed by said member, said means being mounted on said main supporting frame;
  - a pair of foot pedals mounted on said main supporting frame for powering said apparatus by manual rotational movement about a horizontal axis transverse to the longitudinal axis of said main supporting frame;
  - means, mounted on said main supporting frame, for apportioning power derived from rotational movement of said foot pedals to drive said means for cutting ground cover and to concurrently drive said apparatus in a forward or rearward direction; and
  - means for applying a spring loaded force on said auxiliary frame to enhance stability of said mobile vehicle member for mowing operations and to cause said pair of rear minor wheels to move in a forward arcuate direction when said

rear major wheel of said main supporting frame is elevated from ground level, to convert said apparatus to a stationary exercycle.

**4,341,059**  
**DUAL COUPLING MECHANISM FOR PROVIDING FLOATATIONAL OPERATION OF A FRONT MOUNTED CUTTING ASSEMBLY**  
 Michael Gerzanich, Hopelawn, N.J., assignor to LeHara Manufacturing Co., Inc., East Brunswick, N.J.  
 Filed Oct. 20, 1980, Ser. No. 198,786  
 Int. Cl.<sup>3</sup> A01D 49/00

U.S. Cl. 56—15.8

10 Claims



1. Apparatus for mowing vegetation on undulating terrains, including a vehicle of the type including a frame assembly having a front end with first and second extending tabs on said front end, each having an aperture and a back end, the improvement therewith of apparatus for providing a front, floatational mower suspension assembly, comprising:

a first and a second coupling section each comprising a main planar body having an aperture at a first end, an extending rod coupled to said body on a first side and having a depending flange with an aperture on said flange coaxial with said aperture on said first end, to provide a space therebetween for accommodating said extending tabs, with means inserted through said apertures to provide a pivot point for said planar body, said planar body having a box-like housing positioned on the side opposite that containing said rod,

first and second cylinder assemblies each having a movable piston, said cylinder assemblies coupled to said vehicle frame, with each piston coupled to an associated one of said planar bodies within said box-like housing, said planar members having a front end remote from said first end, a first and a second extending beam coupled to said front end of an associated planar body, and a cylindrical cutting head rotatably mounted between said beams.

**4,341,060**  
**CARRIAGE FOR A GRASS TRIMMING DEVICE**  
 Joseph M. Lowry, 308 Sweetbriar Dr., and Ernest E. Griffin, 12306 Ridgefield Pkwy., both of Richmond, Va. 23233  
 Division of Ser. No. 119,176, Feb. 6, 1980, Pat. No. 4,287,709.  
 This application Feb. 2, 1981, Ser. No. 230,807  
 Int. Cl.<sup>3</sup> A01D 50/00, 35/262

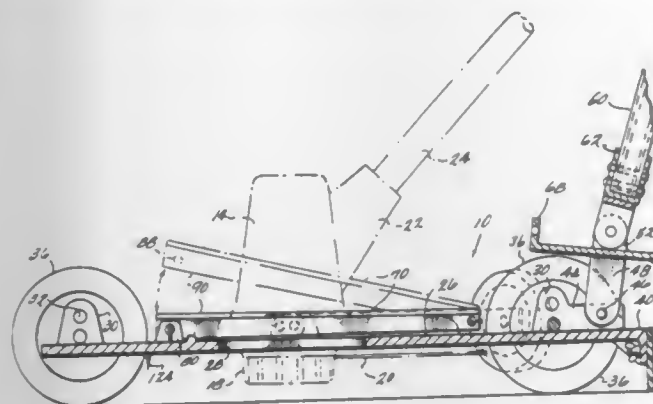
U.S. Cl. 56—17.5

3 Claims

1. A carriage for a trimming device of the type having a motor, a housing for the motor, a cutting element in the form of a length of cable connected to said motor so as to be rotatable about an axis at high speed for cutting grass, weeds and the like, said carriage comprising:
  - a platform having a top and a bottom side, means for supporting said platform for movement over the ground, an aperture in said platform for receiving and supporting a motor driven cutting device,
  - releasable clamping means movably mounted on said top

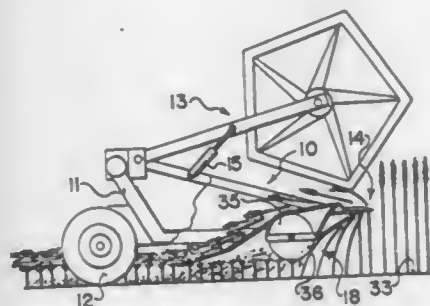


side of said platform for securely holding the cutting device in said aperture with the cutting element disposed to extend from said bottom side of said platform and with the motor on said top side thereof above said aperture, said clamping means including first and second retaining arms each having one end pivotally mounted on said top side of said platform at spaced apart locations, each arm being pivotable between an open position, wherein said aperture in said platform is unobstructed by said arms, and a closed position, wherein each said arm extends to a respective portion of said platform on the side of said



aperture opposite to said respective locations, said platform having grasping means for engaging and releasably holding the other ends of said retaining arms so that, when a motor housing is disposed in said aperture, said retaining arms will engage the housing when said retaining arms are in said closed position, said grasping means comprising a pair of hook members mounted on said platform, each hook member having an open portion facing said platform, each hook member being located so as to be engageable by the other end of an associated retaining arm.

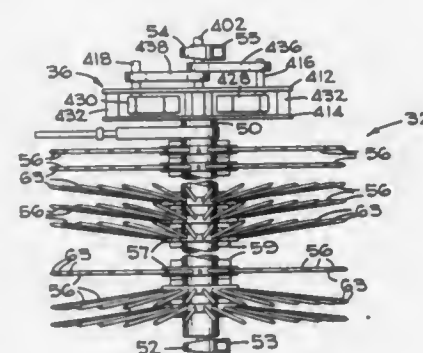
**4,341,061**  
**REEL-TYPE STUBBLE CONDITIONING DEVICE**  
Warren Denzin, R.R. #1, Regina, Saskatchewan, Canada  
Filed Oct. 14, 1980, Ser. No. 196,603  
Claims priority, application Canada, Nov. 28, 1979, 340827  
Int. Cl.<sup>3</sup> A01D 43/00  
U.S. Cl. 56—192 7 Claims



1. In a swather which includes a frame, a transverse cutter bar assembly for cutting a swath including a transverse cutter bar support member, a canvas assembly, and a swath discharge area at one end of the canvas of said canvas assembly; the improvement comprising a stubble conditioning assembly below said swath discharge area for conditioning the tops of the stubble over which the swath is to be deposited, said swather conditioning assembly including a horizontally located stubble cutting and conditioning reel component journaled for rotation within and below the swath discharge area and means supporting said reel component from the frame of the swather, said conditioning reel component including swather guide shield means over the upper side thereof for receiving the swath from the swath discharge area and depositing same upon the conditioned stubble therebehind, and means

operatively connecting said reel to a source of power, said shield means curving rearwardly and downwardly over part of said reel component.

**4,341,062**  
**COFFEE HARVESTER**  
Roy Scudder, Araraquara, Brazil, assignor to FMC Corporation, Chicago, Ill.  
Filed Jul. 18, 1980, Ser. No. 170,293  
Claims priority, application United Kingdom, Aug. 28, 1979, 7929833  
Int. Cl.<sup>3</sup> A01G 19/00  
U.S. Cl. 56—330 8 Claims

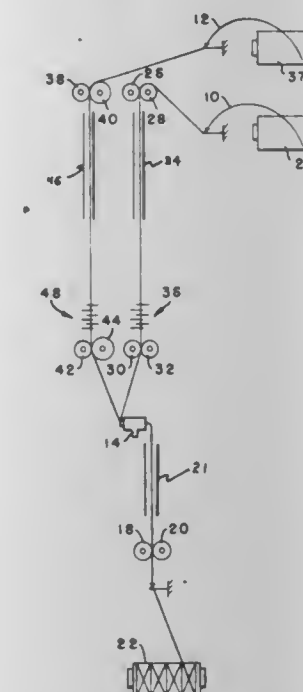


1. In a harvesting machine for harvesting crops growing on plants such as trees, bushes, canes, vines or the like, having stalks growing from the ground, said harvester having frame means, means for advancing the harvester in a direction along a row of stalks, means on said frame means for dislodging crops from the plants, endless conveyor means on said frame means having laterally spaced endless flexible side conveyors which straddle the crop along a crop receiving reach, means for driving said conveyors for moving said reach in a conveying direction opposite to the advance direction of the said harvester and having a zero speed relative to the ground, a row of individual crop catching and conveying trays mounted on each of said side conveyors; the improvement in said means for dislodging said crop comprising a rotatable central shaft mounting sets of axially spaced generally radially extending tine arrays where in each array the tines are regularly circumferentially spaced, split hubs releasably secured to said central shaft and formed with a plurality of bores in which the tines are fixed, said bores in certain hubs defining an acute angle with respect to the axis of said central shaft so that the tines fixed therein are correspondingly inclined with respect to the axis of the central shaft.

**4,341,063**  
**AIR TEXTURED YARNS**  
William F. Southerlin, Travelers Rest, and Paul W. Eschenbach, Moore, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.  
Filed Aug. 26, 1980, Ser. No. 181,636  
Int. Cl.<sup>3</sup> D02B 1/20; D02G 3/38  
U.S. Cl. 57—6 1 Claim

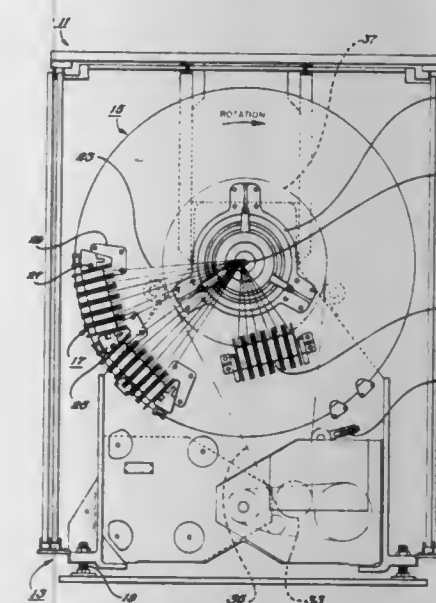
1. A method of making an air textured yarn having a core yarn and an effect yarn comprising the steps of: supplying a first partially oriented polyester yarn at a first feed rate, supplying a second partially oriented polyester yarn at a lower second feed rate, heating, false twisting, and drawing the first polyester yarn while cold drawing the second yarn, supplying

the first and second yarns into an air jet, supplying gaseous fluid into the air jet to commingle and texture the first and



second yarns and withdrawing the commingled and air textured yarn from the air jet at a third feed rate.

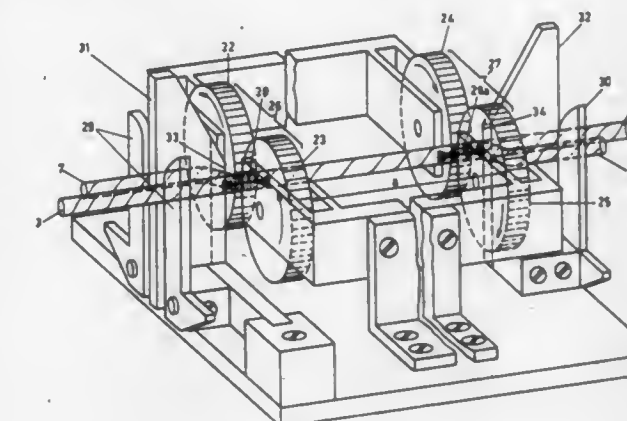
**4,341,064**  
**CABLE MAKING APPARATUS**  
Jasper D. Wells, and Robert M. Gilbert, both of Graham, Tex., assignors to Electric Hose & Rubber Company, Ocala, Fla.  
Filed Sep. 2, 1980, Ser. No. 183,015  
Int. Cl.<sup>3</sup> D07B 3/06; D04C 3/40, 1/12  
U.S. Cl. 57—13 4 Claims



1. In a cable braiding assembly including:  
a. a structural framework;  
b. a main rotation means rotatably supported on said structural framework having a central aperture for passage therethrough of a plurality of cables being braided into a main cable for being wrapped into respective layers in a hose or the like; and  
c. a plurality of bobbins comprising a plurality of cable spools supported on respective shafts on said main rotation means such that said cables can be pulled therefrom with respective degrees of tension to said central aperture for braiding;  
the improvement comprising:  
d. bearing and tensioning means for providing accurate rotation and adjustable tension on respective said cable spools such that respective said cables can be unwound

from respective said spools at a predetermined tension; said bearing and tensioning means comprising,  
1. a plurality of respective bushings and nuts nonrotatably supported by respective said shafts; each said bushing having a radially protruding base at a first end and threadably engaging a said nut at a second end opposite said first end and adapted to encompass therebetween a plurality of adjustably loadable bearings supporting said spool; and  
2. a plurality of adjustably loadable bearings; a pair of said bearings for each said spool; respective said bearings having respective angular contacts so as to adjust the tension in response to adjustment of thrust loaded onto the bearing by respective nuts against respective said radially protruding bases such that respective tensions for the respective cable spools can be adjusted individually by respective said nuts.

**4,341,065**  
**PRODUCTION OF BINDINGS OF FIBER BUNDLES**  
August Baumgartner, Uster, and Martin Plaschy, Zurich, both of Switzerland, assignors to Zellweger Uster Ltd., Uster, Switzerland  
Filed Jun. 8, 1981, Ser. No. 271,261  
Claims priority, application Switzerland, Jul. 23, 1980, 5612/80  
Int. Cl.<sup>3</sup> B65H 69/06; D01H 15/00  
U.S. Cl. 57—22 15 Claims



1. A method for the production of a binding for twisted fiber bundles, comprising positioning the fiber bundles to be bound together in at least approximately-parallel, closely-neighboring position to each other; applying shearing forces and tractive and/or compressive forces to at least a part of the circumference of each of the fiber bundles to be bound and on all of the fiber bundles by effecting physical contact between the same with the use of opposed moving deformation members, in order, on one hand, to change the original cross sections and/or the original structure of the fiber bundles to be bound, and, on the other hand, to at least partly release individual fibers from at least one of the fiber bundles to be bound and to displace them such that they finally wind around the fiber bundles to be bound in a force-locking manner at least in on part of the operational region of the deformation members; and then relocating the fiber bundles bound by the winding out of the operational region of the deformation members, characterized in that the forces are applied to the fiber bundles during binding in directions which are selected variably in different sections in the longitudinal direction of the binding to be produced.

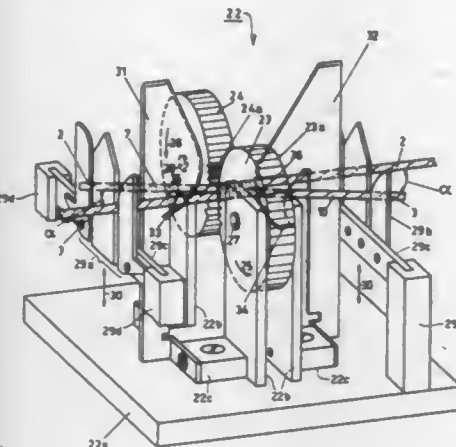


# 4,341,066 METHOD OF AND APPARATUS FOR THE BINDING OF FIBER BUNDLES

August Baumgartner, Uster, Switzerland, assignor to Zellweger Uster Ltd., Uster, Switzerland  
Filed Jun. 8, 1981, Ser. No. 271,262

Claims priority, application Switzerland, Jul. 23, 1980, 5611/80

Int. Cl.<sup>3</sup> B65H 69/06; D01H 15/00  
U.S. Cl. 57—22 16 Claims



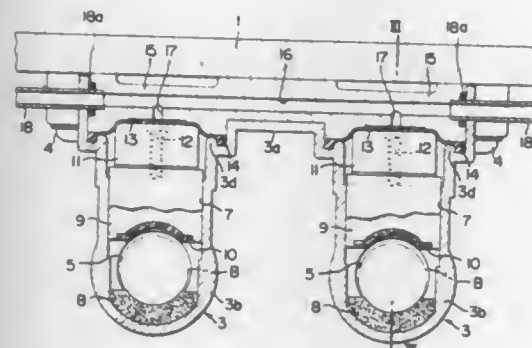
1. A method of binding of fiber bundles, comprising binding two fiber bundles together in a force-locking manner adjacent respective loose ends thereof; and during the binding of the fiber bundles, deflecting a loose end of a bundle out of its normal position, guiding that bundle away around an edge and severing the loose ends in such a manner that the loose end is intentionally frayed to a large extent by the said edge so that the remaining frayed portion on the side of the binding may be worked into the binding.

# 4,341,067 BOBBIN HOLDING DEVICE IN A DOFFING APPARATUS

Kanetaka Kondo, Nagoya; Takayuki Morita, Kariya, and Masashi Ushino, Hekinan, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan  
Filed Jan. 31, 1980, Ser. No. 117,304

Claims priority, application Japan, Feb. 10, 1979, 54/16000[U]

Int. Cl.<sup>3</sup> D01H 9/02; B66C 1/46  
U.S. Cl. 57—275 6 Claims



1. A bobbin holding device for use in a bobbin doffing and donning apparatus, said device comprising:  
an elongated doffing bar;  
a hollow body having a base portion connected to said doffing bar and means for receiving a bobbin;  
bobbin holding means positioned within said hollow body and movable relative to said bobbin receiving means between a projected position for holding a bobbin and a retracted position for releasing a bobbin;  
flexible means, positioned within said hollow body in fluid tight relation with respect to said bobbin holding means,

for moving said bobbin holding means from said retracted position thereof to said projected position thereof;  
means for supplying pressurized fluid from an external source to said flexible means without passing said fluid through said doffing bar, and for thereby causing said flexible means to move said bobbin holding means to said projected position, said supplying means comprising a rigid block member having therein a fluid passage extending in a direction parallel to said doffing bar throughout the entire length of said block member, a space between said block member and said flexible means, and said block member having therein at least one hole extending between said fluid passage and said space.

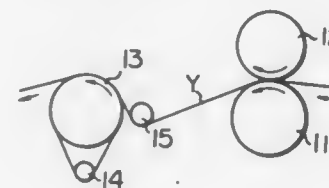
# 4,341,068 METHOD FOR PRODUCING AN IMPROVED BUNDLE OF FIBROUS ELEMENTS

Takao Negishi, and Kazuo Tomita, both of Otsu, Japan, assignors to Toray Industries, Incorporated, Tokyo, Japan

Division of Ser. No. 940,437, Sep. 7, 1978, Pat. No. 4,258,542. This application, Oct. 14, 1980, Ser. No. 196,916

Claims priority, application Japan, Mar. 13, 1978, 53-27634; Apr. 7, 1978, 53-40279; Jan. 16, 1978, 53-72224; Jul. 18, 1978, 53-87472; Jul. 18, 1978, 53-87473

Int. Cl.<sup>3</sup> D02G 3/34  
U.S. Cl. 57—288 18 Claims



1. A method for manufacturing fibrous bundles composed of a plurality of fibrous elements, at least a partial number of said fibrous elements provided with uneven thickness along axis thereof, said method comprising, supplying a bundle of fibrous elements having a property of constant tension elongation behavior within a specific temperature range into a drawing zone of a drawing process, moving said fibrous bundle while it is being bent by contact with a frictional resistance-imparting member and taking up the fibrous bundle by a take-up roller at a constant speed to draw said fibrous bundle, the temperatures of said member to be engaged with said fibrous bundle and the atmosphere of said drawing zone are maintained within said specific temperature range, a draw ratio expressed by (take-up speed)/(feed speed) is made lower than the inherent natural draw ratio of said fibrous elements and the running fibrous bundle is caused to fall into contact with said take-up roller in a yarn passage of said drawing zone at a point distant by 50 mm or less from a point where the fibrous bundle separates from said frictional resistance-imparting member.

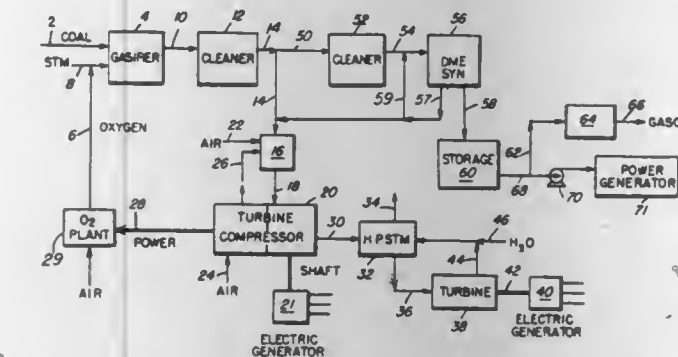
# 4,341,069 METHOD FOR GENERATING POWER UPON DEMAND

Weldon K. Bell, Pennington; Clarence D. Chang, Princeton, both of N.J., and Reuel Shinnar, Great Neck, N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 2, 1980, Ser. No. 136,637  
Int. Cl.<sup>3</sup> F02C 3/28 18 Claims

1. A method for generating power from coal which comprises:  
(A) gasifying coal in the presence of steam and oxygen to generate a syngas comprising hydrogen and carbon oxides;  
(B) passing a first portion of the generated syngas to a fired turbine-compressor prime mover driving an electric generator and expanding fired syngas in the turbine thereof,

and passing compressed air from said turbine-compressor prime mover to said fired turbine;  
(C) removing sulfur and nitrogen from a second portion of said generated syngas and passing said second portion in contact with a catalyst and under conditions to synthesize a dimethyl ether product, passing unreacted syngas sepa-



rated from said dimethyl ether product to one of said dimethyl ether synthesis reaction step or to said fired turbine; and  
(D) passing synthesized dimethyl ether to a storage zone and passing dimethyl ether from said storage zone to a fired turbine-compressor prime mover electric power generator.

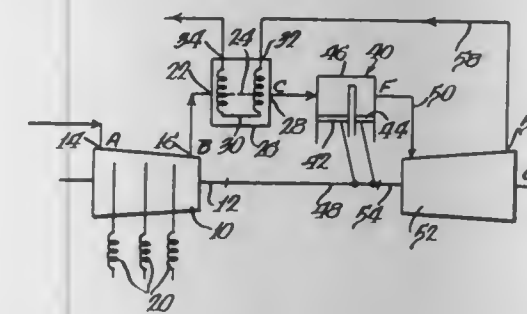
# 4,341,070 HIGH THERMAL EFFICIENCY POWER PLANT AND OPERATING METHOD THEREFOR

John M. Clarke, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00348, § 371 Date Mar. 31, 1980, § 102(e) Date Mar. 31, 1980, PCT Pub. No. WO81/02912, PCT Pub. Date Oct. 15, 1981

PCT Filed Mar. 31, 1980, Ser. No. 213,245  
Int. Cl.<sup>3</sup> F02C 6/00 4 Claims

U.S. Cl. 60—39.04



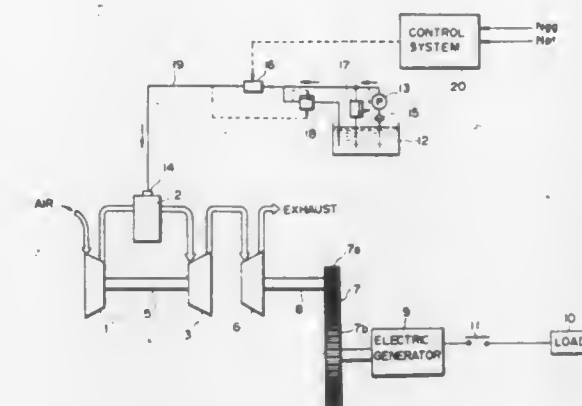
1. A method of performing work utilizing the energy of an expanding working fluid comprising the steps of:  
(a) substantially isothermally compressing a working fluid from an initial pressure to a predetermined degree;  
(b) thereafter adding heat to the working fluid under substantially constant pressure conditions;  
(c) thereafter substantially isentropically compressing the working fluid a further amount;  
(d) thereafter adding additional heat to the working fluid under substantially constant volume conditions;  
(e) thereafter substantially isentropically expanding the working fluid to substantially said initial pressure while extracting work therefrom;  
(f) thereafter extracting heat from the working fluid;  
(g) steps (c), (d) and at least the initial portion of step (e) being performed in a positive displacement mechanism having a higher expansion ratio than compression ratio.

# 4,341,071 FUEL CONTROL SYSTEM FOR A GAS TURBINE

Toshimi Abo, and Hidetoshi Kanegae, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed May 28, 1980, Ser. No. 154,050  
Claims priority, application Japan, Jun. 1, 1979, 54-68313  
Int. Cl.<sup>3</sup> F02C 9/26 7 Claims

U.S. Cl. 60—39.14 R



1. A gas turbine control system for a two-shaft gas turbine having a compressor turbine and a power turbine, which comprises:

- a fuel control valve for controlling the rates of fuel supplied into a combustion chamber of said two-shaft gas turbine, said fuel control valve being controlled by electric signals;
  - a control signal generator for outputting signals for supplying an optimum fuel supply rate to said fuel control valve as a function of the gas generator shaft speed of the compressor turbine;
  - a power turbine differential speed detector for determining the power turbine speed and for outputting differential speed signals between the actual speed and a target speed of the power turbine shaft;
  - a calculation unit for outputting a signal for giving an appropriate fuel supply rate to said fuel control valve after executing arithmetic operations in accordance with the differential speed signals supplied by said power turbine shaft differential speed detector;
  - a comparator for outputting a signal to switch from the signal from said control signal generator to the signal from said calculation unit at the moment the signal level of said calculation unit becomes less than that of said control signal generator, the outputs of both said control signal generator and said calculation unit being connected thereto; and
  - a first selector for switching from the signal from said control signal generator to that from said calculation unit at the moment said comparator outputs a corresponding signal, the outputs of both said control signal generator and said calculation unit being connected thereto, the output of said first selector being connected to said fuel control valve,
- whereby the two-shaft gas turbine is first controlled in accordance with optimum ignition fuel supply rates defined by a function stored in said control signal generator and next controlled in accordance with fuel supply rates detected and operated by said power turbine differential speed detector and said calculation unit after the power turbine speed approaches a target power turbine speed.



4,341,072

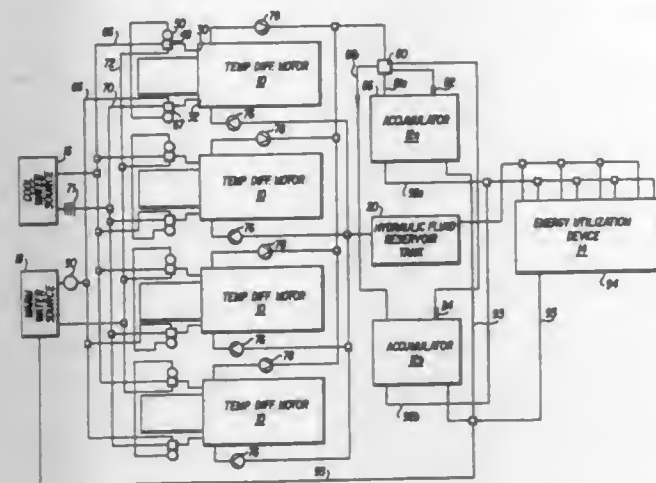
# METHOD AND APPARATUS FOR CONVERTING SMALL TEMPERATURE DIFFERENTIALS INTO USABLE ENERGY

Arthur J. Clyne, 5651 N. Luce Rd., Alma, Mich. 48801  
Filed Feb. 7, 1980, Ser. No. 119,287

Int. Cl.<sup>3</sup> F03G 7/06

U.S. Cl. 60—325

25 Claims



1. A method of reciprocating a working member comprising the steps of positioning the working member inside a container for reciprocation therein; sealing the edges of said working member to the sides of said container to thereby form sub-chambers on opposite sides of said working member inside said chamber; positioning a fusible substance in one of said sub-chambers having the characteristic of expanding or contracting upon passing through its fusion temperature, the fusion temperature of said substance being at least 10° F. above an unrefrigerated water temperature; circulating a coolant which has been cooled by unrefrigerated water in close proximity to said container to thereby cool said fusible material; thereafter circulating warm coolant at least 10° warmer than said fusion temperature in close proximity to said cylinder to warm said fusion material wherein said fusion material is calcium-chloride hexahydrate.

4,341,073

# CONTROL CIRCUIT FOR VARIABLE DISPLACEMENT PUMPS WITH OVERRIDE VALVE

William J. Spivey, Jr., Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

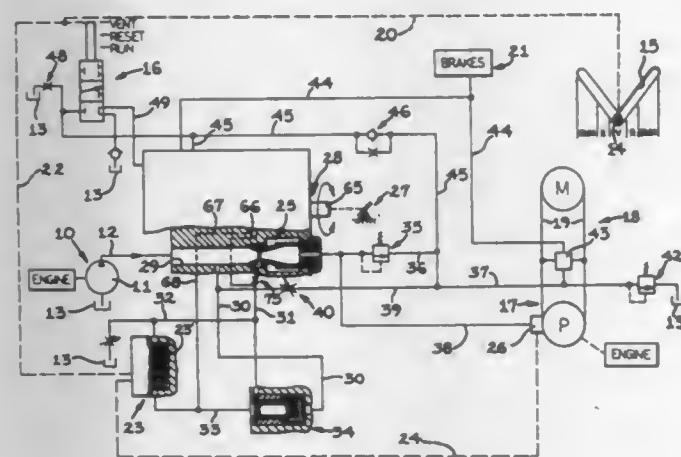
PCT No. PCT/US79/00413, § 371 Date Jun. 13, 1979, § 102(c) Date Jun. 13, 1979

PCT Filed Jun. 13, 1979, Ser. No. 89,126

Int. Cl.<sup>3</sup> F04B 49/00; F16H 39/46

U.S. Cl. 60—399

16 Claims



1. A control circuit comprising a source of pressurized fluid (10), variable displacement pump means (17) for having the displacement thereof varied, said variable displacement

pump means (17) including a servo system (26) adapted to vary the displacement of said pump means (17), a replenishing valve (43) connected between said source (10) and said pump means (17) to make-up loss of fluid and to controllably interrupt fluid from said pump means (17), pressure responsive control valve means (50,60) for controlling fluid pressure to and from said replenishing valve (43) when positioned in actuated and deactuated conditions of operation, respectively, primary control means (14,16,23,25) for effecting the communication of pressurized fluid from said source (10) to said replenishing valve (43) and actuatable for effecting the selective venting of pressurized fluid from said replenishing valve (43) and for varying the displacement of said pump means (17) through said servo system (26) between minimum and maximum values, said primary control means including control valve means (16) for communicating fluid pressure to said pressure responsive control valve means (50,60) to effect movement thereof to its actuated condition of operation and means (25) for creating a differential fluid pressure signal to said servo system (26) for controlling the displacement of said pump means (17) in response to actuation of said primary control means (14,16,23,25), and

override control means (27,28), independent of the supply of said source fluid to said primary control means (14,16,23,25) said pressure responsive control valve means (50,60), and said replenishing valve (43), for (A) selectively varying said signal to said servo system (26) for varying the displacement of said pump means (17) when said primary control means (14,16,23,25) is in its actuated condition of operation, independently of actuation of the control valve means (16) of said primary control means (14,16,23,25), in response to an initial movement of said override control means (27,28), and (B) venting pressurized fluid from said pressure responsive control valve means (50,60) to effect movement thereof to its deactuated condition of operation wherein pressurized fluid is vented from said replenishing valve (43) by said pressure responsive control valve means (50,60) and further varying the displacement of said pump means (17) through said servo system (26) in response to further movement of said override control means (27,28).

4,341,074

# WAVE-ENERGY CONVERTER

Michael J. French, United Kingdom Atomic Energy Authority, 11 Charles II St., London, SW1Y 4QP, England

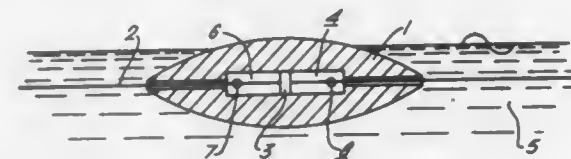
Filed Nov. 16, 1979, Ser. No. 94,855

Claims priority, application United Kingdom, Feb. 9, 1979, 7904658

Int. Cl.<sup>3</sup> F03B 13/12

U.S. Cl. 60—504

17 Claims



1. A device for converting the energy of waves on a liquid into useful work, the device comprising, a body arranged to be located in the liquid, means arranged to extend in a substantially horizontal direction for holding the body at the surface of the liquid in a manner to allow to and fro movement of the body in said direction in response to waves on the surface; said holding means comprising an elongate member arranged to extend through the body and along which elongate member said to and fro movement is allowed to occur, and means for

converting said to and fro movement of the body into useful work.

4,341,075

# METHOD AND A DEVICE FOR ENERGY CONVERSION

Anders D. Backlund, S-820 90 Ytterhogdal, Holmen, Sweden

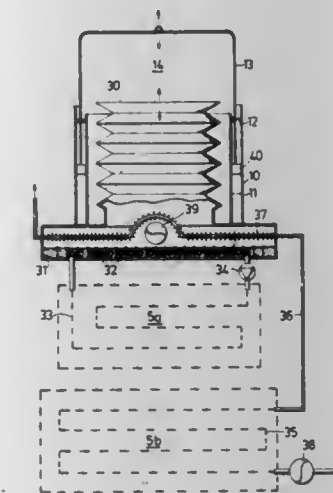
Filed Jan. 17, 1980, Ser. No. 112,896

Claims priority, application Sweden, Jan. 17, 1979, 7900397

Int. Cl.<sup>3</sup> F03G 7/06

U.S. Cl. 60—531

12 Claims



1. A device for converting low temperature heat energy into mechanical energy, comprising:  
at least one chamber containing a working fluid for performing work in response to temperature variations;  
at least one container having at least one expansible and compressible part, said at least one container part being disposed in said working fluid;  
at least one first and at least one second heat accumulator, each arranged to store and deliver heat by melting and freezing ice, said at least one second accumulator having an agent therein to depress the freezing point thereof to a temperature lower than the freezing point in said at least one first accumulator; and,  
a refrigerant disposed in said container, capable of shifting between liquid and gas phases and in heat exchanging contact with said at least one first and second accumulators for expanding and contracting said expansible and compressible container part depending upon the temperature thereof, said refrigerant being arranged to alternately be supplied with heat from said at least one first accumulator, being vaporized thereby so as to perform work by expansion of said at least one container part, and be cooled by said at least one second accumulator, being thereby condensed so as to perform work by contracting said at least one container part, whereby mechanical energy is imparted to said working fluid by the expansion and contraction of said at least one container part.

4,341,076

# HYDRAULIC BRAKE BOOSTER

Helmut Steffes, Eschborn, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,072

Claims priority, application Fed. Rep. of Germany, May 2, 1979, 2917684

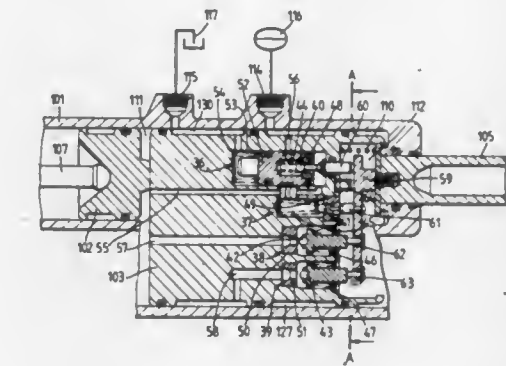
Int. Cl.<sup>3</sup> B60T 13/00

U.S. Cl. 60—547 R

13 Claims

1. A hydraulic brake booster comprising:  
a housing having a longitudinal axis;  
a working piston disposed in said housing coaxial of said axis for driving a master cylinder piston;  
a transmission piston disposed in said housing coaxial of said axis having one end thereof adjacent the end of said working piston remote from said master cylinder piston, said

transmission piston having a diameter greater than the diameter of said working piston;  
a transmission pressure chamber disposed in said housing between said working piston and said transmission piston, said transmission pressure chamber being filled with a pressure fluid;  
a drive pressure chamber disposed in said housing adjacent the other end of said transmission piston;  
a control piston disposed in said housing adjacent said other end of said transmission piston operable from a rest position by a brake pedal;  
a control valve arrangement disposed in said transmission piston controllable by said control piston, said control valve arrangement having an inlet valve to connect said



drive pressure chamber to a pressure fluid source and a discharge valve to connect said drive pressure chamber to a reservoir;  
a supply valve arrangement associated with said fluid source and said transmission pressure chamber, said supply valve arrangement opening to couple pressurized fluid from said fluid source to said transmission pressure chamber when said control piston is moved from said rest position and said supply valve arrangement closing when pressure in said transmission pressure chamber exceeds a limiting value which corresponds approximately to the lower limit of an active braking pressure; and  
a return valve arrangement to connect said transmission pressure chamber to said reservoir.

4,341,077

# PROCESS AND SYSTEM FOR RECOVERY OF ENERGY FROM GEOTHERMAL BRINES AND OTHER HOT WATER SOURCES

Samuel G. Woinsky, Irvine, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation of Ser. No. 763,533, Jan. 28, 1977, abandoned. This application Oct. 15, 1979, Ser. No. 84,537

The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> F03G 7/00

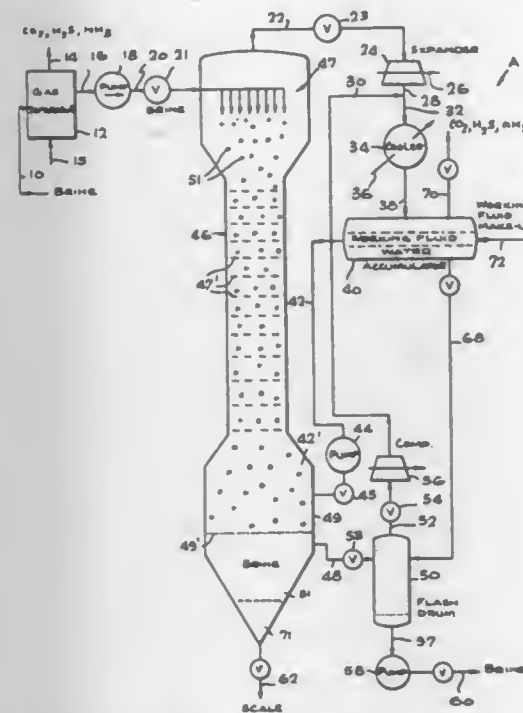
U.S. Cl. 60—641.3

25 Claims

1. Process for recovery of energy from hot water-containing fluids including geothermal brines and other hot water sources, said hot water-containing fluids including uncondensable gases, which comprises  
(a) introducing said hot water-containing fluid into a heat transfer zone and directly contacting said hot water-containing fluid therein with a working fluid in liquid form, said heat transfer zone being maintained at or above the critical pressure of said working fluid and said hot water-containing fluid being at a temperature at or above the critical temperature of said working fluid, to provide  
(i) a dense phase working fluid and  
(ii) a cooled water containing fluid including a portion of said working fluid, and uncondensable gas,  
(b) expanding said dense phase working fluid in an expander to produce work,  
(c) discharging said expanded working fluid,  
(d) cooling said discharged working fluid to provide a con-



- densified working fluid comprising condensed water vapor and uncondensable gas,
- separating, in an accumulator zone, said condensed working fluid from said condensed water and uncondensable gas,
  - venting said uncondensable gas from said accumulator zone,
  - returning said separated working fluid under pressure to said heat transfer zone,
  - withdrawing said cooled water-containing fluid from said heat transfer zone,
  - flashing said withdrawn water-containing fluid to flash off

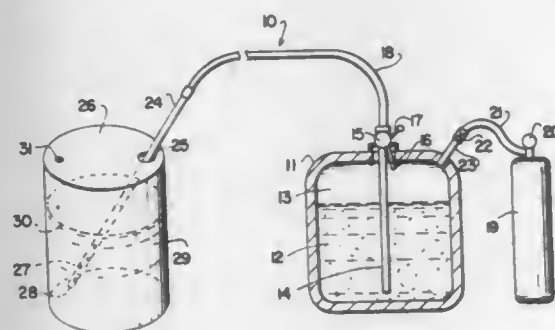


- said portion of said working fluid and provide a further cooled water-containing fluid, said flashing being carried out at a pressure sufficiently high to minimize the amount of uncondensable gas flashed off with said working fluid,
- compressing said flashed working fluid,
  - mixing said compressed working fluid with said discharged working fluid, and
  - discharging said further cooled water-containing fluid whereby the level of uncondensable gases recycled to said accumulator zone is reduced to a level that little or no uncondensable gas is vented from said accumulator zone.

**4,341,078**  
**IMMOBILIZING TOXIC LIQUIDS**  
 William Weitzen, Bethesda, Md., assignor to General Technology Applications, Inc., Arlington, Va.  
 Filed Aug. 5, 1980, Ser. No. 175,561  
 Int. Cl.<sup>3</sup> F17C 11/00

U.S. Cl. 62-48

28 Claims

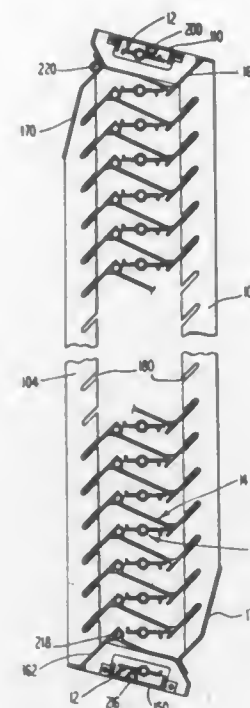


1. A process for the immobilization of a toxic liquid within a container which comprises injecting a slurry of cryogenically comminuted polymer particles in a cryogenic refrigerant into said liquid within said container.

**4,341,079**  
**CRYOPUMP APPARATUS**  
 John W. Bonn, Columbus, Ohio, assignor to CVI Incorporated, Columbus, Ohio  
 Continuation-in-part of Ser. No. 136,194, Apr. 1, 1980, Pat. No. 4,275,566. This application Oct. 30, 1980, Ser. No. 202,219  
 Int. Cl.<sup>3</sup> B01D 8/00

U.S. Cl. 62-55.5

20 Claims



1. Cryopump apparatus comprising:
- means for supplying cryogenic fluid;
  - means for supplying refrigerant fluid;
  - panel means within said apparatus including
    - heat exchange surfaces on opposite sides of said panel means, and
    - bore means for conducting said cryogenic fluid there-through in heat transfer relationship with said heat exchange surfaces;
  - means delivering said cryogenic fluid to said panel bore means;
  - radiation shield means within said apparatus including
    - heat exchange surfaces on opposite sides of said shield means, and
    - bore means for conducting said cryogenic fluid there-through in heat transfer relationship with said heat exchange surfaces;
  - means delivering said refrigerant fluid to said shield bore means;
  - a zig-zag passageway provided between adjacent shield means, each of said passageways including one of said means optically blocking said panel means.

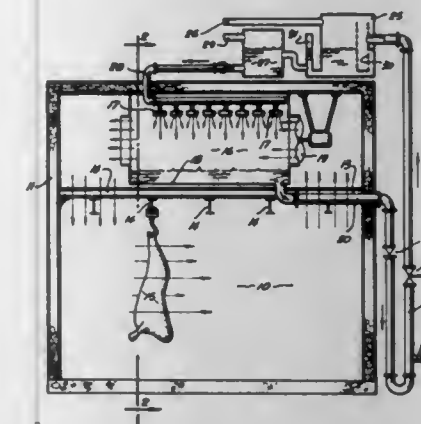
**4,341,080**  
**METHOD FOR REFRIGERATION**  
 Robert G. Shaw, Drummoyne, Australia, assignor to The Commonwealth Industrial Gases Limited, New South Wales, Australia  
 Division of Ser. No. 121,199, Feb. 13, 1980, Pat. No. 4,307,580.  
 This application May 21, 1981, Ser. No. 265,937  
 Claims priority, application Australia, Feb. 20, 1979, PD7749  
 Int. Cl.<sup>3</sup> F25D 17/02

U.S. Cl. 62-64

4 Claims

1. A method of refrigerating a moist article comprising the steps of circulating a cooling atmosphere past said article, cooling said atmosphere by contact with a moisture absorbent

liquid spray, collecting and recirculating said liquid, cooling said liquid by bringing it into contact with a cryogenic fluid



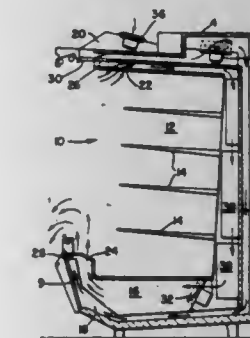
and removing said fluid and any absorbed moisture from said liquid before returning said liquid to said spray.

**4,341,081**  
**MULTIBAND OPEN FRONT REFRIGERATED CASE WITH AIR DEFROST**  
 Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 11,804, Feb. 14, 1979. This application Aug. 29, 1979, Ser. No. 70,882  
 Int. Cl.<sup>3</sup> F25D 21/12

U.S. Cl. 62-82

22 Claims



1. A method of operating an open front refrigerated display case where the display case includes:

a cabinet having top, rear, bottom and front walls and an opening within the front wall for enabling access to products displayed within the display case; an inner air conduit passing around the top, rear and bottom walls of the cabinet and having a first air outlet opening adjacent one end of the opening in the front wall of said cabinet and a first air inlet opening adjacent the other end of said opening in said front wall of the cabinet with the first air outlet and the first air inlet being aligned so that air leaving the first outlet is directed towards and received by the first air inlet; and a secondary air conduit passing along the top, rear and bottom walls of the cabinet and being arranged adjacent to the inner air conduit but outwardly therefrom and having a second air outlet opening adjacent one end of the opening in the front wall of the cabinet and a second air inlet located adjacent the other end of the opening in the front wall of the cabinet with the second air outlet and the second air inlet being aligned so that air leaving said second air outlet is directed towards and received by the second air inlet; said method comprising the steps of: circulating air through the inner air conduit in a forward direction during a refrigeration cycle of operation so as to establish an inner air band and an inner air curtain across the opening in the front wall of the cabinet; cooling air passing through the inner air conduit only during a refrigeration cycle of operation of the display case; circulating air through the secondary air conduit in a forward direction during a refrigeration cycle of operation so as to establish a secondary air band with a secondary air curtain across the opening in the front wall of the cabinet; turning off said refrigeration means during a defrost cycle; terminating the forward air flow through said secondary air conduit during a defrost cycle; and reversing the air flow direction of said first air circulating means during a defrost cycle to draw relatively warm ambient air into said inner air conduit as the primary defrost medium and passing said ambient air over said refrigeration means to defrost said refrigeration means.

ward direction during a refrigeration cycle of operation so as to establish a secondary air band with a secondary air curtain across the opening in the front wall of the cabinet; turning off said refrigeration means during a defrost cycle; terminating the forward air flow through said secondary air conduit during a defrost cycle; and reversing the air flow direction of said first air circulating means during a defrost cycle to draw relatively warm ambient air into said inner air conduit as the primary defrost medium and passing said ambient air over said refrigeration means to defrost said refrigeration means.

**4,341,082**  
**OPEN TOP REFRIGERATED DISPLAY CASE HAVING AMBIENT AIR DEFROST**  
 Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

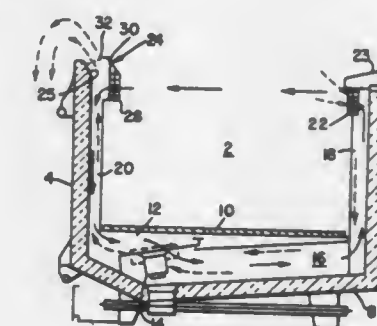
Continuation-in-part of Ser. No. 11,804, Feb. 14, 1979, and Ser. No. 60,459, Jul. 25, 1979. This application Oct. 15, 1979, Ser. No. 84,858

The portion of the term of this patent subsequent to Oct. 20, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> F25D 21/12; A47F 3/04

U.S. Cl. 62-82

11 Claims



1. An open top refrigerated display case being selectively operative in a refrigeration cycle and a defrost cycle, said case comprising: a bottom wall and four side walls at least one air conduit extending along a first of said side walls, along said bottom wall and a second of said side walls, said first and second side walls being opposing side walls, said air conduit having first and second openings at its opposite ends and each of said openings being located near the top portion of the respective said side wall; means for refrigerating air moving through said conduit during a refrigeration cycle, said means for refrigerating being arranged within said air conduit; air circulating means arranged within said air conduit, said air circulating means circulating air within said air conduit in a forward direction during a refrigeration cycle and circulating air in a reverse direction during a defrost cycle, and said air circulating means drawing in ambient air from outside of said display case through said first opening when said air circulating means circulates air within said air conduit in the reverse direction; means for switching operation of said display case between a refrigeration cycle and a defrost cycle and correspondingly causing said air circulating means to change the direction of circulating of air within said air conduit; and guide means for causing air leaving said air conduit through said second opening during a defrost cycle to flow in a direction upwardly and over the outside of the adjacent said side wall so as to flow away from said display case when such air is flowing in said reverse direction so that such air is prevented from reentering said air conduit, said guide means including a baffle arranged so as to extend in a generally upward but slanted outwardly direction and to be positioned over said second opening of said air conduit for deflecting the air away from said display case.

9. A method for selectively operating an open top refrigerated display case in a refrigeration cycle and a defrost cycle, where the case includes a bottom wall and four side walls, a



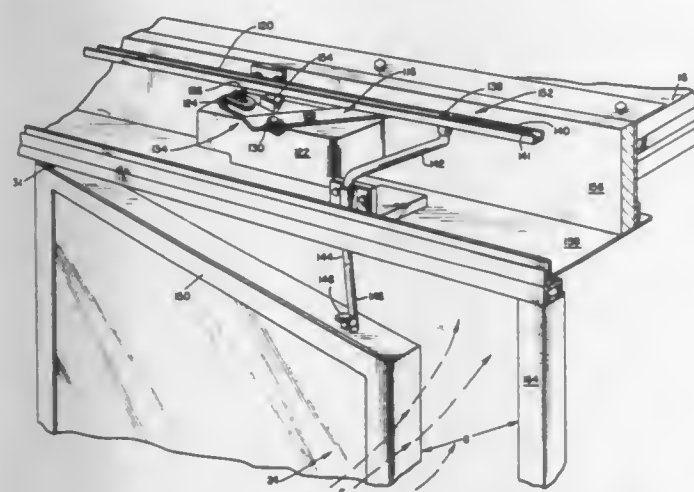
single air conduit extending along a first of the side walls, along the bottom wall and a second of the side walls, the first and second side walls being opposing side walls, the air conduit having first and second openings at its opposite ends and each of the openings being located near the top portion of the respective side wall; the method comprising the steps of: refrigerating air moving through the air conduit during a refrigeration cycle; circulating air within the air conduit in a forward direction during a refrigeration cycle; circulating air in a reverse direction during a defrost cycle; drawing in ambient air from outside of said display case through the first opening when air is circulated within the air conduit in the reverse direction; switching the operation of the display case between the refrigeration cycle and the defrost cycle and correspondingly causing the direction of circulation of air within the air conduit to be changed; and deflecting air leaving the air conduit along a path directed upwardly and over the outside of the adjacent side wall so as to flow away from the case when such air is flowing in the reverse direction.

**4,341,083**  
**DOOR OPERATING MECHANISM FOR REFRIGERATED MERCHANDISER DISPLAY CABINET**  
Fayez F. Ibrahim, Niles, and Elmer J. Subera, Cassopolis, both of Mich., assignors to Tyler Refrigeration Corporation, Niles, Mich.

Filed May 1, 1980, Ser. No. 145,711  
Int. Cl.<sup>3</sup> A47F 3/04

U.S. Cl. 62-82

54 Claims



51. A method of operating a refrigerated display cabinet comprising a cabinet having a display space therein, and aperture means in at least one wall thereof for communicating ambient outside air with the air in the cabinet, the aperture means comprising an access opening for permitting products to be moved into and out of the display case, covering means for the aperture means including a barrier door for substantially covering the access opening, the barrier door being movable for enabling access to the cabinet, at least one air conduit extending about the display space and having an outlet opening and an inlet opening at opposite ends thereof, with the outlet opening and the inlet opening being arranged in aerodynamic alignment so that air leaving the air conduit outlet opening will be directed toward and received by the inlet opening, and an air moving means for propelling a refrigerated air band through the air conduit during a refrigeration cycle and for propelling ambient air through the cabinet during a defrost cycle, and a refrigeration means arranged within the air conduit; the method comprising the steps of:

selectively operating the display cabinet in a refrigeration cycle of operation and in a defrost cycle of operation; during a refrigeration cycle, circulating the air band through the air conduit so that air is expelled from the outlet opening and received by the inlet opening so as to form an air curtain across the access opening in the cabinet along a path inside of the barrier door, and propelling the air band through the refrigeration means; during a defrost cycle of operation,

terminating operation of the refrigeration means, causing ambient air to be drawn into the cabinet, pass through a substantial portion of the air conduit, and across the refrigeration means, causing the defrost ambient air to be ejected from the cabinet, creating a gap between the barrier door and the access opening to enable ambient air through-flow, and providing for closing of the gap by outside force and reestablishment of the gap when the force is removed; whereby ambient air is drawn into the air band and across the refrigeration means to defrost the same by communicating ambient air with the air band in the display cabinet.

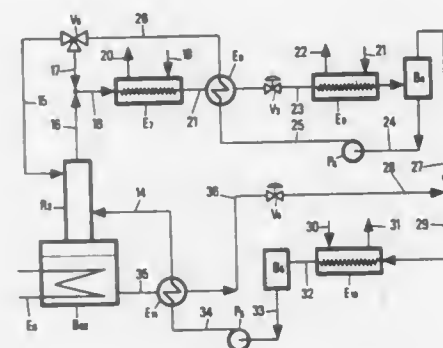
**4,341,084**  
**COLD AND/OR HEAT PRODUCTION INVOLVING AN ABSORPTION CYCLE AND ITS USE FOR HEATING BUILDINGS**

Alexandre Rojey, Garches, and Georges Cohen, Le Pecq, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Feb. 13, 1981, Ser. No. 234,214  
Claims priority, application France, Feb. 15, 1980, 80 03460  
Int. Cl.<sup>3</sup> F25B 15/00

U.S. Cl. 62-101

10 Claims



1. An improved process for cold and/or heat production, in an absorption cycle operating with a working fluid (F) as a solute, and a fluid (S) as the solvent, the boiling temperature of the fluid (S) being higher than the boiling temperature of the fluid (F), and said cycle comprising at least one absorption step, at least one desorption step, at least one rectification step for the vapor withdrawn from the desorption step, at least one condensation step and at least one vaporization step, the improvement comprising the steps of:

- vaporizing, in the vaporization step, a portion of the liquid phase (L<sub>1</sub>) of high fluid (F) content, obtained in the condensation step (d), taking the necessary vaporization heat at least partly from an external fluid, recovering a vapor phase (V<sub>1</sub>) and a liquid phase (L<sub>2</sub>), separating said vapor phase (V<sub>1</sub>) from said liquid phase (L<sub>2</sub>), and fractionating said liquid phase (L<sub>2</sub>) into at least one first fraction and at least one second fraction,
- contacting the vapor phase (V<sub>1</sub>) from the step (a), in the absorption step, with a liquid phase (L<sub>3</sub>) of low fluid (F) content and high fluid (S) content from the desorption step (c), delivering heat to an external fluid, and recovering a solution (S<sub>1</sub>) of increased fluid (F) content,
- feeding at least one portion of the solution (S<sub>1</sub>) from step (b) to an intermediate point of a rectification zone wherein the rectification step is effected, flowing said portion of the solution (S<sub>1</sub>) downwardly in said rectification zone, supplying heat at the bottom of said rectification zone by means of a heating fluid, so as to effect said desorption step of said solution (S<sub>1</sub>) and to obtain a vapor phase (V<sub>2</sub>) and a desorbed liquid phase (L<sub>3</sub>), withdrawing said liquid phase (L<sub>3</sub>) and feeding it to step (b), introducing said first portion of the liquid phase (L<sub>2</sub>) from step (a) into said rectification zone, at the top thereof, flowing said first portion downwardly in said rectification zone, circulating said vapor zone (V<sub>2</sub>) upwardly in said rectification zone,

and withdrawing a vapor phase (V<sub>3</sub>) from the top of said rectification zone, and

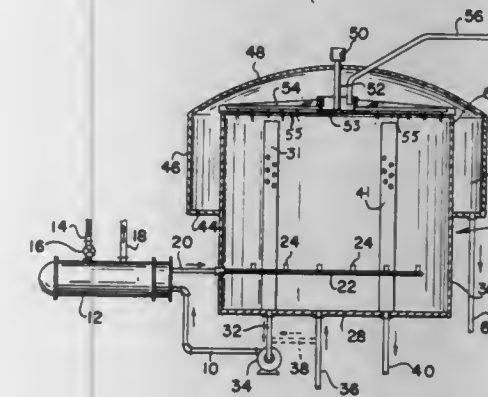
(d) mixing said vapor phase (V<sub>3</sub>), withdrawn from the top of said rectification zone, with said second portion of the liquid phase (L<sub>2</sub>) from the step (a), cooling the resultant mixture by heat exchange with an external fluid, in the condensation step, so as to form said condensed liquid phase (L<sub>1</sub>), and feeding said phase (L<sub>1</sub>) to the step (a).

**4,341,085**  
**FREEZE CONCENTRATION APPARATUS AND METHOD**  
James A. Nail, Carol Stream, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Mar. 4, 1981, Ser. No. 240,608  
Int. Cl.<sup>3</sup> F25J 9/04

U.S. Cl. 62-124

7 Claims



- Apparatus for freeze concentrating an aqueous liquid mixture comprising:
  - a freeze exchanger;
  - a first liquid conduit communicating with the freeze exchanger for feeding an aqueous liquid mixture to the freeze exchanger for indirect heat exchange therein with a cold fluid fed to the freeze exchanger;
  - a vessel having an open top and an outwardly spaced shell means surrounding the upper part of the vessel, and extending above the vessel top, defining an annular space for collecting washed ice which is withdrawn from the vessel;
  - a second liquid conduit communicating with the freeze exchanger and the vessel for feeding an aqueous liquid mixture containing ice from the freeze exchanger to the vessel in which the ice floats on top of aqueous liquid mixture in the vessel;
  - means for withdrawing washed floating ice from the vessel and delivering it to the vessel annular space;
  - a third liquid conduit communicating with the first liquid conduit and with the vessel for withdrawing aqueous liquid mixture from the vessel; and
  - a fourth liquid conduit communicating with the vessel for feeding aqueous liquid mixture thereto.

**4,341,086**  
**REFRIGERATION SYSTEM**  
Heiichiro Ishii, Toda, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

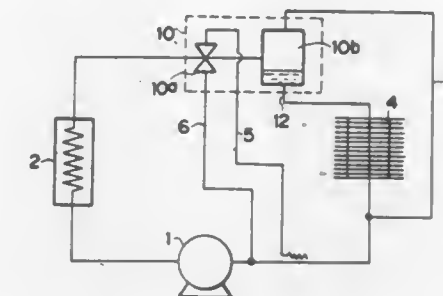
Filed Oct. 6, 1980, Ser. No. 194,552  
Int. Cl.<sup>3</sup> F25B 41/04

U.S. Cl. 62-225

9 Claims

2. A refrigeration system having a compressor, a condenser, an expansion valve and an evaporator which are connected to each other in the sequence, which refrigeration system is characterized in that said expansion valve is comprised of an expansion valve portion and a gas-liquid separating portion, said expansion valve portion being adapted to receive a refrigerant from said condenser and have said refrigerant subjected to adiabatic expansion there, said gas-liquid separation portion including means for receiving a mixture of a liquid refrigerant from the condenser and a gaseous refrigerant generated there-

from, separating said mixture into a liquid phase refrigerant and a gas phase refrigerant, and introducing the liquid refrigerant to an inlet of the evaporator and the gaseous refrigerant to an outlet of said evaporator, and said expansion valve portion having a body which is partitioned by a partition member having an opening to form said expansion valve portion and



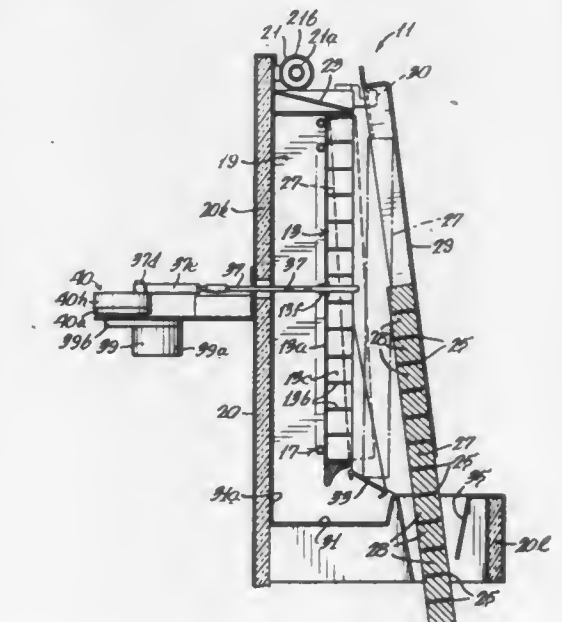
said gas-liquid separating portion integrally with each other, said expansion valve portion including a diaphragm fixed at an end portion of said body, a rod having an end fixed to said diaphragm, a spherical member fixed to another end of said rod and a spring biasing said rod through said spherical member, and said gas-liquid separating portion including a gas-liquid separating strainer.

**4,341,087**  
**AUTOMATIC ICE CUBE MAKING APPARATUS**  
Leon R. Van Steenburgh, Jr., Denver, Colo., assignor to Mile High Equipment Company, Denver, Colo.

Filed Apr. 8, 1981, Ser. No. 252,482  
Int. Cl.<sup>3</sup> F25C 1/04

U.S. Cl. 62-233

21 Claims



1. An ice cube maker comprising a vertically disposed flat plate having refrigeration evaporator coil mounted on one side thereof in good heat exchange relation therewith and lattice forming cube molds on the other side thereof, said lattice including horizontally and vertically extending intersecting walls forming sidewardly opening pockets within which water may be frozen to form ice cubes, means supplying water across the top of said plate so the water traverses said lattice, means delivering refrigerant liquid to said coil to freeze water to form ice cubes in said lattice with bridging portions forming a slab of ice including said cubes, means for alternatively supplying hot gas to said coil to separate said slab from said plate during an ice harvesting period, probe means for applying a horizontal force to said slab inwardly of the edges to displace said slab from said lattice, said probe applying a predetermined limited force sufficient to displace said slab when completely sepa-



rated from said lattice but less than that which would fracture the bridging portions of said slab.

7. In a cube ice making machine the combination comprising a refrigeration system including a compressor and an evaporator with means distributing a low pressure liquid refrigerant from said compressor to said evaporator, an ice cube forming lattice in good heat transfer relation with said evaporator and means circulating water to said lattice to be frozen into cubes, a pressure responsive switch to initiate the cube making cycle when said compressor achieves a predetermined reduced pressure in said distributing means, a timer controlled by said pressure responsive switch to continue the cube freezing portion of said cycle for a predetermined time after which said timer initiates the harvest portion of said cycle, mechanical means for displacing said ice cubes from said lattice during the harvest portion of said cycle, said cubes being formed into a slab of ice with bridging portions interconnecting rows of cubes, a hot gas solenoid actuated by said timer at the start of the harvest portion of said cycle to deliver hot gas from said compressor to said evaporator and terminate distribution of said liquid refrigerant to said evaporator, said mechanical means applying a force against a central portion of said slab of ice to overcome the capillary forces retaining said slab in said evaporator after said hot gas has melted the ice retaining said slab to said lattice.

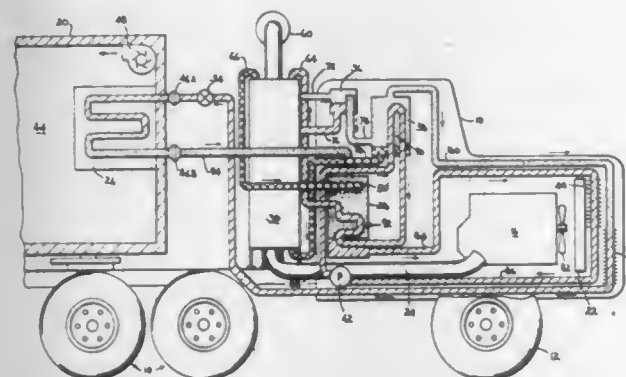
#### 4,341,088 HIGHWAY VEHICLE EXHAUST GAS REFRIGERATION SYSTEM

Viung C. Mei, 129 Brentwood Dr., Oak Ridge, Tenn. 37830; Zalman Lavan, 947 Ridge Ct., Evanston, Ill. 60202, and Sushil K. Chaturvedi, 7740 Enfield Ave., Apt. 103, Norfolk, Va. 23505

Filed Jun. 11, 1980, Ser. No. 158,562  
Int. Cl.<sup>3</sup> B60H 3/04

U.S. Cl. 62—239

6 Claims



1. A mobile refrigeration plant for use with a thermally insulated enclosure, comprising:

- a frame supported by a set of wheels and driven by a heat engine mounted on said frame, hot exhaust gases from said heat engine being discharged through an exhaust pipe;
- an eutectic solution cooling plate within said insulated enclosure, said plate containing a frozen fluid selected to maintain the temperature in said enclosure below a specified value;
- an absorption refrigeration system carried by said frame, said absorption refrigeration system including: a condenser; a generator-analyzer thermal energy being supplied to said absorption system by said exhaust pipe gases transferring heat to said generator-analyzer; an absorber heat exchanger, heat being transferred from said condenser and from said absorber heat exchanger to the atmosphere with the absorber heat exchanger and condenser mounted adjacent said engine whereby when said engine is running, ambient air is forced across said condenser and said absorber heat exchanger; a rectifier; an absorber tank; an expansion valve; and a solution pump, said solution pump directing fluid flow from said absorber tank to said generator-analyzer via said absorber heat exchanger; and
- exchange means for transferring thermal energy from

said eutectic cooling place to said absorption refrigeration system via a fluid connection between the outlet of said expansion valve and said absorber tank whereby the temperature within said enclosure is maintained relatively constant and below said specified temperature despite the variation in engine load including complete shut down over a relatively long period of time; said generator analyzer comprising:

- a first cylinder having both ends covered;
- a second cylinder having both ends covered with said first cylinder enclosed within and carried by said second cylinder, said first and said second cylinders defining a generally annular space between the walls of said cylinders and between the ends of each of said cylinders, said second cylinder defining an inlet port at one end and an outlet port at the other end, said hot exhaust gases being ducted to said inlet port and flowing from said outlet port;
- a first tube, axially positioned along the length of said first and said second cylinders and passing through said first cylinder, ducting a portion of the exhaust gases flowing from said inlet port to said outlet port through said first cylinder, said first tube having a plurality of radial fins along its length, said fins transferring heat from the interior of said first tube to the interior of said first cylinder with at least one of said fins being located adjacent to the closed end of said first cylinder adjacent to the outlet port of said second cylinder, said fins forming evaporation sites and increasing the evaporation area of said first cylinder, the lower portion of said interior volume defining the generator section of said generator-analyzer, the upper portion of said interior volume defining the analyzer section of said generator-analyzer; said first cylinder defining:

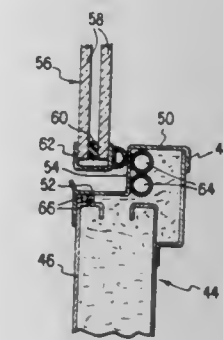
- a first port used to join the interior of said first cylinder to a source of a relatively strong concentration of a refrigerant-absorbent solution, said first port spraying said strong refrigerant-absorbent solution upon at least one of said fins, said at least one of said fins increasing the impingement distance said spray droplets must transverse before falling into the liquid phase of the refrigerant-absorbent solution within said first cylinder thereby reducing the carryover of absorbent flowing out of said generator section to said rectifier;
- a second port used to join the interior of said first cylinder to the vapor section of said rectifier;
- a third port used to join the interior of said first cylinder to the absorber tank of said refrigeration system, said third port ducting relatively weak refrigerant-absorbent solution from said generator section to said absorber tank; and
- a fourth port used to join the interior of said first cylinder to the condensed vapor flowing from said rectifier whereby the temperature of the relatively strong refrigerant-absorbent solution pumped to said generator-analyzer via said first port is raised by the heat emitted from said first tube, said fins and said first cylinder walls thereby evolving a gaseous mixture of refrigerant and absorbent, said gaseous mixture being free to pass upwardly to the top of said first cylinder and from there to said rectifier via said second port, said rectifier condensing an additional portion of said absorbent vapor, with the condensed absorbent vapor flowing back to said generator-analyzer via said fourth port while refrigerant vapor from said rectifier flows to said condenser.

#### 4,341,089 SELF HEATING REFRIGERATOR

Fayez F. Ibrahim, and Arthur Perez, both of Niles, Mich., assignors to Tyler Refrigeration Corporation, Niles, Mich.  
Continuation-in-part of Ser. No. 876,749, Feb. 10, 1978, abandoned. This application May 7, 1979, Ser. No. 36,661  
Int. Cl.<sup>3</sup> A47F 3/04

U.S. Cl. 62—246

3 Claims



1. A refrigeration display case including a cabinet having an opening therein, a refrigerator door covering the opening and apparatus for preventing the formation of condensation at the junction of the refrigerator door and jamb for the door, said display case comprising: a refrigeration system for cooling the interior of said case, said system including an evaporator, a compressor, a condenser, and an expansion valve; said expansion valve being located upstream of said evaporator for expanding refrigerant delivered thereto through said evaporator for cooling said case, said compressor being located downstream of said evaporator for receiving the refrigerant expanded through said evaporator, said compressor compressing the refrigerant and delivering such refrigerant to a condenser located downstream of said compressor, said condenser condensing the refrigerant and being connected to a return conduit for returning the liquid refrigerant to the expansion valve; a portion of said return conduit being located adjacent the portion of said case frame surrounding said refrigerator door for heating and maintaining said case frame and said door jamb above the dew point during the operation of said refrigeration system thereby preventing condensation from accumulating thereon in the area surrounding said refrigerator door; the refrigerant being further cooled by heat transfer when passing through said portion of said return conduit adjacent to said case frame prior to returning to said expansion valve for expansion through said evaporator; and electrical resistance wires being located adjacent said case frame around said refrigerator door jamb, said electrical resistance wires being connected to an electrical source, said resistance wires being energized when refrigerant is not flowing through said return conduit for providing sufficient heat to raise said case frame above the dew point.

#### 4,341,090 VARIABLE ORIFICE METERING

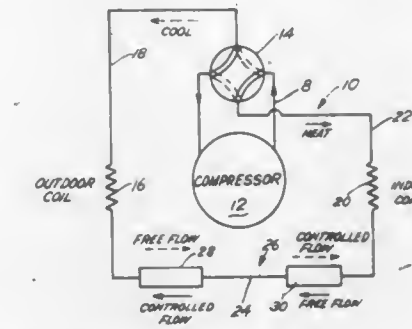
Rengaswamy Ramakrishnan, Fort Worth, Tex., assignor to Lennox Industries, Inc., Dallas, Tex.  
Filed Jan. 26, 1981, Ser. No. 228,068  
Int. Cl.<sup>3</sup> F25B 13/00

U.S. Cl. 62—324.1

7 Claims

1. For use in a heat pump having a compressor, an indoor coil, an outdoor coil, means for porting refrigerant selectively from the compressor to either the indoor coil to heat an environment or to the outdoor coil to cool an environment, and regulating means between the indoor coil and the outdoor coil for regulating the refrigerant flow during the heating and the cooling modes of operation, characterized by the regulating means between the indoor coil and the outdoor coil comprising combination variable orifice valve means and check valve means for providing controlled fluid flow to the indoor coil in one mode of operation and substantially free fluid flow to the indoor coil in the other mode of operation, said combination

variable orifice valve means and check valve means comprising a valve housing having a passage therethrough, a tubular valve body movable within said passage, said valve body having an orifice therein, said valve body having projections at one end for guiding the valve body in the passage, but providing substantially unrestricted flow between the valve housing and the valve body in said other mode of operation, and spring-



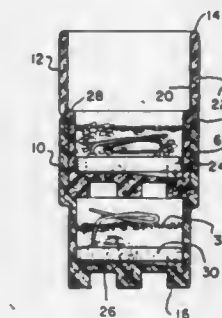
biased metering means including a plug movable relative to the orifice and cooperating with the orifice to vary the effective area of the orifice for controlling flow of fluid through the orifice for providing controlled flow in said one mode of operation, said variation of the effective area of the orifice being precisely controlled by the pressure difference acting across the plug.

#### 4,341,091 CONTAINER METHOD AND APPARATUS

Buryl Minter, P.O. Box 655, Chugiak, Ak. 99567  
Division of Ser. No. 88,192, Oct. 23, 1979, Pat. No. 4,267,700.  
This application Oct. 15, 1980, Ser. No. 197,039  
Int. Cl.<sup>3</sup> F25D 3/08

U.S. Cl. 62—372

24 Claims



20. Containers for transporting and chilling materials comprising a plurality of containers, a manifold in a bottom of each container, means for receiving ice in the bottom of each container and on the manifold, means for stacking a number of containers having manifolds therein, whereby the stacked containers and manifolds may be shipped, means for unstacking the containers, means for connecting a pressurized air supply to a manifold in a bottom of each container, an upward opening in each container for adding water, ice and materials to be cooled, means for supplying air to the manifold and thereby bubbling air through the water and ice and materials, covers for closing open ends of the containers and means for stacking another similar filled container on the cover.

#### 4,341,092 LIQUID MODULATOR

William G. Davis, Salisbury East, Australia, assignor to Liquid Modulators, Inc., Des Moines, Iowa  
Filed Nov. 20, 1980, Ser. No. 208,542  
Int. Cl.<sup>3</sup> F25B 43/04

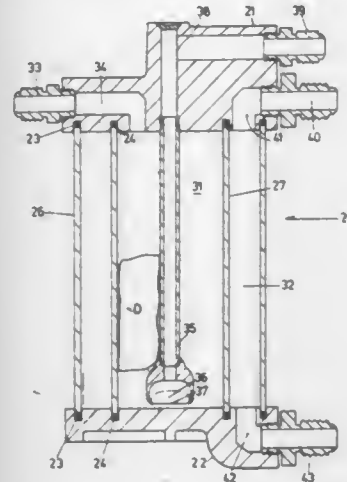
U.S. Cl. 62—475

2 Claims

1. A receiver/drier for a compression refrigeration system having a compressor, evaporator, condenser and expansion valve, said receiver/drier having a hollow body, end caps closing said hollow body, one of said end caps having an inlet



and outlet for passage of high pressure liquid therethrough from the condenser to the expansion valve, said outlet having an outlet tube extending through said body to terminate at an end adjacent the other of said end cap, said end of said tube being expanded to form an inlet covered by a screen, a bag of desiccant situated in said body adjacent said outlet tube to absorb moisture in said liquid, the opening of said enlarged end



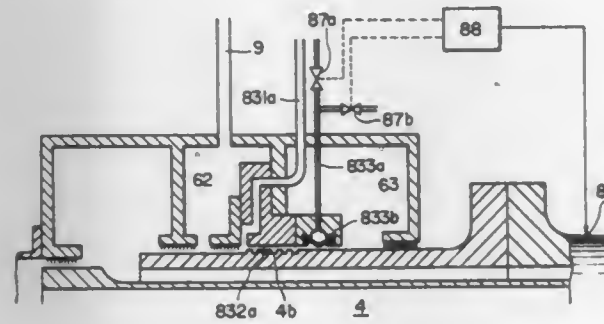
being closely spaced from said other end cap to prevent blockage by the desiccant bag, an outer casing surrounding and spaced from said body to form a fluid chamber about said body, an inlet in said one end cap to receive fluid from the evaporator to flow into said fluid chamber, an outlet in said other end cap to deliver fluid to the compressor, whereby high pressure fluid and low pressure gas are in heat exchange relationships through the body of the receiver/drier.

**4,341,093**  
**DEVICE FOR LEADING COOLING LIQUID OUT OF ROTARY ELECTRIC MACHINE WITH LIQUID COOLED ROTOR**

Norio Oishi; Kouichi Okamoto; Shoji Furukado, all of Kobe, and Masaki Sakuyama, Ashiya, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan  
Filed Dec. 1, 1980, Ser. No. 212,043  
Int. Cl.<sup>3</sup> F25B 31/00

U.S. Cl. 62—505

7 Claims



1. A device for conducting cooling liquid out of a liquid cooled rotor type rotary electric machine comprising: a supplying and draining pipe coupled to the rotor shaft of said rotary electric machine for supplying cooling liquid to and draining cooling liquid from said rotor shaft; an outlet chamber disposed around said supplying and draining pipe with a gap provided between said outlet chamber and said supplying and draining pipe for receiving cooling liquid discharged from said supplying and draining pipe and discharging cooling liquid thus received, said outlet chamber being filled with a shielding gas under pressure; means for supplying a sealing liquid into said gap at one end of said outlet chamber; and threads being cut in the outer wall of said supplying and

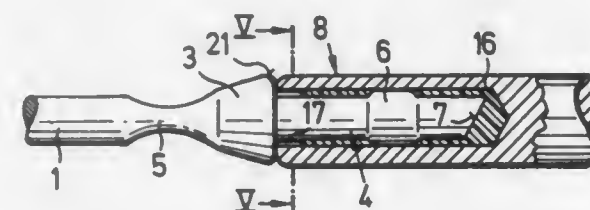
draining pipe so as to pressurize said sealing liquid towards said outlet chamber; and a stretchable member surrounding the outer wall of said supplying and draining pipe in such a manner that, when said supplying and draining pipe is stopped, said stretchable member is brought into close contact with the outer wall of said supplying and draining pipe to seal said sealing liquid.

**4,341,094**  
**CIRCULAR KNITTING NEEDLE**  
Helmuth Heide, Menden, Fed. Rep. of Germany, assignor to Joh. Moritz Rump, Altena, Fed. Rep. of Germany  
Filed Dec. 12, 1979, Ser. No. 102,949  
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1978, 2853701

Int. Cl.<sup>3</sup> D04B 35/02

U.S. Cl. 66—117

13 Claims



1. A circular knitting needle, comprising a flexible intermediate portion of a viscous polyamide filament material and two rigid tips connected to said intermediate portion, each of said tips including a rod portion and a needle point, said rod portion being formed with an axial recess which is filled with a quick-binding adhesive material, said intermediate portion including an axially extending projection at each end thereof which is inserted into a respective recess so that said adhesive material surrounds said projection, said projection being formed with at least one radially outwardly projecting lug, said lug having an outer cylindrical surface, said recess being formed with at least two longitudinal contact surfaces extending radially inwardly from an inner surface thereof, said contact surfaces being in engagement with the outer cylindrical surface of said lug to provide a reliable contact between said recess and said projection.

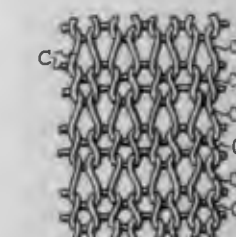
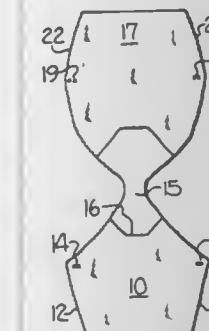
**4,341,095**  
**STRETCHABLE GARMENT KNIT OF COTTON YARN**  
Dewey E. Potat, Lenoir, N.C., assignor to Alba-Waldensian, Incorporated, Valdese, N.C.  
Filed May 2, 1980, Ser. No. 146,103  
Int. Cl.<sup>3</sup> A41B 9/04

U.S. Cl. 66—177

6 Claims

1. A garment knit exclusively of the same size and type of cotton body yarn in successive courses of stitch loops and shaped to generally conform to the configuration of that portion of the body on which the garment is to be worn, said garment having the overall appearance of a conventional non-stretchable knitted garment and being characterized by having sufficient stretchability and recoverability to properly fit several body sizes heretofore requiring garments of different sizes, said garment comprising single courses of large stitch loops of said cotton body yarn alternating with single courses of small stitch loops of said cotton body yarn throughout at least the main body portion of said garment, said large stitch loops being

from about 1.1813 to 1.4437 times as long as said small stitch loops, and wherein the courses of large stitch loops provide



stretchability to said garment and the courses of small stitch loops provide density and opacity to said garment.

**4,341,096**  
**SOCK WITH TRIPLE LAYER FABRIC IN FOOT AND METHOD**

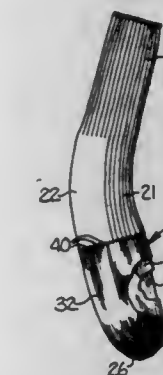
Sam C. Safrit, Pfafftown; Roscoe M. Farrell, Pittsboro, and Harper Shields, Burlington, all of N.C., assignors to Kayser-Roth Hosiery, Inc., Burlington, N.C.

Filed Aug. 6, 1980, Ser. No. 175,932

Int. Cl.<sup>3</sup> A41B 11/02; D04B 7/04

U.S. Cl. 66—185

16 Claims



1. In a sock including a leg portion knit of successive courses including a predetermined number of stitch loops forming wales in successive courses, and a foot portion knit integral with said leg, said foot portion including toe, heel, sole, and upper and lower instep areas with said toe area including a closure seam, the improvement wherein at least a substantial portion of said foot portion is provided with improved cushioning characteristics and comprises triple layer fabric including an inner layer, an intermediate layer, and an outer layer each including forward ends connected together by said toe portion closure seam and rear portions integrally knit with the remainder of the sock.

**4,341,097**  
**HOSIERY ARTICLE WITH A REINFORCED TOE WITH VARYING DENSITY**

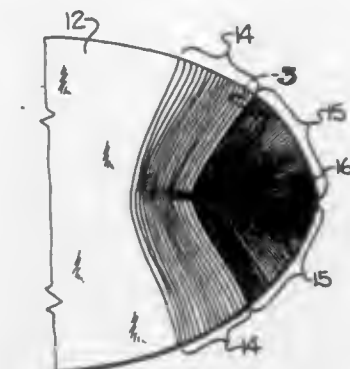
Edward L. Cassidy, Sr.; William B. Cothran, both of Burlington, and Sam C. Safrit, Pfafftown, all of N.C., assignors to Kayser-Roth Hosiery, Inc., Burlington, N.C.

Filed Jul. 21, 1980, Ser. No. 170,698

Int. Cl.<sup>3</sup> A41B 11/02

U.S. Cl. 66—187

6 Claims



2. A hosiery article with a reinforced toe of progressively increasing density including a foot with a toe pocket, said toe pocket being integrally knit with said foot at one end and being closed at the other end thereof, said foot and toe pocket being knit of a body yarn and forming successive courses extending throughout said foot and toe pocket, and a reinforcing yarn knit in plated relationship with said body yarn in certain courses of a first group of courses adjacent said one end of said toe pocket, said reinforcing yarn being knit in plated relationship with said body yarn in certain courses of a second group of courses adjacent said closed end of said toe pocket, said certain courses of said first group of courses being spaced further apart than said certain courses of said second group of courses, the density of the knit fabric in said first group of courses being greater than the density of the knit fabric in the adjacent foot portion and being less than the density of the knit fabric in said second group of courses so that the density of the knit fabric of said toe pocket increases from the adjacent foot portion to the closed end of said toe pocket.

**4,341,098**  
**JET PATTERN DYEING OF MATERIAL, PARTICULARLY CARPET**

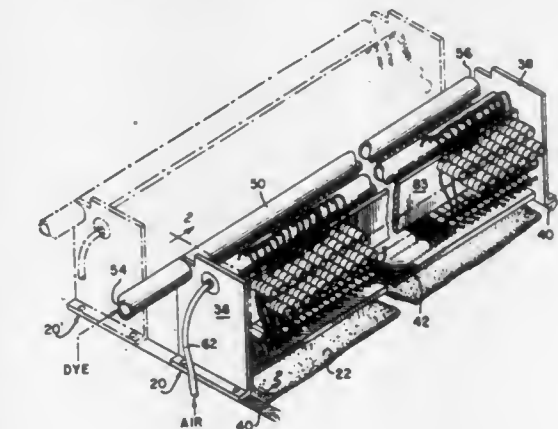
Billy J. Otting, La Fayette, Ga., assignor to Otting Machine Company, Inc., La Fayette, Ga.

Continuation of Ser. No. 85,943, Oct. 18, 1979, abandoned. This application Feb. 24, 1981, Ser. No. 237,577

Int. Cl.<sup>3</sup> D06B 1/02, 11/00

U.S. Cl. 68—205 R

21 Claims



1. Apparatus for pattern dyeing a continuously moving carpet web comprising means for conveying the carpet contin-



uously along a substantially horizontal path past a dye applicator station;

at least one dye applicator at said station positioned above the path of said carpet web and extending across the width of the carpet web transverse to the direction movement of the carpet web;

each applicator including at least one dye manifold adapted to be maintained under pressure and at least one air manifold adapted to be maintained under a pressure, a plurality of dye delivery tubes, each tube having an inlet end and an outlet end and at least a portion thereof which is flexible so as to permit pinching of the flexible portion, a pinch tube valve assembly receiving each of said flexible portions for selective control of dye flow through the tube, each of said delivery tubes having its inlet end connected to a dye manifold and its outlet end supported above the path of the carpet web and adjacent thereto;

said valve assembly comprising a valve block having a bore extending through said block for receiving the flexible portion of the associated tube, a passageway in said block, said passageway intersecting with said bore at a right angle thereto, the intersection of said bore and said passageway defining a pinch chamber, an electrically operated pneumatic valve connected to an air manifold, an intermediate block portion member supported at one end to said valve block and supporting at its other end said pneumatic valve, an air chamber formed between said other end of said intermediate block portion and the pneumatic valve, said intermediate block portion including a central chamber communicating with said air chamber, piston means within said central chamber having a rod section at one end selectively reciprocal in said passageway between a first position and a second position, a freely floating ball disposed in said passageway between one end of the rod section and the flexible portion of the associated tube for pinching the flexible tube into a closed condition in response to actuation of said pneumatic valve and positioning of said rod section in its second position, said pinch chamber having a flattened wall portion circular in shape and being formed in said bore opposite the intersecting passageway and said flattened wall portion being in a plane perpendicular to said intersecting passageway so as to allow expansion of said tube upon pinching thereof; and

controller means for selective actuation of the pinch tube valve assembly as the carpet web is conveyed past the applicator station to effect dyeing of the carpet web in the desired pattern.

#### 4,341,099 CODE CHANGING SYSTEM FOR COMBINATION PADLOCKS

Jose P. Garro, Irun, Spain, assignor to Talleres de Escoriaza S.A., Irun, Spain

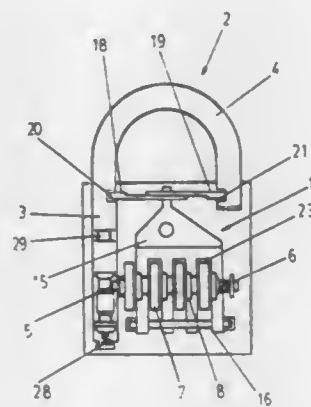
Filed Jun. 30, 1980, Ser. No. 164,080

Claims priority, application Spain, Jul. 2, 1979, 482,109

Int. Cl.<sup>3</sup> E05B 37/00, 37/06

U.S. Cl. 70—25

5 Claims



1. In a combination padlock of the type having a body, a

code mechanism comprising an axially movable shaft having digit display wheels mounted thereon and bushings spring biased into engagement with the wheels, said bushings each having a generally circular periphery with a flattened portion, a locking element movable between an unlocking and a locking position by said bushings, and a shackle having a long leg retained in the body and a short leg for entering a body aperture when the shackle is oriented to the locking position and closed, the improvement comprising means on said long leg for engaging the end of the shaft and causing it to move axially when the shackle is oriented to a position other than the locking position and pressed into the body, said axial movement of the shaft causing said bushings to become released from the wheels to allow the code to be changed.

#### 4,341,100 PORTABLE CERTIFICATE MAGAZINE

Hermann Kohlhaage, Paderborn, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

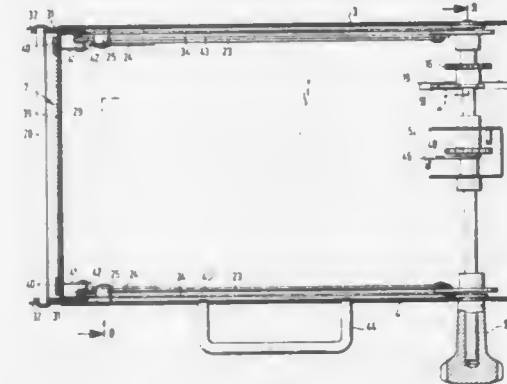
Filed Jun. 28, 1979, Ser. No. 53,133

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1978, 2829584

Int. Cl.<sup>3</sup> E05B 65/52

U.S. Cl. 70—63

10 Claims



1. A portable magazine for a bank note dispenser comprising:  
a housing having a cover;  
a first key lock mechanism at least partially within the housing;  
a second key lock mechanism at least partially within the housing;  
a tripping mechanism capable of assuming an armed but untripped condition and a disarmed, tripped condition;  
indicator means associated with said tripping mechanism to show the condition thereof; and  
a latch for locking and unlocking said cover;  
the first key lock mechanism being connected to operate the latch and to trip the tripping mechanism to the disarmed condition when operated;  
the second key lock mechanism being connected to arm and re-arm the tripping mechanism.

#### 4,341,101 COMBINATION LOCKS

Lazlo Bako, Woodcliff Lake, N.J., assignor to Presto Lock, Inc., Garfield, N.J.

Filed Jul. 11, 1980, Ser. No. 167,429

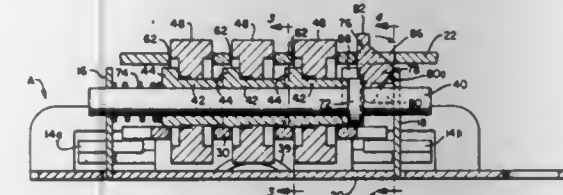
Int. Cl.<sup>3</sup> E05B 37/02

U.S. Cl. 70—312

8 Claims

1. A combination lock including a plurality of combination elements disposed on a common axis in a casing for axial movement in unison in one direction to uncouple said elements from cooperating combination components in order to change the combination of the lock, a shift member for moving said elements axially, said shift member including an actuator portion extending through an opening in said casing and means provid-

ing a camming action between said shift member and said elements for causing said shift member to move said elements



axially in said one direction responsive to axial movement of said actuator portion in said opening in the opposite direction.

#### 4,341,102 CONSTRUCTION FOR A CYLINDER LOCK AND KEY

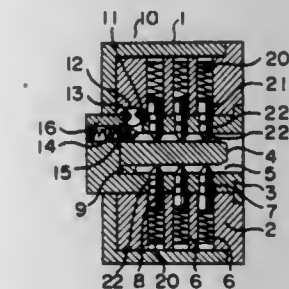
Chung C. Ku, 63, Cheng Chou Rd., and Ching H. Yeh, 76, Hsin Yi Rd., both of Taipei, Taiwan

Continuation-in-part of Ser. No. 919,040, Jun. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 797,065, May 16, 1977, abandoned. This application Sep. 27, 1979, Ser. No. 79,463

Int. Cl.<sup>3</sup> E05B 27/06

U.S. Cl. 70—358

1 Claim



1. An improved construction for a cylinder lock adapted to be selectively opened or locked by means of a matching key, comprising an inner and a stationary outer cylinder, said outer cylinder being provided in a suitable housing, said inner cylinder being rotatably mounted in said outer cylinder, a plurality of bores provided through said cylinders and arranged radially from the central axis of said inner cylinder, a plurality of radial pin tumblers of various lengths and diameters being provided one each in each radial bore, a plurality of back plugs, each back plug being provided behind a radial pin tumbler in said bores, a plurality of spring means, one spring means being provided between said housing and each said back plug to urge said radially disposed pin tumblers toward the axis of said inner cylinder, a radial bore being additionally provided at the rear-most portion of said inner cylinder, a circular recess being provided at the rearmost portion of said outer stationary cylinder, a ball being provided within the chamber constituted by said rearmost radial bore and said circular recess, the size of said circular recess being smaller than a half of the diameter of said ball, a longitudinal bore being provided in said longitudinal bore, a longitudinal spring means being provided between the bottom of said inner cylinder and longitudinal pin tumbler to urge said longitudinal pin tumbler to cause said ball to be clamped in the cavity between the inner and outer cylinders, a center post being longitudinally provided in said inner cylinder to constitute a circular central bore therebetween, a key post being provided in said circular central bore and disposed between said center post and the inner surface of said inner cylinder so that when said matching key is inserted into said circular central bore, each of the plurality of radial pin tumblers will be raised by the correct amount to the top thereof and being exactly flush with the outer surface of the inner cylinder, and the longitudinal pin tumbler will be urged backward to allow the clamped ball to fall away from the cavity in the outer cylinder, and by engagement of the key with said key post the inner cylinder will rotate in response to mutual rotation of said key, said matching key being characterized in that the shank thereof is round, hollow, and of approximately the

same diameter as the inside diameter of said circular central bore so that said key may be inserted over said center post, said matching key being provided with a plurality of depressions of various diameters and depths, each depression corresponding to one of said plurality of radial pin tumblers and adapted for raising each of said radial pin tumblers the correct amount to effect opening of said lock, and the end of said shank being tapered and having disposed therein an indentation for engaging with a key post provided in said lock.

#### 4,341,103 SPIN-NECKER FLANGER FOR BEVERAGE CONTAINERS

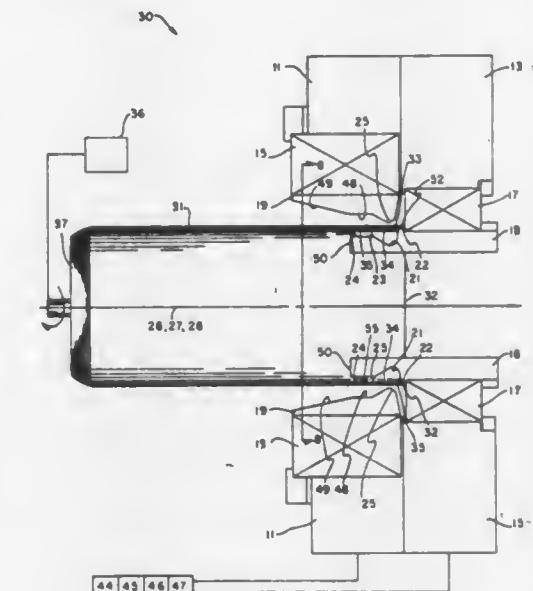
Eduardo C. Escallon, Muncie, Ind., and Paul S. Marsh, East Lansing, Mich., assignors to Ball Corporation, Muncie, Ind.

Filed Sep. 4, 1980, Ser. No. 183,868

Int. Cl.<sup>3</sup> B21D 19/12

U.S. Cl. 72—70

2 Claims



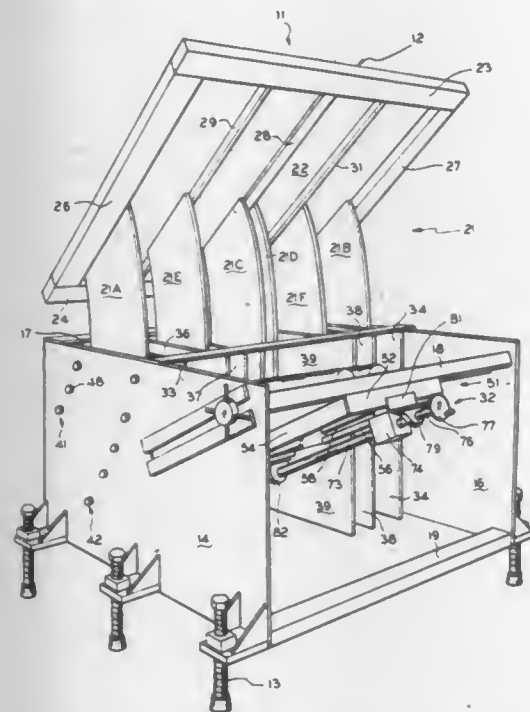
1. Apparatus for beading the end portion of a substantially cylindrical canbody having a terminal end edge at said end portion, comprising: means for rotating said canbody; a rotatably mounted inner mandrel having a circumferential arcuate groove therein defining a concave arcuate forming surface terminating at spaced apart first and second end zones, said rotatably mounted inner mandrel being capable of engaging said cylindrical canbody over a major portion of a sector of the circumference of said canbody, said first end zone having a first diameter and said second end zone having a second diameter greater than said first diameter, said inner mandrel extending from said first end zone in a substantially cylindrical shape of said first diameter, said inner mandrel being positionable within said canbody with said second end zone located adjacent to the terminal end edge of said canbody and said first end zone located within said canbody, said inner mandrel being provided with a can stop for establishing the correct axial position of said canbody; a rotatably mounted outer mandrel of a hollow cylindrical-like shape having a convex rib on the inner peripheral surface thereof, said convex rib defining an arcuate convex surface which is shaped to receive said groove, said outer mandrel being positionable around said canbody with said rib aligned with said groove; mounting means for independently mounting each of said inner and outer mandrels for movement toward and away from the longitudinal axis of said canbody; and operating means to move said inner and outer mandrels in opposite directions along a plane substantially coextensive with the plane defined by the terminal end edge of said canbody, said operating means comprising a first actuating means to translate said inner and outer mandrels in opposite directions into contact with the peripheral surface of the canbody; a second actuating means to translate said inner mandrel away from the longitudinal axis of said canbody and through the plane of said canbody thereby deforming said



terminal end edge and the immediately axial end portion outwardly to an increased diameter; a third actuating means to translate said outer mandrel toward the longitudinal axis of said canbody thereby deforming said end portion inwardly to a decreased diameter; and a fourth actuating means to translate said inner and outer mandrels to positions which are coaxial with said canbody thereby allowing removal of said canbody.

**4,341,104**  
**PRESS BRAKE PLATE LIFTER TABLE**  
David J. Jarman, PO 181/RR #3, Aurora, Ind. 47001  
Filed Nov. 19, 1979, Ser. No. 95,335  
Int. Cl.<sup>3</sup> B21D 5/01  
U.S. Cl. 72-389

11 Claims



1. In a press brake plate lifter table of the type having a support surface for supporting material to be formed in said press brake, said support surface having a horizontal position and an angular position, and hydraulic cylinder means for moving said surface between said horizontal position and said angular position, the improvement comprising:

means for moving said hydraulic cylinder means toward or away from said support surface to vary said angular position;  
said moving means including threaded rod means;  
handle means for rotating said threaded rod means;  
plate means threadably associated with said rod means and moving responsive to the rotation of said rod means; and  
means for pivotally attaching said hydraulic cylinder means to said plate means.

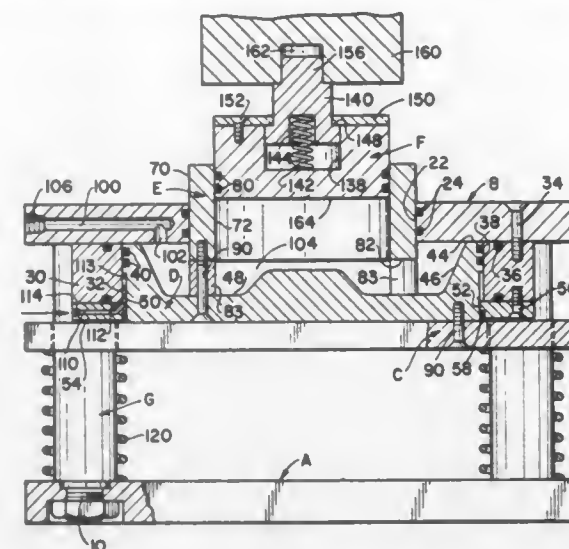
**4,341,105**  
**FORCE MULTIPLIER FOR PUNCH PRESSES**  
Steven J. Gerrick, Jr., 6816 Parma Park Blvd., Parma Heights, Ohio 44130  
Filed Sep. 8, 1980, Ser. No. 185,198  
Int. Cl.<sup>3</sup> B21J 9/12

U.S. Cl. 72-453.02

5 Claims

1. A force multiplier for a punch or arbor press comprising in combination a base plate, a top plate and pillars holding said plates in rigid vertically spaced relationship, a platen member between said plates and movably guided by said pillars, means biasing said platen upwardly, a cylinder of a first diameter extending downwardly from the lower surface of said upper plate, a first piston member slidable in said cylinder and at its lower surface abutting the upper surface of said platen, said upper plate having a cylindrical opening therethrough of a second diameter less than said first diameter, a sleeve slidable in said opening and having an inner cylindrical wall of a third diameter less than said second diameter, a second piston slid-

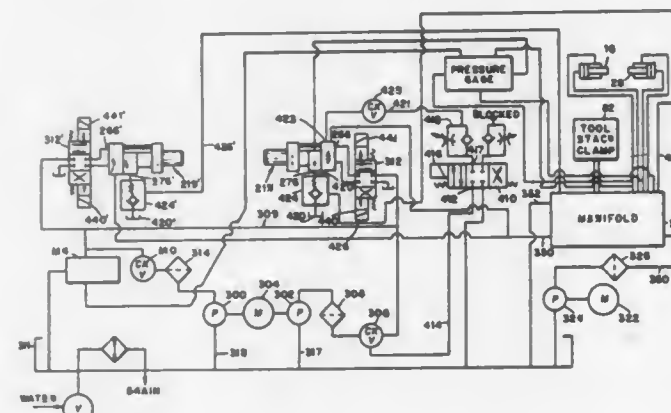
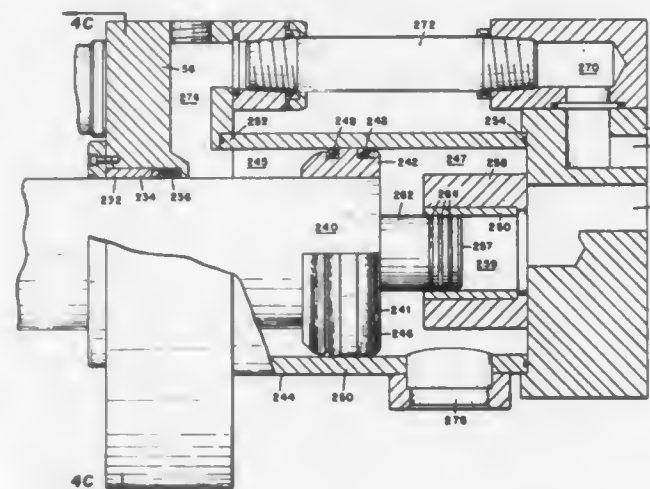
able in said sleeve and extending above said sleeve, the space defined by said cylinder and said pistons being filled with a



hydraulic fluid whereby forces on said second piston will exert through said hydraulic fluid a force downwardly on the platen greater than the force on the second piston.

**4,341,106**  
**APPARATUS FOR CONTROLLING THE MOVEMENT OF A RECIPROCATORY HYDRAULICALLY DRIVEN ELEMENT OF A METAL FORMING MACHINE**  
Kenneth P. Hackett, Nashville, Tenn., assignor to Gleason Works, Rochester, N.Y.  
Division of Ser. No. 787,056, Apr. 13, 1977, Pat. No. 4,197,757.  
This application Nov. 2, 1979, Ser. No. 90,665  
Int. Cl.<sup>3</sup> B21C 23/08, 27/00; F16B 15/08  
U.S. Cl. 72-453.07

4 Claims



1. A method for providing two-speed movement of a reciprocatory hydraulically driven element of a metal working machine comprising the steps of introducing at respective

inlets hydraulic fluid at a first pressure substantially simultaneously into first and second chambers of different cross sectional areas as viewed in a plane that is substantially perpendicular to the direction of reciprocatory motion of said element and which receive therein respective first and second working faces of said element and thereupon cause said chambers to be in fluid communication with one another at a location other than their respective inlets to thereby exert a force against said element to move the same in a direction that tends to move one of said faces out of its respective chamber, while continuing the aforesaid introduction of hydraulic fluid introducing at a separate and larger inlet hydraulic fluid at a second and lesser pressure into that chamber having the larger cross sectional area under flow conditions that tend to equalize the pressure within said chambers when said chambers are not in fluid communication with one another.

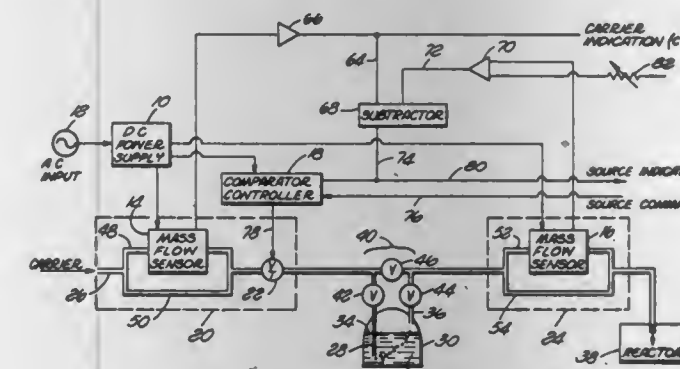
**4,341,107**  
**CALIBRATABLE SYSTEM FOR MEASURING FLUID FLOW**

Richard F. Blair, Fountain Valley, and Ralph Beazley, Rancho Palos Verdes, both of Calif., assignors to Tylan Corporation, Carson, Calif.

Filed Oct. 14, 1980, Ser. No. 196,410  
Int. Cl.<sup>3</sup> G01F 1/74, 25/00

U.S. Cl. 73-3

6 Claims



1. A calibratable control system for accurately metering the amount of a predetermined liquid vaporized by a carrier gas passing therethrough independent of temperature and pressure changes, comprising:

a mixing station for forming a mixture of said carrier gas and vaporized liquid;  
a flow controller comprising an inlet for said carrier gas, and an outlet, a first mass flow sensor connected between said flow controller inlet and outlet generating a first signal in correspondence to the mass flow rate of said carrier gas therethrough, and an adjustable valve controlling flow through said outlet to deliver carrier gas to said mixing station;

a flowmeter comprising an inlet for receiving said mixture from said mixing station, and an outlet therefor, and a second flow sensor connected between said flowmeter inlet and outlet generating a second signal in correspondence to the mass flow rate of said mixture therethrough; each of said mass flow sensors comprising a sampling tube and, wound on said tube, heating and temperature sensing wires providing an output voltage as a function of mass flow independent of ambient temperature and pressure changes;

means for comparing said first and second signals to yield a third signal representing the mass flow rate of said vaporized liquid;

means for generating a command signal in accordance with a predetermined mass flow rate of said vaporized liquid; means for comparing said command signal to said third signal;

means for adjusting said flow controller valve in accordance with any difference between the command signal and said

third signal whereby to minimize or eliminate said difference;  
means for diverting carrier gas from the outlet of said flow controller to the inlet of said flowmeter, bypassing said mixing station, whereby said first signal corresponds only to the mass flow rate of said carrier gas through said second mass flow sensor; and  
means for adjusting said first and/or second signal so as to cause said first and second signals to be equalized thereby calibrating said system and whereupon said carrier gas can be redirected to said mixing station.

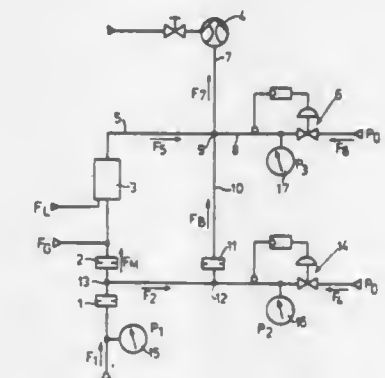
**4,341,108**  
**MASS FLOW-DEPENDENT GAS ANALYZER WITH THROUGH-FLOW CONTROL DURING LOW PRESSURE OPERATION**

Heinz Warneke, Cologne; Melchior Kahl, Bergisch Gladbach; Hans H. Meyer, Dormagen, and Paul Schürmeyer, Neuss, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Filed Aug. 8, 1980, Ser. No. 176,373  
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1979, 2932436

Int. Cl.<sup>3</sup> G01N 27/16

U.S. Cl. 73-23

6 Claims



1. In a continuously operated gas analyzer comprising a mass flow-dependent detector, consisting of:

(a) a suction device at the detector outlet;  
(b) a low pressure controller connected to the detector outlet, which controller maintains the low pressure  $p_3$ , produced by the suction device, constant at the detector outlet with respect to the atmospheric pressure  $P_0$ ;  
(c) a first choke which is connected upstream of the detector in the measuring gas line; and  
(d) a second choke which is connected parallel to the series connection of the first choke and the detector as a by-pass, the improvement comprising: a third choke connected upstream of the common gas entry into the first choke and the second choke and low pressure control means connected to the common connection point of the three chokes and including the second choke for sucking up air under atmospheric pressure at its inlet and maintaining its outlet pressure  $p_2$  at a value which has a constant difference from the atmospheric pressure  $P_0$ .

**4,341,109**  
**METHOD AND APPARATUS FOR DETERMINING CIGARETTE FILTER ROD PRESSURE DROP**  
John D. Evans, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.  
Filed Jul. 7, 1980, Ser. No. 166,626  
Int. Cl.<sup>3</sup> G01B 13/08

U.S. Cl. 73-37

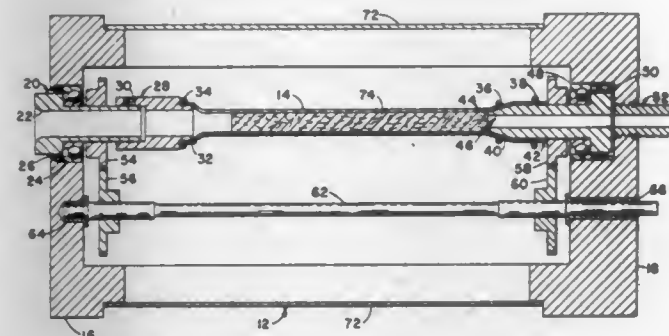
6 Claims

1. Apparatus for use with a gauging instrument, which measures and indicates the circumference of articles by means scanning the surface of the articles, and for determining in cooperation with said gauging instrument substantially true pressure drop measurement of nonwrapped and soft wrapped



filter rods when the circumference of said filter rods is compressed for such pressure drop measurement by an encapsulation method, said apparatus comprising:

elastic sleeve means for receiving therewithin the entire length of a filter rod, and adapted to encapsulate said filter rod by close sealing adherence to and predetermined compression of the circumferential surface of said filter rod and thereby form a substitute profile on the profile of said filter rod, said substitute profile providing a reference surface to be measured;



means for supporting said elastic sleeve means in said apparatus;  
means for generating a gas flow at a predetermined rate through said elastic sleeve means and through a filter rod encapsulated therein;  
means for measuring and indicating the pressure difference at said predetermined flow rate between the flow of gas entering and the flow of gas leaving said filter rod; and  
means for rotating said elastic sleeve means while said gauging instrument measures said substitute profile circumference.

#### 4,341,110 PERCOLATION TESTING METHOD AND APPARATUS

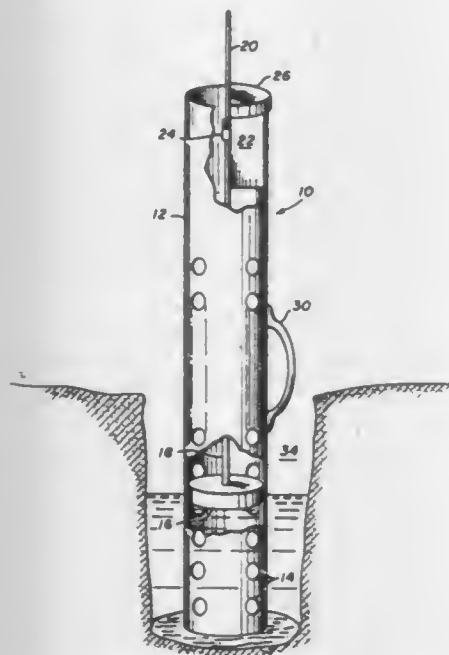
Philip M. Block, 58 Fleetwood Rd., Newington, Conn. 06111

Filed Jun. 19, 1980, Ser. No. 161,139

Int. Cl.<sup>3</sup> G01N 15/08

U.S. Cl. 73—38

4 Claims



1. Apparatus for measuring the rate of change of the level of fluid in an excavation in a porous medium comprising:  
a perforated tubular housing having an axis;  
float means positioned for axial movement within said tubular housing;  
elongated rod means, said rod means being affixed at a first end to said float means, said rod means having a recording

medium receiving portion adjacent a second end thereof; and

recording means, said recording means being removably supported within said housing at a first end thereof, said recording means including timer means and means controlled by signals produced by said timer means for periodically marking the recording medium, said recording means further including guide means for said rod means second end whereby the recording medium is juxtapositioned to said recording means marking means, the points at which the recording medium is marked by said marking means being a function of the position of said float means in said housing and said timer means output signals.

#### 4,341,111 PROCESS AND APPARATUS FOR DETERMINING THE VISCO ELASTIC CHARACTERISTICS OF FLUIDS

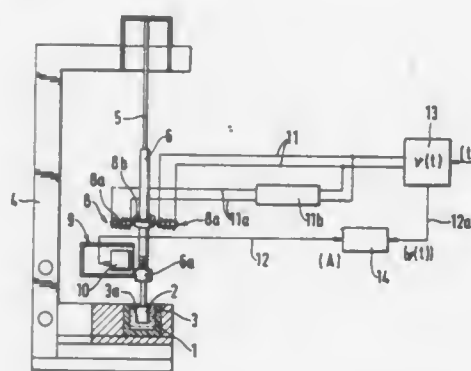
Dieter Husar, Bad Homburg, Fed. Rep. of Germany, assignor to Fresenius AG, Bad Homburg, Fed. Rep. of Germany

Filed Mar. 4, 1980, Ser. No. 127,987

Int. Cl.<sup>3</sup> G01N 11/10, 33/48

U.S. Cl. 73—64.1

27 Claims



1. In a process for determining the visco-elastic properties of specimens including fluids and/or a polymerizing mixture, especially of coagulating fluids such as blood or blood plasma, and their temporal changes, using an elastic oscillation system including said specimen, the natural resonant frequency of said system changing as said specimen properties change, the improvement characterized by:  
monitoring at least the changing frequency position of the resonant frequency of said oscillation system occurring as said specimen properties change for determining specimen elasticity changes.

#### 4,341,112 MEASUREMENT OF SOIL MOISTURE

Neilson A. M. Mackay, and John C. Beal, both of Kingston, Ontario, Canada, assignors to Queen's University at Kingston

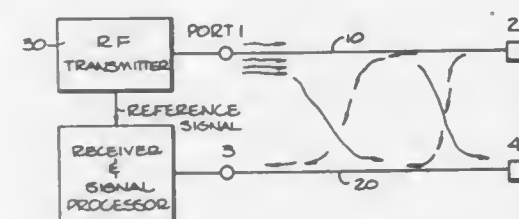
Filed Jun. 23, 1980, Ser. No. 162,093

Claims priority, application Canada, Jun. 22, 1979, 330390

Int. Cl.<sup>3</sup> G01N 27/02

U.S. Cl. 73—73

7 Claims



1. A method of measuring the moisture content of bulk material comprising:  
(a) placing a length of leaky co-axial cable in the bulk material so as to be buried therein and spaced from an electromagnetic sensor in the region of interest;

(b) injecting a signal of high frequency electro-magnetic energy into the cable; and  
(c) measuring at least one of phase and time of arrival of the signal at the sensor with respect to the injected signal and therefrom determine the moisture content of the material.

#### 4,341,113 INSPECTION SYSTEM FOR HEAT EXCHANGER TUBES

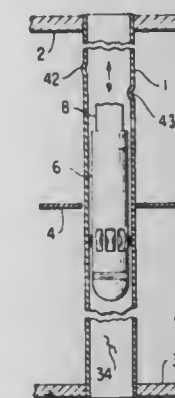
James E. Gutzwiller, Jr., Forest, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Aug. 8, 1980, Ser. No. 176,427

Int. Cl.<sup>3</sup> G01B 5/28

U.S. Cl. 73—105

7 Claims



1. In an apparatus for inspecting a heat exchanger tube, a composite scanner adapted to be drawn through the tube having a cylindrical body portion, a flexure spring having one end anchored to said body portion adjacent its outer circumference and a free end contacting the interior wall of the tube as the scanner is drawn therethrough, a strain gauge operatively connected to said flexure spring having a winding responsive to the flexing of said flexure spring generating a first signal corresponding to the response of said winding to the flexing of said flexure spring, and an eddy current sensor having a winding incorporated in said scanner electromagnetically coupled with said tube generating a second signal corresponding to changes in said electromagnetic coupling as said scanner is drawn through said tube.

#### 4,341,114 APPARATUS FOR BURNOFF OF A RESISTOR, IN PARTICULAR OF A HOT WIRE IN AN AIR FLOW RATE METER OF AN INTERNAL COMBUSTION ENGINE

Gunther Plapp, Filderstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

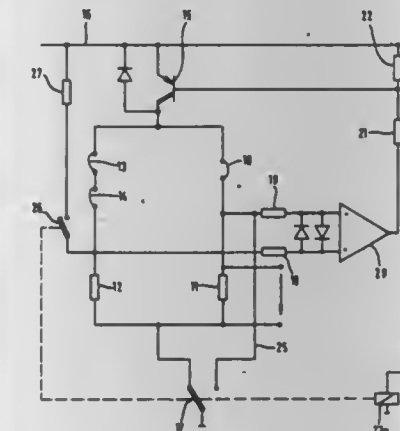
Filed May 30, 1980, Ser. No. 154,688

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929434

Int. Cl.<sup>3</sup> G01M 15/00

U.S. Cl. 73—118

11 Claims



1. An apparatus for burnoff of deposits from at least two resistors of an air flow rate measurement circuit for an internal

combustion engine, in which the at least two resistors are normally connected in a parallel arrangement in a first electric current circuit controlled by an electric current control device during a measurement operation, wherein the apparatus comprises:

a second electric current circuit which is different from the first electric current circuit; and  
switch means for switching the at least two resistors in a series arrangement into the second electric current circuit during a burnoff operation.

#### 4,341,115 METHOD AND APPARATUS FOR MONITORING STRUCTURAL AND MECHANICAL PROPERTIES OF DRILLING MUD

Stanislav A. Alekhin, Chilanar, kvartal 24, dom 53, kv. 89; Vitold M. Bakhr, proezd Gaidara, dom 7-a, kv. 17, and Raisa I. Born, Chilanar, kvartal 24, dom 53, kv. 89, all of Tashkent, U.S.S.R.

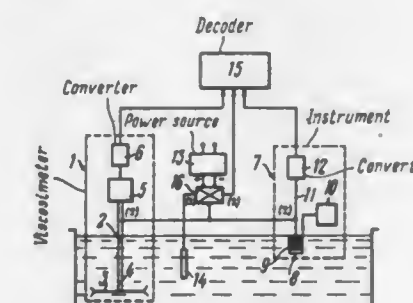
PCT No. PCT/SU79/00076, § 371 Date May 22, 1980, § 102(e) Date Apr. 21, 1980, PCT Pub. No. WO80/00726, PCT Pub. Date Apr. 17, 1980

PCT Filed Aug. 30, 1979, Ser. No. 195,423

Claims priority, application U.S.S.R., Sep. 22, 1978, 2665177 Int. Cl.<sup>3</sup> E21B 47/00

U.S. Cl. 73—153

3 Claims



1. A method of monitoring structural and mechanical properties of drilling mud, said method utilizing a power source having a pair of poles of opposite polarity and an electrode, said method including the steps of  
determining the viscosity of drilling mud by using a viscometer having a driven sensitive element,  
determining the shear strength of the drilling mud by using a shear strength measuring instrument having a driven sensitive element,  
immersing the driven sensitive elements into the drilling mud, and  
obtaining and comparing the data characteristics of the parameters measured, said method comprising the steps of  
connecting said sensitive elements to the same pole of said power source;  
connecting said electrode to the opposite pole of said power source and immersing said electrode in said drilling mud;  
measuring current flowing between said electrode and said sensitive elements, thereby obtaining electrical signals proportional to the viscosity and shear strength of said drilling mud upon stabilization of said current;  
determining a first ratio of said shear strength and viscosity signals;  
reversing the polarity of the poles of said power source;  
determining a second ratio of said shear strength and viscosity signals; and  
determining the arithmetical mean of said first and second ratios.



4,341,116

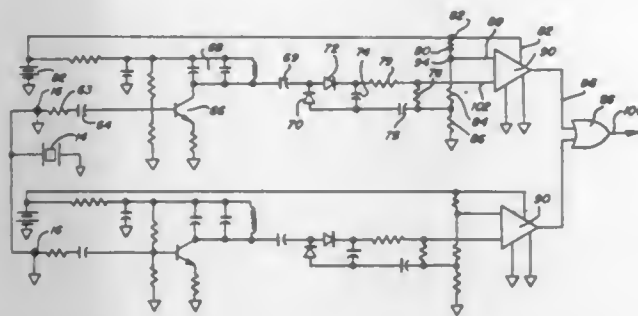
## LIQUID ABSENCE DETECTOR

Arnold C. Bilstad, Deerfield, and Michael Wicnienski, Antioch, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 6, 1980, Ser. No. 127,552  
Int. Cl.<sup>3</sup> G01N 29/02

U.S. Cl. 73—290 V

13 Claims



1. A device for detecting the absence of liquid in a liquid chamber, said device comprising transmitter means for transmitting a signal through the chamber, and receiver means for receiving the transmitted signal after its transmission through the chamber, said receiver means comprising a receiving transducer for receiving an AC signal, an amplifier, a capacitor AC coupling said transducer to said amplifier, DC control circuit means for receiving an AC signal and for generating an output voltage the amplitude of which is proportional to the peak-to-peak amplitude of the received AC signal, means for coupling the amplified AC signal from said amplifier to said DC control circuit means, a comparator, means for providing a reference voltage to one input of said comparator, means for coupling said DC control circuit output voltage to the other input of said comparator, the amplitude of said DC control circuit output voltage being proportional of the peak to peak amplitude of said amplified AC signal, and said comparator output providing a liquid absence detection signal in response to the difference between said reference voltage and said DC control circuit output voltage.

4,341,117

## ELECTRONIC THERMOMETER

Harold Goldstein, Westbury, and William Montren, Bay Shore, both of N.Y., assignors to Patient Technology, Inc., Hauppauge, N.Y.

Division of Ser. No. 392,961, Sep. 5, 1973, Pat. No. 3,978,325.  
This application Jun. 11, 1976, Ser. No. 695,688

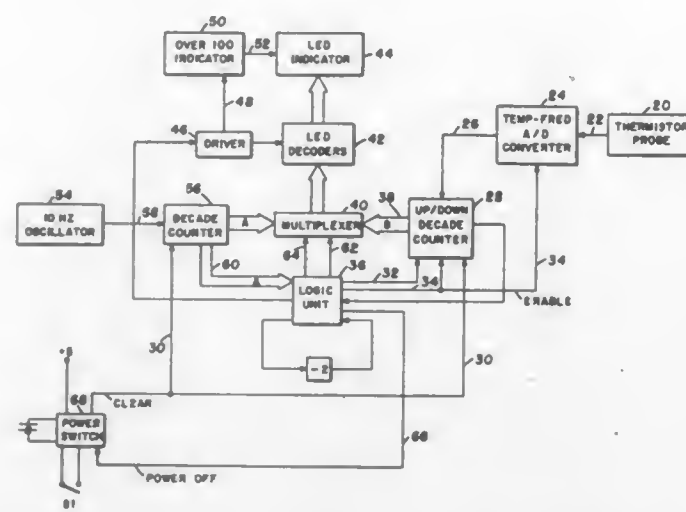
Int. Cl.<sup>3</sup> G01K 7/24

U.S. Cl. 374—170

5 Claims

1. An electronic apparatus comprising: transducer means for varying an electric parameter in accordance with a condition being measured; converter means for converting said electric parameter to a frequency-varying signal; computing means connected to said converter means for computing an advance indication of said condition; and display means for receiving and displaying said advance indication of said condition; said apparatus further comprising control means for controlling said computing means to operate on said frequency-varying signal during first and second time periods to obtain first and second temperature measurements, respectively, said first and second temperature measurements

being combined by said computing means to provide said computed advance indication; and



wherein the sum of said first and second time periods is less than the time said condition actually takes to reach its final value.

4,341,118

## TEMPERATURE VERIFICATION APPARATUS

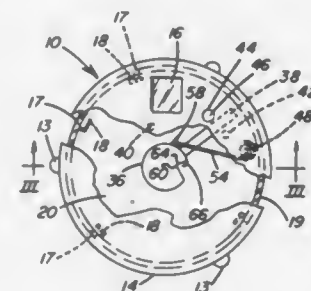
Howard T. Schobl, Coraopolis, Pa., assignor to Schobl Enterprises, Coraopolis, Pa.

Filed Jul. 28, 1980, Ser. No. 173,054

Int. Cl.<sup>3</sup> G01K 5/72; G01D 11/16, 13/24

U.S. Cl. 116—221

14 Claims



1. Critical temperature verification apparatus comprising, a case, a cap connected to the top of said case, a transparent window enclosed within said cap, temperature responsive means mounted within said case having a portion of said temperature responsive means free to move in an arcuate path in response to temperature variation, a rotatable cam connected to said free portion of said temperature responsive means within said case and adapted to rotate in response to temperature variation, a temperature indicator connected to said cam and extending outwardly therefrom within said case and adapted to travel into view under said window in response to attainment of a preselected critical temperature, first locking means integral with a portion of the lateral surface of said cam, second locking means connected to said cap within said case and having a portion of said second locking means adapted to traverse said lateral surface of said cam upon rotation thereof and further adapted to engage in fixed connection said first locking means upon the attainment of said preselected critical temperature, and stop means connected to said cap within said case adapted to engage said temperature indicator to prevent further movement of said temperature indicator in response to further temperature variation beyond said preselected critical temperature.

4,341,119

## DATA INPUT SYSTEM FOR DYNAMIC BALANCING MACHINE

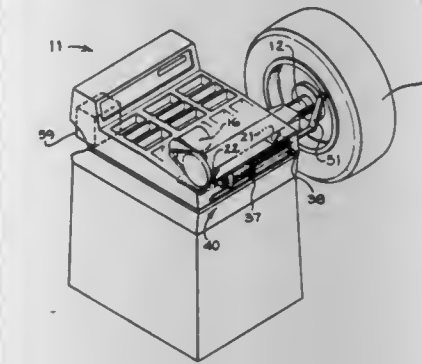
Bernie F. Jackson, Los Gatos, and Hoyt H. Nelson, Santa Clara, both of Calif., assignors to Nortron Corporation, Sunnyvale, Calif.

Filed Mar. 18, 1980, Ser. No. 130,083

Int. Cl.<sup>3</sup> G01M 1/22

U.S. Cl. 73—462

11 Claims



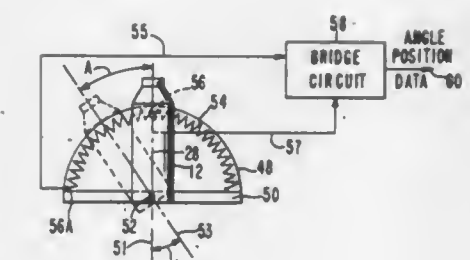
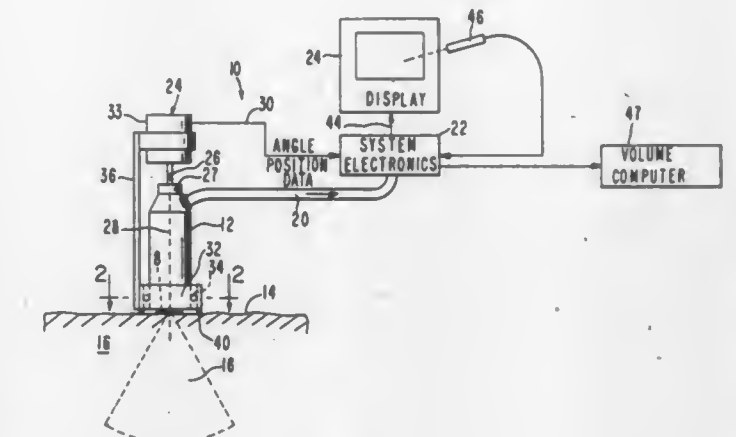
1. In a dynamic wheel balancing machine of a type having an elongate drive shaft for carrying a wheel at one end to be rotated therewith, an automatic data input device for detecting data for balancing a wheel, said input device comprising, in combination:

measurement means axially movable between retracted and advanced positions with respect to the plane of the adjacent rim of the wheel for measuring the displacement between said plane and a predetermined portion of said machine;

engaging means carried at the free end of said measurement means positionable to engage the rim of the wheel; signal means coupled to the engaging means to generate an electric signal representative of the diameter of the wheel to be balanced, said signal means including

- (1) a radius arm carried on the free end of said axially movable means, said arm being rotatable to engage the lip of the rim of the wheel and
- (2) variable electric means coupled to sense radial rotation of said arm to define an angle between said arm when contacting the rim of the wheel and a line drawn between the axis of rotation of the wheel and the axis of rotation of said radius arm.

ence position and a plurality of selected examining positions of said transducer body, upon said transducer body being rotated from said reference to said selected positions while at least one point of said longitudinal axis remains substantially spatially fixed, said means for determining comprising a shaft encoder means mounted to said body for providing a signal indicative of said rotational angle; means for correlating the associated reconstructed images



4,341,120

## ULTRASONIC VOLUME MEASURING SYSTEM

Weston A. Anderson, Palo Alto, Calif., assignor to Diasonics Cardio/Imaging, Inc., Salt Lake City, Utah

Filed Nov. 9, 1979, Ser. No. 92,903

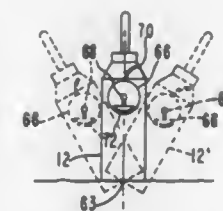
Int. Cl.<sup>3</sup> G01N 29/04

U.S. Cl. 73—618

5 Claims

1. In an ultrasonic imaging system of the type adapted for examining bodily tissue or the like; said system including a transducer means interrogating said bodily tissue to be examined with an ultrasonic beam which is swept over an internal fan shaped sector of said tissue to be examined; means for determining from the reflected ultrasonic energy resulting from said beam the variations in acoustical impedance of said bodily tissue over the area of said sector and providing therefrom a reconstructed image of a cross-section of bodily tissue corresponding to said sector; said transducer means including a housing body, said body including a longitudinal axis approximately aligned with the plane of said fan-shaped sector and approximately symmetrically dividing the included angle of said fan, and said body being orientable with respect to the bodily tissue being examined to enable said fan-shaped sector to intersect and thereby effect imaging of a desired cross-section of said tissue; the improvement enabling evaluation of the volume or shape of a three-dimensional portion of the tissue being examined, comprising:

means for determining the rotational angle between a refer-



with the said determined angles, whereby to generate a plurality of cross-sectional images of said three-dimensional tissue portion being examined, wherein the imaged tissue cross-sections include at least one common point, thereby to enable evaluation of the volume or shape of the said three dimensional tissue portion; and means for supporting said transducer body for rotation about said longitudinal axis.



4,341,121

# METHOD AND APPARATUS FOR TESTING THE RESETTING CAPACITY OF SAFETY SKI BINDINGS WHICH ARE FOR EXAMPLE MOUNTED ON SKIS

Hannes Marker, Hauptstrasse 51-53, 8100 Garmisch-Partenkirchen, Fed. Rep. of Germany; Walter Knabel, Farchant, and Gerhard Eichweber, Kochel, both of Fed. Rep. of Germany, assignors to Hannes Marker, Garmisch-Partenkirchen, Fed. Rep. of Germany

PCT No. PCT/EP79/00010, § 371 Date Oct. 22, 1979, § 102(e) Date Oct. 22, 1979, PCT Pub. No. WO79/00653, PCT Pub. Date Sep. 6, 1979

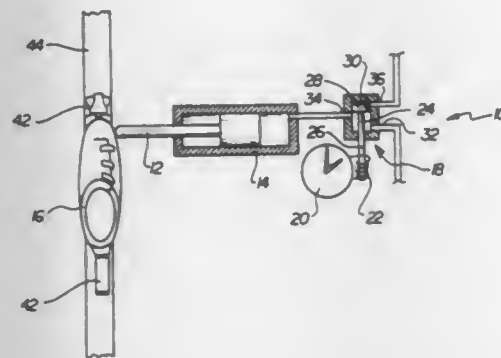
PCT Filed Feb. 20, 1979, Ser. No. 201,110

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807638

Int. Cl.<sup>3</sup> G01L 5/03

U.S. Cl. 73—862.02

3 Claims



1. A method of testing the resetting capacity of a safety ski binding mounted on a support, comprising:  
positioning a member in a rest position in the ski binding;  
exerting a first constant force on the member in a release direction of the binding during constant time intervals;  
and

releasing the first force during time periods intermediate the constant time intervals so that the member is moved towards its rest position by the ski binding against a second constant force, the member returning to its rest position during the time periods when the resetting capacity of the safety ski binding is more than a predetermined value, and the member returning only a part of the way to its rest position when the resetting capacity of the safety ski binding is less than the predetermined value so that a residual distance remains at the end of each time period, the residual distances being summated during subsequent exertions of the first force to cause release of the safety ski binding.

3. An apparatus for testing the resetting capacity of a safety ski binding mounted on a support, the ski binding holding a member in a rest position, said apparatus comprising:

supporting means spaced from the support;  
a pin mounted in the supporting means for movement towards and away from the member held in the ski binding;  
means for moving the pin into engagement with the member to thereby exert a releasing force on the ski binding;  
resistance means for applying a constant force counteracting movement of the pin when the ski binding urges the member towards its rest position; and  
clock means for controlling said means for moving for spaced time intervals so that, during the time intervals, said means for moving exerts a first constant force on said pin to thereby move the member held by the ski binding and exert a releasing force on the ski binding, said ski binding urging the member against the resistance means towards its rest position during time periods intermediate the time intervals, the member returning to its rest position during the time periods when the resetting capacity of the safety ski binding is more than a predetermined value, and the member returning only a part of the way to its rest position when the resetting capacity of the safety ski

binding is less than the predetermined value so that a residual distance remains at the end of each time period, the residual distances being summated during subsequent exertions of the first force to cause release of the safety ski binding.

4,341,122

# FORCE MEASURING DEVICE

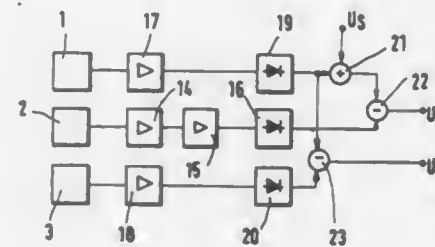
Gerhard B. Lechler, Mühlenstrasse 58, 1000 Berlin 46, and Otto G. Richter, Berlin, both of Fed. Rep. of Germany, assignors to Gerhard B. Lechler, Berlin, Fed. Rep. of Germany  
Filed Mar. 13, 1980, Ser. No. 130,073

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1979, 2911479

Int. Cl.<sup>3</sup> G01L 5/12, 5/16

U.S. Cl. 73—862.04

9 Claims



1. A device for measuring forces including:

a ball or roller bearing having concentric inner and outer rings for accommodating at least first and second rows of rolling elements therebetween,

first and second resistance strain gauges on said ball or roller bearing mounted at first (1) and second (3) measuring positions proximate said first row for sensing cyclic strains applied thereto,

a third resistance strain gauge mounted on said ball or roller bearing at a third measuring position (2) proximate said second row for sensing cyclic strains applied thereto, said ball or roller bearing being adapted to absorb radial and axial forces applied thereto, said first, second and third strain gauges being adapted to change resistance and provide a signal in response to cyclic strains applied to said respective measuring positions,

first (17) and second (18) and third (14) amplifiers coupled to the output of said first, second and third strain gauges, respectively,

first (19), second (20) and third (16) rectifiers coupled to the outputs of said first, second and third amplifiers, respectively,

a compensator (15) coupled between the output of said third amplifier (14) and the input of said third rectifier (16) for compensating for bearing ratio percentages, and the apparent axial force resulting therefrom, with only radial forces acting on said first and second rows of rolling elements,

said compensator being adapted to reinforce the weaker signal of the signals proceeding from the first and third measuring positions, to which the radial forces are applied in the same direction, until said apparent axial force is eliminated, and

a subtractor (22) for subtracting said compensated signal at the output of said third rectifier (16) from the signal at the output of said first rectifier (19) to provide a different signal  $U_A$  corresponding to actual applied axial force.

4,341,123

# TORQUE-MEASURING TAPE CASSETTE

Reinhard Raemisch, Reichelsheim, and Arthur H. Hoffmann, Mannheim, both of Fed. Rep. of Germany, assignors to Koenig-Electronic Friedrich W. Koenig, Reichelsheim, Fed. Rep. of Germany

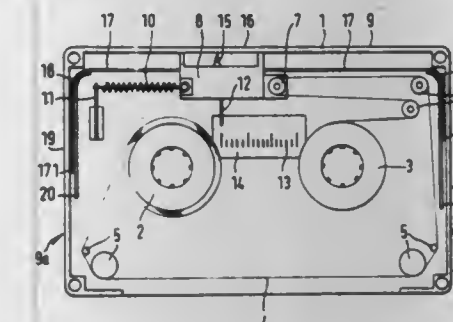
Filed Jul. 22, 1980, Ser. No. 171,418

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1979, 2930739; Aug. 10, 1979, 2932526

Int. Cl.<sup>3</sup> G01L 3/16, 5/06

U.S. Cl. 73—862.09

10 Claims



1. A torque-measuring tape cassette, comprising  
a housing having a plurality of different exposed sides and a pair of hubs adapted to be rotated by the tape drive of a cassette tape machine; a movable component mounted in said housing for displacement in a path; a deflecting element provided on and displaceable with said movable component; a spring connected to said housing and to said movable component and resisting the displacement of said component; a tape trained about said deflecting element and having spaced ends connected to the respective hubs; a set of dials, including a plurality of dials each located and observable at a different one of said exposed sides; and a set of pointers, including a plurality of pointers each cooperating with one of said dials, one of said sets being provided on said housing and the other of said sets being movable with said component so that displacement of said component effected as a result of rotation applied to a respective hub and consequent pull on said tape, can be read off all of said dials as an indication of measured torque.

4,341,124

# AUTOMATIC SAMPLING APPARATUS

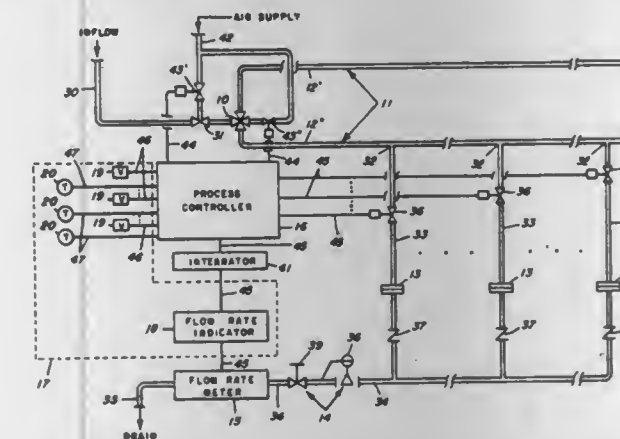
Douglas N. Rodgers, Manfred Siegler, and David Y. H. Shen, all of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Nov. 10, 1980, Ser. No. 205,414

Int. Cl.<sup>3</sup> G01N 1/10

U.S. Cl. 73—863.01

13 Claims



10. The method of keeping solid particles suspended in liquid in a sampling apparatus comprising the steps of providing the liquid to a switching valve at the entrance of a manifold having two branches, and periodically exclusively directing the flow

from the switching valve down one and then the other of the branches of the manifold.

4,341,125

# DEVICES FOR EXTRACTING A SAMPLE OF FLUID FROM A HYDRAULIC CIRCUIT

Roger Tardy, Nexon, France, assignor to Sofrance S.A., Limoges, France

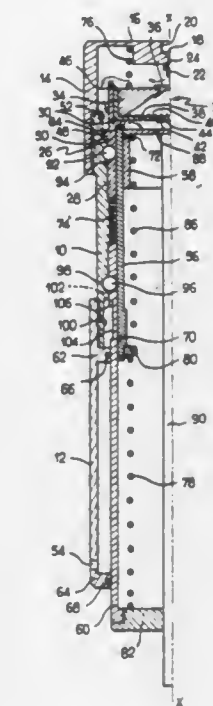
Filed Nov. 17, 1980, Ser. No. 207,768

Claims priority, application France, Nov. 30, 1979, 79 29545

Int. Cl.<sup>3</sup> G01N 1/14

U.S. Cl. 73—863.25

11 Claims



1. A device for extraction of a sample of fluid from a hydraulic circuit having an extraction take-off, comprising:

a body provided with a ferrule which can be fitted on the take-off;

a perforator fixed to the ferrule and provided with at least one orifice capable of distributing the fluid into the body; a container provided with a perforatable capsule and a filtering membrane;

a movable carrier capable of receiving the container, the carrier being displaceable from one to the other of two positions, comprising an extraction position where the capsule is perforated by the perforator and where the fluid penetrates into the container, and a non-extraction position where the capsule is not perforated by the perforator, and where the fluid flows outside the container;

first resilient return means tending to return the carrier towards the extraction position;

second resilient return means, of lesser force than the first resilient return means, tending to return the carrier towards the non-extraction position;

means for immobilising the carrier in the non-extraction position;

first releasing means capable of releasing the immobilising means;

second releasing means capable of releasing the first resilient return means; and

means defining a space and capable of: receiving a first predetermined volume of fluid, namely a rinsing volume, while the carrier is in the non-extraction position; operating the first releasing means and thus causing the displacement of the carrier towards the extraction position, receiving a second predetermined volume of fluid, namely a sample volume, which passes through the filtering membrane of the container; operating the second releasing means and thus causing the displacement of the carrier towards the non-extraction position;



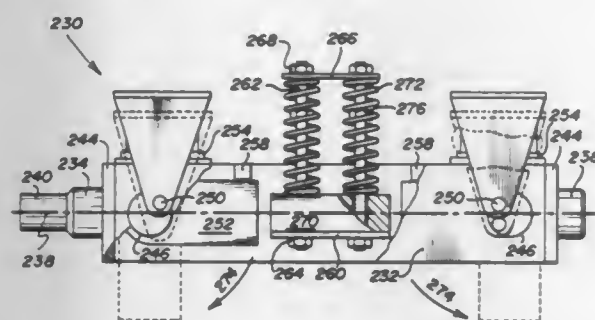
and discharging outside the body the fluid coming from the perforator and the fluid rejected from the space.

4,341,126

**VARIABLE AMPLITUDE VIBRATORY APPARATUS**  
Hubert E. Thomas, 1406 El Camino Real, Eufless, Tex. 76039  
Continuation of Ser. No. 772,137, Feb. 25, 1977, abandoned,  
which is a continuation-in-part of Ser. No. 712,395, Aug. 6, 1976,  
abandoned. This application Aug. 21, 1979, Ser. No. 68,343  
Int. Cl.<sup>3</sup> F16H 33/00

U.S. Cl. 74—61

2 Claims



1. A variable amplitude vibratory apparatus comprising:  
shaft means supported for rotation about an axis;  
first movable weight means mounted eccentrically on the  
shaft means for rotation therewith for movement between  
a first relatively reduced eccentricity position and a first  
relatively increased eccentricity position with respect to  
the axis of rotation in response to a centrifugal force of  
rotation;

first guiding means attached to said shaft means for guiding  
the first movable weight means for movement between  
the first reduced eccentricity position and the first in-  
creased eccentricity position with respect to the axis of  
rotation wherein the guiding means for the first movable  
weight means includes first rod means mounted on the  
shaft means and extending outwardly substantially per-  
pendicularly with the axis of rotation of the shaft means  
and slidably supporting the first movable weight means;

first stop means mounted on the first rod means for limiting  
maximum eccentricity of the first movable weight means;  
first spring means connected between said first movable  
weight means and said first guiding means, and biasing the first  
movable weight means toward the first relatively reduced  
eccentricity position for retaining the first movable  
weight means in the first reduced eccentricity position  
until the rotational shaft velocity increases above a first  
predetermined magnitude and for yieldably resisting pro-  
gressive movement of the first movable weight means as  
said first movable weight means moves toward the first  
increased eccentricity position in response to increasing  
centrifugal force as rotational shaft velocity increases  
above the first predetermined magnitude wherein the first  
spring means includes at least one compression spring  
means mounted concentrically on the first rod means;

second movable weight means mounted eccentrically on the  
shaft means for rotation therewith for counterbalancing  
the first movable weight means and for movement be-  
tween a second relatively reduced eccentricity position  
and a second relatively increased eccentricity position  
with respect to the axis of rotation wherein the second  
movable weight means comprises two weight members  
which are guided and supported for pivotal movement  
about two spaced axes which are substantially perpen-  
dicular to the rotational axis of the shaft means; p1 the center  
of mass of the second movable weight means being posi-  
tioned on the opposite side of the shaft means from the  
center of mass of the first movable weight means;

second guiding means attached to said shaft means for guid-  
ing the second movable weight means for movement  
between the second reduced eccentricity position and the

second increased eccentricity position with respect to the  
axis of rotation; and

second spring means connected between said second mov-  
able weight means and second guiding means, and biasing  
the second movable weight means toward the second  
reduced eccentricity position for retaining the second  
movable weight means in the second reduced eccentricity  
position until the shaft rotational velocity increases to a  
second higher predetermined magnitude and for yieldably  
resisting progressive movement of the second movable  
weight means as said second movable weight means  
moves toward the second increased eccentricity position  
in response to increasing centrifugal force so that the  
second movable weight increasingly counterbalances the  
first movable weight as the rotational shaft velocity in-  
creases above the second higher magnitude.

4,341,127

**MULTIPLE-SPEED TRANSMISSION OF  
COUNTERSHAFT CONSTRUCTION WHICH CAN BE  
SHIFTED UNDER LOAD**

Enno Stodt, Heldenheim, Fed. Rep. of Germany, assignor to  
Voith Getriebe KG, Fed. Rep. of Germany

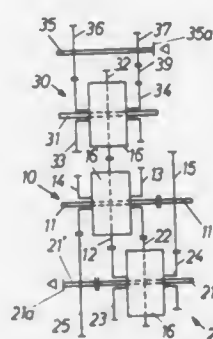
Filed Dec. 26, 1978, Ser. No. 973,020

Claims priority, application Fed. Rep. of Germany, Jan. 4,  
1978, 2800267

Int. Cl.<sup>3</sup> F16H 3/10

U.S. Cl. 74—333

16 Claims



1. A multiple speed transmission, comprising:

(A) a first and a second shift unit, each said shift unit com-  
prising, respectively:

(1) a rotatable shaft, the rotatable shaft of said first shift  
unit being parallel to the rotatable shaft of said second  
shift unit;

(2) a first gear fixed for rotation with said shaft;

(3) a second gear on said shaft and rotatable with respect  
thereto;

(4) a third gear on said shaft and rotatable with respect  
thereto; said third gear having a different pitch diameter  
than said second gear, said second and third gears being  
located on opposite sides of said first gear, the diameter  
of said first gear being greater than the diameter of at  
least one of said second and third gears;

(5) clutch means for selectively coupling one of said sec-  
ond and said third gears to rotate together with said first  
gear, said clutch means including first and second disk  
clutches arranged on either side of said first gear, said  
first disk clutch being adapted to selectively couple said  
first gear to said second gear, said second disk clutch  
being adapted to selectively couple said first gear to said  
third gear;

(6) a fourth gear fixed for rotation with said shaft, said  
fourth gear being further away, as measured along the  
axis of said shaft, from said first gear than at least one of  
said second and third gears;

(B) said gears of both said shift units being, at least indi-  
rectly, in engagement such that said first gear of each said  
unit is in engagement with and defines a set of gears with  
said second gear of the other said unit, and said third gear

of each said unit is in engagement with and defines a set of  
gears with said fourth gear of the other said unit, whereby  
four engaging sets of gears are formed; and

(C) a reverse transmission connected to said first shift unit  
for reversing the direction of rotation of said shaft of said  
first shift unit, said reversing transmission comprising a  
third shift unit, said third shift unit including:

(1) a second shaft; a fifth gear fixed to said second shaft for  
rotation therewith; said fifth gear engaging said first  
gear of said first shift unit for rotation therewith;

(2) a sixth gear and a seventh gear located on and being  
rotatable with respect to said second shaft;

(3) second clutch means for selectively coupling one of  
said sixth and seventh gears to rotate with said fifth  
gear;

(4) first means for rotating said sixth gear, and thereby for  
rotating said fifth gear, in one direction when said sec-  
ond clutch means has coupled said fifth and said sixth  
gears; and

(5) second means for rotating said seventh gear, and  
thereby for rotating said fifth gear, in a second, opposite  
direction when said second clutch means has coupled  
said fifth and said seventh gear.

4,341,129

**SYSTEM OF CHANGING TRAVELLING SPEED OF  
WORKING VEHICLE**

Niro Bando, Sakai, Japan, assignor to Kubota, Ltd., Osaka,  
Japan

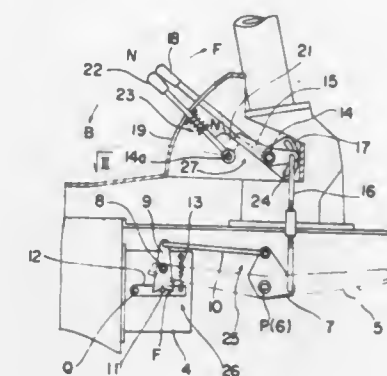
Filed Mar. 27, 1980, Ser. No. 134,399

Claims priority, application Japan, Oct. 13, 1979,  
54/141687[U]

Int. Cl.<sup>3</sup> G05G 1/14, 5/04, 11/00

U.S. Cl. 74—481

5 Claims



1. A system of changing the travelling speed of a working  
vehicle comprising;

a pedal (5) for operating a stepless speed-change means (4),  
spring means (26) for normally spring-loading said stepless  
speed-change means (4) to the neutral position,

an operating unit for speed change (25) to interlockingly  
connect said stepless speed-change means (4) with said  
pedal (5),

a first manual lever (22) for operating said stepless speed-  
change means (4),

spring means (23) for maintaining said first manual lever (22)  
at its operated position,

cam means (27) adapted to permit said stepless speed-change  
means (4) to be operated in the speed increasing direction  
by said pedal (5) and adapted to prevent said stepless  
speed-change means (4) from being operated to its neutral  
position, and

coupling means (16) to interlockingly connect said cam  
means (27) with said operating unit and said pedal for  
speed change (25).

4,341,130

**DUST AND OIL SLINGER**

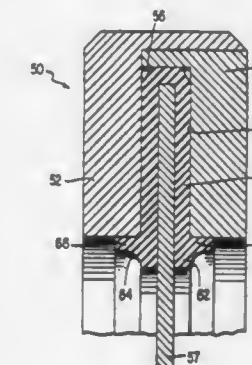
Michael Shepherd, Indianapolis, and Robert C. Bremer, Jr.,  
Brownsburg, both of Ind., assignors to Wallace Murray Cor-  
poration, New York, N.Y.

Continuation-in-part of Ser. No. 908,135, May 22, 1978,  
abandoned. This application Feb. 26, 1979, Ser. No. 15,060

Int. Cl.<sup>3</sup> F16F 15/10; F16C 1/00, 3/00

U.S. Cl. 74—574

2 Claims



1. A torsional vibration damper of the type having an annu-  
lar inertia ring mass coupled to a rotatable disc by means of  
working elastomer, the outer periphery of the disc extending

4,341,128

**DEVICE FOR MOVING A SLIDABLE STAGE ON A  
TWO-DIMENSIONAL PLANE**

Makoto Murakoshi, and Tamotu Yoshizawa, both of Asaka,  
Japan, assignors to Fuji Photo Film Co., Ltd., Kamagawa,  
Japan

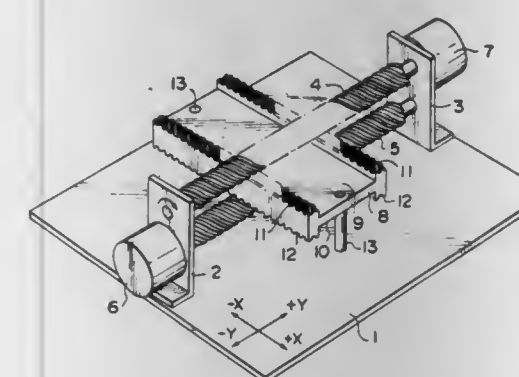
Filed Jun. 13, 1980, Ser. No. 159,170

Claims priority, application Japan, Jun. 15, 1979, 54-75497

Int. Cl.<sup>3</sup> G05G 11/00, 25/20

U.S. Cl. 74—479

11 Claims



1. A device for moving a stage on a plane in X and Y direc-  
tions as desired comprising a pair of parallel lead screws, a pair  
of driving means for independently driving the pair of lead  
screws, a movable stage having a first face opposed to said first  
lead screw and a second face opposed to said second lead  
screw and extending in parallel to said first face, a first helical  
rack extending perpendicular to said first lead screw on said  
first face of the stage and meshed with said first lead screw, and  
a second helical rack extending perpendicular to said second  
lead screw on said second face of the stage and meshed with  
said second lead screw, teeth of said second helical rack ex-  
tending in the direction of intersecting with teeth of said first  
helical rack.



into a complementary annular recess in the inertia ring mass, the working elastomer lining the interior portions of the said annular recess, the working elastomer surrounding and contacting the sides and the radially outermost periphery of the disc, the disc adapted to be coupled to a rotating shaft subject to torsional vibrations, the disc being of lesser axial extent than the inertia ring, the inertia ring mass, working elastomer, and disc acting in a known manner to lessen torsional vibrations of the shaft, the improvement comprising, an annular elastomer seal carried by the vibration damper, the seal being of an axial extent, as measured in a direction parallel to the axis of rotation of the damper, greater than the axial distance between the disc sides and the sides of the said annular recess, the seal being integral with the working elastomer in the annular recess, the seal extending on both sides of the disc, the seal not being bonded to said axially extending portions of the inertia ring mass, whereby the seal protects the elastomer in the annular recess by inhibiting entry into the annular recess of dust or other abrasive material or corrosive fumes or materials, the seal serving as a sacrificial member in corrosive environments.

4,341,131

## HYDROMECHANICAL TRANSMISSIONS

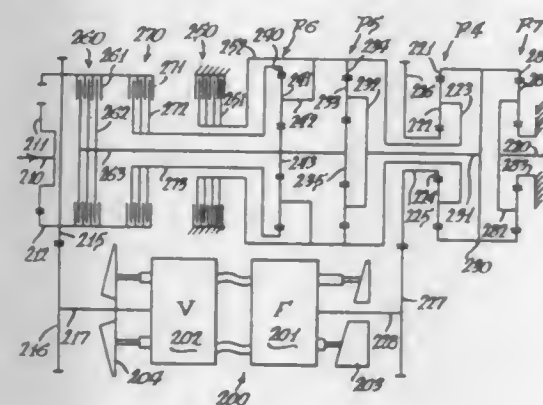
Frederic W. Pollman, Ames, Iowa, assignor to Sundstrand Corporation, Rockford, Ill.

Division of Ser. No. 825,844, Aug. 18, 1977, abandoned. This application Mar. 27, 1980, Ser. No. 134,614

Int. Cl.<sup>3</sup> F16H 47/04, 37/06

U.S. Cl. 74—687

6 Claims



1. A hydromechanical transmission having plural modes of operation with a shift between modes maintaining the power load on a power source for the transmission comprising, an output shaft, a planetary gear system including an element thereof providing a drive to said output shaft, an input shaft connectable to the power source, a hydrostatic transmission connectable to said power source and offset from the axis of said input and output shafts, said hydrostatic transmission including a pair of hydraulic units each with a displacement setting swash plate and with the angle of one of the swash plates being variable and with one unit connectable to the power source and the other unit connected to a first rotatable element of the planetary gear system, each of the units operating as either a pump or a motor at different times with the flow from the pump unit being greater than that flowing through the motor unit because of leakage which requires a larger displacement for the unit operating as a pump, means for hydraulically driving said first rotatable element of the planetary gear system from the hydrostatic transmission without direct mechanical connection to the input shaft in one mode of operation and with the hydrostatic transmission units capable of delivering full power provided by the power source, means for connecting both the hydrostatic transmission and the input shaft to the planetary gear system in a second mode of operation including a clutch between said input shaft and a second rotatable element of said planetary gear system, the unit functioning as a pump having a greater flow than the other unit at the end of said one mode and immediately prior to shift to said second mode in order to make up leakage, and means including gear ratios in the planetary gear system for maintaining a

continuous transmission ratio and power flow through a mode shift with each hydraulic unit having its same displacement setting before and after shift including gearing means in said planetary gear system drivingly interconnecting said first and second rotatable elements to maintain a fixed speed relation therebetween during various speeds of operation in said one mode when said first element is free to rotate because of said clutch being disengaged, additional gearing means in said planetary gear system operative upon engagement of said clutch to convert a speed change in said first rotatable element to an increased speed of said second rotatable element whereby said second rotatable element can rotate at a greater speed after shift than before shift whereby said other unit operating as a pump after shift has an effectively larger flow after said shift to make up leakage and avoid the need for movement of the variable swash plate, said gearing means having gear ratios to provide substantially equal working pressure in and substantially equal speed differences between said units before and after shift between modes.

4,341,132

## CONTINUOUSLY VARIABLE RATIO POWER TRANSMISSION

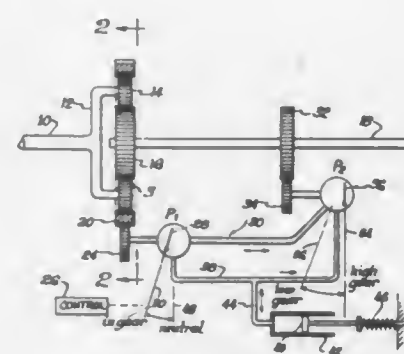
Clayton J. Burdick, 2814 Atadero Ct., Carlsbad, Calif. 92008

Filed Feb. 13, 1981, Ser. No. 234,244

Int. Cl.<sup>3</sup> F16H 47/04, 37/06

U.S. Cl. 74—687

2 Claims



1. A clutchless, direct-drive transmission comprising:  
(a) input and output shafts linked through sun and planetary gears;  
(b) a ring gear engaged on said planetary gears for controlling the relative rotation of said shafts;  
(c) a first wobble plate pump and a liquid-filled closed line connecting the inlet and outlet of said pump said pump being operatively connected to said ring gear to concomitantly exert a variable restraining force on, and be driven by, said ring gear;  
(d) externally operable control means for varying the fluid displacement per cycle of said first pump;  
(e) a second wobble plate pump installed in said line to variably restrain the flow of fluid in said line to provide another control input to restraint placed on said ring gear, said second pump being driven by said output shaft to feed back output shaft speed into the ring gear restraint function;  
(f) said externally operable control means comprising means to change the angle of the wobble plate of said first pump, and including means to vary the angle of the wobble plate of said second pump as a function of the fluid flow produced by said first pump; comprising pressure sensor operatively connected to the output of said first pump such that increased sensed pressure directly increases the angle of said wobble plate; and,  
(g) said pressure sensor comprising a cylinder with a fluid tap tube communicating with the output of said first pump and including a piston in said cylinder mechanically linked to said second wobble plate.

4,341,133

## CONTROL SYSTEM FOR A HYDRAULICALLY DRIVEN VEHICLE

Masaaki Sakamoto, Kaga, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

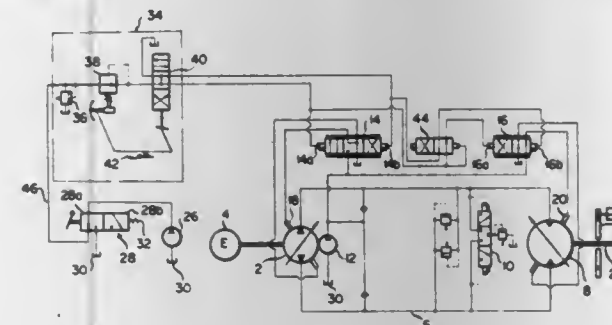
Filed May 30, 1980, Ser. No. 154,963

Claims priority, application Japan, May 31, 1979, 54-72392

Int. Cl.<sup>3</sup> F16H 47/00

U.S. Cl. 74—733

3 Claims



1. A control system for a hydraulically driven vehicle including a variable displacement hydraulic pump driven by a prime mover, and a hydraulic motor connected with said variable displacement hydraulic pump in a closed loop and driven thereby, said control system comprising in combination:  
a fixed displacement first charge pump driven by said prime mover;  
a pilot-operated servo valve means for controlling the displacement of said variable displacement hydraulic pump, said pilot-operated servo valve means having a pilot port formed therein and being connected with said first charge pump;  
a fixed displacement second charge pump driven by said prime mover;  
a manually operated change-over valve means connected at the input side thereof to said second charge pump, said change-over valve means having a communication position and an offset position said change-over valve means being normally held in the communication position, said change-over valve means being changed over to the offset position for connecting the output side of said second charge pump to a tank; and  
servo control valve means connected at the input side thereof with said change-over valve means and at the output side with the pilot port of said pilot-operated servo valve means, wherein when said change-over valve means is in the communication position, said servo control valve means is connected to said second charge pump through said change-over valve means.

4,341,134

## TOOL FOR STRIPPING INSULATING COVERING

Shigeo Yamazaki, Suzuka, and Masahiko Nakamura, Matsuzaka, both of Japan, assignors to MCC Corporation, Tsu, Japan

Filed Aug. 8, 1980, Ser. No. 176,631

Claims priority, application Japan, Oct. 9, 1979, 54-130273; Oct. 9, 1979, 54-140084[U]; Oct. 9, 1979, 54-140085[U]; Oct. 9, 1979, 54-140086[U]; Oct. 9, 1979, 54-140087[U]; Oct. 9, 1979, 54-140088[U]; Oct. 9, 1979, 54-140089[U]

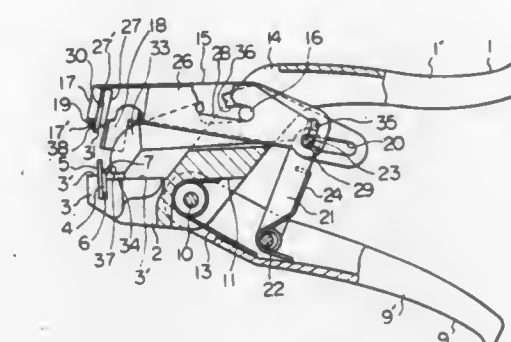
Int. Cl.<sup>3</sup> H02G 1/12

U.S. Cl. 81—9.5 A

9 Claims

1. A tool for stripping the insulating covering from a covered electrical wire which comprises a main body consisting of a first handle having a lower jaw at the leading end and a second handle pivoted to said first handle by means of a shaft, a wire holding mechanism provided at the leading end portion of said main body for gripping said wire when the first and second handles are closed and cutting blade means provided at the leading end portion of said main body adjacent to said wire holding mechanism for cutting into said insulating covering and pulling the cut insulating covering off of wire core along

said handles when said first and second handles are closed, said cutting blade means having an upper cutting blade and a lower cutting blade, said lower cutting blade being a stationary cutting blade secured to the upper surface of said lower jaw and



said upper cutting blade being a movable cutting blade adapted to approach the lower cutting blade and move in the longitudinal direction of the handles when the first and second handles are closed, said wire holding mechanism and cutting blade means projecting laterally of said handles.

4,341,135

## METHOD OF AND APPARATUS FOR CUTTING A PLATE INTO SMALL SECTIONS

Werner Ufermann, Bernried, Fed. Rep. of Germany, and Rolf Grzymek, Marietta, Ga., assignors to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

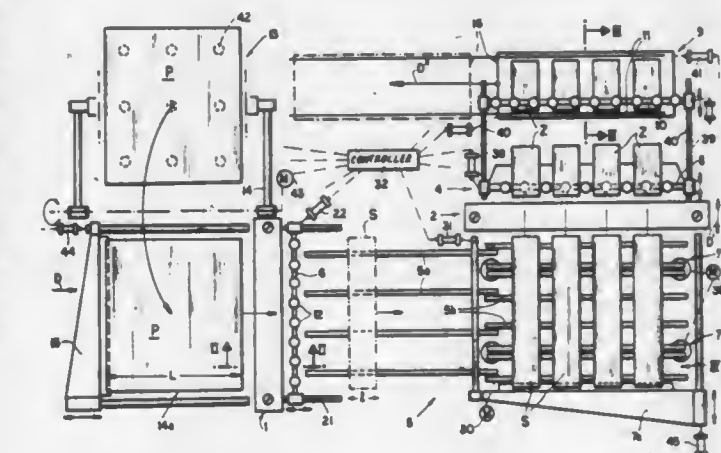
Filed Aug. 1, 1980, Ser. No. 174,700

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931780

Int. Cl.<sup>3</sup> B26D 3/16; B29C 17/10

U.S. Cl. 83—23

8 Claims



1. A method of subdividing a large rectangular plate into a plurality of small rectangular sections, said method comprising the steps of:  
feeding said plate stepwise in a main direction through an upstream shear while supporting and pneumatically seizing the downstream end portion of said plate immediately downstream of said shear with each advance step;  
shearing the supported and seized downstream end portions off said plate between the advance steps;  
displacing the sheared-off, supported, and seized end portions in said main direction immediately after each is sheared off said plate to the upstream end of a conveyor and depositing them one after another on said conveyor;  
displacing the sheared-off end portions with said conveyor in said main direction until each one is positioned over a respective aligner spaced apart in said main direction;  
lowering said conveyor and thereby depositing the sheared-off end portions on the respective aligners;



aligning the sheared-off end portions on said aligners with said aligners perpendicular to said main direction; pushing the aligned and sheared-off end portions jointly in a transverse direction perpendicular to said main direction stepwise through a downstream shear while supporting and pneumatically seizing the downstream ends of said end portions immediately downstream of said downstream shear with each transverse advance step; shearing the supported and pneumatically seized downstream ends off said downstream end portion between the transverse advance steps; and displacing the sheared-off, supported, and pneumatically seized downstream ends in said transverse direction to a collection location and depositing same in said collection location.

4,341,136

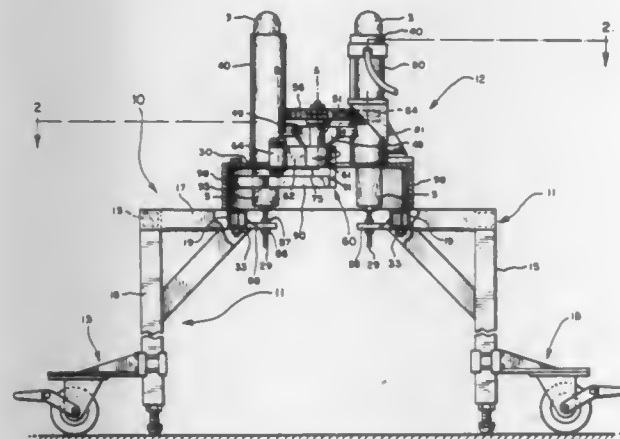
## FOOD PROCESSING MACHINE

Roger F. Parson, Duluth, Minn., assignor to Jeno's, Inc., Duluth, Minn.

Filed Aug. 27, 1980, Ser. No. 181,817  
Int. Cl.<sup>3</sup> B26D 3/22

U.S. Cl. 83—158

2 Claims



1. A machine for cutting up sausage-like food products such as pepperoni, Canadian bacon, salami and sausage and the like into chunks, comprising:

- a meat holder including a base plate having a plurality of apertures therethrough and also including a plurality of vertically oriented tubes for receiving individual sausage-like food products arranged around a vertical machine axis;
- said apertures including a first group of apertures over which corresponding ones of said tubes are mounted so that sausage-like food products inserted in said tubes are free to pass through said base plate;
- said apertures also including a central aperture disposed at said machine axis;
- a blade assembly rotatable about said machine axis and disposed below said plate on a drive shaft extending upwardly through said central aperture;
- said drive shaft being rotatably supported from spider means above said plate;
- said spider means being mounted between said tubes;
- said blade assembly including a blade mounted for rotation about a vertical blade axis;
- said vertical blade axis being radially displaced from said machine axis; and
- means for rotating said blade assembly about said machine axis.

4,341,137

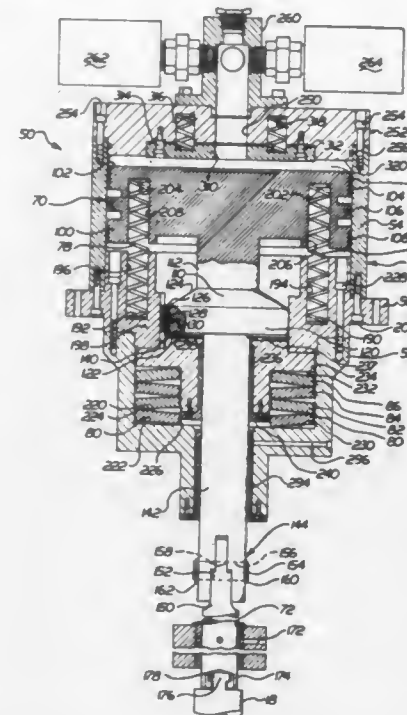
## MATERIAL FORMING APPARATUS

Paul A. Leitch, Northfield, and Thomas W. Shinn, Norristown, both of Pa., assignors to The Warner & Swasey Company, Cleveland, Ohio

Filed Oct. 2, 1979, Ser. No. 81,046  
Int. Cl.<sup>3</sup> B26D 5/12; B30B 15/20

U.S. Cl. 83—639

22 Claims



1. An apparatus for use in forming material with a tool, said apparatus comprising housing means for defining a chamber, a piston adapted to be connected with the tool, said piston being axially movable within said chamber, means for introducing fluid under pressure into said chamber to cause said piston to move in said chamber through a power stroke in a first direction to thereby effect movement of the tool relative to the material, return means for moving said piston through a return stroke in a second direction to retract the tool from the work-piece, and dissipating means for dissipating kinetic energy of said piston as said piston moves through its return stroke in said second direction, said dissipating means including means for providing a relatively unrestricted flow path for conducting a flow of fluid displaced from the chamber by said piston at a first rate during a first portion of the return stroke and for providing a relatively restricted flow path for conducting a flow of fluid displaced from the chamber by said piston at a second rate which is less than the first rate during a second portion of the return stroke.

4,341,138

## BAND SAW

Kurt Sidler, Ottenbach, Switzerland, assignor to Gottlieb Johner, Kerzers, Switzerland

Filed Feb. 29, 1980, Ser. No. 125,816

Claims priority, application Switzerland, Mar. 2, 1979, 2076/79

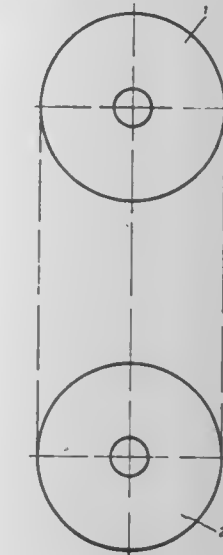
Int. Cl.<sup>3</sup> B23D 55/08; B27B 13/10

U.S. Cl. 83—820

2 Claims

1. A band saw comprising a support, two cast iron wheels mounted for rotation on the support on spaced axes, one of said wheels being power driven, and a saw blade in the form of an endless saw band trained under tension around the wheels and provided with teeth, the bearing surfaces of both the wheels having a large number of grooves running parallel to one another and the rims of said wheels, the width of the grooves exceeding the depth, wherein the width and depth of at least

two grooves lying opposite each other on the one and the other wheel are equal so that zones of the saw band running



over the grooves of the first wheel are running over the grooves having the same dimensions of the second wheel.

4,341,139

## APPARATUS FOR SCORING A COATED SUBSTRATE

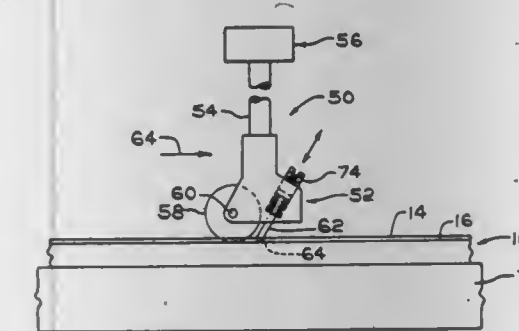
Robert P. DeTorre, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 153,387, May 27, 1980, Pat. No. 4,300,934.  
This application Jun. 5, 1981, Ser. No. 271,055

Int. Cl.<sup>3</sup> B26D 3/08; C03B 33/10

U.S. Cl. 83—886

3 Claims



1. An apparatus for scoring a sheet of refractory material having a fluid coating thereon, comprising:  
means for scoring the sheet;  
means mounted in spaced relationship to said scoring means for wiping the fluid coating to define a score path; and  
means for moving said scoring wheel and said wiping means along a predetermined path with said scoring means upstream of said wiping means.

4,341,140

## AUTOMATIC PERFORMING APPARATUS

Hideaki Ishida, Hachioji, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1981, Ser. No. 227,537

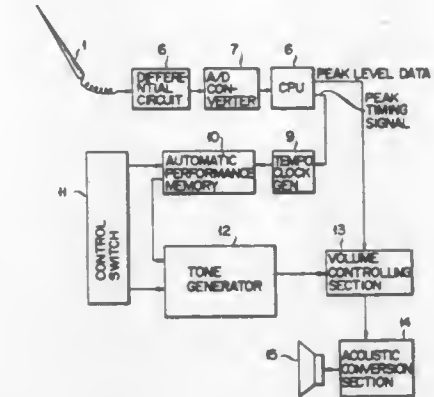
Claims priority, application Japan, Jan. 31, 1980, 55/10504[U]; Jan. 31, 1980, 55/10505[U]; Jan. 31, 1980, 55/10516

Int. Cl.<sup>3</sup> G10G 7/00

U.S. Cl. 84—1.03

5 Claims

1. An automatic performing apparatus comprising detecting means for detecting an amount of change in a motion of a baton; clock signal generating means for generating tempo clock signals on the basis of the motion change amount of the



ing a tone dependent on said tone data read out from said memory in accordance with said tempo clock signal.

4,341,141

## POLYPHONIC SLIDING PORTAMENTO IN A MUSICAL INSTRUMENT

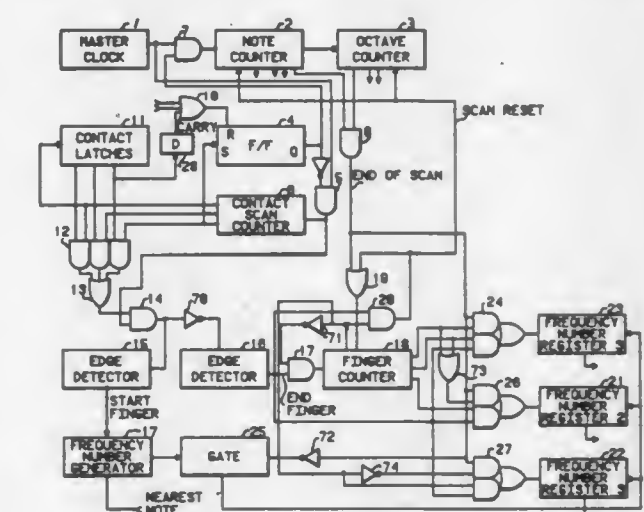
Ralph Deutsch, and Leslie J. Deutsch, both of Sherman Oaks, Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Jul. 10, 1980, Ser. No. 167,305

Int. Cl.<sup>3</sup> G10H 1/02

U.S. Cl. 84—1.24

15 Claims



1. In a keyboard operated electronic musical instrument in which the pitches of the generated tones are determined by frequency numbers corresponding to actuated keyboard switches, apparatus for providing polyphonic portamento in response to the lateral displacement of any of a number of player fingers in contact with said keyboard switches comprising:

- a switch array comprising a multiplicity of keyswitches arranged in a linear array such that a plurality of contiguous keyswitches is actuatable, for each pitch by each of said player fingers in contact with said switch array,
- a scanning means for providing scanning signals to said switch array,
- a detection means responsive to said scanning signals whereby detection signals are generated corresponding to each actuated keyswitch in said switch array,
- a center detection means responsive to said detection signals whereby a note signal is generated corresponding to each one of said player fingers in contact with said switch array, and
- a frequency number generator responsive to each said note signal wherein said frequency numbers are generated thereby producing said polyphonic portamento effect corresponding to said lateral motion of said player fingers in contact with said keyboard switches.



# 4,341,142 MUSIC BOX

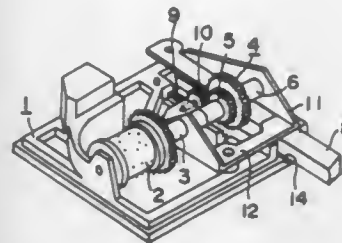
Fumito Komatsu, Shiojiri, and Kenzi Muramatsu, Okaya, both of Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Shimosuwa, Japan

Filed Nov. 13, 1979, Ser. No. 93,657

Claims priority, application Japan, Nov. 17, 1978, 53-158998  
Int. Cl.<sup>3</sup> G10F 1/06

U.S. Cl. 84—95 R

7 Claims



1. A rocking chair music box mechanism comprising a base for mounting on a rocking chair, a drum pivotally mounted on a base, a spring connected to the drum, a starting gear connected to the spring, whereby the spring is adapted to accumulate a turning force relative to the drum and starting gear, a rack bar slidably supported on the base, elastic means connected to the base and to the rack bar to urge the rack bar to make a return movement in one direction, an intermediate gear movably mounted on the base and operatively connected to said rack bar and engagable and disengagable with the starting gear according to movement of the rack bar, whereby when said rack bar is moved in said one direction by said elastic means, said rack bar moves the intermediate gear into engagement with the starting gear and imparts rotational movement to said intermediate gear, which imparts rotational movement to said starting gear to thereby accumulate turning force in said spring, a stopper member movably mounted on the base, said stopper being operatively connected to the starting gear in such a manner that when the rack bar rotates the intermediate gear and the intermediate gear rotates the starting gear, the stopper is moved out of operative stopping connection with the starting gear, and whereby when the starting gear is turned in an opposite direction said stopper member moves on the base into operative stopping connection with the starting gear, whereby the rack means and intermediate gear tend to rotate the starting gear in one direction and whereby the stopper tends to prevent rotation of the starting gear in an opposite direction.

# 4,341,143

## REMOTE-CONTROLLED KEY-DEPRESSING DEVICE

Russell C. Minerd, P.O. Box 554, Scarsdale, N.Y. 10583

Filed Jun. 20, 1980, Ser. No. 161,300

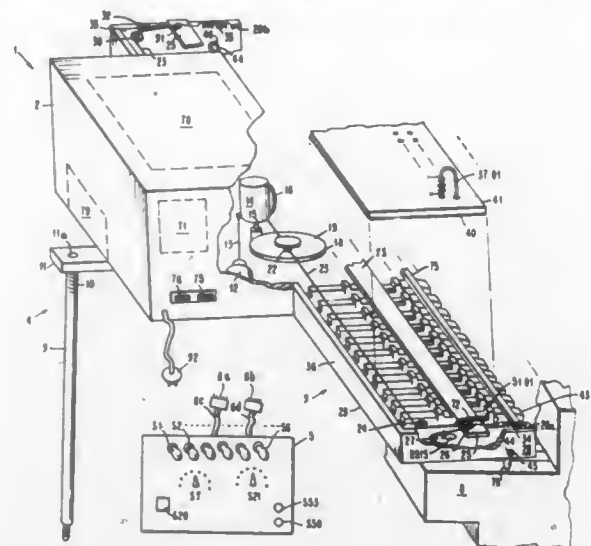
Int. Cl.<sup>3</sup> G10F 3/00

U.S. Cl. 84—107

4 Claims

1. A remote-controlled device for depressing the keys of a keyboard instrument which comprises in the device (a) separate means for depressing each of the desired keys, each of said means being pivotally mounted on a fulcrum, (b) electromagnetic means for selecting each means for depressing desired keys which comprises (i) an electromagnet and (ii) a pusher, which is capable of being magnetically attracted to said electromagnet when manually selectable switching means in the device applies current to the electromagnet thereby selected, which corresponds to the desired key of the instrument, (c) an activator means normally spring-urged toward the separate means for depressing each of the desired keys, and (d) means whereby the activator may be moved in opposition to its spring, current is applied to said electromagnet selected, causing the corresponding pusher to be attracted to the electromagnet and in line between the activator and the means for depressing the desired keys and then allowing the spring to

urge the activator, causing the activator to move the pusher against the means for depressing the desired key, thereby



# 4,341,144

## BRIDGE STRUCTURE FOR STRINGED INSTRUMENTS

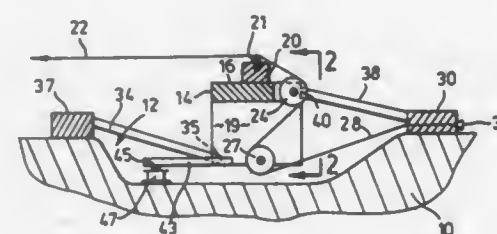
Paul A. Milne, 785 Exmouth St., Sarnia, Ontario, Canada

Filed Jan. 29, 1981, Ser. No. 229,307

Int. Cl.<sup>3</sup> G10D 3/04

U.S. Cl. 84—307

4 Claims



1. A bridge structure for a stringed instrument body, comprising:  
a member supporting a ridge over which at least one string is strung, one end of the string being secured at a location on the instrument remote from the said member,  
a first and a second guide pulley secured to the member, the other end of the string being entrained around both pulleys in an S-configuration, the terminal part of said other end of the string being secured to the instrument body, the S-configuration cooperating with tension in the string to give rise to rotational torque on the member,  
suspension means for supporting the member from the instrument body in such a way as to counteract said rotational torque,  
and means on the member supporting at least part of a pick-up device, whereby oscillation of the string tension tends to produce rotational oscillation in the member and a corresponding signal in said device.

# 4,341,145

## ELECTRONIC PIPE VALVE

Richard H. Peterson, 11748 Walnut Ridge Dr., Palos Park, Ill. 60464

Filed Sep. 23, 1980, Ser. No. 190,001

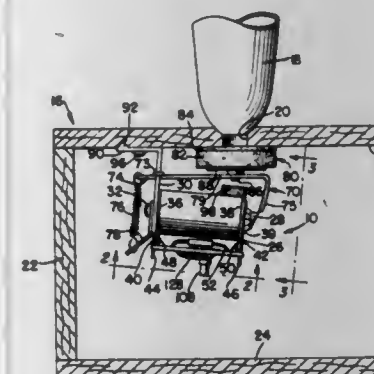
Int. Cl.<sup>3</sup> G10D 9/04

U.S. Cl. 84—337

4 Claims

1. An electronic pipe valve assembly for pipe organs, comprising:  
a mounting bracket adapted to secure the assembly within the wind chest of a pipe organ;

solenoid means mounted on said bracket, said solenoid means including a coil having first and second terminals; first and second spaced terminal lug means secured to and located at opposite ends of said solenoid means and electrically connected to said first and second terminals of said coil, respectively;  
armature means adapted for movement by the energization and deenergization of said coil;  
pipe valve means mounted on said armature for controlling the flow of air from the wind chest to the pipes of a pipe organ;  
control means for said solenoid means, said control means including an electronic control circuit mounted on a circuit board approximately equal in area to the planar projection of said coil, whereby said circuit board is easily



accessible without impeding access to said coil, said armature, or said pipe valve means, said control means further including a control lead connected to said control circuit for supplying control signals to regulate the energization and deenergization of said coil and power leads connected to said control circuit for supplying power to energize said coil; and  
connector means including first and second notches on said circuit board adapted to receive and engage said first and second terminal lugs, respectively, for mechanically mounting said circuit board on said solenoid means and further including printed circuit means on said circuit board and located at said first and second notches for electrically connecting said control circuit to said first and second terminal lug means.

# 4,341,146

## COMBINED TENOR AND SOPRANO SAXOPHONE

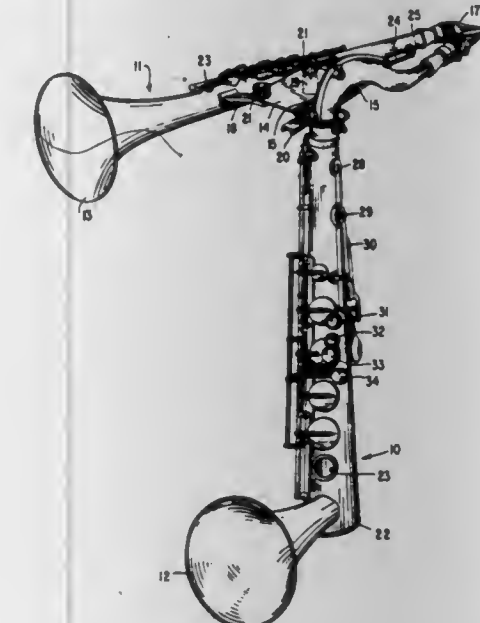
Louis B. Massa, Bergenfield, N.J.

Filed Feb. 5, 1981, Ser. No. 231,682

Int. Cl.<sup>3</sup> G10D 15/00

U.S. Cl. 84—381

8 Claims



1. A musical instrument comprising a tenor saxophone and a

soprano saxophone slideably connected together by a plate wherein a bracket connects the neck of the soprano saxophone to said plate and a rail connects the neck of the tenor saxophone to said plate and wherein nuts extend through said plate and said rail and are slideably mounted therein whereby when said nuts are loosened and therefore slideable in said rail one saxophone can be slid relative to the other saxophone until they are properly aligned wherein said tenor saxophone and said soprano saxophone each are fitted with a trumpet bell outlet.

# 4,341,147

## COAXIAL DUAL HOLLOW PISTON REGENERATIVE LIQUID PROPELLANT GUN

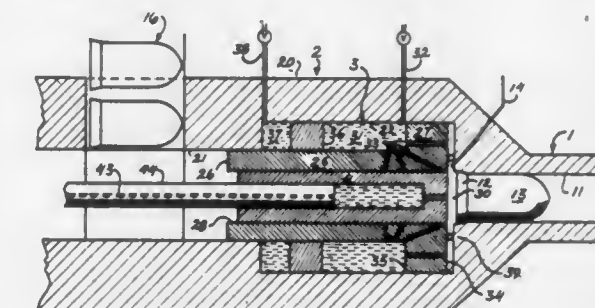
Robert E. Mayer, Williamstown, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 16, 1980, Ser. No. 158,939

Int. Cl.<sup>3</sup> F41F 1/04

U.S. Cl. 89—7

32 Claims



5. An improved breech structure for a direct injection regenerative liquid propellant gun comprising:

a. a coaxial piston structure including an outer piston and an inner piston assembly mounted coaxially in a breech casing having a barrel end and a breech end wherein:

(1) said outer piston is movable axially with respect to said casing, defines a variable volume combustion chamber in cooperation with the barrel end of said casing, defines a variable volume primary reservoir in cooperation with the breech end of said casing and constitutes a differential area piston between said chamber and said primary reservoir having its larger piston area exposed to said combustion chamber,

(2) said outer piston has an axial bore and injection ducts for flow of liquid propellant from said primary reservoir into said bore for feeding propellant from said primary reservoir to said combustion chamber,

(3) said inner piston assembly is journaled in said bore to permit relative axial displacement between said piston and said piston assembly to control said flow and the rate of said flow of propellant from said injection ducts to said combustion chamber, and

(4) said inner piston assembly has a forward piston portion exposed to said combustion chamber;

b. means for supplying a quantity of liquid propellant to said primary reservoir;

c. means for initiating combustion in said combustion chamber;

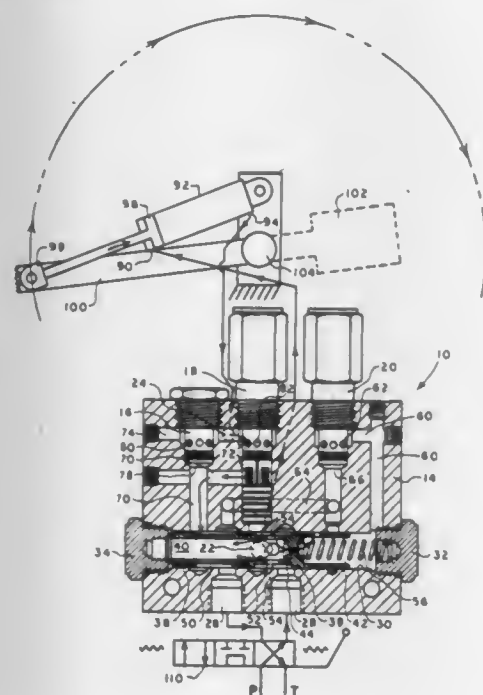
whereby initiation of combustion with said piston structure in firing position and with propellant in said reservoir will cause liquid propellant to be driven from said reservoir through said injection ducts in response to combustion pressure on said piston structure; and

whereby the rate of increase of pressure, the pressure attained and the duration of pressure in said combustion chamber are in part functions of the quantity and rate of flow of propellant through said injection ducts which in turn in a function of the capacity of said reservoir, the size and location of said ducts, relative movement of components of said piston structure, the rate of expansion of



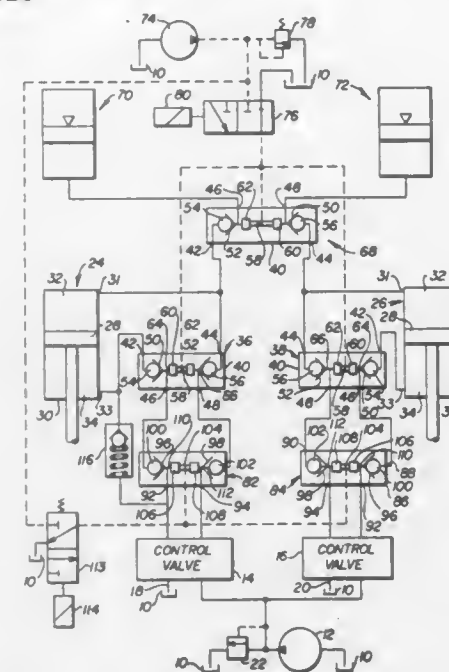
volume of said combustion chamber and the pressure in the combustion chamber.

**4,341,148**  
**HYDRAULIC SEQUENCING VALVE**  
 Constantine Kosarzecki, Schaumburg, Ill., assignor to Modular Controls Corporation, Villa Park, Ill.  
 Filed Sep. 30, 1980, Ser. No. 192,642  
 Int. Cl.<sup>3</sup> F15B 11/15; A01B 3/30  
 U.S. Cl. 91—356 20 Claims



1. An improved hydraulic sequencing valve comprising: a valve body defining first and second line ports, a pump port, a tank port, and an internal bore; a valve spool within said internal bore including a partition intermediate its ends dividing said spool into first and second chambers and having an orifice providing fluid communication between said chambers, said spool being movable within said internal bore between first and second positions and defining with said valve body first fluid flow paths from said pump port to said first line port and from said second line port to said tank port when in said first position, and second fluid flow paths from said pump port to said second line port and from said first line port to said tank port when in said second position, said spool first chamber being in continuous fluid communication with said pump port; sequence control valve means disposed in fluid communication between said spool second chamber and said tank port and arranged to open when the fluid pressure within said spool second chamber transmitted thereto through said spool orifice reaches a predetermined pressure for providing a restricted fluid path from said second chamber to said tank port for creating a pressure differential between said chambers and causing initial movement of said spool from said first position toward said second position; and aperture means in said spool second chamber defining with said valve body a direct fluid flow path from said second chamber to said tank port upon said initial movement of said spool toward said second position for increasing the pressure differential between said chambers and accelerating the movement of said spool to said second position.

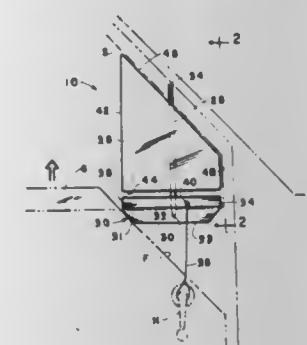
**4,341,149**  
**SELECTIVELY ACTUATABLE FLUID CONTROL SYSTEM FOR A WORK ELEMENT**  
 Joseph E. Dezellan, Western Springs, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.  
 PCT No. PCT/US79/00667, § 371 Date Aug. 30, 1979, § 102(e)  
 Date Aug. 30, 1979, PCT Pub. No. WO81/00598, PCT Pub. Date Mar. 5, 1981  
 PCT Filed Aug. 30, 1979, Ser. No. 95,191  
 Int. Cl.<sup>3</sup> F15B 11/16  
 U.S. Cl. 91—526 6 Claims



1. A hydraulic system for controlling the work element of an earth working machine comprising hydraulic motor means (24,26) for moving said work element, said hydraulic motor means (24,26) including at least one lift jack (24) connected to move said work element, said lift jack (24) including a lift jack cylinder (30) and a piston (28) mounted for movement within said lift jack cylinder (30) which divides said lift jack cylinder (30) into a head end (32) and a rod end (34), fluid source means (10,12) for providing fluid to said hydraulic motor means (24,26), control means (14,16) connected to said fluid source means (10,12) for alternately directing a flow of fluid into and out of said head and rod ends (32,34) of said lift jack cylinder (30), shock absorbing means (70,72), including fluid accumulator means (70,72), and a lock valve system (36,38,68,82,84) connected between said control means (14,16), said hydraulic motor means (24,26) and said shock absorbing means (70,72), said lock valve system (36,38,68,82,84) including first lock valve means (36,38) connected to said head and rod ends (32,34) of said lift jack cylinder (30), said first lock valve means (36,38) being selectively operable to permit or block fluid flow from said head and rod ends (32,34) of said lift jack cylinder (30) and said accumulator means (70,72), second lock valve means (68) being selectively operable to connect or disconnect said head end (32) of said lift jack cylinder (30) to said accumulator means (70,72), and longstem lock valve means (82,84) connected between said first lock valve means (36,38) and said control means (14,16), said longstem lock valve means (82,84) being operable in combination with said first lock valve means (36,38) to vent residual pressure at the head end (32) of said lift jack cylinder (30) when said head end (32) is connected to said accumulator means (70).

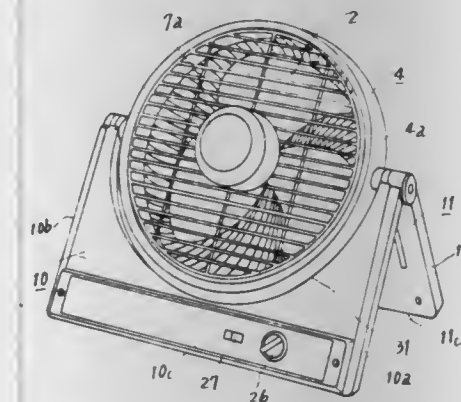
**4,341,150**  
**UNIVERSAL AUTOMOTIVE VENT**  
 Alan S. McConnell, 1902 Haverhill Rd., Baltimore, Md. 21234;  
 Thomas R. Bilodeau, 6220 Allender Rd., Baltimore, Md. 21162  
 Filed Apr. 6, 1981, Ser. No. 251,111  
 Int. Cl.<sup>3</sup> B60J 1/20  
 U.S. Cl. 98—2.12 16 Claims  
 1. In a vent wing for attachment to the lower front corner of

a motor vehicle front-door window of the type having no vent wing, and a rearwardly sloping front edge and a horizontal lower edge each with a glass channel therein permitting the door window-glass with matching sloping front edge, to be raised and lowered thereon under control of a window mechanism, the improvement comprising: a body including a fin



proportioned for fitting downwardly into a said horizontal glass channel and a stop on a top portion of the fin, an axle supported upright of the body and having an upper end proportioned for fitting upwardly into a said rearwardly sloping front edge glass channel and a wing affixed on said axle below said axle upper portion.

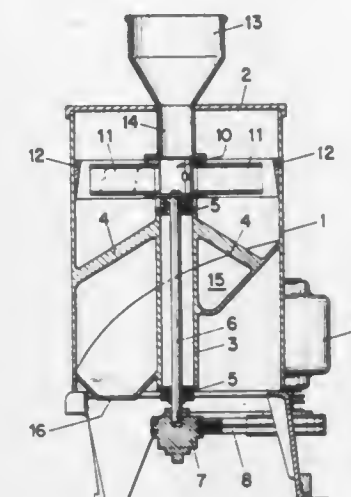
**4,341,151**  
**ELECTRIC FAN**  
 Kunji Sakamoto, Hirakata, Japan, assignor to Matsushita Seiko Co., Ltd., Osaka, Japan  
 Filed Jul. 1, 1980, Ser. No. 164,954  
 Claims priority, application Japan, Dec. 11, 1979, 54-161096  
 Int. Cl.<sup>3</sup> F24F 7/00  
 U.S. Cl. 98—94 R 8 Claims



1. An electric fan comprising: vanes for sending air axially thereof; a motor for retaining and turning the vanes; an annular main body supporting the motor and forming a passage for air flow delivered by the vanes; a pair of pivots provided on the main body, said pivots being arranged on a phantom straight line substantially perpendicular to the rotary axis of the vanes and symmetrical with respect to the rotary axis; and, a pair of substantially rectangular plate-like support members which are rotatably connected with each other in side-by-side relation and with the main body by the pivots, each of said support members having a substantially semi-circular cutout formed on a radius slightly larger than that of the outer periphery of the main body to allow rotation of the main body and the support members on the pivots, each of said support members being provided with a primary support portion comprising at least two support points on a line parallel with said phantom straight line and with a secondary support portion comprising at least one support point on a line which passes through one end

of the axis of the pivots and is substantially perpendicular to said phantom straight line.

**4,341,152**  
**CONTRIVANCE FOR SHELLING A GRANULAR PRODUCT**  
 Karl Solenthaler, Teufen, Switzerland, assignor to Gebrueder Buehler AG, Switzerland  
 Continuation of Ser. No. 69,902, Aug. 27, 1979, abandoned. This application Nov. 7, 1980, Ser. No. 204,825  
 Claims priority, application Switzerland, Mar. 8, 1979, 2244/79  
 Int. Cl.<sup>3</sup> B02B 3/00, 7/02  
 U.S. Cl. 99—609 7 Claims



1. Apparatus for shelling a granular product of given grain size, such as soy beans, sunflower seeds and the like, comprising:  
 (a) a housing having a distribution head mounted therein for rotation about its longitudinal axis;  
 (b) said distribution head having a peripheral wall with at least one pass through opening therein to which is connected a radially oriented unenclosed guideway extending radially beyond said passthrough opening, said guideway having a generally U-shaped profile whose side walls point in the direction of rotation, said guideway having one generally flat guide surface extending between said side walls and facing in the direction of rotation;  
 (c) said opening being structured as a slot, said slot defining a wall generally coplanar with the guide surface of the guideway, said slot extending longitudinally in the direction of the axis of rotation of said distribution head with the height of said opening in said longitudinal direction being at least three times its width, said width being preferably 1.5 to 3 times the grain width; and  
 (d) means for rotating said head and said guideway at a speed such that product in said distribution head is carried out through said opening by centrifugal force and moves in a two dimensional distribution with the width of one layer along the guideway and retained on the flat surface so as to be thrown outwardly against said housing.

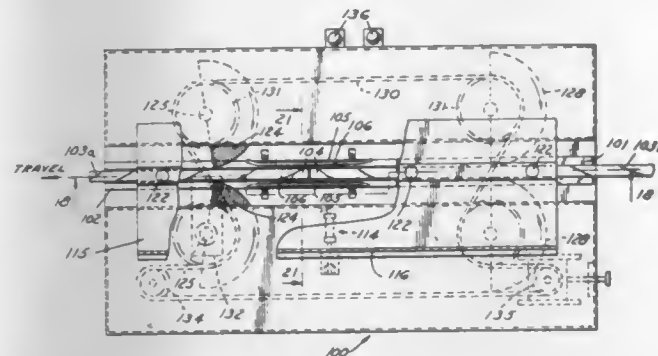
**4,341,153**  
**SPLICING AND TRUSS ASSEMBLY APPARATUS AND METHODS**  
 Donald M. Bowser, Barrie, Canada, assignor to Truswal Systems Corp., Madison Heights, Mich.  
 Filed Oct. 16, 1980, Ser. No. 197,543  
 The portion of the term of this patent subsequent to Sep. 8, 1998, has been disclaimed.  
 Int. Cl.<sup>3</sup> B30B 3/04 31 Claims

1. Assembly apparatus for securing toothed connector plates to sides of wood members such as 2x4s comprising vertical axis longitudinally fixed side roller means for progressively



pressing said connector plates with teeth placed against said wood members ahead of said roller means into wood penetrating assembled relation as they pass said roller means, and means for driving said wood members in required relation together with said connector plates past said side roller means.

22. A production method for assembling wood members connected by stamped sheet metal elements having toothed extremities fixedly penetrating said wood members comprising



the steps of prepositioning said wood members in assembly relation, positioning said elements on respective horizontally spaced sides of said wood members in required relation to each other, driving and guiding said wood members along a horizontal path, and applying synchronized compressive rolling pressure adjusted to the width of said wood members to progressively force said tooth extremities into penetrating assembled relation along the length of said wood members.

4,341,154

## CAGE FOR COMPRESSING FOOD ARTICLES

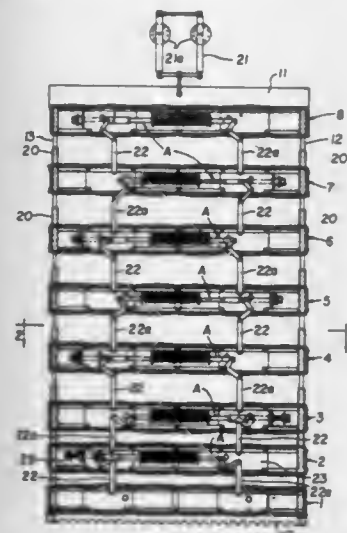
Gerald J. Orłowski, Scottsdale, Ariz., and Thomas E. Dugle, Cincinnati, Ohio, assignors to Armour and Company, Phoenix, Ariz.

Continuation of Ser. No. 963,909, Nov. 24, 1978. This application Oct. 6, 1980, Ser. No. 194,673

Int. Cl.<sup>3</sup> B30B 7/02

U.S. Cl. 100—194

8 Claims



1. A cage for compressing food articles comprising a series of vertically spaced trays which includes a lower tray having food articles thereon, a middle tray having food articles thereon, and an upper tray over the food articles on said middle tray, the weight of said middle tray and articles thereon bearing against the articles on said lower tray, means between said upper tray and said middle tray for moving said upper tray and said middle tray toward each other for developing pressure on said articles on said middle tray, and means between said middle tray and said lower tray for moving said middle tray and said lower tray toward each other and developing pressure on said articles on said lower tray, said first mentioned means being effective for developing a pressure on said articles on said middle tray which is greater than the pressure developed by said second mentioned moving means on said articles

on said lower tray to bring the total pressure on the articles on each of said trays closer to equality.

4,341,155

## CUSTOM LABEL PRINTER

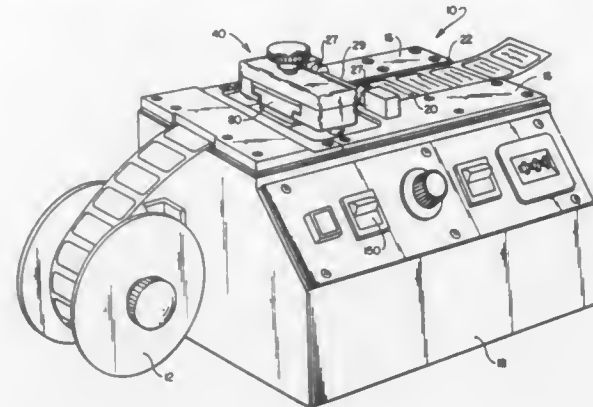
Kenneth D. Relyea, Grove City, and Dale A. Beard, Dayton, both of Ohio, assignors to Drustar, Inc., Grove City, Ohio

Filed Oct. 3, 1980, Ser. No. 193,620

Int. Cl.<sup>3</sup> B41L 27/26; B65H 23/22

U.S. Cl. 101—125

3 Claims



1. An improved apparatus for printing information on each of a plurality of interconnected labels, said labels having a region of substantially different light reflection or transmission characteristics associated with each label, said apparatus of the type having: a label advance means including a controllable drive means having an advance control input for at times advancing said interconnected labels along a label path including a printing station and at times stopping said advance with a label positioned at said printing station in response to the state of the control input; a printing means at said printing station and having a print control input for printing said information at a label positioned at said printing station in response to the state of the print control input; a photo radiator and detector means mounted adjacent said label path for registration with said regions; and control circuit means connected to said photo radiator and detector means, said advance control input and said print control input for stopping the advance of said labels and initiating the operation of said printing means in response to registration of one of said regions with the light path of said photo means, wherein the improvement comprises:

a negative feedback control circuit connected to said photo radiator and detector means for maintaining a constant light intensity received by said photo detector when said labels are interposed in the light path from said photo radiator to said photo detector, said feedback control circuit comprising:

- a peak detector connected to the output of said photo detector for providing a signal level proportional to the average minimum light received by said photo detector;
- an amplifier having its input connected to the output of said peak detector and its output connected to said photo radiator; and
- a reference level control for adjusting the radiation from said photo cell radiator to a selected level.

4,341,156

## DILITHO PRINTING IMAGE HEATING

Werner M. Kaepfner, Prescott, Canada, assignor to CIP Inc., Quebec, Canada

Filed Aug. 28, 1980, Ser. No. 182,168

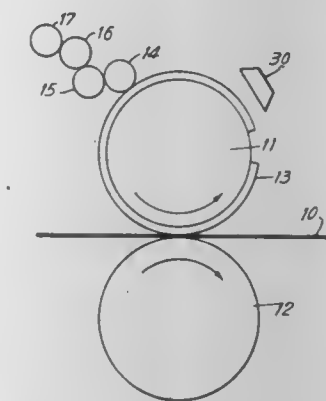
Int. Cl.<sup>3</sup> B41M 1/06; B41L 25/00; B41F 7/00

U.S. Cl. 101—141

5 Claims

1. In a DiLitho printing press wherein hydrophobic ink is provided to hydrophobic image areas on a printing plate and an aqueous fountain solution is provided to hydrophilic non-

image areas on said printing plate, and wherein said image areas are dark and absorptive of radiation and said non-image areas are light and reflective of radiation, the improvement comprising providing radiant heating source means to said plate cylinder, at a point prior to application of said ink and



said fountain solution and after transfer of ink supplied in a previous cycle from said image areas to a web on which it is desired to transfer said ink, to warm selectively said image areas, said radiant heating source means being such as to warm said image areas to from 10° F. to 50° F. above the ambient temperature prior to inking.

4,341,157

## VIBRATION-ABSORBING CYLINDER FOR PRINTING PRESSES

Claus Simeth, Offenbach am Main, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

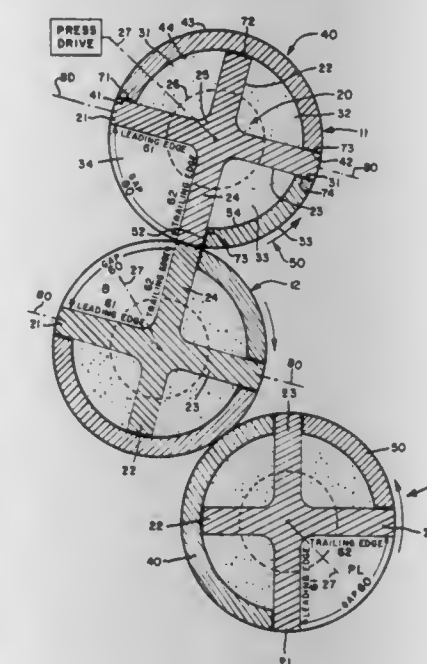
Filed Mar. 27, 1981, Ser. No. 248,311

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012060

Int. Cl.<sup>3</sup> B41F 13/08

U.S. Cl. 101—375

10 Claims



1. A vibration-absorbing cylinder for a printing press intended for phased rolling engagement with a companion cylinder comprising, in combination, a unitary cylinder body of star-shaped cross section extending the length of the cylinder, the body having a central axial portion and a plurality of angularly spaced axial webs extending radially outward therefrom to define between them recesses of sector-shaped cross section longitudinally of the cylinder, a plurality of arcuate shell segments which together form the cylinder surface, the shell segments having parallel edges and extending bridgily between the tip portions of the associated webs for enclosing all but one of the recesses, the one recess being uncovered to

produce a gap in the cylinder surface, the gap defining a leading edge as the cylinder rotates, the web at the leading edge position being extended outwardly to the locus of the cylinder surface so that the cylinder body absorbs the impact with the companion cylinder which occurs at the leading edge at each revolution by reason of the gap, the edges of the segments being in abutting relation to the tip portions of the webs, a resilient vibration-dampening layer of adhesive interposed at the abutting surfaces, the webs being so arranged and of such thickness that maximum resistance of the body to bending stress is in the plane of the web at the leading edge position.

4,341,158

## APPARATUS FOR ELIMINATING POWER SOURCE RISE TIME EFFECTS IN A TIME FUZE SYSTEM

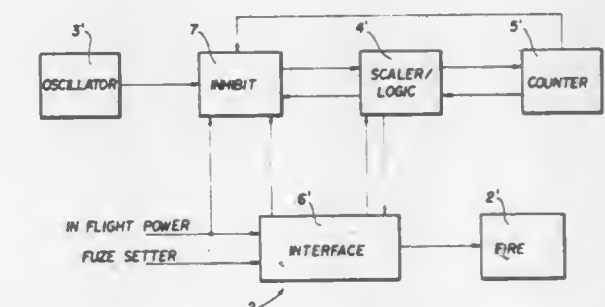
Alan C. Reiter, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 15, 1980, Ser. No. 169,004

Int. Cl.<sup>3</sup> F42C 11/06

U.S. Cl. 102—215

3 Claims



1. An apparatus for eliminating variable power source rise time effects in a fuze timing system for providing a fuze trigger signal comprising:

- a programmable timing means comprising a counter powered by said power source;
- means for programming said timing means, including an oscillator or clock, with a setting time;
- means for reading said setting time out of said timing means, said means for reading out also includes said oscillator and wherein said oscillator is run at different frequencies during programming and during reading out;
- means for providing said fuze trigger signal upon completion of said setting time; means for reducing said setting time beneath the time in which it is desired for said fuze trigger signal to be provided by a fixed amount of time which is greater than the longest expectable rise time of said power source;
- means for delaying the reading out of said setting time by said fixed amount of time, whereby said fuze trigger signal is provided at a time which is independent of power source rise time variations; and
- wherein said means for reducing and said means for delaying both include an inhibit means which is connected between said oscillator and said counter.

4,341,159

## RETARD SENSING DOUBLE RELEASE SAFE SEPARATION MUNITION TIMER

Robert E. Edminster, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jul. 17, 1980, Ser. No. 169,545

Int. Cl.<sup>3</sup> F42C 15/12

U.S. Cl. 102—228

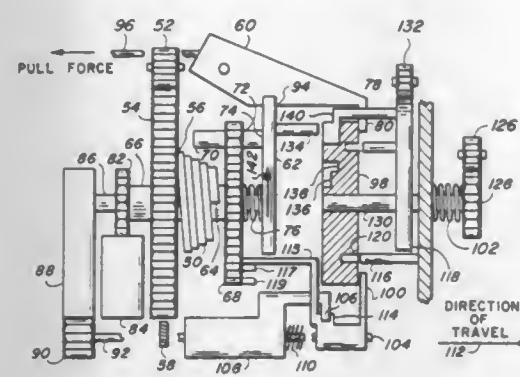
5 Claims

3. A dual purpose safing and arming timer for a retard/non-retard munition comprising in combination:

- means for sensing one of the retard and non-retard modes of the munition, said means for sensing further comprising:
- means for double sensing said retard mode, said double



sensing means requiring a first sensing at a first time and a second sensing at a time subsequent to said first time; means for responding to said sensing of the retard mode to provide a first selected arm time; and



means for responding to said sensing of the non-retard mode to provide a second selected arm time.

4,341,160

# MOBILE MACHINE FOR THE TREATMENT OF RAILWAY TRACKS

Arne Nielsen, La Conversion, Switzerland, assignor to SIG Societe Industrielle Suisse, Neuhausen am Rheinfalt, Switzerland

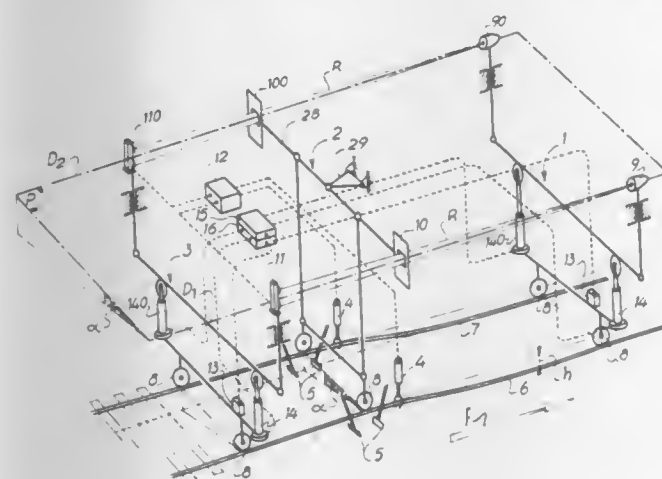
Filed Mar. 5, 1980, Ser. No. 127,377

Claims priority, application Switzerland, Mar. 23, 1979, 2725/79

Int. Cl.<sup>3</sup> E01B 29/04

U.S. Cl. 104-7 B

3 Claims



1. A mobile machine for the treatment of railway tracks equipped with a device for the longitudinal and transverse leveling of the track comprising tools for the lifting of each line of rails, tools for distributing the ballast below the raised ties, and a device for measuring and controlling the extent of the lifting comprising:

- (a) a pair of first vertical position detectors respectively located headway of the machine above each line of rails of the untreated track;
- (b) a pair of second vertical position detectors respectively located above each line of rails in the area of lift of the track, at an invariable distance from the line of rails;
- (c) a pair of third vertical position detectors respectively located at the rear of the machine above each line of rails of the treated track;
- (d) liaison means (R) respectively joining the first detector to the third detector in each of said pairs of first and third detectors to define two reference lines;
- (e) sensitive means respectively arranged on the detectors of one of said pairs of first, second and third vertical position detectors to give off signals representing differences in the respective vertical positions of each said second detectors with respect to said reference lines;
- (f) a first frame means resting on both lines of rails trans-

versely to the track for supporting said pair of first vertical position detectors, said first frame means being formed of two parts mounted slidably one on the other in the plane transverse to the track, one of said parts being connected to the track by rollers which rest on the two lines of rails while the other of said two parts is connected to the machine;

- (g) a second frame means resting on both lines of rails transversely to the track for supporting said pair of second vertical position detectors;
- (h) a third frame means resting on both lines of rails transversely to the track for supporting said pair of third vertical position detectors, said third frame means being formed of two parts mounted slidably one on the other in the plane transverse to the track, one of said parts being connected to the track by rollers which rest on the two lines of rails while the other of said two parts is connected to the machine;
- (i) a height control means for controlling the vertical displacements of said lifting tools in response to said vertical position difference signals;
- (j) a first means for measuring the transverse inclination of the track and give off signals representing the differences in inclination thereof with respect to the horizontal, said first measuring means supported by said first frame means;
- (k) a second means for measuring the transverse inclination of the track and give off signals representing the differences in inclination thereof with respect to the horizontal, said second measuring means supported by said third frame means;
- (l) a first pair of height regulating means arranged on said first frame means for respectively regulating the height of the detectors of said pair of first vertical position detectors;
- (m) a second pair of height regulating means arranged on said third frame means for respectively regulating the height of the detectors of said pair of third vertical position detectors;
- (n) a first control means respectively connected to said first transverse inclination measuring means and to said first pair of height regulating means for giving off differential control signals for said first pair of height regulating means the difference of which is proportional to the difference between the actual inclination of the track measured by said first transverse inclination measuring means and a desired inclination ( $\alpha$ ); and
- (o) a second control means respectively connected to said second transverse inclination measuring means and to said second pair of height regulating means for giving off differential control signals for said second pair of height regulating means, the difference of which is proportional to the difference between the actual inclination of the track measured by said second transverse inclination measuring means and said desired inclination ( $\alpha$ ), whereby said reference lines defined by said liaison means (R) are maintained parallel and inscribed in a plane (P) having the said transverse inclination ( $\alpha$ ) whatever the geometrical conformation of the track.

4,341,161

# WORKPIECE HANGER CARRIAGE

Toshikatsu Morita, Sayama, and Akira Minegishi, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1980, Ser. No. 147,745

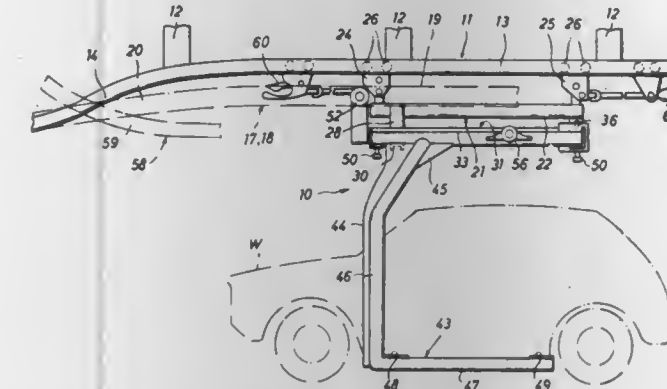
Int. Cl.<sup>3</sup> B65G 17/32

U.S. Cl. 105-149

10 Claims

- 5. A workpiece conveyor system, comprising:
  - (a) a first rail having a vertically lowered portion;
  - (b) a pair of second rails each having a portion vertically curved toward said vertically lowered portion of said first rail;

- (c) a pair of third rails each having a vertically raised portion adjacent to said vertically lowered portion;
- (d) a first frame having rollers rollingly engaging said first rail;
- (e) a second frame pivotally mounted on said first frame and having a pair of rollers rollingly engaging said second rails, respectively, said first and second frames being angularly movable relative to each other when moving along said vertically lowered and curved portions of said first and second rails;



- (f) a pair of substantially L-shaped arms pivotally mounted on said second frame and laterally spaced from each other for supporting a workpiece therebetween; and
- (g) a pair of rollers rotatably mounted on said arms, respectively, and rollingly engaging said third rails, respectively, said L-shaped arms being angularly movable away from each other for releasing said workpiece when said rollers on the arms move along said vertically raised portions of said third rails.

4,341,162

# RAILWAY CENTER PLATE LINER

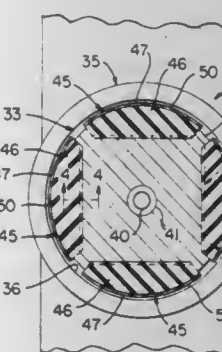
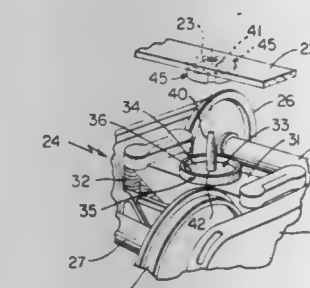
Julien C. Mathieu, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Aug. 18, 1980, Ser. No. 179,192

Int. Cl.<sup>3</sup> B61F 5/16; F16C 17/10

U.S. Cl. 105-199 C

20 Claims



- 1. In a railway vehicle having; a body provided with a body bolster and a body center plate; a truck provided with a truck bolster and bolster bowl defined by a truck center plate having an upstanding peripheral annular flange; said body center plate being received within said flange and being supported by said truck center plate and flange; and a wear resistant liner means disposed between said body center plate and said peripheral flange; the improvement wherein said liner means comprises a

deformable polymeric laminate, said laminate comprising a first deformable polymeric material which is adapted to reduce load concentration against said flange and a second deformable polymeric material which provides an antifriction surface engaging said flange, said first material being an inner part of said liner means and said second material being an outer part of said liner means and a different material than said first material, said laminate resulting in an increased operating life for said flange because said laminate is adapted to deform into the contour of said flange.

4,341,163

# VEHICLE SUPERSTRUCTURE IN PARTICULAR FOR RAILWAY VEHICLES WITH HOODS WHICH CAN BE EXPANDED OUTWARDS AND MOVED WITH RESPECT TO THE LOAD BEARING PLATFORM

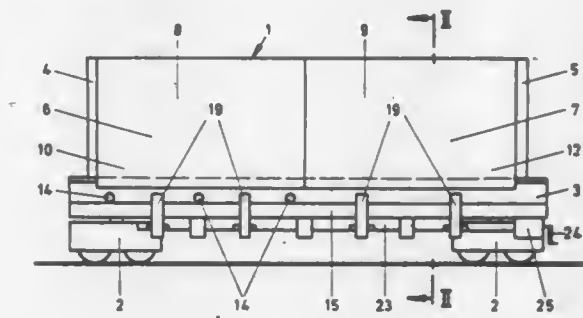
Antal Ritzl, Bergdietikon, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Feb. 1, 1980, Ser. No. 117,486

Int. Cl.<sup>3</sup> B61D 39/00

U.S. Cl. 105-377

19 Claims



- 1. A railway car comprising a railway undercarriage, a load bearing platform mounted on said undercarriage, first and second end walls mounted on the ends of said load bearing platform, at least one rail provided on either end of said load bearing platform and extending substantially the entire length of said load bearing platform from said first end wall to said second end wall, at least two hoods movably mounted with respect to said first and second end walls on said load bearing platform, said at least two hoods having side walls and a roof, said side wall of said at least two hoods being provided with roller means on said side walls adapted to rollingly mate with said at least one rail provided on either side of said load bearing platform and displacement means provided on said load bearing platform for selectively displacing outwardly said side walls of at least one of said at least two hoods away from said load bearing platform so as to enable said at least one hood having said displaced side walls to slide over the other of said at least two hoods.

4,341,164

# FOLDING CAMP TABLE

Johnny L. Johnson, San Antonio, Tex., assignor to Charles H. Ruble, San Antonio, Tex.

Filed Jun. 13, 1980, Ser. No. 159,395

Int. Cl.<sup>3</sup> A47B 1/06, 3/04

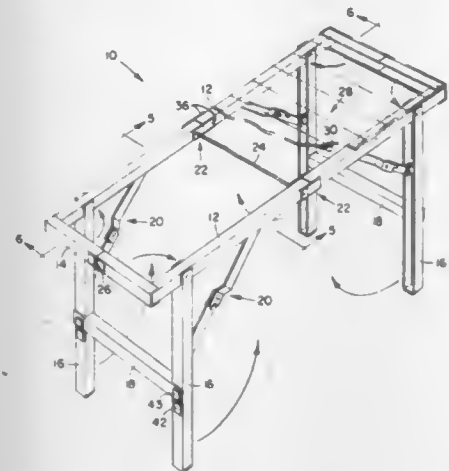
U.S. Cl. 108-67

11 Claims

- 1. A folding camp table comprising a foldable frame and a foldable table surface, said frame comprising:
  - a pair of foldable spaced apart side rails;
  - a pair of foldable spaced apart end rails, said end rails being perpendicular to and pivotally connected to said side rails to form a rectangle;
  - legs located normal to each corner of said rectangle, said legs pivotally connected to said side rails, said end rails, side rails and legs having a U-shaped configuration and said end rails and said legs capable of being folded over said side rails to obtain maximum compactibility of said



foldable frame and minimal occupation of space by said foldable frame when in the folded state;  
foldable locking support means having one end attached to said leg and the opposite end attached to said side rail; and



said table surface comprising a flexible material having a series of supports located on the underneath side, said supports distributed the length of said flexible material and extending transversely, the ends of said supports abutting the interior of said side rails of said table frame.

4,341,165

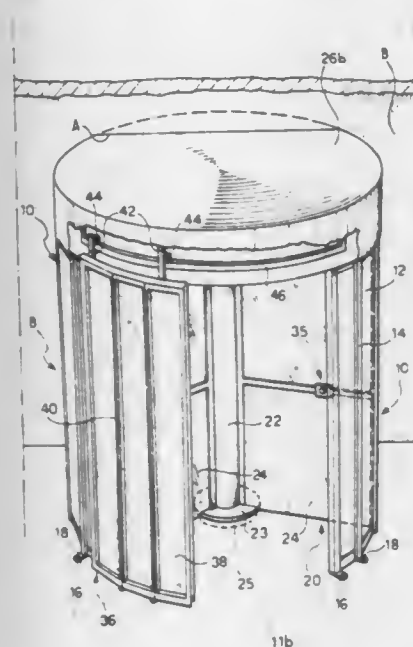
**SECURITY SYSTEM INCLUDING A REVOLVING DOOR**  
Rosario Calandritti, and Biagio Calandritti, both of Via Gorizia 92, Turin, Italy

Filed May 29, 1980, Ser. No. 154,565

Claims priority, application Italy, Jun. 11, 1979, 68249/79

Int. Cl.<sup>3</sup> E05G 3/00

U.S. Cl. 109—8



1. In a security system for controlling access to a protected region through an opening, of the type comprising:  
two opposite fixed walls of bullet-proof material, both in the form of partly cylindrical panels having a width such as to subtend an angle substantially in the region of 90°, said fixed walls being disposed on either side of said opening in such a way as to define between them a passage having an entrance opening facing outwardly of said protected region, and an exit opening facing into said protected region,  
a revolving door turnable only in a single predetermined rotational sense about a vertical axis, said revolving door being located at the centre of said passage, said revolving door comprising four panels of bullet-proof material, angularly spaced from one another by 90°, and  
means for stopping the rotation of said revolving door with said door in a pre-established angular position and for locking it in this position whereby when said stopping and

locking means are energised a person attempting to pass through said passage is trapped in a space between two adjacent panels of said revolving door and one of said two partly cylindrical walls,

the improvement wherein:

there are further provided auxiliary closure means, including a partly cylindrical panel of bullet-proof material, having a width at least as great as that of said exit opening, said panel of said auxiliary closure means being in the form of a sliding door angularly displaceable about said axis of rotation of said revolving door between an open position in which it does not obstruct said exit opening of said passage and a closure position in which it securely closes said exit opening,

an upper support structure fixed to the upper ends of said fixed partly cylindrical walls;

a curved track carried by said upper support structure, the length of said curved track being at least twice that of the width of said sliding door, said curved track being located so as to extend over said exit opening and part of one of said partly cylindrical fixed walls;

suspension means including rollers for suspending said sliding door from said track,

a curved guide element carried by said upper support structure,

a closed loop of chain guided by said curved guide element, means attaching an intermediate point of said closed loop of chain to said sliding door, and

a motor unit carried in said upper support structure for driving said closed loop of chain and consequently said sliding door.

4,341,166

**SAFE STORAGE BOX**

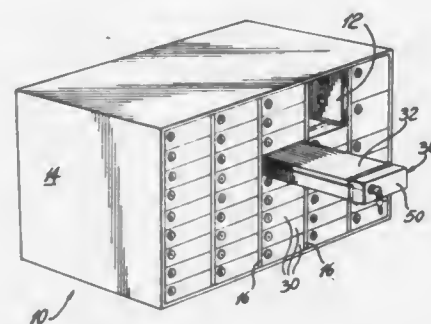
Ross H. Cantley, 577 Essex Rd., Beaconsfield, Quebec, Canada

Filed Aug. 25, 1980, Ser. No. 181,213

Int. Cl.<sup>3</sup> E05G 1/08; A47B 88/04

U.S. Cl. 109—53

4 Claims



1. A safe storage box in combination with a frame for receiving the box, the box comprising an elongated tray defining an open top, a front wall, a lid hinged to the tray and covering the open top, the frame defining a plurality of tray receiving compartments, each compartment having an opening defined by marginal members, the safe storage box including a lock housing attached to the front wall, the housing having dimensions and a peripheral shape defined by the opening and at least partially by the marginal members such that the lock housing will just slide through the opening, a latch receiving seat defined by at least one of the marginal members, a lock operated latch provided in the housing and adapted to protrude into the latch receiving seat when the box is locked in the frame, and the lock housing being made of a sturdy metal formed in at least a channel-shaped elongated member having open ends and a pair of parallel legs with its longitudinal axis perpendicular to the longitudinal axis of the tray, extensions of the tray closing the open ends of the elongated member, one of the legs of the channel forming the front wall of the lock housing and

the other leg forming the attachment panel to the front wall of the tray, and the extensions of the tray forming the ends of the lock housing enclosing the lock housing.

4,341,167

**ENERGY CONSERVING HEATING AND COOLING SYSTEM FOR PRINTING PLANT**

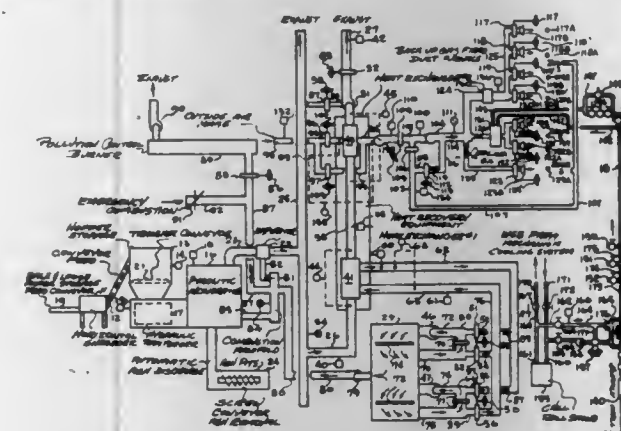
Eric P. St. John, 778 Chenango St., Binghamton, N.Y. 13901

Filed Oct. 29, 1980, Ser. No. 201,984

Int. Cl.<sup>3</sup> B09B 3/00

U.S. Cl. 110—235

12 Claims



1. A heating system for a manufacturing plant comprising an incinerator for incinerating waste products generated as a result of the operations of the plant, exhaust duct means for conducting heated gases from said incinerator, a heat treating apparatus, heat exchange means for transferring heat from said heated gases in said exhaust duct means to air to be supplied to said heat treating apparatus, first duct means for conducting heated air from said heat exchange means to said heat treating apparatus, and second duct means for conducting solvent-laden air from said heat treating apparatus to said incinerator to burn off solvents in said solvent-laden air.

4,341,168

**SYSTEM FOR APPLYING AMMONIA TO THE GROUND**

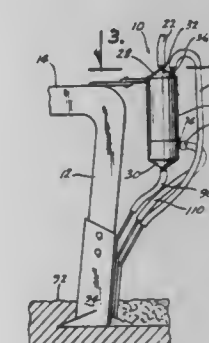
Louie P. Siebert, Box 654, Henderson, Nebr. 68371

Continuation-in-part of Ser. No. 91,363, Nov. 5, 1979, which is a continuation of Ser. No. 787,947, Apr. 15, 1977, Pat. No. 4,196,677. This application May 11, 1981, Ser. No. 262,348

Int. Cl.<sup>3</sup> A01C 23/00

U.S. Cl. 111—7

15 Claims



1. An implement for row application of cold liquid ammonia to the ground comprising,  
an implement frame having a plurality of ground plows having ground working lower end portions,  
a nurse tank connected to said frame adapted for containing pressurized ammonia,  
a plurality of anhydrous converters, each operatively associated with a respective ground plow and adapted to convert said pressurized ammonia to cold depressurized liquid ammonia,  
each converter comprising a generally cylindrical expansion cannister having a side wall and top and bottom ends with an inlet opening in the top end and an outlet opening in the

bottom end and a plurality of spaced apart baffles within said cannister defining a plurality of expansion chambers between said baffles and top and bottom ends, said chambers being interconnected for the flow of ammonia from said inlet opening through said chambers and outwardly through said outlet opening, a supply conduit connecting said inlet opening to said nurse tank for receiving ammonia therefrom, and a single liquid discharge conduit having only two ends, one of said ends being in communication with said outlet opening and the other of said ends terminating adjacent and closely behind said lower end portion of a respective ground plow for transmission of liquid ammonia to the ground,

said outlet openings of said converters being positioned above and adjacent said lower end portions of the respective ground plows, thereby to minimize the travel distance of depressurized liquid ammonia from said outlet openings to the ground,

a vent opening being provided in each cannister in communication with one of said chambers therein at a position vertically spaced from said outlet opening, and

a vapor conduit communicating at one end with said vent opening and terminating at the other end thereof closely adjacent and behind said lower end portion of a respective ground plow for transmission of gas ammonia into the ground.

4,341,169

**MACHINES FOR MAKING WELTED OPENINGS IN A PIECE OF MATERIAL OR SIMILAR**

Jean-Louis Mainot, and Alain Picard, both of Paris, France, assignors to The Reece Corporation, Waltham, Mass.

Continuation of Ser. No. 970,992, Dec. 19, 1978, abandoned.

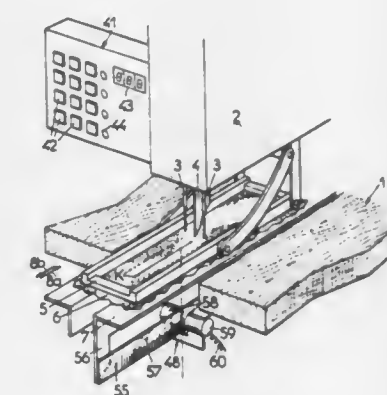
This application Sep. 17, 1980, Ser. No. 188,132

Claims priority, application France, Dec. 21, 1977, 77 38702

Int. Cl.<sup>3</sup> D05B 21/00, 3/10

U.S. Cl. 112—121.12

13 Claims



1. Apparatus for automatically regulating the operation of cutting, stitching and notching means of a sewing machine forming welted openings in pieces of material or the like comprising  
memory means,  
input means for feeding to said memory means sets of information for the control in a predetermined sequence of said cutting, stitching, and notching means relative to each of a plurality of desired welted openings of predetermined length,  
means for selecting a sequence of sets of information from said memory,  
monitoring means for sensing, during operation, the position







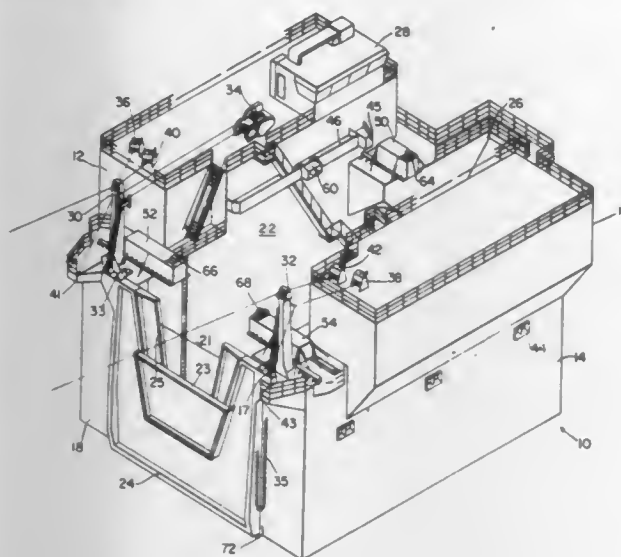
#### 4,341,174 BOW DOCK

Don L. Stevens, Jr., Arlington; Steven L. Brown, Catharpin; John A. Malone, Falls Church, all of Va.; Timothy A. Knowles, Bradenton, Fla., and Thomas G. Webb, College Park, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 22, 1980, Ser. No. 142,796  
Int. Cl.<sup>3</sup> B63C 1/02

U.S. Cl. 114—45

19 Claims



1. A bow dock providing a dry work space for performing maintenance on the bow of a vessel, comprising:
  - a bottom structure;
  - a stern end mounted on the bottom structure, said stern end having an aperture for receiving the bow of the vessel;
  - a bow end mounted on the bottom structure;
  - port and starboard side members mounted on the bottom structure to form a well with the bow and stern ends;
  - a stern gate mounted on the stern end of the dock so as to close the stern end aperture, said stern gate comprising:
    - means conforming the stern gate to the vessel hull, said means being formed with indentations shaped complementarily to the shape of the hull at a predetermined location along the hull, and
    - means forming a seal between the conforming means and the vessel hull;
    - means mounted on facing sides of both vessel and dock for controlling both the longitudinal and transverse positions of the vessel within the dock's well, said position-control means being configured to determine the vessel's longitudinal and transverse positions in at least two locations in the well, one of said locations being defined as an intermediate stop means which is removed when the vessel is moved to the second of said two locations; and
    - means supporting the vessel in the well.

#### 4,341,175

##### SHIPBUILDING METHOD AND COMPLEX

Jury P. Ivanov, Grazhdansky prospekt, 92/2, kv. 1., Leningrad, U.S.S.R.

Continuation of Ser. No. 48,631, Jun. 14, 1979, abandoned. This application May 1, 1981, Ser. No. 259,528

Claims priority, application U.S.S.R., Jun. 16, 1978, 2622027; Jun. 16, 1978, 2622028

Int. Cl.<sup>3</sup> B63B 3/02

U.S. Cl. 114—65 R

9 Claims

1. A method of making and assembling hulls of vessels comprising, the steps of, assembling a section of a hull of a vessel and floating it in a first area of a basin at a certain level, moving the preassembled section of a hull into a second area while in a floating condition, removing the water from said basin and settling said preassembled section of a hull onto a bottom floor level of said second area lower than a level of a

bottom of said first area, after removal of the water from said basin placing said second area in communication with a contiguous drydock and moving said preassembled section of said hull into the contiguous drydock while free of water and maintained isolated from said basin until said section of a hull is



settled at a level of said bottom floor area of said second area, again isolating said drydock from said basin second area, and repeating the steps until enough preassembled sections of a hull of a complete vessel are in said drydock while free of water for joining and assembly into a hull of a vessel.

#### 4,341,176

##### AIR FOIL WITH REVERSIBLE CAMBER

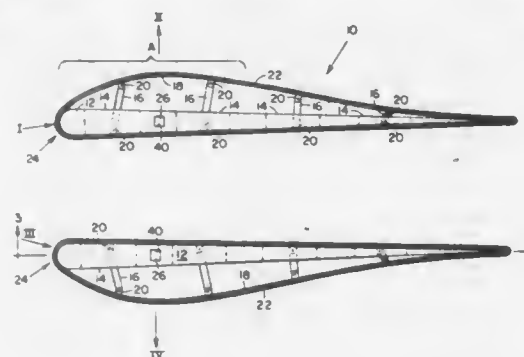
William W. Orrison, 900 NE. Loop 410, Suite E-103, San Antonio, Tex. 78209

Filed Sep. 29, 1980, Ser. No. 191,938

Int. Cl.<sup>3</sup> B63H 9/04; B64C 3/48; F03D 9/00

U.S. Cl. 114—102

15 Claims



1. A reversible airfoil having a tapered and shaped configuration comprising:
  - at least two spaced apart rigid spars having in each of said rigid spars,
  - at least two slots therein, said slots of sufficient size to permit bars to project therethrough, each end of said bar attaching to,
  - flexible slats parallel to said rigid spars, and
  - a flexible movable skin covering the outer surfaces of said flexible slats, said bars moving in and through said slots in said rigid spars to allow said flexible slats and said skin to move in relation to said rigid spars in response to wind impacting said airfoil and thereby creating a lifting action in said airfoil.

#### 4,341,177

##### SMALL WATERCRAFT

Takeshi Miyazaki, Miki, and Hiromi Ono, Akashi, both of Japan, assignors to Kawasaki Jukogyo Kaisha, Kobe, Japan

Filed Mar. 21, 1980, Ser. No. 132,554

Claims priority, application Japan, Mar. 29, 1979, 54-41915[U]

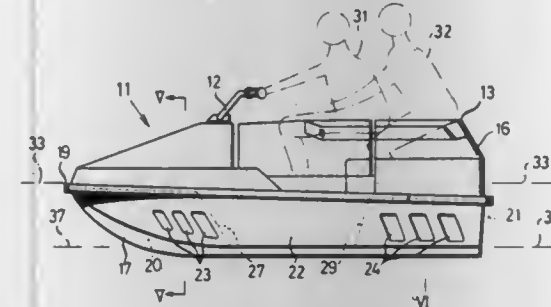
Int. Cl.<sup>3</sup> B63B 43/06

U.S. Cl. 114—125

6 Claims

1. A watercraft for planing on water comprising:
  - a hull of longitudinally elongated shape and reduced width;
  - propulsion means mounted in said hull;
  - a bottom surface of said hull for planing by means of said propulsion means; and
  - at least one water accommodation compartment formed in a forward section of said hull above said bottom surface;
  - said water accommodation compartment formed with a closed front end and a plurality of openings on lateral

sides of a lower part of said hull for permitting water to flow into the water accommodation compartment when the watercraft is at rest and out of the water accommodation compartment when the watercraft moves to a cruising position;



said water accommodation compartment additionally formed with at least one partition wall secured to the lower part of the hull.

#### 4,341,178

##### METHOD OF AND APPARATUS FOR DETECTING LEAKAGE INTO THE BILGE OF A SEA VESSEL

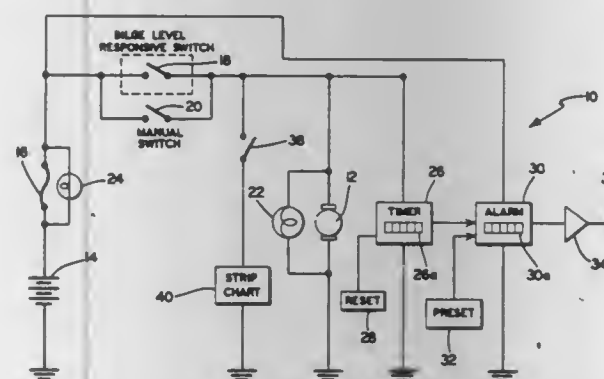
Douglas R. Price, 1406 Locust Ave., Ruxton, Md. 21204

Filed Jun. 27, 1979, Ser. No. 52,596

Int. Cl.<sup>3</sup> B63B 13/00, 29/16, 37/00

U.S. Cl. 114—183 R

23 Claims



1. In a vessel having a bilge pump for pumping bilge water overboard and means responsive to bilge water level for operating said bilge pump, a method of detecting excessive leakage of water into the bilge, comprising the steps of monitoring on time of the bilge pump; numerically accumulating the on time of said bilge pump over a period of time; and correlating the accumulated on time of the pump for the period of time with an expected accumulated on time for normal bilge water leakage for said period of time to identify excessive bilge water leakage and, in response to said correlating step, providing an indication of excessive or non-excessive bilge water leakage.

#### 4,341,179

##### DEVELOPING DEVICE

Nagao Hosono, Chofu, and Junichiro Kanbe, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1980, Ser. No. 124,712

Claims priority, application Japan, Mar. 1, 1979, 54-23700; Mar. 5, 1979, 54-25328

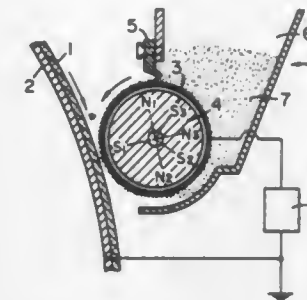
Int. Cl.<sup>3</sup> G03G 15/09

U.S. Cl. 118—658

30 Claims

1. A developing device for developing a latent image supported on latent image bearing means by supplying a developer thereto, comprising:
  - developer supporting means provided in facing relation to said latent image bearing means;
  - developer supply means for supplying the developer supporting means;
  - thickness controlling means for adjusting the developer

present on said developer supporting means to a uniform thickness wherein said thickness controlling means adjusts the developer thickness to a value smaller than the distance between said latent image bearing means and said developer supporting means, thereby forming a clearance between said latent image bearing means and the developer layer; and



magnetic field generating means for generating a magnetic field in a developing zone for developing the latent image supported on said latent image bearing means; wherein said developer is a magnetic developer containing magnetic powder in a proportion not less than 20 wt.%; and wherein said magnetic field generating means is stationary and adapted to generate a flux density not in excess of 950 gauss on the surface of said developer supporting means in the developing zone.

#### 4,341,180

##### ANIMAL LITTER AND PROCESS

Louis R. Cortigene, and Robert G. Wright, both of Portage, Mich., assignors to James River Corporation of Virginia, Richmond, Va.

Division of Ser. No. 672,471, Mar. 31, 1976, Pat. No. 4,203,388.

This application Jul. 5, 1979, Ser. No. 55,003

Int. Cl.<sup>3</sup> A01K 29/00

U.S. Cl. 119—1

13 Claims

1. A process for making animal litter which comprises partially de-watering waste rejects from a secondary fiber plant to a consistency such that the partially de-watered waste can be formed into pellets, forming the partially de-watered waste into pellets, and then drying said pellets, in which the partially de-watered waste contains from about 32 percent to about 40 percent water.

#### 4,341,181

##### LIVESTOCK CONFINEMENT PASTURE MACHINE

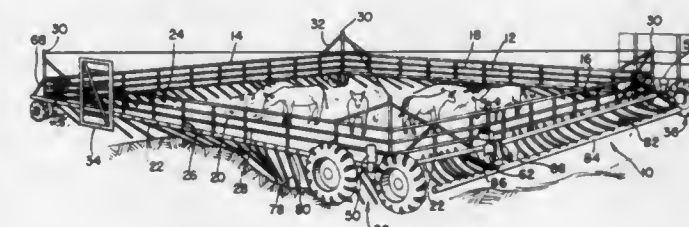
Walter R. Fair, P.O. Box 306, Menno, S. Dak. 57045

Filed Feb. 6, 1981, Ser. No. 232,010

Int. Cl.<sup>3</sup> A01K 3/00

U.S. Cl. 119—20

10 Claims



1. A livestock confinement pasture machine comprising confinement means for confining livestock within a defined area, said confinement means having a front end and a rear end, drive assembly means mounted upon said confinement means for moving said confinement means at a predetermined speed to control the grazing of livestock confined thereby, said drive assembly means including at least one drive wheel unit mounted on said confinement means, a motor connected for driving said drive wheel unit, and pre-settable automatic timing



means for operating said motor for a time selected prior to starting said motor to move said confinement means during the time selected and to stop the movement of said confinement means when the time selected has elapsed, and steering means for controlling the direction of movement of said confinement means mounted upon said confinement means, said steering means operating to sense and follow a preformed direction control path for said livestock confinement pasture machine.

4,341,182

## ANIMAL WATERING APPARATUS

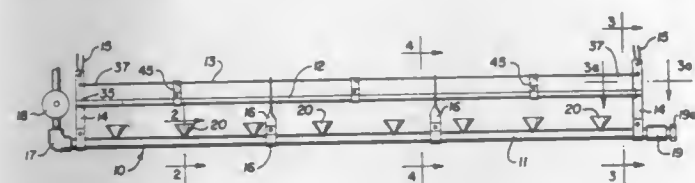
Francis Rustin, and Morris C. Keller, both of 2170 E. Blaine, Springfield, Mo. 65803

Filed Nov. 26, 1980, Ser. No. 210,687

Int. Cl.<sup>3</sup> A01K 39/00, 7/06

U.S. Cl. 119—75

17 Claims



1. Animal watering apparatus comprising a length of water pipe; a pair of elongated rigid end support members having their respective lower ends fixed to said pipe, adjacent to the opposite ends thereof; an elongated compression member disposed between said support members in generally parallel relation to said pipe; said compression member being secured at its opposite ends to said support members intermediate the ends thereof; an elongated tension member connected between said support members adjacent to the upper ends thereof, in generally parallel relation to said compression member and said pipe; said tension member being stressed in tension, whereby said compression member is stressed in compression and said pipe is stressed in tension; a plurality of drinker valves, to be operated by the animals, mounted in longitudinally spaced relation on said pipe; and said support members having means at the upper ends thereof for suspending said watering apparatus from an overhead support.

4,341,183

## VETERINARY APPARATUS

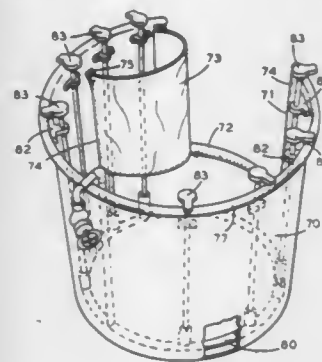
Louis A. Metzler, 365 Chestnut St., Stirling, N.J. 07980

Continuation-in-part of Ser. No. 10,136, Feb. 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 840,122, Oct. 7, 1977, abandoned. This application Apr. 29, 1980, Ser. No. 144,878

Int. Cl.<sup>3</sup> A61D 11/00

U.S. Cl. 119—158

8 Claims



6. A veterinary therapeutic apparatus comprising, a bottom fluid header, nipples protruding upwardly from said bottom fluid header in fluid communication therewith, a plurality of spray tubes, each of said spray tubes being pivotally mounted

on said bottom fluid header, said spray tubes each being in fluid communication with a respective one of said upwardly protruding nipples in order to selectively orient said spray tubes in predetermined directions, a bucket for generally containing said bottom fluid header and said spray tubes, said bucket having a portion of its side removed in order to form a sill spaced from the bottom of said bucket and an opening thereabove in said bucket, and a sheet for selectively closing said bucket opening.

4,341,184

## METHOD AND DEVICE AVOIDING THE POLLUTION OF THE ATMOSPHERE BY NOXIOUS GASES

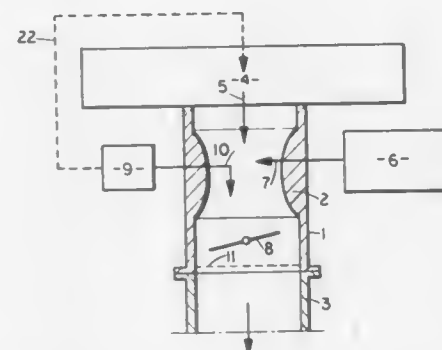
Maria Temmerman, 3, Rue Belliard, 1000 Bruxelles, Belgium

Continuation-in-part of Ser. No. 646,774, Jan. 6, 1976, abandoned, which is a continuation-in-part of Ser. No. 580,459, May 23, 1975, abandoned. This application Jul. 23, 1979, Ser. No. 60,116

Int. Cl.<sup>3</sup> F02D 19/00

U.S. Cl. 123—25 F

12 Claims



1. Apparatus for reducing the emission of pollutant gases resulting from a combustion of fuel in an internal combustion engine comprising means defining a path for the passage of fuel to a combustion zone, means for producing a stream of water vapor, said means comprising an exhaust pipe (17), a water reservoir (13) above said exhaust pipe, a heat exchanger (16) in contact with and completely surrounding the exterior periphery of said exhaust pipe, an air vent (18) for said heat exchanger, a water outlet (14) for said reservoir, projecting from the reservoir and extending into said heat exchanger, valve means (15) on said outlet for controlling the flow of water from said reservoir to said heat exchanger, and a conduit (22) for passing the steam produced in the heat exchanger into contact with a catalyst comprising cerium or germanium while maintaining the fuel out of contact with said catalyst, thereby producing nascent hydrogen by the contact of said water vapor with the catalyst, and a supplemental conduit for thereafter passing the stream of vapor into said path and delivering it with said fuel to the combustion zone.

4,341,185

## FLUID-COOLED VALVE HOUSING FOR AN ENGINE HAVING TWO EXHAUST VALVES PER CYLINDER

Jean-Pierre Pollet, Arnouville les Gonesse, France, assignor to Societe d'Etudes de Machines Thermiques S.E.M.T., Saint-Denis, France

Filed Dec. 4, 1979, Ser. No. 100,245

Claims priority, application France, Jan. 29, 1979, 79 02192

Int. Cl.<sup>3</sup> F01P 3/14

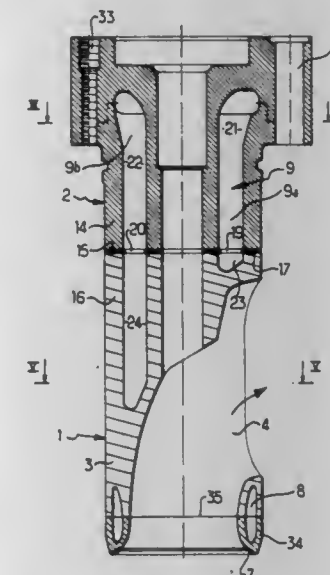
U.S. Cl. 123—41.85

22 Claims

1. An internal combustion engine having a cylinder, a right-hand and a left-hand valve for said cylinder, and respective right-hand and left-hand fluid-cooled valve housing assemblies for said valves, each housing assembly including a cage member having a circumferential outer wall with a lateral opening in the wall connecting to a common passage of the cylinder, and an annular valve seat portion at one end of the cage member having an annular space for fluid coolant therein, a valve

guide member at the other end of the cage member, said valve guide member having axially extending circumferentially spaced coolant supply and coolant return compartments connecting to the annular space in the valve seat portion through coolant supply and return passages provided within the cage member, and an intermediate element interposed between the valve guide member and the cage member, the intermediate element having one opening for coolant flow between the supply compartment of the valve guide member and the supply passage of the cage member and another opening for coolant flow between the return passage of the cage member and the return compartment of the valve guide member, wherein the improvement comprises:

said cage member being provided with at least one portion of said coolant supply and coolant return compartments, said intermediate element thereby dividing the coolant supply and coolant return compartments into upper coolant supply and coolant return compartment portions in the



- valve guide member and lower coolant supply and coolant return compartment portions in the cage member; the angular extents of the one and the other openings in the intermediate element being less than the angular extents of the supply and return compartment portions, respectively, in the valve guide member and the cage member adjacent to the intermediate element; the upper supply and return compartment portions in the valve guide member being angularly shifted relative to the lower supply and return compartment portions of the cage member, with direct communication between the supply compartment portion of one of said members and the return compartment portion of the other of said members being precluded by said intermediate element; the valve guide member of the right-hand housing being a mirror image of the valve guide member of the left-hand housing; and the cage member of the right-hand housing being identical to the cage member of the left-hand housing.

4,341,186

## AIR INTAKE SYSTEM FOR A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Bertold Mayr, Gauting, and Jiri Seidl, Munich, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 7, 1980, Ser. No. 138,075

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914172

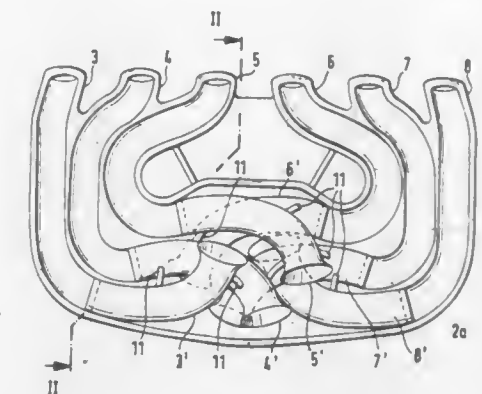
Int. Cl.<sup>3</sup> F02B 75/18

U.S. Cl. 123—52 M

9 Claims

1. An air intake system for a multi-cylinder internal combustion engine such as a fuel-injected internal combustion engine, the intake system comprising a multi-part distributor housing which is divided into essentially two half shells which are interconnected along a dividing plane which extends in a

longitudinal direction across said housing, first and second individual intake pipes connected to the distributor housing, openings of the first and second intake pipes lying in mutual opposition within the distributor housing on the division thereof in said longitudinal direction, characterized in that bent auxiliary pipes are arranged at the respective openings of the



individual intake pipes, in that the auxiliary pipes are arranged in the distributor housing in a mutually overlapping relationship when viewed along said dividing plane, said auxiliary pipes having openings at opposite ends thereof which face in different directions, and in that the respective auxiliary pipes are fixed in the openings of the respective intake pipes under a pretensioning by the two half shells of the distributor housing.

4,341,187

## SEAL FOR INTERNAL COMBUSTION ENGINE HAVING A NOISE-DEADENING SHROUD

Erich Absenger, Ruhstorf, Fed. Rep. of Germany, assignor to Motorenfabrik Hatz GmbH & Co. KG, Ruhstorf, Fed. Rep. of Germany

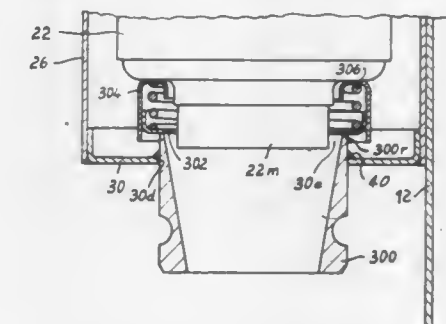
Filed Nov. 5, 1979, Ser. No. 91,442

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855220

Int. Cl.<sup>3</sup> F02B 77/00; G10K 11/00; F16L 55/02

U.S. Cl. 123—198 E

5 Claims



1. An exhaust arrangement for an internal combustion engine, comprising: exhaust means supported on said engine for conducting exhaust gases away from said engine, said exhaust means having an outlet pipe at the end thereof remote from said engine; a sound-deadening enclosure surrounding and spaced from said exhaust means, said enclosure being supported on said engine independently of said exhaust means and having a pipe connection extending through and securely supported on a wall thereof, said outlet pipe being telescopically disposed within and free of contact with the end of said pipe connection which is within said enclosure; an annular seal surface provided on the axially facing surface on said of said pipe connection; an annular cover member closely encircling said outlet pipe and engaging said annular seal surface; and first means for maintaining said cover member in sealing engagement with said seal surface on said pipe connection.



**4,341,188**  
**TWO-CYCLE INTERNAL COMBUSTION ENGINE**  
**INCLUDING MEANS FOR VARYING CYLINDER PORT**  
**TIMING**

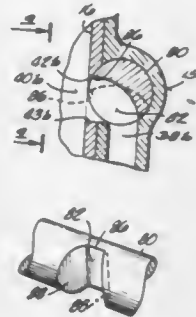
James S. Nerstrom, Gurnee, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 21, 1980, Ser. No. 141,906

Int. Cl.<sup>3</sup> F02B 75/02

U.S. Cl. 123—324

6 Claims



1. A two-cycle internal combustion engine comprising an engine block including a cylindrical wall defining a cylinder having a head end, a piston mounted for reciprocative movement in said cylinder relative to said cylinder head end, and a passage in said engine block terminating at said cylindrical wall in a port having upper and lower edges at given distances from said cylinder head end and having side edges, and valve means mounted for movement inside said passage relative to said port to selectively vary the effective distance of one of said port edges from said cylinder head end, said valve means comprising a valve member including an elongated barrel section and a passageway in said barrel section for registering with said port and having an inlet which has a transverse edge, side edges, and a shape different from the shape of said port, said valve member being mounted transversely of said passage and adjacent said port for rotational movement between a first position wherein said passageway inlet does not substantially affect the effective distance of said one edge of said port from said cylinder head end or the effective opening area of said port and a second position wherein the transverse and side edges of said passageway inlet extend inwardly from the respective edges of said port to define a smaller opening area, with the transverse edge of said passageway effectively acting as the upper edge of said port.

**4,341,189**  
**KNOCK DETECTING APPARATUS FOR COMBUSTION**  
**ENGINES**

Hiroaki Yamaguchi, Anjo; Tadashi Hattori, and Yoshinori Oot-suka, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

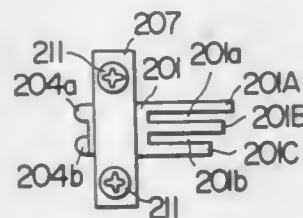
Filed Nov. 19, 1979, Ser. No. 95,307

Claims priority, application Japan, Jun. 4, 1979, 54-70494

Int. Cl.<sup>3</sup> F02P 5/04; F02B 33/00

U.S. Cl. 123—425

3 Claims



1. A knock detecting apparatus for an internal combustion engine comprising a single vibrating plate of piezoelectric element branched into a plurality of vibrating reeds having different lengths by forming a recess in said vibrating plate from one end thereof, said plurality of vibrating reeds being integral at the other end of said vibrating plate, and having respective resonance characteristics in different frequency

bands within a frequency range of the knocking of said combustion engine, an electrode electrically connected to said vibrating plate at said other end thereof to deliver an output voltage representing resonance characteristics of said plurality of vibrating reeds, and a housing member for supporting said vibrating plate securely at said other end thereof as a cantilever.

**4,341,190**  
**AIR-FUEL RATIO CONTROL DEVICE OF AN INTERNAL**  
**COMBUSTION ENGINE**

Norikatsu Ishikawa, Mishima; Haruyuki Obata, Susono; Hidemi Onaka, Susono; Takao Tate, Susono; Toshio Tanahashi, Susono, and Isamu Hagino, Aichi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

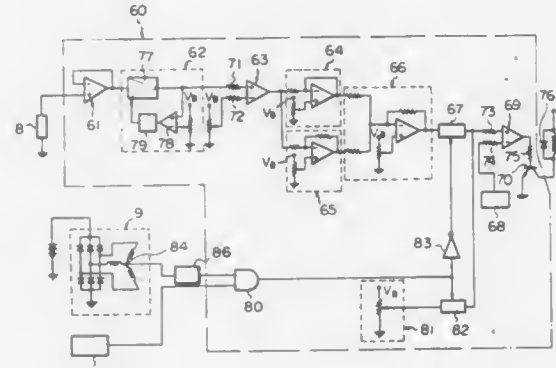
Filed Feb. 25, 1981, Ser. No. 237,949

Claims priority, application Japan, May 14, 1980, 55-62703; May 14, 1980, 55-62704; May 14, 1980, 55-62705; May 14, 1980, 55-62706

Int. Cl.<sup>3</sup> F02M 7/18

U.S. Cl. 123—439

39 Claims



1. An air-fuel ratio control device of an internal combustion engine having at least one cylinder, an intake passage and an exhaust passage, said device comprising:  
 a carburetor arranged in the intake passage and having a choke apparatus for reducing an air-fuel ratio of a mixture fed into the cylinder from said carburetor when the engine is started, said carburetor having a fuel reservoir and a fuel outflow passage which interconnects said reservoir to the intake passage;  
 an air bleed passage interconnecting said fuel outflow passage to the atmosphere for feeding air into said fuel outflow passage;  
 a temperature reactive switch for detecting the temperature of the engine to produce a detecting signal indicating whether the temperature of the engine is lower or higher than a first predetermined temperature;  
 an air-fuel ratio detector arranged in the exhaust passage and detecting components of an exhaust gas in the exhaust passage for producing a detecting signal which has a potential level which becomes high or low when the air-fuel ratio of said mixture becomes less or larger than the stoichiometric air-fuel ratio, respectively;  
 a detecting signal processing circuit having a first comparator for comparing the level of the detecting signal of said air-fuel ratio detector with a reference voltage to produce an output voltage, said processing circuit having an integrating circuit for integrating the output voltage of said first comparator to produce a first control signal having a level which varies within a fixed range of voltage and becomes large as the air-fuel ratio of said mixture becomes small;  
 control voltage generating means for generating a second control signal having a first level which is larger than said fixed range of voltage;  
 switching means in response to the detecting signal of said temperature reactive switch for selectively producing an output voltage which is equal to the level of said first control

signal or the level of said second control signal when the temperature of the engine is higher or lower than said first predetermined temperature, respectively;  
 a drive pulse generator for generating continuous drive pulses, each having a width which is proportional to the output voltage of said switching means, and;  
 control valve means arranged in said air bleed passage and actuated in response to said drive pulses for increasing a flow area of said air bleed passage in accordance with an increase in the width of said drive pulse.

**4,341,191**  
**FUEL INJECTION TYPE CARBURETOR**  
 Keiso Takeda; Shozo Inouye, and Toshimi Kashiwakura, all of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

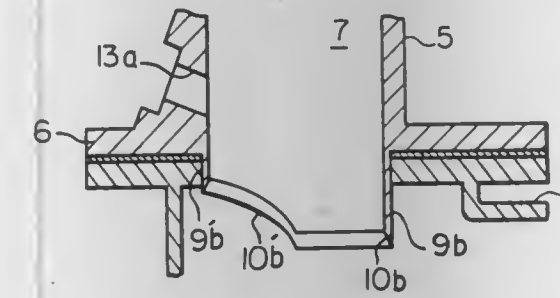
Filed Jul. 15, 1980, Ser. No. 169,205

Claims priority, application Japan, Aug. 1, 1979, 54-97209

Int. Cl.<sup>3</sup> F02M 61/14

U.S. Cl. 123—445

1 Claim



1. A fuel injection type carburetor of multicylinder internal combustion engines comprising:  
 a throttle body having a throttle bore extending substantially vertically and being connected at the bottom portion thereof to a collecting portion of intake manifolds extending substantially horizontally, said throttle body having an extension formed integrally with said throttle body and extending downwardly into said collecting portion of the intake manifolds, said extension comprising a cylindrical thin wall formed integrally and coaxially with said throttle bore and having a sharp peripheral knife edge at the lower end thereof;  
 a throttle valve in said throttle bore;  
 a linear injection type fuel injection valve having a fuel injection nozzle in one side of said throttle bore downstream from said throttle valve and inclined toward the downstream side, so that a fuel jet injected from said fuel injection nozzle strikes against said extension of said throttle bore; and  
 said cylindrical thin wall extending vertically downwardly at the side of said throttle bore substantially opposite said fuel injection valve to a substantially greater extent than at said one side of said throttle bore.

**4,341,192**  
**FUEL INJECTION SYSTEM**  
 Heinrich Knapp, Leonberg; Wolfgang Maisch, Schwieberdingen; Klaus-Jürgen Peters, Affalterbach; Michael Wissmann, Gerlingen; Günther Jäggli, and Peter Schelhas, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 11, 1980, Ser. No. 129,496

Claims priority, application Fed. Rep. of Germany, May 8, 1979, 2918479

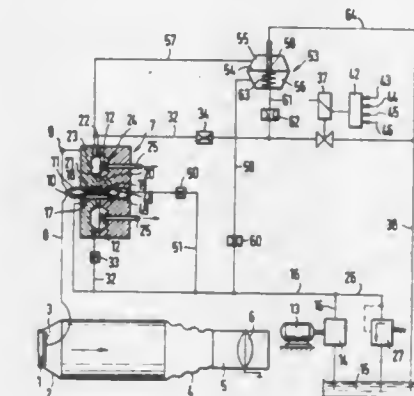
Int. Cl.<sup>3</sup> F02M 69/00

U.S. Cl. 123—452

4 Claims

1. In a fuel injection system for an internal combustion engine, including

an intake manifold, through which air is supplied to the engine,  
 a measuring device which is disposed within the intake manifold and which is displaceable therein against a restoring force in accordance with the air quantity flowing through the intake manifold,  
 an arbitrarily actuatable throttle valve which is disposed in series with the measuring device within the intake manifold,  
 a fuel supply line,  
 a fuel metering valve, which is disposed in the fuel supply line and which includes a movable element whose position is determined by the measuring device, for metering a fuel quantity to be injected corresponding to the air quantity flowing through the intake manifold,  
 a control pressure line, having opposite ends,  
 a control throttle, disposed between one end of the control pressure line and a portion of the fuel supply line upstream



of the metering valve, through which the control pressure line communicates with the fuel supply line,  
 an electromagnetic valve, which is disposed at the other end of the control pressure line, for relieving the pressure in the control pressure line,  
 valve actuating means for actuating the electromagnetic valve in accordance with selected operational characteristics of the engine,  
 pressure control means for controlling the pressure in the fuel supply line upstream of the metering valve, and  
 a control valve for controlling the pressure differential at the metering valve, the control valve including a movable valve element having one side subjected to the fuel pressure downstream of the metering valve and an opposite side subjected to the pressure of the control pressure line, the improvement which comprises:  
 a pressure limitation element which is disposed upstream of the electromagnetic valve in the control pressure line.

**4,341,193**  
**LOW PRESSURE THROTTLE BODY INJECTION**  
**APPARATUS**  
 Lauren L. Bowler, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.  
 Continuation-in-part of Ser. No. 853,331, Nov. 21, 1977, abandoned. This application Jul. 6, 1978, Ser. No. 922,339  
 Int. Cl.<sup>3</sup> F02M 39/00

U.S. Cl. 123—472

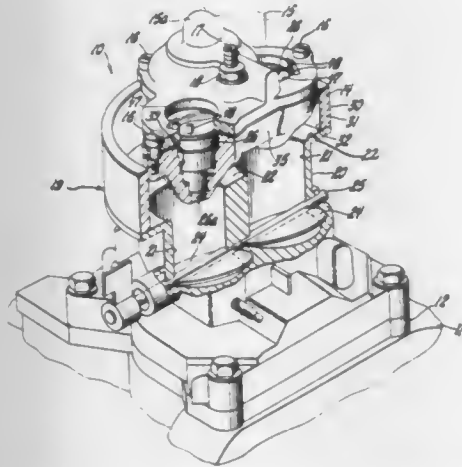
10 Claims

1. A low pressure fuel supply mechanism for a spark ignition internal combustion engine having a throttle body defining a substantially vertical air intake passage and a movable throttle therein, comprising:  
 an injector mechanism mounted above said air intake passage and adapted to receive fuel at said low pressure, said injector mechanism having a fuel discharge passage through which fuel flows generally downwardly and is discharged into said air intake passage, the mechanism defining a valve seat at the upper end of the passage and a fuel space about said valve seat, the mechanism further



having a vertically movable valve member effective to close said fuel discharge passage at said seat; said injector mechanism also defining (a) an annular fuel well substantially horizontally aligned with said fuel space and radially outboard the same (b) a generally horizontally oriented fuel intake passage into said fuel space from said annular fuel well (c) a fuel intake passage opening into said fuel well at one peripheral point and (d) a fuel return passage opening from said fuel well at a point circumferentially spaced from said one peripheral point to return excess fuel from the same, whereby excess fuel circulates peripherally about the annular fuel well to establish cooling heat flow communication from the circulating fuel to the fuel at the said fuel discharge passage;

the passages being so proportioned and located that the amount of fuel entering the injector mechanism is substantially greater than the fuel injected into the throttle body in an amount sufficient to avoid substantial fuel vaporization at the metering orifice.



10. A fuel-air management system comprising a throttle body adapted for connection to an intake manifold of an internal combustion engine, said throttle body having an induction bore which includes:

- a throttle assembly having a rotatable throttle plate for controlling the amount of air flow through said induction bore;
- a fuel injector jacket having a pressurized fuel accumulation chamber;
- suspension means for suspending said fuel injector jacket above said air induction bore and throttle plate; and
- an intermittent fuel injection valve mounted in said jacket to meter fuel from said accumulation chamber into the air flow of the induction bore before it reaches the throttle plate, said injection valve having a hollow conical spray pattern wherein the spray pattern directs injected fuel at the opening between the periphery of the throttle plate and the wall of the air induction bore when the engine runs under open throttle operation and above said opening when the engine runs under closed throttle operation.

#### 4,341,194 INTERNAL COMBUSTION ENGINE, ESPECIALLY FOR TRUCKS DRIVEN WITH GAS-STORED IN LIQUID CONDITION IN A FUEL TANK

Gerhard Wolters, Gaggenau, and Horst Bergmann, Esslingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Aug. 29, 1980, Ser. No. 182,824  
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1979, 2934797

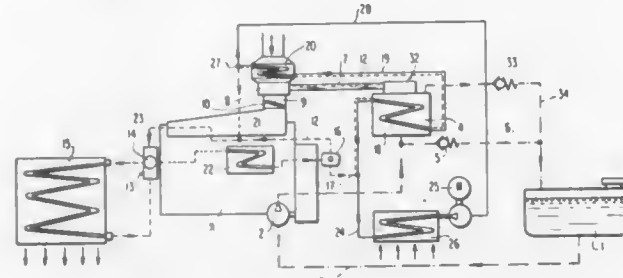
U.S. Cl. 123—557

Int. Cl.<sup>3</sup> F02M 31/00

21 Claims

1. A water-cooled internal combustion engine adapted to be operated on a gaseous fuel stored as a liquid fuel in a fuel tank, the internal combustion engine includes a cooling water circulatory means, a fuel vaporizer means adapted to be heated at least by the cooling water circulatory means, an intake air

preheater means adapted to be heated at least by the cooling water circulatory means, an intake air/gas mixer means, and a throttle valve means arranged between the air/gas mixer means and working cylinders of the internal combustion engine, characterized in that an externally heated water circulatory means is provided, conduit means are provided for communicating the circulatory means with each other, and the thermostatic control valve means are arranged in the conduit means for selectively controlling the communication between



the two circulatory means in dependence upon a temperature such that water from at least one of the cooling water circulatory means and the externally heated water circulatory means are conducted through the fuel vaporizer means and the intake air preheater means whereby the externally heated water circulatory means, when the internal combustion engine has not reached a predetermined operating temperature, and the cooling water circulatory means, when the internal combustion engine has reached a predetermined operating temperature, are switched on with respective priority.

#### 4,341,195 IGNITION SYSTEM FOR SPARK PLUGS CAPABLE OF REMOVING CARBON DEPOSITS

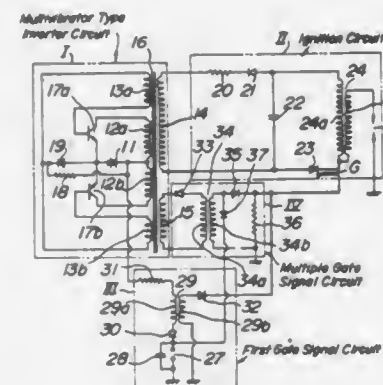
Kanemitsu Nishio, Komaki, and Takashi Suzuki, Nagoya, both of Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 893,415, Apr. 4, 1978, abandoned. This application Jan. 18, 1980, Ser. No. 113,326  
Claims priority, application Japan, Apr. 6, 1977, 52-38504

U.S. Cl. 123—598

Int. Cl.<sup>3</sup> F02P 1/00

3 Claims



1. An ignition circuit for spark plugs capable of removing carbon deposits, comprising a multivibrator type inverter circuit connected to a low direct current source and producing a high alternating current voltage; an ignition circuit including a condenser operative to be charged by said high alternating current voltage, a silicon controlled rectifier having a gate terminal and a creeping discharge spark plug; a first gate signal circuit connected between said multivibrator type inverter circuit and said gate terminal of the silicon controlled rectifier and including an interrupter operatively connected with an engine, said first gate signal circuit being operative to make conductive said silicon controlled rectifier in response to the operation of said interrupter and produce a single spark; and a multiple gate signal circuit connected between said multivibra-

tor type inverter circuit and said first gate signal circuit, said multiple gate signal circuit being connected to said gate terminal of the silicon controlled rectifier and operative to make conductive said silicon controlled rectifier in response to the operation of said interrupter and produce a multiple spark.

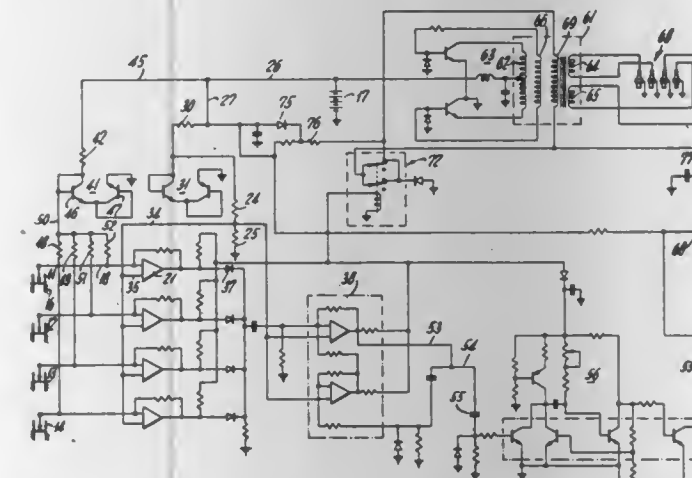
#### 4,341,196 IGNITION INITIATING SIGNAL FROM A FUEL INJECTION NOZZLE VALVE

Robert E. Canup, Poughkeepsie, and Martin Alperstein, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 27, 1980, Ser. No. 200,620  
Int. Cl.<sup>3</sup> F02P 1/00

U.S. Cl. 123—643

7 Claims



1. In an ignition system for an internal combustion engine wherein said system employs a fuel injection nozzle valve for producing an ignition spark control signal, said injection nozzle valve being actuated by fuel pressure to inject said fuel, said fuel pressure creating an electrically insulating layer at said valve when said fuel is injected, and said valve creating said control signal when unseated, the improvement comprising electrical circuit means for limiting both voltage and current of said control signal to eliminate breakdown of said insulating layer and pitting of said valve seat.

7. In an ignition system for an internal combustion engine wherein

said system employs a fuel injection nozzle valve for producing an ignition spark control signal, said injection nozzle valve being actuated by fuel pressure to inject said fuel, said fuel pressure creating an electrically insulating layer at said valve when said fuel is injected, and said valve creating said control signal when unseated, the improvement comprising electrical circuit means for limiting both voltage and current of said control signal to eliminate breakdown of said insulating layer and pitting of said valve seat,

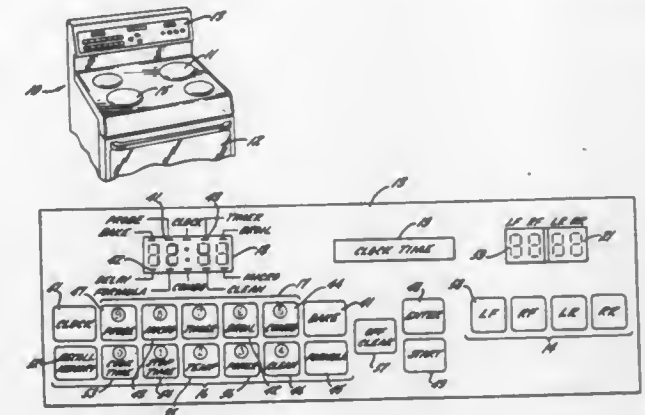
said electrical circuit means comprising a constant voltage unit for limiting the voltage amplitude of said signal and having a first resistor in series with a pair of transistors connected with the collector to emitter paths in series and with each base connected to its collector, and

a second resistor in series with the output of said constant voltage unit for limiting the current amplitude of said signal.

#### 4,341,197 PROMPTING CONTROL

Orville R. Butts, West Lafayette, Ind., assignor to Roper Corporation, Kankakee, Ill.  
Filed Jul. 25, 1980, Ser. No. 172,252  
Int. Cl.<sup>3</sup> F24C 3/08; H05B 3/68; G08C 9/00  
U.S. Cl. 126—39 BA

6 Claims



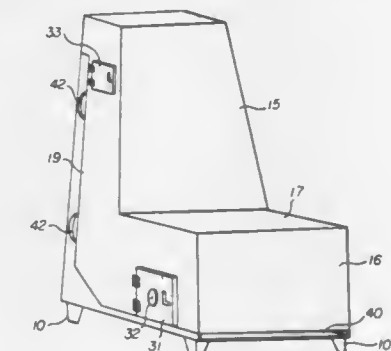
1. In a multifunction cooking appliance having at least one cooking station, a control arrangement comprising: (a) keys for entry of control information for the cooking appliance functions, a first group of the keys having a plurality of identifiable modes of operation; (b) an alphanumeric prompting display for providing alphabetic prompting commands to assist in sequential entry of control information for the cooking functions through the keys (a); and (c) a processor-based control which includes (1) means for selecting one of the identifiable key modes in dependence upon the type of control information to be entered through the group of keys, (2) means for activating the prompting display in dependence upon the control information being entered through the group of keys, and (3) means for transferring control information through the group of keys to a cooking station for the cooking functions of the cooking appliance.

#### 4,341,198 WOOD BURNING STOVE

Paul D. Sullivan, 15 Juniper La., Medfield, Mass. 02052  
Continuation-in-part of Ser. No. 4,702, Jan. 19, 1979, abandoned. This application Nov. 10, 1980, Ser. No. 205,345  
Int. Cl.<sup>3</sup> F24B 7/00

U.S. Cl. 126—68

32 Claims



1. A wood burning stove comprising a housing defined by a horizontally disposed top housing surface and bottom, a vertically disposed back wall, a front wall comprising a planar upper wall portion, and a planar vertically disposed lower wall portion, and side walls that extend between and connect together the front wall and back wall, top housing surface and bottom, and which in turn define a lower zone for accommodating a wood burning fire comprising a plurality of logs of predetermined maximum length arranged in parallel relation-



ship to one another and an upper zone which terminates at the top of said lower zone;

a planar horizontally disposed front wall portion which connects said planar upper wall portion to said planar lower front wall portion suitable for accommodation of cooking utensils and which determines the said top of the said lower fire accommodating zone;

a divider located in said housing extending between and connected to the side wall portions and dividing said upper zone into a log storage chamber adjacent said back wall and an exhaust chamber adjacent said front upper wall portion for discharge of the gaseous combustion products from said lower zone, both said log storage and exhaust chamber having bottom openings and each communicating directly with said lower fire accommodating zone, the said divider extending downwards only to the top of said lower zone, and terminating at a horizontal plane approximate to that of the plane defined by said horizontally disposed front wall portion;

an air tight fill door covering an opening in a side wall in said housing and providing access to the top portion of said log storage chamber for the loading of logs, the said log storage zone being sealed and air tight when said air tight fill door is closed and having no other communication to the atmosphere other than the said bottom opening thereof communicating with the lower zone whereby the exhaust gases during start-up and operation of the stove will move to and exhaust only through the said exhaust chamber;

an air tight fire door covering another opening located adjacent said vertical front wall portion in a side wall in said housing and providing access to said lower fire accommodating zone;

a flue discharge opening located in said housing and communicating with the top portion of said exhaust chamber; and means provided in said housing in said lower zone for introduction of air into said lower zone.

4,341,199

# BIO-MASS BURNER WITH GRATE THEREFOR AND METHOD OF OPERATION

Calvin H. Hand, Jr., Rte. #3, Box 407, Tappahannock, Va. 22560; David J. Hand, Rte. #1, Box 140A, Warsaw, Va. 22572, and John A. Careatti, Rte. #1, Box 154, Howertons, Va. 22475, assignors to Calvin H. Hand, Jr., Tappahannock; David J. Hand, Warsaw; John A. Careatti, Howertons and Herbert J. Mulqueen, Jr., Tappahannock, all of, Va.

Filed Jun. 13, 1980, Ser. No. 159,226

Int. Cl.<sup>3</sup> F23H 1/02, 3/00

U.S. Cl. 126—163 A

6 Claims

1. A grate structure for supporting a bio-mass fuel product in a burning chamber which comprises

a. a first manifold means having an inlet aperture communicating with a source of air under a pressure greater than atmospheric pressure,

b. a second manifold means laterally spaced from said first manifold means,

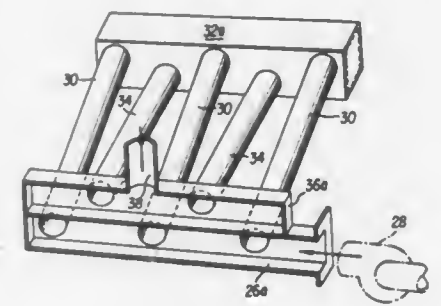
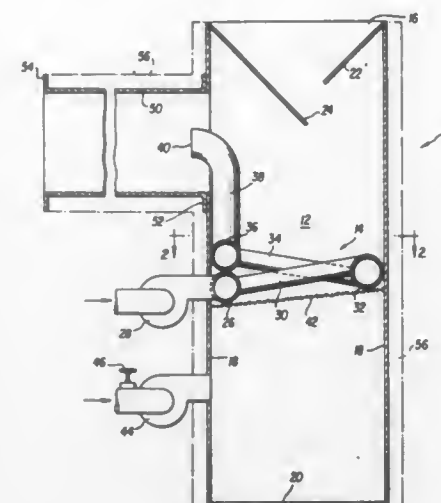
c. a first plurality of hollow tubular members having imperforate walls interconnecting said first and second manifold means,

d. a third manifold means laterally spaced from said second manifold means,

e. and a second plurality of hollow tubular members having imperforate walls interconnecting said second and third manifold means,

f. said first and second plurality of hollow tubular members establishing a crisscross arrangement in vertical elevation for supporting a solid fuel product in said burning chamber,

g. said source of air traversing a path sufficiently long in moving through said grate means from the inlet at said



first manifold means to an exit at said third manifold means to become superheated.

4,341,200

# SOLAR ENERGY COLLECTOR SUB-ASSEMBLIES AND COMBINATIONS THEREOF

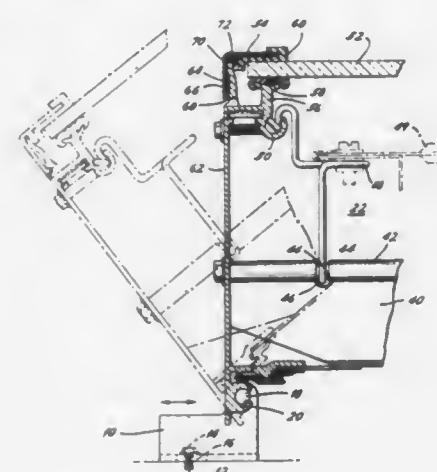
John C. Bowen, Huntingdon Valley, Pa., assignor to Ametek, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 935,406, Aug. 21, 1978, Pat. No. 4,201,190. This application Mar. 28, 1980, Ser. No. 134,961

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—417

1 Claim



1. Solar collector assembly including:

solar collector mounting member and mating solar collector housing mounting means, said member comprising a U-shaped channel having an elongated bolt hole in the central leg thereof and aligned shaft holes in the side legs thereof, said means comprising an exterior shaft receiving channel along a side of said housing, said channel said channel having slots therein perpendicular to the length of said channel and space to receive the side legs of said U-shaped channel member, and a shaft in said shaft-receiv-

ing channel projecting through the holes of said U-shaped channel member;

a spring loaded solar collector top glazing and seal locking means including a solar collector side member having an upwardly facing top glazing receiving member inward of the collector side and an upward projection outward of said glazing receiving member including an outwardly facing spring receiving tip and an upwardly pointing locking tip, and said means further including a spring member extending along the length of said member with a locking dog adapted to engage said outwardly facing spring receiving tip and a vertical channel adapted to receive, upon slight deflection of said spring member, said upwardly pointing locking tip, said deflection in turn urging downwardly an inward projection of said spring member and thereby adapted to clamp a top glazing member against said upwardly facing top glazing receiving member of said collector side member;

solar collector housing corner mating side members with corner locking means, said side members having inward projections along the length thereof near the top and bottom thereof, said inward projections adapted to receive and retain therein a corner locking piece having two angularly disposed legs, each of which fits into the inward projections of one of said corner mating side members; and

means for mounting a rectangular collector plate in a solar collector housing comprising, along two opposite edges of said plate, spring clips fastened to said plate and slidably retained above and below said plate so as to permit slight lengthwise movement of said clips fastened to said plate and along one of the remaining edges of said plate, spring clips fastened to said plate and slidably retained only above said plate, and along the other of said remaining edges of said plate, fastening means fastened to said plate and to the adjacent side member of said collector housing.

4,341,201

# SOLAR ENERGY COLLECTING AND UTILIZATION SYSTEM

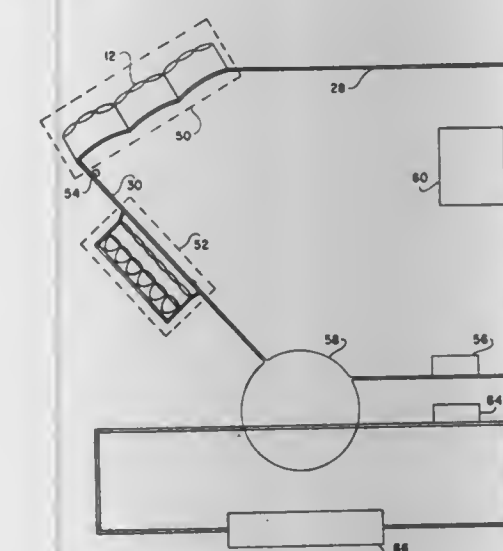
Ronald W. Ziemann, 4307 Moonbeam Dr., Colorado Springs, Colo. 80916

Filed Feb. 29, 1980, Ser. No. 126,141

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—422

8 Claims



1. A solar energy collecting and utilization system comprising a matrix of double convex lenses formed by a plurality of lens units disposed in a generally planar array, each said lens unit comprising a plurality of lenses having a common focal length and being arranged in dome-like configuration; a solar heat collecting surface for receiving solar energy focused thereon comprising one surface of a thin metallic member and shaped to conform to the curve defined by a line drawn through the focal points of the lenses of said plurality of lens

units; means for extracting the radiant solar heat comprising a heat collecting fluid circulated in contact with the surface of said metallic member opposite to said heating collecting surface; and a back-up system including a further heat collecting member having one surface in contact with said heat collecting fluid and infra-red heating means for heating said further heat collecting member; said infra-red heating means comprising a plurality of infra-red lamps and a like plurality of lenses for focusing the infra-red light from said lamps on said further heat collecting surface.

4,341,202

# PHASE-CHANGE HEAT TRANSFER SYSTEM

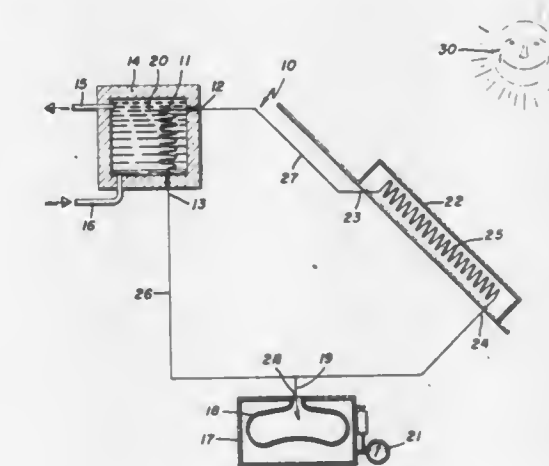
Roger F. French, Jackson, N.H., assignor to Aptec Corporation, Los Angeles, Calif.

Continuation of Ser. No. 870,624, Jan. 19, 1978, abandoned. This application Jan. 17, 1980, Ser. No. 112,939

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—433

16 Claims



1. A heat collection apparatus using phase-change heat transfer comprising:

a system including:

a condenser housing including

means for containing a condensing fluid therein;

a condenser within the housing for transfer of heat from a phase-change fluid within the condenser to the condensing fluid within the housing and about the condenser;

a heat collector located in a position for exposure of a phase-change fluid therein to a relatively high temperature; and closed circuit conduit means interconnecting the condenser and the heat collector for movement of heat therebetween via a phase-change heat transfer fluid within the system formed by the condenser, heat collector, and conduit means; and

means attached to the system at a location vertically below the condenser and collector for removing sufficient phase-change fluid from the system, when the condensing fluid reaches a predetermined temperature, to prevent movement of heat through the system from the heat collector to the condenser.

5. Solar water heater making use of phase-change heat transfer, comprising:

(a) a condenser having an inlet and an outlet, which condenser is in contact with the water to be heated;

(b) a solar collector having a bottom inlet and a top outlet and having an inner conduit that connects the inlet and the outlet, the conduit being suitable for exposing a heat-transfer medium in the conduit to solar energy, the collector outlet being located below the condenser;

(c) conduits joining the outlet of the collector to the inlet of the condenser and the outlet of the condenser directly to the inlet of the collector to form a closed circuit;

(d) a phase-change liquid heat transfer medium located within the circuit; and



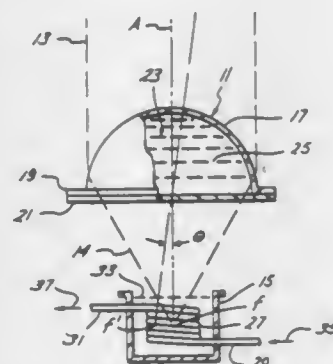
(e) an accumulator having means for regulating the pressure therein at a pressure substantially equal to the vapor-pressure of the phase change fluid at a temperature corresponding to a maximum predetermined water temperature and having an inlet that is connected to the circuit below the collector.

#### 4,341,203 SOLAR ENERGY COLLECTOR

Dan E. Bloxson, P.O. Box 36116, Houston, Tex. 77042  
Division of Ser. No. 956,220, Oct. 30, 1978, Pat. No. 4,305,383.  
This application Jun. 8, 1981, Ser. No. 271,654  
Int. Cl.<sup>3</sup> F24J 3/02; G02B 1/06

U.S. Cl. 126-440

5 Claims



1. A solar energy collector, comprising: concentrating means for concentrating solar radiation including a plurality of converging lenses each having a curved surface, an optical axis, a principal focus and a focal length, said concentrating means including a first member and a second member of transparent thermoplastic, said first and second members each having a body portion, said body portions being disposed in nested, spaced apart interrelationship, one of said body portions of said members having a plurality of spaced apart hollow hemispherical bubbles bulging away from the other of said body portions and forming said curved surfaces of said lenses, said bubbles being integral with and part of said one of said body portions of said members, the interior surface of each of said bubbles defining a chamber, and each of said chambers being in communication with the space between said body portions of said members; means for collecting solar radiation including a fluid-transporting heat transfer unit; and frame means connected to said concentrating means and said collecting means for fixing the position of each of said lenses relative to said heat transfer unit at a distance from said heat transfer unit substantially equal to its focal length so that said focus of each of said lenses is located proximate said heat transfer unit, wherein said first and second members each include a peripheral portion connected to and extending from said body portion for interconnecting said first and second members, said first and second members being an inner and an outer hollow dome, respectively, said bubbles forming said curved surfaces of said lenses being uniformly spaced on said body portion of said outer dome, said inner dome body portion and said outer dome body portion exclusive of said bubbles conforming generally to the shapes of hollow hemispheres, said inner dome body portion being nested within said outer dome body portion.

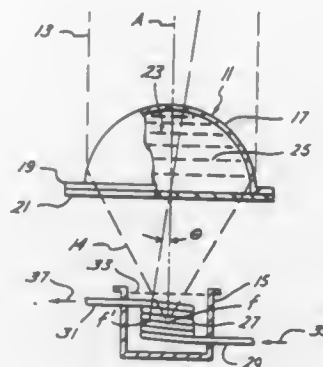
#### 4,341,204

##### SOLAR ENERGY COLLECTOR

Dan E. Bloxson, P.O. Box 36116, Houston, Tex. 77042  
Division of Ser. No. 956,220, Oct. 30, 1978, Pat. No. 4,305,383.  
This application Jun. 8, 1981, Ser. No. 271,655  
Int. Cl.<sup>3</sup> F24J 3/02; G02B 1/06

U.S. Cl. 126-440

4 Claims



1. A solar energy collector, comprising: concentrating means for concentrating solar radiation including a plurality of converging lenses each having a curved surface, an optical axis, a principal focus and a focal length, said concentrating means including a first member and a second member of transparent thermoplastic, said first and second members each having a body portion, said body portions being disposed in nested, spaced apart interrelationship, one of said body portions of said members having a plurality of spaced apart hollow hemispherical bubbles bulging away from the other of said body portions and forming said curved surfaces of said lenses, said bubbles being integral with and part of said one of said body portions of said members, the interior surface of each of said bubbles defining a chamber, and each of said chambers being in communication with the space between said body portions of said members; collecting means for collecting solar radiation including a fluid-transporting heat transfer unit; and frame means connected to said concentrating means and said collecting means for fixing the position of each of said lenses relative to said heat transfer unit at a distance from said heat transfer unit substantially equal to its focal length so that said focus of each of said lenses is located proximate said heat transfer unit, wherein said first and second members each include a peripheral portion connected to and extending from said body portion for interconnecting said first and second members, said first and second members being an inner and an outer hollow dome, respectively, said bubbles forming said curved surfaces of said lenses being uniformly spaced on said body portion of said outer dome, said inner dome body portion and said outer dome body portion exclusive of said bubbles conforming generally to the shapes of hollow hemispheres, said inner dome body portion being nested within said outer dome body portion, wherein said lenses all have the same focal length and said heat transfer unit includes a coil of tubing convoluted so as to have the shape of a hollow hemisphere disposed under and concentric with said inner dome body portion, said coil being spaced from said lenses a distance substantially equal to said focal length of said lenses.

#### 4,341,205

##### ENDOSCOPE

Saburo Hosono, Hino, and Yoshihiko Miyamoto, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

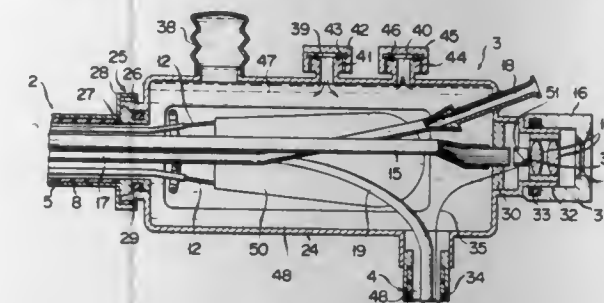
Filed Jan. 5, 1981, Ser. No. 222,373

Claims priority, application Japan, Jan. 17, 1980, 55-3800

Int. Cl.<sup>3</sup> A61B 1/06

U.S. Cl. 128-6

10 Claims



1. An endoscope comprising: a control section having two ends; an insertion section which has two ends, one of them being fixed to one end of the control section, and which is further provided with an envelope prepared from a heat-resistant and pressure-resistant material; an ocular section which is formed at the other end of the control section and sealed from said control section and the atmosphere; an objective provided in the other end of the insertion section; a light guide cable which has two ends, one end being connected to the control section, and is provided with an envelope prepared from a heat-resistant and pressure-resistant material; a connector connected to the other end of the light guide cable; a cavity defined throughout the control section, the insertion section, the light guide cable and the connector and sealed from the atmosphere; an image guide which extends through the control section and the insertion section, and has two ends, one end being optically connected to the objective and the other end being optically connected to the ocular section; a light guide which extends through the cavity and has two ends, one end being disposed in the other end portion of the insertion section and the other end being connected to the connector; and a protective liquid whose volume little varies with pressure and temperature and is filled in the cavity.

#### 4,341,206

##### DEVICE FOR PRODUCING A HOLE IN A BONE

T. Robert Perrett, Wayne, Pa.; Franz Sutter, Niederdorf, and Paul Gisin, Waldenburg, both of Switzerland, assignors to Synthes AG, Chur, Switzerland

Filed Dec. 18, 1979, Ser. No. 104,824

Claims priority, application Switzerland, Dec. 19, 1978, 12877/78; Dec. 19, 1978, 12878/78

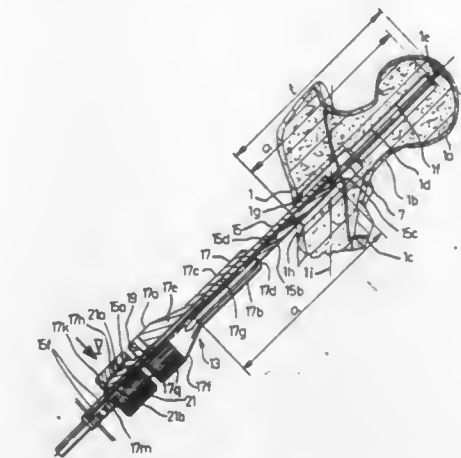
Int. Cl.<sup>3</sup> A61B 17/18; A61F 5/04

U.S. Cl. 128-92 EB

2 Claims

1. A tool for forming a stepped hole of controlled depth in bone for receiving a fracture reducing and stabilizing implant, comprising a twist drill, having a shank, for forming a small diameter cylindrical bore, means for forming a large diameter bore, the shank of said twist drill being slidable through said large diameter bore forming means so as to be axially extendable therefrom, means for adjusting the extent to which the twist drill extends beyond said large diameter bore forming means and a conical section abutting and tapering outwardly from said means for forming a large diameter bore on the side of said means opposite to that from which the twist drill extends, the part of said conical section nearest said large diameter

ter bore forming means having a series of flutes and grooves, said flutes forming cutting means for chamfering the edge of



the large diameter bore in the bone, the remainder of said conical section having an outer surface serving as a stop for said tool.

#### 4,341,207

##### WOUND DRESSING

Peter L. Steer, East Grinstead, and Howard Mathews, Forest Row, both of England, assignors to Kingsdown Medical Consultants Limited, England

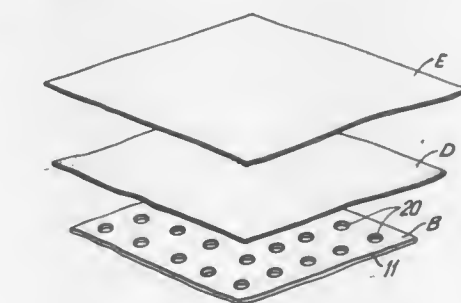
Filed Aug. 25, 1980, Ser. No. 180,717

Claims priority, application United Kingdom, Sep. 7, 1979, 7931164; Apr. 21, 1980, 8012994

Int. Cl.<sup>3</sup> A61F 13/00

U.S. Cl. 128-155

16 Claims



1. A wound dressing comprising a layer of curative and absorbent material which contacts the wound and has a series of apertures therethrough, a layer of air-permeable deodorizing material, and an outer flexible air-permeable layer having an adhesive coating which secures the dressing to the body wherein said layer of curative and absorbent material is a homogeneous mass of from about 30% to about 70% by weight of one or more hydrocolloids selected from the group consisting of pectin, gelatin, karaya gum, guar gum, locust bean gum, and sodium carboxymethylcellulose provided that at least about 20% by weight of said mass is one or more curative hydrocolloids selected from the group consisting of gelatin, pectin and karaya gum and from about 30% to about 70% by weight of a viscous binder selected from the group consisting of natural rubber, silicone rubber, acrylonitrile rubber, polyurethane rubber and polyisobutylenes.

#### 4,341,208

##### MOISTURE-RETENTIVE COVERING FOR OINTMENT APPLICATION

Marvin Gordon, East Windsor, N.J., assignor to Whitman Medical Corporation, Clark, N.J.

Filed Jul. 14, 1980, Ser. No. 168,723

Int. Cl.<sup>3</sup> A61L 15/00

U.S. Cl. 128-156

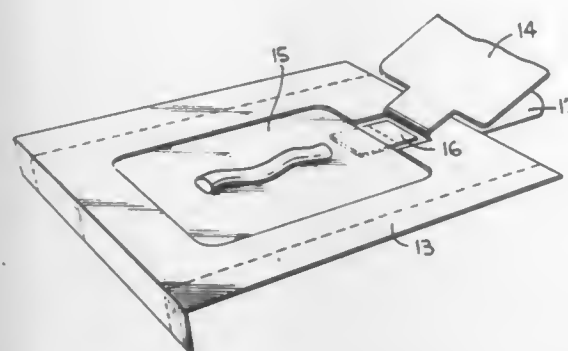
6 Claims

1. A moisture-retentive covering for ointment applied to a



portion of a patient's skin to promote hydration of the covered skin and maximizing percutaneous absorption of the ointment, said covering comprising:

- a flexible frame member defining a prescribed area slightly larger than said skin portion, said frame member having first and second surfaces with adhesive material on each surface;
- a sheet of moisture-impervious material secured to said first surface of said frame member by said adhesive material and entirely covering said first surface and said prescribed area;



- a removable backing secured to said second surface by said adhesive material and entirely covering said second surface, said removable backing being fabricated from a material which, upon removal from said second surface, leaves the adhesive material substantially intact on said second surface; and
- at least one tab extending from said sheet beyond said prescribed area defined by said frame for the purpose of permitting a user to grip the tab while removing said backing.

4,341,209

## ADHESIVE BANDAGE WITH FOAM BACKING

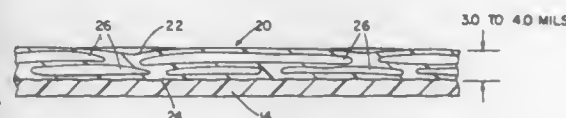
Charles H. Schaar, Lake Zurich, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Jan. 12, 1981, Ser. No. 224,378

Int. Cl.<sup>3</sup> A61L 15/00

U.S. Cl. 128—156

4 Claims



1. A pressure sensitive adhesive bandage having superior smoothness, flexibility, conformability and softness, including a backing sheet with a glossy, smoothly pebbled, low friction, non-adherent face surface and a coating-adherent rear surface having adhered thereon a coating of pressure sensitive adhesive providing an adhesive rear surface, and an absorbent pad adhered to a portion of said adhesive rear surface with other portions of said adhesive rear surface being uncovered
- said backing sheet comprising
- polyethylene foam film of between about 2 to 7 mils thickness with predominantly closed cells, an apparent effective density of less than about 1.00 gram per cubic centimeter, and a TAPPI T498 hand of less than a vinyl backing sheet of equivalent thickness.

4,341,210

## CUFFED ENDOTRACHEAL TUBE AND METHOD

James O. Elam, 6723 S. Euclid Ave., Chicago, Ill. 60649

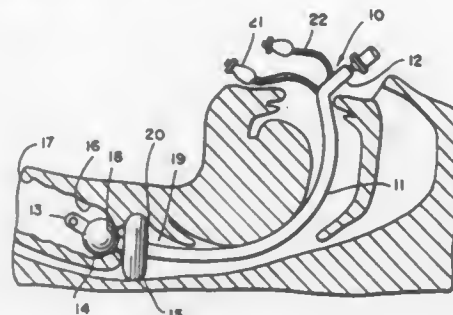
Continuation of Ser. No. 942,854, Sep. 15, 1978, Pat. No. 4,235,239, which is a continuation-in-part of Ser. No. 800,420, May 25, 1978, abandoned. This application Jun. 30, 1980, Ser. No. 157,735

The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> A61M 25/00

U.S. Cl. 128—207.15

9 Claims



1. A cuffed endotracheal tube adapted for insertion through the mouth of a patient to provide a passage for artificial respiration comprising:

- an elongated flexible air tube having a proximal end portion adapted to be located external to the mouth and a distal end portion adapted to be located within the trachea;
- anchoring means located on said tube at two separate points along said tube intermediate said proximal and distal end portions thereof, the lower of said means radially extending from said tube and adapted to contact the area of the trachea around and below the opening defined by the larynx without exerting pressure against the wall of the trachea, the upper of said means extending radially from said tube and adapted to contact the area around and above the opening defined by the larynx while also exerting pressure against the wall of the pharynx;
- said elongated flexible air tube being positively anchored by the upper and lower of said means associated with said tube in a position in which the upper of said means provides a seal to prevent leakage of air during artificial respiration while at the same time preventing secretions from travelling into the area of the upper trachea or larynx.

4,341,211

## LUBRICATING OBJECT APPLICATOR

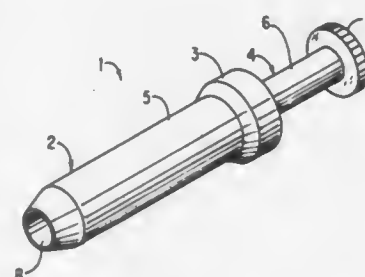
Larry H. Kline, 18 Broad St., Suite 805, Charleston, S.C. 29401

Filed Sep. 8, 1981, Ser. No. 300,028

Int. Cl.<sup>3</sup> A61M 35/00, 5/00

U.S. Cl. 128—261

60 Claims



1. A device for placing a suppository into a body cavity comprising:
  - a. an applicator body with a shaft extending from a first open end to a second open end;
  - b. a compartment surrounding said shaft;
  - c. a lubricating plunger moveably secured to said applicator

body, sized and shaped to fit within said compartment; and

- d. a suppository plunger, sized and shaped to fit within said shaft, wherein said suppository plunger may push said suppository from said first open end to and out of said second open end when said device is utilized, whereby when said device is placed within said body cavity, said suppository may be pushed through said second open end into said body cavity.

4,341,212

## SEROUS FLUID DRAIN KIT

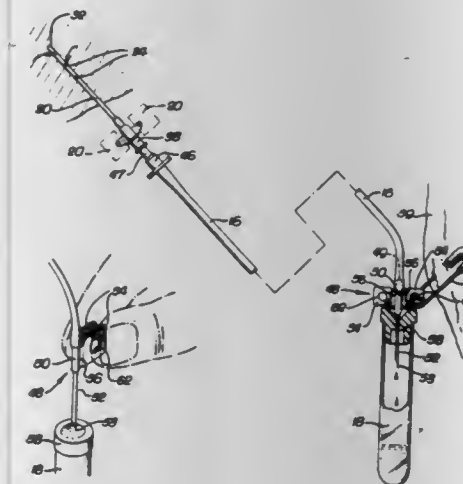
Albert Medwid, 770 Via Hierba, Santa Barbara, Calif. 93110

Filed Jul. 18, 1980, Ser. No. 170,146

Int. Cl.<sup>3</sup> A61M 1/00, 5/00

U.S. Cl. 128—276

19 Claims



19. A drain kit for collection and drainage of serous fluid from a region of accumulated serous fluid in a patient's body, comprising:

- a catheter assembly including a hollow flexible cannula having a blunt end with a plurality of perforations formed adjacent said blunt end and a rear end connected to a female coupling member, and a relatively rigid trocar with a pointed end and received slidably within said cannula and said female coupling member, said pointed end of said trocar being insertable into said region of accumulated serous fluid to carry said blunt end of said cannula into said region, said trocar being slidably removable from said cannula and said female coupling member to leave said blunt end of said cannula within said region for collection and passage of the serous fluid out of the patient's body;
- an elongated flexible drain tube having a male coupling member carried at one end for reception into said female coupling member for communicating the interior of said drain tube with the interior of said cannula;
- a portable vacuum bottle defining a source of vacuum and including a self-sealing resilient cap;
- a fitting at the other end of said drain tube and including a hollow piercing element for insertion through said cap for coupling said vacuum to the interior of said tube whereby said vacuum draws the serous fluid from the patient's body into said bottle, said fitting further including at least one foldable wing projecting outwardly and sized to facilitate manual grasping of said fitting for easy insertion of said piercing element through said cap and subsequent removal from said cap when the bottle is filled with the draining fluid, said at least one wing having a hole formed therein; and
- a pin receivable through the hole formed in said at least one wing and adapted for connection to clothing worn by the patient to secure said fitting with respect to the patient's body.

4,341,213

## BONDED NONWOVEN FABRICS

Lawrence B. Cohen, Sharon, Mass., assignor to The Kendall Co., Boston, Mass.

Filed Aug. 13, 1981, Ser. No. 292,374

Int. Cl.<sup>3</sup> A41B 13/02

U.S. Cl. 128—284

8 Claims

1. A nonwoven fabric which comprises an unspun and unwoven array of textile fibers adhesively united to each other along at least certain portions of their length by a combination of

- (a) an organic polymeric bonding agent;
- (b) an inorganic filler selected from the class consisting of alumina trihydrate, silica, calcium carbonate, and clays having adsorbed water bound to their surfaces or as an element of their structure, said organic polymeric bonding agent being coupled to said inorganic filler by
- (c) a coupling agent selected from the class consisting of
- (d) organosilanes and organotitanates characterized by having covalently bonded to the silicon or titanium atom at least one organic group capable of hydrolyzing to a hydroxy group in aqueous media, and further characterized by having at least one non-hydrolyzable organic group covalently bonded to said silicon or titanium atoms, and
- (e) organotitanates in which two valences of the titanium atom are taken up by a non-hydrolyzable chelate linkage.

4,341,214

## SLEEVE-ENCLOSED HYDROPHILIC FOAM TAMPON WITH IMPROVED AFTER-USE WITHDRAWAL CHARACTERISTICS

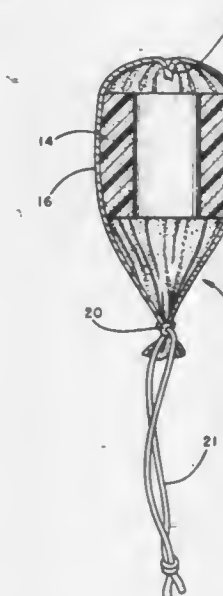
Donald M. Fries, Combined Locks, Wis., and David F. Ring, Morganville, N.J., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jul. 1, 1977, Ser. No. 812,174

Int. Cl.<sup>3</sup> A61F 13/20

U.S. Cl. 128—285

12 Claims

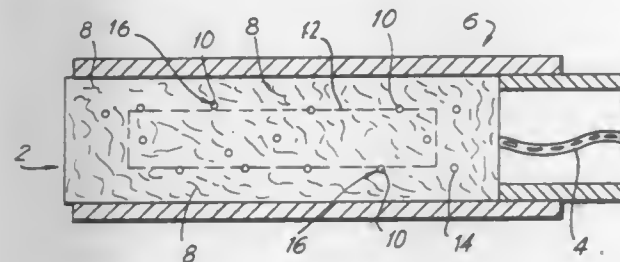


1. A catamenial tampon comprised of a resiliently compressible absorbent element enclosed in a sleeve of fluid-permeable material, said element being comprised of an oblong strip of hydrophilic foam curled up in the form of a hollow right cylinder with the ends of said strip juxtaposed and with said ends being free of attachment to each other or to said sleeve, said sleeve being elongate and closed at both ends with said closed end sleeve having a length dimension substantially greater than the length of said cylinder and an inner diameter at least equal to the uncompressed outer diameter of said cylinder, the ratio of said closed sleeve length to said cylinder length being in the range of from 1.5 to about 3 to 1; said cylinder being disposed inside one end of said closed sleeve and said end comprising the insertion end portion of said tampon, the other end of said closed sleeve being unoccupied by



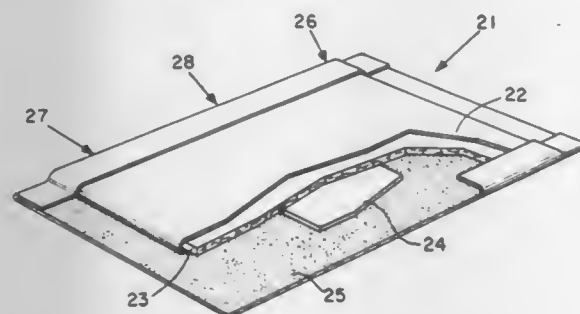
any absorbent material and comprising the withdrawal end portion of said tampon, said withdrawal end portion being gathered to form a tapered structure, and said withdrawal end portion having a withdrawal string secured to the small gathered end of said tapered structure, enabling said tapered withdrawal end portion to interact in wedge-like fashion with the introital opening of the vagina at the time of withdrawal and to ease such withdrawal when pulling force is exerted on said withdrawal string.

**4,341,215**  
**ABSORBENT DEVICE**  
William T. Eldridge, Darien, Conn., assignor to Tampax Incorporated, Lake Success, N.Y.  
Filed Sep. 4, 1980, Ser. No. 184,120  
Int. Cl.<sup>3</sup> A61F 13/20  
U.S. Cl. 128—285 25 Claims



1. A catamenial tampon comprising:  
an open-structured mass of absorbent material;  
super-absorbent material, including at least one discrete portion thereof;  
encapsulating means using an encapsulating material for isolating at least 50% of the super-absorbent material from being wetted by an aqueous liquid, such as water or menses, in one or more of said discrete portions;  
each said encapsulated discrete portion being incorporated within said mass of absorbent material; and  
said encapsulating material being adapted in the presence of a relative excess of menses, and prior to saturation of said mass of absorbent material, to permit absorption of the excess menses by the super-absorbent material originally contained within said encapsulating means.

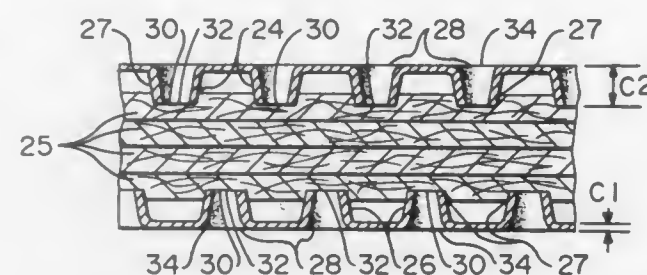
**4,341,216**  
**BREATHABLE BACKSHEET FOR DISPOSABLE DIAPERS**  
Mary C. Obenour, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio  
Filed Feb. 27, 1981, Ser. No. 239,090  
Int. Cl.<sup>3</sup> A41B 13/02  
U.S. Cl. 128—287 17 Claims



1. A disposable diaper comprising an absorbent core; a vapor pervious, relatively liquid impervious outer sheet; and a liquid impervious inner panel; wherein said inner panel is substantially as wide as said absorbent core and is from about 25% to about 85% of the length of said absorbent core; wherein said inner panel is superimposed on said outer sheet to form a breathable backsheet and said absorbent core is superimposed

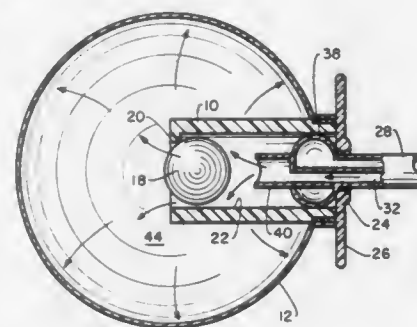
on said backsheet in such a manner that said inner panel is interposed between said absorbent core and said outer sheet and is located in the crotch region of said diaper.

**4,341,217**  
**BARRIERLESS DISPOSABLE ABSORBENT ARTICLE HAVING AN ABSORBENT CORE ENCASED IN A HOMOGENEOUS OUTER WRAP**  
Susan P. Ferguson, and William F. Landrigan, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio  
Filed Nov. 17, 1980, Ser. No. 207,165  
Int. Cl.<sup>3</sup> A61F 13/16  
U.S. Cl. 128—290 W 9 Claims



1. A barrierless disposable absorbent article comprising a thin, flexible absorbent core means for absorbing and retaining liquid, said absorbent core means having first and second opposed surfaces; and a homogeneous outer wrap having a top-sheet portion and a backsheet portion, said outer wrap encasing said absorbent core means with said top-sheet portion overlaying said first opposed surface and said backsheet portion overlaying said second opposed surface, said homogeneous outer wrap having an apparent caliper and having a multiplicity of protuberances projecting inwardly towards said absorbent core means, each of said protuberances having a base and having an apex remote from said base, said base having a base opening and said apex having an apex opening, said outer wrap having a largest apex opening; the ratio of the apparent caliper of said outer wrap to the maximal diagonal of said largest apex opening being at least about 0.35 and the apparent caliper of said homogeneous outer wrap being from about 0.013 inches to about 0.035 inches.

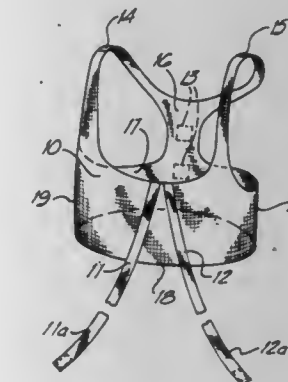
**4,341,218**  
**DETACHABLE BALLOON CATHETER**  
Hoi S. U, La Jolla, Calif., assignor to University of California, Berkeley, Calif.  
Continuation of Ser. No. 910,310, May 30, 1978, abandoned.  
This application Mar. 6, 1980, Ser. No. 147,020  
Int. Cl.<sup>3</sup> A61M 25/00  
U.S. Cl. 128—325 15 Claims



1. A detachable balloon catheter adapted to be placed in an organic lumen, comprising:  
a balloon having a neck portion;  
a cylinder secured to the neck portion of said balloon;  
a catheter tube;  
means mounted on the distal end of said tube for coupling said tube to said cylinder in fluid transfer relation with said

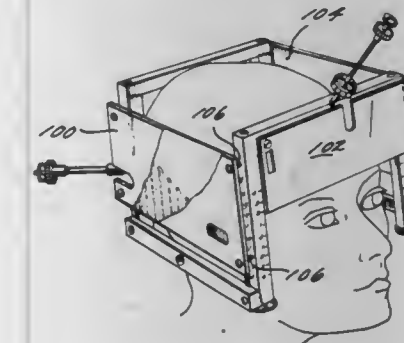
balloon for inflating said balloon through said cylinder, by initially securing said tube end within said cylinder; and for uncoupling said tube from said cylinder, without any relative movement between said tube and said cylinder or between said tube and said balloon, whereby said tube may be released from said cylinder atraumatically and withdrawn from the lumen without the application of force to said cylinder or to said balloon;  
seal means for sealing said cylinder substantially simultaneously with withdrawal of said tube.

**4,341,219**  
**SUPPORT BRASSIERE**  
Lawrence Kuznetz, 2336 Crows Nest La., League City, Tex. 77573  
Filed Jul. 23, 1980, Ser. No. 172,226  
Int. Cl.<sup>3</sup> A41C 3/00  
U.S. Cl. 128—498



1. A support brassiere comprising in combination  
(a) an anterior breast engaging section conformable to the shape of the breast and being stretchable in the horizontal direction but not substantially stretchable in the vertical direction, connected to each of  
(b) a dorsal section and  
(c) a shoulder support section which is not substantially stretchable in the vertical direction.  
(d) said anterior section having strap means extending downwardly and sidewardly for each breast respectively and having an extended section of sufficient length to be secured at the dorsal section for separating and uplifting the breasts.

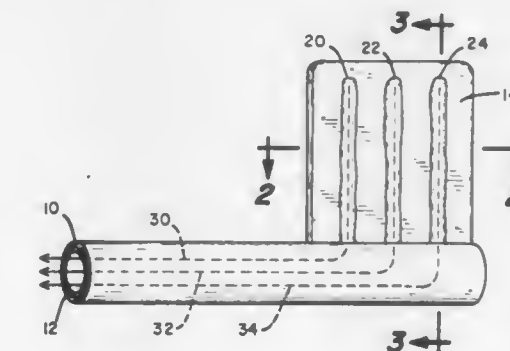
**4,341,220**  
**STEREOTACTIC SURGERY APPARATUS AND METHOD**  
John H. Perry, Silver Spring, Md., assignor to Pfizer Inc., New York, N.Y.  
Filed Apr. 13, 1979, Ser. No. 29,865  
Int. Cl.<sup>3</sup> A61B 17/00  
U.S. Cl. 128—630 31 Claims



1. Stereotactic frame apparatus adapted for use in performing stereotactic surgery with an X-ray CT scanner, said stereotactic frame apparatus comprising:  
a stereotactic frame defining a three-dimensional coordinate

system which can be fixed with respect to the anatomy of a living patient,  
said stereotactic frame including mechanism for positioning a desired surgical device within said anatomy at any desired location defined in terms of said three-dimensional coordinate system, and  
X-ray detectable fiducial marker means associated with said stereotactic frame defining at least three non-collinear points within each planar cross-section therethrough, said marker means including means for determining the three-dimensional coordinates of said three points in each said cross-section whereby a scan in any single plane provides the three-dimensional coordinates of said three noncollinear points.

**4,341,221**  
**SHIELDED RECORDING ELECTRODE SYSTEM**  
Roy L. Testerman, New Hope, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.  
Filed Oct. 7, 1980, Ser. No. 195,169  
Int. Cl.<sup>3</sup> A61B 5/04  
U.S. Cl. 128—642 14 Claims



1. A method of detecting electrical activity of a nerve comprising:  
wrapping at least one electrode tightly about said nerve;  
shielding said at least one electrode from electromagnetic interference by wrapping a flap having a conductive shield about said at least one electrode; and  
electrically coupling at least one electrical conductor to said at least one electrode whereby said electrical activity of said nerve may be detected from said at least one electrical conductor.

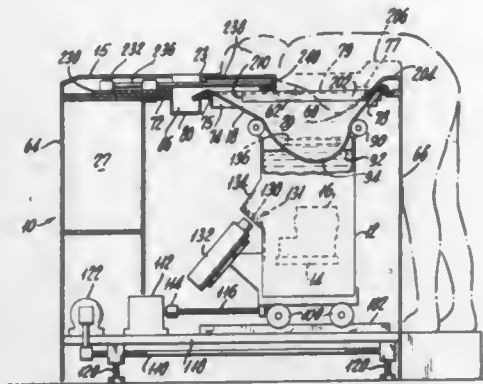
**4,341,222**  
**PATIENT SUPPORT APPARATUS FOR ULTRASOUND MAMMARY SCANNING APPARATUS**  
Bayard G. Gardineer, Skillman, and James A. Heringes, Dayton, both of N.J., assignors to Technicare Corporation, Solon, Ohio  
Filed Mar. 12, 1980, Ser. No. 129,814  
The portion of the term of this patent subsequent to Aug. 11, 1998, has been disclaimed.  
Int. Cl.<sup>3</sup> A61B 10/00 22 Claims

1. Apparatus for supporting a patient during examination of the patient's breast comprising:  
a tank for containing a quantity of fluid transmission medium;  
a sonic energy transducer disposed in said tank for transmitting to and receiving sonic energy from the patient;  
a patient support platform for supporting the patient's upper body over said tank;  
said platform having an aperture therethrough for receiving the patient's breast;  
readily changeable and disposable flexible bag means having an open end supported adjacent said platform and about said aperture and having a closed end adapted to be draped into engagement with fluid in said tank;



said bag means adapted to contain a quantity of fluid to define a pool of fluid into which the patient's breast may be suspended without contacting said bag during diagnosis;

said bag means adapted to form an interface between fluid in said pool and fluid in said tank;



the transmission properties of said bag means permitting transmission of sonic energy from said transducer there-through without substantial distortion of said sonic energy.

4,341,223

#### FLUORESCENCE COMPOSITION AND METHOD OF DETERMINING FLUID FLOW

Lauralee A. Lutz, 2925 Hilltop, Ann Arbor, Mich. 48104

Filed Feb. 4, 1981, Ser. No. 231,039

Int. Cl.<sup>3</sup> A61B 5/00; C09K 11/06

U.S. Cl. 128—666

13 Claims

1. An aqueous fluoresceable composition comprising 6, 7-dihydroxycoumarin 6-glucoside in parenteral dosage unit form at a concentration sufficient, when administered to a subject and exposed to ultraviolet light, for visualizing fluorescence in tissue fluid, the composition being adapted for co-administration with fluoresceable parenteral fluorescein and being compatible and non-scavenging with said fluorescein in vivo.

5. A method for determining fluid flow in a subject comprising administering to the subject a fluoresceable composition in parenteral dosage unit form comprising 6, 7-dihydroxycoumarin 6-glucoside, exposing the treated subject to ultraviolet light, and viewing the subject while exposed to determine the presence and distribution of fluorescence.

4,341,224

#### CATHETER FLUSHING APPARATUS

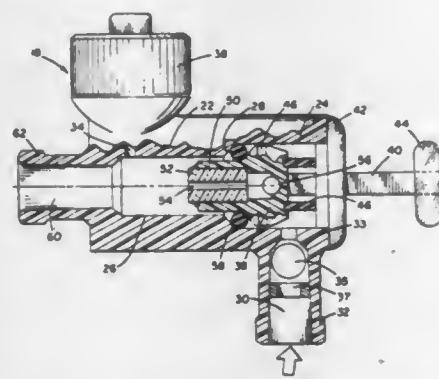
Jerry D. Stevens, Thousand Oaks, Calif., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Feb. 4, 1980, Ser. No. 118,420

Int. Cl.<sup>3</sup> A61B 5/02

U.S. Cl. 128—675

10 Claims



1. An improved flow control apparatus for use in liquid flow systems for pressure monitoring of hemodynamics, such systems including a catheter which is continuously flushed in use, said apparatus comprising:

a housing having at least one passage therein, said passage having an inlet and an outlet;

a valve seat defined in said passage;

a valve plunger movably mounted in said passage;

resilient means biasing said plunger into contact with said seat;

capillary means extending at least partially through said plunger for providing a low flow path from said inlet to said outlet when said valve plunger is in contact with said valve seat;

means for selectively moving said valve plunger out of contact with said valve seat to provide a high flow path around said plunger from said inlet to said outlet;

said moving means including an actuator member attached to said plunger and slidably mounted in and extending through a hole extending from said passage to the exterior of said housing so that said plunger may be moved selectively out of contact with said seat by manipulation of said actuator member from externally of said housing; and

a flexible sealing element connected about said actuator member and to said housing about said hole to prevent liquid from leaking out of said passage through said hole; and

said inlet having flow control means to limit the amount of flow in said high flow path thereby minimizing the possible production of air bubbles in the system.

4,341,225

#### ELECTROCARDIOGRAPHY SYSTEM

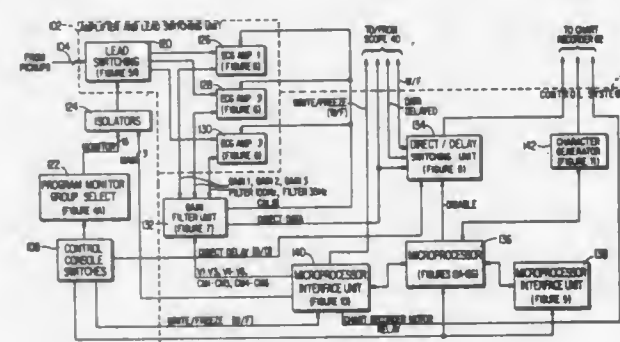
Stuart L. Gallant; Samuel Woods, and Walter E. Palmer, all of Baltimore, Md., assignors to Hittman Corporation, Columbia, Md.

Filed Jul. 31, 1980, Ser. No. 174,271

Int. Cl.<sup>3</sup> A61B 5/04

U.S. Cl. 128—710

43 Claims



1. An electrocardiography system for displaying, in accordance with an operator input, electrocardiograph (ECG) data provided in a plurality of pickup leads, wherein said pickup leads in said plurality of pickup leads are divided into groups, said system comprising:

selector means responsive to said operator input for selecting a corresponding group of said pickup leads;

processing means for processing said ECG data from said corresponding group of said pickup leads to develop respective processed outputs;

display means including a plurality of display channels for providing each one of said respective processed outputs on a corresponding one of said display channels in accordance with said operator input; and

recording means including a plurality of recording channels for recording each said respective ECG data on a corresponding one of said recording channels in accordance with said operator input;

wherein each said group comprises a predetermined number of said pickup leads, and wherein said plurality of display channels includes a given number of channels, equal in number to said predetermined number of said pickup leads, a spare channel, and operator actuator means for selecting one of said given number of channels and for actuating said spare channel to record thereon said respective ECG data from said selected one of said given number of channels;

said system including switch means connected between said selector means and said display means, on the one hand, and said recording means, on the other hand, said switch means being responsive to said operator input for making a selection between said respective ECG data from each said pickup lead, said displayed respective ECG data from said display means, and said respective ECG data from said selected one of said given number of said channels as recorded on said spare channel, and for providing said selection to said recording means.

4,341,226

#### TEMPORARY LEAD WITH INSERTION TOOL

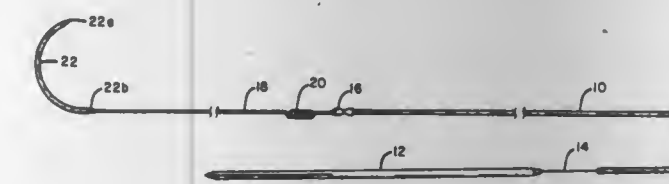
Peter Peters, Brunssum, Netherlands, assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 22, 1980, Ser. No. 189,531

Int. Cl.<sup>3</sup> A61N 1/04

U.S. Cl. 128—784

5 Claims



1. A lead for establishing electrical contact between body tissue and a medical device comprising:

a length of conductor having a proximal end and a distal end;

a sheath attached to the surface of said length of conductor;

connector means fixedly attached to said proximal end of said length of conductor for electrically coupling said lead to said medical device;

an electrode fixedly attached to said distal end of said length of conductor;

a length of surgical thread having a proximal end and a distal end wherein said proximal end of said length of surgical thread is fixedly attached to said electrode;

a needle fixedly attached to said distal end of said length of surgical thread; and

means fixedly attached to said length of surgical thread for frictionally resisting the movement of said surgical thread relative to said body tissue.

4,341,227

#### SYSTEM FOR IRRADIATING LIVING TISSUE OR SIMULATIONS THEREOF

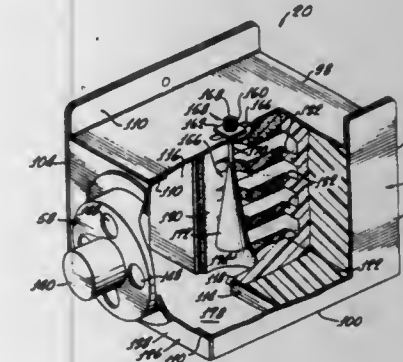
Paul F. Turner, North Salt Lake, Utah, assignor to BSD Corporation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 2,583, Jan. 11, 1979, abandoned. This application Jun. 14, 1979, Ser. No. 48,515

Int. Cl.<sup>3</sup> A61N 1/40

U.S. Cl. 128—804

14 Claims



1. An applicator for irradiating electromagnetic energy into living tissue, or simulations thereof for causing hyperthermia therein, comprising:

(a) a waveguide-type transmission line having electrically

conductive top, bottom and side walls, and a radiation emitting face and an opposite rearward face;

(b) dielectric means disposed in the transmission line for enabling the transmission line to have a characteristic impedance, when radiating electromagnetic energy into the tissue, or simulations thereof, within a preselected frequency range having a preselected bandwidth ratio, approximately matching an average characteristic impedance of the living tissue, or simulations thereof, in said preselected frequency range, said dielectric means including a portion extending rearwardly from said radiation emitting face towards said rearward face and for a distance, L, which is less than length of said transmission line; and,

(c) coupling means configured for receiving said electromagnetic energy from a conductor connected to a radiation source and for launching the electromagnetic energy into the transmission line for irradiation thereby into tissue or simulations thereof;

said coupling means including a radiation energy coupler disposed through one of said transmission line walls into said portion at an axial position adjacent a rearward end thereof.

4,341,228

#### METHOD FOR EMPLOYING TOBACCO DUST IN A PAPER-MAKING TYPE PREPARATION OF RECONSTITUTED TOBACCO AND THE SMOKING MATERIAL PRODUCED THEREBY

Gus D. Keritsis, and David A. Lowitz, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jan. 7, 1981, Ser. No. 223,035

Int. Cl.<sup>3</sup> A24B 3/14

U.S. Cl. 131—354

35 Claims

1. A method for employing tobacco dust in the preparation of reconstituted tobacco which comprises:

(a) admixing tobacco dust with a bonding material to form a mixture;

(b) treating the mixture to form water resistant agglomerated particles;

(c) admixing the agglomerated particles with a tobacco-parts slurry; and

(d) forming the slurry into a sheet by means of a paper-making process, drying and then shredding the resultant reconstituted tobacco sheet.

4,341,229

#### METHOD AND APPARATUS FOR SETTING HAIR

Daniel Bauer, Le Raincy; Jules Leroy, Blanc Mesnil, and Jean-Paul Beck, Paris, all of France, assignors to L'Oréal, Paris, France

Division of Ser. No. 584,980, Jun. 8, 1975, Pat. No. 4,166,473.

This application Oct. 16, 1978, Ser. No. 951,458

The portion of the term of this patent subsequent to Sep. 4, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> A45D 7/00

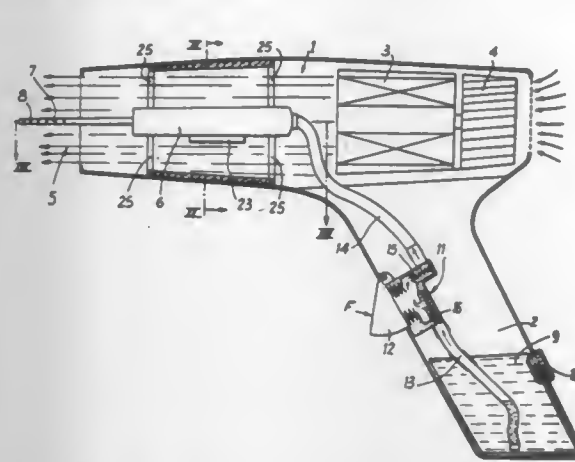
U.S. Cl. 132—7

5 Claims

1. A process for setting hair which comprises the steps of subjecting at least partially dry hair wound on a tubular member to the action of steam at a temperature between 110° and

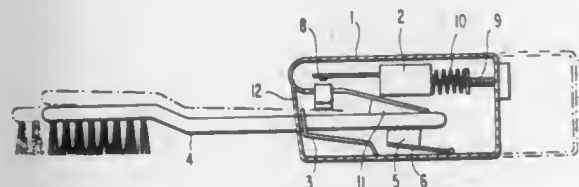


150° C. for a period of 1 to 60 seconds, without substantially mentioned and proportioned to constitute a means for holding otherwise heating the hair, and unwinding the hair from the a droplet of liquid by surface tension of the liquid and for



member only after the hair is cooled to about ambient temperature.

**4,341,230**  
**SOUND-PRODUCING TOOTHBRUSH ASSEMBLY**  
 Joseph Siahou, 14, rue Pascal, 13007 Marseille, France  
 Filed Oct. 24, 1980, Ser. No. 200,266  
 Claims priority, application France, Oct. 31, 1979, 79 27399  
 Int. Cl.<sup>3</sup> A45D 44/18  
 U.S. Cl. 132-84 B 9 Claims



1. A sound-generating toothbrush container adapted for holding a toothbrush during toothbrushing to encourage and increase the efficiency of toothbrushing as well as to direct the functional senses for cleaning from top to bottom with translational pressure and for bringing a desired psychological effect, said toothbrush container comprising:

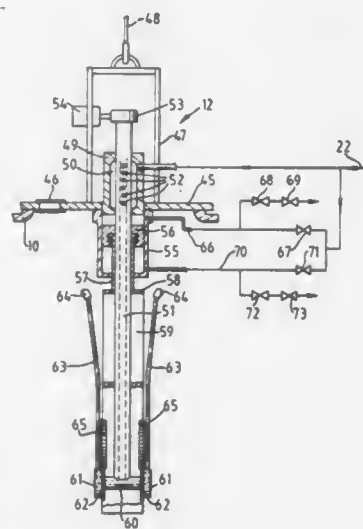
- (a) a sound producing system; and
- (b) means for receiving a toothbrush or like instrument therein during use, said means for receiving said toothbrush being adapted to pressure said toothbrush in response to pressure exerted by said toothbrush during brushing whereby sound is produced upon application to the teeth of said toothbrush and stops upon removal of the toothbrush from the teeth.

**4,341,231**  
**COSMETIC APPLICATOR AND ASSOCIATED METHOD**  
 Allan Costa, 131 Beverly Rd., Huntington, N.Y. 11746  
 Filed Jun. 5, 1980, Ser. No. 156,652  
 Int. Cl.<sup>2</sup> A45D 40/30  
 U.S. Cl. 132-88.5 13 Claims

1. In an applicator for a liquid such as mascara, eyebrow lotion or the like comprising a handle, a stem attached to the handle and applicator means on said stem, the improvement wherein said applicator means comprises a flexible tape element formed as an annulus secured to said stem and including a plurality of filaments projecting from said tape element, said filaments being of hook shape and oriented randomly on said tape element, said flexible tape element surrounding said stem such that said filaments project substantially radially from said stem substantially entirely therearound, said filaments having opposite ends, one of said ends being secured to said tape element, the other end of the filament being shaped as a hook to form the hook shape for the filament, said hook being di-

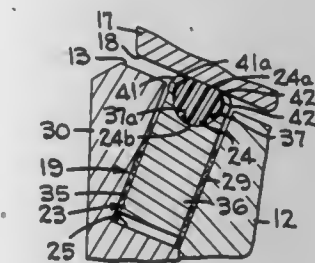
applying the liquid to the hair by contacting the hook holding the liquid droplet to said hair to break the surface tension.

**4,341,232**  
**TANK CLEANING APPARATUS**  
 Maurice E. G. Maton, Sherfield English, England, assignor to Beaumont (U.K.) Limited, Hampshire, England  
 Filed Oct. 1, 1980, Ser. No. 192,848  
 Claims priority, application United Kingdom, Oct. 3, 1979, 7934281  
 Int. Cl.<sup>3</sup> B08B 9/08  
 U.S. Cl. 134-107 12 Claims



1. Apparatus for cleaning the interior of a tank, comprising a spray head insertable into such a tank, conduit means coupled to said spray head for supplying a washing fluid under pressure to said spray head, said spray head having at least one spray arm means for spraying such liquid therefrom, first drive means for rotating said spray arm means bodily about a longitudinal axis of the spray head, second drive means for rotating said spray arm means about an axis normal to the longitudinal axis and independently of the rotation effected by said first drive means, means for controlling the flow of fluid to said spray arm means so that during a washing cycle liquid flows from said spray arm means during only substantially 180° of rotation of said spray arm about the axis normal to the longitudinal axis from a substantially vertical position of said spray arm means and whilst said spray arm means is rotated through a plurality of rotations about the longitudinal axis.

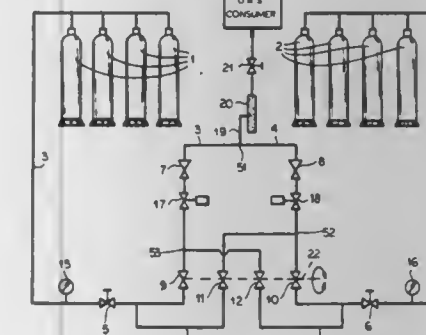
**4,341,233**  
**FIRE SAFE SEAT FOR A ROTARY VALVE**  
 William W. Broadway, Houston, Tex., assignor to FMC Corporation, Chicago, Ill.  
 Filed Jun. 27, 1980, Ser. No. 163,657  
 Int. Cl.<sup>3</sup> F16K 13/04  
 U.S. Cl. 137-72 7 Claims



1. A fire-safe seat assembly for a rotary valve having an annular valve body defining a flow passage and a movable valve element supported in the flow passage for controlling flow, comprising:

- an annular one-piece metallic seat ring including a radially outer rigid body portion merging into radially inwardly extending arcuately curved relatively thin lips defining therebetween an annular groove, each of said lips having a constant cross-section,
- an annular resilient seal member disposed between said lips and substantially filling said groove, to extend normally radially inwardly of said seat ring,
- said lips converging toward each other with a curved configuration to terminate at their radially innermost extremities thereby to retain said seal member in said groove, and,
- said lips having a spring-like character for respectively flexing at their said innermost extremities and positioned to be engaged by the valve element as said resilient seal member is deformed, thereby to enhance sealing engagement with the valve elements by spring pressure of said metal lips thereagainst on either side of said resilient seal member.

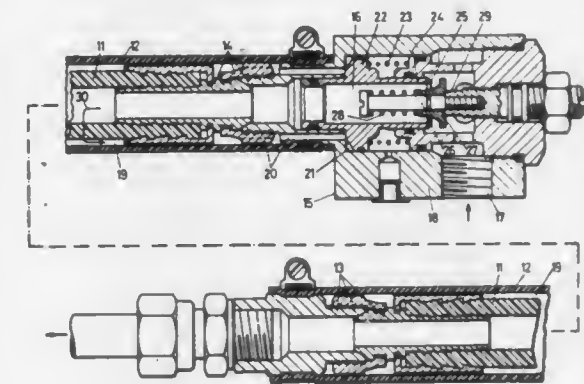
**4,341,234**  
**METHOD AND APPARATUS FOR EMPTYING VESSELS**  
 Helmut Meinass, Wolfratshausen, and Bernhard Volz, Munich, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany  
 Filed Oct. 7, 1980, Ser. No. 194,898  
 Claims priority, application Fed. Rep. of Germany, Oct. 8, 1979, 2940755; Jun. 27, 1980, 3024251  
 Int. Cl.<sup>3</sup> F17D 1/02; G05D 7/01  
 U.S. Cl. 137-110 4 Claims



1. A gas supply apparatus comprising first and second acetylene-delivering gas supply means for expanding acetylene gas and supplying same to an acetylene-gas consumer, each of said gas supply means including a respective group of tanks containing said gas under pressure, each group of tanks being provided with a respective withdrawal line, each of said withdrawal lines being provided in succession with a cut-off valve,

a switch-over valve and an automatic pressure controller before said lines join to feed said consumer, a respective connecting duct communicating with each line between the cut-off valve and switch-over valve thereof and opening into the other of said lines between the switch-over valve and the pressure controller thereof, each of said ducts being provided with a respective switch-over valve, and control means including said controllers for initially drawing gas from said first gas supply means and upon partial emptying of said first gas supply means continuing to withdraw gas therefrom and to feed said consumer therewith in a preference stream, and for mixing said preference stream with gas drawn from said second gas supply means with progressive increase in the rate of flow of gas from said second gas supply means upon decrease in the rate of flow from said first gas supply means, the gas from said second gas supply means forming a complementary gas stream, said control means responding to comparison of the pressures of said preference and complementary streams with first and second set point values, each first set point value corresponding to a higher pressure level than the respective second set point value, the pressure controller of the line through which the preference stream is drawn having a horizontal or increasing characteristic curve while the pressure controller of the line through which said complementary stream is drawn having a horizontal or decreasing characteristic curve so that at a constant volumetric flow rate with a decreasing tank pressure, the pressure of the respective gas after expansion remains constant or increases over a broad pressure range for the preference stream and remains constant or decreases over a broad pressure range from the complementary stream.

**4,341,235**  
**DEVICE FOR CONNECTING A PRESSURE FLUID SOURCE TO A FLUID MOTOR**  
 Rune Nord, Vasa, Finland, assignor to Torbjörn Nord, Stockton, Calif.  
 Filed Oct. 31, 1980, Ser. No. 202,651  
 Claims priority, application Sweden, Oct. 31, 1979, 7909030  
 Int. Cl.<sup>3</sup> F16K 17/40, 31/122  
 U.S. Cl. 137-312 4 Claims



1. A device for connecting a pressure fluid source to a fluid motor, comprising:

- (a) an inner conduit;
- (b) first connector means attached to one end of said inner conduit for connecting said inner conduit to the fluid motor;
- (c) an outer conduit surrounding said inner conduit and defining a sealed space around said inner conduit; and
- (d) a safety shut-off valve attached to said inner and outer conduits and having second connector means for being connected to the pressure fluid source, said safety shut-off means including

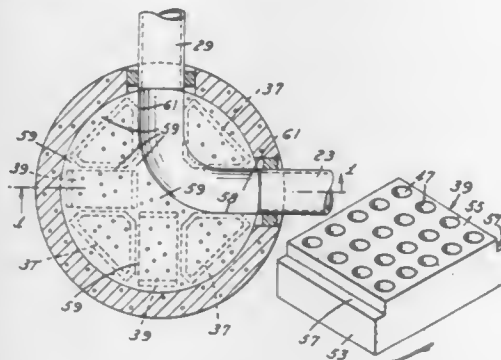
- (1) means defining a flow-through passage communicating with said second connector means and with the other end of said inner conduit,
- (2) means defining a sealed compartment in said valve,
- (3) means defining a fluid flow passage between said sealed space and said sealed compartment,



- (4) a pair of valve elements disposed in said flow-through passage and coacting as valve seat and valve body and independently relatively movable toward one another to a closed position in sealing engagement to block fluid flow through said passage, and away from one another to an open disengaged position to permit fluid flow through said passage;
- (5) means biasing each of said valve elements toward said open position;
- (6) one of said valve elements constituting a movable wall of said sealed compartment and being displaceable against its bias toward said closed position by elevated pressure in said sealed space and said sealed compartment, said elevated pressure being a build-up of fluid pressure produced by fluid leaking from said fluid flow passage through said inner conduit; and
- (7) the other of said valve elements being displaceable against its bias toward said closed position by fluid forces imposed on it by a liquid stream passing through said flow-through passage from said second connector means at a flow rate at least equal to a given maximum permissible flow rate.

#### 4,341,236 SEWER MANHOLE CHANNEL CONSTRUCTION AND METHOD

Gary F. LaBenz, 13027 Dixie Hwy., Holly, Mich. 48442  
Filed Mar. 11, 1980, Ser. No. 129,362  
Int. Cl.<sup>3</sup> F16L 5/00; E04B 2/00  
U.S. Cl. 137—363 16 Claims

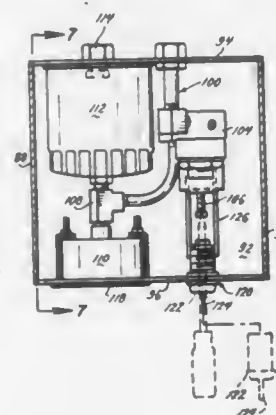


1. In a sewer manhole construction having a cylindrical bottom section adapted for placement within the ground at a pre-determined depth, and having bottom and side walls; there being spaced inlet and outlet openings in said side wall above said bottom wall adapted to receive the ends of sewer conduits; the improvement comprising a flooring upon said bottom wall, said flooring including a plurality of pre-formed channel elements of either generally triangular and rectangular shape and of uniform height, said preformed elements being made from a light weight foam plastic material and being mounted upon and around said bottom wall adjacent said side wall, one inner wall of each element registering with the inner walls of adjacent elements and spaced from the inner wall of opposed elements to generally define a first channel underlying and interconnecting said inlet and outlet openings; each generally triangular channel element having a base portion and a top portion inset along its sides from the sides of the base portion to define a continuous ledge around said generally triangular channel element between said base and top portions, the corners of the base and top portions being truncated, each rectangular channel element having a base portion and a top portion, opposite ends of the rectangular channel element top portion being inset from the corresponding ends of the rectangular channel element base portion defining a ledge at opposite ends of said rectangular channel element between its base and top portions;

each channel element having a plurality of upright apertures extending therethrough; and a layer of concrete filling all of said apertures and the interstices between the channel elements and between the channel elements and side wall, partly filling said first channel and overlying said channel elements providing a flooring above the channel elements, the concrete filling the channel element apertures defining a series of concrete columns within said channel elements and terminating in the top of the flooring above the channel elements; there being a concave floor channel formed in the top of said concrete flooring in registry with said first channel and at its ends communicating with said inlet and outlet openings.

#### 4,341,237 APPARATUS AND METHOD FOR REDUCING THE WASTE OF WELDING GAS

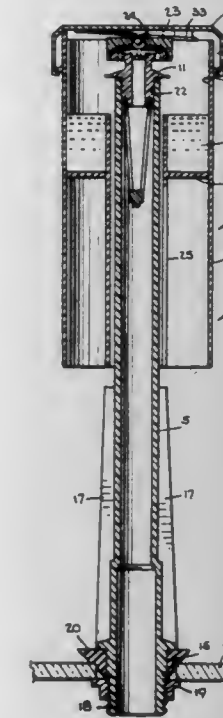
Howard V. Stauffer, Sioux City, Iowa, assignor to Valmont Industries, Inc., Valley, Nebr.  
Continuation-in-part of Ser. No. 130,706, Mar. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 909,448, May 25, 1978, abandoned. This application Nov. 24, 1980, Ser. No. 209,536  
Int. Cl.<sup>3</sup> F16K 1/00, 37/00  
U.S. Cl. 137—382.5 11 Claims



2. A gas delivery apparatus comprising, a source of high pressure gas, a main gas line for delivering gas from said source, at least one gas consuming stations, for each station a branch gas line for delivering gas from said main line to said station, there being as many branch lines as there are stations in the system with each branch line having only one station connected therein, and a control in each of said branch lines, said control further comprising, a pressure regulator connected in the branch line for substantially reducing the pressure of the gas at the output of the regulator, and a surge tank means in fluid communication with the output of the pressure regulator and an with said only one station, whereby the flow of gas delivered from said control to said station at said reduced pressure is greater during the transient period immediately upon operating the station, than during steady state operating conditions.

#### 4,341,238 FLUSHING MEANS

Vernon D. Roosa, 184 Wood Pond Rd., West Hartford, Conn. 06107, and Peter V. Roosa, 253 Fairview Ave., Hamden, Conn. 06514  
Continuation-in-part of Ser. No. 801,088, May 27, 1977. This application Jun. 3, 1981, Ser. No. 269,537  
Int. Cl.<sup>3</sup> F16K 31/18, 33/00  
U.S. Cl. 137—414 7 Claims



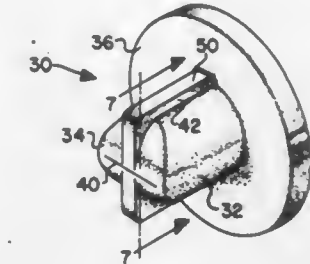
1. An improved fluid inlet means for a flushing tank comprising the combination of: an inlet fitting adapted for being coupled to a source of fluid under pressure and for being mounted within the tank; a float movably mounted on said inlet fitting for movement between raised and lowered positions responsive to the level of liquid in the tank; an inlet valve with a cavity positioned on said inlet fitting, said inlet valve having an inlet part and two outlet parts serving said cavity; a first valve shut-off means including a ball and a ball seat in said inlet valve cavity at one outlet part; means operatively coupling said float to said first ball for moving said ball from a closed position on said seat to an opened position against the pressure of fluid in said inlet fitting cavity; a second shut-off means at said other outlet part comprising a flexible diaphragm a fluid passing aperture and being movable between open position and a closed position sealing said other outlet part by fluid pressure in said inlet valve cavity in response to the closed position of said ball; and a post member positioned in said inlet valve cavity including a support for said ball at its open position and a guide surface for fluid aperture in said flexible diaphragm.

#### 4,341,239 COMBINATION CHECK-OVERPRESSURE RELIEF VALVE

Gordon E. Atkinson, Yellow Springs, Ohio, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio  
Filed Jul. 14, 1980, Ser. No. 168,981  
Int. Cl.<sup>3</sup> F16K 17/18  
U.S. Cl. 137—493 9 Claims

1. A combination check-overpressure relief valve comprising: a substantially cylindrical main body portion having a central longitudinal axis and defining a flow path through said valve,

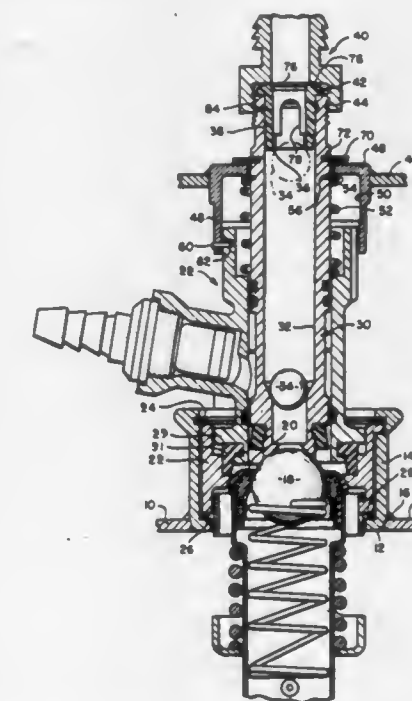
said cylindrical main body portion terminating at one end thereof in a lip portion, said lip portion having a curved contour about an axis of curvature extending substantially perpendicularly to said flow path, said contour being in a cross section contained within a first plane parallel to said central axis, said lip portion having a squared-off contour in a second cross section contained within a second plane being parallel to said central axis and not parallel to said first plane, at least one normally closed slit formed along said squared-off contour, and,



said main body and lip portions being formed of an elastomeric material which allows flow through said slit in a first direction at pressures in excess of a first pressure, checks flow through said slit in a second direction opposite to said first direction at pressures below a second pressure, permits relief flow through said slit in said second direction, and resets said slit to its normally closed position when flow pressure in said second direction drops to a value below said second pressure.

#### 4,341,240 BEER TAP CONSTRUCTION

Vincent J. Cerrato, Pomona, N.Y., assignor to Vending Components, Inc., Hackensack, N.J.  
Filed Feb. 4, 1980, Ser. No. 118,203  
Int. Cl.<sup>3</sup> F16K 15/04  
U.S. Cl. 137—533 5 Claims



1. An outlet fitting for a beer keg or the like including in combination a sleeve having a passage with a discharge end through which the beer is discharged from the keg, a check-valve element in the sleeve, a seat in the sleeve against which the check valve closes to prevent back flow of beer through the fitting toward the keg, a retainer bushing flanged at one end and having its other end received in the sleeve passage at the discharge end of the sleeve, the extent of such reception being to the point of flange abutment with said discharge end



of the sleeve, the part of the bushing which extends into the sleeve having a passage for the flow of beer from the keg, and the bushing having protuberances at its said other end, said protuberances having interference abutment with the check-valve member to effectively prevent the check-valve member from entry into the other end of the bushing, and a tubular sleeve-discharge fitting having a counterbore sized and configured for removable circumferential overlap and threaded engagement with the outer surface of the discharge end of the sleeve, the counterbore of said sleeve-discharge fitting being characterized by an annular flange-engaging bottom wall in radial overlap with the end of the sleeve.

4,341,241

## POSITION INDICATING VALVE MEANS

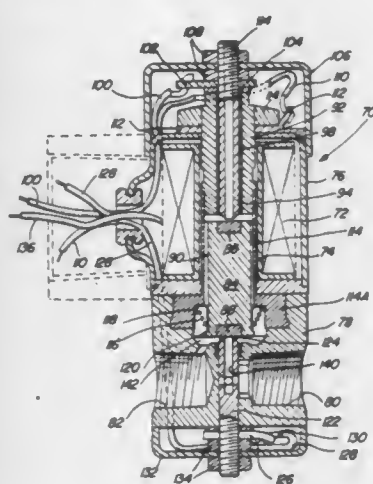
Joseph W. Baker, Branchburg Township, Somerset County, N.J., assignor to Brunswick Corporation, Skokie, Ill.

Filed Oct. 20, 1980, Ser. No. 198,365

Int. Cl.<sup>3</sup> F16K 37/00

U.S. Cl. 137—554

20 Claims



1. A position indicating valve, comprising:  
a housing;

a movable member reciprocally mounted in said housing;  
engageable valve seal means and valve stop means, one of said means being on said housing and the other said means being on said movable member for relative movement into and out of engagement between closed and open positions;  
said valve seal means and said valve stop means being fabricated of electrically conductive material to define engageable electrical contact means, and one of said valve seal means and said valve stop means being fabricated of a conductive elastomer material to insure complete valve closing; and  
circuit means coupled to each said valve seal means and said valve stop means whereby said circuit means is closed when said valve seal means and said valve stop means are in contact with each other.

4,341,242

## LOADING ARM

Dean E. Hermanson, Richardson, Tex., assignor to Continental Emsco Company, Dallas, Tex.

Filed Nov. 3, 1980, Ser. No. 203,408

Int. Cl.<sup>3</sup> B65B 3/04

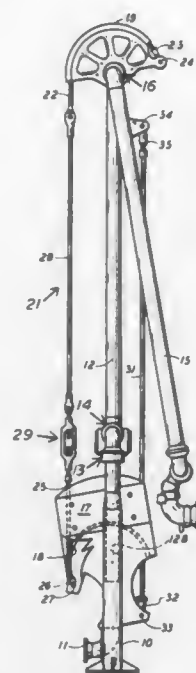
U.S. Cl. 137—615

5 Claims

1. A loading arm comprising,

a riser,  
an inboard arm supported on the riser and including means allowing rotation about first horizontal and vertical axes,  
an outboard arm supported on the inboard arm and including means allowing rotation about a second horizontal axis,  
a counterweight rotatably mounted on the inboard arm for counterbalancing the inboard and outboard arms,  
a first half sheave mounted on the counterweight with its

center of rotation coaxial with the center of rotation of the counterweight,  
a second half sheave mounted on the outboard arm with its center of rotation coaxial with the second horizontal axis of rotation of the outboard arm,  
said first and second sheaves of equal size,  
first means including cables trained over one side of said first and second sheaves connecting the counterweight to the outboard arm, and



second means pivoted to and interconnecting the counterweight and said outboard arm and including a pair of respective pivot points,  
said pivot points spaced equal distances from the respective centers of rotation of said counterweight and outboard arm and at equal distances from the centerline of said inboard arm in all positions of said outboard arm, said centerlines of said outboard arm and counterweight being parallel,  
said centerlines of said counterweight and said outboard arm extending through their axes of rotation.

4,341,243

## PRESSURE REDUCING VALVE WITH FLOATING STEM FOR MAKE-UP VENT

Kurt B. Melocik, Mazon, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00765, § 371 Date Jun. 16, 1980, § 102(e) Date Jun. 16, 1980, PCT Pub. No. WO81/03686, PCT Pub. Date Dec. 24, 1981

PCT Filed Jun. 16, 1980, Ser. No. 245,223

Int. Cl.<sup>3</sup> F15B 13/042

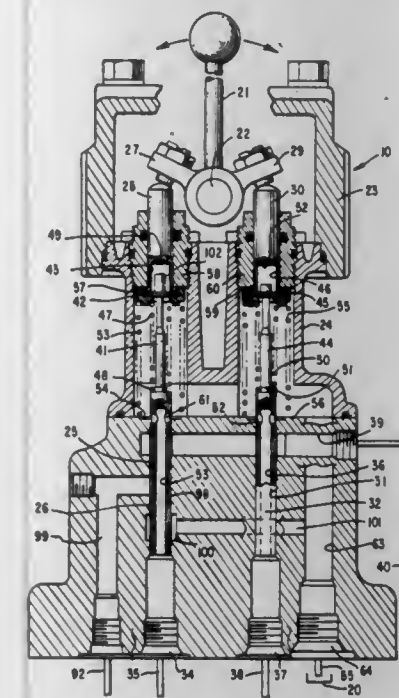
U.S. Cl. 137—625.68

9 Claims

1. A pressure regulating valve (10) having wall means (24) defining a valve chamber (25) provided with an inlet (39), an exhaust passage (101,63,64), and an outlet (34), a movable valve member (26) in said chamber (25), and regulating means (61,39,47) associated with said valve chamber and said movable valve member to provide pressure regulation of fluid passing from said inlet (39) through said valve chamber (25) to said outlet (34), said regulating means being further arranged to limit movement of said valve member (26) to a first preselected position in response to pressurized fluid in said outlet (34), the improvement comprising:

means (102,49,28) selectively directly mechanically connected with said movable valve member (26) for moving the movable valve member beyond said first position to a second preselected position;  
means defining a second inlet (99);  
means (99,98,100) operable when said valve member (26) is disposed in said second preselected position for providing

a flow passage from said second inlet through said pressure regulating valve (10) to said exhaust passage, said regulating means (61,39,47) including a connector (42) slidably connected to said valve member (26), and a spring (47) positioned between the connector and said valve member, and said mechanical means (102,49,28) including



an end portion (102) on said valve member, a manual input element (28) in engagement with said connector and having a contact surface (49) spaced from said end portion (102) of the valve member at the first position of the valve member and in contact with said end portion at the second position.

4,341,244

## METERING DEVICE PARTICULARLY FOR CAPSULE-FILLING MACHINES

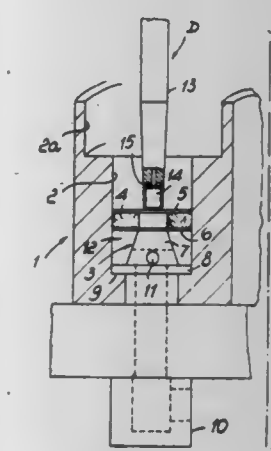
Libero Facchini, Bologna, Italy, assignor to Farmatic S.N.C., Bologna, Italy

Filed Nov. 6, 1979, Ser. No. 91,849

Claims priority, application Italy, Nov. 9, 1978, 84948 A/78

Int. Cl.<sup>3</sup> B65B 1/04

U.S. Cl. 141—18



1. In a capsule-filling machine having a bowl adapted to receive a quantity of pulverulent material to be introduced into capsules, and a volumetric metering member in the form of a vertically displaceable plunger having a metering cavity at its lower end and adapted to be lowered into said bowl to pick up a quantity of said material, the improvement wherein said bowl comprises:  
an upwardly open vessel rotatable about a vertical axis and

formed with an annular cylindrical chamber opening upwardly and extending to the bottom of said chamber;  
a removable insert replaceably received in said chamber and forming a fluid-permeable floor for said bowl impermeable to said material therein, said insert including:  
an upper perforated metal plate defining said floor,  
a lower perforated metal plate spaced below said upper plate,  
a fluid-permeable filling between said plates, and  
a support extending to said bottom of said chamber and carrying said plates and said filling while maintaining an annular fluid-distributing compartment in said chamber communicating with said filling and the perforations in said plates; and  
means for connecting said compartment with a suction source.

4,341,245

## GAS INLET ATTACHMENT FOR A GAS CHARGER

Norio Daicho, Amagasaki, and Keitaro Yonezawa, Kobeshi, both of Japan, assignors to Kabushiki Kaisha Neriki, Hyogoken, Japan

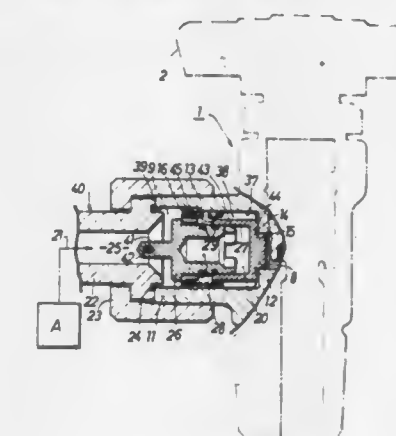
Filed Apr. 3, 1980, Ser. No. 136,495

Claims priority, application Japan, Apr. 6, 1979, 54-46147[U]

Int. Cl.<sup>3</sup> B65B 3/04

U.S. Cl. 141—18

6 Claims



1. In a gas-inlet attachment for use in the mouthpiece of a gas charger, which is detachably connected to the cock of a gas container when the container is charged with a fresh supply of gas, the improvement of said gas-inlet attachment comprising:  
said cock including a spring-closed check valve having a recess which opens toward said gas charger;  
said check valve having at least one axial passage along its outer periphery to allow the passage of gas therethrough;  
said mouthpiece of said gas charger including a pressure differentiator opposed to said check valve;  
said pressure differentiator including an axially movable member air-tightly connectable to but movable relative to said check valve with a pressure differentiating space interposed therebetween, whereby to cause opening of said check valve by a pressure difference; and  
said mouthpiece of said gas charger including a sealing means for enabling the same to be air-tightly connected to said cock.

4,341,246

## LOG-SPLITTING ATTACHMENT DEVICE

James O. Salladay, P.O. Box 224, Fairmount, Ill. 61841

Filed Oct. 10, 1980, Ser. No. 196,060

Int. Cl.<sup>3</sup> B27L 7/00

U.S. Cl. 144—193 A

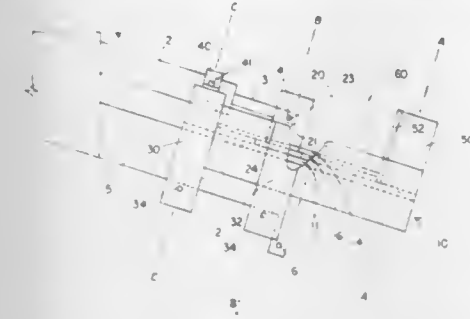
1 Claim

1. In a log-splitting attachment device that is adapted to be connected to an apparatus having a hydraulically-powered cylinder-piston combination, after removal of the work piece element normally moved by said cylinder-piston combination,



to provide a reciprocating log-splitting machine, the improvement comprising:

- (a) a plunger block means adapted to be removeably connected to the forward free end of said piston, said plunger means including laterally extending flange means,
- (b) a frame means including:
  - (1) a base plate element upon the upper surface of which a log to be split may be placed,
  - (2) side plate elements positioned essentially vertically on each side of said base plate element for retaining a log to be split against lateral movement,
  - (3) slot means provided above and adjacent said base plate element, said slot means being adapted to slideably



receive said flange means of said plunger means, to thereby guide and retain said plunger means adjacent said base plate element during the reciprocation of said piston,

- (4) a cutting blade element positioned vertically on and adjacent the end of said base plate element removed from said cylinder, and
- (5) means for connecting said frame means removeably to said cylinder, whereby a log placed on said base plate element between said plunger means and said cutting blade element is split upon extension of said piston from said cylinder by forcing said log against and sufficiently past said cutting blade element.

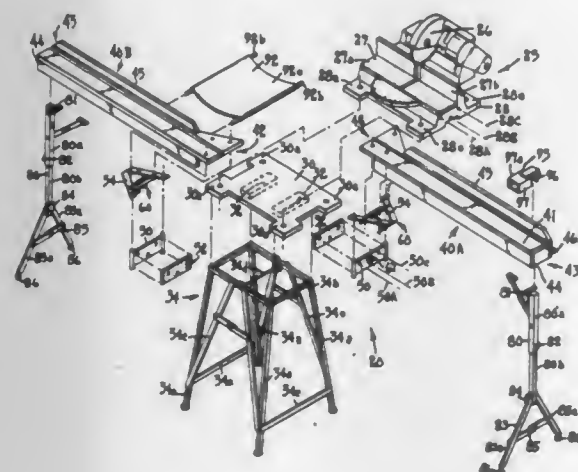
4,341,247

EXTENSION-TABLE ASSEMBLY FOR POWER TOOLS  
T. David Price, 648 Turin St. S., St. Paul, Minn. 55075

Filed Jun. 6, 1980, Ser. No. 157,077  
Int. Cl.<sup>3</sup> B27C 9/02; B27B 25/10

U.S. Cl. 144—287

40 Claims



1. An improved coupler apparatus for securing an elongate extension to a power tool assembly, comprising:

- (a) a first coupler member configured for fixed engagement to a power tool assembly having a primary table portion;
- (b) a second coupler member configured for fixed engagement to an elongate extension; said first and second coupler members having cooperatively mating engagement members for loosely securing said extension in general alignment with said primary table portion; and
- (c) tightening means cooperatively mounted to said first and said second coupler members for rapidly applying align-

ment pressure directed through a single point between said first and said second members, causing said coupler members to rigidly secure said extension to said power tool assembly and to simultaneously align said extension with said primary table about three orthogonal axes; whereby the upper workpiece supporting surfaces of said extension and said primary table portion are longitudinally, laterally and vertically aligned with one another.

4,341,248

PORTABLE SAWMILL

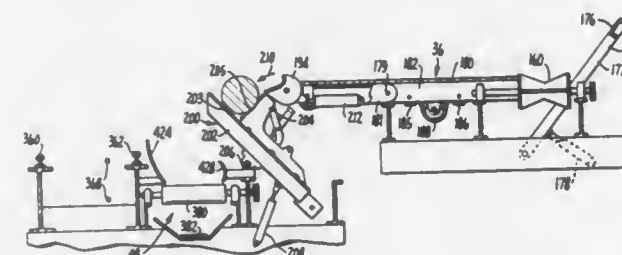
Kenneth G. Critchell, Dover, and James M. Brown, Jr., Sand Point, both of Id., assignors to Pack River Management Company, Hayden Lake, Id.

Division of Ser. No. 969,645, Dec. 14, 1978, abandoned. This application Feb. 4, 1981, Ser. No. 231,541

Int. Cl.<sup>3</sup> B27B 1/00, 29/08

U.S. Cl. 144—378

2 Claims



1. A method of producing lumber from a supply of generally round logs which have bent ends, comprising the steps of: dropping a log on a set works so that the bent ends of the log point downwardly; dogging the log with its bent ends pointed downwardly; then rotating the set works through a pre-selected arc of approximately 45° to incline the bent ends of the log from the vertical; and thereafter sawing the log into lumber.

4,341,249

COMPRESSION SIDEWALL TIRE REINFORCED FOR DEFLATED OPERATION

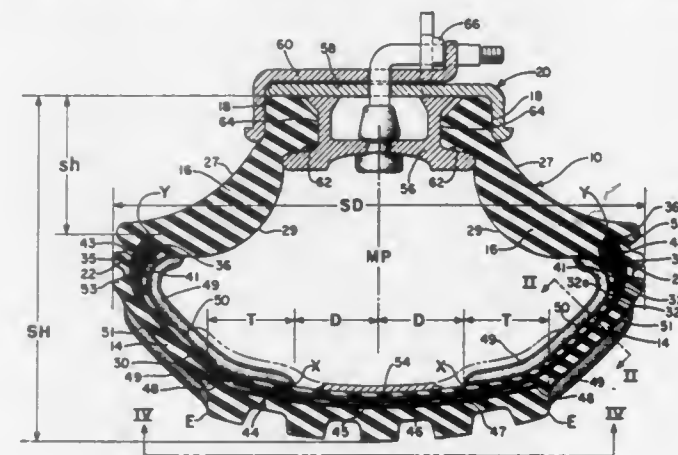
Thomas N. H. Welter, Keispelt, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 99,693, Dec. 3, 1979, abandoned. This application Aug. 6, 1981, Ser. No. 290,534

Int. Cl.<sup>3</sup> B60C 17/00, 13/00

U.S. Cl. 152—330 RF

8 Claims



1. A pneumatic compression sidewall tire suitable for operating in an inflated or a deflated condition, comprising an annular body of elastomeric material, a circumferentially extending ground-engagable tread portion at the outer periphery of said body, a shoulder portion extending from each axially outer extremity of said tread portion and axially outward and radi-

ally inward from said outer extremity, a pair of spaced-apart mounting portions for mounting on a rim, a sidewall extending axially and radially outward from each mounting portion, a pair of junction portions respectively connecting the shoulder portions and sidewalls, the maximum section width of the tire being at the junction portions when the tire is under normal inflation pressure and load, the thickness of said shoulder portions being less than that of the sidewalls, a ply of reinforcing cords extending circumferentially around the tire and extending from each junction portion through a respective shoulder portion and at least to a point radially inward of the tread portion, means to maintain the shoulder portions out of engagement with the ground when the tire is deflated and under normal load, said means including a plurality of circumferentially spaced ribs on the interior and exterior surfaces of each shoulder portion, each rib being disposed at an angle of from 0 to 10 degrees relative to a radial plane of said tire passing through the rib, the ribs on the interior surface of each shoulder portion extending from the respective junction portion to a point axially inward of the respective axially outer edge of the tread, the ribs on the exterior surface of each shoulder portion being congruently spaced whereby each shoulder portion has a minimum thickness which is equal to the thickness of the shoulder portion without any ribs formed thereon and has a maximum thickness which is equal to said minimum thickness plus the maximum thickness of a rib on the interior surface of the shoulder portion and the maximum thickness of a rib on the exterior surface of the shoulder portion.

4,341,250

SPLIT CARCASS TIRE

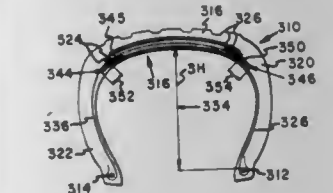
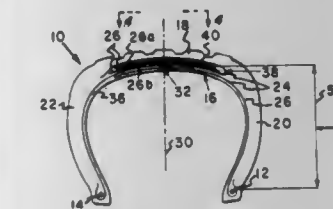
Thomas N. H. Welter, Luxembourg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 29, 1981, Ser. No. 229,685

Int. Cl.<sup>3</sup> B60C 9/04, 9/20

U.S. Cl. 152—354 R

18 Claims



1. A directional tire having a rotational axis and comprising a first and a second bead, a crown portion, first and second sidewall portions extending respectively from opposite edges of the crown portion to the first and second beads respectively, a belt structure in the crown portion, and a carcass including a first reinforcing ply anchored to and extending from the first bead through the first sidewall portion and into the crown portion past the mid-circumferential plane of the tire and terminating radially outwardly of the mid-section height of the tire, said carcass further including a second reinforcing ply anchored to and extending from the second bead through the second sidewall portion and into the crown portion between

said first ply and said belt structure and past the mid-circumferential plane of the tire to partially overlap said first ply, said second ply further extending beyond said belt structure to a location disposed radially outwardly of the mid-section height of the tire at which location said second ply is redirected 180 degrees, the redirected portion of said second ply is disposed radially outwardly of and in at least partial overlapping relation with said belt structure.

10. A directional tire having a rotational axis and comprising a first and second bead, a crown portion, first and second sidewall portions extending respectively, a belt structure in the crown portion, and a carcass including a first reinforcing ply extending from the first bead through the first sidewall portion and into the crown portion past the mid-circumferential plane of the tire and terminating radially outwardly of the mid-section height of the tire, said carcass further including a second reinforcing ply extending from the second bead through the second sidewall portion and into the crown portion between said first ply and said belt structure and past the mid-circumferential plane of the tire to partially overlap said first ply, said second ply further extending beyond said belt structure and into said first sidewall portion a distance equal to at least one-tenth and not more than one-half of the section height of the tire to a location disposed radially outwardly of the mid-section height of the tire at which location said second ply is redirected 180 degrees.

4,341,251

TIRE AND METHOD OF MAKING

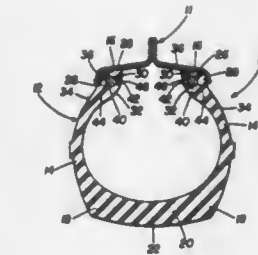
Heinz W. Beneze, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Feb. 11, 1981, Ser. No. 233,424

Int. Cl.<sup>3</sup> B60C 15/00, 1/00

U.S. Cl. 152—357 A

15 Claims



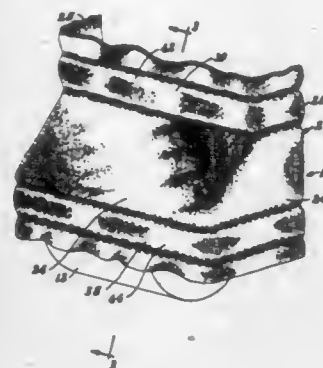
1. In a pneumatic tire comprising a molded or cast seamless toroidal body extending continuously from one annular bead portion to the other, encompassing sidewalls and at least a crown area radially inward of an annular road-engaging tread, said sidewalls connecting the lateral edges of said tread to said bead portions, each bead portion containing an independent unitary annular substantially inextensible reinforcing element, the improvement comprising the addition of means for producing an integral circumferential constricted slot in each of said bead areas during said molding or casting process to permit an interference-fitting of said reinforcing elements subsequent to said molding or casting process, with the cross section of each constricted slot being complementary with the cross section of each reinforcing element to the degree of providing an at least 180° surface contact therebetween.



**4,341,252**  
**DECORATIVE CANOPY MEANS FOR TOILET TISSUE ROLL MOUNTING**  
 Doris Schenk, 4732 E. Pleasant Run Pkwy., N. Dr., Indianapolis, Ind. 46201

Filed Jul. 31, 1981, Ser. No. 288,891  
 Int. Cl.<sup>3</sup> E04F 10/00  
 U.S. Cl. 160—45

11 Claims



1. A canopy means, as for providing a decorative cover or housing for an installation of a roll of toilet tissue on an associated support means, the canopy means comprising, in combination:

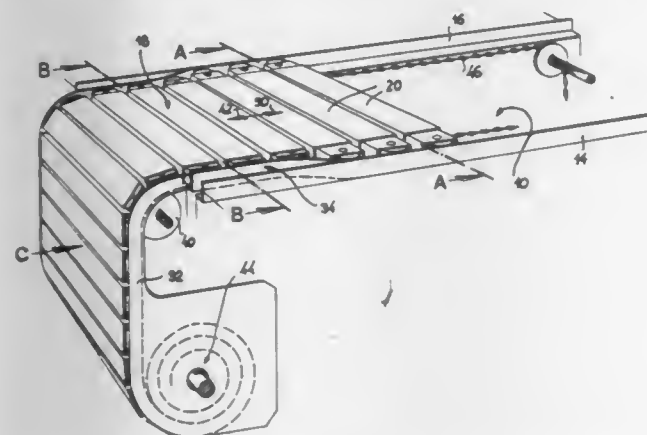
an upper support member, of a generally C-shape, having an intermediate span and end portions extending generally perpendicularly with respect thereto;  
 the end portions of the upper support member being supportingly connectable to the associated support means;  
 an enclosure panel means having end panel portions and an intermediate panel portion, the upper portions of which are respectively supportingly associated with each of the upper support member's end portions and intermediate span;

a body member means, of a generally C-shape, having an intermediate span and end portions extending generally perpendicularly thereto; and  
 the body member means being connectable to the lower portion of the enclosure panel means, and providing therefor a double function of some weight achieving a downward pull on the enclosure panel means for assuring tautness thereof and an interrelated shaping of the panel portions of the enclosure panel means.

**4,341,253**  
**COVER ARRANGEMENT FOR SERVICING HOLES**  
 Anton Eyerle, Stettiner Str. 14, D-8950 Kaufbeuren, Fed. Rep. of Germany

Filed Feb. 29, 1980, Ser. No. 126,107  
 Claims priority, application Austria, Dec. 11, 1979, 7217/79  
 Int. Cl.<sup>3</sup> E06B 9/08  
 U.S. Cl. 160—133

4 Claims

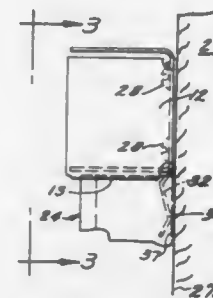


1. An arrangement for covering and uncovering a hole provided in the floor of automotive service stations, the hole having a rectangular horizontal cross-section and vertical side

surfaces, said arrangement comprising: a pair of guide rails extending along the upper edges of the side surfaces of the hole, said guide rails each having a horizontal flange and a vertical flange, the horizontal flanges of said pair of guide rails being supported on the floor and the oppositely arranged vertical flanges having a spacing larger than the width of the hole, a pair of vertical guide plates being arranged within the hole of one front end and adjacent the side walls thereof, the spacing of the vertical guide plates being smaller than that between the horizontal flanges of said pair of guide rails, a pair of connection ramps, each of said ramps providing a continuous transition between the vertical flanges of one of the guide rails and the vertical guide plate, a plurality of parallel elongated support members pivotably connected with one another forming said cover for the hole, the ends of said support members being supported on the horizontal flanges of the guide rails, each one of said plurality of support members being of a telescopic construction, a compression spring arranged within each one of said plurality of support members, said compression spring urging the ends of each support member in contact with said vertical flanges of the guide rails, and a driving device for moving the plurality of support members from a first position between the pair of guide rails into a second position between the pair of guide plates, whereby the support members one after another becoming telescopically compressed when passing said pair of ramps.

**4,341,254**  
**FRAME FOR A VENETIAN BLIND**  
 Maurice Schaller, Clifton, N.J.; Victor Debs, Staten Island, N.Y.; Leo Abate, Wayne Township, Passaic County, N.J.; James Dodich, New Milford, N.J.; Regino Rodriguez, River Vale, N.J., and Joseph A. Anderle, Clifton, N.J., assignors to Levolor Lorentzen, Inc., Lyndhurst, N.J.  
 Filed Mar. 24, 1980, Ser. No. 133,112  
 Int. Cl.<sup>3</sup> E06B 9/30, 9/327  
 U.S. Cl. 160—172

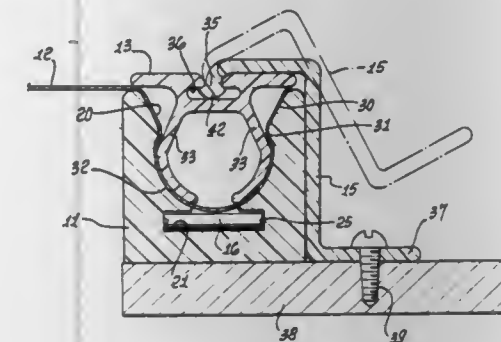
4 Claims



1. For use in connection with a venetian blind having a blind head and slats suspended from said head: a pair of brackets supporting the blind head at opposite ends thereof at a window opening or the like, a frame surrounding the perimeter of at least part of said venetian blind, said frame comprising two substantially U-shaped side channels for respectively receiving opposite ends of said slats, and means for connecting said frame to said brackets and to a structure adjacent said opening, said connecting means including a pair of clips, each clip having a first portion for engagement with the respective bracket, and a second portion adapted to receive and hold in place a top portion of the respective side channel and for resiliently holding said channel against said structure, and fastening means for connecting said brackets and said first portions to said structure.

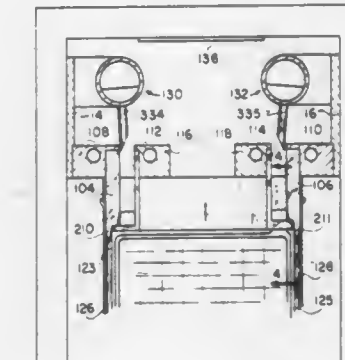
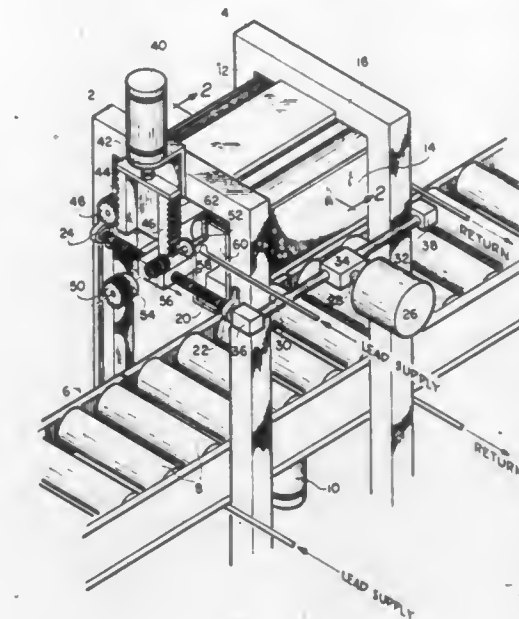
**4,341,255**  
**STORM WINDOW**  
 Donald E. Mock, Azusa, Calif., assignor to Cetec Corporation, El Monte, Calif.  
 Filed Jun. 12, 1981, Ser. No. 273,225  
 Int. Cl.<sup>3</sup> A47H 3/00; E06B 3/00  
 U.S. Cl. 160—369

14 Claims



1. In a window or the like, the combination of:  
 a frame with frame members defining a glazing face, with first grooves in opposing frame members at said glazing face;  
 a glazing sheet over said frame members;  
 lock strips inserted in opposing first grooves, with said sheet disposed between the lock strips and frame members, said lock strips having second grooves parallel with said first grooves; and  
 mounting clips each having a first end for attachment to a support surface and a second end inserted into a second groove.

outlet means and said return means for circulating said lead through said casting means;  
 (f) measuring aliquot portions of lead in said casting means;



(g) pouring said aliquot portions simultaneously into respective molding channels to cast said straps and intercell connectors.

**4,341,256**  
**METHOD AND APPARATUS FOR FORMING BATTERY STRAPS AND INTERCELL CONNECTIONS**  
 William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.  
 Continuation of Ser. No. 752,644, Dec. 20, 1976, Pat. No. 4,241,780. This application Jul. 30, 1980, Ser. No. 173,481  
 Int. Cl.<sup>3</sup> B22D 19/04, 39/02  
 U.S. Cl. 164—109

17 Claims

1. A method for automatically casting the commoning straps and intercell connections of a storage battery, said method comprising the steps of:

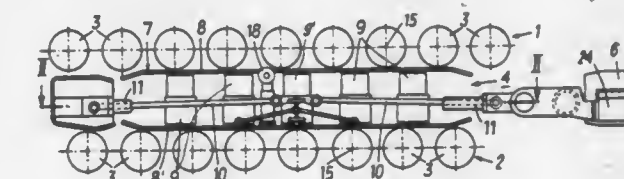
- providing a work surface for receiving a battery case, each cell of said battery case containing stacked positive and negative plates;
- providing a battery case having at least two cells defined therein and separated by a cellular partition each cell of said battery case containing stacked positive and negative plates, each of said plates having protruding lugs thereon;
- forming mold means around the protruding lugs of said positive and negative plates within said battery case, said mold means comprising respective molding channels for said positive and said negative protruding lugs;
- providing molten lead from a reservoir having an outlet means for dispensing molten lead and a return means for receiving molten metal;
- providing casting means operatively connected to said

**4,341,257**  
**ARRANGEMENT FOR LOCATING ROLLERS WITH AN INCREASED ROTATORY RESISTANCE IN A ROLLER WAY**

Werner Scheurecker, Linz; Josef Wirth, Leonding, and Reinhold Angerer, Linz, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Werksgelände, Austria  
 Filed Oct. 2, 1980, Ser. No. 193,395  
 Claims priority, application Austria, Oct. 22, 1979, 6873/79  
 Int. Cl.<sup>3</sup> B22D 11/00

U.S. Cl. 164—150

15 Claims



1. An arrangement for locating rollers with an increased rotatory resistance in a roller way such as strand guiding rollers in a continuous casting plant, which arrangement comprises:  
 a supporting body movable along said roller way,  
 a frictional head provided on said supporting body and pressable to the surface area of subsequently arranged rollers,  
 means for moving said supporting body along said roller way, and



means for indicating and recording a difference between the velocity of said supporting body with which said supporting body moves along said roller way and the velocity of that part of said frictional head which comes into contact with a roller.

4,341,258

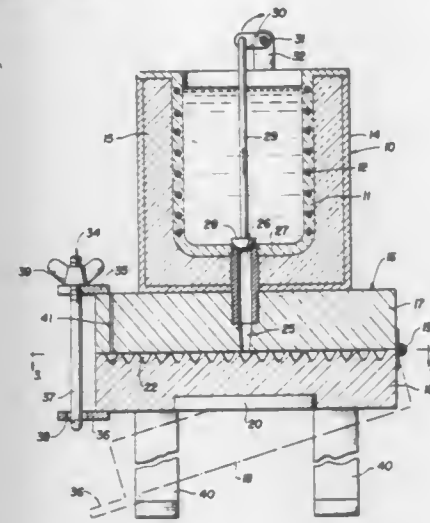
**SOLDER RECLAIMING APPARATUS**

Arthur G. Wigdahl, West Salem, Wis., assignor to Richard C. Thompson, La Crosse, Wis.

Filed Oct. 7, 1980, Ser. No. 194,879

Int. Cl.<sup>3</sup> B22D 27/04, 39/00

U.S. Cl. 164—337



1. A self-contained scrap solder reclaiming apparatus comprising upper and lower superposed flat plate die sections having opposed mating surfaces which surfaces mate to define a horizontal mold parting plane a hinge having a horizontal axis of rotation and connected to each die section along opposed sides surfaces thereof, substantially rigid support legs for the apparatus, each leg having a first end attached to the upper flat plate die section and a second end spaced from said first end and adapted to contact a support surface upon which the apparatus rests, each of said second ends being spaced from said first ends by a distance measured along an axis normal to said horizontal mold parting plane, sufficient to extend substantially beyond the lower flat plate die section to enable the latter to swing downwardly from the upper flat plate die section to a reclaimed solder release position, a single readily releasable fastener element attached to the upper and lower flat plate die sections for securing the lower flat plate die section in opposing abutting relationship with the upper flat plate die section during a reclaiming process, an electrically heated melting pot for scrap solder fixed on the upper flat plate die section and having a bottom molten solder vertical axis feed tube anchored in a bottom wall thereof and projecting below the bottom wall to expose an external surface portion which surface portion is screw-threaded, the upper flat plate die section having surface portion defining a complimentary screw-threaded recess receiving the projecting screw-threaded portion of said feed tube and the upper flat plate die section defining a sprue opening in coaxial registration with a bore of the feed tube and extending through the mating surface of the upper flat plate die section, a metering valve including a generally vertical valve stem within the melting pot and adapted to be seated on and close an upper end of the bore of the feed tube, supporting and operating mechanism for the metering valve on the melting pot connected to the stem of said valve near the top of the melting pot, the mating surface of the upper flat plate die section being a substantially smooth face, and the mating surface of the lower flat plate die section having formed therein a continuous long spiral casting groove of substantially V-cross section and having one terminal end substantially at the center of the mating surface of the lower flat plate die section in registration with the sprue opening and a second terminal end near a side surface of the lower flat plate die section whereby the spiral

groove occupies a major portion of the surface area of the mating surface of the lower flat plate die section, the upper flat plate die section having a vent port formed therethrough in communication with the spiral casting groove near the second terminal end of the groove, and electrical heating means connected with the lower flat plate die section for heating at least said lower flat plate die section.

4,341,259

**METHOD FOR SPEED CONTROL OF A CONTINUOUS METAL STRIP CASTING MACHINE AND ROLLING MILL ARRANGEMENT, AND SYSTEM CONTROLLED ACCORDING TO THIS METHOD**

Wilhelm F. Lauener, Rechterswil, Switzerland, assignor to W. F. Lauener AG, Thun, Switzerland

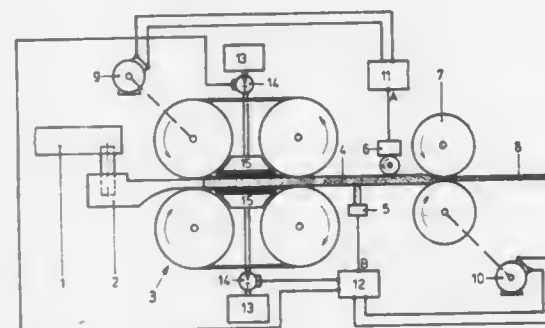
Filed Dec. 18, 1979, Ser. No. 104,794

Claims priority, application Switzerland, Dec. 29, 1978, 13268/78

Int. Cl.<sup>3</sup> B22D 11/16

U.S. Cl. 164—454

8 Claims



1. A method for control of a casting and rolling plant including a casting machine having a molding assembly with continuously advancing molding surface for producing a cast strip, means for driving the molding assembly, a rolling mill for rolling the cast strip and means for driving the rolling mill, said method comprising the steps of:

- positioning the rolling mill relative to the casting machine such that the speed of the cast strip as it exits the casting machine and is fed to the rolling mill is directly affected by the speed of said rolling mill;
- measuring the speed of said cast strip between said casting machine and said rolling mill; and
- controlling the speed of the means for driving the molding assembly in direct proportion to said measured speed whereby the speed of said casting machine is synchronized with and follows the speed of said rolling mill.

4,341,260

**METHOD OF PRODUCING AMORPHOUS METAL TAPES**

Toyooki Ishibachi, Yokosuka, and Masato Sakata, Yokohama, both of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 883,859, Mar. 6, 1978, abandoned. This application Apr. 29, 1980, Ser. No. 144,864

Claims priority, application Japan, Mar. 7, 1977, 52-24582; Mar. 8, 1977, 52-25254; Apr. 4, 1977, 52-38355; Jan. 30, 1978, 53-9052; Jan. 31, 1978, 53-9660

Int. Cl.<sup>3</sup> B22D 11/06

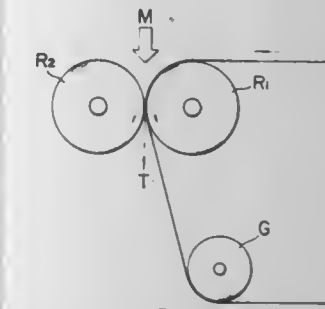
U.S. Cl. 164—463

11 Claims

1. A method of producing long, wide amorphous metal tapes having a thickness of less than 0.05 mm, and having a superior dimensional accuracy comprising:

- introducing a molten jet of a composition capable of forming an amorphous metal upon rapid cooling directly into a contact nip area formed between a first rotating, working roll, whose surface is comprised of metal, and a contiguous, long open-end, flexible metal belt;
- simultaneously rolling and cooling said molten metal on

both sides by said working roll and said belt within said contact area, said contact being effected by providing a second, back-up roll whose surface is comprised of elastic material, and wherein said back-up roll presses elastically said metal belt against said working roll, and both rolls



being friction-driven by said metal belt, and wherein said contact nip area formed between said working roll and said metal belt is elastically closed prior to said spraying of said molten metal and is elastically expanded by solidified metal passing into said contact area.

4,341,261

**METHOD OF CASTING ELONGATED MEMBERS OF REACTIVE METALS AND REACTIVE METAL ALLOYS**

Robert Thomson, and John R. Emmett, both of Ottawa, Canada, assignors to Canadian Patents & Dev. Ltd., Ottawa, Canada

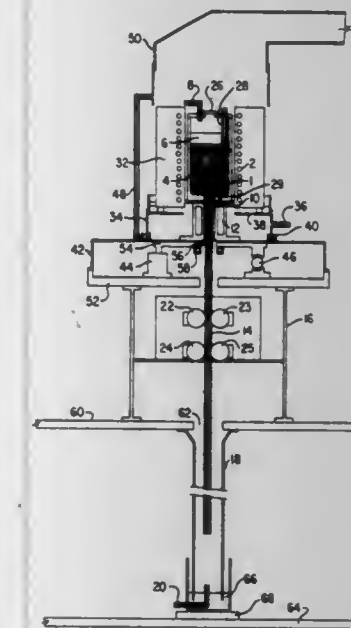
Filed Jun. 9, 1980, Ser. No. 157,532

Claims priority, application Canada, Jul. 18, 1979, 332068

Int. Cl.<sup>3</sup> B22D 11/10

U.S. Cl. 164—475

6 Claims



1. A method of casting elongated members of reactive metals and reactive metal alloys comprising:

- (a) melting the metal to be cast into a molten state in a vessel with fused slag while blanketing the surface of these contents of the vessel with inert gas;
- (b) maintaining the metal in the vessel in a molten state while allowing the molten metal to flow directly from the vessel into an upstream end of a mould protruding into and sealed to a bottom portion of the vessel to maintain the upstream end of the mould flooded with molten metal;
- (c) cooling a downstream portion of the mould so that the molten metal issues therefrom as a cast, elongated member; and
- (d) controlling the rate of casting of the molten metal by extracting means pulling the elongated member directly from the mould into an inert gas flushed, elongated member receiving chamber which is sealed to the mould.

4,341,262

**ENERGY STORAGE SYSTEM AND METHOD**

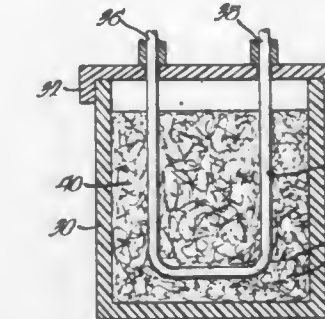
Thomas R. Alspaugh, 4707 Otomi Ave., San Diego, Calif. 92117

Filed May 5, 1980, Ser. No. 146,493

Int. Cl.<sup>3</sup> F28D 17/00

U.S. Cl. 165—1

5 Claims



1. A method of increasing conductivity between chemical energy storage media and energy exchangers in energy storage systems, comprising the steps of coating finely divided filaments of highly conductive material with a protective material for mitigating corrosion of the filaments without materially reducing their conductivity, and dispersing the highly conductive coated filaments throughout the media and causing the filaments to establish highly conductive paths in contact with substantially the entirety of the media and the energy exchanger.

4. A method of mitigating destabilization of chemical energy storage media and increasing conductivity between the chemical energy storage media and energy exchangers in energy storage systems, comprising the steps of dispersing finely divided multitudinous fine strands of highly conductive material through the media, contacting the conductive fine strands with substantially the entirety of the media, the energy exchanger and one another to establish highly conductive paths between substantially the entirety of the media and the energy exchanger, causing the fine strands, by virtue of their composite large surface area, capillary attraction and pointed ends, to mitigate separation, destabilization and supercooling of the media and enhance its useful service life, and stratifying the mixture of the fine strands and the media into layers by inserting therein spaced, generally parallel, sheet-like dividers of highly conductive mesh.

4,341,263

**WASTE WATER HEAT RECOVERY APPARATUS**

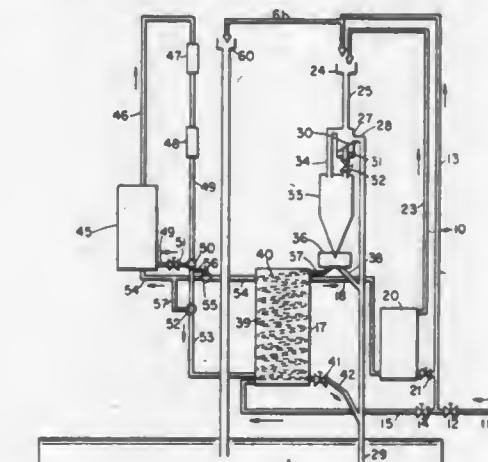
Morteza Arbabian, P.O. Box 1270, Madison, Wis. 53701

Filed Nov. 3, 1980, Ser. No. 203,718

Int. Cl.<sup>3</sup> F24H 3/00

U.S. Cl. 165—40

9 Claims



1. Waste water heat recovery apparatus for a building comprising:

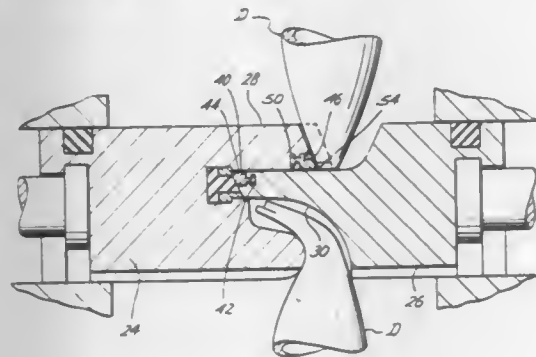
- (a) a hot water heater delivering hot water to hot water supply pipes;



- (b) a waste water drain pipe receiving hot water from the hot water supply pipes after use;
- (c) a heat exchanger having an interior chamber filled with a heat transfer liquid having a high heat capacity, a waste water conduit extending through the heat transfer liquid in the heat exchanger and connected to receive at an inlet end the waste water from the waste water drain pipe and discharging waste water at an outlet end, a supply water conduit having an inlet adjacent the outlet of the waste water conduit at which it receives fresh supply water and extending through the heat transfer liquid generally parallel to the waste water conduit up to an outlet, and means for maintaining a temperature gradient in the heat transfer liquid along the waste water and supply water conduits between the inlet and outlet ends of the waste water conduit;
- (d) an output line connecting the outlet of the supply water conduit to the hot water heater;
- (e) a discharge line connecting the outlet of the waste water conduit to a sewer drain pipe.

**4,341,264**  
**WELLHEAD SHEARING APPARATUS**  
 Fern H. Cox, Houston, and Irwin Rosenhauch, Rockwall, both of Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

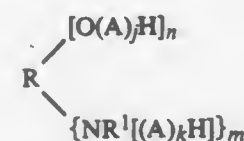
Filed Oct. 15, 1980, Ser. No. 197,115  
 Int. Cl.<sup>3</sup> E21B 29/08, 33/06  
 U.S. Cl. 166—55



1. A wellhead shearing apparatus comprising a body having a vertical bore therethrough and opposed guideways extending outwardly from the bore, a ram assembly having a first and a second ram, said rams being positioned in opposite guideways, one ram having an upper cutting blade extending toward and coacting with the lower cutting blade of the opposite ram, means associated with each ram for moving the rams into the bore to shear pipe in the bore and to seal across the bore and for retracting the rams from the bore to allow freedom of movement of pipe through the bore, said rams and said cutting blades being of steel having a maximum hardness of 26 Rockwell C, a recess extending across the face of the lower cutting blade and having an enlarged volume within said blade to present a shoulder therein facing away from the face of said blade, a hard metal insert positioned within said recess and forming the forward cutting edge for said blade, said insert substantially filling said recess to have an enlarged portion therein engaging said recess shoulder to retain said insert within said recess, and means providing a hard surface on the cutting edge of the upper cutting blade.

**4,341,265**  
**METHOD OF RECOVERING PETROLEUM FROM A SUBTERRANEAN RESERVOIR INCORPORATING A POLYETHER POLYOL**  
 Charles M. Blair, Jr., Buena Park, Calif., assignor to Magna Corporation, Santa Fe Springs, Calif.  
 Continuation-in-part of Ser. No. 917,054, Jun. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 917,057, Jun. 19, 1978, abandoned. This application Jun. 4, 1979, Ser. No. 45,479

Int. Cl.<sup>3</sup> E21B 43/22  
 U.S. Cl. 166—274  
 33 Claims  
 1. The method of recovering petroleum from a subterranean reservoir comprising the steps of: (1) introducing into said reservoir a predetermined amount of a polyether polyol having the formula:



wherein:

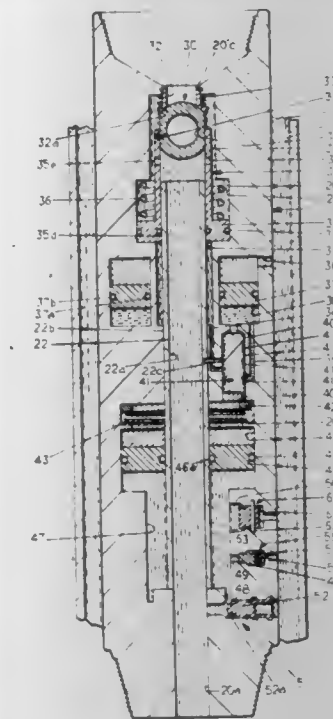
- A is an alkylene oxide group,  $\text{—C}_i\text{H}_2\text{O—}$ ; O is oxygen; i is a positive integer from 2 to about 10, inclusive; j is a positive integer no greater than about 100; k is a positive integer no greater than about 100; N is nitrogen; R<sup>1</sup> is one of hydrogen, a monovalent hydrocarbon group containing less than about C<sub>11</sub>, or; L is a positive integer no greater than about 100; R is a hydrocarbon moiety of a non-aromatic polyol, resorcinol, hydroquinone, a primary or secondary polyamine; a primary or secondary amino alcohol, or hydrogen; and m+n is no greater than about 4 when R is other than hydrogen and one of m and n is zero and the other is unity when R is hydrogen, said polyether polyol at about 25° C.: (a) being less than about 1% by volume soluble in water and in isooctane; (b) having a solubility parameter in the range of between about 6.9 and about 8.5; and (c) spreading at the interface between distilled water and refined mineral oil to form a film having a thickness no greater than about 20 Angstroms at a film pressure of about 16 dynes per cm; and (2) contacting said petroleum in said reservoir with an effective thin film forming amount of said polyether polyol.

**4,341,266**  
**PRESSURE OPERATED TEST TOOL**  
 Gene C. Craig, Houston, Tex., assignor to Lynes, Inc., Houston, Tex.

Filed Sep. 15, 1980, Ser. No. 187,283  
 Int. Cl.<sup>3</sup> E21B 34/10

- U.S. Cl. 166—317  
 10 Claims  
 1. A primary valve for use in a subterranean well test string positionable in a well bore and having a packer arranged for selectively sealing the well bore to isolate the annulus between the well bore and the test string above the packer from that portion of the well bore below the packer, comprising: means for mounting said primary valve in said test string for movement between an open and closed position relative to the interior of said test string; an actuating piston for shifting said primary valve between said open and closed positions; resilient means urging said actuating piston to its valve closing position; a first fluid reservoir containing an isolated fluid; a shiftable control valve for selectively connecting one end of said piston to one of said first fluid reservoir and said test string bore, said control valve having opposed piston faces, one piston face on said control valve being exposed to said isolated fluid; means responsive to an increase in annulus pressure above well bore hydrostatic pressure for increasing said isolated fluid pressure

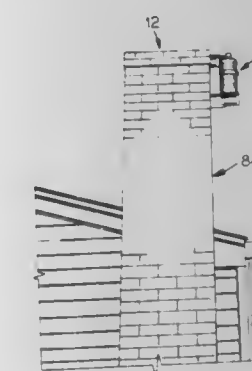
to shift said control valve to cause said isolated fluid to open said primary valve; and means including said other piston face responsive to a subsequent decrease in annulus pressure to well



bore hydrostatic pressure for shifting said control valve to remove the isolated fluid from said actuating piston, thereby permitting said primary valve to be closed by said resilient means.

**4,341,267**  
**CHIMNEY FIRE EXTINGUISHER**  
 Guy Lagasse, 94 Bush Hill Rd., Manchester, Conn. 06040  
 Filed Jul. 9, 1980, Ser. No. 167,385  
 Int. Cl.<sup>3</sup> A62C 37/00

U.S. Cl. 169—54



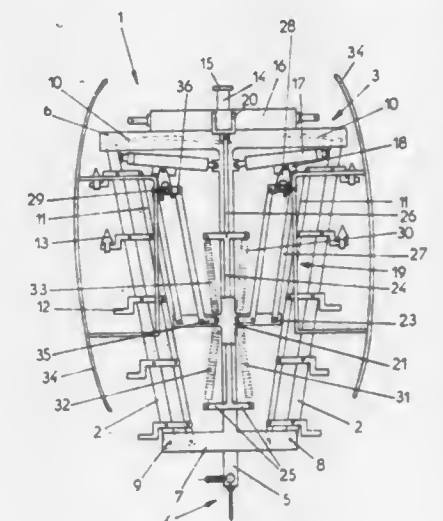
1. A chimney fire extinguisher comprising:  
 a. a container containing fireextinguishing material;  
 b. bracket means having a first portion dimensioned and configured to seat upon the cap of an associated chimney, said bracket means having a second portion engaged with said container and being adapted to suspend said container outside the associated chimney, said bracket means including a unitary generally U-shaped member having first and second leg portions and a web portion extending therebetween, said first leg portion providing a first clamp surface adapted for abutting the interior surface of the associated chimney at its cap, said bracket means further including support means supporting said container on said second leg portion of said U-shaped member and a plate member providing a second clamp surface adapted for abutting the interior surface of the associated chimney at its cap, said plate member being disposed between said legs, extending generally parallel thereto, and being adjustably mounted on said web portion of said U-shaped member for varying the spacing between said plate member and said first leg

portion and thereby between said clamp surfaces to accommodate chimney walls of different thicknesses;  
 c. conduit means having one end communicating with the interior of said fluid container, the other end of said conduit means being spaced from said container for positioning inside the associated chimney and adjacent said first portion of said bracket means when said bracket means seats upon the associated chimney cap and said container is suspended by said bracket means outside the associated chimney, said conduit means including flow-control means preventing flow through said conduit means in its normal state and permitting flow through said conduit means in a second state, said flow-control means including fusible means maintaining said flow-control means in said normal state but being fusible at a predetermined temperature above the normal expected interior temperature of the associated chimney adjacent its cap to cause said flow-control means to assume said second state and thereby permit said fire-extinguishing material to flow through said conduit and quench a fire in the chimney causing the high temperature when said chimney fire extinguisher is mounted by said bracket on the cap of the chimney.

**4,341,268**  
**PLOUGH FOR WORKING EARTH BETWEEN PLANT ROW**  
 Julien Hugg, 7, route du Vin, Bergheim (Haut-Rhin), France  
 Filed Feb. 19, 1980, Ser. No. 122,379  
 Claims priority, application France, Feb. 19, 1979, 79 04916  
 Int. Cl.<sup>3</sup> A01B 13/04

U.S. Cl. 172—5

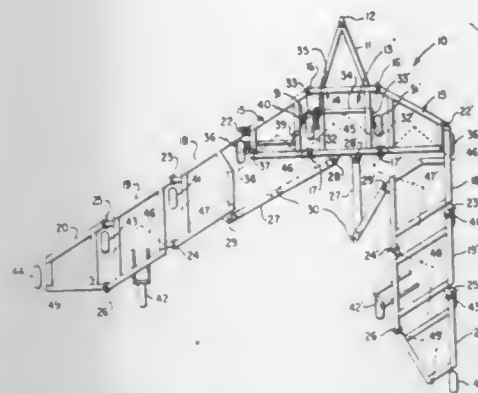
6 Claims



1. A plough for earth working between rows of plants, comprising a movable chassis, horizontally swingable members carried by the chassis, tool holders carried by the horizontally swingable members for holding tools to plough the earth, means to swing the horizontally swingable members toward and away from each other to decrease and increase, respectively, the width of the earth to be ploughed according to the distance between the plants in the rows, and means for centering the plough on laterally inclined ground, said centering means comprising a ground-engaging member carried by the chassis, that swings about a vertical axis in one direction or the other upon lateral tilting of the chassis on inclined ground, and linkage mechanically interconnecting said ground-engaging member and said horizontally swingable members to move both said horizontally movable members laterally in a direction opposite to the direction in which the chassis tilts.



**4,341,269**  
**WING BACK IMPLEMENT**  
 Simon A. Hann, Nobleford, Canada, assignor to Versatile Cor-nat Corporation, Vancouver, Canada  
 Filed Mar. 27, 1980, Ser. No. 134,581  
 Claims priority, application Canada, Feb. 27, 1980, 346549  
 Int. Cl.<sup>2</sup> A01B 73/00  
 U.S. Cl. 172-311 4 Claims



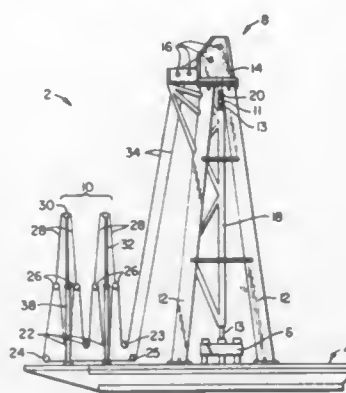
2. An implement used for tillage purposes comprising a tongue adapted for connection at one end to a source of pull power, a centre frame connected to the opposite end of said tongue, a plurality of end frames extending outwardly from said centre frame in a generally diverging direction, sub-frames interconnected between said centre frame and said end frames on respective opposite sides of the centre of said implement, said sub-frames being connected to said centre frame about substantially horizontal axes to allow independent vertical movement of said sub-frames relative to said centre frame, said end frames being interconnected by substantially horizontal axes adapted to allow independent vertical movement of each respective said end frame relative to its adjoining said end frame, said end frames being adapted for pivotal rotation about substantially vertical wing-back pivot points located on said sub-frames on opposite sides of the longitudinal axis of said implement, wheel means mounted below said centre frame, said sub-frames and said end frames to allow movement of said implement, the wheel means mounted on said centre frame and said sub-frames operating independently of the wheel means mounted on said end frames, and reinforcement means movable between extended and retracted positions and being pivotally connected behind said wing-back pivot points, said reinforcement means acting to provide reinforcement for said end frames on respective opposite sides of said centre frame when in the extended position whereby the implement is adapted for operation when said reinforcement means is extended and for transportation when retracted.

**4,341,270**  
**DRILL STRING SUSPENSION TOWER**  
 Scott M. Ferguson, San Francisco, Calif., assignor to Great American Development Co., San Francisco, Calif.  
 Filed Jun. 16, 1980, Ser. No. 160,048  
 Int. Cl.<sup>3</sup> B23Q 5/00; E21C 5/00; B23B 5/027  
 U.S. Cl. 173-151 16 Claims

1. A drill string suspension apparatus for use in conjunction with a hook supporting said drill string during well drilling operations, comprising:

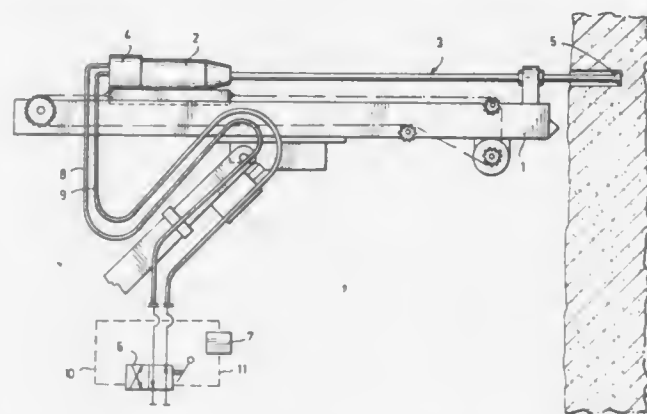
- (a) a generally vertically extending frame;
- (b) means for movably supporting said hook along a first path within said frame, said first path being generally coaxial with said drill string;
- (c) a belt coupled to said movable support means and adapted for raising and lowering said movable support means and said drill string attached thereto along said first path; and
- (d) a belt take-up assembly operably coupled to said supporting means via said belt, said take-up assembly comprising:
  - (i) at least two belt guiding means, at least one of which is movable relative to the other belt guiding means, said

belt guiding means adapted to guide the belt along a second, variable length path; and  
 (ii) means for changing the relative positions of said belt



guiding means so the length of said belt passing along said second variable length path is changed thereby causing the position of said hook along said first path to change.

**4,341,271**  
**ROCK DRILLING METHOD**  
 Antero Anttila, Tampere, Finland, assignor to OY. Tampella AB, Tampere, Finland  
 Continuation of Ser. No. 820,997, Aug. 1, 1977. This application Apr. 22, 1980, Ser. No. 142,801  
 Claims priority, application Finland, Aug. 25, 1976, 762440  
 Int. Cl.<sup>3</sup> E21B 6/00  
 U.S. Cl. 175-24 9 Claims



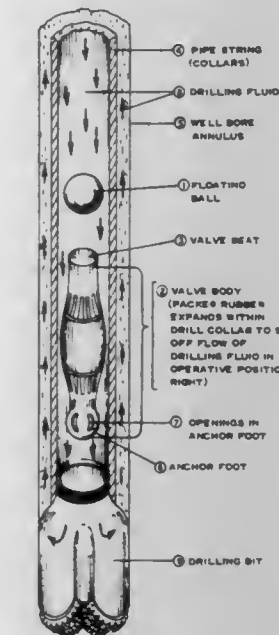
1. A rock drilling apparatus, comprising a rock drill adapted to receive an elongate drill steel and rotate the drill steel bidirectionally about the longitudinal axis thereof, a feeding device upon which the rock drill is mounted to be advanced and retracted in directions parallel to said longitudinal axis, and control means connected to said rock drill for automatically reversing the direction of rotation of the drill steel in accordance with a predetermined program and independently of the change of the direction of movement of the rock drill after the steel has completed several full turns in either direction.

**4,341,272**  
**METHOD FOR FREEING STUCK DRILL PIPE**  
 Joseph S. Marshall, 611 Eastland Ave., Ruston, La. 71270  
 Filed May 20, 1980, Ser. No. 138,582  
 Int. Cl.<sup>3</sup> E21B 31/00  
 U.S. Cl. 175-65 3 Claims

1. A method for dislodging a stuck-off-bottom drill string, including a drill bit and drill pipe, comprising the steps of:

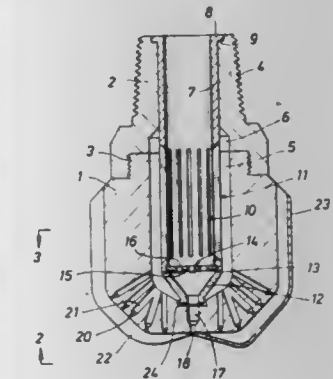
- (a) pumping a valve body down inside the drill string to anchor at or above the drill bit in a position to receive a spherical member for sealing action, said valve body having means for diverting drilling fluid into means for ex-

panding its diameter upon receiving said spherical member, thereby sealing itself against the inside of the drill string and consequently blocking off flow in the drill string; and



(b) pumping said spherical member down the drill string to seat in said valve body, thereby causing said body to expand and block the flow of drilling fluid, resulting in a hammer-like impetus to force the drill string down and out of the stuck position.

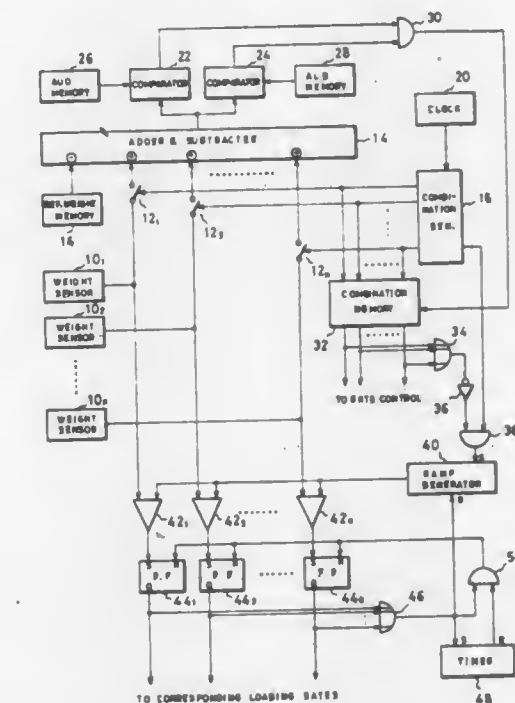
**4,341,273**  
**ROTARY BIT WITH JET NOZZLES**  
 Bruce H. Walker, Salt Lake City, Utah, and Robijn Feenstra, Rijswijk, Netherlands, assignors to Shell Oil Company, Houston, Tex.  
 Filed May 28, 1981, Ser. No. 267,957  
 Claims priority, application United Kingdom, Jul. 4, 1980, 8022050  
 Int. Cl.<sup>3</sup> E21B 10/18, 10/60, 12/06  
 U.S. Cl. 175-339 13 Claims



1. Rotary bit with cutting elements and a plurality of liquid-discharger nozzles for drilling hole in an underground formation, the bit including a body with a central cavity and a shank attached to the body and enclosing a central fluid passage that communicates with the cavity, a first self-cleaning screening element with a plurality of fluid passages allowing the passage of a predetermined size range of particles carried by a fluid, the element being at least partly mounted in the cavity and dividing the cavity in a first part communicating with a first set of nozzles, and a second part communicating with the central passage of a drill string when the shank of the bit is copled thereto, said second part being divided in two further parts by a second screening element having a plurality of fluid passages through which coarser particles can pass than through the fluid passages of the first screening element, one of these two further parts communicating with the fluid passages in the first

screening element, and the other part communicating with a second set of nozzles that are fewer in number than the first set of nozzles, the fluid passage through each of the nozzles of the second set being larger than the fluid passage through each of the nozzles of the first set and being at least equal to a fluid passage of the second screening element.

**4,341,274**  
**COMBINATION WEIGHING DEVICE**  
 Takashi Hirano, Kobe, and Takashi Aga, Akashi, both of Japan, assignors to Yamato Scale Company, Ltd., Hyogo, Japan  
 Filed Apr. 6, 1981, Ser. No. 251,396  
 Int. Cl.<sup>3</sup> G01G 13/02  
 U.S. Cl. 177-25 2 Claims



1. A combination weighing device, comprising a plurality of balances for weighing a plurality of articles to produce electric signals indicative of the measured weights, respectively; arithmetic means having a plurality of input terminals for receiving said electric signals, respectively, for summing up the received electric signals, comparing the resultant sum with reference signals indicative of a predetermined range of weight and, when the sum falls within said range, producing an output signal; a plurality of normally-open switches provided with control terminals and inserted between said weighing balances and said input terminals of said arithmetic means, respectively; switch control means having output terminals coupled respectively to said control terminals for producing control signals from said output terminals selected successively in accordance with a predetermined set of combinations to close the corresponding ones of said normally-open switches; and output means for storing said combinations of the outputs of said switch control means successively and responding to the output signal of said arithmetic means to supply a combination of outputs stored at that time to utilization means; trouble detecting means for detecting lack of output from said output means during each cycle of operation of said switch control means to produce an output signal; a ramp generator for generating a ramp signal in response to the output signal of said detecting means; a plurality of comparators having a first input terminal for receiving said ramp signal and a second input terminal for receiving the output signal from each weighing balance to produce an output signal when both input signals coincide with each other; and second output means for responding to the output of said comparator to supply an output control signal to corresponding one of said utilization means.



**4,341,275**  
**MEASURING APPARATUS WITH ELECTROMAGNETIC FORCE COMPENSATION AND CAPACITIVE POSITION SENSOR**

Eberhard Stadler, Göttingen, and Franz-Josef Melcher, Hardeggen, both of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

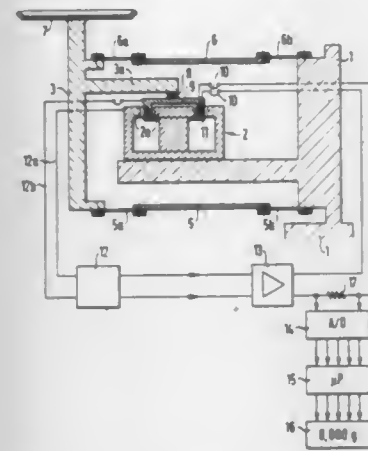
Filed Mar. 31, 1981, Ser. No. 249,420

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1980, 3012979

Int. Cl.<sup>3</sup> G01G 7/02

U.S. Cl. 177-212

5 Claims



1. An electromagnetically compensating apparatus, comprising:
- a stationary permanent magnet system having a pole plate and an air gap;
  - a compensation coil wound upon a coil form and movable in the air gap of the permanent magnet system;
  - a capacitive position sensor connected to detect the position of the compensation coil; and
  - an automatic volume control amplifier series-connected to the position sensor so as to follow it, and whose output current feeds the compensation coil and strives to hold it in a prespecified zero position; wherein the coil form of the compensation coil, and the pole plate of the permanent magnet system each form an electrode of the position sensor.

**4,341,276**  
**FRAME STRUCTURE FOR CONSTRUCTION VEHICLES**  
 Takeshi Furuichi, Ibaraki, Japan, assignor to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

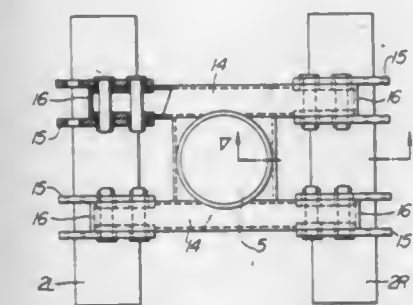
Filed Jul. 25, 1980, Ser. No. 172,180

Claims priority, application Japan, Jul. 27, 1979, 54/94948

Int. Cl.<sup>3</sup> B62D 55/00

U.S. Cl. 180-9.48

6 Claims



1. A frame structure for a construction vehicle having a lower frame and a pair of track frames connected to the lower frame, said frame structure comprising:
- a pair of beams of an elongated box shape constituting a part of said lower frame and extending substantially horizontally crosswise of the vehicle;
  - bracket means comprising a pair of free-standing plates secured to an upper surface of each of said track frames in

a manner extending vertically upwardly therefrom and disposed parallel to said beams so as to closely receive each of the opposite end portions of each of said beams therebetween; and

pin means for forming a connection between each end portion of said each beam and each pair of plates of said bracket means thereby to connect said lower frame to said track frames, said pin means comprising a plurality of removable pins extending through said plates and the beams received therebetween so as to fully bear the loads and movements imposed on said connection.

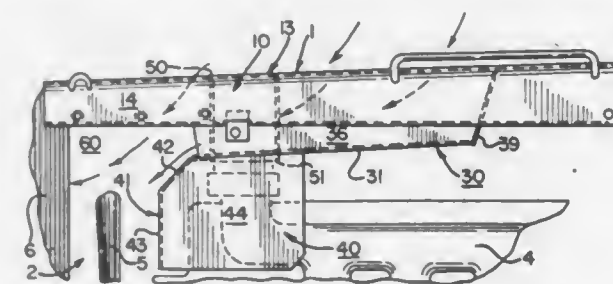
**4,341,277**  
**PERFORATED HOOD WITH AIR SCOOP**  
 Joseph W. Adamson, and Clifford W. Corr, both of Springfield, Ill., assignors to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Jun. 23, 1980, Ser. No. 161,675

Int. Cl.<sup>3</sup> B60K 11/04

U.S. Cl. 180-54 A

10 Claims



1. A hood assembly for use in an off-the-road vehicle having a liquid cooled internal combustion engine which hood assembly is particularly adapted for collecting ambient air above the engine and delivering the collected ambient air to an engine coolant heat exchanger with minimal thermal contact of the air with the engine comprising; hood means forming a portion of an engine compartment of the vehicle, said hood means having a portion positioned above the engine and a portion positioned above a space between the engine and the engine coolant heat exchanger, said hood means having inlet means to receive a flow of ambient air from above and outside the engine compartment, said inlet means extending above a portion of the engine, duct means rigidly coupled to said hood means to form an air passage therewith in the engine compartment in fluid communication with said inlet means, said duct means isolating said air passage from the engine mounted in the engine compartment to prevent substantially a heat exchange relationship between the air drawn into said air passage means and the engine, and fan means positioned between the engine and the engine coolant heat exchanger and mounted in fluid communication with said air passage to draw ambient air through said inlet means and create an air flow in said duct means to deliver ambient air to the engine coolant heat exchanger to be exhausted from the engine compartment through the engine coolant heat exchanger.

**4,341,278**  
**WHEELCHAIR**  
 Wilhelm Meyer, 7 Kirchstrasse, 4973 Vlotho, Fed. Rep. of Germany

Filed Feb. 12, 1980, Ser. No. 120,822

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1979, 2906372

Int. Cl.<sup>3</sup> B62D 5/04

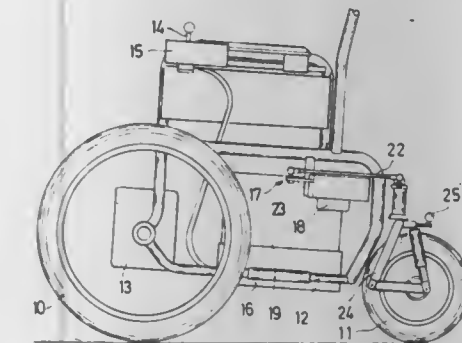
U.S. Cl. 180-79.1

1 Claim

1. A wheelchair having an electric drive and steerable wheels pivotally mounted and displaceable into a desired lateral angular position, an electromechanical control apparatus for turning said wheels, said control apparatus comprising:
- a control circuit, and a control stick for actuating said con-

trol circuit, said control circuit including a voltage divider means which is provided with a voltage which is dependent upon the traveling speed of the wheelchair;

- an electric control motor for controlling the pivotal movement of the steerable wheels;
- first potentiometer means coupled to receive a voltage output from said voltage divider means, said first potentiometer means arranged for actuation by said control stick to provide a nominal value output signal;
- second potentiometer means coupled to receive a voltage output from said voltage divider means, said second potentiometer means arranged for actuation in accordance



with the actual value of the angular position of said steerable wheels, said second potentiometer means providing an actual value output signal; and,

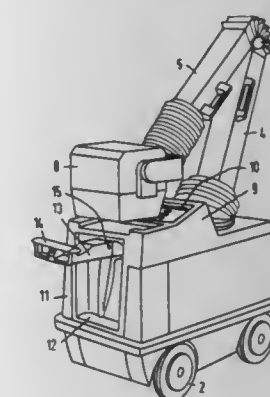
differential amplifier means having a first input coupled to receive said nominal value signal and a second input coupled to receive said actual value signal, and having an output, said differential amplifier means output coupled to said electric control motor for controlling the pivotal movement of said steering wheels, whereby pivotal movement and steering lock of said steerable wheels are controllable in dependence upon the traveling speed of the wheelchair.

**4,341,279**  
**MOBILE X-RAY APPARATUS**  
 Hans Waerve, Sollentuna, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany  
 Continuation of Ser. No. 940,377, Sep. 7, 1978, abandoned. This application Jun. 27, 1980, Ser. No. 163,712  
 Claims priority, application Fed. Rep. of Germany, Oct. 3, 1977, 7730536[U]

Int. Cl.<sup>3</sup> B62D 3/02

U.S. Cl. 180-19 S

1 Claim



1. In a four-wheeled cart suitable for supporting an X-ray apparatus thereon, with two powered wheels at a selected end of the cart and a steering handle rotatably attached to the selected end of the cart, an improvement wherein:
- each of said four wheels has substantially the same diameter;
  - each of said powered wheels has a motor connected thereto; and an improved steering device comprising:

first and second vertical members rotatably connected to the powered wheels;

- first and second spaced apart bearings mounted on the cart, each said bearing rotatably supports one of said vertical members for rotation about a vertical axis adjacent each respective powered wheel;
- first and second rigid elongated rods, each said rod is pivotally connected between one of said vertical members and an interconnection plate mounted on the cart for essentially only rotation about a fixed vertical axis;
- an articulated linkage connected only to a rotatable section of the steering handle and said interconnection plate whereby rotary movement of the steering handle in a first arcuate direction only rotates said interconnection plate a corresponding amount which in turn rotates each powered wheel about said adjacent vertical axis in the first arcuate direction and rotary movement of the steering handle opposite said first arcuate direction correspondingly only rotates said interconnection plate a corresponding amount which in turn rotates each powered wheel about said adjacent vertical axis in the opposite arcuate direction.

**4,341,280**  
**VARIABLE DISPLACEMENT FRONT WHEEL DRIVE SYSTEM**

Joseph E. Dezellan, Western Springs, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

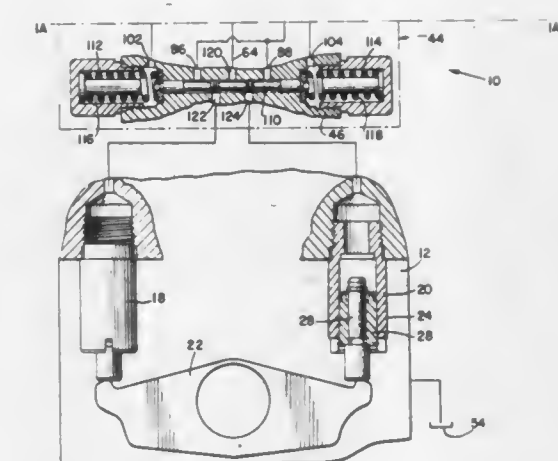
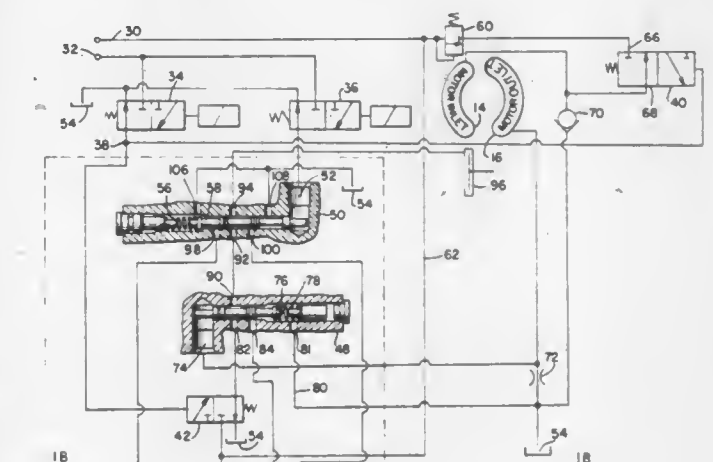
PCT No. PCT/US80/00121, § 371 Date Feb. 4, 1980, § 102(e) Date Feb. 4, 1980

PCT Filed Feb. 4, 1980, Ser. No. 149,354

Int. Cl.<sup>3</sup> B60K 25/00

U.S. Cl. 180-243

10 Claims

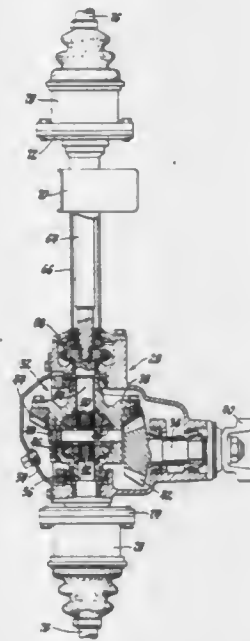


1. In a vehicle having a primary hydraulic system including pump means to supply fluid to the vehicle accessories, a variable displacement auxiliary front wheel drive system (10) to drive at least one wheel of said vehicle, the improvement comprising: at least one variable displacement fluid motor



means (12,14,16), fluid supply means (30,32) for supplying fluid under pressure to said fluid motor means (12,14,16), pressure compensating control means (44) operative to cause said fluid motor means (12,14,16) to destroke when the fluid pressure from said fluid supply means drops below a predetermined level, fluid control means (34,36,40) connected to selectively block fluid from said fluid supply means (30,32) to said pressure compensating control means (44) and said fluid motor means (12,14,16) to render said fluid motor means (12,14,16) inoperative, and drain means (42,50) operative to drain fluid from said pressure compensating control means (44) in response to the operation of said fluid control means (34,36,40) to block fluid from said fluid supply means (30,32).

**4,341,281**  
**SPLIT AXLE DRIVE MECHANISM**  
 Laszlo Nagy, St. Clair Shores, Mich., assignor to General Motors Corporation, Detroit, Mich.  
 Filed Mar. 3, 1980, Ser. No. 126,561  
 Int. Cl.<sup>3</sup> B60K 23/08  
 U.S. Cl. 180—247

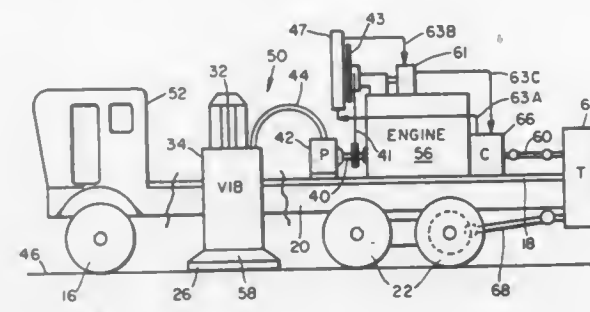


1. A split axle drive mechanism for a part-time four-wheel drive vehicle having a transfer case which includes an auxiliary output shaft connectable to an input shaft of the transfer case for selectively driving a pair of vehicle wheels through a split axle comprising, in combination,  
 a differential having a drive shaft for receiving drive from the auxiliary output shaft of the transfer case and two outputs connected to respective side gears of the differential and adapted to be connected to respective parts of the split axle,  
 one of said outputs being directly connected to one side gear of the differential and the other of the outputs being connected to the other side gear of the differential through a clutch which is disengageable for preventing back drive to the other side gear when the vehicle is in a two wheel drive mode.

**4,341,282**  
**CARRIER VEHICLE FOR SEISMIC VIBRATIONAL SYSTEM**  
 James M. Bird, Tulsa, Okla., assignor to Industrial Vehicles International Inc., Tulsa, Okla.  
 Filed May 19, 1980, Ser. No. 151,256  
 Int. Cl.<sup>3</sup> G01V 1/04  
 U.S. Cl. 181—114

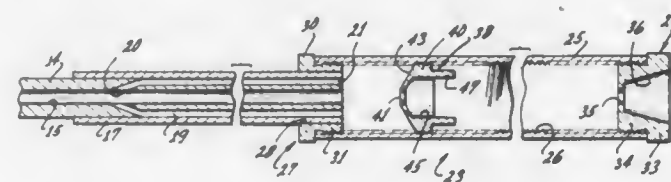
1. In a vehicle having only a single engine, for transport and powering of a seismic hydraulic vibrator for over the road use, comprising:  
 (a) means to carry a seismic hydraulic vibrator on said vehicle, and to drive an hydraulic pump from said single engine,

for pressurizing a selected first fluid for powering said vibrator, and means to control said vibrator;  
 (b) gear transmission means between said single engine and the wheels of said vehicle;  
 the improvement in means to repeatedly rapidly start said vehicle, for short distance travel, while said engine is running continuously at or near maximum speed; comprising:



(c) a first wet disc clutch means connected into the drive system between said single engine and said wheels; said first wet disc clutch means capable of repeatedly starting said vehicle from rest, at or near maximum engine speed; whereby said single engine operating at or near maximum engine speed alternately powers the operation of the said vibrator when said vehicle is at rest and powers operation of traversal of the vehicle over a series of about equal new vibration points of short distances said operations being at a constant gear ratio.

**4,341,283**  
**SOUND SUPPRESSION SYSTEM**  
 Vincent E. Mazzanti, 1020 Prospect St., Suite 312, La Jolla, Calif. 92037  
 Filed Oct. 15, 1980, Ser. No. 197,080  
 Int. Cl.<sup>3</sup> F41C 21/18; F01N 1/08, 1/16, 7/08  
 U.S. Cl. 181—223



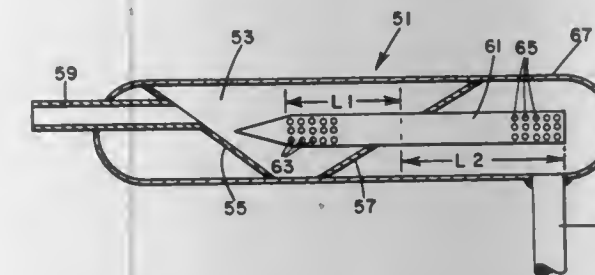
1. A sound suppression system for firearms comprising:  
 a sound suppression chamber having a longitudinally extending tubular housing with a first end and an opposite second end, a first wall structure closes said first end and it has an aperture therein through which passes a longitudinally extending tubular member;  
 baffle means are positioned within the interior of said tubular housing;  
 said tubular member having a plurality of gas passage means whose first ends connect with the bore of said tubular member and which pass longitudinally along the length of said tubular member in the area of the tubular between its bore and its outer diameter and whose opposite second ends exit from the front end of the tubular member directly into said sound suppression chamber adjacent one face of said baffle means whereby said gases under a high pressure and traveling at a high speed are directed to said sound suppression chamber through said tubular member, a portion of said gases upon reaching the first end of said gas passage means will enter these gas passage means and accelerate their speed of travel, relative to that remaining portion of gases continuing along the axial bore of said tubular member, so that they exit from the second end of said tubular passage means and are directed against said baffle means prior to the arrival of the remaining portion

of the gases that had continued along the axial bore of said tubular member; and  
 said bore and said gas passages being free of any valves that might function to close any of these passages during the operation of said sound suppression system.

**4,341,284**  
**SILENCER MEANS FOR INTERNAL COMBUSTION ENGINES**

James W. Moore, and Rudolph A. Peterson, Jr., both of Horicon, Wis., assignors to Deere & Company, Moline, Ill.  
 Filed Dec. 20, 1979, Ser. No. 105,772  
 Int. Cl.<sup>3</sup> F01N 1/08  
 U.S. Cl. 181—272

2 Claims



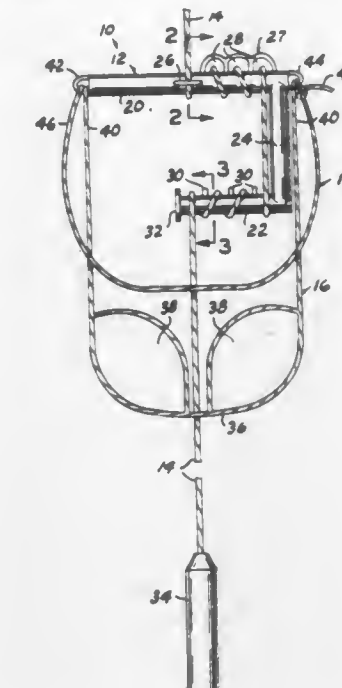
1. In combination with a two-cycle engine, a silencer including a housing defining a generally cylindrical shaped chamber closed at the ends, a first plate having a generally elliptical shape fixedly mounted rearwardly in said chamber in an angled orientation to form a converging longitudinal cross-section area in said chamber, said first plate's periphery being in continuous communication with portion of said housing, a second plate having a generally elliptical shape fixedly mounted forward in said chamber in an opposing angled orientation to said first plate to form a diverging longitudinal cross-section area in said chamber, said second plate's periphery being in continuous communication with a portion of said housing, said first and second plates being in longitudinally spaced relationship, an exhaust pipe leading from said engine's exhaust ports to said chamber, a portion of said exhaust pipe being fixedly mounted in said second plate, wherein the improvement comprises, a stinger fixedly mounted in said first plate and closed at each end having a first portion extending forward of said first plate, and a second portion extending rearward of said first plate and enclosed by said housing, said stinger having a plurality of perforations placed around each end, a tail pipe fixedly mounted in said housing rearward of said first plate.

**4,341,285**  
**EMERGENCY ESCAPE DEVICE**  
 Eli G. Krickovich, P.O. Box 106, Clinton, Iowa 52732  
 Filed Dec. 30, 1980, Ser. No. 221,493  
 Int. Cl.<sup>3</sup> A62B 1/14, 1/20  
 U.S. Cl. 182—6

2 Claims

1. An emergency escape device, comprising;  
 a generally U-shaped frame disposed in a vertical plane when in use and including at least one horizontally disposed tubular leg having spaced-apart rope guides on its periphery and having a closed loop at its respective ends;  
 an elongated escape rope capable of extending from an elevated position to the surface of the earth and being helically wound, intermediate its ends, around said frame leg through said rope guides;

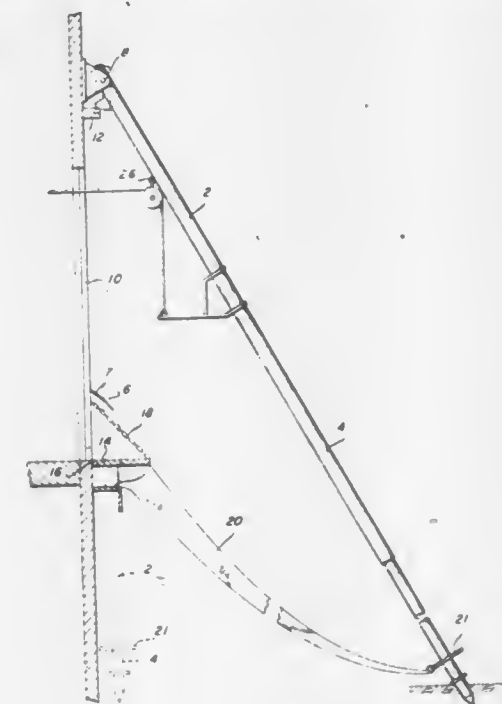
a flexible leg harness secured in depending relation to said closed loops; and,



a stabilizing weight secured to the depending end portion of said escape rope.

**4,341,286**  
**FIRE ESCAPE IMPROVEMENT**  
 Charles A. Gregory, Ormsbee Rd., Porters Corners, N.Y. 12859  
 Filed Nov. 12, 1980, Ser. No. 206,264  
 Int. Cl.<sup>3</sup> A62B 1/06, 1/20  
 U.S. Cl. 182—10

4 Claims



1. An improved Fire Escape Device comprising:  
 a multi-section axially telescopic pole;  
 a transverse pin positioned normally in said pole to hold said telescopic piece in housed position,  
 pivot means attaching said pole at its upper end to a building thereby supporting said pole to lie normally alongside said building, while permitting said pole to be pivoted outwardly from said building,  
 means restricting said transverse pin to pull the same from said pole as the latter is pivoted away from the building, thereby releasing the stored telescopic sections for gravity actuation to a slide pole position.



4,341,287

## ELEVATOR CONTROL APPARATUS

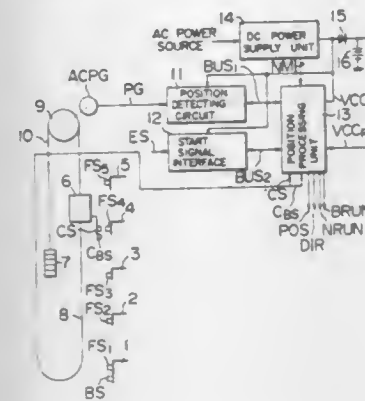
Soshiro Kusunuki; Kotaro Hirasawa; Masumi Imai, all of Hitachi; Takeo Yuminaka, Katsuta; Kazuhiro Sakata, Katsuta, and Kanji Yoneda, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 140,416

Claims priority, application Japan, Apr. 14, 1979, 54-44864  
Int. Cl.<sup>3</sup> B66B 3/02

U.S. Cl. 187—29 R

17 Claims



1. An elevator control apparatus for an elevator car which is mounted for movement between a plurality of floors of a building, comprising means for driving the elevator car, means for generating a train of pulses corresponding to the running distance of the elevator car driven by said driving means, car position detecting means including means for counting the number of said pulses to detect the instantaneous position of the elevator car, means for controlling the elevator car depending on the detected position of the elevator car as indicated by said car position detecting means, means for storing predetermined pulse number correction data representing a correction factor relating to the operating characteristic of the elevator car, and means for correcting the count of said car position detecting means with said correction data each time the elevator car is actuated from its standstill condition.

4,341,288

## ELEVATOR SYSTEM

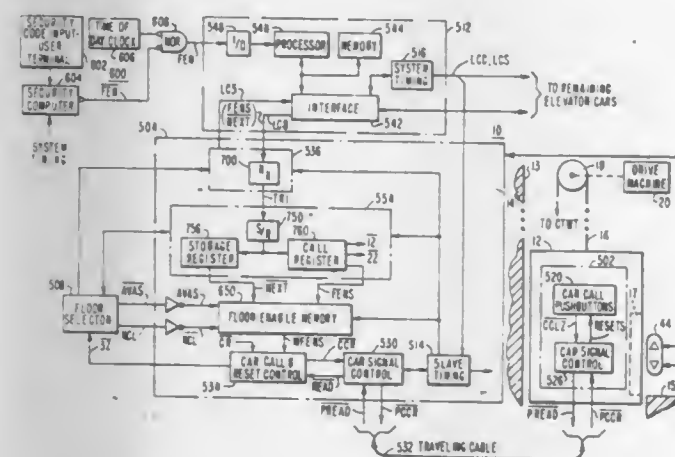
Jerry D. Bass, Martinez, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 6, 1981, Ser. No. 232,287

Int. Cl.<sup>3</sup> B66B 1/16

U.S. Cl. 187—29 R

11 Claims



1. An elevator system, comprising: a building having a plurality of floors, at least one elevator car having car call means, said at least one elevator car being mounted in said building to serve the floors therein, security means at at least one of the floors for recognizing predetermined security inputs, enabling means providing a floor enabling signal for a prede-

termined floor, with said floor enabling signal persisting for a predetermined period of time sufficient to enable a call to be registered via the car call means, in response to the recognition of a security input by said security means, memory means responsive to a car call for the enabled floor within the predetermined period of time for providing a second enabling signal for the enabled floor, and control means responsive to the second enabling signal and to the car call for causing the elevator car to serve the car call and to provide a completion signal when the service has been completed, said memory means terminating the second enablement signal in response to said completion signal.

4,341,289

## DISC BRAKES

George W. Smith, Studley, England, assignor to Lucas Industries Limited, Birmingham, England

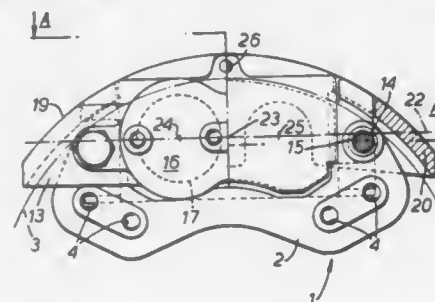
Filed Sep. 11, 1979, Ser. No. 74,532

Claims priority, application United Kingdom, Sep. 25, 1978, 38065/78; Jun. 11, 1979, 7920204

Int. Cl.<sup>3</sup> F16D 55/224

U.S. Cl. 188—73.39

4 Claims



1. A disc brake assembly for use in combination with a rotating brake disc, comprising: a carrier member for mounting in a fixed position straddling the periphery of the brake disc; first and second brake pads mounted directly on the carrier member for engaging opposite faces of the brake disc, the brake pads being located on the carrier member such that drag forces imposed on the pads in use are transferred directly to the carrier member; and a clamping member for forcing the pads towards each other and into engagement with the brake disc, the clamping member being slidably mounted on the carrier member for movement parallel to the axis of rotation of the disc and comprising a first portion located on one side of the disc and including means for forcing the pad located on that side of the disc towards the disc and operating on said clamping member to move it by reaction in the opposite direction, and a second portion located on the other side of the disc and connected to the first portion by a pair of circumferentially spaced integral connecting means, said second portion engaging the pad located on that side of the disc for forcing same towards the disc upon reaction movement of said clamping member, the connecting means when viewed in a direction parallel to the axis of rotation of the disc being disposed substantially symmetrically with respect to a central plane of clamp of the brake assembly which plane passes through both connecting means and contains the axis of pressure of the disc brake assembly, said connecting means each comprising an arcuate web of metal integral with the first and second portions of the clamping member and being spaced from and closely following the circular periphery of the disc along the entire length of said web to define with the disc periphery a small air gap, said connecting means also defining the circumferentially extreme position of the parts of the brake assembly which span the disc, said first and second portions extending radially inwardly from said arcuate webs in planes parallel to the plane of disc rotation whereby when a substantially radial cross-section taken through a web where said central plane of clamp also passes through said web is viewed in a direction normal to the

axis of disc rotation, said web and said first and second portions define an inverted U-shaped, said first and second portions of said clamping member being unconnected apart from the spaced connecting means to define an open top in said clamping member, said carrier member having a bridge portion extending into said open top and there spanning the periphery of the disc, said bridge portion having circumferentially spaced outer edges adjacent respective circumferentially spaced inner edges of the respective connecting means, said bridge portion also having circumferentially spaced inner edges for slidably guiding said brake pads, the circumferential space between said inner edges of said bridge portion on either side of said disc being open to define an open top in said carrier member whereby said pads may be radially withdrawn without removing said clamping member from said carrier member.

4,341,290

## DEVICE FOR AUTOMATICALLY CONTROLLING THE BRAKING FORCE OF AN EDDY CURRENT AND/OR FRICTION TRACK BRAKE

Max Baermann, Postfach 26, 5060 Bergisch-Gladbach 1, Fed. Rep. of Germany

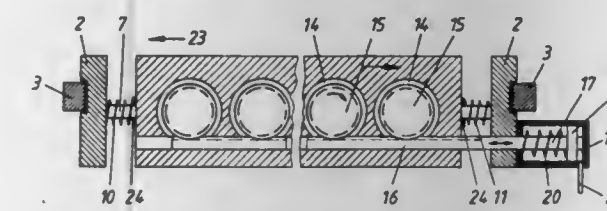
Filed Jun. 2, 1980, Ser. No. 155,471

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1979, 2923739

Int. Cl.<sup>3</sup> B60L 7/28

U.S. Cl. 188—165

9 Claims



1. In an eddy current and/or friction track brake for a moving vehicle which is infinitely variable by means of movable permanent magnets, preferably arranged such that poles of alternate polarity result in the direction of motion, and which can be lowered onto the track for the purpose of braking by frictional forces, said brake including a movable member co-acting with said magnets to move same between a brake on to a brake off position, the improvement which comprises: means mounting said brake on the vehicle such that it is shiftable relative to the vehicle in the direction of motion and of a distance corresponding to a required control range, a control element between at least one end face of said brake and a part fastened to the vehicle, said element being operatively connected with said member for moving said permanent magnets in response to forces on said brake produced during braking by frictional forces with the track, said control element acting to reduce the braking force by moving said permanent magnets toward the brake off position whereby the permissible deceleration force is not exceeded.

4,341,291

## LOAD CONTROL LINK

John F. Flory, Morristown, and Steven P. Woehleke, Convent Station, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 23, 1980, Ser. No. 152,855

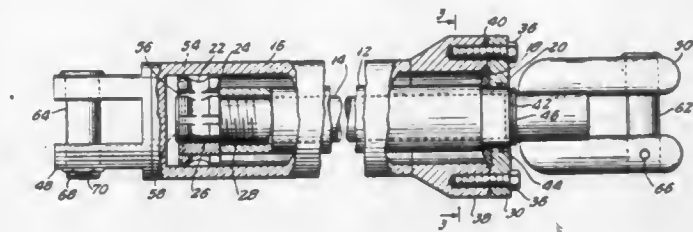
Int. Cl.<sup>3</sup> F16F 7/12

U.S. Cl. 188—375

2 Claims

1. A device for controlling tension loads comprising: a housing, a shaft within said housing, a cutting member, cutting means bearing on said cutting member, said cutting member having a cylindrical inside surface and said cutting means comprising a disc concentric within said cutting member and mounted on said shaft, said disc having a cutting edge on its outside periphery and said cutting member having an inside diameter slightly smaller than the outside diameter of said disc, and connection means attached at the opposite end of said

housing or said shaft such that tension load applied to said connection means tends to produce relative motion between said cutting means and said cutting member resulting in energy dissipation by the action of cutting material from said cutting member, said cutting member comprising a material character-



ized by having a cutting force substantially independent of cutting speed, and wherein said housing contains fluid and centering means for centrally locating said shaft in said housing including passages for enabling said fluid to flow therethrough as said shaft is withdrawn from said housing.

4,341,292

## FREELY-REVERSIBLE TORQUE-APPLYING HANDLE ASSEMBLY WITH DIRECTION OF TORQUE-APPLICATION SELECTION

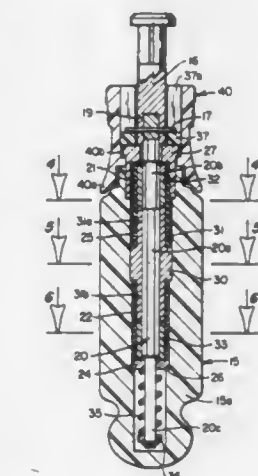
Ignacio Acevedo, 4066 Fenwick Rd., Columbus, Ohio 43220

Filed Aug. 28, 1980, Ser. No. 182,142

Int. Cl.<sup>3</sup> B25B 15/00

U.S. Cl. 192—43

10 Claims



1. A tool-handle assembly comprising a handgrip having a tool-shank disposed for axial and rotative movement in a double-spring clutch carried thereby; said double spring clutch comprising two axially-aligned springs disposed in a chamber formed in the handgrip; and a connecting sleeve arrangement between the shank and the clutch springs and the handgrip and the clutch springs whereby selective axial movement of the shank will selectively actuate the clutch springs to apply torque to the tool shank in one direction and permit free-reversal in the opposite direction or will apply torque in both directions.

4,341,293

## TORQUE-APPLYING, FREELY-REVERSIBLE TOOL AND DRIVE-HANDLE COUPLING WITH DIRECTION OF TORQUE-APPLICATION SELECTION

Ignacio Acevedo, 4066 Fenwick Rd., Columbus, Ohio 43220

Filed Nov. 21, 1980, Ser. No. 208,995

Int. Cl.<sup>3</sup> F16D 41/20; B25B 13/46

U.S. Cl. 192—43

14 Claims

1. A torque-applying assembly having members for carrying a handle element and a tool element comprising a housing; means for operatively connecting said handle element and tool element carrying members comprising: a double-spring clutch in the housing with two axially-aligned springs, a tool drive-shank disposed within the spring clutch for axial and rotative



movement therein, a connecting and drive sleeve arrangement between the shank and the clutch springs comprising a plurality of axially-aligned drive sleeves disposed in abutting relationship within said springs, said shank carrying a drive portion



tion thereon axially movable therewith into selective engagement with the sleeves to drive the shank, and means for selectively axially adjusting the shank to position said drive portion axially relative to said sleeves for driving the shank in the desired direction.

4,341,294

## SPIRAL TYPE ONE-WAY CLUTCH ASSEMBLY

John H. Kerr, P.O. Box 40, Treasure Island, R.R. #1, Kingston, Ontario, Canada (K7L 4V1)

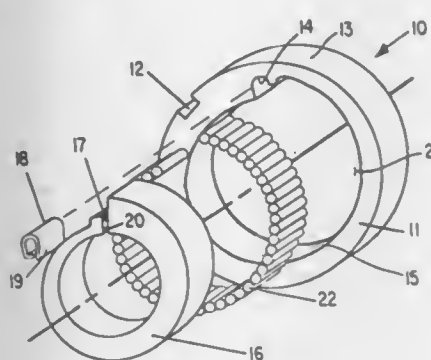
Continuation-in-part of Ser. No. 39,299, May 15, 1979, abandoned. This application Feb. 20, 1980, Ser. No. 123,064

Claims priority, application Canada, Feb. 20, 1979, 321941

Int. Cl.<sup>3</sup> F16D 15/00, 41/06

U.S. Cl. 192—45

24 Claims



1. A spiral type one-way clutching mechanism comprising:

- (a) a monolithic, annular outer body member including an inner spiral surface having at least one spiral segment defining an axially oriented opening through the outer body member;
- (b) a concentrically mounted, monolithic inner body member positioned in said axially oriented opening, including an outer spiral surface having at least one spiral segment which is tangentially congruent to the inner spiral surface of said outer body member, said congruent inner and outer spiral surfaces defining a spiral race therebetween, one end of said spiral race defined in part by said outer spiral surface having an inner abutment provided by a radially outwardly extending protrusion or flange on said inner body member, the other end of said spiral race defined in part by said inner spiral surface having an outer abutment provided by a radially inwardly directed protrusion on

said outer body member, at least one of said body members having a radially directed slit extending therethrough; said outer body member (a) and said inner body member (b) being relatively rotatably oscillatable with respect to each other;

- (c) a plurality of axially oriented roller members positioned in said spiral race, substantially but not completely filling said spiral race, said roller members contacting said inner and said outer spiral surfaces and adapted to abut said inner abutment and said outer abutment when free-wheeling; and

- (d) resilient limit means acting between said body members, for limiting relative oscillatory movement therebetween.

4,341,295

## SYNCHRONIZING DEVICE

Manfred Freitag, Friedrichshafen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen A.G., Friedrichshafen, Fed. Rep. of Germany

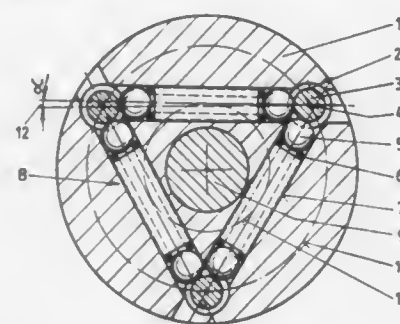
Filed May 22, 1980, Ser. No. 152,158

Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2920970

Int. Cl.<sup>3</sup> F16D 23/04

U.S. Cl. 192—53 E

28 Claims



1. A synchronizing device comprising a shift sleeve adapted to be mounted about a shaft, the shift sleeve including at least one hole transversely directed at least partially through the sleeve, and at least two substantially parallel holes in an axial direction through the sleeve, a ram being located in each of the axially directed holes in the shift sleeve, at least two pressure pieces in the transversely directed hole, one at each end of the hole, a pressure spring disposed in the hole between the pressure pieces and being substantially perpendicular to the rams, the pressure pieces meshing with a mating formation in the rams, thereby to limit the shift of the shift sleeve.

4,341,296

## FLOW DIVIDER FOR LIQUID COOLANT OR LUBRICANT

James R. Schaefer, and Leland J. Radtke, both of North Palm Beach, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 22, 1980, Ser. No. 189,242

Int. Cl.<sup>3</sup> F16D 13/74

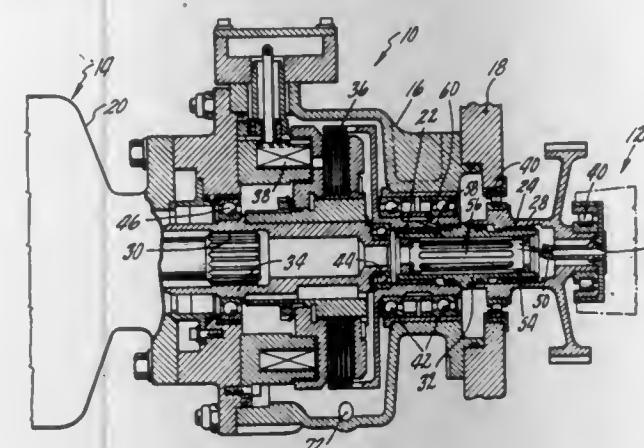
U.S. Cl. 192—113 B

3 Claims

1. Apparatus for distributing a liquid to orifices about the interior of a rotating shaft, which comprises:

- a cylindrical insert disposed at the interior of the shaft and rotatable therewith wherein the insert is open at one end and has a plurality of longitudinally extending slits therethrough, one each in alignment with a corresponding orifice to which distribution of the liquid is desired; and
- a stationary nozzle at one end of the insert which is capable

of spraying said liquid into the interior of the insert through said open end for collection in the slits of the



insert and subsequent distribution to the corresponding orifices.

4,341,297

## FEED MECHANISM

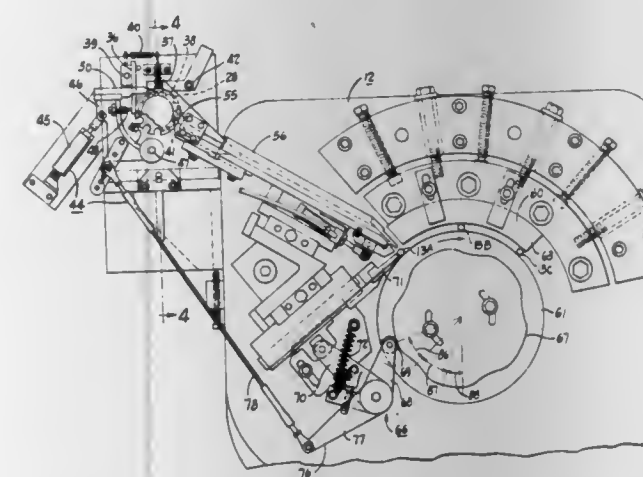
David L. Turner, Parma, Ohio, assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed Aug. 27, 1980, Ser. No. 181,823

Int. Cl.<sup>3</sup> B65G 29/00, 47/24

U.S. Cl. 198—408

17 Claims



1. A feed mechanism to feed parts to a utilization machine, comprising, in combination,

- a frame,
- a motion changing magazine supported on said frame and having a plurality of wall means establishing elongated substantially parallel part pockets disposed side-by-side,
- a guide supported relative to said frame to guide elongated parts substantially in the direction of the longitudinal axis of the parts and of said pockets,
- drive means connected to relatively move said magazine and said guide in a direction transverse to the longitudinal dimension of said pockets with said pockets and said guide sequentially established at a loading position with an upstream end of each pocket in alignment with the downstream end of said guide,
- said wall means having wall ends sequentially at the downstream end of said guide alternating with said pockets,
- means urging any said part in said guide toward said magazine to be receivable in an empty pocket at said loading position and to be blocked by a wall end at said loading position,
- feed means at the utilization machine having an intermittent part feed-in range in a 360 degree cycle,
- means to supply parts side-by-side from said magazine to said feed means,
- said feed means connected to feed parts sequentially into said utilization machine during said part feed-in range,
- and means to actuate said drive means in substantial synchro-

nism with said feed means to have at said loading position a pocket capable of receiving a part for a period of time substantially greater than the time of said feed-in range of the 360 degree cycle.

4,341,298

## FORMING GROUPS OF ROD-LIKE ARTICLES

Paul Dingli, Winslow, England, assignor to Molins Limited, London, England

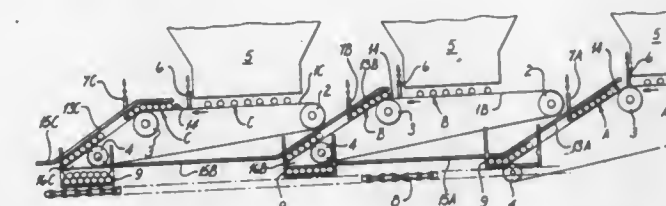
Filed Feb. 13, 1980, Ser. No. 121,335

Claims priority, application United Kingdom, Feb. 20, 1979, 7905951

Int. Cl.<sup>3</sup> B65B 19/10

U.S. Cl. 198—419

8 Claims



5. Apparatus for forming groups of rod-like articles, each group consisting of a plurality of superposed rows of articles, comprising:

- (a) a conveyor movable along a substantially rectilinear path and comprising a series of group-receiving containers;
- (b) means for driving said conveyor at a continuous speed;
- (c) means defining a plurality of parallel passageways corresponding in number to said plurality of superposed rows to be formed, said passageways being disposed successively above said conveyor for passing articles transversely of their axes to said containers;
- (d) each passageway having an inlet portion and an exit portion, said exit portion being inclined at an acute angle towards said conveyor in the direction of movement thereof;
- (e) first feed means for intermittently feeding a required number of articles through said inlet portion of each respective passageway to form a row of said articles at a predetermined position in said passageway; and
- (f) second feed means for feeding said row of the required number of articles through said exit portion of each respective passageway in timed relationship with the movement of said containers therebeneath, so that a row of articles is progressively formed in each said container as it sequentially passes each exit portion of a passageway.

4,341,299

## APPARATUS FOR PERFORMING OPERATIONS ON A STACK OF SHEETS

Roger Walker, Nantwich, and Alan Holdsworth, Broadstone, both of England, assignors to McCorquodale Machine Systems Limited, Basingstoke, England

Filed May 8, 1980, Ser. No. 147,788

Int. Cl.<sup>3</sup> B65G 47/26

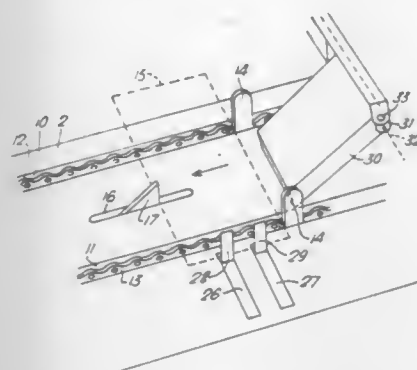
U.S. Cl. 198—434

7 Claims

1. Sheet-conveying apparatus comprising stack-pushing means for engaging the trailing edge of a stack of sheets loaded on to a stationary conveyor track, a stack-aligning element movable between a first position in which it projects from the track so as to engage and align the leading edges of the sheets of a stack and a second position in which it is withdrawn below the track, and means for halting the stack-pushing means when the stack of sheets has been advanced along the track to a station at which an operation is to be performed on the stack, and further comprising mounting means positioning the stack-aligning element at the said station and comprising resilient means permitting yielding movement of the element in the direction of movement of the conveyor while the element is in its first position, so that the sheets are urged into alignment to



form a compact stack between the said resiliently mounted stack-aligning element and the stack pushing means, and means operating in timed relationship with further movement of the



conveyor for withdrawing the resiliently mounted element to the second position to permit the stack to advance beyond the said station.

#### 4,341,300 ARTICLE HOLDER AND METHOD OF MANUFACTURE THEREOF

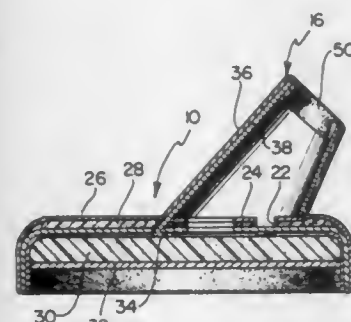
Armand W. Roy, Plainville, Mass., assignor to Royal Hinge & Die Co., Inc., Plainville, Mass.

Filed Dec. 31, 1979, Ser. No. 109,461

Int. Cl.<sup>3</sup> B65D 5/50

U.S. Cl. 206—45.14

5 Claims



#### 1. An article holder comprising:

- a base member having a generally horizontal top wall with a plurality of slots formed therein in predetermined spaced apart relation;
- at least one holder member mounted on said base member for receiving an article for display thereon, said holder member being formed of a metallic sheet material in generally upwardly tapered hollow tubular configuration with the lowermost edges thereof in substantially coplanar relation, said holder member being disposed with said lowermost edges in communication with said top wall and being shaped such that the longitudinal axis thereof is inclined with respect to the vertical;
- a plurality of spaced apart prongs joined to said lowermost edges and received in said slots in said top wall and bent into engaging relation with the underside of said top wall to firmly lock said holder member on said top wall in an inclined position relative thereto;
- a decorative covering secured to the exterior surfaces of said holder member;
- a foam-like pad overlaid on the upper surface of said top wall; and
- a decorative covering overlaid on said pad and secured to said base member, said decorative coverings providing an ornamental appearance for said holder member, said base member covering capturing said pad on said base member to provide a resilient top surface for said top wall, whereby said lowermost holder member edges are received on said covering on said top wall in cushioned

relation and buried therein to produce a one-piece effect between said holder member and said base member.

4,341,301

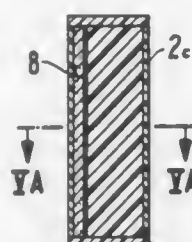
**ADHESIVE SECURING OF ANCHORS IN BOREHOLE**  
Frank Meyer, Essen, and Ingo Romey, Hünxe, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 887,319, Mar. 16, 1978, abandoned, which is a continuation of Ser. No. 758,542, Jan. 11, 1977, abandoned. This application Jun. 15, 1979, Ser. No. 49,045  
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1976, 2641776

Int. Cl.<sup>3</sup> B65D 25/08

U.S. Cl. 206—219

15 Claims



1. An adhesive cartridge for securing an object in a hole, comprising an elongated substantially rigid tubular envelope adapted for insertion into a hole and being of a material composed of thermoplastic synthetic resin and 50-80% by weight of a particulate filter therefor, said material being sufficiently brittle to facilitate shattering of the envelope in the hole but having sufficient elasticity to permit limited flexing of the envelope so as to facilitate accommodation of the envelope to a non-linear path of insertion into the hole; a mass of one component of a two-component adhesive in said envelope; and a mass of the other component of said two-component adhesive also in said envelope and juxtaposed with the first-mentioned mass to become mixed therewith on destruction of the envelope in the hole, said material also being opaque to prevent the access of light to said two-component adhesive so as to avoid polymerization and consequent spoilage of the same and thus to afford extended shelf-life to the cartridge.

4,341,302

**STORING AND MIXING APPARATUS**

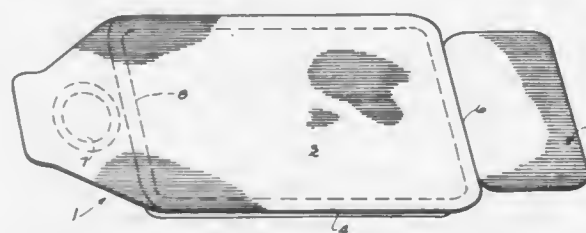
Andrew J. Baker, and Alfred G. Baker, both of Glen Waverley, Australia, assignors to United Fillers Pty. Ltd., Melbourne, Australia

Filed Oct. 15, 1980, Ser. No. 197,123

Int. Cl.<sup>3</sup> B65D 81/32, 1/36, 77/08

U.S. Cl. 206—219

6 Claims



1. A tray for storage and mixing of individual material components, said tray comprising:  
an upwardly open container bounded by side and end edges and including two or more depressions located within its edges, said depressions being adapted to respectively store individual material components for subsequent mixing with one another;  
a flat paddle having intersecting edges along its periphery, said paddle being integrally formed as part of the container along one of its edges and being detachable from the

container along said one edge by a joining line of weakness;  
one of said depressions having a cross-sectional configuration complementary to the configuration of the intersecting edges of the paddle;  
whereby material within said one depression can be removed from it by a continuous movement of the paddle through the depression while said intersecting edges thereof engage the cross-sectional configuration of said depression complementary thereto.

4,341,303

**FRANGIBLE STRIP OF CLIPS**

John P. Britt, Chelmsford, England, assignor to Pinna Corporation, Dallas, Tex.

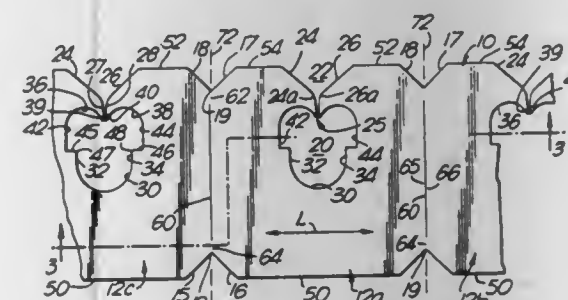
Division of Ser. No. 957,672, Nov. 6, 1978, Pat. No. 4,215,606. This application May 9, 1980, Ser. No. 148,259

Claims priority, application United Kingdom, Nov. 21, 1977, 48432/77

Int. Cl.<sup>3</sup> B65D 69/00, 83/08, 85/00; F16S 1/08

U.S. Cl. 206—343

4 Claims



1. A frangible strip of clips, the strip being essentially flat and of a plastics material, in which the entrance to the aperture of each clip is at a lateral edge of the strip, each successive clip of the strip being frangibly joined to next adjacent clips by a line extending between longitudinal edges of the strip, the improvement comprising a slit which is formed through the thickness of the material of the strip by shearing the material of the strip without removal of that material, said slit terminating inwardly of said longitudinal edges of the strip to form breaking portions which are substantially longitudinally coextensive with the slit, said slit and said breaking portions lying along said line, so there are no projections between the clips which could break at undesired or multiple positions.

4,341,304

**TOOL TRAY**

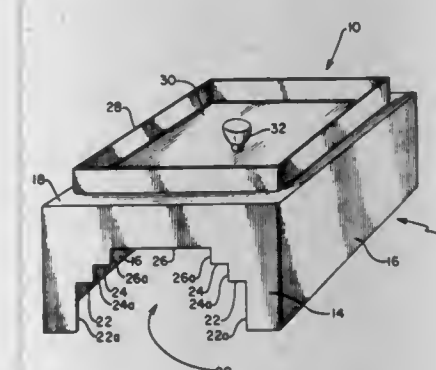
Harold L. Diller, 3980 Highland Dr., Mogadore, Ohio 44260

Filed Oct. 10, 1980, Ser. No. 196,006

Int. Cl.<sup>3</sup> B65D 43/00, 61/00

U.S. Cl. 206—349

9 Claims



1. A tool tray assembly, comprising:  
a base having top interconnecting front and back plates at opposite ends thereof, said front and back plates having

aligned openings therein and said base being open at the bottom thereof;  
a tray maintained upon said top; and  
wherein said aligned openings decrease in width incrementally in steps from the bottoms of said openings to the tops thereof.

4,341,305

**CONTAINER FOR STORING SHAVING BLADE UNITS**  
Erhard Schultz, Solingen, Fed. Rep. of Germany, assignor to Tondeo-Werk GmbH, Solingen, Fed. Rep. of Germany

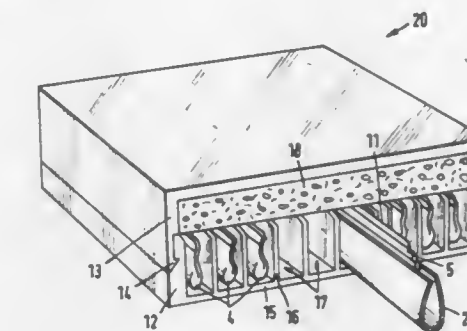
Filed Sep. 3, 1980, Ser. No. 183,831

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936167

Int. Cl.<sup>3</sup> B65D 83/10

U.S. Cl. 206/356

10 Claims



1. A container for storing of shaving blade units each including an elongated blade having a coating and a cutting edge extending along a longitudinal face of the blade and a holding element embracing the blade at lateral sides of the latter, the storage container comprising a body portion having at least one elongated compartment having a length, a height and a width, said compartment having two ends spaced from one another in direction of elongation and an opening at one of said ends so that the shaving blade unit can be inserted into said compartment through said opening and a width of the blade extends in direction of the height of said compartment, the width of said compartment being such that in inserted condition of the shaving blade unit a small space remains in said compartment to the shaving blade unit in direction of the width of said compartment; and an abutment member limiting said compartment at its one side as considered in direction of its height, the height of said compartment being such that in inserted condition of the shaving blade unit the cutting edge of the blade at least abuts against said abutment member, and said abutment member being composed of such a material that during withdrawal of the shaving blade unit from said compartment the coating of the blade is removed from the cutting edge of the blade.

4,341,306

**DISPOSABLE RAZOR PACKAGE**

Martin F. Lightsey, Staunton, Va., assignor to American Safety Razor Company, Verona, Va.

Filed Mar. 26, 1980, Ser. No. 133,779

Int. Cl.<sup>3</sup> B65D 75/58; A45D 27/29

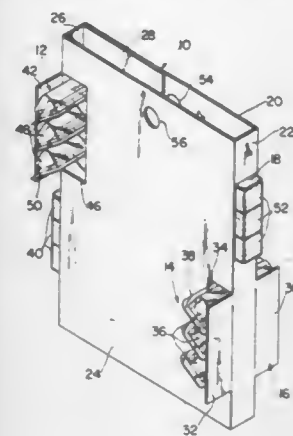
U.S. Cl. 206—372

6 Claims

1. A hollow package for safety razors, each razor having a head and a handle, the package comprising:  
front, rear and side panels articulated together;  
first means formed in the front and rear panels for securing the heads of a first plurality of razors therein;  
second means formed in a first side panel, opposite the first means, for supporting the handles of the first plurality of razors therein;  
third means formed in said front and rear panels substantially identical to and formed diametrically opposite the first



means and adjacent said second means for securing the heads of a second plurality of razors therein; and fourth means substantially identical to the second means and formed adjacent said first means in a second side panel, opposite the first side panel, for supporting the handles of

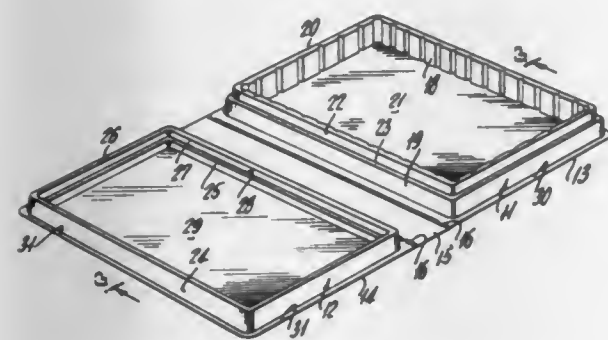


**4,341,307**  
**CONTAINER HAVING INTERLOCKING BASE AND CLOSURE**

Richard H. Shyers, 343B Long Rd., Basking Ridge, N.J. 07920  
Filed Aug. 18, 1980, Ser. No. 178,829  
Int. Cl.<sup>3</sup> B65D 1/34, 85/67

U.S. Cl. 206—387

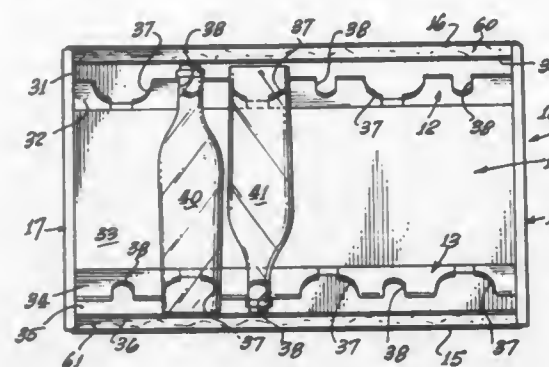
6 Claims



1. A container having a base and interlocking closure therefor, said container base comprising a bottom wall, a peripheral hollow side wall extending therefrom, said side wall having an inner peripheral wall portion and an outer peripheral wall portion joined by a flat outer face, said outer wall portion being stepped along a line spaced from said outer face forming an inwardly extending shoulder, said flat outer face and adjoining corners being of relatively heavy thickness with the wall of the stepped portion adjoining said shoulder being thinner than said outer face and said adjoining corners, said closure comprising a top wall and a peripheral hollow side wall extending therefrom, the last said side wall having an inner wall portion and an outer wall portion joined by a flat outer face, said inner wall portion being stepped near the edge thereof forming an inwardly extending shoulder, the last said flat outer face and adjoining corners being of relatively heavy thickness with the wall of the stepped portion adjoining the last said shoulder being thinner than the last said flat outer face and adjoining corners, the outer periphery of the first said flat outer face of said container base being substantially the same in size and configuration as the inner periphery of the flat outer face of said closure whereby said container base and closure will firmly interlock upon being pressed into engagement.

**4,341,308**  
**CONTAINER FOR BOTTLES**  
William G. Pasquini, 913 S. Maple St., Montebello, Calif. 90640  
Filed Jul. 18, 1980, Ser. No. 170,133  
Int. Cl.<sup>3</sup> B65D 85/62, 81/02  
U.S. Cl. 206—427

11 Claims



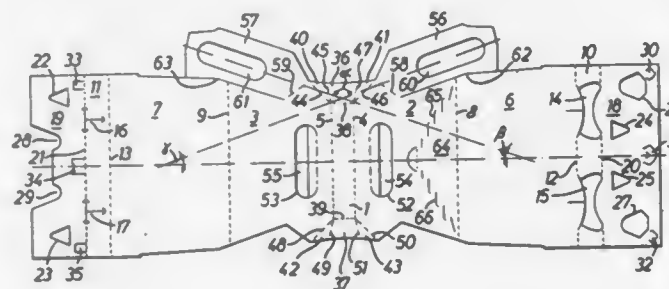
1. An improved container for holding a plurality of bottles, said container being of the type typically fabricated from corrugated particle board and having a base with a generally rectangular bottom, sides and ends, and a cover member having a generally rectangular top, sides and ends, wherein the improvement comprises:

a bottle holder having a length about equal to the length of the sides of the base, said bottle holder being held on said bottom and having a first end support flap, a first platform integral with and positioned at a right angle with respect to the first end support flap, a first, inverted V-shaped bottle support member affixed at one edge thereof and extending upwardly from said first platform and affixed at its other edge to a center platform of the bottle holder, a second inverted V-shaped bottle support member affixed at one edge thereof and extending upwardly from the center platform and affixed at the other edge to a second platform and an end support flap integral with and positioned at a right angle to the second platform, said first and second inverted V-shaped bottle support members having a plurality of bottle support slots formed therein and wherein the combined width of the first platform, the center platform and the second platform is between 15% and 35% less than the width of the base, whereby spacer means may be inserted between said end support flaps and sides of the base to provide end support for the bottles placed in the bottle support members.

**4,341,309**  
**WRAP-AROUND CARRIER**  
James R. Oliff, Austell, Ga., assignor to The Mead Corporation, Dayton, Ohio  
Filed Oct. 6, 1980, Ser. No. 194,643  
Int. Cl.<sup>3</sup> B65D 65/00

U.S. Cl. 206—429

9 Claims



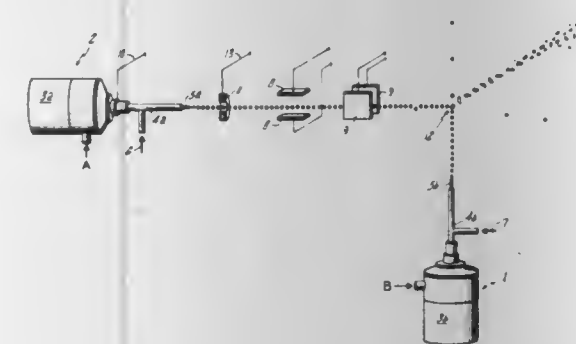
1. A wrap-around carrier for accommodating a plurality of bottles arranged in a single row, which carrier is formed from a unitary blank of foldable material and comprises a bottom wall, opposing side walls extending upwardly from said bottom wall and inclined toward each other to generally conform to the upwardly tapered configuration of the bottles, a top

panel joined to the upper edges of said side walls and overlying the tops of the bottles, a reinforced hand-gripping aperture formed in at least one of said side walls below said top panel, said hand-gripping aperture being reinforced by at least one handle reinforcing panel hinged to said one side wall and folded inwardly into overlapping relationship therewith to provide extra material around said hand-gripping aperture, characterized in that said handle reinforcing panel is hinged to its respective side wall along a fold line extending obliquely with respect to the longitudinal and transverse axes of the blank from which said carrier is formed.

**4,341,310**  
**BALLISTICALLY CONTROLLED NONPOLAR DROPLET DISPENSING METHOD AND APPARATUS**  
Joseph J. Sangiovanni, West Suffield, and Raymond J. Michaud, Hampton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.  
Filed Mar. 3, 1980, Ser. No. 126,244  
Int. Cl.<sup>3</sup> B07C 9/00

U.S. Cl. 209—638

7 Claims



1. A process of accurately dispensing individual droplets of a nonpolar liquid comprising generating a continuous monodispersed stream of liquid droplets of nonpolar liquid, generating a continuous monodispersed stream of liquid droplets of a polar liquid, imposing a charge on each of the polar liquid droplets as they are formed, causing the stream of polar liquid droplets to intersect and collide with the stream of nonpolar liquid droplets prohibiting continuation of nonpolar liquid droplets on their precollision path, altering the precollision path of a predetermined number of polar liquid droplets by changing the charge on the preselected number of polar droplets to be different from the colliding polar droplets by using a pulsed, low DC voltage sufficient to allow passage of a corresponding number of nonpolar liquid droplets on their precollision path.

**4,341,311**  
**METHOD AND APPARATUS FOR SORTING RIVETS**  
Raymond D. Gold, Waukegan; Robert A. Tufts, Bondurant, and Merle S. Schillerstrom, Des Moines, all of Iowa, assignors to Deere & Company, Moline, Ill.  
Filed Aug. 25, 1980, Ser. No. 180,775  
Int. Cl.<sup>3</sup> B07C 5/00

U.S. Cl. 209—644

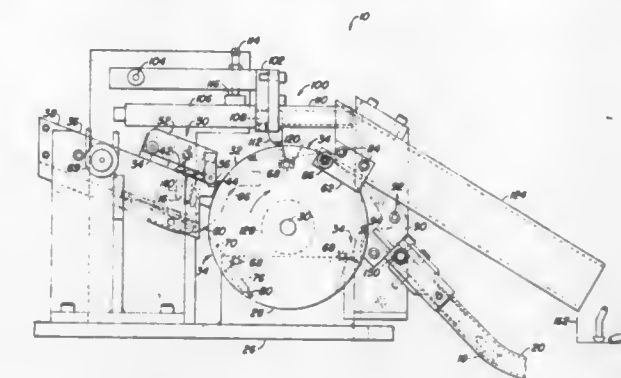
25 Claims

1. A machine for sorting headed rivets or the like articles having straight, uniform shanks from those having irregular shanks comprising:

a movable gauging member defining an outer boundary and having gauging means for receiving articles with uniform shanks and permitting the article heads associated with the uniform shanks to extend within the boundary while maintaining article heads associated with non-uniform shanks outwardly of the boundary;

first means for guiding the articles toward the gauging member for receipt by the gauging means;

second means for removing to a first location the received articles with heads extending outwardly of the boundary;



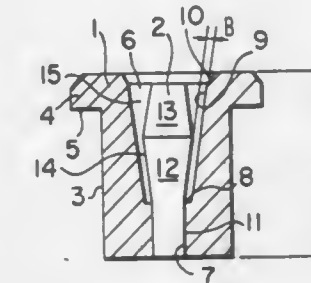
third means for removing to a second location the articles with head extending within the boundary; and drive means for moving the gauging member.

**4,341,312**  
**HOLDER FOR SMALL INSTRUMENTS SUCH AS DENTAL INSTRUMENTS**  
Arno Scholer, Riederbachweg 7, 3292 Busswil, Switzerland  
Filed Apr. 25, 1980, Ser. No. 143,777

Claims priority, application Switzerland, Apr. 30, 1979, 4023/79  
Int. Cl.<sup>3</sup> A61G 1/14; A47F 7/00

U.S. Cl. 211—60 T

7 Claims

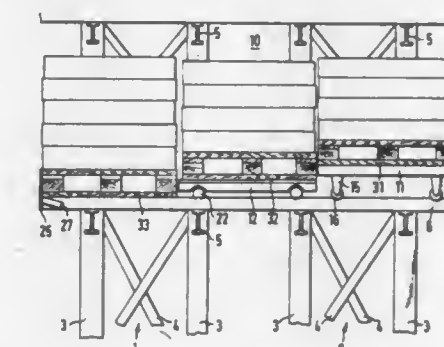


1. A holder for small instruments, comprising a holder body having therein an annular recess, the recess having an upper portion defined between side walls that converge downwardly and a lower portion defined between parallel side walls.

**4,341,313**  
**SHELVING FOR PALLETS**  
Erich Döring, Im Hölzeli, Berneck, Switzerland (9442)  
Filed Jun. 29, 1979, Ser. No. 53,423  
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1978, 2829325  
Int. Cl.<sup>3</sup> A47F 5/00

U.S. Cl. 211—151

6 Claims



1. Shelving for pallets in which compartments defined by a frame are continuous in side by side relation and on top of one



another and adapted to receive at least three pallets positioned on a plane which is inclined towards a common loading and unloading side of said frame, comprising:

- at least one pair of rails, in each compartment, which extend at an inclination toward the common loading and unloading side; and
- at least two flat pallet carriages of different heights positioned in rolling engagement on said pair of rails, said at least two flat pallet carriages including a lower carriage being adapted to roll completely under a higher carriage wherein a first pallet may be positioned on said higher carriage, a second pallet may urge said first pallet and said higher carriage away from said common loading and unloading side and be positioned on said lower carriage and a third pallet may urge said first pallet and said lower carriage away from said common loading and unloading side and be positioned on said pair of rails.

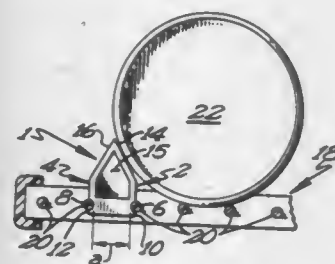
#### 4,341,314 CONTAINER STOP DEVICE FOR REFRIGERATOR TRAYS

Richard E. Feuerstein, 3857 Van Dyke, White Bear Lake, Minn. 55110

Filed Jun. 16, 1980, Ser. No. 160,008  
Int. Cl.<sup>3</sup> A47F 5/00

U.S. Cl. 211—184

8 Claims



1. In combination with a refrigerator tray comprised of a plurality of parallel, laterally spaced rods, a stop device for restraining containers from movement on said tray comprising: an upright stop member of sufficient height to bear against containers to be held in place, said stop member having opposed side walls;
- a container contact surface on at least one of said opposed side walls of said stop member adapted to bear against stored containers said container contact surface being inclined at a predetermined angle to provide substantially tangential contact with the curvilinear side walls of a round container and thereby preventing rolling displacement of such a container on the refrigerator shelf;
- an elongated recess in each of said opposed side walls of said stop member, said recesses being in horizontal alignment with each other and sized to receive the rods of said refrigerator shelf in snug engagement therewith, and said recesses being laterally spaced apart a predetermined distance substantially corresponding to the distance between the adjacent surfaces of a pair of parallel, laterally spaced rods of said refrigerator shelf, and said stop member being positioned between a pair of such shelf rods and locked in place with said pair of rods in snug, frictional engagement within said recesses; and
- each of said side walls having a lowermost side wall segment extending below said recesses, said lowermost side wall segments being spaced apart by a predetermined width greater than the lateral spacing between said recesses and greater than said distance between the adjacent surfaces of said pair of parallel, laterally spaced rods of the refrigerator shelf, and said lowermost side wall segments extending downwardly between said pair of said refrigerator shelf rods to a position therebelow and retained below said rods

with said rods engaged within said recesses to assist in holding said stop member in place.

4,341,315

#### MARINE DERRICK ARRANGEMENT

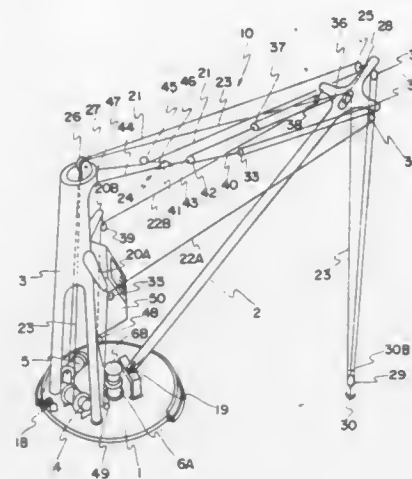
Tsiung-Siung Tseng, Room 707, 3-4-28, Sakurazara, Chuoku, Fukuoka City 810, Japan

Filed Oct. 11, 1979, Ser. No. 83,833

Claims priority, application Japan, Nov. 30, 1978, 53/149308  
Int. Cl.<sup>3</sup> B66C 23/60, 23/52

U.S. Cl. 212—193

3 Claims



1. A marine derrick comprising a rotatably mounted turntable, a derrick boom pivotally attached to said turntable, a derrick post affixed to said turntable, a guy winch, a pair of guy pendants entrained on said guy winch, each guy pendant being connected to said derrick boom for slewing said derrick boom relative to said turntable, a motor, means including a driveshaft for interconnecting said motor and said guy winch, means including gear means for interconnecting said driveshaft and said turntable such that operation of said motor produces slewing movement of said derrick boom relative to the turntable superposed on rotating movement of the turntable,
- a topping lift winch on the turntable with a topping lift wire passing over the derrick post and being connected to the derrick boom,
- a cargo winch on the turntable with a cargo fall passing over the derrick post and the derrick boom,
- power cable means including a power cable and a ring-shaped cable holder concentric to the turntable fixedly mounted around the outer periphery of the turntable and having means forming an annular recess for receiving the power cable in coiled condition around the turntable, and
- a tension type winding drum mounted on the turntable and adapted to wind and unwind the power cable in said cable holder, one end of the power cable being held on the drum and being connected to the topping lift and cargo winches on the turntable.

4,341,316

#### INSULATING VESSEL

John M. Bunge, 5 Melton Ct., Old Brompton Rd., London S.W. 7, England

Filed Apr. 28, 1980, Ser. No. 144,657

Claims priority, application United Kingdom, May 29, 1979, 7918567

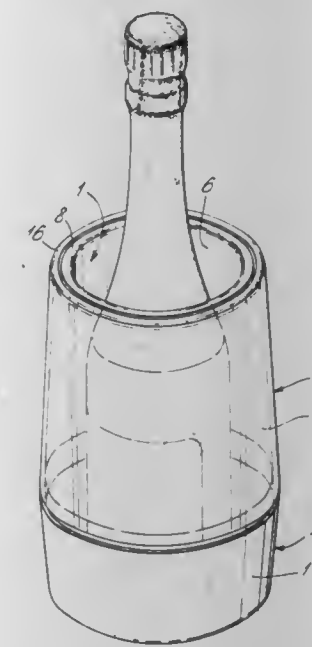
Int. Cl.<sup>3</sup> B65D 6/10

U.S. Cl. 215—13 R

7 Claims

1. An insulating vessel for a wine bottle, comprising: an outer jacket comprising a bottom wall and a continuous upstanding cylindrical side wall means; and

a container member disposed internally of said outer jacket and spaced therefrom so as to define a space therebetween, said container member comprising a bottom wall and a continuous upstanding cylindrical side wall means defining a cavity therewithin so as to snugly receive therein a wine bottle, the upper portion of said side wall means of said outer jacket



at an elevation above said bottom wall of said container being transparent while the portion of said side wall means of said outer jacket below said elevation being opaque, and said container member side wall means also being transparent, so as to enable substantially the entire height extent of said wine bottle disposed within said container cavity to be seen within said container cavity from a reference point outside said insulating vessel.

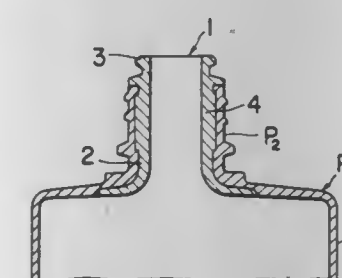
#### 4,341,317 BIAXIALLY ORIENTED BOTTLE OF SATURATED POLYESTER RESIN

Sadao Suzuki; Harumi Kinoshita; Takuzo Takada, and Fumio Negishi, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Japan

Filed May 9, 1980, Ser. No. 148,388  
Int. Cl.<sup>3</sup> B65D 25/42

U.S. Cl. 215—31

2 Claims



1. A biaxially oriented, blow molded bottle of saturated polyester resin, which comprises: a body having a threaded neck and a shoulder portion, said neck having an upper end;
- a mouthpiece snugly fitted to the inside of the neck, said mouthpiece having an upper flange which overlies the upper end of the neck, said mouthpiece being from an injection molded synthetic resin and having a length sufficient to extend from the neck to the shoulder portion of the bottle, said mouthpiece having an oriented lower portion and an intermediate portion, said lower portion being reduced in thickness relative to said intermediate portion.

4,341,318

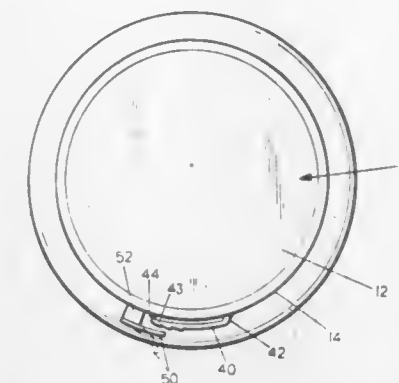
#### CLOSURE WITH CHILD-RESISTANT TAMPER-PROOF BAND

Ned J. Smalley, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 23, 1981, Ser. No. 246,814  
Int. Cl.<sup>3</sup> B65D 55/02

U.S. Cl. 215—225

5 Claims



1. A child-resistant, tamper-proof closure comprising a panel section; an annular skirt depending from the periphery of said panel, the lower portion of said skirt including a tamper-proof band removably attached to the remainder of said skirt; means on said tamper-proof band for engaging the finish of an associated container to prevent removal of the closure while the tamper-proof band is attached to the remainder of the closure, grasping means on said skirt to facilitate removal of said tamper-proof band; and shield means integrally formed with said closure for normally preventing access to said grasping means, said shield means being manipulable to permit such access.

4,341,319

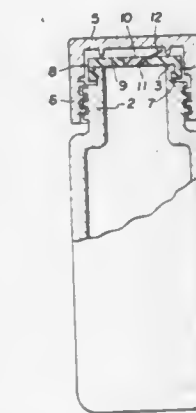
#### VIRGIN SEALED INNER CLOSURE CAP

Hirotake Ogasawara, Funabashi, Japan, assignor to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,612  
Int. Cl.<sup>3</sup> B65D 41/34

U.S. Cl. 215—307

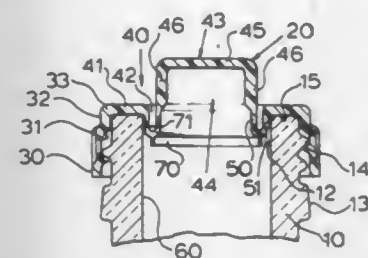
4 Claims



1. A virgin sealed inner closure cap for a small container adapted to be tightly fitted to an open mouth in the neck of said container and covered by an outer closure cap engageable with the outer periphery of said neck, said inner closure cap comprising a base cap member made of one thermoplastic resin for fitting to said open mouth in the neck of said container and provided with a pour-out hole through the upper end wall thereof and a plug member removably fitted to said pour-out hole and having a holding tongue thereon, wherein said plug member is made of another thermoplastic resin, which has no chemical affinity with that of said base cap member, and lightly attached to said base cap member to cover said pour-out hole by pressing said plug member against said base cap member while said plug member is molten by heating.

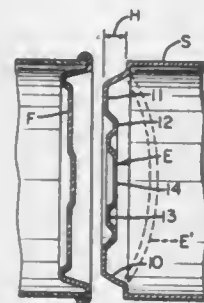


**4,341,320**  
**TAMPERING INDICATING BOTTLE CAP AND BOTTLE**  
 Sidney M. Libit, 441 Lake Side Ter., Glencoe, Ill. 60022  
 Filed Oct. 3, 1980, Ser. No. 193,810  
 Int. Cl.<sup>3</sup> B65D 41/28  
 U.S. Cl. 215—341 6 Claims



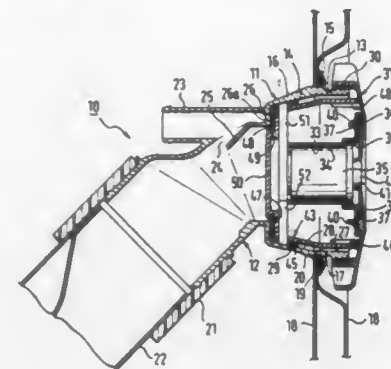
1. A molded plastic bottle cap and bottle neck combination comprising a cap having an outer peripheral axially extending skirt, an axial end wall at one end of the skirt, the axial end wall having a radially outer portion and a radially inner portion, the radially inner portion being connected to the radially outer portion through a convolution band being convoluted in the direction of the extension of the skirt from the axial end wall, the radially inner portion being movable from a first position projecting above the radially outer portion to a second position substantially coplanar with an axial outer face opposite the projection of the skirt of the radially outer portion, the convolution band being formed of yieldable material, a bottle neck adapted to receive the cap, said cap having a first stable position at the second position when fully attached to said bottle neck and seated thereon after forced movement from the first position to the second position subsequent to attachment to the bottle neck and a second stable position at the first position when attached to said bottle neck and seated thereon prior to said forced movement.

**4,341,321**  
**CAN END CONFIGURATION**  
 Laszlo A. Gombas, Rte. 7, Box 555Q, Evergreen, Colo. 80439  
 Continuation-in-part of Ser. No. 931,124, Aug. 4, 1978, Pat. No. 4,199,073. This application Apr. 8, 1980, Ser. No. 138,856  
 Int. Cl.<sup>3</sup> B65D 6/34, 8/04, 8/06  
 U.S. Cl. 220—66 14 Claims



1. An end closure for a container, wherein the container has a cylindrical side wall and the end closure is adapted to close an axial end of the side wall, said end closure comprising: an end panel of malleable material and having a generally dome-shaped configuration extending convexly axially beyond the cylindrical side wall, characterized by a bi-axial forming stress condition in the compositional material of the end panel, wherein one stress axis is longitudinally parallel to the central axis of the dome-shaped configuration of the end panel and the second axis is circumferential to the first axis.

**4,341,322**  
**FILLING CONNECTION FOR VEHICLES DRIVEN BY**  
**INTERNAL COMBUSTION ENGINES**  
 Horst Heinke, Hamburg, Fed. Rep. of Germany, assignor to ITW Ateco GmbH, Norderstedt, Fed. Rep. of Germany  
 Filed Jun. 5, 1980, Ser. No. 156,842  
 Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2922611  
 Int. Cl.<sup>3</sup> B65D 55/14  
 U.S. Cl. 220—210 9 Claims

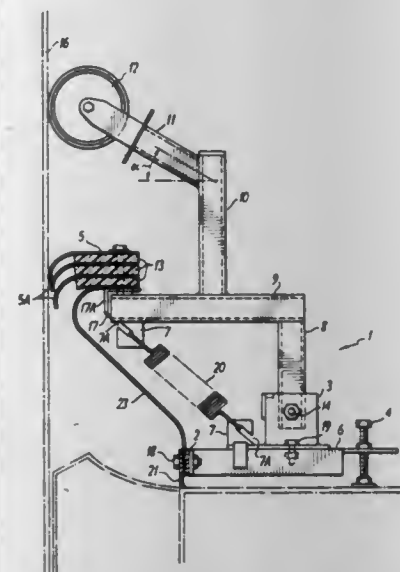


1. In combination a filling connection for vehicles driven by internal combustion engines and a lid, said connection adapted to be fastened in an opening of the car body and includes a section extending beyond the inner surface of the car body adapted to be connected to a line leading to the fuel tank, while a second section disposed on the outer surface is provided with fastening means onto which said lid may be adjustably attached, and an axially effective sealing means is arranged between said lid and said second section, characterized in that the lid (31) comprises a vented hollow axial projection (43) extending into the filling connection (10) and having a bar (51, 52) movably supported therein which is capable of being adjusted between a retracted and an extended position transversely of the axis of the projection (43) by means of a closure device (35) arranged inside the projection, and a plurality of axially extending circumferentially spaced tooth means (29) arranged on the inner surface of the filling connection (10) and having a substantial axial extent but spaced from the opening thereof with which the bar (51, 52) cooperates when in the extended position, whereby said lid can be axially adjusted relative to said second section through a variety of positions and locked in each such position.

**4,341,323**  
**SEAL FOR FLOATING ROOF TANKS**  
 Jacques C. Kerby, Torrance, Calif., assignor to Mobil Oil Corporation, New York, N.Y.  
 Filed Mar. 10, 1981, Ser. No. 242,215  
 Int. Cl.<sup>3</sup> B65D 88/46  
 U.S. Cl. 220—224 9 Claims

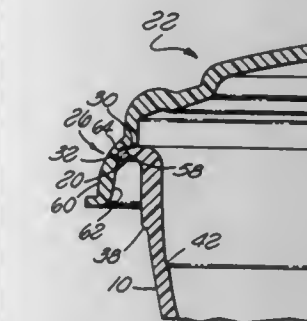
1. In a floating roof tank having a vertical wall and containing a relatively volatile liquid, a buoyant roof floating on said relatively volatile liquid and extending to the vicinity of the interior of said vertical wall, a dependent sealing element extending downwardly from the periphery of the upper surface of said roof to engagement with said vertical wall, an auxiliary seal mounted on the periphery of the upper surface of said roof and spaced above said dependent sealing element, thereby defining a vapor space between said dependent sealing element and said auxiliary seal, a closure means connecting said upper surface of said roof with said auxiliary seal, thereby substantially preventing leakage from said vapor space, the improvement wherein said auxiliary seal is mounted on said roof by a spring-tensioned bracket means having attached thereto, but spaced above said auxiliary seal, a

rolling means in contact with said wall, spring means of said spring-tensioned bracket means urging said rolling



means and said auxiliary seal into contact with the interior of said vertical wall.

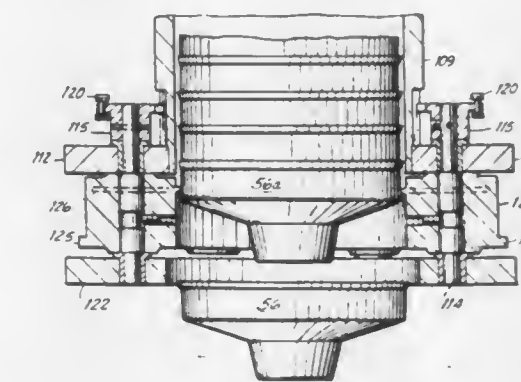
**4,341,324**  
**BOWL AND COVER ASSEMBLY**  
 Richard L. Ramirez, Whittier, Calif., assignor to Dolco Packaging Corporation, Sherman Oaks, Calif.  
 Filed Jul. 9, 1980, Ser. No. 166,884  
 Int. Cl.<sup>3</sup> B65D 41/18, 43/10, 21/02  
 U.S. Cl. 220—306 4 Claims



1. A bowl and cover assembly formed from plastic foam material comprising:  
 a bowl comprising:  
 a bottom,  
 an upper annular rim,  
 upwardly extending side walls rising from the margin of the bottom and terminating in the upper annular rim, and  
 an integrally formed annular sealing lip attached to and depending radially outwardly from the upper annular rim and joined thereto at a single annular hinge region about which the annular sealing lip is resiliently pivotal, the annular sealing lip having a single annular top sealing surface and a single annular edge sealing surface depending downwardly from the top sealing surface and defining the outermost peripheral edge of the annular sealing lip; and  
 a cover comprising:  
 a domed panel having a downwardly extending peripheral flange thereabout, and  
 an integrally formed annular skirt depending generally outwardly and downwardly from the peripheral flange for defining an upwardly facing annular skirt shoulder around the outside surface of the cover and an inwardly facing annular heel at the junction between the peripheral flange and the annular skirt, the annular skirt comprising an upper laterally depending portion having a laterally disposed down facing mating surface, and a

lower downwardly depending portion having an annular inwardly facing mating surface, the down facing mating surface adapted for contacting the top sealing surface of the bowl and the edge sealing surface adapted for contacting an annular portion of the inwardly facing mating surface for forming an airtight seal between the bowl and the cover when the annular skirt of the cover is placed over the annular sealing lip of the bowl wherein said annular heel is moveable radially outwardly along the top sealing surface for pressing down on the top sealing surface to break the seal between the down-facing mating surface and the top sealing surface and to simultaneously break the seal between the edge sealing surface and the inwardly facing mating surface by forcing the annular skirt outwardly when the domed panel of the cover is depressed by a depression force, the seal between the annular skirt and the annular sealing lip reforming when the depression force is removed to create a partial vacuum in the covered bowl.

**4,341,325**  
**APPARATUS FOR DISPENSING SUBSTANTIALLY RIMLESS ARTICLES**  
 Loren L. Lowdermilk, Middletown, N.J., assignor to International Paper Company, New York, N.Y.  
 Continuation of Ser. No. 936,838, Aug. 25, 1978, abandoned, which is a division of Ser. No. 732,706, Oct. 15, 1976, Pat. No. 4,135,347. This application Sep. 29, 1980, Ser. No. 192,346  
 Int. Cl.<sup>3</sup> B65G 59/06; B65H 3/08  
 U.S. Cl. 221—211 11 Claims



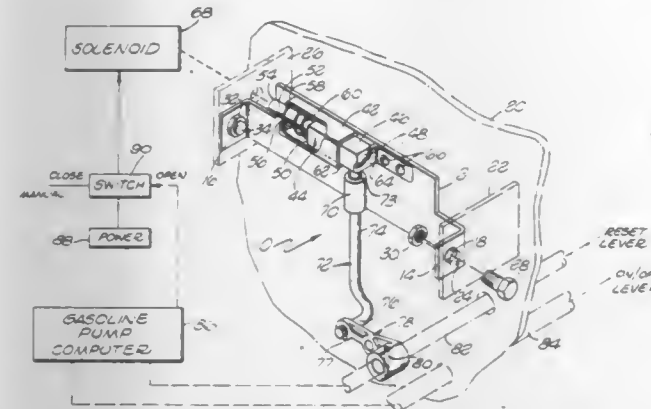
7. An apparatus for sequentially separating and discharging a substantially rimless article having a substantially cylindrically walled portion from a nested stack of said articles, the apparatus comprising:  
 (a) a sleeve for containing a stack of said articles;  
 (b) a plurality of rotatively mounted article feeding and retaining members positioned around the discharge end of said sleeve, said members comprising a plurality of cylindrical means, each having its major axis substantially parallel to and displaced from the major axis of said article stack, and each said cam having two axially displaced partially angularly overlapping, discontinuous cam lobes of different radial projection, said lobes comprising a first lobe for engaging the substantially cylindrically walled portion of the article in said stack next to the article to be discharged, and a second lobe for engaging the article to be discharged; and  
 (c) means for rotating each of said article feeding and retaining cams so that the article to be discharged may be sequentially separated from said stack and discharged.



**4,341,326**  
**GASOLINE PUMP RESET LEVER APPARATUS**  
 Sergio M. Bravo, 1823 N. Hill Dr., So. Pasadena, Calif. 91030  
 Filed Feb. 4, 1980, Ser. No. 118,293  
 Int. Cl.<sup>3</sup> B67D 5/26

U.S. Cl. 222—32

9 Claims



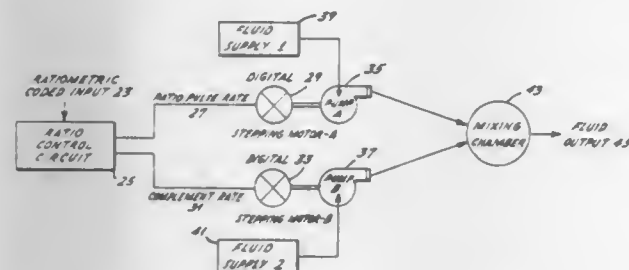
1. A fluid pump meter reset lock apparatus for use in a fluid pump assembly having a housing, a pump mounted in the housing, a meter apparatus mounted in the housing and interconnected to the pump for measuring the quantity of fluid pumped by the pump, an actuating lever apparatus for turning the pump on and off, and a reset lever apparatus having a reset lever and a reset axle rotatable in response to rotation of the reset lever for resetting the meter apparatus, the fluid pump meter reset lock apparatus comprising:

- a mounting bracket for being mounted within the fluid pump assembly;
- a plunger apparatus mounted to the mounting bracket having a plunger which is controllably moveable to a locked position and to an unlocked position;
- a reciprocating link member having a leg portion movably attached to the mounting bracket and a base portion attached to one end of the leg portion, the other end of the leg portion positioned for encountering the plunger only when the plunger is in the locked position; and
- a rotatable crank member having a first end fixed to the reset axle whereby the crank member is rotated when the reset lever is rotated and further having a second end rotatably attached to the base portion of the reciprocating link member whereby the plunger apparatus prevents the reset lever from being rotated to reset the pump meter when the plunger is in the locked position.

**4,341,327**  
**DIGITAL PROPORTIONAL METERING PUMPING SYSTEM**  
 Vernon Zeitz, 4 Plain Hill Rd., Springfield, Vt. 05156  
 Filed Feb. 28, 1980, Ser. No. 125,339  
 Int. Cl.<sup>3</sup> B67D 5/08

U.S. Cl. 222—63

9 Claims



1. A fluid metering apparatus comprising:  
 a first means for dispensing a first fluid;  
 a second means for dispensing another fluid;  
 means, associated with said first and second dispensing means, for combining said first and second dispensed outputs; and  
 digital means for individually and simultaneously control-

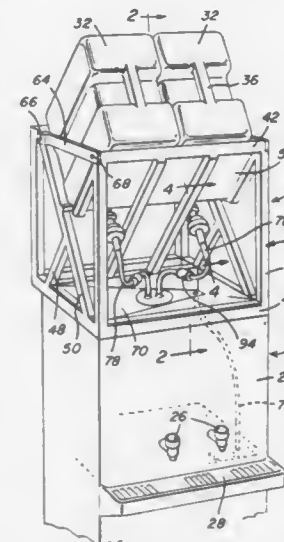
ling the operation of said first and second dispensing means, said digital control means providing a metered ratio of said first dispensed output to total dispensed output and including a first digital stepping motor operatively connected to said first dispensing means, a second digital stepping motor operatively connected to said second dispensing means, and control circuit means for individually and simultaneously controlling the operating-states of said first and said second digital stepping motors wherein said control circuit means includes means for providing a series of fixed frequency pulses, means for dividing the pulse frequency in evenly spaced pulses, said frequency divider means being connected to said pulse providing means for providing a divided down output, and means, connected to said frequency divider means, for steering a first portion of said divided down frequency output pulses to a first path while simultaneously steering a second portion of said divided down frequency output pulses to a second path, wherein said first path connects to said first digital stepping motor and said second path connects to said second digital stepping motor.

**4,341,328**  
**ADAPTER FOR BOTTLED WATER DISPENSER**  
 Richard W. Redick, Jr., Apt. B-14, 6166 Leesburg Turnpike, Falls Church, Va. 22044

Filed Jan. 30, 1980, Ser. No. 117,840  
 Int. Cl.<sup>3</sup> B67B 7/24

U.S. Cl. 222—83.5

5 Claims



1. In combination with a liquid dispenser of the type having a reservoir and discharge spigot means communicating therewith, at least one disposable container, an adapter enabling the disposable container to be used with the liquid dispenser, said adapter comprising container support structure adapted to be supported from the dispenser to directly support the container above the reservoir, a reservoir closure means for sealing the reservoir against entry of ambient air, and means connecting the reservoir with the container for enabling gravity flow of liquid from the container to the reservoir through the closure means without the liquid coming into contact with ambient air, said connecting means including a connector insertable into an enclosed area communicated with the container, said closure means for the reservoir includes a resilient stopper telescoped into the reservoir and secured in sealed relation thereto, said means connecting the reservoir with the container includes a tube having one end extending through said stopper in a direct sealed relation thereto, the other end of said tube terminating in a pointed end penetrating into the interior of the container in sealed relation thereto, said support structure includes a tray between the reservoir and the container with the tube extending therethrough in sealed relation, said tray including an inclined bottom having a drain fitting at its lowest point to drain any leaked liquid into a catch basin on the dispenser.

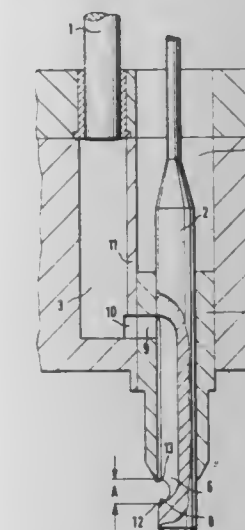
**4,341,329**  
**DISPENSING APPARATUS FOR ASEPTIC MEASUREMENT AND FILLING OF A FLUID PRODUCT**  
 Helmut Kuemmerer, Nellmersbach; Theo Moser, Steinenberg, and Adolf Genstorfer, Althütte, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 13, 1980, Ser. No. 149,227  
 Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921236

Int. Cl.<sup>3</sup> G01F 11/02

U.S. Cl. 222—275

4 Claims



1. A dispensing apparatus for aseptic measurement and filling of a container with a fluid product which may include solid components, including a housing with first and second side-by-side vertically disposed parallel bores, said first bore comprising a dispensing chamber for said fluid product and said second bore including a supply chamber, an opening between said dispensing chamber and said supply chamber, a tubular element supported in said supply chamber, a control slide slidably supported in said tubular element for reciprocating movement between an uppermost position and a lowermost position, a reciprocable piston in said bore of said dispensing chamber, said control slide further including a longitudinally extending groove-like recess, an aperture in said tubular element at the same elevation and in alignment with said opening between said dispensing chamber and said supply chamber extending to said groove-like recess, said groove-like recess disposed in a sidewall of said control slide and cooperating with said tubular element to define a flow passage so that when said control slide is in its uppermost position, a fluid connection is made between said supply chamber and said dispensing chamber and when said control slide is in its lowermost position, said groove-like recess connects said dispensing chamber with a container positioned to receive fluid conducted from said dispensing chamber by way of said flow passage.

**4,341,330**  
**AEROSOL CONTAINER**  
 Carmen T. Mascia, Clarendon Hills, and Gary K. Hasegawa, Chicago, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

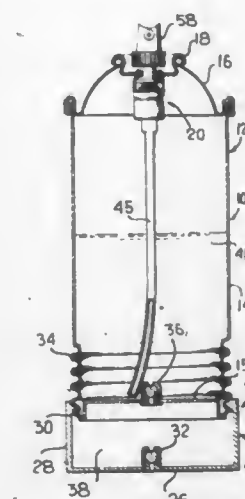
Filed Oct. 6, 1978, Ser. No. 949,304  
 Int. Cl.<sup>3</sup> B65D 83/14

U.S. Cl. 222—401

5 Claims

3. For use in an aerosol container, a dispensing valve mechanism comprising a supply passage for receiving a product to be dispensed under pressure, a dispensing valve member in said supply passage for selectively controlling the dispensing of a product, and automatic shutoff means responsive to low pressure in said supply passage, said automatic shutoff means being

disposed in said supply passage upstream of said dispensing valve member and including a spring loaded disc valve mem-



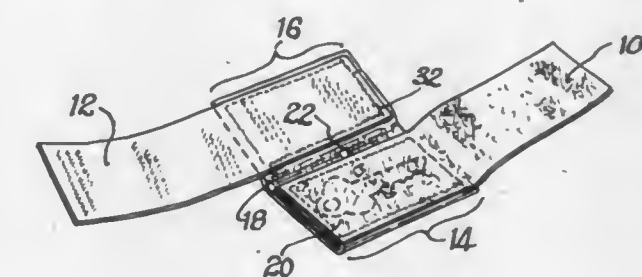
ber for closing said supply passage to said dispensing valve member in response to low pressure in said supply passage.

**4,341,331**  
**ARTICLE HOLDER**  
 Patrick P. McDougall, 6305 Mt. Ainsworth, San Diego, Calif. 92111

Filed Jul. 27, 1981, Ser. No. 286,797  
 Int. Cl.<sup>3</sup> A45F 5/00

U.S. Cl. 224—219

8 Claims



1. A hook-and-loop type article holder comprising:  
 (a) a length of hook material having a hooked face and a fabric back;  
 (b) a length of loop material having a looped face and a fabric back;  
 (c) said lengths being arranged parallel, facing substantially the same direction, and with mutually longitudinally overlapping proximal end portions; and  
 (d) a hinge means fastening the adjacent edges of said proximal end portions and defining a hinge line such that said lengths can be rotated about said hinge line into face-to-face hook-and-loop engagement to capture an article therebetween, and the distal ends of said lengths can be wrapped around a member such as a wrist or ankle and engaged in face-to-face hook-and-loop engagement.

**4,341,332**  
**STANCHION ASSEMBLY**  
 Daniel J. Kowalski, Ortonville, and Ray G. Mareydt, Warren, both of Mich., assignors to Four Star Corporation, Troy, Mich.

Filed Dec. 29, 1980, Ser. No. 220,229  
 Int. Cl.<sup>3</sup> B60R 9/04

U.S. Cl. 224—326

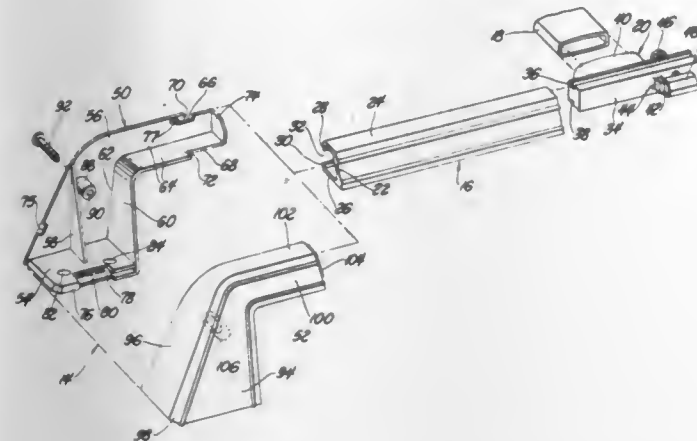
10 Claims

1. A stanchion for an article carrier of the type including a first section adapted to be secured to a vehicle surface and a second section adapted to be secured to said first section to form a hollow and enclosed stanchion, the improvement comprising:

- (a) the first section including a base, first wall means extend-



- ing upwardly from not more than one-half of the periphery of said base and leaving the remaining portion of said base periphery unenclosed by said first wall means;
- (b) means for securing said base to said vehicle surface;
- (c) the second section including second upstanding wall means having a lower periphery corresponding in shape



- and extent to that portion of the base periphery unenclosed by said first wall means; and
- (d) means for detachably joining said first and second sections to form a hollow stanchion whereby said first and second wall means entirely enclose the base of said first section.

4,341,333

## BLOCK HANDLING APPARATUS

Walter Boa, Bedford, and Peter M. Grondon, Flitton, both of England, assignors to National Research Development Corporation, London, England

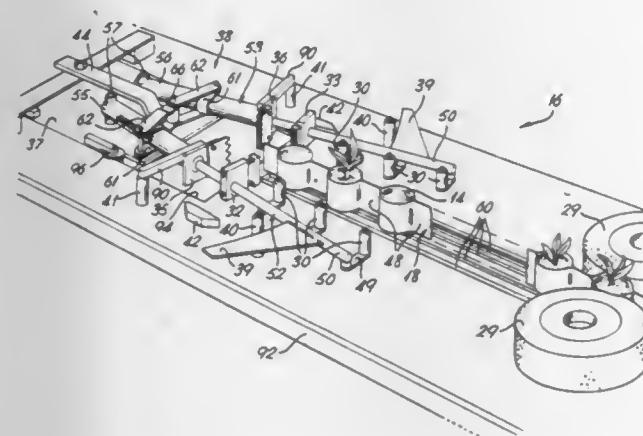
Filed Jul. 30, 1980, Ser. No. 173,741

Claims priority, application United Kingdom, Aug. 3, 1979, 7927197; Jun. 3, 1980, 8018140

Int. Cl.<sup>3</sup> B26F 3/02

U.S. Cl. 225—96

12 Claims



1. Apparatus for handling a plurality of spaced growing blocks linked together by substantially flat strips to form a bandolier, said apparatus comprising: detachment means sequentially operable to detach a growing block from an end of said bandolier; at least one gripper element mounted on support means which are selectively movable to bring said gripper element into engagement with a strip of said bandolier to move the end of said bandolier in a path towards the detachment means in an incremental step, and to move the gripper element out of engagement with the strip, said support means having a component of movement perpendicular to the bandolier's path to bring the gripper element into and out of contact with the strip and being telescopically movable with a component of motion parallel to the bandolier's path to step the bandolier towards the detachment means whereby each sequential oper-

ation of the detachment means detaches a single growing block from the end of the bandolier.

4,341,334

## APPARATUS FOR SPACING SHEETS AND MOVING GROUPS OF SPACED SHEETS

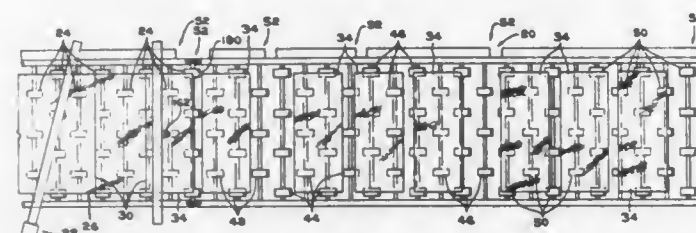
David A. Bier, Houston, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 968,335, Dec. 11, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,741

Int. Cl.<sup>3</sup> B26F 3/00; B65H 35/04, 35/10

U.S. Cl. 225—96.5

11 Claims



1. Apparatus for spacing articles and moving groups of spaced articles, comprising:

conveying means having an upstream section, a downstream section and an intermediate section between said upstream section and said downstream section;

means for advancing individual articles onto said upstream section at a receiving speed;

first motor means to drive said upstream section at the receiving speed, to accelerate said first section from the receiving speed toward a speed greater than the receiving speed defined as a spacing speed, to decelerate said first section to the receiving speed and to accelerate said first section to a discharge speed greater than the receiving speed;

second motor means to drive said intermediate section at the receiving speed, to accelerate said intermediate section to the spacing speed, to decelerate said intermediate section to the receiving speed and to accelerate said intermediate section to the discharge speed;

third motor means to drive said downstream section at the receiving speed, to accelerate said downstream section to the spacing speed, to decelerate said downstream section to the receiving speed and to accelerate said downstream section to the discharge speed;

means responsive to an article advancing onto said upstream section for (1) acting on said first motor means to drive said upstream section at the receiving speed to receive an article from said advancing means, to accelerate said upstream section toward the spacing speed to maintain spacing between articles on said upstream section and provide a spacing between a most recent article moved onto said upstream section and next article to be moved onto said upstream section from said advancing means, and to decelerate said conveying means to the receiving speed to maintain spacing between articles in group being accumulated on said upstream section and receive an article onto said upstream section from said advancing means to increase the number of spaced articles in the group being accumulated and (2) acting on said first motor means to accelerate said upstream section to the discharge speed when the group of spaced articles has been accumulated on said conveying means to advance the group from said upstream section onto said intermediate section and to maintain said upstream section at the discharge speed at least until last article of the group has moved from said upstream section;

said acting means responsive to an article advancing from said upstream section onto said intermediate section to act on said second motor means to drive said intermediate section at the receiving speed, to accelerate said intermediate section toward the spacing speed, and to decelerate

said downstream section to the receiving speed in unison with said upstream section when at least one article of the group being accumulated is on said intermediate section and to accelerate said intermediate section to the discharge speed and to maintain said intermediate section at the discharge speed as long as at least one of the articles of the accumulated group of spaced articles is on said intermediate section; and

said acting means responsive to an article advancing from said intermediate section onto said downstream section to act on said third motor means to drive said downstream section at the receiving speed, to accelerate said downstream section to the spacing speed and to decelerate said downstream section to the receiving speed in unison with said intermediate section when at least one article of the group being accumulated is on said downstream section and to accelerate said downstream section to the discharge speed and to maintain said downstream section at the discharge speed as long as at least one article of the accumulated group of spaced articles is on said downstream section.

4,341,335

## METHOD AND APPARATUS FOR CONTROLLING TENSION IN A MOVING MATERIAL

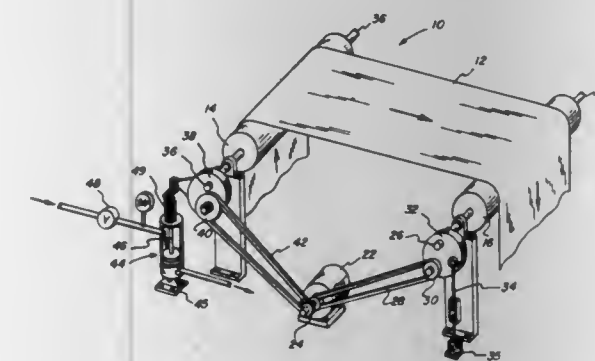
Franz J. Schmid, Moore, S.C., assignor to Sistig Corporation, Spartanburg, S.C.

Filed Oct. 7, 1980, Ser. No. 194,754

Int. Cl.<sup>3</sup> B65H 23/08, 59/00

U.S. Cl. 226—195

19 Claims



1. Apparatus for longitudinally conveying an indefinite length of material in a desired path of travel while imposing a desired constant tension thereon comprising:

first and second positively driven feed rollers located in axially fixed, spaced relation to engage and convey the material in a path of fixed length therebetween, means for rotatably driving said rollers at desired rates of speed, and

constant pressure means associated with said roller driving means for imparting a constant torque to one of said rollers to impose a corresponding tension on said material in its path between said rollers and to increase or decrease the speed of rotation of said one roller in response to longitudinal contraction or extension of the material in its fixed length path between said rollers.

4,341,336

## DIMPLER ATTACHMENT AND IMPROVED FASTENER DRIVING TOOL

Gareth J. Smith, 15533 Tupper St., Sepulveda, Calif. 91343

Filed May 12, 1980, Ser. No. 148,687

Int. Cl.<sup>3</sup> B25C 1/04, 7/00

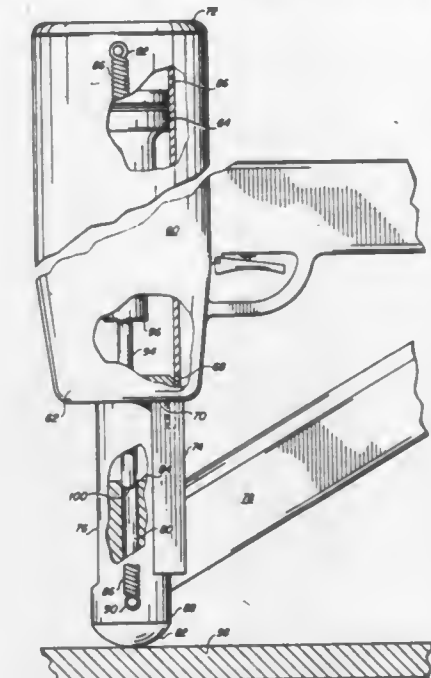
U.S. Cl. 227—66

10 Claims

1. An improved dimpler attachment for a fastener driving tool, said attachment comprising, in combination:

(a) a dimpler head defining a curved dimple-forming front end, a central passageway, extending longitudinally rear-

- wardly from said front end and an expanded pocket communicating with the rear end of said passageway;
- (b) an elongated driver slidable within said passageway and extendable from the said front end to drive a fastener into a substrate, the rear end of said driver bearing means connectable to the driving piston of a fastener driving tool;
- (c) resilient stop means connected to said driver and diametrically dimensioned to fit into said pocket but larger than



said passageway to limit forward movement of said driver and transmit dimpling force to said head;

(d) said resilient stop means comprising releasable locking means to lock the driver with said dimpler head;

(e) slide means slideably connected to said head and connectable to a fastener driving tool to permit reciprocation of said head external of said tool;

(f) fastener magazine means connected to said head and connectable to a fastener driving tool to facilitate said reciprocation.

4,341,337

## POLYGONAL PAPERBOARD DRUM

Ralph L. Beach, Jr., Convent Station, N.J., and William R. Fuson, Wilmington, Del., assignors to International Paper Company, New York, N.Y.

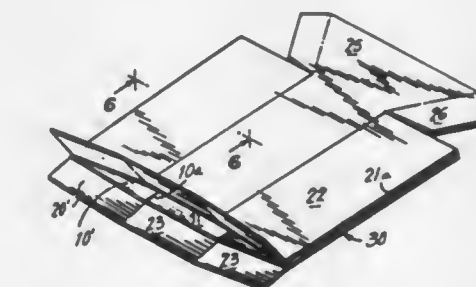
Continuation of Ser. No. 848,619, Nov. 4, 1977, Pat. No.

4,166,567, which is a continuation of Ser. No. 692,435, Jun. 3, 1976, abandoned. This application Apr. 20, 1979, Ser. No. 31,775. The portion of the term of this patent subsequent to Sep. 4, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> B65D 5/35, 13/00

U.S. Cl. 229—23 BT

8 Claims



1. A polygonal paperboard container, which comprises: a one-piece, upstanding, generally tubular, reinforcing member having at least six, foldably connected, substantially rectangular, upstanding, reinforcing flaps, arranged in a row; and



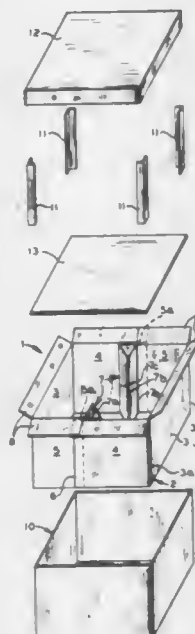
a one-piece body member having two sets of at least three, substantially rectangular, foldably connected, upstanding side wall panels, arranged in a row, and a one-piece polygonal bottom panel of at least four sides, connected along its opposite sides to the central side wall panel of each set of side wall panels;

the sets of side wall panels being located on opposite sides of the tubular reinforcing member and the side wall panels being bonded to the reinforcing flaps;

the upstanding lateral sides of the sets of side wall panels being in substantially abutting relationship but not overlapping about the foldable connection between reinforcing flaps, and the upstanding lateral sides of the reinforcing member being in substantially abutting relationship but not overlapping about the foldable connection between side wall panels; and

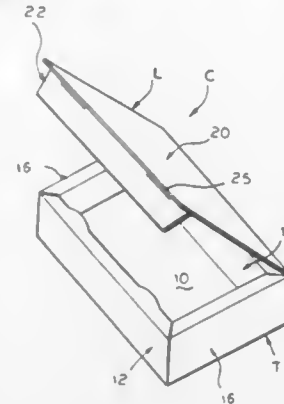
the side walls of the container consisting essentially of only the two sets of side wall panels and the reinforcing flaps which are bonded thereto.

**4,341,338**  
**CORRUGATED BOX BULK MATERIALS**  
Emmons S. Arnold, deceased, late of Grove City, Ohio (by Bonnie K. Arnold, executrix), assignor to Owens-Illinois, Inc., Toledo, Ohio  
Filed Jun. 23, 1980, Ser. No. 162,219  
Int. Cl.<sup>3</sup> B65D 5/42  
U.S. Cl. 229—23 BT 7 Claims



1. A reinforced corrugated shipping box for bulk materials comprising a pair of identical corrugated blanks each scored and folded on two vertical corners to form a vertical end wall and two vertical partial side walls terminating in vertical edges, the partial side walls of each blank being disposed in overlapping relationship with the partial side walls of the other said blank, a pair of vertical seams joining said overlapped partial side walls to form a tube, each said vertical seam being respectively disposed in spaced relationship from said vertical edge of the inside one of said overlapped partial side walls, thereby defining an integral free end portion on the inside of each side wall of the assembled tube between said vertical edge and said seam, each free end portion being folded inwardly on vertical fold lines to form a reinforcing post of triangular configuration, spaced from said end walls and said corners, that portion of said reinforcing post incorporating said vertical edge lying adjacent the respective side wall and spaced from said end walls, and means defining a bottom wall for cooperating with said tube.

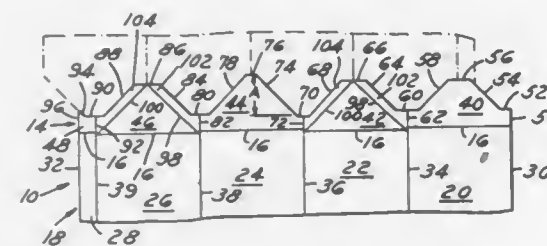
**4,341,339**  
**HOLLOW WALL TRAY AND COVER CLOSURE LOCK ARRANGEMENT**  
Frank E. Zore, Richmond Heights, Ohio, assignor to Container Corporation of America, Chicago, Ill.  
Filed Mar. 25, 1981, Ser. No. 247,393  
Int. Cl.<sup>3</sup> B65D 5/20, 5/66, 5/68  
U.S. Cl. 229—34 HW 7 Claims



1. In a closure lock arrangement for a hollow wall tray and an integral hinged cover, formed of a unitary blank of foldable paperboard, the combination of:

- (a) a tray member including a bottom wall having opposed hollow front and rear side walls and hollow end walls upstanding therefrom and foldably joined thereto and to each other to form a box-like enclosure open at the top;
- (b) said hollow front side wall comprising a pair of inner and outer panels spaced from each other and having upper edges interconnected by a relatively narrow connecting panel which has at least one integral lock tab projecting inwardly from the inner edge thereof;
- (c) a cover member including a top wall hingedly attached at its rear edge to an upper edge of said rear side wall and having a locking flange extending downwardly from a front portion thereof;
- (d) said flange being spaced inwardly from the front edge of said top wall and being substantially the thickness of said front wall and presenting at least one aperture aligned with said tray member lock tab for receipt thereof when a marginal portion of said cover top wall is seated on said tray member front wall upper connecting panel.

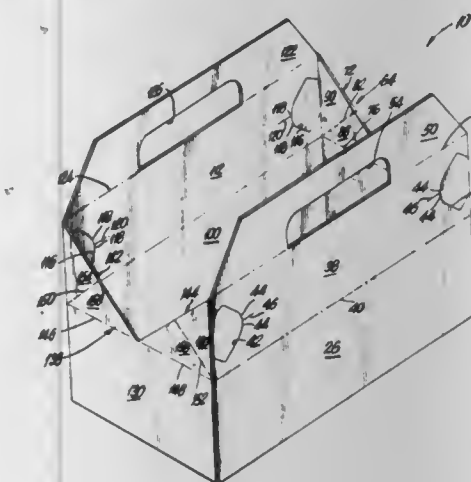
**4,341,340**  
**CONTAINER WITH INFOLDED BOTTOM CLOSURE**  
Robert E. Lisiecki, Orchard Lake, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.  
Filed Sep. 16, 1980, Ser. No. 187,648  
Int. Cl.<sup>3</sup> B65D 5/08  
U.S. Cl. 229—37 R 6 Claims



1. A blank for a container of foldable sheet material having an overall surface of thermoplastic material that becomes adhesive when subjected to heat, said blank comprising a plurality of side panels, first and second pairs of (opposed) bottom closure panels alternately connected to said side panels along a lateral score line as extensions thereof and connected one to the other by vertical score lines along their sides for a

(predetermined) partial portion of their heights, each bottom closure panel having free cut edges extending in first directions parallel to said lateral score line and inwardly toward each other from the end of each vertical score line (for a thence in second angularly covering directions and thence in third directions parallel to said first direction toward the centerline of said bottom closure panel and meeting at said centerline (such that the panels of the adjacent blank are interested therewith prior to being cut apart therefrom), said free cut edges extending in said first direction being such that they provide for an increased height of said vertical score lines and, hence, support for the container corners to be formed by said vertical score lines.

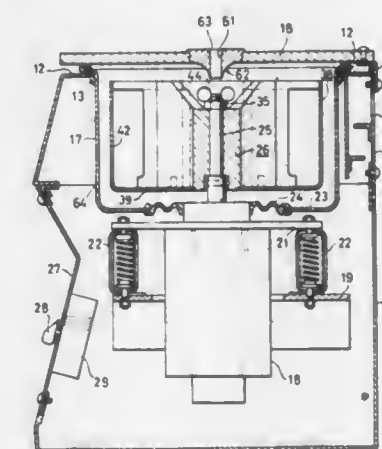
**4,341,341**  
**TAKE OUT CARTON AND BLANK FOR FORMING SAME**  
Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.  
Continuation-in-part of Ser. No. 178,099, Aug. 14, 1980, Pat. No. 4,307,834. This application Jun. 15, 1981, Ser. No. 273,960  
The portion of the term of this patent subsequent to Dec. 29, 1998, has been disclaimed.  
Int. Cl.<sup>3</sup> B65D 5/10  
U.S. Cl. 229—39 R 12 Claims



- 1. A take out carton having a reclosable flat top portion comprising:
  - a generally rectangular tubular side wall including alternatively hingedly connected opposed side panels and end panels;
  - a bottom panel hingedly connected to said side wall;
  - a pair of top panels, each respectively hingedly connected along the bottom edge thereof to the top edge of a side panel, each said top panel further including an opposed pair of tab receiving apertures, said tab receiving apertures being respectively disposed adjacent the opposed side edges of the associated top panel;
  - a handle hingedly connected to the top edge of each said top panel; and
  - a pair of closure panels, each being formed from a pair of triangular sections with the bottom edge of each said triangle being respectively hingedly connected to the top edge of one of said end panels, and with one side edge of each said triangles being respectively hingedly connected to a side edge of a top panel, and with each said triangles further including a central fold line defining a pair of minor triangle portions, each said central fold line beginning at the apex of a triangle nearest to the edge of an associated end panel and extending to the opposite side of said triangle, whereby in the closed condition of the carton, the upper edges of said top panels are in abutting relationship forming a flat configuration, with said handles extending above said flat top portions, and with each said triangles of said closure panels being folded about said central fold line such that said minor triangle portions overlap to define a double thickness closure tab, of greater cross-sectional area than the cross-sectional area of the

associated tab receiving aperture in said top panel, with each said closure tab being coplanar and interengaged with the associated top panel by having a portion thereof extending through said tab receiving aperture internally of said top panel thereby structurally rigidifying said carton and maintaining said flat top portion in a closed position.

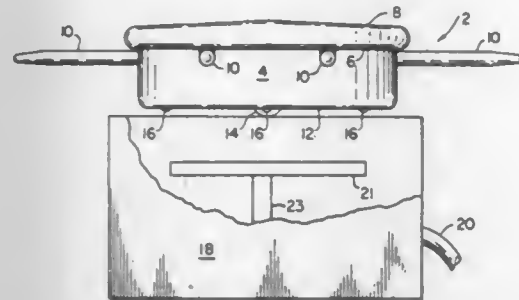
**4,341,342**  
**CENTRIFUGE**  
Minoru Hara, Sakado, Japan, assignor to Kabushiki Kaisha Kubota Seisakusho, Tokyo, Japan  
Filed Dec. 4, 1980, Ser. No. 213,143  
Int. Cl.<sup>3</sup> B04B 15/02, 15/08, 1/00  
U.S. Cl. 233—1 A 14 Claims



- 1. A centrifuge comprising:
  - an outer housing having an opening in its top panel;
  - an inner housing disposed in the outer housing, the upper end portion of said inner housing being engaged with the marginal portion of the opening of the outer housing;
  - a lid for covering the opening of the outer housing;
  - a motor disposed below the inner housing in the outer housing, said motor having a rotary shaft which extends into said inner housing;
  - a rotor disposed in the inner housing and mounted on the portion of the rotary shaft of the motor which extends into the inner housing, the rotor having formed integrally therewith a plurality of arms disposed at equiangular intervals about its center of rotation, the arms each having stepped portions formed therein at its end to extend towards adjacent arms, and the upper parts of the arms on the side of the opening of the outer housing being respectively expanded sectorially to form sectorial plate portions having arcuate marginal edges;
  - a bottomed, cylindrical wind shield disposed to surround the rotor, the upper marginal portion of the inner surface of the wind shield being held in contact with the arcuate marginal edges of the sectorial plate portions;
  - tube racks inserted between adjacent ones of the arms of the rotor to hold test tubes substantially at right angles to the rotary shaft, each tube rack having forming integrally therewith engaging portions for engagement with the stepped portions of each arm so that a centrifugal force applied to the tube rack is received by the stepped portions, the tube racks having end faces so shaped that, when said tube racks are loaded on the rotor, said end faces on the side of the open end of the wind shield cooperate with the sectorial plate portions of the rotor to almost entirely close the open end of the wind shield.

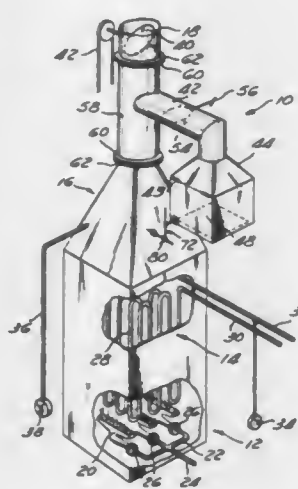


**4,341,343**  
**MAGNETICALLY DRIVEN CENTRIFUGE SYSTEM**  
 Stuart Beckman, 531 Kingsland St., Nutley, N.J. 07110  
 Filed Sep. 22, 1980, Ser. No. 189,158  
 Int. Cl.<sup>3</sup> B01D 1/00  
 U.S. Cl. 233—26 16 Claims



1. A magnetically driven centrifuge system, comprising:  
 a chamber having an open top and a closed bottom, with an axially disposed supporting pivot extending externally from the closed bottom;  
 a magnetic member;  
 the chamber including means for supporting the magnetic member therein;  
 a flange extending circumferentially around the open top;  
 a plurality of slots equally spaced around the flange;  
 a plurality of tubes containing specimens carried within corresponding slots so as to extend radially from the chamber and external thereto;  
 a cap which engages the chamber flange for closing the open top and including means cooperating with the flange for retaining the specimen tubes in the slots;  
 a base for supporting the chamber, said base having a rotatable magnet; and  
 the closed chamber spinning freely on the supporting pivot about the chamber axis upon rotation of the base magnet by virtue of the centrifugal force created by the magnetic interaction between the rotating magnet and the magnetic member supported within the chamber, whereby a centrifuging action is imparted to the specimens in the tubes.

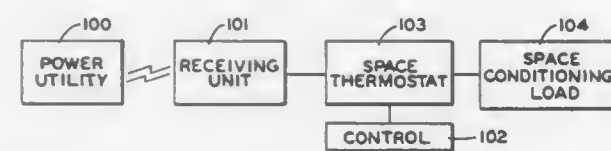
**4,341,344**  
**AUTOMATIC DRAFT CONTROLLER**  
 Robert J. Russell, 1332 Lymric Way, Bakersfield, Calif. 93309  
 Filed Feb. 25, 1980, Ser. No. 124,089  
 Int. Cl.<sup>3</sup> F23N 3/02  
 U.S. Cl. 236—45 20 Claims



15. An automatic draft control plate for regulating the velocity of the draft in a furnace, comprising:  
 a plate attached along one edge to a rotatable shaft and located in a channel adapted to be a communication with the flue of said furnace, said plate adapted to open or close in response to a change in pressure differential across it in order to maintain efficient draft conditions in said furnace;  
 a rod attached to one end of said shaft and disposed generally

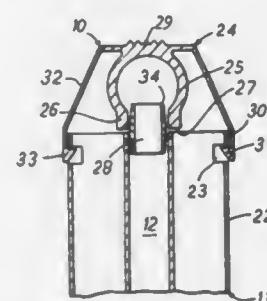
perpendicular to said plate, said rod being slidably adjustable along its axis; and  
 a counter-weight attached to said rod so as to be slidably adjustable in a direction generally perpendicular to said rod, said counter-weight adaptable to adjustably apply a moment to said plate in order to set said plate in an initially open position, said rod being adjustable to vary the rate of change of said moment during said rotation of said plate in response to changes in pressure differential in order to adjust the sensitivity of said rotation, said counter-weight comprising a second rod having a weight slidably mounted therein.

**4,341,345**  
**METHOD AND APPARATUS FOR POWER LOAD SHEDDING**  
 Jeffrey M. Hammer, New Brighton; David C. Ullestad, St. Louis Park, and Stephen J. Wesoloski, Eagan, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.  
 Filed Feb. 19, 1980, Ser. No. 122,787  
 Int. Cl.<sup>3</sup> H02J 1/00; F25B 29/00  
 U.S. Cl. 236—46 R 20 Claims



1. A method of controlling electrical power demand of a space-conditioning load comprising the steps of:  
 assuming control of the setpoint function of the space-conditioning thermostat associated with said load;  
 causing a simulated value representing the setpoint of said space-conditioning thermostat associated with said load to change substantially continuously with time at a first rate to a first predetermined space temperature limit wherein said first rate is a function of the difference between said simulated set point at the time control is assumed and such first predetermined temperature limits and the predetermined electrical power demand control interval; and  
 returning control of said setpoint function to said thermostat.

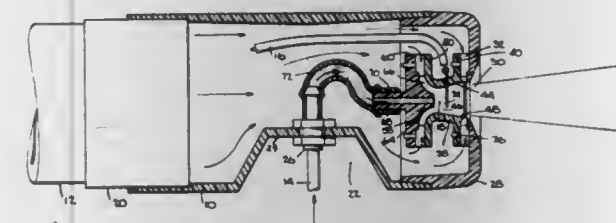
**4,341,346**  
**RADIATORS FOR USE IN HOT WATER CENTRAL HEATING SYSTEMS**  
 Victor J. Simpson, Walton-on-Thames, England, assignor to Alcan Aluminium (U.K.) Ltd., London, England  
 Filed Jul. 30, 1980, Ser. No. 173,754  
 Int. Cl.<sup>3</sup> F24H 3/00  
 U.S. Cl. 237—70 5 Claims



1. A radiator for use in hot water central heating systems and constructed from extruded aluminium or aluminium alloy section, one configuration of section having at least one tubular duct extending therethrough being used as the heat exchanger which interconnects other configurations of section which form the fluid flow and return headers and which each incorporate a locking flange which interlocks with a respective external slot pre-formed in the side of each heat-exchanger section, the flow and return headers being drilled at intervals

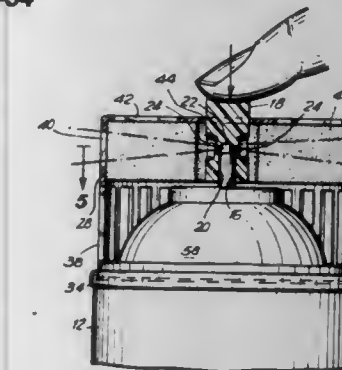
to coincide with the position of the tubular duct or ducts in each heat-exchanger section and one end of a double-ended chamfered barrel nipple being pressed as an interference fit into the end of said duct and the other end of the chamfered nipple being pressed as an interference fit into the corresponding hole drilled into the header at right angles to the cored flow path, thus forming a rigid assembly with a fluid pressure tight connection at each joint between the heat-exchanger duct and the headers.

**4,341,347**  
**ELECTROSTATIC SPRAYING OF LIQUIDS**  
 Joseph M. DeVittorio, Will, Ill., assignor to S. C. Johnson & Son, Inc., Racine, Wis.  
 Filed May 5, 1980, Ser. No. 146,801  
 Int. Cl.<sup>3</sup> B05B 5/02, 1/34  
 U.S. Cl. 239—3 12 Claims



11. A method for spraying small size liquid particles in the size range of approximately five to fifteen microns, said method comprising the steps of directing air to flow as a vortex about an axis within a chamber, supplying liquid into said vortex at its axis so that said vortex forms and entrains particles from said liquid, and applying an electrical charge to the liquid particles thus formed by causing said particles entrained in said vortex to pass by a needle shaped electrode which extends into vortex flow transversely of said axis while said particles are rotating at a high velocity but before they have been thrown outwardly against the walls of said chamber and while maintaining a high electrical potential on said electrode.

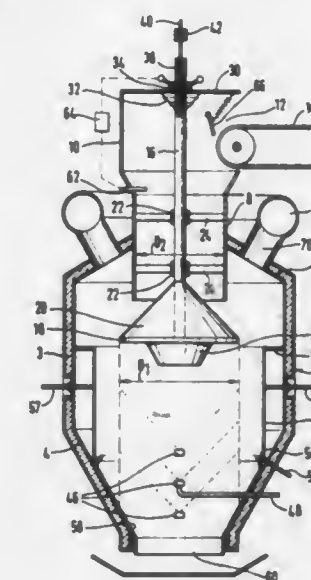
**4,341,348**  
**DIRECT AND INDIRECT FRAGRANCE DISPENSING DEVICE**  
 Neal S. Dearling, 132 E. 35th St., New York, N.Y. 10016  
 Filed Nov. 10, 1980, Ser. No. 205,430  
 Int. Cl.<sup>3</sup> A61L 9/04  
 U.S. Cl. 239—34 5 Claims



1. A fragrance dispensing device for direct or indirect dissemination of a fragrance comprising:  
 a cover member adapted to be positioned over the discharge outlet means of a fragrance container,  
 said cover member including means to provide an access passage from within said cover member to the exterior of said cover member on diametrically opposed sides of said cover member,  
 a pair of carrier members having the ability to absorb or

adsorb a liquid fragrance disposed within said cover member on diametrically opposite sides of said cover member, actuation means including a fragrance spray outlet member having at least a pair of spray outlet ports therein on diametrically opposed sides thereof and cooperable with said discharge outlet means to discharge a spray of said fragrance from said outlet ports,  
 said actuation means and cover member being movable relative to each other between a first position wherein said outlet ports are oriented in register with said access passages in said cover member to discharge said fragrance directly to the exterior of said cover member as a spray and a second position wherein said outlet ports are oriented to discharge said fragrance onto said carrier members within said cover assembly to disseminate said fragrance indirectly over a long period of time, and  
 means within said cover member to direct a flow of air into and around said carrier members.

**4,341,349**  
**APPARATUS FOR THE DAMPING OF BULK MATERIAL**  
 Riesel Hartmut, Hattingen, Fed. Rep. of Germany, assignor to Maschinenfabrik Koppert GmbH & Co. KG., Hattingen, Fed. Rep. of Germany  
 Filed Jul. 1, 1980, Ser. No. 164,973  
 Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2926713  
 Int. Cl.<sup>3</sup> B05B 3/04; B65G 25/00  
 U.S. Cl. 239—222.17 20 Claims



1. Apparatus for the damping of bulk material in which a liquid is to be sprayed into a falling stream of said material, the apparatus comprising an upright tubular shaft through which the material is to fall in a stream; a plate arranged coaxially below the lower end of the tubular shaft and defining an annular gap between the tubular shaft and the plate, through which gap the material will pass after falling through the tubular shaft; at least one spray nozzle arranged below the plate in a spraying region, and a housing which encloses the lower end of the tubular shaft, the plate and the spraying region.

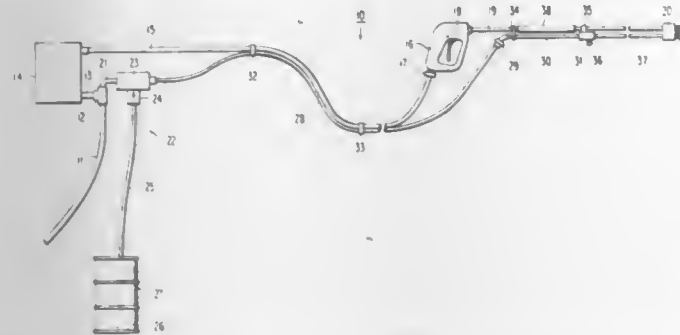
**4,341,350**  
**CHEMICAL INJECTION SYSTEM FOR HIGH PRESSURE WASHERS**  
 Otto Wemmer, 3710 Greenbriar Dr., Columbia, S.C. 29206  
 Filed Sep. 5, 1980, Ser. No. 184,457  
 Int. Cl.<sup>3</sup> B05B 9/04  
 U.S. Cl. 239—312 17 Claims

1. An improved chemical injection system for injecting a chemical solution into a high velocity spray of liquid provided by a pressure washer having pressurized liquid delivery means for highly pressurizing a liquid supplied to said pressurized liquid delivery means from a source of relatively low pressure



liquid and a high pressure nozzle for forming said high velocity spray by discharging said highly pressurized liquid to ambient pressure, said chemical injection system comprising:

- chemical nozzle means for emitting said chemical solution as a chemical spray intersecting said high velocity spray along a line of intersection extending across at least about 50% of the transverse width of said high velocity spray;
- a spray head assembly for mounting said chemical nozzle means in spaced relation to said high pressure nozzle so that said high velocity spray does not impinge upon said chemical nozzle means;
- chemical conduit means for providing a liquid flow path between said chemical nozzle means and said source of relatively low pressure liquid;



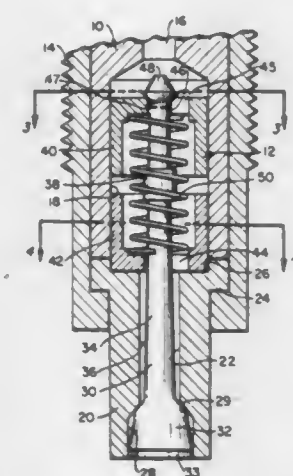
an eductor means in said chemical conduit means for drawing a chemical agent into said flow path and mixing said chemical agent with said low pressure liquid to form said chemical solution, said eductor means including suction means for drawing said chemical agent into said flow path from a reservoir containing a body of said chemical agent at ambient pressure in response to flow of said low pressure liquid through said chemical conduit means; and, chemical control valve means positioned in said chemical conduit means between said eductor means and said chemical nozzle means, said chemical control valve means being selectively actuable for allowing said low pressure liquid to flow through said chemical conduit means so as to draw said chemical agent into said flow path and emit said chemical solution from said chemical nozzle means as said chemical spray.

**4,341,351**  
**OUTWARDLY OPENING POPPET PINTLE NOZZLE**  
Frank DeLuca, Enfield, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Jun. 2, 1980, Ser. No. 155,433  
Int. Cl.<sup>3</sup> F02M 61/06

U.S. Cl. 239—453

11 Claims



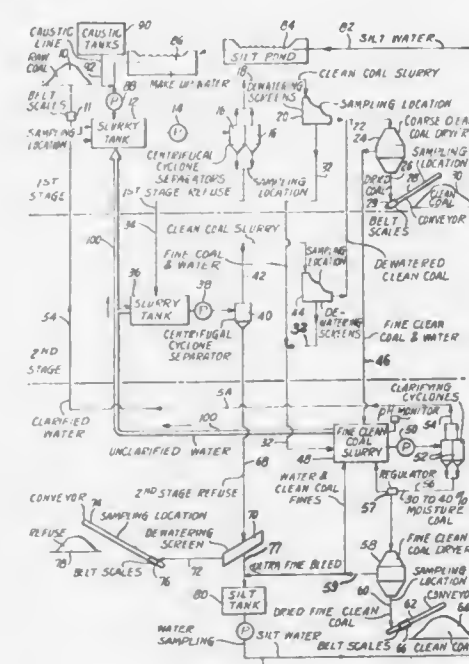
1. In a fuel injection nozzle, a nozzle holder body having a throughbore forming a fuel passageway provided with an upper inlet end and having an enlarged counterbore at its lower end forming a valve mounting chamber, a holder body tip detachably connected to the nozzle holder body having a

throughbore and a counterbore at its upper end of the same diameter and registering with the counterbore of the nozzle holder body, valve mounting means comprising oppositely facing cup members having a spiral spring therebetween, one cup member being slidably mounted in the counterbore of the nozzle holder body and forming a combination upper spring seat and valve hanger, and the other cup member being seated in the counterbore of the holder body tip forming a lower spring seat and partially extending into the counterbore of the nozzle holder body to coaxially align the counterbores, a pintle valve having a stem disposed in the throughbore of the holder body tip and extending through openings in the oppositely facing cup members, said stem having an enlarged tip at its upper end engaging on the upper spring seat and valve hanger, a valve seat formed at the lower end of the throughbore of the holder body tip, and a head on the lower end of the pintle valve stem for engaging the valve seat.

**4,341,352**  
**METHOD OF COAL WASHING AT LOW SPEED PUMPING**  
Delbert I. Liller, Rte. 4, Box 64, Deer Park, Md. 21550  
Division of Ser. No. 63,707, Aug. 6, 1979, abandoned. This application Jun. 10, 1980, Ser. No. 158,250  
Int. Cl.<sup>3</sup> B02C 19/12

U.S. Cl. 241—21

5 Claims



1. A method of water washing crushed coal for gravitational separation in a centrifugal separating cyclone at low speed pumping at a pressure of 8-18 psig between the inlet and the vortex finder outlet, said cyclone having a circular bowl and being fitted with a vortex finder, a vortex finder cylindrical sleeve, a dish, an orifice and a feed pipe, said cyclone having a height to diameter ratio of 0.90 to 0.95, in which light fractions are removed through the vortex finder at the top of the cyclone and heavy fractions pass through the orifice at the bottom, said method comprising:

- installing a removably one-piece dish-orifice unit made of erosion resistant material selected from the group consisting of ceramic, refractory carbide alloy, urethane rubber, nickel hardened cast iron and nickel hardened cast steel,
- providing the geometry of the dish portion of said dish orifice unit by limiting the height of the dish portion to between 0.15B and 0.67B, where B is the inner diameter of the circular cyclone bowl, and providing a first included angle of the dish at the top edge of 85° within a range of +150° or minus 15° and providing a second included angle of the dish below the first included angle of 110° within a range of +15° and 15° and, the third included angle in the

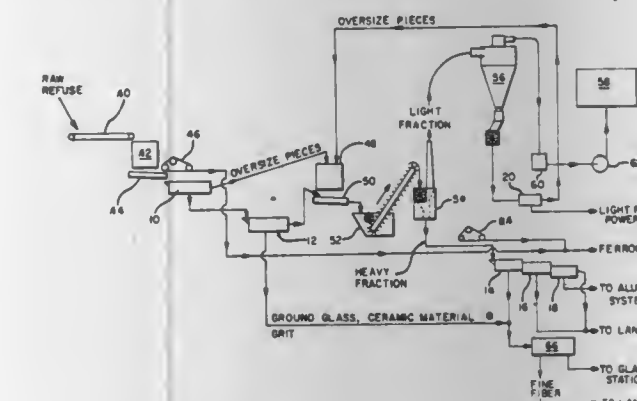
- throat of the orifice of 12° with a variation of from plus 7° to 12° to minus 3° which is 9°;
- (c) adjusting the ratio of the diameter of said vortex finder sleeve diameter in relationship to the cyclone bowl diameter from 0.3B to 0.5B to vary the percent recovery of the washed coal;
- (d) mounting said vortex finder sleeve within said vortex finder;
- (e) adjusting the height of the vortex finder sleeve in relation to the top edge of the dish from zero up to 0.26B, and after the aforesaid adjustment; and
- (f) pumping crushed coal in water through said cyclone at a solids concentration of 5% to 40% and at a differential pressure of 0.3 to 1.0 atmospheres under streamlined centrifugal flow between 6 and 16 feet of water per second.

**4,341,353**  
**METHOD AND APPARATUS FOR RECOVERING FUEL AND OTHER RESOURCES FROM REFUSE UTILIZING DISK SCREENS**  
Frank G. Hamilton, Memphis, Tenn., and John Kelyman, Jr., Warren, Oreg., assignors to Rader Companies, Inc., Portland, Oreg.

Filed Feb. 12, 1979, Ser. No. 11,427  
Int. Cl.<sup>3</sup> B02C 23/14

U.S. Cl. 241—24

15 Claims



1. In a refuse processing apparatus, means for shredding the refuse into pieces;

a first disk screen for separating the shredded refuse into underflow and overflow, the overflow consisting of scalped-out oversize pieces of refuse which are larger than a predetermined maximum size and the underflow consisting of the remainder;

means for re-shredding the overflow from the first disk screen into pieces which are predominantly smaller than the predetermined maximum size;

a second disk screen for separating the underflow from the first disk screen into underflow and overflow, the underflow consisting primarily of ground glass and other fine material; and

means for combining the re-shredded overflow from the first disk screen with the overflow from the second disk screen.

**4,341,354**  
**DEVICE FOR CUTTING OUT AND TRANSPORTING A SILAGE BLOCK**  
Fredericus Liet, and Cornelis H. Liet, both of Losser, Netherlands, assignors to Triolet Silo Europe BV, Losser, Netherlands

Filed May 7, 1980, Ser. No. 147,086  
Claims priority, application Netherlands, May 18, 1979, 7903956

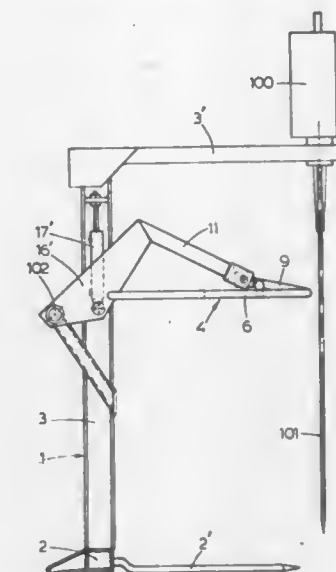
Int. Cl.<sup>3</sup> A01F 29/00

U.S. Cl. 241—101.7

31 Claims

3. In a device for cutting out and transporting a silage block of the type having an upstanding main frame which is adapted to be connected to a tractor and which is provided with an at least approximately horizontal cross-beam at the lower end

thereof to which a plurality of parallel tines are connected to extend substantially perpendicular thereto, an at least approximately horizontal cutting means support frame supported near the upper end of the main frame along which a cutting means is adapted to be reciprocated, and a pressure frame supported on the main frame, the improvement in a pressure frame comprising pressure frame support means adapted to be supported by the upstanding main frame underneath said cutting means support frame, a pressure frame supported by said support

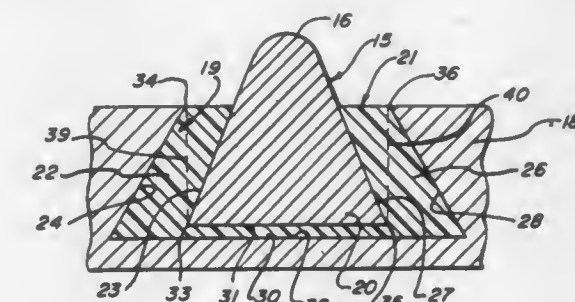


means having a shape so as to extend near the path of travel of the cutting means and comprising two at least approximately symmetrically arranged pressure frame parts which are displaceable with respect to each other, an actuating means operably connected to said two pressure frame parts to displace said pressure frame parts, and an elastically deformable intermediate part at the ends of said pressure frame parts, which are remote from said support connecting said pressure frame parts to each other to facilitate relative displacement of said pressure frame parts.

**4,341,355**  
**ARRANGEMENT FOR SUPPORT OF CONTACT ELEMENTS FOR MATERIAL TREATING APPLICATIONS**  
Michael E. Hornberger, Carlisle, Pa., assignor to The Frog Switch & Manufacturing Company, Carlisle, Pa.  
Filed Mar. 13, 1980, Ser. No. 129,830  
Int. Cl.<sup>3</sup> B02C 17/22

U.S. Cl. 241—102

12 Claims



1. In a device for treating materials, a metal support element formed to provide a socket in an upper face thereof, a metal contact element disposed in said socket, a first pair of side surfaces being defined by opposite internal side surfaces of said support element within said socket and a second pair of side surfaces being defined by opposite external side surfaces of said contact element, said first and second pairs of side surfaces being positioned to provide a pair of spaces therebetween, and a solid resilient plastic material disposed in said pair of spaces and acting between said first and second pairs of side surfaces



to hold said contact element against upward movement out of said socket, said side surfaces being generally planar and at least one of said pair of side surfaces being generally in planes converging upwardly and inwardly to intersect in a line above said socket with upward movement of said contact element relative to said support element being effective to apply compressive forces to said plastic material with minimal development of tensile and shearing stresses in said plastic material.

4,341,356

## PULVERIZER

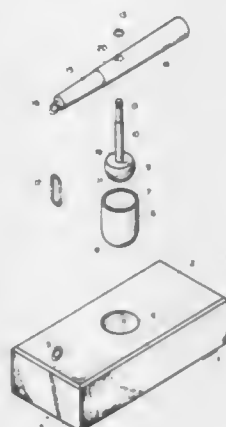
Edward R. Hlott, Cottageville, S.C., and Sara E. Scheckel, Sanford, Fla., assignors to Hlott & Bridges, Inc., Cottageville, S.C.

Filed Jun. 16, 1980, Ser. No. 160,076

Int. Cl.<sup>3</sup> B02C 19/08

U.S. Cl. 241-169.2

9 Claims



1. A device for use in pulverizing materials comprising:

- a. a base;
- b. a hole in said base;
- c. holding means shaped to fit securely in said hole, comprising a rounded bottom and a circular interior surface of the same diameter from said rounded bottom to the top of said holding means, and operative to hold said materials; and
- d. a pulverizer comprising:

- (1) a rounded pulverizing bottom in the shape of a hemisphere and of similar shape, but of slightly smaller dimensions, than said rounded bottom of said holding means;
- (2) a rounded upper portion comprising a rounded side with any section of said rounded side being contiguous with said rounded pulverizing bottom, said rounded pulverizing bottom and said rounded upper portion being in the shape of a truncated sphere, said rounded side being operable as a pulverizing side segment in contact with said holding means rounded bottom and the lower portion of said circular interior surface of said holding means; and
- (3) a shaft secured to said rounded upper portion, said shaft movable causing said rounded pulverizing bottom to move against said holding means rounded bottom and said rounded side of said rounded upper portion to be used as a pulverizing side segment in contact with said holding means rounded bottom and said lower portion of said circular interior surface of said holding means dependent on the movement of said pulverizer by said shaft,

whereby said rounded pulverizing bottom and said rounded upper portion of said pulverizer are shaped and sized to fit snugly within said holding means rounded bottom and said lower portion of said circular interior surface of said holding means, whereby when said materials are placed into said holding means and said shaft is moved with pressure in any direction, said materials are pulverized between said pulverizer and said holding means.

#### 4,341,357 WINDING CORE FOR MAGNETIC TAPE ADAPTED FOR STACKING

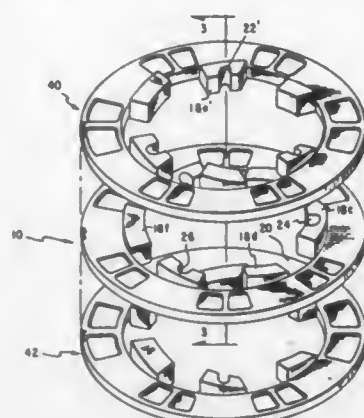
Joseph De Filippo, Monroe, Conn., assignor to CBS Inc., New York, N.Y.

Filed Sep. 25, 1980, Ser. No. 191,052

Int. Cl.<sup>3</sup> B65H 75/18

U.S. Cl. 242-68.5

9 Claims



1. A winding core for magnetic tape, adapted for nesting between like first and second sandwiching cores, comprising: an annular body having first and second substantially parallel annular surfaces, an outer circumferential surface for winding tape therearound having a height substantially equal to the width of the tape, and an inner circumferential surface from which a plurality of lugs extend radially inwardly, each of which lugs has a cross-sectional shape, at the median plane of said annular body, of a sector of an annulus, and being spaced from adjacent lugs by gaps which have substantially the same shape and dimensions as said lugs, said lugs each projecting equally from the said first and second annular surfaces of said body, over at least a portion of its circumferential dimension, a distance which is greater than one-half the height of said outer circumferential surface, each of the lug projections from the first annular surface for mating with a gap of the first sandwiching core and each of the lug projections from the second annular surface for mating with a gap of the second sandwiching core, the innermost end of said lugs being circularly curved and together defining a discontinuous inner circumferential core surface.

4,341,358

## HUB FOR MAGNETIC TAPE

Shigemasa Shoji, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

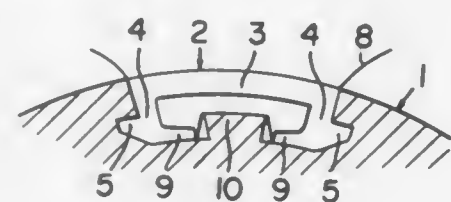
Filed Sep. 26, 1980, Ser. No. 190,956

Claims priority, application Japan, Oct. 5, 1979, 54-137963[U]

Int. Cl.<sup>3</sup> B65H 75/28

U.S. Cl. 242-74.1

4 Claims



1. In a hub for securing a magnetic tape comprising a recess formed in the peripheral part of the hub, said recess including side wall grooves and a bottom, and a magnetic-tape clamp formed of a resilient material for fitting into the recess, an improvement which comprises an upper clamp rib formed of resilient material and having an outer surface with the same curvature as that of the hub; legs formed at both ends of the upper rib; projections extending outward from the legs by a

first distance to be fitted into the side wall grooves of the recess; a convex portion formed in the central part of the recess bottom; and lower ribs extending inward from the legs to terminate in the vicinity of, and spaced from, said convex portion formed in the central part of the recess bottom by a second distance, said second distance being less than said first distance and being sufficiently large for said projections to be fitted into said side wall grooves.

4,341,359

## GUIDE ARRANGEMENT FOR A SAFETY BELT

Walter Jahn, Ehningen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

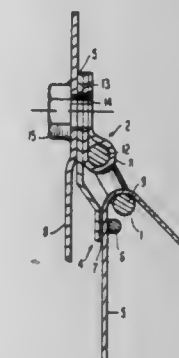
Filed Apr. 21, 1980, Ser. No. 142,126

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2915988

Int. Cl.<sup>3</sup> A62B 35/00; B65H 75/48

U.S. Cl. 242-107

5 Claims



1. In a guide device for a safety belt of a safety belt system for a motor vehicle which includes a delivery roll means for accommodating the safety belt, a deflector fitting having a deflector crosspiece, and a guide device having a guide slot of a width which is narrower than a doubled thickness of the safety belt, the improvement comprising said guide device being mounted together with said deflector fitting to a fixed vehicle part and extending from said fixed part to a free end, a runner being mounted on the free end of the guide device and defining said guide slot in conjunction therewith, said guide slot being located upstream of said deflector fitting relative to the direction of travel of said safety belt from said delivery roll means, and means for enabling the position of said guide slot to automatically adjust to the path of the safety belt at any given moment by shifting with respect to a longitudinal center axis of the deflector crosspiece by an amount which is at least equal to the radius of curvature of the safety belt that is a function of the stiffness of the safety belt and retraction force in a winding-up direction of the delivery roll means in a region of deflection of the safety belt at the deflector crosspiece, whereby friction between the safety belt and portions of said guide device are minimized.

4,341,360

## LOCKING MEANS FOR SAFETY BELTS

Stig M. Lindblad, 410 Bay La., Muskegon, Mich. 49445

PCT No. PCT/SE80/00065, § 371 Date Nov. 5, 1980, § 102(e)

Date Nov. 5, 1980, PCT Pub. No. WO80/01877, PCT Pub.

Date Sep. 18, 1980

PCT Filed Mar. 5, 1980, Ser. No. 212,705

Claims priority, application Sweden, Mar. 5, 1979, 7901949

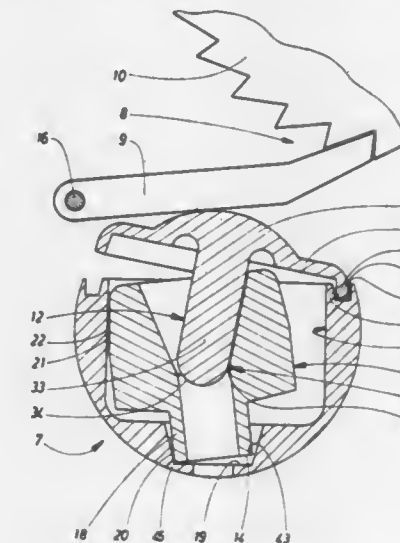
Int. Cl.<sup>3</sup> A62B 35/02; B65H 75/48

U.S. Cl. 242-107.4 A

6 Claims

1. Locking means for a safety belt of the reel belt type provided with a strap webbing which against the bias of a spring can be unwound from a strap winding-up device having a strap reel rotatably journaled therein, said locking means comprising a pawl movable between a position releasing the strap reel, and a locking position in which the strap reel is maintained locked against rotation in one direction, and also comprising

activating means for the moving the pawl to its locked position when the activating means is subjected to an acceleration exceeding a predetermined value, said activating means comprising a body of inertia positioned in a housing and having a base surface, said body being adapted to selectively occupy a central rest position with the base surface resting on a support surface of the housing, and a peripheral activated position in which the body of inertia is tilted about a first pivoting center, said activating means also comprising a transmission element arranged so as to be adapted to rest against an annular support surface of the housing and provided with a contact surface arranged to cooperate with the pawl and a sensor portion by cooperation with the body of inertia provided to sense its positions, and an upper portion with a peripheral, annular edge by means of which the transmission element is arranged in the resting position of the body of inertia to rest against said annular support surface positioned at the top of said housing, said transmission element in said resting position permitting the pawl to take its releasing position and when the body of inertia



is repositioned to activated position the transmission element being arranged to pivot with its annular edge on said annular support surface acting as a second pivoting center, thereby providing for a displacement of said contact surface, said pawl being arranged to assume its locking position under the action of the displacement of said contact surface, wherein the improvement comprises: said sensing portion of the transmission element being a shank which in said resting position is centrally positioned relative to the axis of symmetry of the body of inertia and which projects downwards from said upper portion of the transmission element and is provided with a lateral, peripheral sensing surface for contact with the body of inertia, and said body of inertia being provided with a central cavity into which the shank projects, said cavity having a peripheral activation surface for contact with the shank, so that when the body of inertia is repositioned to its activated position said body by means of its activating surface removes the sensing surface of the shank and thereby tilts the shank, so that said contact surface will be displaced by the pivoting motion of the transmission element relative to said second pivoting center.

4,341,361

## YARN CARRIER FOR PRESSURE KIER

Humayun N. Shaikh, London, England, assignor to Burke Mills, Inc., Valdese, N.C.

Filed Oct. 1, 1980, Ser. No. 192,717

Int. Cl.<sup>3</sup> B65H 49/02; D06F 17/02

U.S. Cl. 245-130.4

6 Claims

6. An improved yarn package carrier of the type used to support numerous packages of yarn in vertically-spaced relation on a plurality of upright spindles within a pressure dyeing apparatus having cylindrical sidewalls and a dome-shaped cover cooperating therewith to sealingly close the opening, wherein the improved yarn package carrier comprises:

- (a) a circular base for being positioned within the dyeing







spool means including a spool shaft supported between said side frame members;

pinion gear means being slidably mounted on said spool shaft for selectively rotating together with said spool shaft in a first position and being disengaged from rotating together with said spool shaft in a second position;

a main gear means rotatably disposed within said housing, said main gear means being operatively connected to a handle shaft means for rotation therewith and said main gear means being operably engaged with said pinion gear means;

a clutch lever means operatively mounted within said housing and operably connected to the pinion gear means for movably positioning the pinion gear means on the spool shaft to assume said second position;

rotating disk means being operatively connected to said handle shaft means for rotation therewith, said rotating disk means including at least one clutch switch pin mounted thereon;

clutch switch plate means being operatively mounted within said housing and being in releasable locking engagement with said clutch lever means for selectively preventing said clutch lever means from returning to a normal position wherein said clutch lever means is disengaged from said pinion gear means; and

clutch returning lever means being operatively mounted within said housing and being manually engageable with said clutch switch plate means to release said clutch switch plate means from locking engagement with said clutch lever means to permit said pinion gear means to assume said first position on said spool shaft;

said at least one clutch switch pin being mounted for engagement with said clutch switch plate means to automatically release said clutch switch plate means from locking engagement with said clutch lever means upon rotation of said rotating disk means.

4,341,367

## ROOF MOUNTED WIRE SUPPORT

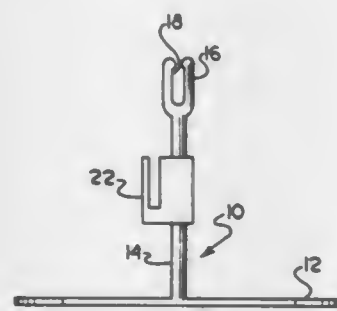
Lee M. Wieland, 1403 Beach Drive Extension, Akron, Ohio 44312

Filed Nov. 7, 1979, Ser. No. 92,196

Int. Cl.<sup>3</sup> F16L 3/22

U.S. Cl. 248—68 R

2 Claims



1. The combination of a roof with shingles thereon with a wire support comprising

a member including a U-shaped flat base portion, lying in and defining a plane,

a support post extending perpendicularly to said base and joined thereto at a center portion of said base,

said support post including a bifurcated wire receiving end portion for receiving a wire between leg portions thereof, said support post being relatively narrow in a direction transverse of said U-shaped base, and

said base portion being positioned below a conventional shingle having a slot extending thereinto from a lower edge thereof and having a secured upper end, and said support post extending up through said slot, said base portion having arms extending upwardly toward the

upper secured end of the said shingle, and wire support being retained in position by friction with the shingles.

4,341,368  
MOLD

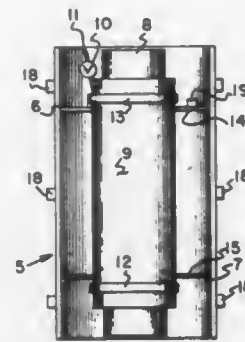
Donald R. Thompson, and John R. White, both of Wadsworth, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 11, 1980, Ser. No. 186,050

Int. Cl.<sup>3</sup> B29C 5/00; B30B 5/02

U.S. Cl. 249—142

2 Claims



1. A mold comprising an elongated hollow cylinder having at least two parts that can be locked to form said cylinder, a core axially aligned therein and having an inflatable cover thereover, said inflatable cover having means to fix the cover on said core, upper and lower seal members positioned between said cylinder and said core with said seal members being in loose association with said cover, and a means to inflate said cover to contact and form a tight seal between said cover and said upper and lower seal members.

4,341,369

## EXPANDING GATE VALVE ASSEMBLY

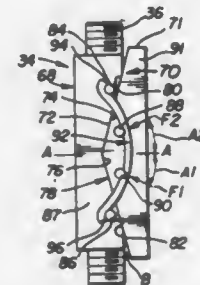
Danny S. Meyer, Richmond, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Apr. 25, 1980, Ser. No. 143,965

Int. Cl.<sup>3</sup> F16K 25/00

U.S. Cl. 251—168

3 Claims



1. In a gate valve structure having a valve body with a valve chamber therein and a flow passage extending through said valve body and communicating with said valve chamber, an expandable gate assembly mounted within said valve chamber for movement in a collapsed condition between open and closed positions with respect to said flow passage, said gate assembly including a gate element and a segment which are expanded away from each other at said open and closed positions and are provided with ports which are aligned with one another and the flow passage in said open position, said gate element having a pair of slide surfaces defining a V-shaped recess and said segment having a complementary V-shaped face defining an apex fitting in said V-shaped recess in conformity therewith when said gate element and segment are in a fully collapsed condition, said segment being slidably movable on either of said slide surfaces to effect the expansion or collapse of said gate assembly; an improved means for continu-

ously urging said gate element and segment to a fully collapsed position, said means comprising:

a pair of spaced apart retaining lugs extending from a side of said gate element and aligned in the direction of movement of said gate assembly, said retaining lugs being equi-spaced from and disposed on opposite sides of a transverse axis passing through the apex of said V-shaped recess;

an elongate bowed spring;

a pair of spaced apart flexing lugs extending from a side of said segment and aligned in the direction of movement of said gate assembly and offset from the alignment of said retaining lugs, said flexing lugs being closer spaced than said retaining lugs and equi-spaced from and disposed on opposite sides of a transverse axis passing through the apex of said V-shaped face, said spring being disposed to be in tension on said sides of said segment and gate element with its opposite end portions adjacent its ends engaged by said respective retaining lugs on the sides of said retaining lugs remote from the apex of said V-shaped recess and its central bowed section engaged by both said flexing lugs when in the collapsed condition of said gate assembly and on the sides of said flexing lugs remote from the apex of said V-shaped face whereby said spring continuously urges said gate assembly to the fully collapsed condition and the movement of the gate assembly to the expanded condition associated with said open and closed positions results in said spring engaging and acting with flexing force on only that one of said flexing lugs which leads with respect to the direction of movement of said segment relative to said gate element.

4,341,370

## HIGH PRESSURE, THREE STAGE, BALANCED VALVE

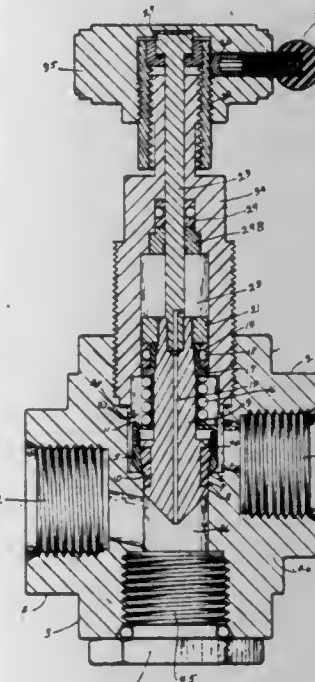
George W. Banks, 24824 43rd Ave., S. Kent, Wash. 98031

Filed Nov. 20, 1980, Ser. No. 208,670

Int. Cl.<sup>3</sup> F16K 39/02

U.S. Cl. 251—282

3 Claims



3. A high pressure, three stage, balanced valve, comprising, (a) a valve body having a cylindrical wall structure defining a central valve closure member assembly chamber communicating with a first supply port, said chamber having a bottom concentrically counter bored, forming a 45 degree poppet valve seating surface providing a smooth entrance to a smooth walled circular orifice control chamber communicating with a second supply port, said supply ports communicating with each other when valve is open; (b) a barrel member detachably received in the upper portion of said central chamber, said barrel member having a chamber centrally disposed therein, defining an upper balance chamber which allows a balance seal, mounted on the upper portion of said closure member assembly to be moved up and down therein, the remaining

upper portion of said barrel member is concentrically drilled and fashioned to accommodate a control spindle and a control spindle moving seal; (c) an elongated metering pin having said control spindle attached to the upper end and extending up through said balance chamber, through said moving seal to atmosphere, a compensating balance spindle is centrally attached to the lower end of said metering pin and extending out through said orifice control chamber through a moving seal and out to atmosphere; (d) a pressure communicating by-pass is provided between said upper balance chamber and said lower orifice control chamber; (e) said metering pin having a circular horizontal groove of ample width formed in the outside diameter, just above the shut-off portion of said pin, the upper wall of said groove being a few thousandths of an inch larger in outside diameter than the outside diameter of the lower groove wall; (f) a self lubricating teflon bushing under pressure is carried in said groove, the lower portion of the outside diameter of said teflon bushing being slightly conical, the outside lower end diameter of said teflon bushing conforming to said lower groove wall diameter and tapering up to an upper straight sided portion of said teflon bushing having an outside diameter conforming to the outside diameter of said upper groove wall; (g) a 45 degree, second stage poppet valve formed on the lower end of a heavy walled hollow cylinder, the inside diameter of said hollow cylinder conforming to and covering the outside diameter of said teflon bushing and said upper groove wall; (h) the remaining length of said elongated metering pin, above said upper groove wall is reduced in diameter and a hollow retaining cap is slipped over said metering pin and attached to the upper portion of said hollow cylinder; (i) a coil compression spring is slipped over said metering pin and compressed between said retaining cap and the balance seal assembly; (j) the first stage closure takes place when said metering pin moves down, closing the control orifice, further downward movement of said metering pin causes said second stage poppet valve to close with said 45 degree poppet valve seat, said metering pin co-acting with said compression spring allows said metering pin to continue down smoothly telescoping a lower portion of said self-lubricating teflon bushing into said control orifice, the diameter of said orifice being a few thousandths of an inch smaller than the major diameter of said teflon bushing, the hydraulic advantage in said telescoping multiplies the contact pressure per square inch of said teflon bushing many times over that of the downward control force in pounds per square inch, supplying the needed high seat contact pressure on the inside walls of said control orifice for the third stage final and positive shut off.

4,341,371

## CAR RAMP AND SUPPORTING DEVICE

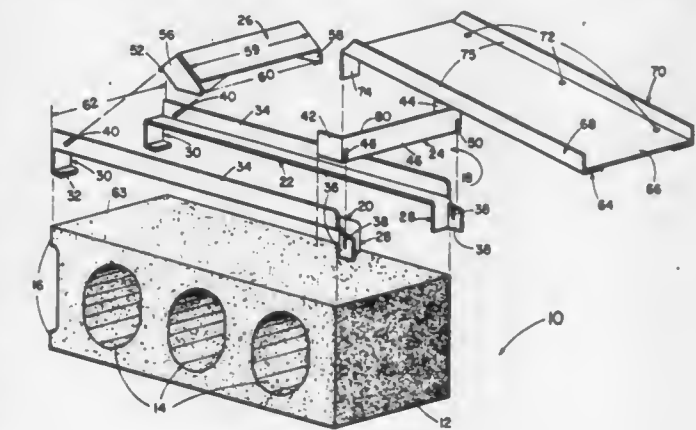
Thomas B. Rotella, 22 E. 7th St., Clifton, N.J. 07011

Filed Dec. 15, 1980, Ser. No. 216,772

Int. Cl.<sup>3</sup> E02C 3/00

U.S. Cl. 254—88

3 Claims



1. An improved vehicle ramp and lifting device comprising: (a) a construction block to form an improved vehicle ramp and



lifting device, the construction block having first and second surfaces parallel to each other and extending in the direction of the longitudinal axis of the block from one end thereof, at, at least, said first surface; and

(b) a framework including:

(i) first and second brackets, each having a first main portion and first and second tabs disposed at right angles to, and at opposite ends of, said main portion of the bracket, said main portion spanning the length of the block in the direction of its longitudinal axis, said first and second tabs configured to conform to the contour of the block at a respective end thereof, whereby said first and second brackets are restrained in movement relative to the block, in the direction of the longitudinal axis;

(ii) a first tie bracket including a second main portion and first and second ends formed at right angles to said second main portion, the distance between said first and second ends being substantially equal to the width of said block, said first and second brackets and said tie bracket, including cooperating means for connecting said tie bracket to one end of each of said first and second brackets, said first and second ends of said tie bracket coacting with the sides of the block to restrain movement of said first and second brackets relative to the block in a direction perpendicular to the longitudinal axis;

(iii) a second tie bracket, said first and second brackets and said second tie bracket, including cooperating means for connecting said second tie bracket to the remaining end of said first and second brackets, said second tie bracket is connected to said first and second brackets, to restrain movement of the remaining end of said first and second brackets relative to the block in a direction perpendicular to the longitudinal axis; and

(iv) a ramp including means for removably connecting one end of said ramp to the end of the first and second brackets connected by said first tie bracket;

said main portion of said first and second brackets disposed upon the first surface of the block.

4,341,372

**AUTOMATICALLY MESHING SHEET WINCH**  
Masumi Sugioka, Shimada, Japan, assignor to Asahi Malleable Iron Co. Ltd., Tokyo, Japan

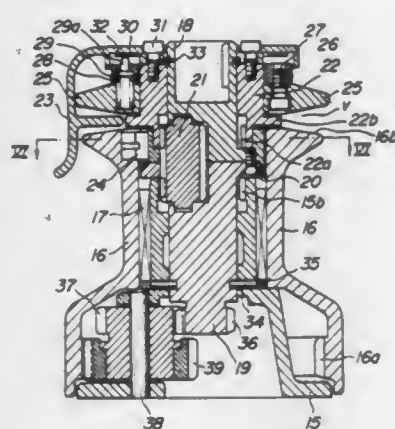
Filed Aug. 4, 1980, Ser. No. 175,105

Claims priority, application Japan, Sep. 18, 1979, 54-118717

Int. Cl.<sup>3</sup> B66D 1/30

U.S. Cl. 254—353

18 Claims



1. An automatically meshing sheet winch, comprising a fixed base frame, a main shaft journaled by the base frame, a drum rotatably mounted on the base frame, a grooved pulley formed at one end of said drum for meshing a rope, an offset gear rotatably mounted on said main shaft, said offset gear having an axis of rotation thereof parallel to but offset from the axis of rotation of said main shaft so that teeth of the offset gear partly extend to outside of the circumferential surface of the main shaft, an internal gear formed on said base frame so as to mesh said offset gear, and a rope guide rotatably mounted on said

base frame and having another internal gear integrally formed therewith, said other internal gear also meshing said gear carried by the main shaft.

4,341,373

**HYDRAULIC WELL DERRICK WITH CABLE LIFTS**

William J. Mouton, Jr., Box 10515, New Orleans, La. 70123

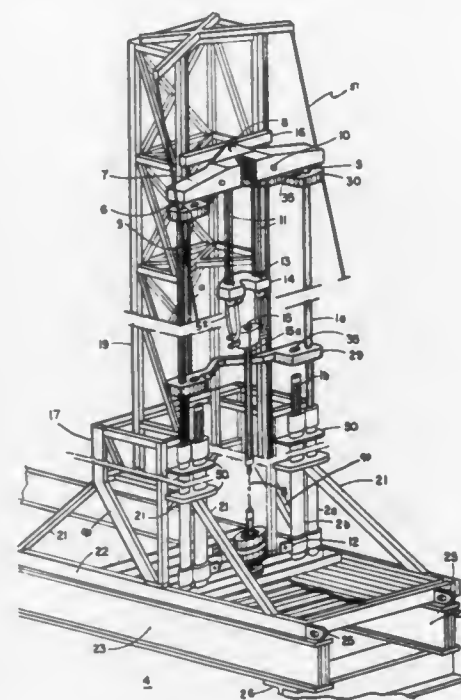
Division of Ser. No. 800,486, May 25, 1977, Pat. No. 4,170,340.

This application Sep. 28, 1979, Ser. No. 80,047

Int. Cl.<sup>3</sup> B66D 3/08

U.S. Cl. 254—386

9 Claims



1. In a well derrick system for raising, lowering and suspending lengths of well pipe, wherein the changes in elevation are secured through the use of vertical, elongated hydraulic cylinders with rams arranged in pairs mounted on the face of the derrick, each member of a pair being parallel to the well's centerline, the members being on opposite sides of the centerline and equidistant therefrom, the improvement comprising in cooperative combination the following:

(a) an equalizer beam bridging the heads of the rams, mounted on a horizontal pivot having an axis intersecting the well centerline, the pivot being located above the points of bridging contact between the beam and the rams, the beam carrying

(b) sheave means comprising at least one sheave on a horizontal axis below the said pivot, and

(c) cable means carried on said sheave means, and extending down to and suspending therefrom

(d) travelling beam means for carrying wellpipe clamping and working tools in working fashion, the cable means comprising two cable sets, each cable having two ends, and the equalizer beam carrying two sets of sheaves on horizontal axes below and parallel to the pivot, and spaced apart from one another equidistantly from the well centerline, one of the cable sets being strung over one of the sets of sheaves, and the other set of sheaves holding the other cable set, and

(e) at least one pair of hydraulic cylinders mounted on the derrick with their rams uppermost, said cylinders being supported near their bottoms on a foundation structure, the upper ends of each ram of a pair that is in use forcing upwardly against the under faces of said equalizer beam, and

(f) diagonal truss members coupled to the cylinders extending downwardly from brackets attached to the cylinders to spaced points on the foundation structure, forming with any intervening derrick structure a bridge truss type structure, whereby the cylinder loads are transferred away from the cylinder bottoms.

4,341,374

**WATER TABLE WITH LOW PROFILE CONVEYOR SYSTEM**

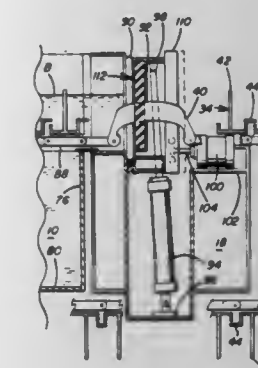
John A. Seelinger, Beaver, Pa., assignor to Anderson Engineers, Inc., Carnegie, Pa.

Filed Mar. 3, 1980, Ser. No. 126,551

Int. Cl.<sup>3</sup> B23K 7/08

U.S. Cl. 266—49

23 Claims



1. A water table and submersible conveyor system comprising:

a water table having opposed end walls, each of said end walls having an opening therethrough;  
a conveyor passing through the openings;  
end doors of a size sufficient to cover the openings, said end doors having means for allowing the conveyor to pass through the end doors when they cover the openings; and  
sealing means on the end doors for engaging and forming a watertight seal between the conveyor and the end doors such that the water level in the table can be raised above the bottom of the openings.

4,341,375

**DUAL VISE FOR SKIS AND THE LIKE**

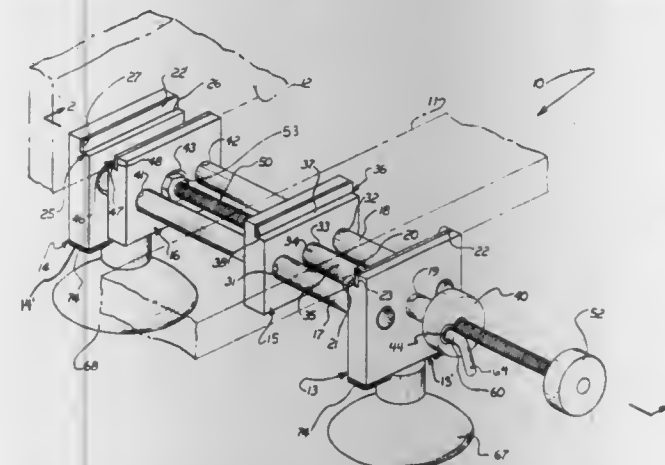
Mario Romanin, 3230 Somia Dr., Parma, Ohio 44134

Filed May 4, 1981, Ser. No. 260,419

Int. Cl.<sup>3</sup> B25B 1/20

U.S. Cl. 269—43

6 Claims



1. A vise having multiple jaws for quickly clamping and releasing a pair of articles such as skis or the like, comprising:

(a) first and second fixed upstanding end jaws fixedly disposed in longitudinally spaced apart relationship at a predetermined distance greater than the combined widths of said articles,

(b) a pair of parallel guide rails in transversely spaced apart relationship to hold said fixedly disposed jaws apart,

(c) first and second movable upstanding jaws slidably disposed on said guide rails, each independently movable with respect to the other,

(d) a tube slidably inserted through said first fixed upstanding jaw, said tube being longitudinally reciprocable so as to move said first movable jaw back and forth along said guide rails,

(e) a rod, longitudinally translatable within said tube so as to

move said second movable jaw back and forth along said guide rails, said rod being at least partially threaded and having one end rotatably disposed in said second movable jaw, and,

(f) releasable locking means, to selectively release and lock said movable jaws relative to one another so as to negate free travel of said movable jaws relative to each other except by rotation of said rod.

4,341,376

**SANDWICH ASSEMBLING JIG**

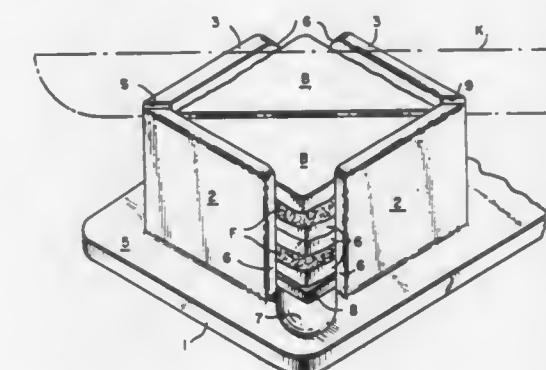
Roger Germinario, 124 Pleasant Ave., East Bridgewater, Mass. 02333

Filed Jan. 27, 1981, Ser. No. 228,751

Int. Cl.<sup>3</sup> B23Q 3/00

U.S. Cl. 269—288

9 Claims



1. A jig for assembling sandwiches comprising:

a base having a planar surface, and  
walls upstanding from the base surface around a sandwich-shaped volume for receiving bread slices stacked upward from the base with a filling between each two slices, the walls having upright edges spaced apart to form a finger access opening to the sandwich volume to allow removing and holding the assembled sandwich with filling from the jig wherein four walls surround a generally rectangular volume with access openings formed at opposite corners of the walls and wherein other corners of the walls are spaced apart less than at the finger access corners to form aligned slits for receiving a knife to cut a sandwich in half diagonally.

4,341,377

**SEESAW**

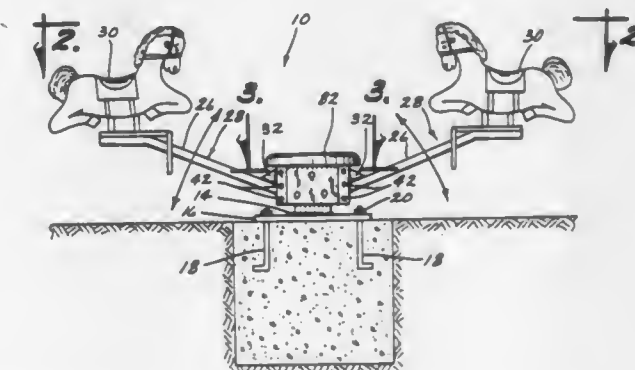
Paul W. Ahrens, Grinnell, Iowa, assignor to Miracle Recreation Equipment Company, Grinnell, Iowa

Filed Sep. 2, 1980, Ser. No. 183,050

Int. Cl.<sup>3</sup> A63G 17/00

U.S. Cl. 272—54

4 Claims



1. A seesaw comprising at least a pair of oppositely extending arms having seats at the outer ends thereof, said arms being connected to the sides of a frame enclosure which embraces a support post having sides and which is connected thereto for resilient up and down pivotal movement by three spaced rub-



ber blocks per arm which have their opposite ends mounted on pins carried on the opposing sides of the enclosure and post, said rubber blocks being cylindrical and having oppositely disposed axial openings at opposite ends in which said pins are received, there being three rubber blocks per arm, two being in a common horizontal plane below the third centrally disposed above and therebetween.

4,341,378

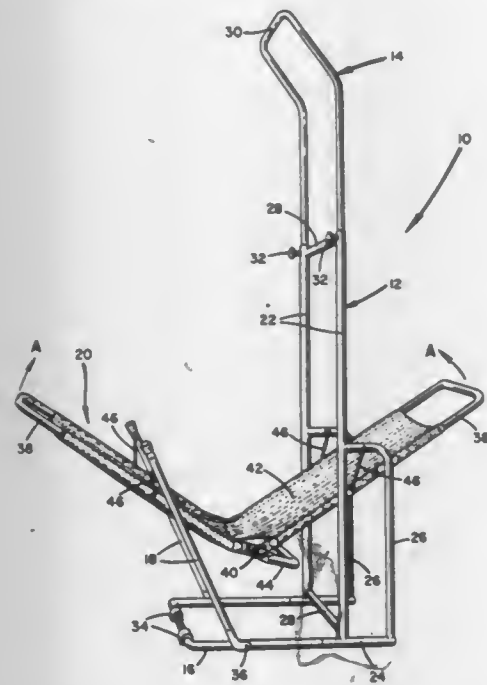
## MULTIPURPOSE EXERCISER DEVICE

Ferenc I. Agyagos, 3-21-5, Akasaka, Minato-ku, Tokyo, Japan  
Filed Sep. 22, 1980, Ser. No. 189,330

Claims priority, application Japan, Sep. 25, 1979, 54-132362  
Int. Cl.<sup>3</sup> A63B 1/02, 23/02

U.S. Cl. 272-62

5 Claims



1. A compound multipurpose exerciser device on which reclining waist, side and hip exercises can be performed, said exerciser device comprising a base frame member supporting a pair of vertically extending frame support elements at one end of said base frame, said base frame member having a pair of separate spaced-apart vertically extending legs that have attached thereto an inverted U-shaped hanger frame member, said frame support elements being attached to said legs at a substantially intermediate location thereof, said U-shaped hanger frame being positioned higher than said frame support element for use in the performing of spine-stretching and chin-up exercises, the upper end of the inverted U-shaped hanger frame member being bent slightly inwardly towards the other end of the base frame for improved stability; and including a substantially horizontal exercising cot which is operably supported by upwardly extending portions of said base frame member, said cot being formed from two U-shaped frame halves, the free end portions of which are pivotally connected together so that the frame halves can be folded, said frame halves having a bracing bar extending between the pivot connections of the two U-shaped frame halves.

4,341,379

## SPOTTING DECK FOR A TRAMPOLINE

Michael R. Milligan, 1901 W. Main St., St. Charles, Ill. 60174  
Continuation-in-part of Ser. No. 949,787, Oct. 10, 1978,  
abandoned. This application Jul. 25, 1980, Ser. No. 172,186  
Int. Cl.<sup>3</sup> A63B 5/18

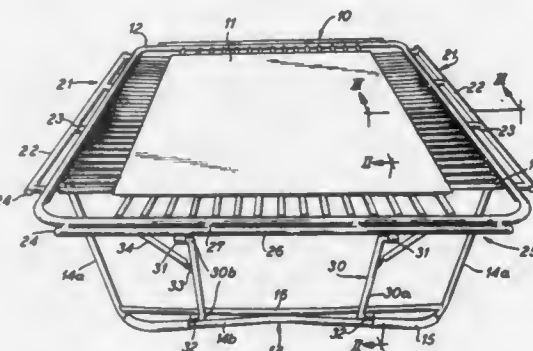
U.S. Cl. 272-65

7 Claims

1. In a backyard trampoline of the type having a rectangular resilient surface-supporting frame with a pair of rigid sides of equal length each side having a rigid outer member connected to said side in spaced relation along the entire length of said side, the improvement of a supporting and viewing end struc-

ture removably attachable to said sides at each end of said trampoline, said structure comprising:

- a pair of downwardly extending first sleeves attached beneath and at opposite sides of said frame inwardly of each said end structure;
- a W-shaped leg having a pair of upper ends respectively removably received in said first sleeves and having a base portion resting on the ground;
- each said end structure comprising a pair of spaced parallel tubular members, one of said tubular members adapted to form together with the pair of sides the surface-supporting frame, and the other of said tubular members forming a foot-supporting element;
- a plurality of connecting members extending between said tubular members,
- said foot-supporting element, said connecting members and said one of said tubular members cooperatively forming an end viewing deck adapted to be substantially coplanar with the resilient surface and said end viewing deck in combination with said outer members connected to said sides forming a segmented viewing



and spotting deck which completely surrounds said resilient surface;

- a pair of spaced lateral second sleeves attached to and extending beneath said foot-supporting element so as to divide said foot-supporting element substantially into thirds;
  - a pair of spaced lateral third sleeves carried on said base portion of said W-shaped leg in registry with said second sleeves;
  - a pair of U-shaped struts having an elongated bight portion extending generally vertically between the deck and the ground and having leg portions respectively received in one of said second sleeves and in one of said third sleeves; and
  - a retainer spring connected between each said strut and said one of said tubular members for spring loading and retaining said struts in said sleeves
- whereby said W-shaped leg is removably attached to said frame by inserting said ends of said W-shaped leg into said first sleeves and respectively inserting said leg portions of said struts in said second and third sleeves.

4,341,380

## BODY CELL THERAPEUTIC DEVICE

Walter J. Sander, 5551 Randolph Blvd., San Antonio, Tex. 78233

Filed Oct. 29, 1980, Ser. No. 201,743

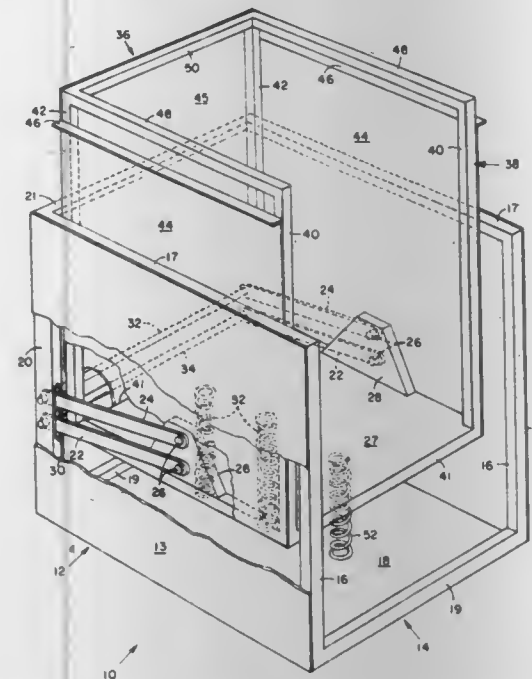
Int. Cl.<sup>3</sup> A63B 5/08

U.S. Cl. 272-65

13 Claims

- 1. A therapeutic device to apply measurable and controllable repetitions of G-force to a body and its components to effect strengthening and functional benefits thereof comprising:
  - a platform having a generally horizontal surface;
  - a base;
  - support means connecting said platform to said base to maintain said platform rigidly horizontal during oscillations of up and down movement initiated and sustained by any means;

said support means including at least two attachment blocks rigidly attached to said platform with two upper and two lower parallel rocker arms having first ends thereof pivotally attached to said attachment blocks, said rocker arms



extending to and pivotally attaching via second ends thereof to said base by means of an interconnection between said second ends, said interconnecting means rigidly connecting at least one pair of said rocker arms.

4,341,381

## INVALID WALKER

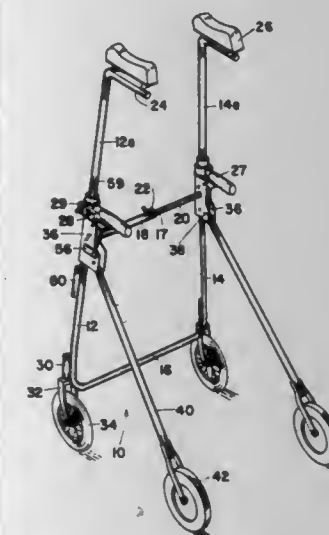
Kenneth H. Norberg, 1161 Butterfield Rd., San Anselmo, Calif. 94960

Filed Feb. 23, 1981, Ser. No. 237,243

Int. Cl.<sup>3</sup> A61H 3/04

U.S. Cl. 272-70.4

7 Claims



- 1. An invalid walker comprising:
  - a U-shaped frame including a bottom cross member and a pair of upright posts;
  - a front wheel carried on the lower portion of each of said posts;
  - crutch shoulder support members mounted on the upper ends of said posts;
  - handgrips extending rearward from said posts intermediate the heights thereof;
  - rearwardly opening channel member means secured to each post intermediate the height thereof and below said handgrips;
  - trailing legs having rear wheels on one end portion thereof with the other end portion pivotally connected between said channel member means to enable them to be pivoted between an extended trailing position with the rear wheels

disposed a considerable distance rearward of said posts to support the user and a collapsed position wherein they are disposed along and closely adjacent the lower rear portion of said posts;

the other end portion of said trailing legs having integral stop extensions on said trailing legs angling upward therefrom to engage the rear of said posts so as to limit the pivoting of said trailing legs when said extended trailing position has been reached;

the sides of said channel member means engaging said stop extensions when said trailing legs are in their extended position to act as restraining members so as to prevent lateral movement thereof; and

latch means on the upper portions of said channel member means engageable over the upper ends of said stop extensions to secure said trailing legs in their extended positions.

4,341,382

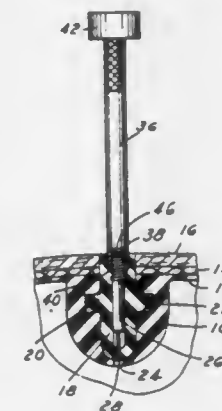
## INFLATABLE BALL AND VALVE SEALING DEVICE

Michael C. Arnold, 224 Charles, Ann Arbor, Mich. 48104  
Filed Jan. 30, 1980, Ser. No. 116,940

Int. Cl.<sup>3</sup> A63B 41/00, 41/12

U.S. Cl. 273-65 C

5 Claims



1. In the combination of a bladder valve extending through the wall of an inflatable ball and a removable plug adapted to seal the bladder valve,

the plug comprising a smooth cylindrical body sized to frictionally and sealingly engage the central passage of the bladder valve and a head formed on the body at the upper end thereof, said head including a thread formed thereon.

4. A tool adapted to insert and remove a removable plug having an externally threaded head from the bladder valve and an inflatable ball,

the tool comprising a tubular body, an internally threaded socket at one end of the tool body and an external chamfer on the tool body at the internally threaded end, said external chamfer tapering from the outside diameter of the tool body to the end to assist in moving the wall of the bladder valve passage way from the external thread on the head of the plug.

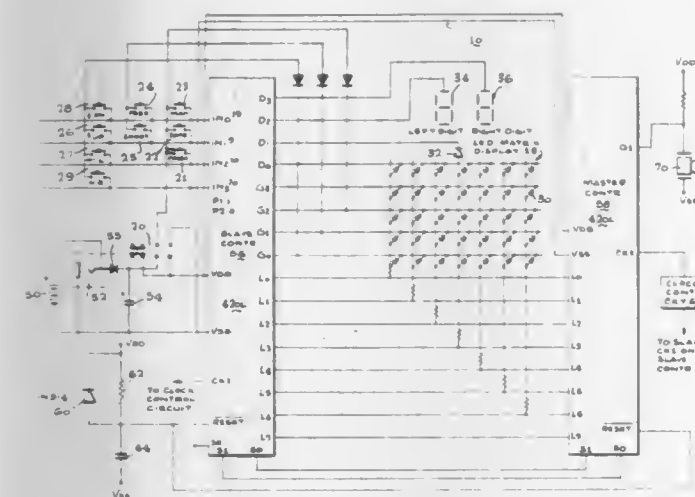
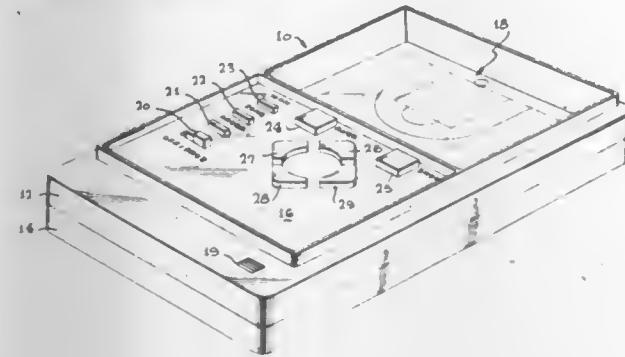
5. A removable plug and tool combination adapted to seal the bladder valve of an inflatable ball,

the plug comprising a smooth cylindrical body sized to frictionally and sealingly engage the central passage of the bladder valve and a head formed on the plug body at the upper end thereof, said head having an external thread thereon,

the tool comprising a tubular body, an internally threaded socket at one end of the tool body adapted to engage the external thread on the plug head, and an external chamfer on the tool body at the internally threaded end, said external chamfer tapering from the outside diameter of the tool body to the end to assist in moving the wall of the bladder valve passage away from the external thread on the head of the plug.



**4,341,383**  
**ELECTRONIC BASKETBALL GAME**  
 David A. Reichert, Carson, Calif., assignor to Mattel, Inc., Hawthorne, Calif.  
 Filed Aug. 4, 1980, Ser. No. 174,986  
 Int. Cl.<sup>3</sup> A63F 9/00  
 U.S. Cl. 273—85 G 15 Claims

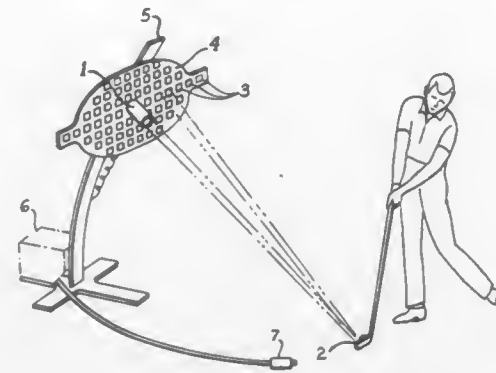


1. An electronic basketball game comprising a display, including a representation of a basket, input means, and means for controlling the display to represent offensive and defensive players and a ball, the means for controlling the display being responsive to the input means for moving the representations of the defensive players, and in which the means for controlling the display includes means for causing the display to provide scores for the teams, means for determining the distance from the basket to a player shooting a field goal, and means for determining the point value of a field goal as a function of the distance from the basket to the player shooting the field goal.

**4,341,384**  
**GOLF SWING DIAGNOSTIC APPARATUS**  
 James D. Thackrey, 13852 Dall La., Santa Ana, Calif. 92705  
 Filed Feb. 23, 1981, Ser. No. 236,706  
 Int. Cl.<sup>3</sup> A63B 69/36 6 Claims

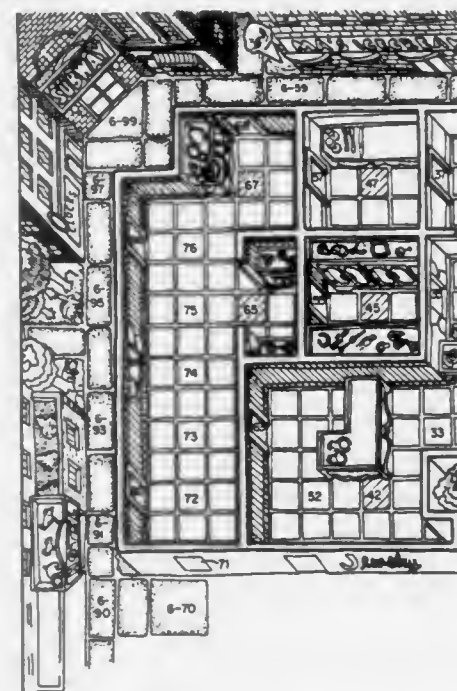
1. Apparatus to be used in evaluating the swinging of a golf club with regard to the squareness of the golf club's face to the intended ball-flight path at the point in the golf club swing at which the club face makes contact with the ball, comprising a source of electromagnetic radiation, and reflective material backed with adhesive so as to be affixed temporarily to any golf club's face, and a multiplicity of sensor-marker assemblies each of which comprises a sensor assembly which reacts to the electromagnetic radiation from said source by closing an electrical circuit; and a marker light adjacent to said sensor-marker assembly and disposed to be switched on when the electrical circuit is closed, in which radiation from said source must be reflected from said reflective material to reach any of said multiplicity of sensor-marker assemblies, whereby during

a single golf swing only certain ones of said sensor-marker assemblies receive radiation and these certain ones may be identified as having received radiation by their having closed the electrical circuit and switched on their associ-



ated marker light, the location of the switched-on marker lights with respect to the intended ball-flight path existing after a swing being immediately visible to an observer whereby the observer can evaluate the squareness of the golf club face during the swing.

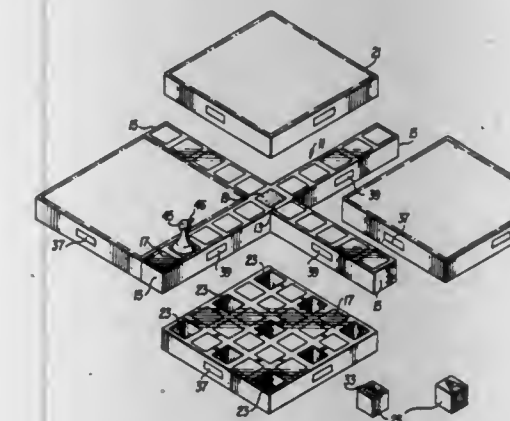
**4,341,385**  
**ELECTRONIC BOARD GAME APPARATUS**  
 Holly T. Doyle; Robert O. Doyle, both of 77 Huron Ave., Cambridge, Mass. 02138, and Wendt Thomis, 383 Old Beaver Brook Rd., Acton, Mass. 01718  
 Filed Jan. 24, 1980, Ser. No. 114,905  
 Int. Cl.<sup>3</sup> A63F 3/00 7 Claims



1. Game apparatus comprising: playing field means carrying visible indicia defining a multiplicity of locations of several different types and permissible paths of movement between locations, said playing field means being adapted for receiving tokens representing the positions of players upon the field; a digital processor; means interconnected with said processor and comprising a fixed table of information representing the various playing field locations together with information representing the possible movements to neighboring locations consistent with said indicia; sound generating means energizable by said processor for generating a selected one of a plurality of predetermined

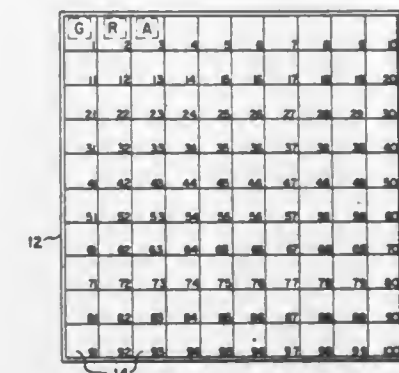
sounds each of said predetermined sounds being characteristic of one type of location; writable memory means for storing a value representing a location on said playing field; means, operable upon player initiation and including a random number generator, for altering said value in conformance with predetermined rules based on said table to effect a corresponding change in the location represented by the stored value, said change being unpredictable though in conformity with said rules, and for activating said sound generating means to generate the preselected sound corresponding to the type of the new location; and player operable means for initiating a CAPTURE operation and designating a location submitted to correspond with the current stored value, the repertoire of said sound generating means including also predetermined sounds corresponding to failure and success in matching the current stored value, said processor being operative to initiate the appropriate success or failure sound in the case of match or mismatch respectively.

**4,341,386**  
**GAME BOARD APPARATUS HAVING REMOVABLE PLAYING PIECE MOVEMENT AREAS**  
 Jacob J. Kleva, 10 New York Ave., Cumberland, R.I. 02864  
 Filed Jul. 15, 1980, Ser. No. 169,201  
 Int. Cl.<sup>3</sup> A63F 3/00 26 Claims



1. A game apparatus comprising: a game board including, on a top surface thereof, a plurality of playing piece movement areas, at least some of said playing piece movement areas being included in an area defined by a channel extending vertically through said game board, each of said channels being adapted to receive a respective game piece, at least some of said playing piece movement areas being grouped into a plurality of playing piece movement area groups by a plurality of first indicium which identify each said group by interconnecting playing piece movement areas within each said group, each of said groups being separate from each of said other groups by the absence of any indicia interconnecting said groups; and, a plurality of game pieces adapted to respectively fit into said channels, each of said game pieces having on at least an upper face thereof a respective second indicium which, with second indicium from others of said game pieces, defines indicia patterns to be traversed by a movable playing piece moving among said playing piece movement areas.

**4,341,387**  
**BOARD WORD GAME APPARATUS AND METHOD**  
 Theodore M. Freyman, 9 Mill Rd., Melrose Park, Pa. 19126  
 Filed Jul. 14, 1980, Ser. No. 168,004  
 Int. Cl.<sup>3</sup> A63F 3/00 8 Claims



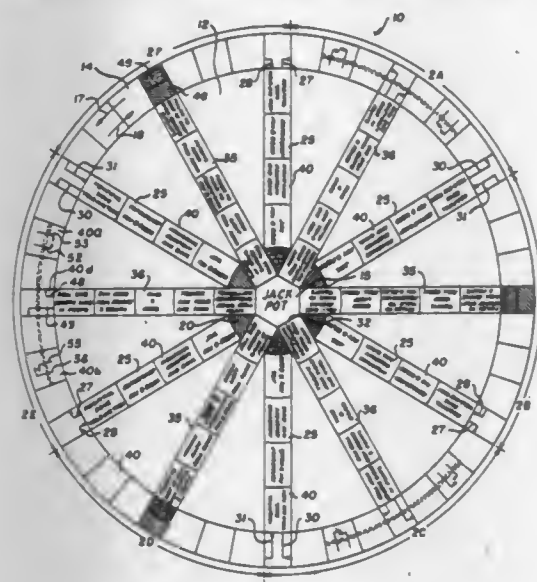
2. A method of playing a game on a playing surface which is divided into a predetermined plurality of discrete areas bearing respective numerals in sequence, comprising the steps of: (a) selecting at random a predetermined number of letters of a given alphabet, (b) marking said selected letters on respective desired lower-numbered ones of said areas in a sequence in which they are in relative positions to form a word or part of a word, (c) then selecting again at random said predetermined number of letters of said alphabet, (d) then marking said last-mentioned selected letters in respective desired unoccupied other ones of said areas bearing numerals higher than the next previously selected areas and in a sequence in which they are in relative positions to form a word or part of a word, (e) repeating said steps (c) and (d) until the player does not desire to mark a letter of the latest selection in an area bearing a numeral higher than those marked in the next previously selected areas to form a word or part of a word, whereupon the player must mark a letter or letters of said latest selection in a respective unoccupied lower-numbered area or areas of said surface; and (f) subsequently repeating steps (c), (d) and (e) until the occurrence of a predetermined event.

**4,341,388**  
**DRIVING GAME BOARD APPARATUS**  
 John Carter, 1157 Marine Dr., West Vancouver, British Columbia, Canada  
 Filed Jan. 19, 1981, Ser. No. 225,872  
 Int. Cl.<sup>3</sup> A63F 3/00 7 Claims

1. Driving game board apparatus to be played by the use of chance number indicating means, comprising a game board; an endless two-way roadway course on the board spaced outwardly from and extending generally around a central area of the board, said roadway course having an inner lane and an outer lane extending throughout the length thereof; a plurality of individual home areas arranged around the central area of the board, each of said home areas having an identification different from the others of said home areas; a plurality of playing pieces simulating vehicles, one for each home area and having the identification of said home area, an in-out pathway extending between each home area and the roadway course; means directing a playing piece on a first group of said in-out pathways to the outer lane; means directing a playing piece on a second group of said pathways to the inner lane;



a plurality of inward detour roads extending from the inner and outer lanes to said central area;  
each of said outward detour roads being marked at an outer end to direct playing pieces onto the inner lane and onto the outer lane of the roadway course;  
a plurality of outward detour roads extending from the central area to the inner and outer lanes;  
each inward detour road having the road indicator section respectively in the inner and outer lanes, said road indica-



tor section of each inward detour road having two different identifications the same as two different identifications of home areas, and the identifications of the road indicator sections of each of said inward detour roads being different from the identifications of the road indicator sections of all the other of said inward detour roads; and  
a plurality of indicator sections in succession on the pathways, the roadway course and the inward and outward detour roads and containing different driving instructions, penalties and awards.

4,341,389

## WORD FINDING AND GUESSING GAME

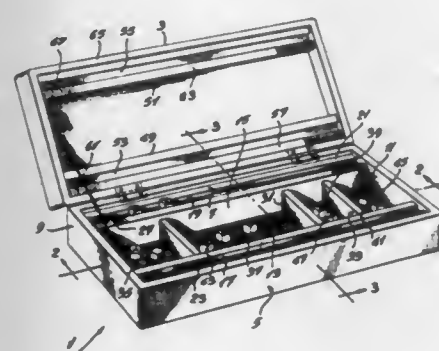
Bernard Dumont, 95 Bellevue, Apt. 306, Sherbrooke, Quebec, Canada (J1J 3Z2)

Filed May 1, 1980, Ser. No. 145,465

Int. Cl.<sup>3</sup> A63F 3/00

U.S. Cl. 273-265

1 Claim



1. A game whereby one player tries to guess a word selected by another player, which comprises a chest including a lid, said chest having a front side and a rear side, a first U-shaped member defining a first channel disposed longitudinally in said chest along said front side and a second U-shaped member defining a second channel disposed longitudinally in said chest along said rear side, a first column of consecutively aligned numerals on an upper edge of said first U-shaped member adjacent said front side, a first plurality of cubes carrying letters of the alphabet adapted to be disposed within said first channel so that a letter of said first plurality of cubes carrying letters can be placed opposite a numeral of said first column thereby enabling a first word selected by said one player and

formed of a plurality of letters taken from said first plurality of cubes carrying letters, to be placed by said one player opposite consecutive numerals of said first column, the first one of said consecutive numerals of said first column being selected at random by said one player in said first column of consecutively aligned numerals, a second column of consecutively aligned numerals on an upper edge of said second U-shaped member spaced from said rear side, a second plurality of cubes carrying letters of the alphabet adapted to be disposed within said second channel so that a letter of said second plurality of letters can be placed opposite a numeral of said second column, thereby enabling a word selected by said another player and formed of a plurality of letters taken from said second plurality of cubes carrying letters to be placed by said one player opposite consecutive numerals of said second column, the first one of said consecutive numerals of said second column being selected at random by said another player, said game also comprising blank cubes to indicate a wrong guess and cubes carrying question marks to indicate position of a letter opposite a specific numeral, transverse partitions between said first and second U-shaped members to define four containers, one said container being provided for said first and second plurality of cubes carrying letters of the alphabet, a second container to contain letters rejected by said one player as not forming part of the word selected by said another player and to be guessed by said one player, a third container to contain said blank cubes, and a fourth container to contain said question marks, said lid having a front side and a rear side, a first inverted U-shaped member defining a third channel disposed longitudinally in said lid along said rear side of said lid, a first additional column of numerals on a lower edge of said first inverted U-shaped member adjacent said rear side of said lid, said blank cubes being adapted to slide within said third channel, and indicate score of said one player, a second inverted U-shaped member defining a fourth channel disposed longitudinally in said lid along said front side of said lid, a second additional column of numerals on a lower edge of said second inverted U-shaped member spaced from said front side of said lid, said blank cubes being adapted to slide within said fourth channel and indicate score of said another player.

4,341,390

## PATTERN LOCATION BOARD GAME DEVICE

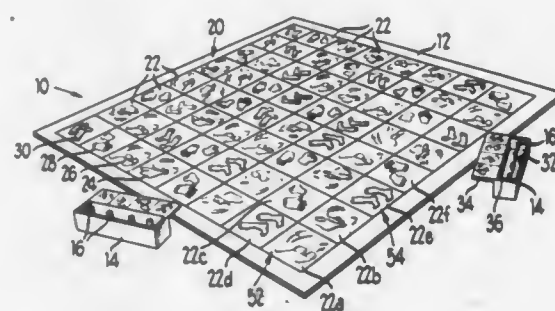
Alan A. Hicks, Chicago, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 17, 1980, Ser. No. 197,919

Int. Cl.<sup>3</sup> A63F 3/00

U.S. Cl. 273-265

10 Claims



10. A board game device comprising:  
a plurality of playing pieces;  
a game surface bearing matrix of playing positions, each playing position bearing indicia representative of one variable of a first and one variable of a second set of variables, each variable set including a plurality of variables, each variable indicated by said indicia on said playing surface, said game surface including a plurality of playing positions, bearing substantially identical indicia; means for indicating each of said first set of variables separately of said game surface;

means for indicating each of said second set of variables separately of said game surface;  
means for indicating a geometric pattern of indicia representative of said first set of said variables on said game surface by associating said first set indicating means with said second set indicating means; and  
said first set of variables including at least four variables and said second set of variables including at least four variables, said game surface containing at least four playing positions bearing identical indicia representative of each combination of one variable of said first set with one variable of said second set.

4,341,391

## REPLACEABLE BLADE ARROWHEAD

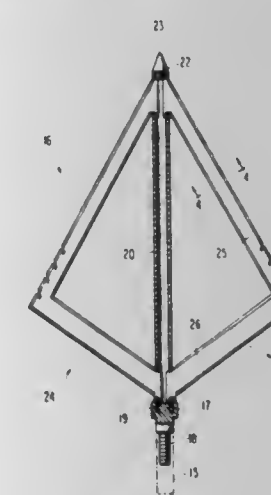
Jeffrey J. Anderson, P.O. Box 11, Pottersville, N.J. 07979

Filed Jun. 5, 1980, Ser. No. 156,751

Int. Cl.<sup>3</sup> F41B 5/02

U.S. Cl. 273-422

11 Claims



1. Arrowhead having generally L-shaped individually detachable blades, comprising:  
a tubular body adapted to be secured at one end to the end of an arrow shaft;  
said body being provided with circumferentially arranged pairs of axially spaced axially extending slots, each of said pairs of slots receiving therein the respective free ends of one of said L-shaped blades;  
and securing means including a member axially movable on said body in one direction to positively lock each of the free ends of all of said blades against axial movement in either direction in said slots and against removal from said slots in a radial direction  
said axially movable member permitting removal of said blades when moved in the opposite direction.

4,341,392

## PLASTICS PIPES HAVING WALLS WITH LENGTHWISE EXTENDING CHANNELS

Jan P. van Dongeren, Bergentheim, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Division of Ser. No. 904,218, May 9, 1978, Pat. No. 4,280,534, which is a continuation of Ser. No. 728,117, Sep. 30, 1976, abandoned. This application Dec. 29, 1980, Ser. No. 221,360

The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.

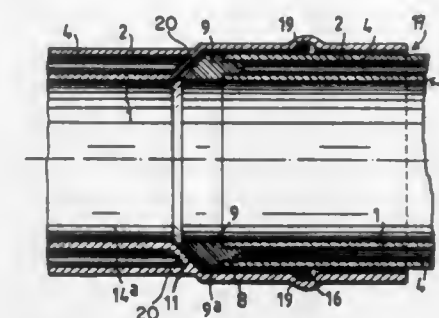
Int. Cl.<sup>3</sup> F16J 15/10

U.S. Cl. 277-207 A

4 Claims

1. A plastic pipe system adapted for underground use comprising at least a first plastic pipe and a second plastic pipe interconnected with each other, said first and second plastic pipes each comprising an inner wall and an outer wall, said walls being interconnected by connecting partitions forming channels extending lengthwise of said first and second pipes, at least one end of said first pipe having a conical channel closing

wall formed by a diverging conical portion of its inner wall directed toward and integrally formed with its outer wall adjacent said end of said first pipe and a generally cylindrical socket means integrally formed with the walls of the first pipe and extending for a distance beyond the end of said first pipe for receiving internally therein a mating end of said second



pipe, said inner and outer walls, said partitions, said channel closing walls and said socket means of said first pipe all being integrally formed together in one piece from the same plastic material, said second pipe having a converging conical channel closing wall at the mating end thereof for engaging the diverging conical portion of said first pipe.

4,341,393

## HAND CART

Donald J. Gordon, Rockwood; Frank H. Johnson, Cambridge, both of Canada; George L. Schick, Easton, Conn., and J. David Smart, Cambridge, Canada, assignors to Slater Steel Industries Ltd., Hamilton, Canada

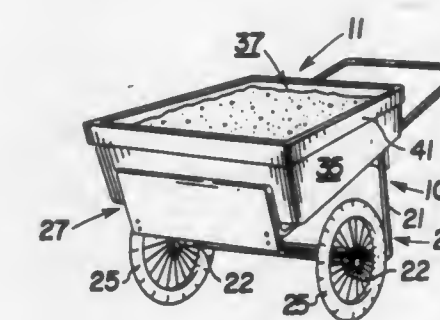
Filed Feb. 15, 1979, Ser. No. 12,223

Claims priority, application Canada, Dec. 18, 1978, 318117

Int. Cl.<sup>3</sup> B62B 1/02

U.S. Cl. 280-47.26

7 Claims



1. A hand cart, comprising:  
(A) a truck which comprises a pair of elongate straight side frame members; a plurality of transverse members connected between said side frame members; a handle connected to the rear ends of said side frame members; a truck nose connected to the front ends of said frame members; an elongate ground engaging frame member connected to each of said side frame members, said ground engaging member including a rear section extending downwardly from said rear end, a ground engaging section in the form of an elbow, and a front section extending upwardly and forwardly from said ground engaging section to said front end; an axle connected between said front sections intermediate, and at a substantial distance from, said ground engaging sections and said front end; and a pair of wheels mounted on said axle;  
(B) an upwardly open container having front, rear, and side walls mounted on said truck, positioned above said wheels and disposed relative to the axle such that the center of gravity of the truck, the container, and the contents of the container lies substantially vertically above the axle in order to minimize the lifting force which needs to be exerted by the user of the hand cart on the handle for



raising the ground engaging members from the ground when it is desired to wheel the hand cart;

- (C) the depth of said container increasing from the rear to the front thereof, said front wall being upwardly and forwardly inclined and disposed adjacent and at least approximately parallel to said nose to facilitate loading of said upwardly open container when said truck is tilted to lower said front wall onto the ground; and
- (D) means for releasably securing said upwardly open container on said frame, said securing means including a pair of projections on the front wall of said upwardly open container, said projections being releasably engageable in openings in said nose for retaining said upwardly open container on said truck, and quick-acting manually operable catch means on the upper portion of said truck for releasably engaging the rear wall of said upwardly open container.

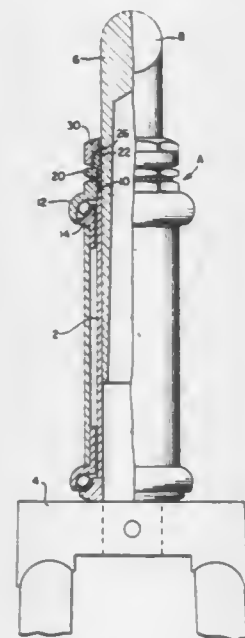
4,341,394

**SIMULTANEOUS CONNECTION BETWEEN HANDLEBAR AND STEERING FORK OF BICYCLES**  
Maximino R. Cabeza, Calle Central 709, Miramar, Santurce, P.R. 00907

Continuation-in-part of Ser. No. 87,497, Oct. 23, 1979. This application Apr. 10, 1980, Ser. No. 138,902  
Int. Cl.<sup>3</sup> B62K 21/18

U.S. Cl. 280—279

1 Claim



1. In combination with the upwardly extending hollow cylindrical stem of the steering fork of the front wheels of a bicycle, and the downwardly extending cylindrical handlebar stem which is positioned within the fork stem, means for connecting the two stems comprising:

- a contractile clamping ring surrounding and connected by threads to the upper end of the fork stem and having an un-threaded internal surface surrounding the adjacent part of the handlebar stem, and having a frusto-conical external surface,
- a locknut loosely surrounding the handlebar stem and connected by threads to the clamping ring, and having a frusto-conical internal surface engaging the frusto-conical external surface of the clamping ring whereby screw threaded movement of the nut toward the ring contracts the ring to cause engagement of the un-threaded internal surface of the clamping ring with the handlebar stem,
- the clamping ring and the locknut having axially extending cuts and notches, respectively, which may be brought into radial alignment by relative threaded movement of the clamping ring and locknut,
- and a locking means such as a cotter pin positioned in the aligned cuts and notches to lock the clamping ring to the

locknut and thereby lock the handlebar stem to the fork stem.

4,341,395

**ANTI-JACKKNIFING CONTROL DEVICE**

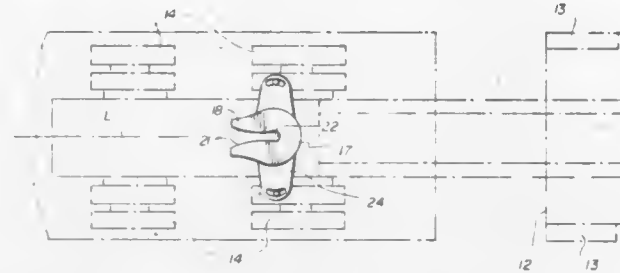
Ray Miller; Ann Miller, both P.O. Box 57, Silver Bow, Mont. 59750; Hans Haumberger, Sr., and Hans Haumberger, Jr., both of Butte, Mont., assignors to Ray Miller and Ann Miller, both of Silver Bow, Mont.

Filed Feb. 19, 1980, Ser. No. 122,680

Int. Cl.<sup>3</sup> B62D 53/08; B60R 21/00

U.S. Cl. 280—432

7 Claims



1. An anti-jackknifing control device for a tractor-trailer and the like having a fifth wheel for coupling said tractor to said trailer and a source of compressed air comprising, in combination, at least one cylinder-piston assembly mounted on said fifth wheel, means for communicating said cylinder-piston assembly to said source of compressed air for vertical movement of said piston between an extended position and a retracted position, a bottom plate on said trailer disposed in overlying relationship with said at least one cylinder-piston assembly, said bottom plate having an arcuate slot for accommodating said piston in said extended position, said arcuate slot having ends defined by portions of said bottom plate abuttingly engageable by said piston in said extended position to limit the relative-to-turning movement of said tractor and said trailer to a predetermined angle in either direction from a centerline corresponding to a longitudinally aligned position of said tractor with said trailer, and means on said fifth wheel for sensing a turning movement of said tractor relative to said trailer to an angle intermediate said centerline and said predetermined angle and alarm means in said trailer actuated by said sensing means when said intermediate angle is sensed to indicate to the operator the need for a steering correction to avoid jackknifing of said tractor-trailer wherein said sensing means comprise a pair of switches mounted on said fifth wheel each of said pair of switches being associated with a respective one of said arcuate slots, means for connecting said pair of switches to said alarm means, each of said pair of switches being arranged for engagement by said bottom plate portion defining one of said ends of the respective arcuate slot at said intermediate angle between said tractor and said trailer for actuating said alarm means, one of said pair of switches being arranged to actuate said alarm means in one direction of turning of said tractor and the other of said pair of switches being arranged to actuate said alarm means in the opposite direction of turning of said tractor.

4,341,396

**FRONT AXLE ASSEMBLY FOR AUTOMOBILE**

M. Georges Decouzon, Guyancourt, and M. Jean J. Carduner, Sannois, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Nov. 14, 1979, Ser. No. 94,094

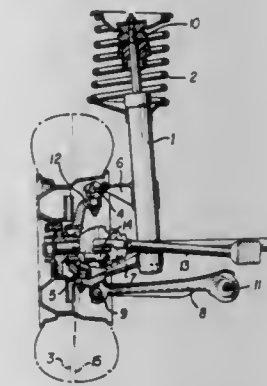
Claims priority, application France, Nov. 14, 1978, 78 32071  
Int. Cl.<sup>3</sup> B60G 3/06

U.S. Cl. 280—666

4 Claims

1. In an automobile having a wheel, including a vertical median plane, an axle, a steering rod and a body, a front axle assembly comprising:  
an axle rack in which said axle is positioned, said axle rack including an upper extension and a lower extension, said

upper and lower extensions extending away from said median plane, said steering rod being articulated to said lower extension;  
a transverse arm articulated to said body about a horizontal axis extending parallel to the length of said body;  
a telescoping strut disposed between said axle rack and said body;  
an upper leg rigidly fixed at one end to said strut and articulated at the other end to said upper extension of said axle rack via a first swivel joint having a first swivel axis; and  
a lower leg rigidly fixed at one end to said strut, articulated at said other end to said lower extension of said axle rack, via a second swivel joint having a second swivel axis



substantially coaxial with said first swivel axis, and articulated at a midpoint thereof about a horizontal axis to said transverse arm, whereby said axle rack may be displaced relative to said transverse arm wherein said wheel is supported on said axle, and a line passing through the point of articulation of said upper extension and said upper leg and passing through the point of articulation of said lower extension and said lower leg, meets the ground on the side of said vertical median plane of the wheel which is opposite the side on which said assembly is located, whereby a negative offset is provided for said assembly;  
whereby a self-stabilizing effect during asymmetrical braking is achieved and road friction during turning is reduced.

4,341,397

**STABILIZING DEVICE FOR A SUSPENSION OF AN AUTOMOTIVE VEHICLE**

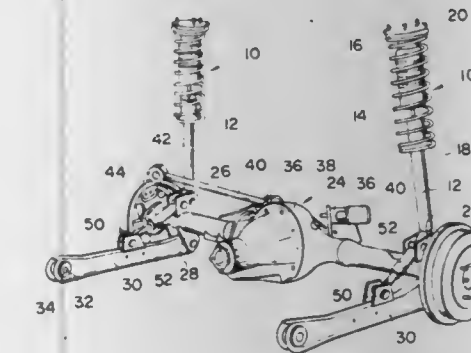
Hiroaki Morimura, Yokohama, and Masanori Abe, Kawasaki, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 25, 1980, Ser. No. 124,273

Claims priority, application Japan, Feb. 24, 1979, 54-23380[U]  
Int. Cl.<sup>3</sup> B06G 1/00

U.S. Cl. 280—688

12 Claims



1. A device for stabilizing the suspension system of an automotive vehicle comprising:  
first shock absorbing means substantially vertically interposed between the vehicle body and the axle housing, said

first shock absorbing means being compressed and expanded in response to generally vertical road shocks;  
a pair of lower control arms disposed adjacent both ends of the axle housing and extending normally with respect thereto for mounting the axle housing below the vehicle body; and  
second shock absorbing means non-vertically interposed between the axle housing and said pair of lower control arms, said second shock absorbing means being compressed and expanded in response to generally non-vertical as well as vertical shocks, said second shock absorbing means having a greater absorbing and stabilizing power than said first shock absorbing means.

4,341,398

**SYSTEM FOR CONTROLLING THE KNEELING OPERATION OF AIR SUSPENSION EQUIPPED TRANSIT VEHICLES**

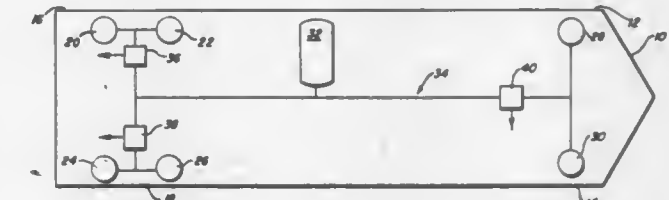
James E. Condon, Woodland, Calif.; Carl W. Roth, Barrington, and Ralph A. Gritchen, Skokie, both of Ill., assignors to Vapor Corporation, Chicago, Ill.

Filed Sep. 22, 1980, Ser. No. 189,177

Int. Cl.<sup>3</sup> B60G 11/26

U.S. Cl. 280—711

1 Claim



1. A system for controlling the kneeling operation of a transit vehicle to be added to a standard kneeling control system wherein said transit vehicle includes a frame and first and second sets of rear wheels and first and second sets of front wheels, and said standard system includes a reservoir of pressurized fluid, fluid filled suspension members mounted at each said set of said front and said rear wheels, a fluid circuit coupling each suspension member with said reservoir, first and second rear height control valves in said circuit for controlling fluid flow to and from said suspension members mounted at said first and second sets of rear wheels, respectively; a front height control valve in said fluid circuit for controlling fluid flow to said suspension members mounted at said first and second sets of front wheels; said added on system comprising first and second solenoid controlled air valves in said fluid circuit at said first and second sets of front wheels; first and second solenoid controlled air valves in said fluid circuit at said first and second sets of rear wheels for controlling flow to said suspension members, third and fourth solenoid controlled air valves in said fluid circuit at said first and second sets of front wheels, first and second exhaust control valves coupled to said third and fourth solenoid controlled valves, a by-pass valve in said fluid circuit for by-passing fluid around said front height control valve, and kneel sensing switch means for controlling the actuation of said by-pass valve.

4,341,399

**PASSIVE SEAT BELT SYSTEM**

Rudy V. Thomas, Sterling Heights, Mich., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 16, 1980, Ser. No. 112,668

Int. Cl.<sup>3</sup> B60R 21/10

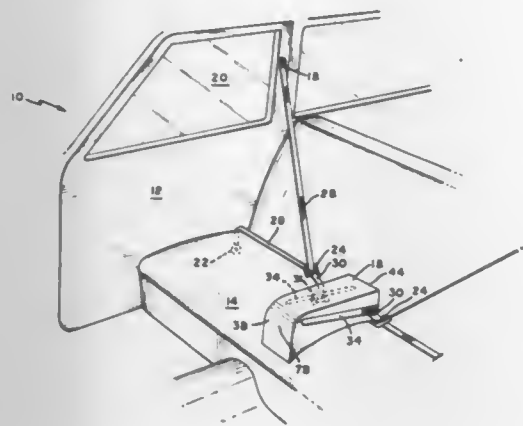
U.S. Cl. 280—802

22 Claims

1. A vehicle passive seat belt system comprising:  
a seat belt adapted to be automatically placed in a restraining position about an occupant seated in a seat in said vehicle adjacent to a vehicle door, said seat belt extending at least across the upper torso of said occupant;



said seat belt being anchored to said vehicle by at least one first mounting point located at a position adjacent said seat inboard of said door and by at least one second mounting point located adjacent to the outboard side of said seat; at least one of said first and second mounting points comprising winder means, said winder means comprising a rotatable storage means which is in communication with said seat belt, said storage means being rotatable in response to movement of said seat belt; and



means to automatically move said at least one of said first and second mounting points from a first position at which said seat belt is in a restraining position about said occupant when seated in said seat to a second position at which said seat belt is in a non-restraining position about said occupant, said means being non-motorized and being actuated in response to a force applied on said seat belt resulting in rotation of said storage means.

4,341,400

## SKI REST FOR A SKI POLE

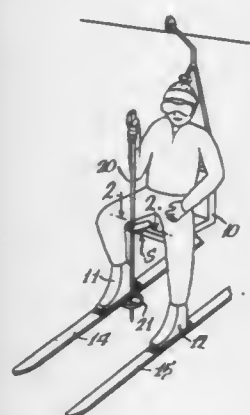
Leonard M. Morgan, Rte. 1, Box A136, Kansasville, Wis. 53139

Filed Nov. 26, 1979, Ser. No. 97,881

Int. Cl.<sup>3</sup> A63C 11/22

U.S. Cl. 280—819

6 Claims



1. A ski pole having a ski rest for use by a skier while traveling on a ski chair lift comprising, an arm movably mounted on the ski pole intermediate the ends thereof for movement between a retracted position substantially parallel to the pole and an extended position extending generally normal to the pole for engagement with a lift chair whereby a skier may place his attached skis on the basket of the ski pole for support thereof during travel and the supported weight is transferred to the lift chair, said arm having an opening adjacent an end thereof for loosely receiving said ski pole and of a size to permit movement of the arm between said two positions, and two edges of said opening engaging opposite sides of the ski pole when the arm is in said extended position to prevent movement of said arm beyond said extended position.

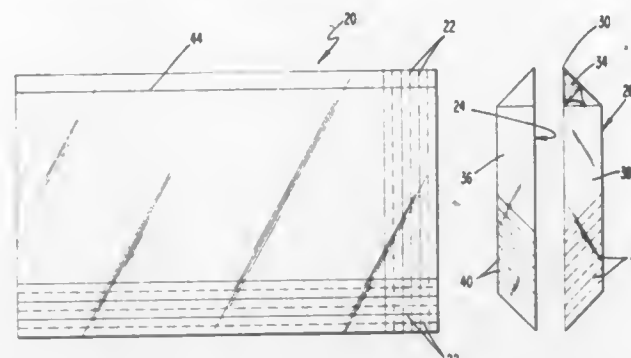
#### 4,341,401 METHOD AND APPARATUS FOR COVERING BOOKS

Huguette C. Arntzen, 1 Av. Franklin Roosevelt, 1050 Brussels, Belgium

Continuation-in-part of Ser. No. 730,732, Oct. 8, 1976, abandoned. This application Feb. 11, 1980, Ser. No. 120,221  
Claims priority, application Belgium, Oct. 9, 1975, 834335  
Int. Cl.<sup>3</sup> B42C 15/00; B42D 3/00

U.S. Cl. 281—34

25 Claims



1. A method for covering a book comprising the steps of: conforming a generally rectangular wrapper to the height of the book, said wrapper enveloping the book so as to leave two end flaps; folding the end flaps over the front and rear cover, respectively, of the book; placing a first leaflet between the front cover of the book and the first page thereof, said leaflet having a height exceeding that of the book and a width inferior to that of the book; positioning the leaflet adjacent the proximal end of the front end flap such that portions of the leaflet protrude beyond the top and bottom edges of the book cover; bending the protruding portions of the leaflet over the top and bottom edges, respectively, of the book cover and adhering said bent portions to the outer surface of said wrapper so as to form a loop on the inside of the book cover; tucking said front end flap under said loop; and repeating the above steps with respect to a second leaflet to be affixed to the rear cover of the book.

4,341,402

#### SYSTEMS EMPLOYING INDOLE COLOR FORMERS

Paul J. Schmidt, Sharonville, and William M. W. Hung, Cincinnati, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

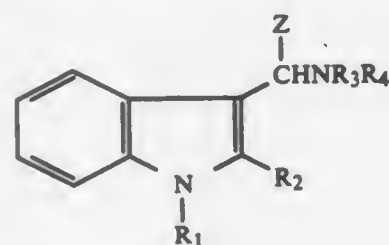
Filed Mar. 6, 1980, Ser. No. 127,650

Int. Cl.<sup>3</sup> B41M 5/16, 5/18, 5/22

U.S. Cl. 282—27.5

3 Claims

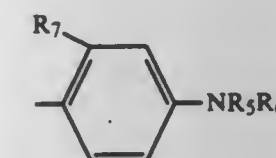
1. A pressure-sensitive carbonless duplicating system or thermal marking system containing a support sheet coated with a color-forming substance comprising a compound having the formula



wherein:

R<sub>1</sub> is hydrogen or lower-alkyl;  
R<sub>2</sub> is hydrogen, lower-alkyl or phenyl;  
R<sub>3</sub> is hydrogen or lower-alkyl;  
R<sub>4</sub> is hydrogen, lower-alkyl, benzyl, di-lower-alkyl-amino-lower-alkyl, tri-lower-alkylammonium-lower-alkyl,

phenyl phenyl substituted with 1 or 2 halo, lower-alkyl or lower-alkoxy groups, or NR<sub>3</sub>R<sub>4</sub> is pyrrolidino, piperidino, hexamethyleimino or morpholino; and Z is biphenyl, naphthyl or a substituent having the formula



wherein

R<sub>5</sub> and R<sub>6</sub> are independently lower-alkyl or benzyl, and R<sub>7</sub> is hydrogen, lower-alkyl, lower-alkoxy, halo or di-lower-alkylamino.

4,341,403

#### FLUORAN COMPOUNDS, PROCESS FOR PREPARATION THEREOF, AND RECORDING SHEETS USING SAME

Akira Igarashi, Fujinomiya; Kozo Sato, and Ken Iwakura, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 18, 1980, Ser. No. 141,527

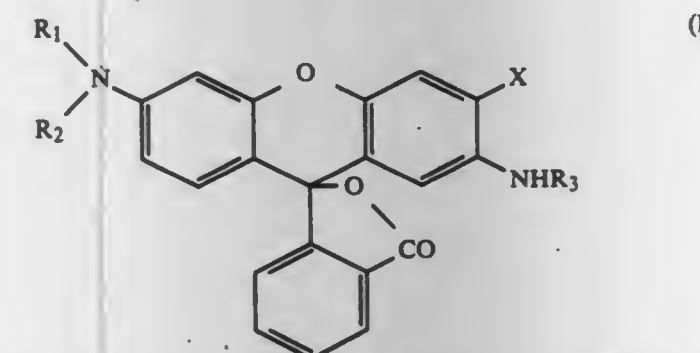
Claims priority, application Japan, Apr. 24, 1979, 54-51270; Jan. 31, 1980, 55-10467

Int. Cl.<sup>3</sup> B41M 5/18, 5/22

U.S. Cl. 282—27.5

4 Claims

1. A pressure-sensitive recording sheet comprising a support carrying as a color former microcapsules containing a fluoran compound represented by the formula (I)



wherein R<sub>1</sub> and R<sub>2</sub> each represents an alkyl group containing up to 18 carbon atoms, R<sub>3</sub> represents an unsubstituted alkyl group, a halogenated alkyl group, or an alkoxyalkyl group containing up to 18 carbon atoms, and X represents a halogen atom.

4,341,404

#### SECURITY DOCUMENT USING A VARIABLE DOT SCREEN

William H. Mowry, Jr., Ionia, N.Y., and Kathleen M. Gerew, Spartanburg, S.C., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 11, 1980, Ser. No. 120,624

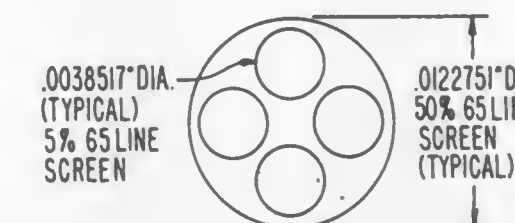
Int. Cl.<sup>3</sup> B42D 15/00

U.S. Cl. 283—8 B

14 Claims

1. An improved security document comprising: a substrate having a top surface for carrying indicia; background printed matter on said top surface, said background printed matter made up of a pattern of background elements of substantially the same size and of a uniform frequency, said background elements not resolvable by a color copier; and, a cancellation term also printed on said top surface of said substrate, said cancellation term composed of a pattern of cancellation term elements, said cancellation term elements being resolvable by a color copier to show a visu-

ally perceptible cancellation term, each said cancellation term element being a geometrically shaped printed dot,



each of said cancellation term elements having at least one unprinted area within said cancellation term element.

4,341,405

#### PRONOUNCED FLEXURE COUPLING DEVICES FOR ELONGATE IRRIGATION PIPES

Theodore V. Olson, R.R. #4, Atkinson, Nebr. 68713

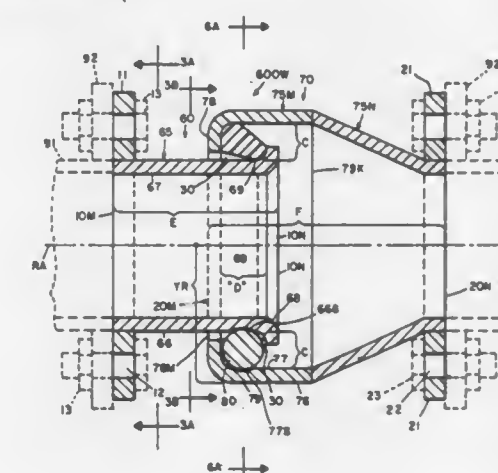
Continuation-in-part of Ser. No. 32,559, Apr. 23, 1979,

abandoned. This application May 2, 1980, Ser. No. 146,039

Int. Cl.<sup>3</sup> F16L 27/10

U.S. Cl. 285—5

12 Claims



1. In combination with consecutively neighboring pipe segments of a longitudinally extending overland traveling sprinkler irrigation apparatus, a coupling device terminally provided with upright first-flange and second-flange for removably coupling consecutive longitudinally extending elongate pipe segments of said irrigation apparatus, said coupling device comprising an insert member, an outer casing member, and an annular elastic connector permitting pronounced relative flexure between the insert and casing members according to angular and torsional articulations of the apparatus environment pipe segments:

A. said insert member comprising an insert-tube concentrically surrounding longitudinally extending reference-axis and having at the second-end thereof an upright tube-rim extending radially outwardly from the insert-tube and surrounding the reference-axis, said insert member adjacent the first-end thereof carrying an upright first-flange extending radially outwardly from the insert-tube and surrounding the reference-axis at a radius exceeding that for the tube-rim, the insert member having a longitudinally extending finite insert-length between its said first and second upright ends;

B. said casing member comprising a yoke, a casing-rim, and a casing-flange, the casing yoke, surrounding said tube-rim and being radially outwardly spaced therefrom, the casing member at its second-end carrying an upright casing-flange extending radially outwardly from the yoke and functioning as said second-flange, the casing member adjacent its first-end having said casing-rim extending radially inwardly from the yoke so as to surround and be radially outwardly spaced from the insert member tube-



rim, said casing-rim at its root delineation with the yoke being radially spaced a finite root-radius from the insert-tube, said root delineation being longitudinally spaced a finite root-length from the tube-rim and being in longitudinal position between the insert member tube-rim and first-flange, the ratio of root-length to root-radius being within the range of substantially two-thirds to two;

C. said annular elastic connector completely surrounding the reference-axis and being annularly adhered to both the tube-rim and the casing-rim including along the annular casing root, whereby said annular connector in longitudinal cross-section extends both longitudinally and radially between the insert and casing members and having a convergent configuration from the casing-rim to the tube-rim; and

D. abrading prevention means to prevent the casing and insert members from making abrasive physical contact during exaggerated articulations of the flanking elongate pipe segments environment.

4,341,406

**PIPE COUPLING COMPRISING A CHAIN COLLAR**  
Claude Abbes, Saint Etienne; Raymond de Villepoix, Donzere, and Christian Rouaud, Bourg Saint Andeol, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

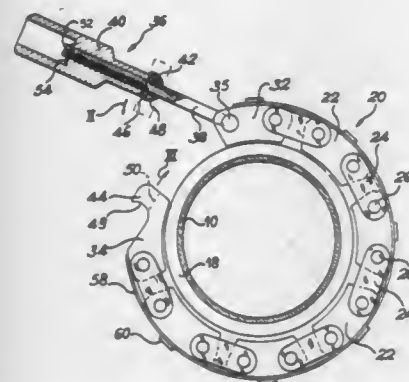
Filed Sep. 30, 1980, Ser. No. 205,519

Claims priority, application France, Oct. 15, 1979, 79 25563

Int. Cl.<sup>3</sup> F16L 23/00

U.S. Cl. 285—408

4 Claims



1. A coupling comprising two tubular end fittings adapted to be sealingly fixed to two parts of a circuit to be connected, a collar for clamping the end fittings together, a plurality of articulated elements, connecting pieces joining said articulated elements, tensioning means for connecting end elements of said collar closing said collar and to move said end fittings one towards the other, said elements cooperating with said end fittings to bring said end fittings into tightly sealed contact when said tensioning means moves said end elements one towards the other, at least one C-shaped spring for said collar connected to each of said articulated elements providing said collar with a semi-rigid structure, and means for providing a clearance in a longitudinal direction between said spring and each of said articulated elements to allow relative movement between said spring and each of said articulated elements whereby the clearance prevents transmission of tightening forces to said spring.

4,341,407

**ADJUSTABLE RETENTION LATCH ASSEMBLY**  
Frank A. Zankich, San Pedro, Calif., assignor to Rexnord Inc., Milwaukee, Mich.

Filed May 9, 1980, Ser. No. 148,110

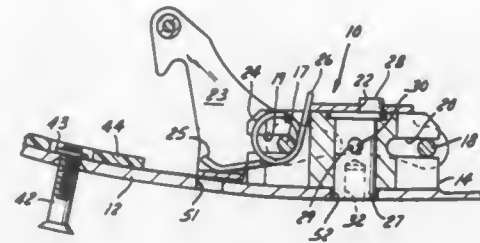
Int. Cl.<sup>3</sup> E05C 5/00

U.S. Cl. 292—111

8 Claims

1. An adjustable retention latch assembly comprising: a striker, a hook releasably engagable with said striker, a bracket onto which said hook is mounted, a slide mounted on said bracket and connected to said hook, adjustment means for

moving said slide toward or away from said striker, said adjustment means including a cylindrical member engaged with said slide for moving said slide in response to rotation of said cylindrical member, and retention means for preventing unintentional rotation of said cylindrical member, said slide including



a base, legs depending from said base and attached to said hook, said base having a slot therein, and said cylindrical member including an eccentric extended portion passing through said slot, said cylindrical member having a receptacle therein for rotation thereof upon insertion and rotation of a tool.

4,341,408

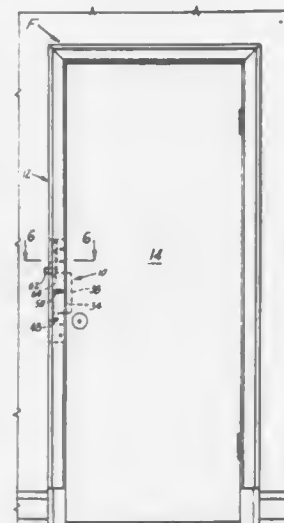
**TAMPERPROOF DEAD BOLT DEVICE**  
Paul Blevins, Rte. #3, Box 139, Bluefield, Va. 24605

Filed Mar. 18, 1980, Ser. No. 131,454

Int. Cl.<sup>3</sup> E05C 1/04; E05B 63/00

U.S. Cl. 292—150

1 Claim



1. A dead bolt device comprising: a door frame mounted supporting plate assembly having means to secure said assembly on a door frame, said supporting plate assembly including a first plate and a second plate, said first plate having at least one channel means, a slidable member in at least one channel means where said slidable member is movable from an unlocked position to a locked position, and a locking means to lock said slidable member in the unlocked position or the locked position, said means to secure the supporting plate includes a first means extending from said supporting plate assembly through a door frame, and fastening means which fasten to said first means, said first means being threaded bolts and said fastening means are threaded nuts, a backing plate means having apertures to receive said threaded bolts aligned with said dead bolt device on the opposite side of the door frame before the threaded nuts are applied, said at least one channel means includes an abutment means, and said slidable member includes a projection to engage said abutment means, said first plate includes a second channel means in which said locking means is vertically slidable, said locking means includes a projection on said locking plate and a mating notch on said slidable bolt plate for locking said slidable bolt plate in an unlocked position, said locking means including a notched area for engaging the back edge of said slidable bolt plate, locking it in a locked position, said slidable bolt plate having a protrud-

ing operating handle and said locking means having a protruding hand grip.

4,341,409

**DOOR LATCHING ASSEMBLY**

Yasuhiro Sakoda, Wakayama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

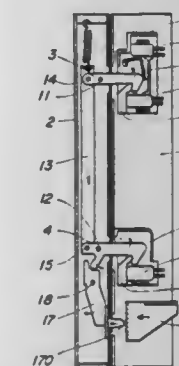
Filed Dec. 10, 1979, Ser. No. 101,522

Claims priority, application Japan, Dec. 11, 1978, 53-153515; Feb. 28, 1979, 54-24877

Int. Cl.<sup>3</sup> E05C 3/34

U.S. Cl. 292—254

4 Claims



1. A microwave oven comprising an oven housing a door attached to the housing which can be operated between a closed and an opened position to provide access to the interior of said housing a door latching assembly for securing the door in a closed position; said door latching assembly containing a locking element movably mounted on the door for locking the door in a closed position, and an unlocking element movably mounted on the door so as to shift the locking element and thereby unlock the door, and actuating means mounted in said oven housing, and operable when the door is locked to move the unlocking element to unlock the door.

4,341,410

**SUPPORTING FRAME FOR DETACHABLY HOLDING A BAG TYPE RECEPTACLE**

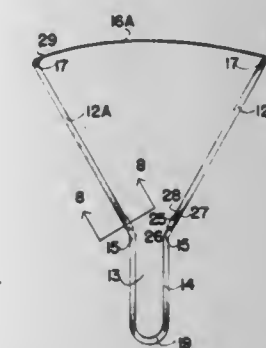
Harley R. W. Summach, P.O. Box 29, Asquith, Saskatchewan, Canada (S0K 0J0)

Filed May 8, 1980, Ser. No. 147,837

Int. Cl.<sup>3</sup> A01K 29/00

U.S. Cl. 294—1 B

4 Claims



1. A holder for plastic, cloth or paper bags comprising in combination a handle portion, a pair of legs extending therefrom in spaced apart relationship and a relatively taut bracing member spanning the distal ends of said legs, said handle portion including an open portion adjacent the junction of the legs to the handle portion and extending into the handle portion whereby the area between the pair of legs opens into the said open portion adjacent said junction of the legs to said handle portion for anchoring and tensioning the associated bag with

the forefinger of the hand holding the handle portion thereby maintaining the bag in the open position, the upper wall of the bag being folded over the bracing member and the legs and being detachably held thereby, said handle portion comprises a curved portion having a closed end portion and a pair of side portions extending from the closed end portion and defining said open portion, said legs being pivotally attached by one end thereof one each to each one of said side portions and movable from a folded, stored position to an extended position and vice versa, and means to pivotally connect each of said legs to one of said side portions, said means including a U-shaped clip, said side portion being pivotally secured within said U-shaped clip adjacent one end of said clip, said legs being pivotally secured within said U-shaped clip adjacent the other end of said clip, said bracing member being detachably secured to the distal end of said legs.

4,341,411

**HAY BALE MOVER**

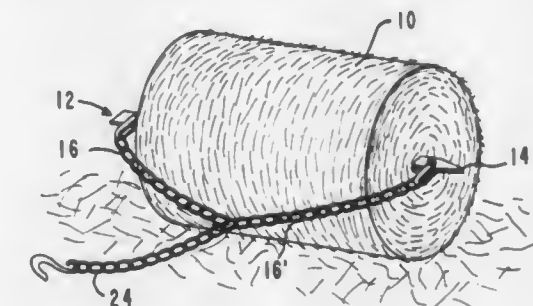
Welby C. Edwards, P.O. Box 1357, Tyler, Tex. 75710

Filed Aug. 25, 1980, Ser. No. 180,575

Int. Cl.<sup>3</sup> A01D 87/12; B66C 1/16

U.S. Cl. 294—74

9 Claims



1. A device for coupling a cylindrical hay bale to a hitch on a vehicle for moving said bale in a horizontal direction by skidding along the ground without substantial rotation thereof comprising:

a flat spring steel bar forming a point at one end, said bar having upper and lower faces lying in parallel planes, each face having a length of at least 72 inches and a width of from about 1½ to 2½ inches, said bar forming an aperture therethrough adjacent each end thereof and extending through said faces; connecting means adapted to be coupled to each end of said bar at the apertures for connecting said bar to a hitch on a vehicle and for distributing a force therefrom equally to each end of said bar; coupling means for coupling said connecting means to either end of said bar, said coupling means adapted to releasably secure said connecting means at the aperture adjacent the pointed end so that after the bar has been thrust axially through a bale said connecting means may be coupled to both ends thereof and said vehicle may cause said bale to skid along the ground in a horizontal direction without substantial rotation thereof.

4,341,412

**TRUCK BED LINER**

Michael Wayne, 1511 Ashover, Bloomfield Hills, Mich. 48013

Filed Apr. 24, 1980, Ser. No. 143,075

Int. Cl.<sup>3</sup> B62D 33/00

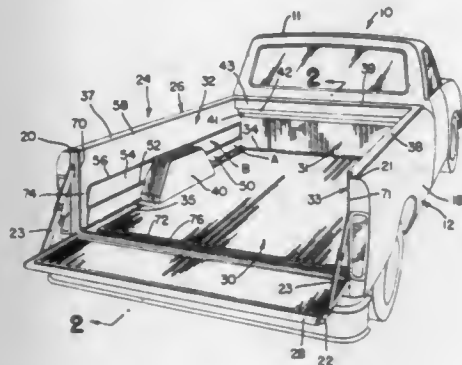
U.S. Cl. 296—39 R

7 Claims

1. A protective liner for a truck bed structure having a floor, a front wall, and opposed side walls, the truck side walls and floor forming a rearward access opening, said liner comprising: a molded plastic one-piece liner member adapted to be inserted in the truck bed, said liner member having a bottom wall, a front wall, and opposed side walls;



longitudinally extending bend portions connecting each said liner side wall with said liner bottom wall;  
each said liner side wall being in simulated shingle form including a plurality of longitudinally extending substantially continuous stepped panels,  
each panel including an upwardly and inwardly inclined riser portion and an angularly disposed tread portion extending outwardly from the upper terminus of its associated riser portion, the juncture of each panel riser and tread portion defining a longitudinally extending substantially continuous side rail;  
said liner side walls characterized in that the stepped panels providing strength to resist longitudinal bending stresses while the longitudinally extending panel side rails being operative to absorb cargo impact and frictional forces;  
said liner side walls and bottom wall defining a rearward substantially rectangular opening providing access for receiving material to be transported;



said liner bottom wall being in ribbed form, including a plurality of longitudinally extending adjacent inverted U-shaped ribs, said ribs extending rearwardly to a bottom wall border portion free of said ribs;  
said stepped panels extending rearwardly to side wall border portions free of said stepped panels;  
each side wall lowermost riser portion having its lower terminus integral with its associated longitudinally extending bend portion;  
said longitudinally extending bend portions having a predetermined radius of curvature;  
said liner side wall border portions joined to said bottom wall border portion by fillet portions having a predetermined radius of curvature substantially less than said bend portions radius of curvature, whereby said border fillet portions closely conform with their associated truck bed access opening corners obviating the entrance of foreign matter between the liner and the truck bed.

**4,341,413**  
**VEHICLE BODY**  
Kenneth P. R. Woods, Southwick, England, assignor to Coachwork Conversions Limited, Colne, England  
Filed May 9, 1979, Ser. No. 37,445  
Claims priority, application United Kingdom, May 30, 1978, 24625/78

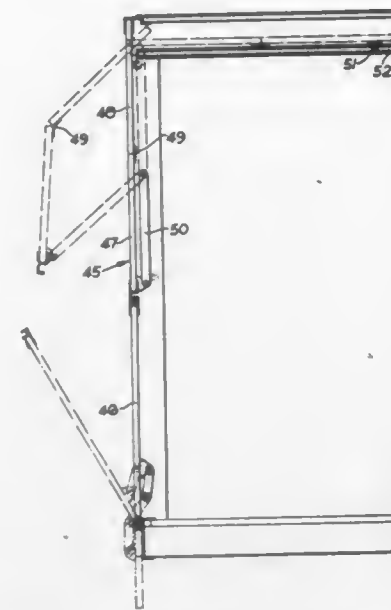
Int. Cl.<sup>3</sup> B62D 25/00

U.S. Cl. 296—50

2 Claims

1. A vehicle body structure including a wall having an opening therein and door means for closing the opening and being movable to an open disposition relative thereto, the door means comprising: a lower door occupying a lower portion of the opening, substantially horizontal hinge means extending along the lower edge of the lower door and mounting the lower door relative to the wall and including a substantially horizontal lower shaft rotatable with the lower door, a lower wheel mounted on the lower shaft, an upper door occupying an upper portion of the opening and serving together with the lower door for the closure of the entirety of the opening, an arm mounting the upper door to the body structure, an upper shaft carrying the arm and adapted upon rotation for swinging the arm outwardly and upwardly relative to the body structure

for opening the upper door in an upward movement and carrying the door to an inoperative position within the body structure, an upper wheel mounted on the upper shaft, flexible coupling means extending in a figure 8 configuration around the upper and lower wheels in a wheel coupling relationship whereby movement of either one of the doors in opening direction imposes a corresponding simultaneous opening



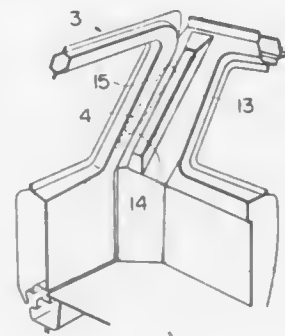
movement on the other of the doors and movement of either one of the doors in closing direction imposes a corresponding simultaneous closing movement of the other of the doors, the upper door including a plurality of hinged portions with an end one of the hinged portions being provided with a guide member constrained to run along a respective guide track during the opening and closing movement.

**4,341,414**  
**BACK DOOR STAY ARRANGEMENT**  
Tatsuya Chiba, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan  
Filed Oct. 9, 1979, Ser. No. 82,931  
Claims priority, application Japan, Oct. 11, 1978, 53-139510[U]

Int. Cl.<sup>3</sup> B62D 25/10

U.S. Cl. 296—56

9 Claims



1. A back door stay arrangement for an automotive vehicle having, an opening formed at the back of the automotive vehicle body, comprising:  
a back door hinged at its upper portion to the upper edge portion of said opening so that said back door can be opened or closed;  
a back door stay fitted between a side edge portion of said opening and said back door for the purpose of supporting said back door;  
a weather strip adapted to seal the periphery of said opening with the periphery of said back door outside said back door stay when said back door is closed;  
a stepped portion formed on the inner portion of said side edge portion of said opening inside of the sealing point of said weather strip in such a way that said stepped portion

can cover one side of said back door stay, one end of said back door stay being provided on said stepped portion; and  
a barrier embossed in a convex shape, the barrier being formed on the inner side of said back door at a position corresponding to said stepped portion, the other end of said back door stay being provided on said barrier;  
the back door including an inner panel and an outer panel; the vehicle body including an inner panel and an outer panel at a rear portion thereof;  
the weather strip being fixed on the joint portion between the inner panel and the outer panel and resting on the seat of the inner panel of the back door when it is closed; whereby said back door stay can be placed in a space defined by said stepped portion and said barrier when said back door is closed, so that said back door stay can be covered by said stepped portion and said barrier.

**4,341,415**  
**VEHICLE HAVING AT LEAST TWO ROWS OF TANDEM SEATS**

Dieter Braun, and Peter-Michael Hübner, both of Rheda-Wiedenbrück, Fed. Rep. of Germany, assignors to Westfalia-Werke Franz Knöbel & Söhne KG, Rheda-Wiedenbrück, Fed. Rep. of Germany

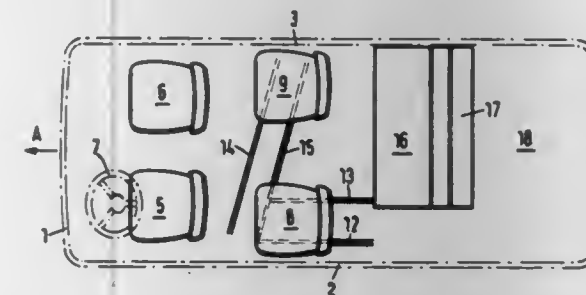
Filed Dec. 21, 1979, Ser. No. 105,879

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 7838370[U]

Int. Cl.<sup>3</sup> B60N 1/08

U.S. Cl. 296—65 R

7 Claims



1. A vehicle having a floor comprising at least two rows of individual seats arranged one behind the other, the seats in each row being on opposite sides of the vehicle, at least two rails recessed in the floor for the second row of seats, at least one of said rails extending parallel with the longitudinal axis of the vehicle for the seat on one side of the vehicle, the other of the rails for the seat on the other side of the vehicle extending at an angle of about 60° to the longitudinal axis of the vehicle from a rearward position near one end of the longitudinally extending rails to a position in front of that end of the longitudinally extending rails, the bases of the seats of the second row having respective individual translation devices and means for swiveling each of said seats through 180°.

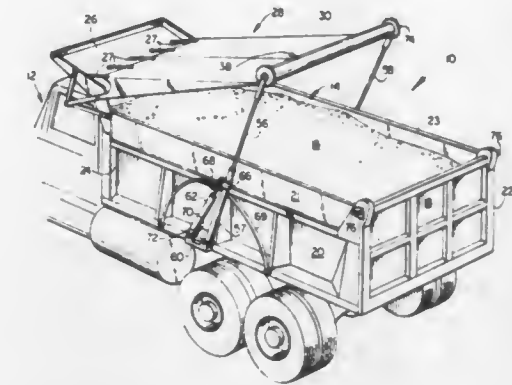
**4,341,416**  
**ROLL-UP TRUCK COVER ASSEMBLY**  
Douglas B. Richard, 113 Richard Rd., Torrington, Conn. 06790  
Filed Apr. 22, 1980, Ser. No. 142,674  
Int. Cl.<sup>3</sup> B60P 7/04

U.S. Cl. 296—98

11 Claims

1. A roll-up truck cover assembly for dump trucks and the like having upstanding side and end walls defining an upwardly open generally rectangular body for receiving particulate material which may project upwardly beyond the sides of said body; said cover assembly comprising a generally rectangular flexible top cover substantially co-extensive with the body cross section viewed from above, said cover having one end portion attached to one end portion of the body to close the body adjacent one end wall and prevent particulate leakage, a take-up roll for said flexible cover having an opposite

end portion of the cover attached thereto substantially across its width and having associated biasing means tending to rotate the roll in a take-up operation of the cover, a pair of similar arms pivotally mounted at lower end portions externally on opposite side walls of the truck body and having upper end portions connected with and rotatably supporting opposite end portions of said take-up roll, and operating means for swinging said arms and take-up roll from said one end portion of the body toward an opposite end portion for an arcuate end-to-end take-up roll traverse of the truck body placing the cover in a body covering position, the said direction being opposite to the direction which said biasing means tend to swing said arms while urging said cover in a take-up direction about said roll,

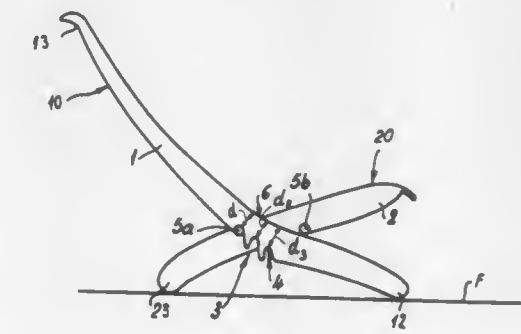


said cover during both roll-out and take-up thus having substantially no horizontal component of movement with respect to particulate material in the truck body, and a braking apparatus associated with said take-up roll and operable at said opposite end portion of the truck body to secure the take-up roll against inadvertent rotation and to thereby hold the cover taut in its body covering position, said braking apparatus comprising circumferentially toothed rotatable means operatively associated with said take-up roll and stop means for securing the rotatable means against rotation, said stop means being mounted on said truck body at its said opposite end portion and engageable with said toothed rotatable means when said take-up roll is disposed at said opposite end portion with the cover in said body covering position.

**4,341,417**  
**ARTICLE OF FURNITURE WITH INCLINABLE BACK**  
Didier Deconinck, Seyssins, France, assignor to Allibert Exploitation, Grenoble, France  
Filed Jun. 10, 1980, Ser. No. 158,112  
Claims priority, application France, Jun. 11, 1979, 79 15863  
Int. Cl.<sup>3</sup> A47C 4/40

U.S. Cl. 297—24

4 Claims

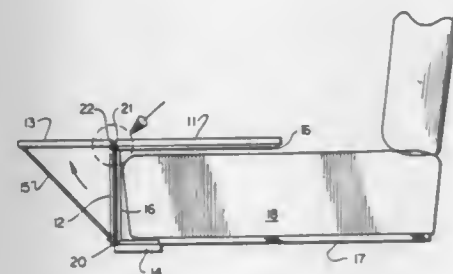


1. A seating unit comprising:  
a seat member and a back member interfitted in a generally X configuration so that a lower portion of said seat member and a lower portion of said back member form rear and front purchases for said unit on a floor, said seat member being inclined downwardly from a front thereof to its rear portion; and  
means for indexing said back member relative to said seat



member in a plurality of selected angular positions corresponding to various inclinations of said back member while the inclination of said seat member relative to the floor is substantially constant, at least one of the sides of said back member being formed with an element extending between its lower portion and an upper portion of said back unit and formed with upper and lower edges, the corresponding side of said seat member being provided with a pair of horizontally spaced pins straddling said element, said means including a rack of notches formed along said lower edge and receiving selectively one of said pins, the other of said pins resting upon the upper edge of said element.

**4,341,418**  
**CAR SEAT HIDE-A-WAY TABLE**  
Austin Chappell, 739 E. 1st South, Kaysville, Utah 84037  
Filed Sep. 2, 1980, Ser. No. 183,024  
Int. Cl.<sup>3</sup> A47C 7/62  
U.S. Cl. 297—192 7 Claims



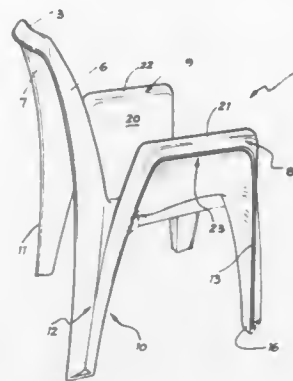
1. A foldable car seat table assembly capable of being stored under the seat of a car when not in use comprising:

- a track mountable under a car seat,
- a three sectioned table unit, each section of which is foldable at right angles to an adjacent section and is attached to an adjacent section by hinge means, with each section being in the same plane when unfolded comprising:
  - a tray section
  - an intermediate section divided into a cup portion having apertures therein and a riser portion and
  - a support end section said tray section and cup portion being connected to said riser portion at the same end thereof by separate hinge means such that when said tray section and cup portion are rotated about said hinge means to be at 90° angles from said riser they will project in opposite directions and be aligned in substantially the same plane, said support end section being connected to the opposite end of said riser portion by hinge means such that when said tray and support sections are folded at right angles to said riser they will extend in the same direction from said riser in a parallel relationship;
- guide runner means adapted to mate with and slide along said track attached to one surface of each section of said multisectioned table, in an aligned position, and
- supporting means to retain said cup portion at right angles to said riser portion when said car seat table is in its assembled position.

**4,341,419**  
**STACKABLE CHAIR WITH ARM RESTS**  
Harry Sebel, 96 Canterbury Rd., Bankstown, New South Wales 2200, Australia  
Continuation-in-part of Ser. No. 970,328, Dec. 18, 1978, abandoned. This application Aug. 19, 1980, Ser. No. 179,456  
Claims priority, application Australia, Dec. 19, 1977, PD2817  
Int. Cl.<sup>3</sup> A47C 3/04  
U.S. Cl. 297—239 11 Claims

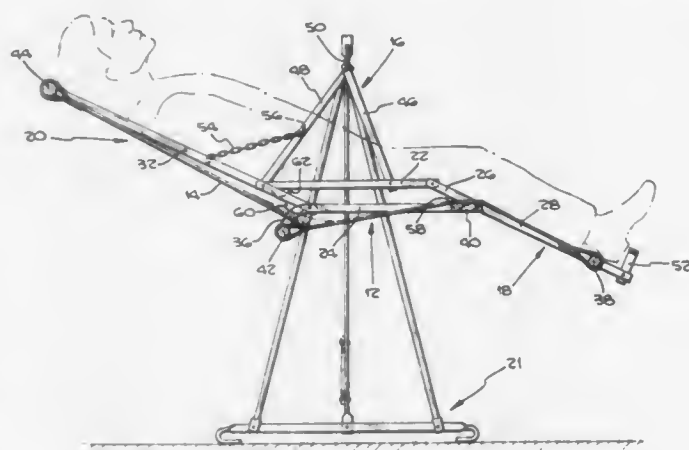
1. A stackable armchair moulded in a single piece from plastics material, said armchair comprising a seat, a back, front

legs, rear legs, and a left arm rest and right arm rest respectively positioned at the corresponding sides of said seat, each of said legs having an outwardly directed channel therein extending along substantially the length thereof and defining rearward and forward edge portions for each of said legs, the forward edge portion of each of said rear legs and the rearward edge portion of each of said forward legs extending upwardly beyond said seat at opposite sides of said seat to form rearward and forward portions of the corresponding arm rest, each arm



rest having a downwardly opening substantially U-shaped trough extending between said upwardly extending leg portions and forming the top of the arm rest, one armrest and corresponding trough being slightly narrower than the other arm rest and corresponding trough so that the narrower arm rest of one chair will fit in the wider arm rest of an adjacent chair, said rearward edge portions of said rear legs being extended upwardly to form the sides of said back, and said arm rests being connected with said back only by said seat.

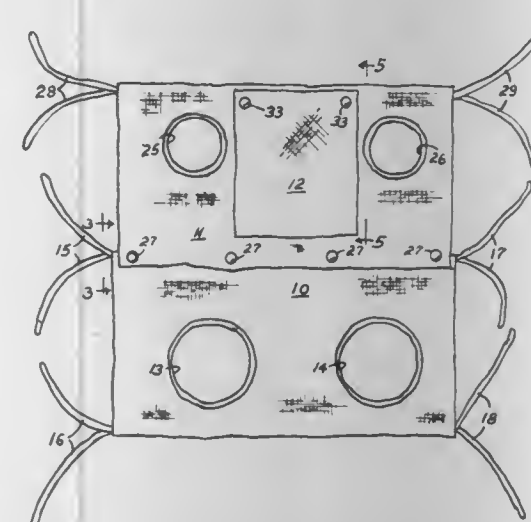
**4,341,420**  
**LOUNGE CHAIR**  
William F. Knowles; Larry F. Knowles, both of 835 Milwood Ave., Venice, Calif. 90291, and H. LeRoy Oliver, 10735 Cranks Rd., Culver City, Calif. 90230  
Filed Aug. 11, 1980, Ser. No. 176,714  
Int. Cl.<sup>3</sup> A47D 13/10  
U.S. Cl. 297—280 5 Claims



1. An articulated frame hanging chair comprising: an articulated frame including elongated elements pivotally connected to define a pair of spaced-apart articulated parallelogram members, each said parallelogram member including a pair of normally horizontally extending seat elements spaced apart from one another in a generally parallel relationship, and a pair of end elements spaced apart from one another in a generally parallel relationship, said seat elements and end elements being pivotally connected to form said parallelogram member, a first one of said end elements being extended outwardly beyond said parallelogram member in a first direction to define a leg portion of said articulated frame, a second one of said end

elements being extended outwardly beyond said parallelogram member in a second direction to define a back portion of said articulated frame, a plurality of laterally extending spacer elements extending between said parallelogram members, a pair of support elements extending normally upwardly from the normally upper one of said seat elements to define therewith a triangular structure, a first one of said support elements pivotally connected at one end to the pivotal connection between said second one of said end elements and said normally upper one of said seat elements, means at the normally uppermost apex of said triangular structure for swingably connecting said chair to a support, adjustable articulation limiting means extending between said first one of said support elements and said back portion to adjustably limit the articulation of said articulation frame, and shield means for preventing injury positioned at the exposed apexes of said parallelogram members where the said elongated members normally articulate through an angle of less than ninety degrees.

**4,341,421**  
**CHILD RESTRAINING ARTICLE**  
Kathryn E. Rowley, Rockledge, Pa., assignor to Barbara J. Braun, Rockledge, Pa.  
Filed Jul. 7, 1980, Ser. No. 166,136  
Int. Cl.<sup>3</sup> A47D 13/08  
U.S. Cl. 297—465 1 Claim

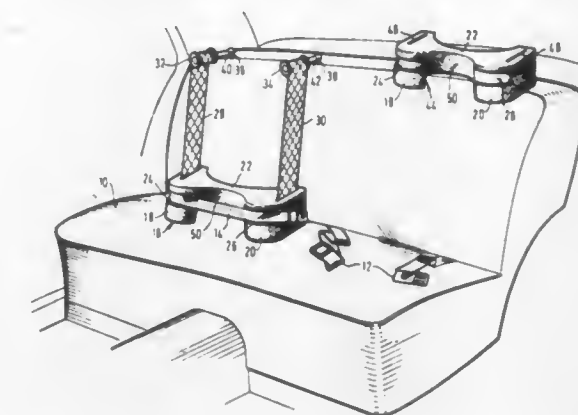


1. A composite child restraining assembly which comprises three attached but separable sheets, namely: an elongated lower sheet which has along its length two spaced holes in it to receive a child's legs close to its body and has attached to it at each of its four corners tapes to be used to tie the lower sheet to a chair frame, an elongated chest sheet having two arm holes in it along its length and also tapes at its two top edge corners to tie to a chair frame, a separable attachment between the lower sheet and the chest sheet along their meeting edges, a waterproof bib sheet overlying the top central portion of the chest sheet between the arm holes, and a separable attachment between the top edges of the bib sheet and the chest sheet.

**4,341,422**  
**RESTRAINT DEVICE**  
Douglas J. Cunningham, Lutterworth, England, assignor to B.S.G. International Limited, Birmingham, England  
Filed Jun. 9, 1980, Ser. No. 157,947  
Claims priority, application United Kingdom, Jun. 9, 1979, 7920164  
Int. Cl.<sup>3</sup> B60R 21/00; A47C 31/00  
U.S. Cl. 297—488 7 Claims

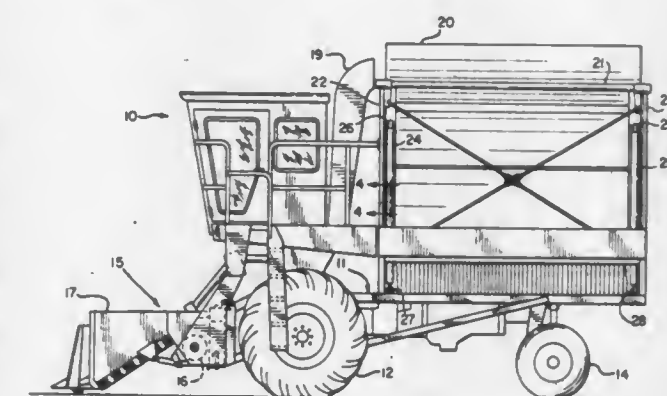
1. A restraint device for use with a vehicle seat comprising a pad shaped to fit over and around the thighs and abdomen of

a child seated in the vehicle seat, guide means on the pad for engagement with an adult lap safety belt to hold the pad in position between a child and said safety belt, and a pair of webs



of flexible material each extending from a respective attachment point adjacent to the top of the seat back to a respective side of the pad.

**4,341,423**  
**BASKET LIFT APPARATUS**  
Robert M. Fachini, Naperville; Michael J. Covington, La Grange, and Jesse H. Orsborn, Clarendon Hills, all of Ill., assignors to International Harvester Co., Chicago, Ill.  
Filed Dec. 22, 1980, Ser. No. 219,000  
Int. Cl.<sup>3</sup> B60P 1/16  
U.S. Cl. 298—18 5 Claims



1. In a crop carrying high dump vehicle, a mobile chassis, a crop receiving receptacle mounted on said chassis in a manner permitting elevation of the bottom portion of the receptacle from said chassis, a hydraulic power means operatively associated with said vehicle, and a pair of linear hydraulic motors operatively connected to said power means for simultaneous actuation, each of said motors having a first rod pivotally connected to said receptacle and attached to a first piston, a second rod pivotally attached to said chassis and attached to a second piston, and a cylindrical housing slidably receiving said first piston in one end and said second piston in the other end, said housing being independent of said chassis and said receptacle for unrestrained movement in the axial direction relative thereto, and means interconnecting the cylindrical housings of said linear motors and disposed to limit rotation of said housings while permitting relative axial movements thereof.



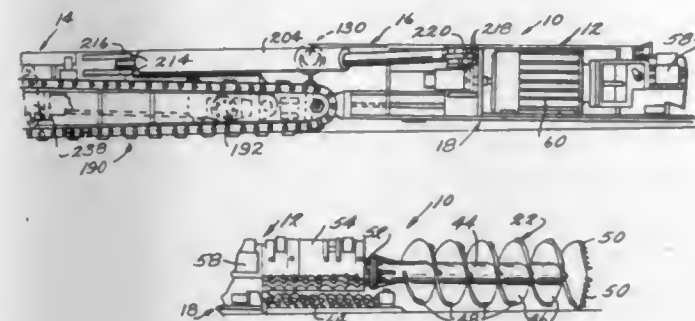
**4,341,424**  
**MOBILE DUAL AUGER CONTINUOUS MINING**  
**MACHINE WITH MULTIPLE MOVEMENT**  
**CAPABILITIES**

Arnold G. Wilcox, Jr., Shady Spring, and Roger D. Plumley, Crab Orchard, both of W. Va., assignors to Fairchild Incorporated, Raleigh, W. Va.

Filed Oct. 21, 1980, Ser. No. 199,363  
 Int. Cl.<sup>3</sup> E21C 27/24, 35/20

U.S. Cl. 299—57

11 Claims



1. A continuous mining machine comprising:

a cutter assembly including a cutter frame, a pair of oppositely pitched auger cutters having their axes of rotation disposed generally parallel with respect to one another, means mounting each of said auger cutters on said cutter frame with the rotational axis thereof extending longitudinally forwardly for independent vertical pivotal movement about a pivotal axis parallel with its axis of rotation, means for effecting a vertical pivotal movement of each auger cutter independently about its pivotal axis with respect to said cutter frame, means carried by said cutter frame for rotating said auger cutters in opposite directions about their rotational axes in any position of vertical pivotal movement thereof,

a mobile assembly disposed rearwardly of said cutter assembly and including a pair of parallel power driven endless track units, a mobile frame, means mounting said mobile frame between said endless track units for independent pivotal movement of each unit about a common generally transversely extending horizontal axis disposed adjacent to the forward portion of said track units, means between the rearward portion of each track unit and said mobile frame for effecting independent pivotal movement of each track unit about said common pivotal axis with respect to said mobile frame,

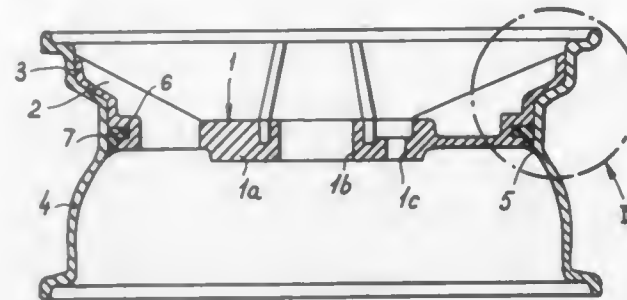
a yoke assembly between said mobile assembly and said cutter assembly including a yoke frame, means pivotally interconnecting said yoke frame with said mobile frame for pivotal movement about an axis generally parallel with the common pivotal axis of said track units, means pivotally interconnecting said yoke frame with said cutter frame for pivotal movement about a generally upright axis extending generally perpendicularly to the pivotal axis of said yoke frame with said mobile frame, means for effecting a pivotal movement of said cutter frame horizontally about its upright pivotal axis with said yoke frame, means for effecting pivotal movement of said yoke frame and said cutter frame vertically about the pivotal axis of said yoke frame with respect to said mobile frame, and

conveyor means including a forward section carried by said cutter frame and a rearward section carried by said mobile frame for conveying coal cut by said auger cutters longitudinally rearwardly of the machine, means pivotally mounting the forward portion of the rearward conveyor section on said mobile frame for pivotal movement about an axis parallel to the common pivotal axis of said track units and means between the rearward portion of said rearward conveyor section and said mobile frame for effecting pivotal movement of said rearward conveyor section about its pivotal axis with respect to said mobile frame.

**4,341,425**  
**MOTOR VEHICLE WHEEL**  
 Rudolf Streicher, and Manfred Pöhl, both of Vienna, Austria, assignors to Vereinigte Metallwerke Ranshofen-Berndorf Aktiengesellschaft, Braunau am Inn, Austria  
 Filed Jun. 10, 1980, Ser. No. 158,125  
 Claims priority, application Austria, Jun. 11, 1979, 4168/79  
 Int. Cl.<sup>3</sup> B60B 1/08, 23/00

U.S. Cl. 301—64 SH

2 Claims

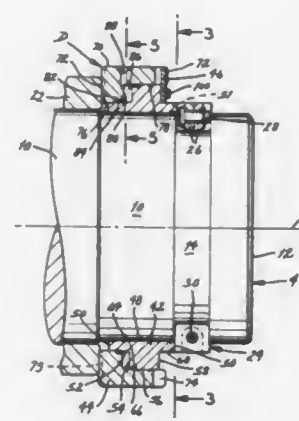


1. An aluminum wheel for a vehicle comprising a felly composed of a malleable aluminum alloy selected from the group which consists of AlMgSi1 and AlZn4.5Mg1 and provided with an inner cylindrical portion adjoining a frustoconical portion, a wheel disk composed of a cast alloy selected from the group which consists of GK(GD)-AlSi12 and GK-AlSi7Mg, said disk having a hub, an outer rim and spokes cast unitarily with and interconnecting said hub and said rim, said rim conforming to the shape of and fitting against said portions of said felly, said rim being formed with an outwardly open angle-section groove opening toward said inner cylindrical portion, and means including a ring cast into said wheel disk and fitting within said groove, said ring being composed of a material which is weld compatible with said felly and selected from the group consisting of S-AlMg4.5Mn, S-AlMg5 or the same material as said felly and at least one weld joining said ring to said felly for securing said felly to said wheel disk.

**4,341,426**  
**CLAMP-UP DEVICE FOR ROLL NECK BEARINGS**  
 James R. Clapp, Canton, Ohio, assignor to The Timken Company, Canton, Ohio  
 Filed Oct. 22, 1980, Ser. No. 199,485  
 Int. Cl.<sup>3</sup> F16C 43/04

U.S. Cl. 308—187.1

12 Claims



1. A clamp-up device for installing and holding a bearing on a shaft, such as the neck of a mill roll, said clamp-up device comprising: first and second rings adapted to fit around the shaft such that the first ring is prevented from moving off of the shaft while the second ring is free to move axially toward the bearing on the shaft, one of the rings being capable of rotating relative to the other of the rings, the first and second rings each having a generally radially directed wall surface and a generally axially directed wall surface, and the radially and

axially directed wall surfaces of the two rings together defining an annular chamber which circumscribes the shaft and is otherwise arranged such that when it is pressurized with a fluid, the second ring will be urged axially toward the bearing so as to exert an axially directed force on the bearing and thereby move the bearing to its operating position on the shaft, each of the rings on its radially directed wall surface further having a ramp which will align with the ramp on the other of the rings when the rings are in the proper angular position relative to each other, the ramps further being configured to force the second ring away from the first ring upon relative rotation of the one ring relative to the other ring in the proper direction so as to hold the bearing in the operating position to which it is forced by the pressurized fluid; a first seal element located along the axially directed wall surface of the first ring to form a barrier between that wall surface and second ring; and a second seal element located along the axially directed wall surface of the second ring to form a barrier between that wall surface and the first ring.

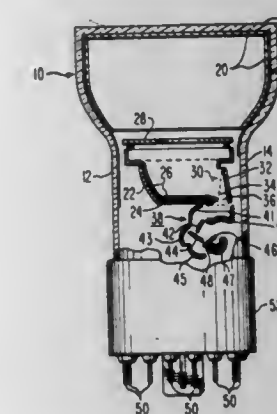
**4,341,427**  
**METHOD FOR STABILIZING THE ANODE**  
**SENSITIVITY OF A PHOTOMULTIPLIER TUBE**  
 Charles M. Tomasetti, Leola; Maurice D. Harsh, and Arthur F. McDonie, both of Lancaster, all of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,675

Int. Cl.<sup>3</sup> H01J 9/12, 9/00

U.S. Cl. 316—1

10 Claims



1. A method of stabilizing the anode sensitivity of a photomultiplier tube, having a photocathode, an anode and a plurality of dynodes for propagating and concatenating electron emission from said photocathode to said anode, each of said plurality of dynodes comprising a supporting substrate having a secondary emissive material on an exposed surface thereof, and at least one Nichrome dynode adjacent to said anode, comprising the steps of:

establishing a temperature gradient across said plurality of dynodes so that the temperature of said Nichrome dynode is substantially greater than said photocathode;  
 bright aging said tube at a first voltage for a predetermined period of time with the photocathode illuminated; and then  
 dark aging said tube at a second voltage for a second predetermined period of time with said photocathode non-illuminated.

**4,341,428**  
**INTERCONNECTION SYSTEM FOR SHIELDED**  
**ELECTRICAL CABLE**  
 David A. Hatch, Sherborn, and Paul J. White, Holliston, both of Mass., assignors to Pintel, Inc., Newton Upper Falls, Mass.  
 Filed Mar. 24, 1980, Ser. No. 132,821  
 Int. Cl.<sup>3</sup> H01R 13/34

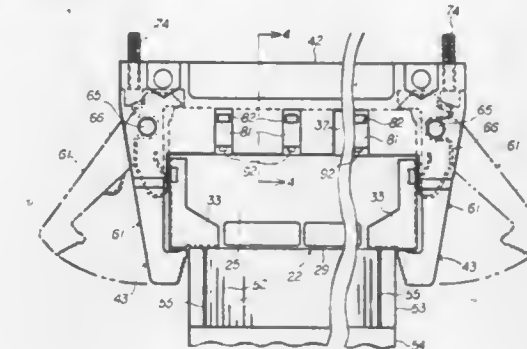
U.S. Cl. 339—14 R

28 Claims

1. An electrical connector system for use with a cable having

a plurality of signal wires and a conductive shield therefor, said system comprising:

a plug-in connector housing adapted to receive the shielded cable;  
 a plurality of connector contacts retained by said housing and each shaped and arranged for connection to one of the signal wires;  
 a header means shaped and arranged to receive and retain said connector housing;  
 a plurality of header contacts retained by said header means and each positioned so as to engage one of said connector contacts upon reception of said connector housing by said header means;



connector ground contact means disposed externally on said connector housing and adapted for connection to the conductive shield;

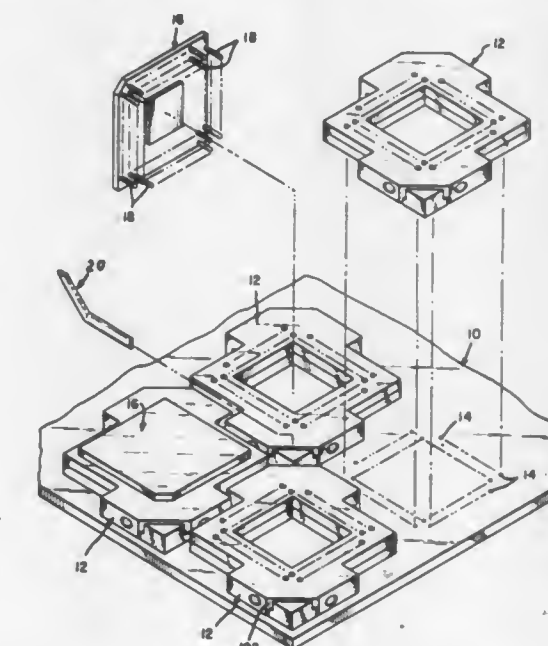
header ground contact means supported by said header means and shaped and arranged to engage said connector ground contact means upon reception of said connector housing by said header means; and

force producing means movable into a position that induces and maintains contact force between said connector ground contact means and said header ground contact means with said connector housing retained by said header means.

**4,341,429**  
**ELECTRICAL CONNECTOR**  
 Edward J. Bright, Elizabethtown; Glenn A. Engle, Hershey, and William S. Scheingold, Palmyra, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.  
 Filed Oct. 20, 1980, Ser. No. 198,493  
 Int. Cl.<sup>3</sup> H01R 13/62

U.S. Cl. 339—74 R

5 Claims



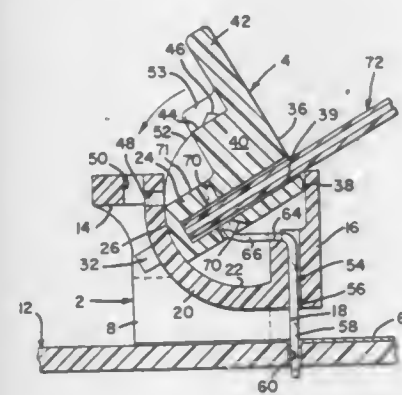
1. A connector for receiving and electrically connecting a ceramic substrate or like device having a plurality of pins



depending therefrom to a printed circuit board or the like, said connector comprising:

- a. a housing of insulating material having a plurality of cavities extending thereinto from the upper surface thereof, a passage from each cavity extending to and opening out on the underside of the housing;
  - b. a cover of insulating material slidably mounted on the upper surface of the housing and having a plurality of slots extending upwardly into the cover from its underside and a plurality of openings extending downwardly from the upper surface of the cover and intersecting the slots, said slots and openings being positioned in the cover in the same pattern as the cavities in the housing;
  - c. a plurality of contacts stamped and formed from conductive material and having:
    - i. means adapted for being electrically connected to a printed circuit board or the like,
    - ii. a fixed arm having a lower portion attached to and extending generally upwardly from said means and an upper portion bent in to lie generally at about a right angle to the lower portion,
    - iii. an elongated web attached to one edge of the lower portion of the fixed arm and extending therearound with a free end being adjacent to the opposite edge of the lower portion, and
    - iv. a movable arm attached to and extending upwardly from the web adjacent the free end thereof, said movable arm extending above and being generally normal to the free end of the fixed arm and adjacent thereto,
- said contacts being positioned in the cavities in the housing with said means extending therebefore for attachment to a printed circuit board or the like and the movable arm extending up into the slots in the cover,
- so that upon sliding the cover, the movable arms are drawn away from the fixed arms to admit therebetween the pins on a ceramic substrate or the like for electrical contact therewith.

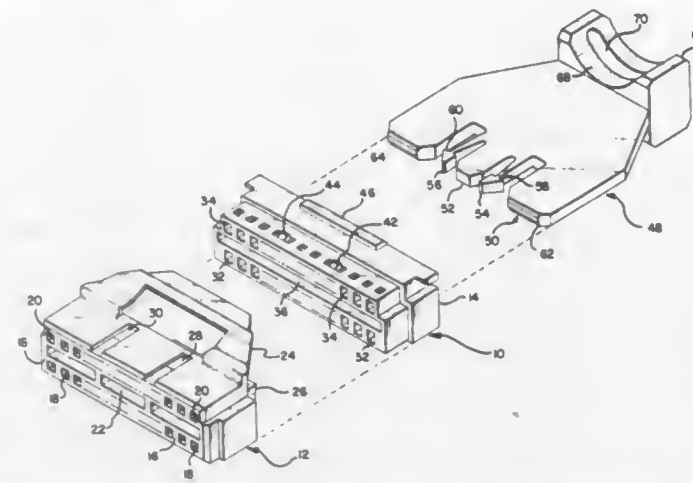
**4,341,430**  
**FLAT CABLE CONNECTOR**  
 Christopher L. Crawford, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.  
 Filed Nov. 5, 1980, Ser. No. 204,099  
 Int. Cl.<sup>3</sup> H01R 11/20, 13/514  
 U.S. Cl. 339—99 R **5 Claims**



1. A connector for flat cable, comprising:
  - a base,
  - a holder pivoted to said base and provided with a passage-way constructed to receive multiple conductors of a flat cable,
  - multiple electrical terminals on said base with terminal portions projecting externally of said base and conductor terminating portions projecting toward said passage-way, said base including an arcuate wall slidably cooperating with said holder upon pivoting said holder passage-way in a curvilinear course into said terminating portions, and, said holder including a projection slidably along a slot in said

arcuate wall, said projection having an enlarged head slidable along said arcuate wall.

**4,341,431**  
**STRAIN RELIEF**  
 John A. Woratyla, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.  
 Filed Jun. 16, 1980, Ser. No. 160,056  
 Int. Cl.<sup>3</sup> H01R 13/58  
 U.S. Cl. 339—103 M **2 Claims**



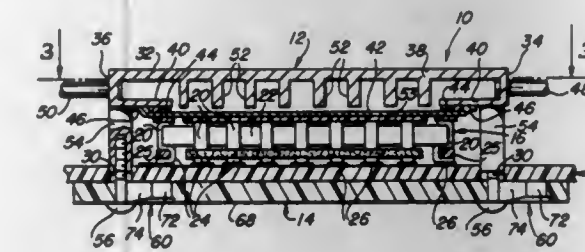
1. In combination with an electrical connector having a housing with at least two parallel spaced terminal carrying portions defining at least one elongated slot between each pair of portions and at least one pair of parallel spaced pillars subdividing said slot into a plurality of passages, a strain relief member adapted to be detachably mounted on said connector, said strain relief member comprising:

- a. a unitary member of rigid insulative material having an overall rectangular profile with a forward edge profiled to define an integral pair of legs on opposite sides of a central lug, each leg having an outwardly directed shoulder adjacent the free end and stabilizes flanges extending from said forward edge to either side of said legs and engageable in a respective one of said passages in said elongated slot of said housing;
- b. a block formed on an opposite rear edge of said member with an outwardly directed concavity formed on each side of the block and a through slot extending between said surfaces; and
- c. bundle tie means whereby conductors extending from said connector and lying in said concavities are encircled by said bundle tie means passing through said slot to secure them to said member.

**4,341,432**  
**LIQUID COOLED CONNECTOR FOR INTEGRATED CIRCUIT PACKAGES**  
 John M. Cutchaw, 7333 E. Virginia Ave., Scottsdale, Ariz. 85257  
 Continuation-in-part of Ser. No. 64,057, Aug. 6, 1979, Pat. No. 4,293,175, which is a continuation-in-part of Ser. No. 913,871, Jun. 8, 1978, Pat. No. 4,166,665, which is a continuation-in-part of Ser. No. 862,582, Dec. 20, 1977, Pat. No. 4,164,003, which is a continuation-in-part of Ser. No. 754,365, Dec. 27, 1976, Pat. No. 4,063,791. This application Jul. 10, 1980, Ser. No. 168,392  
 Int. Cl.<sup>3</sup> H01R 13/00 **15 Claims**

- U.S. Cl. 339—112 L
1. A connector for removably mounting and electrically connecting an integrated circuit package on a backpanel and dissipating the heat generated by operation of the integrated circuit package, the backpanel having holes formed there-through, said connector comprising:
  - (a) a thrust/heat dissipating member of substantially planar configuration for placement in overlaying engagement with the integrated circuit package and movable toward the backpanel for exerting a force on the integrated circuit

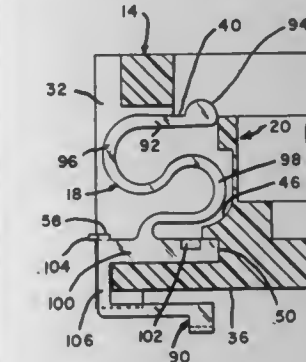
- package to pressurize the leads thereof into conductive contact with aligned terminal pads of the backpanel when the integrated circuit package is aligningly positioned thereon, said thrust/heat dissipating member having means for absorbing and dissipating the heat generated by operation of the integrated circuit package;
- (b) a thrust inducing mounting plate for positioning in contiguous engagement with the opposite surface of the backpanel; and



- (c) complementary elements of a demountable biased connection on said thrust/heat dissipating member and on said thrust inducing mounting plate for interconnection thereof through the holes of the backpanel to move said thrust/heat dissipating member toward the backpanel for pressurized mounting and electrical connection of the integrated circuit package on the backpanel.

**4,341,433**  
**ACTIVE DEVICE SUBSTRATE CONNECTOR**  
 Gabriel B. Cherian, York; William S. Scheingold, Palmyra, and Frank C. Youngfleish, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.  
 Continuation of Ser. No. 38,607, May 14, 1979, abandoned, which is a continuation of Ser. No. 904,645, May 10, 1978, abandoned. This application May 8, 1980, Ser. No. 147,766  
 Int. Cl.<sup>3</sup> H01R 13/22 **2 Claims**

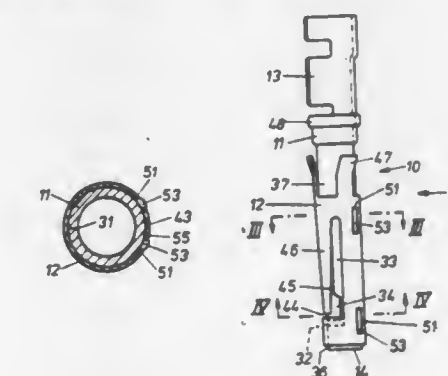
U.S. Cl. 339—176 MP



1. A connector for electrically connecting an active device substrate to a PCB, comprising:
  - a. a frame of insulating material formed by four side walls arranged to define therein between a centrally located, upwardly opened compartment, and ledge extending around the perimeter of the compartment formed by upwardly facing shoulders located on the inwardly facing vertical surfaces of the side walls, said ledge providing support for a substrate which may be positioned in the compartment;
  - b. a plurality of narrow cells spaced along and extending into each of the side walls from the outwardly facing vertical surfaces thereof, each cell having an opening into the compartment through the upwardly facing shoulders and a forward wall extending downwardly from the opening to a floor of the cell; and
  - c. a plurality of spring members consisting of a horizontal bar with forward and rearward ends, a S-shaped spring section extending upwardly from the bar with a contact on the free end, a vertical arm depending from the rear-

ward end of the bar, a horizontal arm extending forwardly from the vertical arm, and a contact on the horizontal arm, said spring members being positioned in the cells with the horizontal bar supported by the floor so that the contact on the spring section extends through the opening into the compartment for engagement with a substrate which may be positioned therein and with the horizontal arm being beneath the frame so that the contact thereon may engage a conductive trace on a PCB.

**4,341,434**  
**ELECTRIC PLUG CONTACT**  
 Max Pfister, Hunenberg, Switzerland, assignor to CDM Connectors Development & Mfg. AG, Cham, Switzerland  
 PCT No. PCT/CH79/00022, § 371 Date Oct. 15, 1979, § 102(e) Date Oct. 15, 1979, PCT Pub. No. WO79/00635, PCT Pub. Date Sep. 6, 1979  
 PCT Filed Feb. 12, 1979, Ser. No. 189,845  
 Claims priority, application Switzerland, Feb. 17, 1978, 146/78  
 Int. Cl.<sup>3</sup> H01R 11/22 **10 Claims**



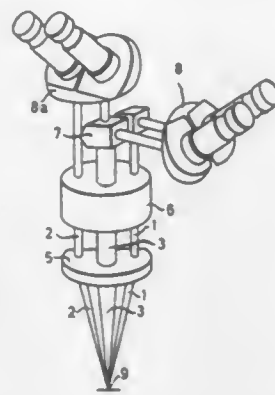
1. An electric plug contact which includes
  - an elongated, electrically conductive contact body, said contact body including a cylindrical portion having at least one pair of anchoring members extending outwardly therefrom, and
  - an elongated spring sleeve wrapped around the cylindrical portion of the contact body, the spring sleeve having side edges which are closely positioned along a longitudinal line extending between each pair of anchoring members, the spring sleeve including pairs of perforations therein at least equal in number to the number of pairs of anchoring members on the contact body, each perforation of each pair of perforations being located near an opposing side edge of the spring sleeve so as to create a holding bridge portion between the perforation and the associated side edge, each perforation being located and shaped such that an associated anchoring member is located therein in continuously wedged relationship against the associated holding bridge portion of the spring sleeve.

**4,341,435**  
**STEREOSCOPIC MICROSCOPE FOR MULTIPLE OBSERVATION**  
 Walter Lang, Königsbrunn; Ortwin Müller, Aalen, and Alfons Neldinger, Heidenheim, all of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Fed. Rep. of Germany  
 Filed Nov. 28, 1980, Ser. No. 211,129  
 Claims priority, application Fed. Rep. of Germany, Dec. 8, 1979, 2949428  
 Int. Cl.<sup>3</sup> G02B 21/22 **8 Claims**

- U.S. Cl. 350—35
1. Stereoscopic microscope for multiple observation, comprising three observing light paths, means causing said light paths to converge on an object to be observed, said light paths having entrance pupils with centers lying at the corners of a



triangle, and means for splitting at least one of said light paths in such manner as to provide from said three light paths two



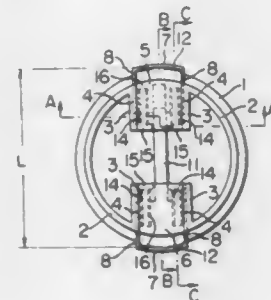
pairs of stereoscopically related observing light paths so that two observers may simultaneously observe the object stereoscopically.

#### 4,341,436 LENS CAP

Hideo Kanno, Kawasaki, and Yoshiki Suzuki, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan  
Filed Aug. 28, 1980, Ser. No. 181,977  
Claims priority, application Japan, Oct. 5, 1979, 54-137360  
Int. Cl.<sup>3</sup> G02B 23/16

U.S. Cl. 350—65

2 Claims



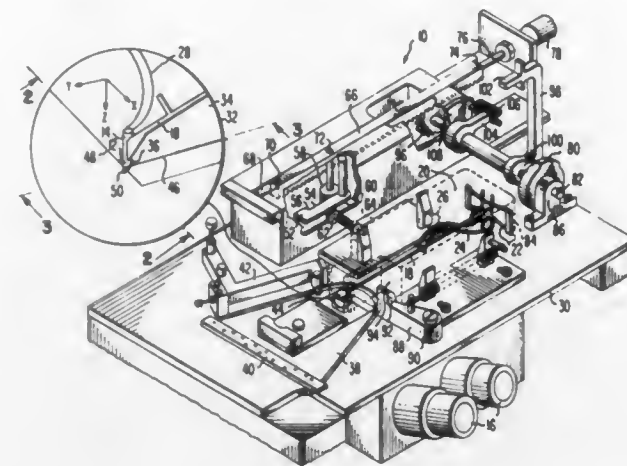
1. In a lens cap mountable on a rim formed at the end of a lens barrel, said lens cap having:  
a disc-shaped cap body;  
a pair of sliding members opposed to each other on said cap body and slidable diametrically of said cap body; and  
a biasing member for biasing said sliding members in a direction in which they are extended outwardly from said cap body;  
said sliding members having connecting portions engageable with a connecting portion provided on the inner peripheral surface of the rim of said lens barrel, said lens cap being mounted on said lens barrel by engagement between said connecting portions;

the improvement comprising engaging members provided at opposed ends of said sliding members, said engaging members limiting the outward extension of said sliding members from said cap body against said biasing means by mutual engagement therebetween, and wherein at least one of said engaging members is supported on a sliding member by a resilient member, and as said sliding members are slid against said biasing member for the assembly of said lens cap, said engaging members bear against each other and said resilient member is resiliently deformed to enable one of said engaging members to ride across and come into engagement with the other engaging member.

4,341,437  
STYLUS TIP POSITIONING TECHNIQUE  
John A. van Raalte, Princeton, and David W. Fairbanks, Monmouth Junction, both of N.J., assignors to RCA Corporation, New York, N.Y.  
Filed Oct. 30, 1980, Ser. No. 202,120  
Int. Cl.<sup>3</sup> G02B 7/00

U.S. Cl. 350—81

27 Claims

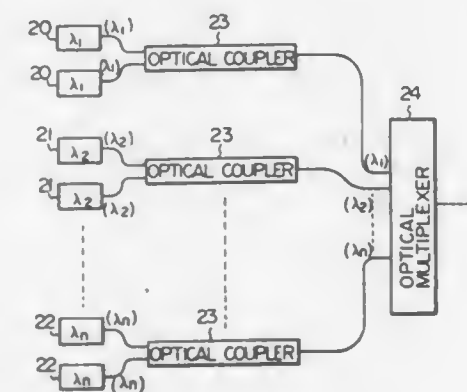


13. An apparatus for positioning the tip of a stylus mounted on an arm attached to a cartridge for viewing through a microscope, said arm being capable of flexible movement with respect to said cartridge, comprising a platform having a transparent plate attached thereto, said platform adapted to support said cartridge so that the tip of said stylus contacts a surface of said plate disposed between said tip and an objective of said microscope, said plate being prepositioned such that said surface lies in the focal plane of said microscope objective.

4,341,438  
LIGHT SOURCE ARRANGEMENT IN AN OPTICAL COMMUNICATION SYSTEM  
Norio Seki, Tokyo; Yohtaro Yatsuzuka, Yokohama, and Haruo Sakaguchi, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan  
Filed May 28, 1980, Ser. No. 153,968  
Claims priority, application Japan, Jun. 6, 1979, 54-69968  
Int. Cl.<sup>3</sup> G02B 5/172; H04B 9/00

U.S. Cl. 350—96.16

1 Claim



1. A light source arrangement in an optical communication system comprising

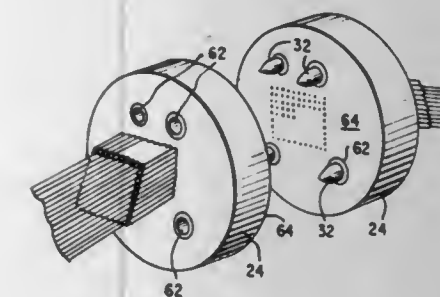
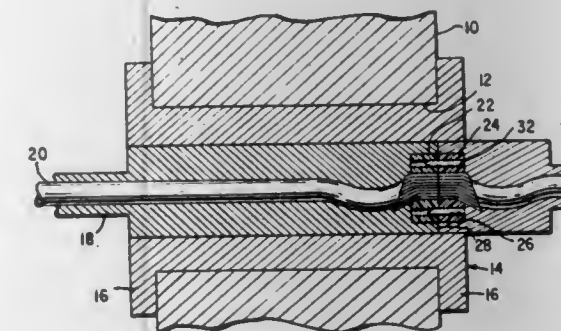
- a plurality of pairs of light sources, each light source within each of said pairs having identical wavelengths and each pair of said light sources having a different wavelength from each other pair,
- a plurality of optical couplers, each of said optical couplers connected to one of said pairs of light sources for coupling together the outputs of each pair of light sources,
- an optical multiplexer connected between each of said optical couplers and an optical fiber cable for multiplexing

the outputs of each of said optical couplers to said optical fiber cable, and  
(d) an electrical switch for selectively actuating one of said light sources wherein said electrical switch is arranged to select one of said light sources when another of said light sources has failed.

4,341,439  
OPTICAL FIBER CONNECTOR AND METHOD OF MAKING SAME  
Malcolm H. Hodge, Claymont, Del., assignor to TRW Inc., Elk Grove Village, Ill.  
Filed Oct. 4, 1979, Ser. No. 81,946  
Int. Cl.<sup>3</sup> G02B 7/26

U.S. Cl. 350—96.22

27 Claims



11. A connector for effecting optical connections between adjacent ends of optical fibers, the combination comprising discrete first and second housings; optical fibers to be joined disposed in said housings, each of said housings comprising a plurality of parallel cylinders in tangential engagement defining fiber-receiving channels having cusp-shaped interstices; the axes of said cylinders being bent intermediate the ends thereof whereby said optical fibers inserted in first receiving ends of said channels of said first and second housings are urged into corresponding interstices of corresponding channels; said fibers terminating with the channel-defining cylinders at second connecting ends of said channels; said first and second housings being of precisely the same configuration at said second ends whereby fibers disposed in corresponding channels of said housings engage in optical signal transmissive connections when corresponding channel second ends of said first and second housings engage in a face-to-face connection.

4,341,440  
UNDERSEA OPTICAL FIBER TELECOMMUNICATIONS CABLE

Jean-Pierre Trezeguet; Jean-Patrick Vives, both of Calais, and Georges Comte, Lyons, all of France, assignors to Societe Anonyme dite: Les Cables de Lyon, Lyons, France  
Filed Dec. 11, 1979, Ser. No. 102,465

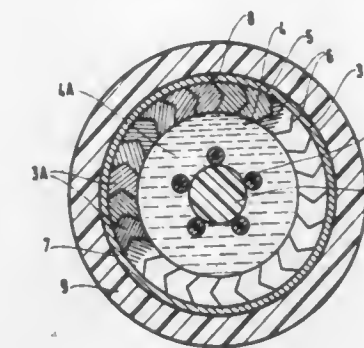
Claims priority, application France, Dec. 12, 1978, 78 34890  
Int. Cl.<sup>3</sup> G02B 5/14

U.S. Cl. 350—96.23

6 Claims

1. An undersea optical fibre telecommunications cable, comprising:

at least one optical fibre immersed in a liquid whose viscosity is close to that of glycerine;  
said optical fibre containing liquid being housed in a casing formed by a stranded assembly of metal wires of generally polygonal cross-section having radially inwardly directed sides of polygonal sections shorter than the radially outwardly directed sides and the intermediate sides being in contact with those of neighbouring wires to form a rigid arch structure;

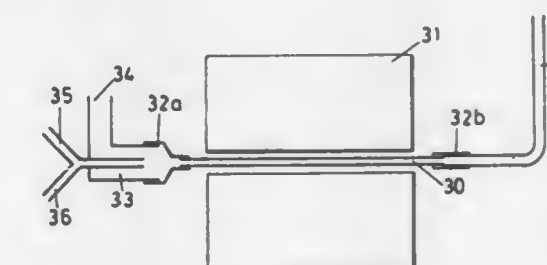


said casing being covered with an outer tube of an electrically conductive metal in the form of a skelped metal tape around the casing with welded meeting edges;  
said outer tube being surrounded by an outer sheath of polymeric material; and  
the density of the optical fibre containing liquid being close to that of water so that the overall density of the cable is slightly higher than that of water.

4,341,441  
METHOD OF MAKING SOLID PREFORMS AND OPTICAL FIBERS DRAWN THEREFROM  
Paul E. Lighty, Lafayette, N.J.; Philip W. Black, Mountfitchet, and John Irvan, Bishop Stortford, both of England, assignors to International Standard Electric Corp., New York, N.Y.  
Continuation of Ser. No. 497,990, Aug. 16, 1974, abandoned.  
This application Jan. 24, 1977, Ser. No. 761,746  
Claims priority, application United Kingdom, Aug. 21, 1973, 39444/73

Int. Cl.<sup>3</sup> C03B 37/025, 37/075  
U.S. Cl. 350—96.30

11 Claims



1. A method of making an optical fiber preform suitable for drawing into an optical fiber including the steps of:  
providing a hollow glass tube of a first refractive index and having a predetermined length with a bore formed there-through;  
introducing into said bore, in unreacted dry vapor form, material that forms a glass layer,  
coating said bore by thermally depositing said material thereon to form a glass layer of higher refractive index than the refractive index of said tube;  
rotating said glass tube about its longitudinal axis by a rotating device; and  
heating said coated tube to collapse said tube into a solid preform having substantially the same length as said predetermined layer whereby the glass coating layer becomes a core of said higher index of refraction than the refractive index of said tube.



6. An optical fiber drawn from an optical fiber preform made by the method of claim 1.

**4,341,442**  
**FIBER OPTICAL TRANSMISSION FILTER WITH DOUBLE-REFRACTION ELEMENT**

Mark Johnson, Ossining, N.Y., assignor to Max-Planck-Gesellschaft zur Förderung d. Wissenschaften e. V., Göttingen, Fed. Rep. of Germany

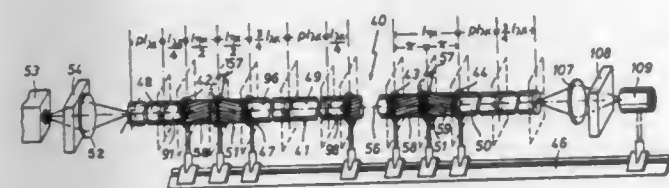
Filed Feb. 26, 1980, Ser. No. 124,720

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1979, 2908752

Int. Cl.<sup>3</sup> G02B 5/12

U.S. Cl. 350—96.30

18 Claims



17. An optical transmission filter comprising:  
an input polarizer for receiving light along a predetermined light path;  
an output polarizer; and  
a single-mode optical fiber mounted between the input and output polarizers comprising:  
an input linear double refraction delay section for receiving light from the input polarizer;  
an output linear double refraction delay section for sending light to the output polarizer;  
an intermediate linear double refraction delay section located between the input and output delay sections; and  
a plurality of coupling sections for coupling the input and output delay sections to the intermediate delay section, wherein the coupling sections are twisted under a torsional force to produce an elliptical double refraction.

**4,341,443**  
**LIGHT REFLECTIVE SAFETY DEVICE**

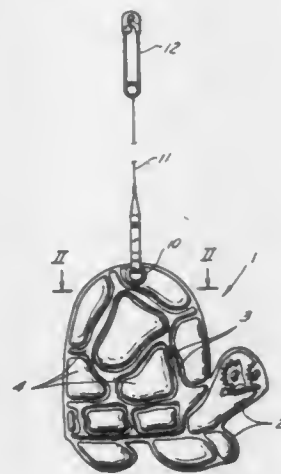
Jerrold Robinson, Scarsdale, N.Y., assignor to The Dimension Weld International Corp., Stamford, Conn.

Filed Jun. 13, 1977, Ser. No. 806,278

Int. Cl.<sup>3</sup> G02B 5/12

U.S. Cl. 350—98

6 Claims



1. A light-reflective safety-device, particularly for use by children on dark roads, comprising a tag composed of a layer of padding material sandwiched between two layers of at least translucent synthetic plastic sheet material, said layers being heat-bonded to one another in a first zone extending along the circumference of the tag and in additional zones inwardly of said first zone so as to delineate a plurality of raised padded areas on said tag, said areas being convexly curved and each being circumferentially flanked by continuous planar surface

portions which are inclined to the general plane of the tag so that light impinging on said convex areas is scattered and reflected; and means for attaching said tag to a user.

**4,341,444**  
**ELECTRICALLY OPERATED REMOTE CONTROL REARVIEW MIRROR**

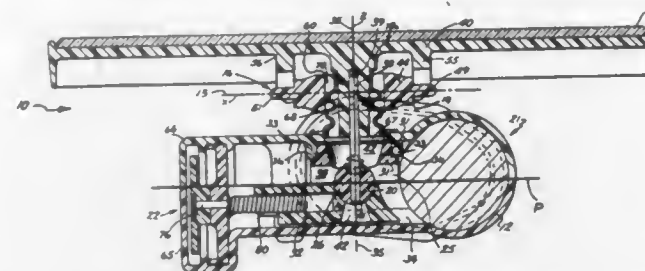
Gerard N. Stelma, Grand Rapids, Mich., assignor to Keeler Corporation, Grand Rapids, Mich.

Filed Aug. 1, 1980, Ser. No. 174,535

Int. Cl.<sup>3</sup> G02B 7/18

U.S. Cl. 350—289

38 Claims



1. An electrically actuated rearview mirror comprising:  
an X axis;  
a Y axis;  
a Z axis, said X axis, said Y axis and said Z axis being mutually orthogonal;  
a mirror;  
a support for said mirror;  
means for mounting said mirror on said support for pivotal movement about at least said X and Y axes;  
a sphere;  
means for mounting said sphere on the back of said mirror for conjunctive pivotal movement with said mirror about said X and Y axes and reciprocal movement about said Z axis;  
an X drive means for pivoting said mirror about said X axis when electrical power is applied to said X drive means, said X drive means including a first surface encompassing at least a portion of one-half of said sphere, said first surface slidably engaging said sphere;  
a Y drive means for pivoting said mirror about said Y axis when electrical power is applied to said Y drive means, said Y drive means including a second surface encompassing at least a portion of the opposing half of said sphere, said second surface slidably engaging said sphere, said first and second surfaces extending in mutually orthogonal directions; and  
said X and Y drive means including means for displacing said first and second surfaces in mutually orthogonal directions, said first and second surfaces being displaced in directions which are orthogonal to the directions in which said first and second surfaces extend, respectively, said first and second surfaces being displaceable when power is applied to said X and Y drive means, respectively, to effect displacements of said sphere and imparting pivotal movements to said mirror.

**4,341,445**  
**LIQUID CRYSTAL DISPLAY ELEMENT AND PRODUCTION THEREOF**

Shigeru Matsuyama, Masaharu Koyama, and Yukihiro Sato, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 1, 1980, Ser. No. 136,370

Claims priority, application Japan, May 18, 1979, 54-60436

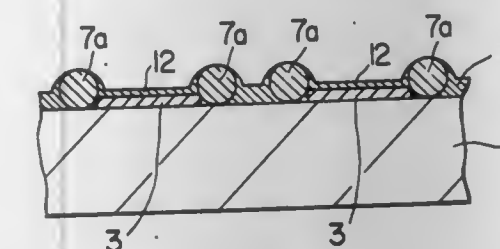
Int. Cl.<sup>3</sup> G02F 1/13

U.S. Cl. 350—344

9 Claims

1. A liquid crystal display element comprising a pair of electrode substrates facing each other at a constant distance, each electrode substrate comprising a transparent substrate and an electrode film adhered to the inside surface thereof, a pair of

orientation controlling films formed on the electrodes and a sealant which may contain a spacer and seals the peripheral portions of the electrode substrates to form a space which is



filled with a liquid crystal material, characterized in that one of the orientation controlling films contains a uniformly dispersed spacer therein.

**4,341,446**  
**MICROFICHE READING CARREL**

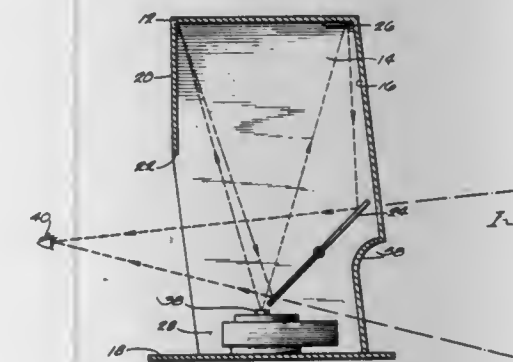
Russell J. Burkel, Hartland, Wis., assignor to Realist, Inc., Menomonee Falls, Wis.

Filed Oct. 27, 1980, Ser. No. 201,059

Int. Cl.<sup>3</sup> G03B 21/24

U.S. Cl. 353—77

3 Claims



1. A microfilm reading carrel comprising:  
a generally rectangular enclosure having long dimension vertically disposed and including a top, bottom, sides, back and a front which depends from the top only part ways towards the bottom to leave a substantial front opening in the lower portion of the front, said bottom extending forwardly of the sides and top,  
the upper surface of said bottom and the inside surfaces of said front, back and sides being non-reflecting black,  
a microfilm projector mounted on said bottom to project an image onto the underside of said top,  
said underside of the top having a flat white surface serving as a projection screen which does not enhance or brighten the projected image,  
a front surface mirror mounted inside the enclosure to the rear of the light path of the projected image, said mirror being mounted for adjustment about a horizontal axis generally on the horizontal axis of the mirror,  
the image on the screen being reflected by the mirror to the person using the carrel through the front opening.

**4,341,447**  
**INFRARED CAMERA RANGING SYSTEM**  
Conrad H. Biber, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 1, 1980, Ser. No. 211,639

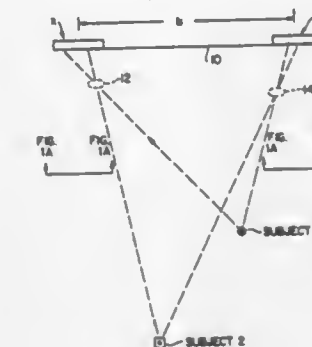
Int. Cl.<sup>3</sup> G03B 7/08

U.S. Cl. 354—25

8 Claims

1. A passive ranging system for photographic apparatus, said system comprising:  
means for sensing infrared radiation emitted by one or more subjects in a scene to be photographed, said sensing means including first and second sensor members of given length spaced apart a predetermined distance in a given direction

and means for imaging radiation from a subject on said sensor members;  
means for comparing the position of the subject image defined by said emitted radiation on each said sensor member as measured along said given direction and, in accordance therewith, determining the separation of said sub-



**4,341,448**  
**LIGHT RECEIVING ELEMENT ASSEMBLY IN A CAMERA**

Kenji Toyoda, and Haruo Hirano, both of Kawasaki, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

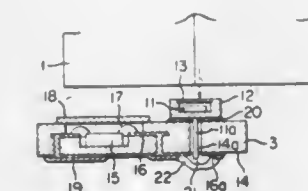
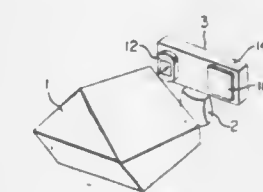
Continuation of Ser. No. 943,759, Sep. 19, 1978, abandoned. This application Feb. 27, 1980, Ser. No. 125,274

Claims priority, application Japan, Sep. 26, 1977, 52/114713

Int. Cl.<sup>3</sup> G03B 7/00

U.S. Cl. 354—59

11 Claims



9. A light receiving element assembly for use in a camera having a pentaprism and an associated eyepiece comprising:  
a prism member adapted to be positioned adjacent to the eyepiece and to the pentaprism for receiving a portion of a light beam passing through an emergent light surface of the pentaprism, the prism member reflecting said portion of the light beam along the emergent light surface of the pentaprism;  
a package enclosing a light receiving element for receiving the reflected light beam from the prism member, the light receiving element having output terminals for producing outputs responsive to the amount of light received;  
a block of insulating material having a cavity therein and extending along the emergent light surface of the pentaprism, the package being mounted on the block of insulating material;  
an integrated circuit chip for treating a signal from the light



receiving element, the integrated circuit chip being enclosed within the cavity in the block of insulating material; and

- a conductor pattern having a first portion disposed within the block of insulating and terminating within the cavity and connected to the integrated circuit chip, and having a second portion disposed on a surface of the block of insulating material and connected to the output terminals of the light receiving element, thereby forming said light receiving element assembly along the emergent light surface of the pentaprism; and
- insulating material covering said output terminals and said second portion to shield the output terminals and the second portion from the atmosphere and reduce leakage currents flowing between the output terminals.

4,341,449

#### CAMERA CAPABLE OF STANDARD AND CLOSE-UP EXPOSURES

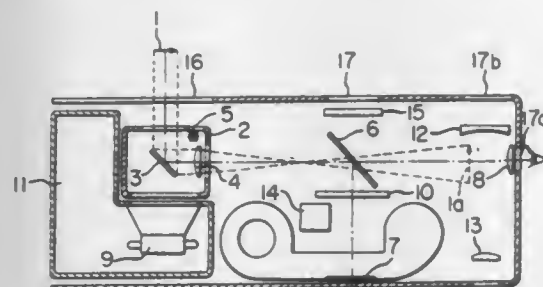
Hiroshi Iwata, Nara, and Akitoshi Morioka, Settsu, both of Japan, assignors to West Electric Co., Ltd., Osaka, Japan  
Filed Aug. 25, 1980, Ser. No. 181,071

Claims priority, application Japan, Aug. 31, 1979, 54-111897; Oct. 12, 1979, 54-132347

Int. Cl.<sup>3</sup> G03B 3/00, 13/12, 15/03

U.S. Cl. 354—126

17 Claims



1. A camera capable of standard and close-up exposures comprising

- a first light aperture formed through a camera body for permitting the transmission of the light from a subject into said camera body,
- an optical system for standard photography for transmitting the light from said first light aperture through a shutter mechanism and a standard lens, thereby focusing the image of said subject on a film,
- a second light aperture formed through said camera body for permitting the transmission of the light from a subject into said camera body,
- an optical system for close-up photography having at least one magnifying objective and a reflecting mirror for directing the light from said second light aperture to said shutter mechanism, thereby focusing the magnified image of said subject on a film,
- a selection means for selecting said optical system for standard photography or said optical system for close-up photography,
- a standard viewing optical system used in conjunction with said optical system for standard photography for permitting a photographer to view the image of a subject to be exposed through said optical system for standard photography,
- a close-up viewing optical system used in conjunction with said optical system for close-up photography for permitting a photographer to view the image of a subject to be exposed through said optical system for close-up photography,
- a flash-light source disposed within said camera body for emitting flash-light for flash exposure, and an auxiliary light source disposed within said camera body and used

for illuminating a subject so as to facilitate the viewing thereof,

whereby by said selection means either said optical system for standard photography or said optical system for close-up photography is selected to focus the image of a subject on a film held on the same position regardless of standard or close-up photography.

4,341,450

#### SELECTIVELY LOCKABLE CAMERA EXPOSURE FACTOR SETTING MECHANISM

Masaharu Shigoku, Yao, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

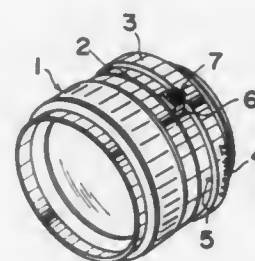
Filed May 4, 1981, Ser. No. 260,206

Claims priority, application Japan, May 12, 1980, 55-65377[U]

Int. Cl.<sup>3</sup> G03B 9/02, 17/00

U.S. Cl. 354—273

11 Claims



1. A camera exposure factor setting mechanism comprising:
- a fixed member;
- an exposure factor setting member adjacent to said fixed member and movable with respect thereto for setting an exposure factor;
- a recess formed in either said fixed member or said exposure factor setting member;
- a lock member provided on the other of said fixed member or said exposure factor setting member, said lock member being movable between a first position allowing movement of said exposure factor setting member and a second position wherein said lock member engages said recess for preventing movement of said exposure factor setting member; and
- visible indication means including a distinguishably colored portion for alternately enabling said colored portion externally visible and invisible depending on the position of said lock member.

4,341,451

#### CAMERA HAVING DEPTH OF FOCUS INDICATING MEANS

Roland Krueger, Wolfenbuettel; Joachim Proske, Brunswick; Ortwin Rösner, Munich, and Walter Swarofsky, Brunswick, all of Fed. Rep. of Germany, assignors to Rollei-Werke Franke & Heldecke GmbH & Co. KG, Brunswick, Fed. Rep. of Germany

Filed Apr. 6, 1981, Ser. No. 251,122

Claims priority, application European Pat. Off., Apr. 5, 1980, 80101837

Int. Cl.<sup>3</sup> G03B 3/08, 17/20

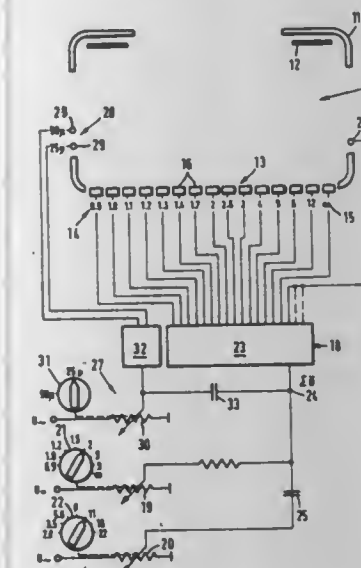
U.S. Cl. 354—289

16 Claims

1. A device for indicating the depth of field of a camera having aperture setting means and range setting means comprising:

- (a) a plurality of optically active elements positioned for view in the camera viewfinder;
- (b) scale means associated with said optically active elements,
- (c) said aperture setting means including means for producing an A.C. voltage for a given value of aperture setting,

- (d) said range setting means including means for producing a D.C. voltage for a given value of range setting, and



- (e) means for energizing selected adjacent ones of said optically active elements to indicate a depth of field, said energizing means responsive to said A.C. voltage and said D.C. voltage.

4,341,452

#### TRIAXIAL UNIVERSAL CAMERA MOUNT

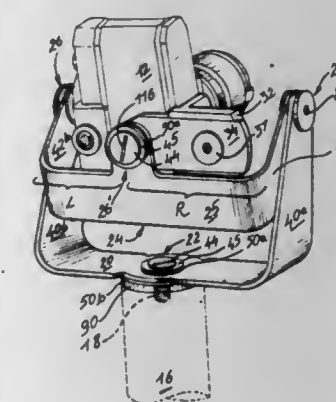
Torkel Korling, 1410 Chicago Ave., Evanston, Ill. 60201

Filed Aug. 10, 1981, Ser. No. 291,272

Int. Cl.<sup>3</sup> G03B 17/56

U.S. Cl. 354—293

41 Claims



1. An improved camera mount comprising in operative combination:

- (a) a first, outer yoke having a planar base portion and a pair of upstanding arms at opposite ends of said base portion;
- (b) a second, inner yoke having a pair of upstanding arms and a planar back portion therebetween;
- (c) said inner yoke being nested within and pivotally connected by a pair of pivot assemblies to said first yoke adjacent the ends of the arms thereof, said pivot assemblies being aligned to form a horizontal axis;
- (d) said outer yoke having means defining a pivotable connection to a tripod disposed in said base portion for releasably securing said mount on said tripod, said base pivotable connection defining a vertical axis normal to said horizontal axis;
- (e) means defining a pivot assembly disposed in said inner yoke back for pivotally securing a camera holder assembly to said inner yoke, said inner yoke back pivot assembly defining a third axis normal to said horizontal and vertical axes;
- (f) a universal camera holder assembly means for removably securing a camera secured to said inner yoke by said inner yoke back pivot assembly, said universal camera holder assembly having means for adjusting the position of the

axis of a lens of said camera so that said lens axis is collimated with said third axis;

(g) said horizontal axis and said vertical axis intersecting said collimated third, lens axis;

(h) said pivot assemblies, base pivotal connection, and inner yoke back pivot assembly being adapted to provide sufficient frictional resistance to turning to permit said yokes and camera to be pivoted from a first to a second position and remain in said second position to which pivoted;

(i) said yokes and universal camera holder assembly means being adapted to maintain said camera substantially in balance about its center of gravity; and

(j) said elements (a) through (i) in combination providing a triaxial universal camera mount removably securable to a manually portable tripod, and permitting:

(i) rotational movement of said camera from a horizontal to vertical frame orientation around the lens axis, and

(ii) upward or downward tilting of said camera around the horizontal axis

without introduction of translational or parallax errors necessitating reframing or refocusing of the camera, and without manipulation of pivot releasing/tightening levers.

4,341,453

#### PHOTOGRAPHIC FILM TYPE SENSOR

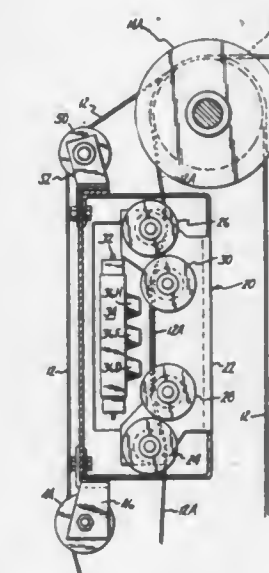
Barry P. Rubin, Maple Grove, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed May 7, 1981, Ser. No. 261,040

Int. Cl.<sup>3</sup> G03D 3/08

U.S. Cl. 354—298

17 Claims



1. A photographic film type sensor apparatus for identifying a film web, the apparatus comprising:

- an array of sensor means positioned across a path of the web, each sensor means sensing presence of the web adjacent the sensor means;
- means for counting the number of sensor means which have sensed presence of the web during each of a plurality of width determining cycles;
- means for making a width determination for each of the width determining cycles based upon the counted number of sensor means during the cycle; and
- means for identifying the web by film width based upon a total of the width determinations from the plurality of width determining cycles.



4,341,454

## SELF-DEVELOPING PHOTOGRAPHIC APPARATUS WITH MULTIPLE TIMERS

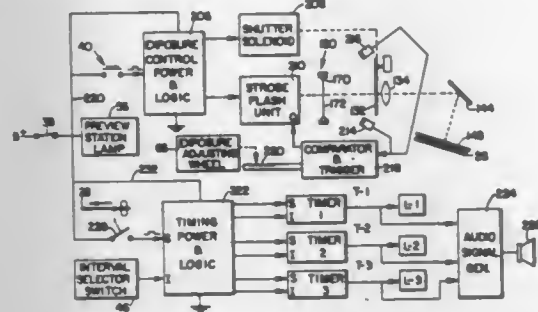
Philip G. Baker, Peabody, and Gerald L. Matthews, Raynham, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 152,858, May 23, 1980, Pat. No. 4,300,827.  
This application Aug. 12, 1981, Ser. No. 292,237

Int. Cl.<sup>3</sup> G03D 5/02

U.S. Cl. 354—304

5 Claims



1. Photographic apparatus for separately timing a predetermined imbibition period for each of a plurality of sequentially processed self-developing film units, said apparatus comprising:

means for processing such a film unit in response to advancing the film unit relative to said processing means;  
means for providing an output signal in response to each advancement of a film unit relative to said processing means;

a plurality of timers, each being operable upon actuation for timing the predetermined imbibition period; and  
means responsive to an output signal for selecting and actuating one of said plurality of timers to time the imbibition period of a corresponding processed film unit, said selecting and actuating means being configured so that said plurality of timers are actuated in a predetermined sequence in response to successive output signals.

4,341,455

## CONDUCTING TONER TRANSFER APPARATUS

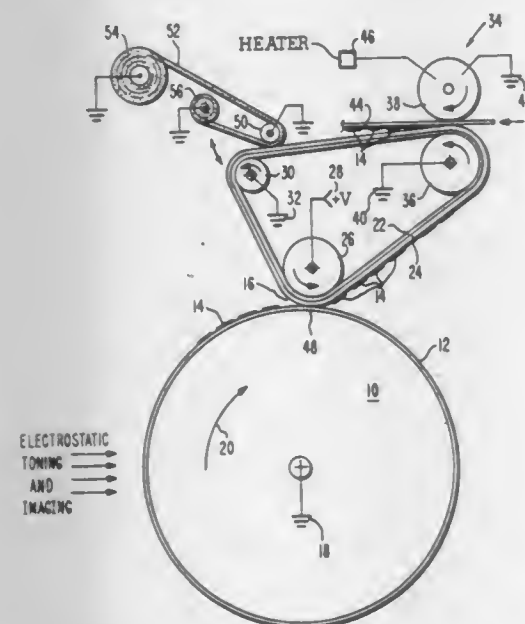
Richard C. Fedder, Longwood, Fla., assignor to Burroughs Corporation, Orlando, Fla.

Filed Nov. 13, 1979, Ser. No. 93,219

Int. Cl.<sup>3</sup> G03G 15/00

U.S. Cl. 355—3 TR

1 Claim



1. Magnetic conductive toner transfer apparatus comprising, an imaging device having an image receiving dielectric

surface on which an electrostatic toned image is accepted and carried,  
semi-conducting means carrying a highly insulating dielectric film disposed in surface contact with the dielectric surface of said imaging device,  
means operably associated with said imaging device and said semi-conducting means for applying an electrical potential to said last named means,  
means moveable relative to said semi-conducting means to keep said semi-conducting means taut with respect to the surface of the imaging device;

said semi-conducting means comprising an endless loop or belt and tensioning rollers maintained at ground potential and a transfer roller having a relatively high voltage potential applied thereto;

a toner fusing station to which said semi-conducting means is continuously moved, said fusing station including a first pressure roller operably associated with said semi-conducting means and a second pressure roller in confronting surface contact with said semi-conducting means and said first pressure roller;

heater means operably associated with said second pressure roller effective when energized to cause toner to fuse under pressure and heat to a secondary substrate such as paper which may be introduced into the nip between said first and second rollers to receive a toned and fixed image corresponding to the image carried by said imaging device; and

continuously renewable means for removing toner and charge from said dielectric film by bringing unused means into cleaning contact with said film.

4,341,456

## TRANSFER SYSTEM FOR A XEROGRAPHIC REPRODUCTION MACHINE

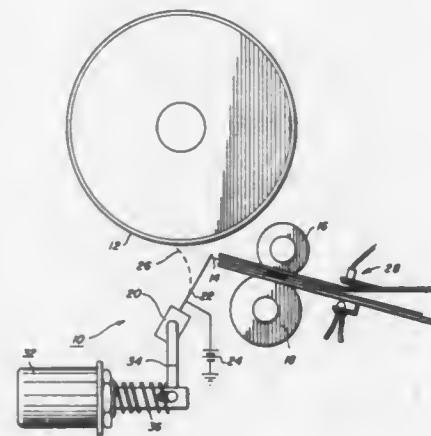
Venkat K. Iyer, Webster; Stephen Borostyan, Victor, and Timothy T. Blair, Farmington, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 27, 1980, Ser. No. 163,459

Int. Cl.<sup>3</sup> G03G 15/00

U.S. Cl. 355—3 TR

3 Claims



1. An improved transfer apparatus for transferring a toner image from a photoreceptor to a copy sheet, said transfer apparatus comprising:

a brush having conductive bristles positioned adjacent to but out of contact with the photoreceptor,  
means for electrically biasing the bristles, and  
means for causing the lead edge of the copy sheet to deflect the brush fibers after which the brush fibers contact the back of the copy sheet and remain in contact with the back of the copy sheet as the copy sheet is moved into contact with the toner image on the photoreceptor so that transfer of the toner image is effected.

4,341,457

## ELECTROPHOTOGRAPHIC APPARATUS INCLUDING AN ELECTROSTATIC SEPARATION DEVICE

Kimio Nakahata, Kawasaki; Koichi Tanigawa, and Hiroyuki Adachi, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

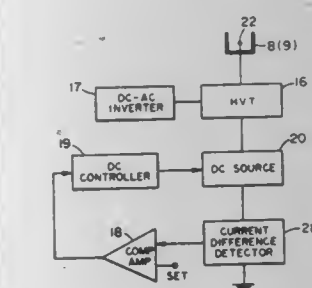
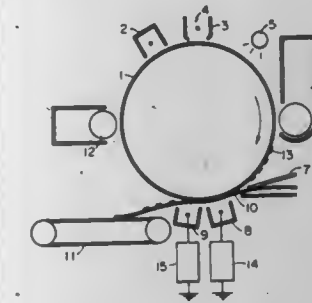
Filed Sep. 8, 1980, Ser. No. 184,663

Claims priority, application Japan, Sep. 13, 1979, 54-117782; Sep. 13, 1979, 54-117783

Int. Cl.<sup>3</sup> G03G 15/00, 15/16

U.S. Cl. 355—3 CH

31 Claims



1. An electrophotographic apparatus comprising:  
an image bearing member having a latent image on the surface thereof;  
developing means for developing the latent image on said image bearing member;  
means for imparting a charge to the back side of a transfer medium by corona discharge to thereby transfer the developed image on said image bearing member to the transfer medium;  
means for applying to the back side of the transfer medium a corona discharge substantially opposite in polarity to said transfer corona discharge to thereby separate the transfer medium from the surface of said image bearing member; and  
means for maintaining substantially constant the amount of charge imparted to the transfer medium by said transfer corona discharge irrespective of charges on the image bearing portion or the non-image bearing portion of said image bearing member.

4,341,458

## THERMAL PRESSURE FIXING DEVICE

Winfried Glasa, Frankfurt, and Peter Gumm, Glashütten, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 22, 1980, Ser. No. 199,663

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943344

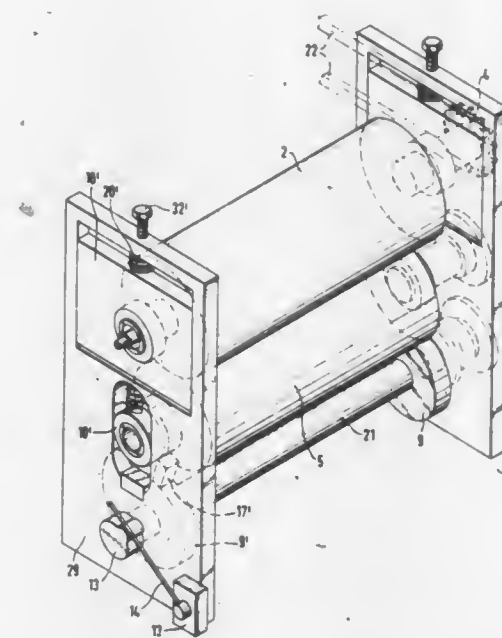
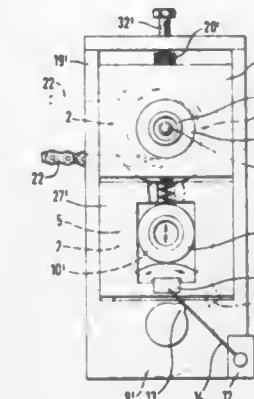
Int. Cl.<sup>3</sup> G03G 15/20

U.S. Cl. 355—3 FU

24 Claims

1. A thermal pressure fixing device for a copier, comprising:  
a fixing roll and a pressure roll, said pressure roll being slideably positioned adjacent to said fixing roll;  
means, including a shaft and a clutch and brake mechanism fitted on said shaft, for moving said pressure roll towards said fixing roll during a thermal pressure fixing step and for separating said pressure and fixing rolls when the copier malfunctions or is shut off;  
means, including at least one resilient element in contact with said fixing roll, for adjusting the distance between the axes of said rolls to maintain a constant pressure between

said rolls by compensating for changes in roll diameter; and



bearing plates for said fixing roll, wherein the lower ends of the resilient elements are in contact with upper sides of said bearing plates for said fixing roll.

4,341,459

## SCANNING PROJECTION APPARATUS

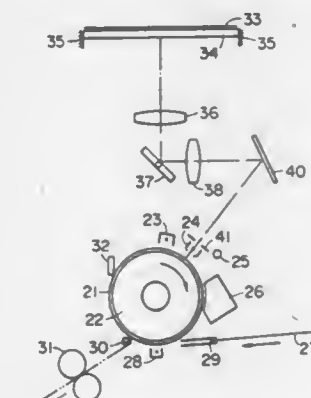
Muneharu Sugiura, Tokyo; Kazuo Minoura, Yokohama, and Setsuo Minami, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1979, Ser. No. 92,070

Claims priority, application Japan, Nov. 14, 1978, 53/140112  
Int. Cl.<sup>3</sup> G03G 15/28; G03B 27/34

U.S. Cl. 355—8

10 Claims



1. A scanning projection apparatus for successively projecting, on light receiving means, an image of each portion of a first plane, comprising:  
a first imaging optical system having one focal plane on said



first plane wherein said first optical system is for collimating a light beam from said first plane and having means for maintaining a constant image magnification of the image of each portion of said first plane projected on said light receiving means, in a direction perpendicular to the scanning direction of said first plane, while maintaining said one focal plane positioned on said first plane;  
a deflector for deflecting the light beam from said first imaging optical system to a predetermined direction;  
a second imaging optical system for receiving the light beam from said deflector and focusing the light beam on said light receiving means; and  
means for limiting the light beam focused on said light receiving means into a slit form elongated in a direction perpendicular to a scanning direction of said first plane, wherein the slit form has a slit width  $\Delta S$  which satisfies a relation  $\Delta S < 1/R_p$  for a predetermined resolving power  $R_p$  on said light receiving means.

4,341,460

## ELECTRONIC COPYING MACHINE

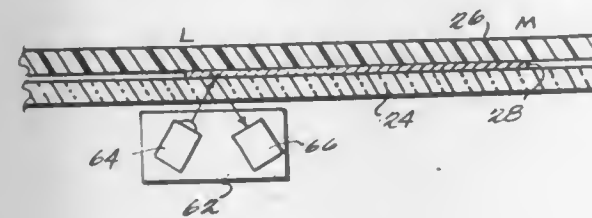
Mitsuaki Kohyama, Higashikurumeshi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan  
Filed Sep. 3, 1980, Ser. No. 183,408

Claims priority, application Japan, Sep. 7, 1979, 54-114964; Sep. 7, 1979, 54-114965; Sep. 7, 1979, 54-123802[U]

Int. Cl.<sup>3</sup> G03G 15/00

U.S. Cl. 355—13

8 Claims



1. A method of detecting the size of an original to be copied in a copying apparatus by utilizing an electrostatic latent image formed on the surface of photo insulating material, said original being placed between a transparent surface and a cover which has less reflectivity to light at one given wavelength than at a second given wavelength and different reflectivity from said original to said one given wavelength, said photo insulating material being exposed by light including at least said second given wavelength comprising:  
directing said light at said one given wavelength onto said cover and said original;  
detecting the intensity of light received at substantially said one given wavelength;  
producing a first signal indicating when said received light is reflected from said cover and a second signal indicating when said received light is reflected from said original and comparing said first signal and said second signal to produce a signal indicating the size of said original.

4,341,461

## DEVELOPMENT CONTROL OF A REPRODUCTION MACHINE

Louis J. Fantozzi, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 7, 1980, Ser. No. 137,710

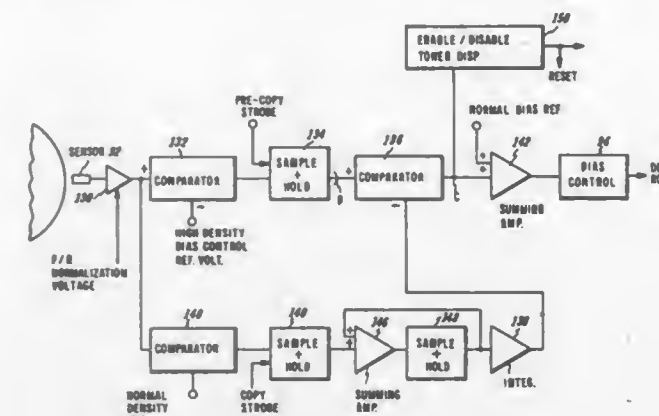
Int. Cl.<sup>3</sup> G03G 15/00

U.S. Cl. 355—14 D

4 Claims

1. A sample data developer control in a reproduction machine having a developer and a photoreceptor surface supporting toner images comprising  
a bias control electrically connected to the developer,  
a first comparator electrically connected to the bias control,  
a test target for providing a sample image on the photorecep-

tor in the photoreceptor image area, means for developing the sample image,  
means for indicating a first toner density condition on the sample image, the means for indicating being electrically connected to the comparator, the bias control responding to the first toner density condition to change the bias on the developer to provide a second toner density condition on the image,



means for periodically indicating a toner density image deviating from the second toner density condition, the means for periodically indicating being electrically connected to the comparator,  
the bias control being responsive to the comparator to maintain the second toner density condition.

4,341,462

## COPYING MACHINE WITH COLLATING APPARATUS

Masaaki Ogura, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

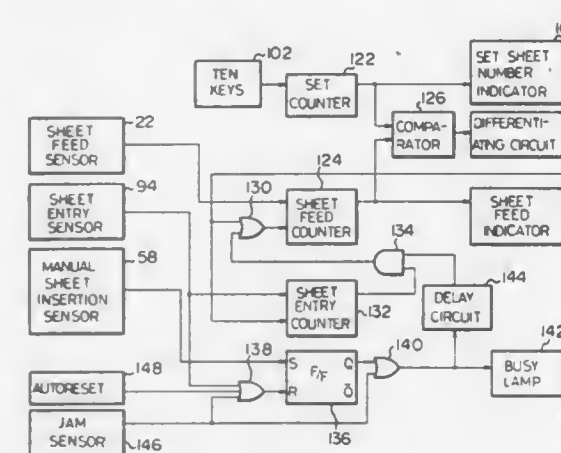
Filed Sep. 24, 1980, Ser. No. 190,106

Claims priority, application Japan, Apr. 7, 1980, 55-44714

Int. Cl.<sup>3</sup> G03G 15/00

U.S. Cl. 355—14 SH

9 Claims



1. A copying machine including a collating apparatus provided with a manual sheet insertion device, comprising:  
setting means for setting a number of sheets to be copied by the copying machine;  
sheet feed sensor means provided in a sheet feed station of the copying machine to detect feeding of sheets from the sheet feed station;  
manual sheet insertion sensor means provided in the manual sheet insertion device to detect insertion of a sheet into the manual sheet insertion device;  
sheet entry sensor means provided in the collating apparatus to detect entry of sheets into bins of the collating apparatus; and  
control means responsive to outputs of the setting means, the sheet feed sensor means, the manual sheet insertion sensor means and the sheet entry sensor means to control the copying machine and the collating apparatus such that

when a sheet is manually inserted into the manual sheet insertion device, a number of sheets fed from the sheet feed station is automatically corrected in response to the entry of said sheet into a desired bin of the collating apparatus.

4,341,463

## IMAGE REPRODUCING APPARATUS

Kazuo Kashiwagi, Tokyo; Toshio Arai, Kawasaki; Takao Toda, Tokyo; Masanari Shirai, Chigasaki, and Masaaki Yanagi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

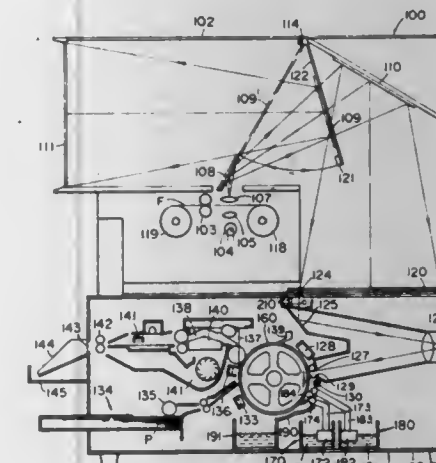
Filed Jan. 27, 1981, Ser. No. 228,721

Claims priority, application Japan, Feb. 5, 1980, 55/12691; Jan. 6, 1981, 56/566

Int. Cl.<sup>3</sup> G03G 15/00

U.S. Cl. 355—14 CH

13 Claims



1. An image reproducing apparatus, comprising:  
illuminating means for illuminating a microfilm having recorded images therein;  
charging means for positively or negatively charging a photosensitive member;  
optical means for projecting an image of the microfilm illuminated by said illuminating means onto said photosensitive member;  
measuring means for measuring the amount of light from the microfilm illuminated by said illuminating means; and  
charge control means for selecting the polarity of charge to be given to said photosensitive member in response to the result of measurement by said measuring means.

4,341,464

## REPRODUCTION APPARATUS EMPLOYING A CASSETTE WITH A FINITE BELT

Mathias J. J. M. Vola, Velden, Netherlands, assignor to Océ-Nederland B.V., Venlo, Netherlands

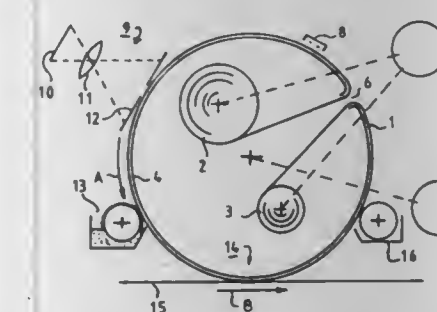
Filed Feb. 17, 1981, Ser. No. 234,890

Claims priority, application Netherlands, Feb. 27, 1980, 8001166

Int. Cl.<sup>3</sup> G03G 15/00

U.S. Cl. 355—16

7 Claims



1. A reproduction apparatus comprising a rotatable drum

having mounted therein two reels for holding a finite length of belt that is impressible with image information, said belt extending and being movable between said reels over the circumferential surface of said drum; a transfer station adjacent to said surface and wherein image information is transferrable from said belt to receiving material moving through said station at a processing velocity; drive means for transporting said belt back and forth between said reels and thus over said drum surface and past said transfer station for transferring image information from the belt to the receiving material; and drum drive means operative when the belt is being transported in either direction over said drum surface to keep said drum at a peripheral velocity which, in magnitude and direction, is equal to said processing velocity minus the velocity at which the belt is being transported over said surface.

4,341,465

## EXPOSURE CONTROL FOR SUBTRACTIVE PHOTOGRAPHIC PRINTER

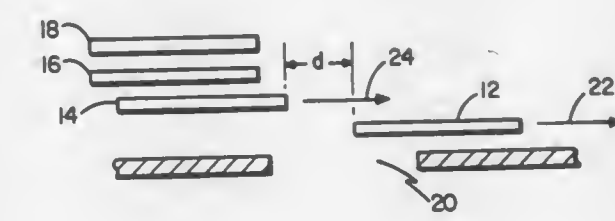
James F. Stewart, Shoreview, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Sep. 11, 1980, Ser. No. 186,189

Int. Cl.<sup>3</sup> G03B 27/72, 27/76

U.S. Cl. 355—36

4 Claims



2. A subtractive photographic printer comprising:  
means for providing light along a light path;  
a shutter normally positioned in the light path;  
a color filter for terminating exposure in a selected color channel when positioned in the light path;  
shutter drive means for driving the shutter in a first direction from its normal position to a position out of the light path;  
filter drive means for driving the color filter in essentially the first direction into the light path to terminate exposure in the selected color channel; and  
exposure control means for controlling exposure time for the selected color channel by actuating the shutter drive means to drive the shutter to the position out of the light path and, after a time delay essentially corresponding to a desired exposure time for the selected color channel, actuating the filter drive means to drive the color filter into the light path at essentially the same rate at which the shutter was driven to a position out of the light path, so that the exposure time is essentially a function of the time delay and essentially not dependent upon the rate at which the shutter is driven.

4,341,466

## METHOD AND APPARATUS FOR DISPLAYING THREE COORDINATES OF AN OBJECT IN A TWO DIMENSIONAL PLANE

David L. Dyregrov, P.O. Box 255, Waterford, Va. 22190

Filed Jun. 20, 1980, Ser. No. 161,361

Int. Cl.<sup>3</sup> G03B 27/48, 27/50

U.S. Cl. 355—50

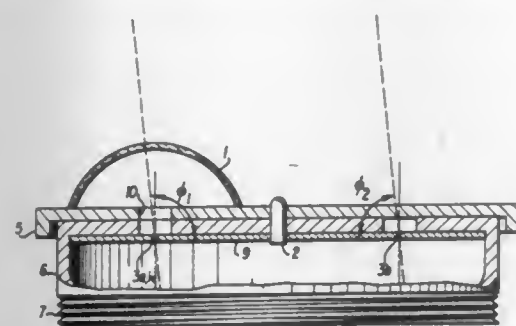
16 Claims

1. A method for making a display of objects in a two dimensional plane, wherein a third dimension is represented by a change in contrast comprising:  
scanning said objects with a substantially collimated light beam whereby a plurality of raster lines are formed on said objects, and

photographing said objects during the time said objects are



being scanned whereby a photograph is produced of said objects with a plurality of raster lines appearing on each image representing each object in said photograph, at least



one dimension of each image raster line being indicative of the relative distance between objects represented in said images.

4,341,467

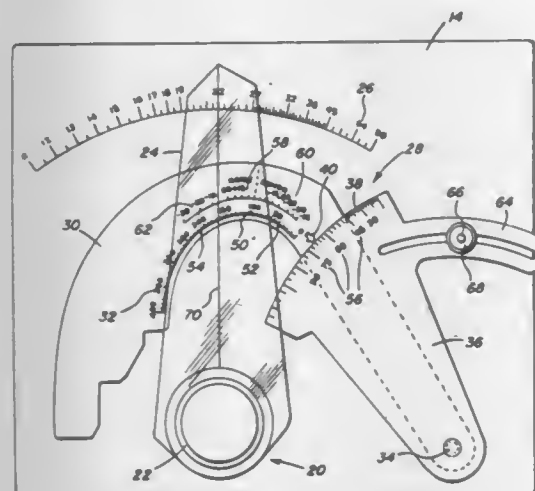
## EXPOSURE GUIDE

John N. Ghougasian, 2660 Kings Bridge Ter., Bronx, N.Y. 10463  
Filed Sep. 23, 1980, Ser. No. 189,747

Int. Cl.<sup>3</sup> G03B 27/52

U.S. Cl. 355—61

3 Claims



1. In combination with a copying camera lens assembly of the type including a base having stationary lens assembly mounted thereon including a rotatable lens aperture adjusting component, an exposure guide including a first scale component stationarily mounted on said base, a pointer mounted relative to said rotatable lens component for angular displacement therewith relative to said first scale component, said first scale component including a first linear lens stop scale thereon relative to which said pointer is registered and along which said pointer may swing, a second scale component including a second linear size compensation scale thereon with which said pointer is registered and along which said pointer may swing, means supporting said second scale component from said base for lengthwise back and forth shifting relative thereto to effect longitudinal shifting of said size adjustment scale transversely of said pointer in a path generally paralleling the plane in which said pointer is swingable, and a third scale component including a third linear density value scale thereon, means supporting said third scale component from said base for back and forth shifting relative thereto for longitudinal shifting of said density scale transverse to the longitudinal extent of an adjacent portion of said size compensation scale, said size compensation scale being arcuate and said second scale component being pivotally supported from said first scale component for angular displacement about an axis appreciably spaced from and general paralleling the axis of rotation of said lens aperture adjusting component relative to said stationary component, said second scale component including indicia registered with and movable along said third scale component responsive to angular displacement of said second scale com-

ponent relative to said base and said third scale component, said first linear scale being arcuate and extending along an arc segment generally concentric with the center of angular displacement of said pointer relative to said base, said second scale component being pivotally supported from said base, said second linear size compensation scale also being arcuate and lying upon an arc segment whose radius of curvature is appreciably shorter than the spacing of said second linear size component scale from the pivot axis of said second scale component relative to said base, one end portion of said second linear size compensation scale extending generally radially of said last mentioned axis, said third scale component being pivotally supported from said base for angular displacement relative thereto about said last mentioned axis, said third linear density value scale being arcuate and extending along an arc segment generally concentric with said axis last mentioned, said second scale component including indicia adjacent said one end of said second linear size compensation scale registered with said third linear density value scale.

4,341,468

## METHOD AND APPARATUS FOR DIAGNOSING VEHICLE WHEEL ALIGNMENT

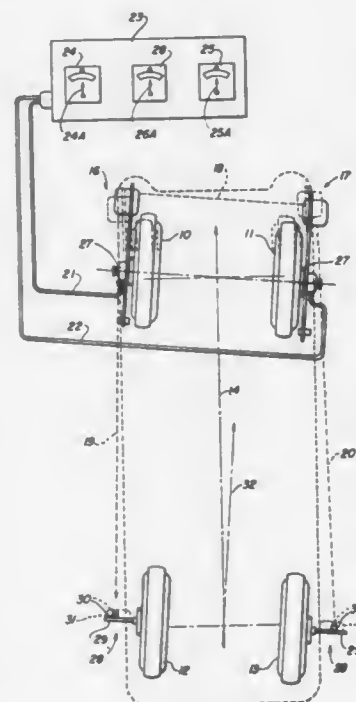
William J. Hollandsworth, Town & Country, and Dean O. Grubbs, Manchester, both of Mo., assignors to Hunter Engineering Company, Bridgeton, Mo.

Filed Mar. 23, 1979, Ser. No. 23,403

Int. Cl.<sup>3</sup> G01B 11/275

U.S. Cl. 356—155

5 Claims



1. A method for diagnosing vehicle wheel alignment in which the vehicle has steerable and non-steerable wheels longitudinally spaced and at either side of the geometric axis, said method comprising: mounting alignment diagnosing instruments on the steerable and non-steerable wheels and compensating the instruments for wheel run-out; moving the steerable wheels such that one thereof has its plane of rotation aligned, initially independent of the existing alignment positions of the non-steerable wheels, in a position selected to be substantially parallel with the vehicle geometric axis; visually displaying the attainment of said selected position for said one steerable wheel; thereafter displaying the total toe alignment characteristics of the planes of rotation of the non-steerable wheels relative to the geometric axis of the vehicle; adjusting the position of the non-steerable wheels to bring the total toe alignment thereof into substantial tracking relation with the geometric axis of the vehicle; and using the total toe alignment display for monitoring the effect of the adjustment to the non-steerable wheels.

4,341,469

## LASER SHADOWGRAPH

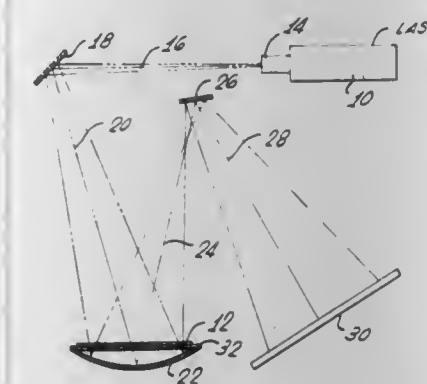
Mark E. Gardiner, Westwood, and David W. Kuntz, Pacific Palisades, both of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Filed Jun. 18, 1980, Ser. No. 160,611

Int. Cl.<sup>3</sup> G01N 21/41

U.S. Cl. 356—239

5 Claims



1. Shadowgraph apparatus for the inspection of transparent discs, said apparatus comprising:  
a source of coherent light;  
focusing means for producing a divergent beam from said light source;  
a concave mirror disposed in the path of the divergent beam for producing a converging beam by reflecting said divergent beam;  
means for supporting a disc to be examined within the aperture of said concave mirror; and  
a projection screen positioned in the path of light reflected from said concave mirror beyond the convergence point thereof, whereby a shadowgraph image of the disc to be examined is formed on said projection screen.

4,341,470

## ATOMIC ABSORPTION SPECTROSCOPY

Clive Parker, Mount Waverly, and Antony Pearl, Park Orchards, both of Australia, assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 376,498, Jul. 5, 1973, abandoned, which is a continuation of Ser. No. 208,772, Dec. 16, 1971, abandoned.

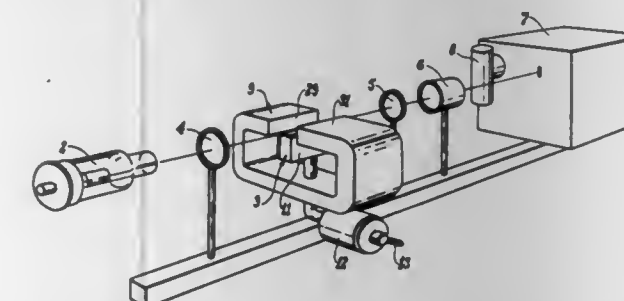
This application Jun. 22, 1977, Ser. No. 810,232

Claims priority, application Australia, Jan. 5, 1971, 364371

Int. Cl.<sup>3</sup> G01J 3/42; G01N 21/72, 21/74

U.S. Cl. 356—307

30 Claims



1. Atomic spectrum analysis apparatus for elements exhibiting an anomalous Zeeman splitting characteristic including a light source made from an element exhibiting an anomalous Zeeman splitting characteristic, atomizing means for directing a cloud of an atomized sample into the path of a beam of light emitted by said source, photoelectric detection means for detecting and measuring the intensity of a selected spectral line of the atomic emission spectrum of said light source after said line has passed through said atomized sample, and transverse magnetic field means operative upon said atomized sample to cause anomalous Zeeman splitting of the absorption profile of said cloud of atoms, means to cause said photoelectric detec-

tion means to sense the effect of said splitting in the relationship between said selected emission line and a corresponding absorption line of said atomized sample, wherein said means to cause said photoelectric detection means to sense the effect of said splitting includes means to modulate said magnetic field.

4,341,471

## APPARATUS AND METHOD FOR MEASURING THE DISTRIBUTION OF RADIANT ENERGY PRODUCED IN PARTICLE INVESTIGATING SYSTEMS

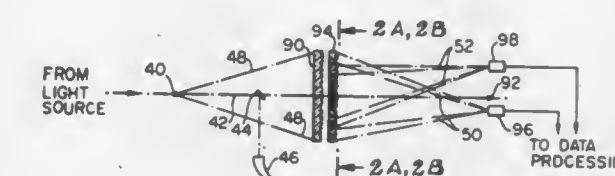
Walter R. Hogg, South Miami, and Albert Brunsting, Miramar, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Jan. 2, 1979, Ser. No. 439

Int. Cl.<sup>3</sup> G01N 21/53

U.S. Cl. 356—343

84 Claims



1. A method of measuring the directional distribution properties of the radiant energy of a particle for particle identification or the like which comprises:  
A. passing the particle through a sensing zone and illuminating the particle with an incident beam of radiant energy,  
B. collecting at least some of the directionally distributed radiant energy produced by the intersection of the particle and the beam and projecting the same toward a focal point in space remote from the sensing zone,  
C. intercepting the projected portion of radiant energy and deviating the same along a plurality of different paths independently of the collecting,  
i. each path being arranged to comprise the radiant energy gathered from a particular geometric area of the projected portion,  
ii. the geometric areas being different,  
iii. the axis of each path being deviated from extending toward said remote point in space,  
iv. each path serving to cause confluence of the radiant energy of its said path at a particular location,  
v. the locations of the respective confluences of radiant energy being spaced from one another, and  
D. measuring the respective intensities of the radiant energy confluence at the respective locations where confluenced.

4,341,472

## METHOD AND APPARATUS FOR POSITIONING A TAPERED BODY

Istvan Gorog, Marvin A. Leedom, and James P. Wittke, all of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,158

Int. Cl.<sup>3</sup> G01B 11/00

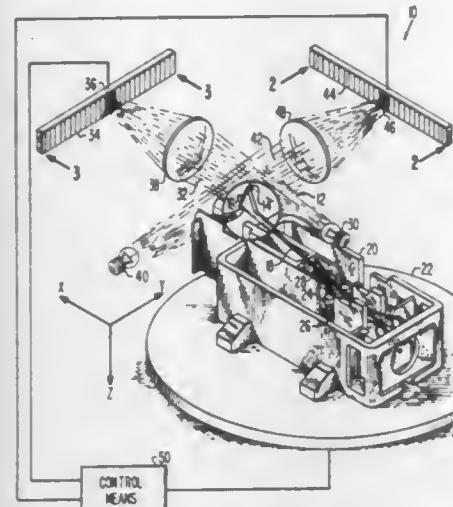
U.S. Cl. 356—399

10 Claims

6. An apparatus for positioning a body having a tapered profile when viewed along a first axis, comprising:  
a first light source positioned to expose said body to a first beam of light oriented along said first axis,  
a first linear array of photodetectors disposed along a direction substantially orthogonal to both said first axis and the direction of said taper in a position such that a linear section across said tapered profile is projected by said first light beam, as a first silhouette-like image, onto said first photodetector array,  
a second light source positioned to expose said body to a second beam of light oriented along a second axis substantially orthogonal to said first axis,



a second linear array of photodetectors disposed along a direction substantially parallel to said first axis in a position such that a second linear section across said body is projected by said second light beam, as a second silhouette-like image, onto said second photodetector array, means for moving said body along said first and said second axes to allow said first and said second images to strike



predetermined locations along said first and said second photodetector arrays, and means for changing the location of said body along a third axis, orthogonal to said first and said second axes, in order to allow the width of said first image to equal a predetermined width measured by the linear magnitude of the first image along said first photodetector array.

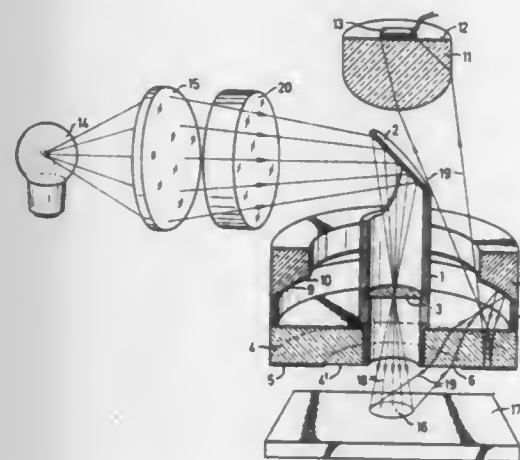
4,341,473

**MEASURING HEAD IN OR FOR A DENSITOMETER**  
Fred Mast, Wil, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Sep. 22, 1980, Ser. No. 189,115  
Claims priority, application Switzerland, Sep. 28, 1979, 8791/79

Int. Cl.<sup>3</sup> G01N 21/47  
U.S. Cl. 356—446

19 Claims



1. In or for a densitometer, a measuring head comprising a light source, a photoelectric transducer and an optical system for providing a light path between the source and the transducer via a location at which an object to be measured is received, the optical system including means to form a defined spot of light at said location to illuminate an area of an object received thereat and means to guide light from the illuminated area to the transducer; the improvement comprising means in said light path to provide at the transducer a light intensity response across the spot that follows a bell-shaped curve having its maximum at the center of the spot and being symmetrical about the spot center.

4,341,474

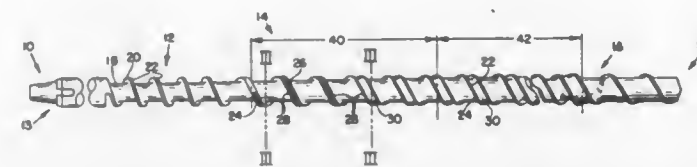
**EXTRUDER SCREW**

Norton C. Wheeler, Jr., Money Point Rd., Mystic, Conn. 06355, and Waseem Rahim, 85 Crouch St., Groton, Conn. 06340  
Filed Aug. 27, 1980, Ser. No. 181,920

Int. Cl.<sup>3</sup> B29B 1/06

U.S. Cl. 366—88

7 Claims



1. An extruder screw having an inlet end and an outlet end comprising:  
(a) a root,  
(b) a helical primary flight extending about the root having a trailing edge and a leading edge, said flight and said root defining a feed section at the inlet end of the screw, a metering section at the outlet end of the screw and a melting section between the feed section and the metering section, and  
(c) a helical barrier flight on the root forming a solids channel with the trailing edge of the primary flight and a melt channel with the leading edge of the primary flight, the width of the solids channel gradually decreasing and the width of the melt channel gradually increasing in a downstream direction, said melting section being divided into at least two lengthwise zones, wherein the change in width of each of said channels is at a first constant rate in one of the zones and a second constant rate in the other of the zones, said rates being in accordance with the melting characteristics of the thermoplastic material in the screw.

4,341,475

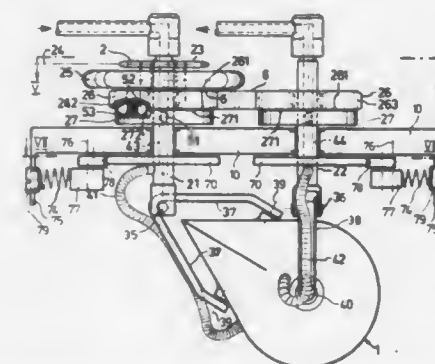
**APPARATUS FOR DRIVING A RIGID BODY FOR THE PURPOSES OF PRODUCING A TUMBLING MOVEMENT DURING ROTATION OF THE BODY**

Josef Saladin, Wil, Switzerland, assignor to Bürgel AG, Basel, Switzerland  
PCT No. PCT/CH80/00027, § 371 Date Oct. 30, 1980, § 102(e)  
Date Oct. 30, 1980, PCT Pub. No. WO80/01830, PCT Pub. Date Sep. 4, 1980

PCT Filed Feb. 26, 1980, Ser. No. 201,405  
Claims priority, application Switzerland, Mar. 1, 1979, 1993/79

Int. Cl.<sup>3</sup> B01F 11/00; F16H 21/46  
U.S. Cl. 366—211

15 Claims



1. Apparatus for producing a tumbling rotary movement comprising a body which, for producing tumbling movements in gimbal suspensions, is displaceable about two mutually spaced axes directed in different directions and which includes a drive means and a transmission means between the drive means and rotatably journaled shafts with which latter a respective one of the gimbal suspensions for the body is connected, characterised in that the transmission means include

torque-transmitting members one of which is operatively connected with the drive means and another of which is operatively connected with a shaft carrying the gimbal suspension and that resiliently yielding energy stores are arranged between the torque-transmitting members for the periodical alternating storing and releasing of energy forces.

a common shaft rotatably supported on said side walls, paper bail means rotatably supported on said common shaft, eccentrics secured to the ends of said shaft outwardly of said side walls adapted to be rotatably mounted in said frame, first lever means connected to rotate said eccentrics for moving said assembly relative to said frame,

4,341,476

**APPARATUS FOR TREATING MATERIALS CONTAINING COCOA BUTTER**

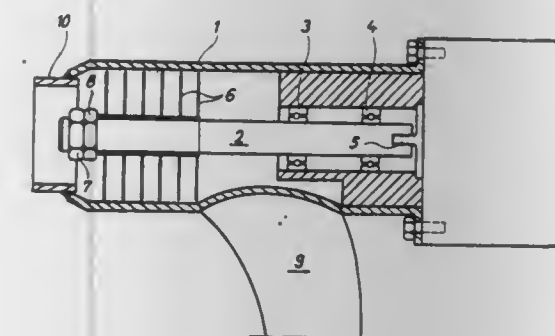
Helmut Sollich, Kalletal, Fed. Rep. of Germany, assignor to SOLLICH KG Spezialmaschinenfabrik, Bad Salzungen, Fed. Rep. of Germany

Division of Ser. No. 902,344, May 3, 1978, Pat. No. 4,195,935.  
This application Sep. 10, 1979, Ser. No. 73,732

Int. Cl.<sup>3</sup> B01F 7/00

U.S. Cl. 366—293

9 Claims



1. In an apparatus for treating substantially viscous materials containing cocoa butter with regard to the air entering therein during processing thereof and which is left in the material but finely and uniformly distributed therein; a plurality of separating elements axially spaced from each other; and conduit means for carrying the viscous material during its flow, said elements being arranged in said conduit means and imparting turbulent motion to the material, which flows together again downstream of said elements, the improvement comprising: said conduit means comprising a housing having a rotatable shaft having said separating elements attached thereto, said housing comprising a lateral feed pipe which provides the viscous material with a directed flow onto the separating elements; said housing also comprising an end spigot positioned at one end of said shaft so as to position said separating elements between said spigot and said lateral feed pipe; said separating element being rotating blades which beat and distribute the air bubbles entrained in the material, said blades being equally spaced and positioned on a shaft, said blades having a sharpened working edge and are arranged longitudinally along said shaft wherein the area between said blades is occupied only by said substantially viscous material.

second lever means rotatably mounted on said common shaft and coupled to pivotally move said paper bail means, and third lever means rotatably mounted on said common shaft and coupled to move said paper trough supporting means to separate said paper trough feed rolls from engagement with said platen.

4,341,478

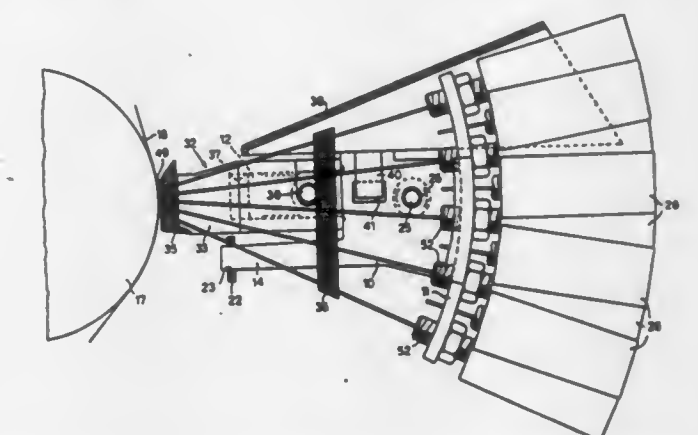
**WIRE PRINTING DEVICE**

Francesco Bernardis, Ivrea; Contardo Adamoli, Castellamonte, and Franco Cretaz, Pont Saint Martin, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Italy  
Continuation of Ser. No. 30,950, Apr. 17, 1979, Pat. No. 4,285,603. This application Feb. 12, 1981, Ser. No. 233,789  
Claims priority, application Italy, Apr. 19, 1978, 67885 A/78

Int. Cl.<sup>3</sup> B41J 3/12

U.S. Cl. 400—124

3 Claims



2. A wire printing device comprising a cylindrical platen having a central axis and a cylindrical surface; a carriage movable parallel to said central axis at a predetermined distance from said platen and having two parallel lateral sides perpendicular to said central axis and a tongue parallel to said central axis; a base member comprising a single plate having a substantially constant thickness so folded and shaped as to define two rectilinear and parallel lateral arms for being mounted on said lateral sides of said carriage and a curved central portion for connecting said two lateral arms therebetween substantially parallel to the cylindrical surface of said platen; removable mounting means cooperating with said lateral arms and with said lateral sides for mounting said base member on said carriage; sliding means allowing said base member to move with respect to said carriage in a direction perpendicular to said

4,341,477

**PAPER HANDLING ASSEMBLY FOR TYPEWRITERS OR LIKE MACHINES**

Rolf Theilen, Furth, Fed. Rep. of Germany, assignor to Triumph-Adler A.G. für Büro- und Informationstechnik, Nuremberg, Fed. Rep. of Germany

Filed Nov. 5, 1980, Ser. No. 204,212

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1980, 3008540

Int. Cl.<sup>3</sup> B41J 11/20, 13/036

U.S. Cl. 400—56

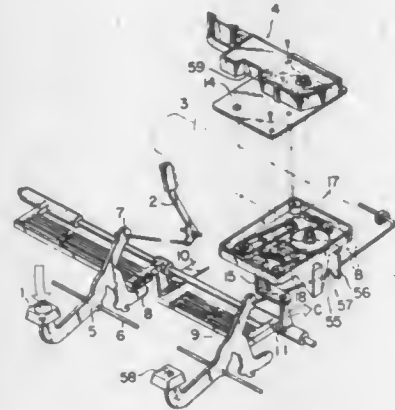
3 Claims

1. In combination, a frame and a paper handling assembly adapted to be mounted on said frame, said paper handling assembly comprising side walls and a bottom wall, a platen rotatably supported between said side walls, a paper trough having feed rolls, means supporting said paper trough with its feed rolls engaging said platen,



platen; a plurality of substantially rectilinear printing wires each having a printing extremity located near to said platen and an actuating extremity located near to the curved central portion of said base member; a plurality of driving electromagnets mounted on said curved central portion and each having an armature connected with a corresponding actuating extremity of said wires; and guide means supported by said base member for guiding said wires along rectilinear paths all converging from said electromagnets towards said cylindrical surface of said platen.

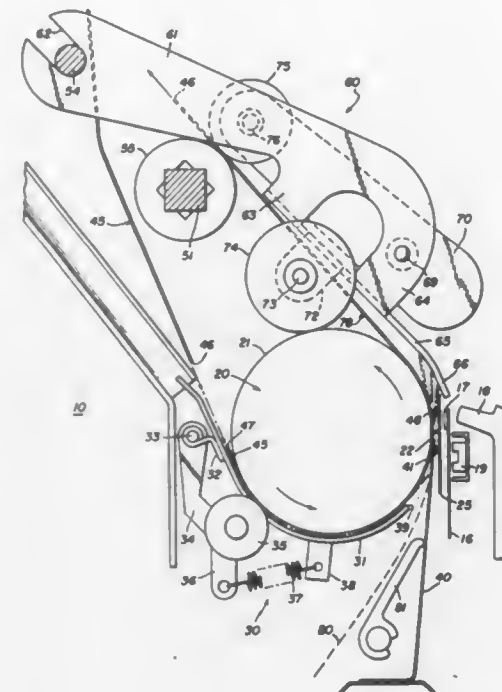
**4,341,479**  
**TYPEWRITER RIBBON CARTRIDGE ACTUATING DEVICE FOR PORTABLE TYPEWRITER**  
 Kokichi Sanada, Tokyo, Japan, assignor to Fujitsu Seiko Kabushiki Kaisha, Tokyo, Japan  
 Filed Sep. 16, 1980, Ser. No. 187,981  
 Int. Cl.<sup>3</sup> B41J 32/02, 33/26  
 U.S. Cl. 400—208 8 Claims



1. In a typewriter, a device for actuating a ribbon cartridge whenever a typewriter key lever is depressed, said device including actuating means for simultaneously moving the cartridge parallel to the longitudinal axis of a platen of the typewriter into a print position while advancing the ribbon within the cartridge, said device comprising:

- (a) a base formed with an opening;
- (b) a sliding plate slidably mounted on said base;
- (c) an actuating crank pivotably mounted on said base, one end of said crank being connected to a universal plate through said opening in said base and an opposite end of said crank engaging the sliding plate, actuation of the key lever causing movement of the universal plate and pivotal movement of the crank to move the sliding plate and cartridge into print position;
- (d) a ratchet gear rotatably mounted on said sliding plate, said gear including advancing means for advancing the ribbon;
- (e) a gear actuating crank pivotably secured on the base, said gear crank including a first end engageable with said ratchet gear and a second end connected to the actuating crank;
- (f) gear stopper means pivotably secured on the sliding plate for preventing reverse rotation of the ratchet; and
- (g) a cover plate including holding means for slidably retaining the cartridge on the plate, said cover plate having a first opening receiving the opposite end of the actuating crank engageable with the cartridge and a second opening whereby said first and second openings enable sliding movement of the cartridge on the cover plate during sliding movement of the sliding plate.

**4,341,480**  
**FEED MECHANISM FOR CONTINUOUS AND CUT FORM PAPER**  
 Werner H. Mailer, Waynesboro, Va., assignor to General Electric Company, Waynesboro, Va.  
 Filed Dec. 26, 1979, Ser. No. 106,507  
 Int. Cl.<sup>3</sup> B41J 13/16  
 U.S. Cl. 400—625 5 Claims

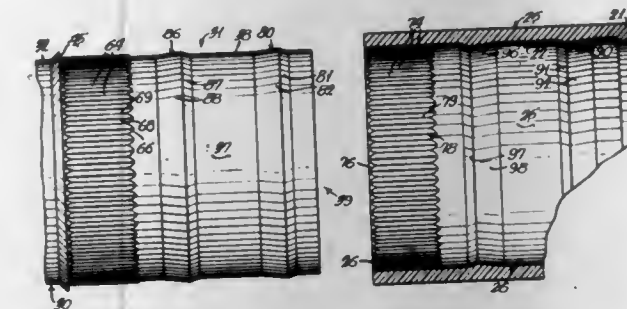


1. Paper transport apparatus for use with discrete sheets of paper in a continuous belt-type line printing machine including a rotatable cylindrical platen, an inked ribbon disposed adjacent to the platen at a printing region, entry drive means for moving the sheets of paper into a printing path extending tangent to the platen through the printing region and past the inked ribbon spaced therefrom, and an exit drive roller spaced from the platen and having a drive surface moving at the same surface speed as that of the platen; said paper transport apparatus comprising

- a guide frame including two mounting arms spaced apart longitudinally of the platen adapted for attachment to the printing machine,
- a deflecting plate carried by said mounting arms and extending therebetween and spaced from the platen downstream of the printing region for engaging the leading edge of the associated sheet past the printing region,
- two adjustment rollers respectively freely rotatably carried by said deflecting plate and adapted for rolling engagement with the platen and cooperating therewith accurately to position said deflecting plate with respect to the platen,
- two pivot arms respectively carried by said mounting arms for pivotal movement with respect thereto, and
- a pressure roller freely rotatably carried by said adjustment arms therebetween and disposed for cooperation with the drive surfaces of the exit drive rollers frictionally to engage the associated sheet therebetween,

said deflecting plate deflecting the associated sheet into an exit path extending along the platen and thence in a straight line to the exit drive rollers tangent to the platen and such that the leading edge of the sheet moves between the exit rollers and said pressure rollers for engagement thereby when the sheet is in said exit path, whereby the leading edge of the associated sheet is held out of contact with the inked ribbon and is moved around the platen without the formation of slack-producing bulges in the sheet downstream of the printing region.

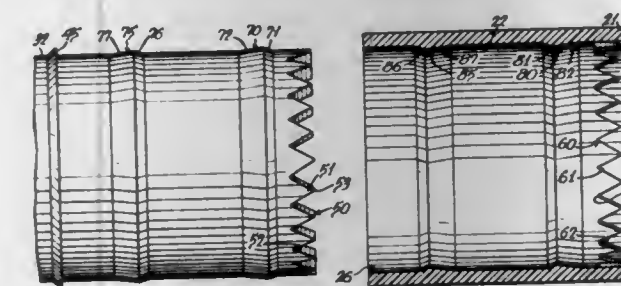
**4,341,481**  
**WRITING INSTRUMENT WITH BARREL AND FERRULE ASSEMBLY**  
 Daniel W. Wollensak, Elmhurst, Ill., assignor to Sanford Research Company, Bellwood, Ill.  
 Filed Sep. 22, 1980, Ser. No. 189,051  
 Int. Cl.<sup>3</sup> B43K 15/00, 8/00, 3/00  
 U.S. Cl. 401—251 11 Claims



1. In a writing instrument of the type having a reservoir for marking fluid and a writing nib for carrying marking fluid from the reservoir to a surface to be marked, a housing assembly for the writing instrument, comprising:

- an elongate hollow barrel member having an inner chamber to receive the reservoir, the barrel member having a closed rear distal end;
- a ferrule member positioned in longitudinal alignment forwardly of the barrel member, the ferrule member having a passageway therethrough and a free end shaped to snugly receive the writing nib, at least one of said barrel and ferrule members being of resilient material;
- adjacent skirt portions on the barrel member and the ferrule member for securing the ferrule member against relative axial rotation with respect to the barrel member, the skirt portions having adjacent open ends and being of a size to make a close mating fit one within the other when moved longitudinally toward each other, the one skirt portion having an outer surface of circular cross section and the other skirt portion having an inner surface of circular cross section, each of said surfaces having peripherally spaced elements positioned for interfitting engagement to prevent said relative axial rotation when the one skirt portion is moved longitudinally into the other skirt portion; and
- means on the skirt portions for urging the ferrule member toward the barrel member when the peripherally spaced elements are in interfitting engagement.

**4,341,482**  
**HOUSING ASSEMBLY FOR FLUID MARKING DEVICE**  
 Daniel W. Wollensak, Elmhurst, Ill., assignor to Sanford Research Company, Bellwood, Ill.  
 Filed Sep. 22, 1980, Ser. No. 189,053  
 Int. Cl.<sup>3</sup> B43K 15/00, 8/00, 3/00  
 U.S. Cl. 401—251 8 Claims



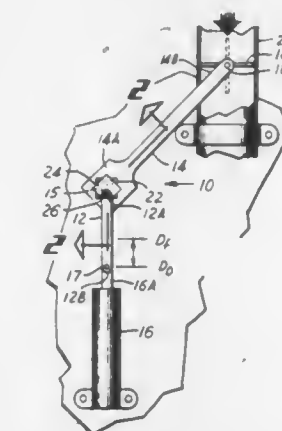
1. In a writing instrument of the type having a reservoir for marking fluid and a writing nib for carrying marking fluid from the reservoir to a surface to be marked, a housing assembly for the writing instrument, comprising:

- an elongate hollow barrel member having an inner chamber

to receive the reservoir, the barrel member having a closed rear distal end;

- a ferrule member positioned in longitudinal alignment forwardly of the barrel member, the ferrule member having a passageway therethrough and a free end shaped to snugly receive the writing nib, at least one of said barrel and ferrule members being of resilient material;
- adjacent skirt portions of circular cross section on the barrel member and the ferrule member for securing the ferrule member against relative axial rotation with respect to the barrel member, the skirt portions having open end portions and being of a size to make a close mating fit one within the other when moved longitudinally toward each other, the one skirt portion having an outer annular surface and a first set of axially opening notches about its periphery, and the other skirt portion having an inner annular surface and being provided with a second set of complementary axially opening notches positioned in opposed relation to said first set of notches, said sets of notches being positioned for interfitting engagement to prevent said relative axial rotation when the one skirt portion is moved longitudinally into the other skirt portion; and
- preformed latch means on the inner and outer surfaces of the skirt portions for retaining the sets of complementary notches in interfitting engagement.

**4,341,483**  
**ADJUSTABLE CONNECTING APPARATUS**  
 William R. Spencer, Springdale, and Dana D. Freberg, Middletown, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio  
 Filed Nov. 24, 1980, Ser. No. 209,363  
 Int. Cl.<sup>3</sup> F16D 1/00; F16L 25/00  
 U.S. Cl. 403—4 13 Claims



1. Adjustable connecting apparatus for connecting a movable drive portion of a first relatively fixed position first operating member to a movable driven portion of a relatively fixed position second member which is spaced from the first member, which comprises:

- (a) a first connecting link having a pair of axially opposing ends, one of said ends adapted to be coupled to the drive portion;
- (b) a second connecting link having a pair of axially opposing ends, one of said ends adapted to be coupled to the driven portion;
- (c) coupling means for adjustably coupling said remaining opposing ends of said first and second connecting links, which includes:
  - (i) a mating plug having at least three sides and having at least one hole disposed eccentrically therethrough and generally parallel to said sides;
  - (ii) said remaining opposing end of one of said connecting links including a socket therein for lockingly mating with said plug wherein said eccentric hole can be disposed in a plurality of different rotational positions with respect to said socket;



- (iii) said remaining opposing end of the other of said connecting links includes an opening therethrough for receiving securing means; and
- (iv) securing means for passing through said eccentric hole and said opening in said remaining opposing end of the other of said connecting links for operationally securing said first and second connecting links together with said eccentric hole being in one of said plurality of different rotational positions.

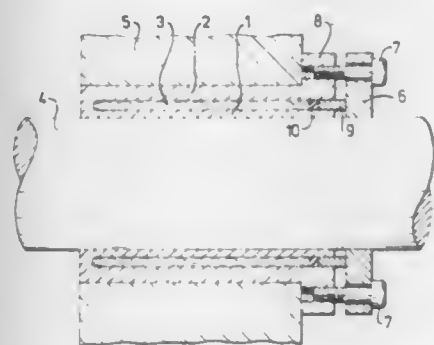
**4,341,484**  
**HYDRAULICALLY EXPANDABLE FRICTION COUPLING**

Börje Peterson, Linköping, and Ulf Lundqvist, Mjölby, both of Sweden, assignors to FFV Industriprodukter AB, Eskilstuna, Sweden

Filed Aug. 29, 1980, Ser. No. 182,586  
Claims priority, application Sweden, Aug. 31, 1979, 7907277  
Int. Cl.<sup>3</sup> F16D 1/08

U.S. Cl. 403—5

7 Claims



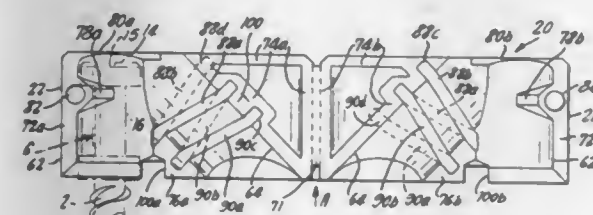
1. A hydraulically expandable friction coupling for coupling a shaft to a hub, in which said coupling comprises concentrically arranged outer and inner cylindrical sleeves introduced between said shaft and said hub, said sleeves sealingly enclosing a pressure medium therebetween, adjusting means for exerting pressure through said pressure medium against the sleeves to transmit a torque between the shaft and the hub, the improvement characterized in that the outer sleeve is so formed with a greater wall thickness than the inner sleeve that initial slipping is ensured between the outer sleeve and said hub when said torque is increased over a predetermined value.

**4,341,485**  
**JOINING DEVICE**  
Robert H. Appleby, Gerrards Cross, and Peter L. Cove, London, both of England, assignors to Titus Tool Company Limited, England

Continuation-in-part of Ser. No. 52,940, Jun. 28, 1979, abandoned. This application Nov. 21, 1979, Ser. No. 96,544  
Claims priority, application United Kingdom, Nov. 24, 1978, 46048/78; Oct. 19, 1979, 7936286

Int. Cl.<sup>3</sup> F16B 9/02  
U.S. Cl. 403—231

51 Claims



1. A joining device for joining panels, comprising a pin to be secured into one panel, the pin having a head portion, a holding member adapted to be fitted in a recess in the other panel, the holding member comprising a plug-like body portion having an opening for receiving said head portion, and a securing member, the securing member being accessible at that side of

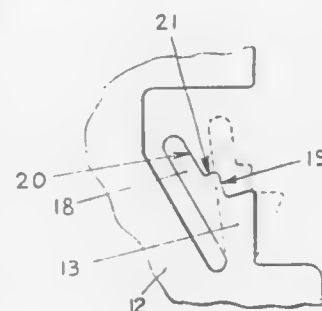
the body portion in which said opening lies and being operable while within the body portion to draw said head portion inwardly of the body portion by pressing on said head portion to tighten a joint between panels, the pin being a steel screw having a threaded shank and a head portion of which at least part is substantially symmetrical around the pin axis, the head portion including means engageable by a rotary driving implement and a stop portion located a pre-determined axial distance from said substantially symmetrical part, said stop portion comprising a collar freely rotatable on the screw for limiting the extent to which the pin can be driven into a panel.

**4,341,486**  
**LOCKING TAB FOR HOOK-IN TYPE SHELVEING**  
Peter G. Hammerschlag, 220 - 111th Ave. SE., Bellevue, Wash. 98004

Continuation of Ser. No. 815,843, Jul. 14, 1977, Pat. No. 4,157,228. This application May 22, 1979, Ser. No. 41,385  
Int. Cl.<sup>3</sup> F16B 7/22

U.S. Cl. 403—252

2 Claims



1. A shelving assembly comprising vertical posts of sheet metal or the like having at least one wall with a plurality of slots in said wall spaced from each other along the length of the post; horizontal beams of sheet metal or the like having a web portion and one or more hooks protruding from the ends of the webs, each of these hooks being received in one of the slots in the posts such that said beams extend transversely from said posts with said webs substantially perpendicular to the said walls with slots of the posts; said beam webs having in addition, extending upwards from at least one of the hooks at each end of the beams, locking tabs, these locking tabs being bendable forward into slots of the posts above the hooks, thus preventing the beams from being lifted upward relative to the posts and thus preventing unlocking of the hooks of the beams from the posts, these locking tabs having in addition a secondary tab with a shoulder surface abutting the post when the tab is bent forward into the locked position and a second surface adjoining said abutting surface in an upward direction and tapering away from the post such that the end of a screwdriver can be placed between the said second surface and the post and twisted to bend the tab back into its original position.

**4,341,487**  
**CONNECTOR**  
Borivoj Nemecek, 100 Kitchener Ave., Kensington, Johannesburg 2094, Transvaal, South Africa

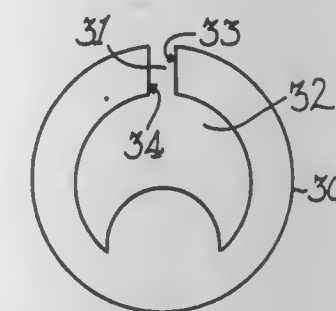
Filed Aug. 16, 1978, Ser. No. 934,264  
Int. Cl.<sup>3</sup> E04B 1/48

U.S. Cl. 403—297

3 Claims

1. Dowel connector means comprising a body having part-cylindrical inner walls and a cylindrical outer wall coaxial with said inner walls and having a longitudinal slot therethrough extending from end to end thereof so that the opposed faces of the slot in the body are spaced apart, the body being composed of a resilient plastics material so that when it is compressed to bring the said opposed faces together the body is placed in tension tending to separate the said faces, and a part-cylindrical rod member disposed in the body, said rod member being of substantially uniform cross-sectional configuration from end to end thereof and being integral with the body on the side of the

body opposite the slot, the distance between said part-cylindrical inner walls and the exterior of the part-cylindrical rod



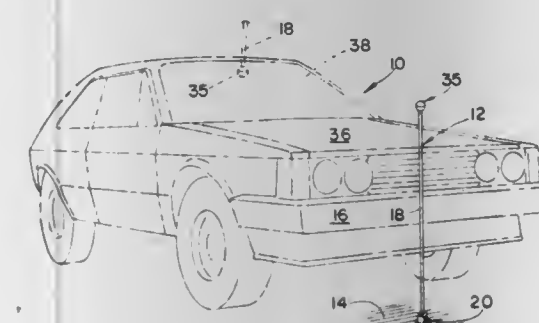
member, in the unstressed condition of the tubular body, being greatest adjacent the slot and progressively decreasing in both directions away from the slot.

**4,341,488**  
**GUIDEPOST FOR PARKING VEHICLES**  
John E. Ryan, Irvine, Calif., assignor to Autopost International, Inc., Reno, Nev.

Filed Jul. 21, 1980, Ser. No. 170,652  
Int. Cl.<sup>3</sup> E01F 9/00

U.S. Cl. 404—10

3 Claims



1. An improved vehicle-parking guidepost to be positioned in a given vehicle-parking area to aid the driver thereof in correctly positioning a vehicle in said given area, said parking guidepost comprising:  
a support base having a central bore therein;  
an elongated flexible rod member having one end thereof mounted in said central bore of said support base, and an opposite free end;  
an illuminatable housing defining a sphere having an upper transparent body member and a lower body member, said upper body member being removably secured to said lower body member;  
a light bulb mounted in said housing wherein the upper transparent member is illuminated thereby;  
a battery connected to said light bulb;  
a switch means adapted to be activated when said guidepost is angularly tilted from a vertical position by said vehicle to illuminate said light bulb, and wherein said battery and said switch means are contiguously disposed in said illuminatable housing.

**4,341,489**  
**OFFSHORE REEF**  
Joe Karnas, 4843 Eastlake Rd., Sheffield Lake, Ohio 44054

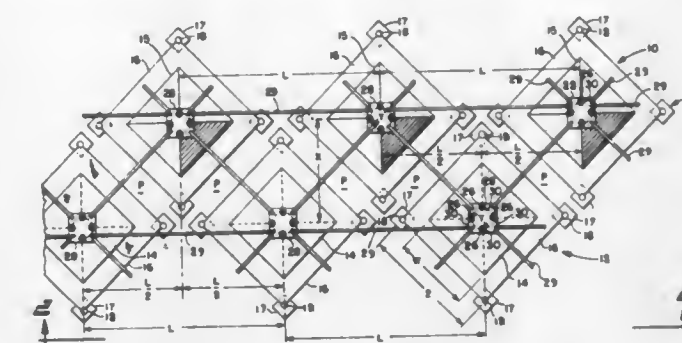
Filed Apr. 30, 1979, Ser. No. 34,362  
Int. Cl.<sup>3</sup> E02B 3/06

U.S. Cl. 405—35

9 Claims

1. An offshore reef assembly comprising a substantially vertical support, and a plurality of reef members mounted on said vertical support in stacked fashion, each reef member having a substantially central vertical opening for receiving said vertical support, each of said reef members having side faces which side faces are inclined to the horizontal and verti-

cal to absorb and dissipate the energy of water moving past said reef members, each reef member stacked on said vertical support being arranged so that the inclined side faces of vertically adjacent reef members form laterally facing alternating ribs and grooves of generally horizontally extending V-shape



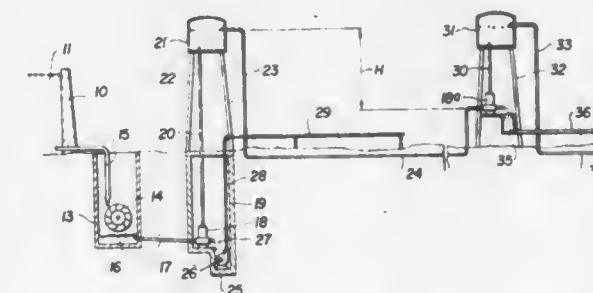
cross section, and a plurality of vertical supports each with reef members stacked thereon arranged in a row, the side faces of the reef members in adjacent stacks being horizontally spaced to allow water to move between and past the side faces of the adjacent stacks of reef members.

**4,341,490**  
**SELF-SUSTAINING LAND IRRIGATING AND HYDROELECTRIC POWER GENERATING SYSTEM**  
Walter W. Keeling, Roanoke and Market Sts., Amsterdam, Va. 24175

Filed Oct. 15, 1980, Ser. No. 197,027  
Int. Cl.<sup>3</sup> E02B 13/00

U.S. Cl. 405—36

10 Claims



1. An irrigation system comprising at least one substantially inexhaustible water source, a first downstream hydraulic ram receiving water from said source under pressure due to an effective head between the source and said first hydraulic ram, a first elevated storage tank receiving water from said first hydraulic ram and having an overflow pipe, a first irrigation pipe near said first hydraulic ram and elevated tank, an externally powered pump delivering exhaust water from the first hydraulic ram to the first irrigation pipe, at least a second downstream hydraulic ram and second elevated storage tank receiving water from the second hydraulic ram and having an overflow pipe, a second irrigation pipe receiving water by gravity flow discharged by the second hydraulic ram, and a supply pipe for the second hydraulic ram connected therewith and connected with the first-named overflow pipe, there being an effective head between the water level in the first elevated storage tank and the inlet of the second downstream hydraulic ram.

**4,341,491**  
**EARTH RETAINING SYSTEM**  
Albert Neumann, 5401 Graywing Ct., Columbia, Md. 21044  
Filed May 7, 1976, Ser. No. 684,371  
Int. Cl.<sup>3</sup> E02D 17/20

U.S. Cl. 405—258

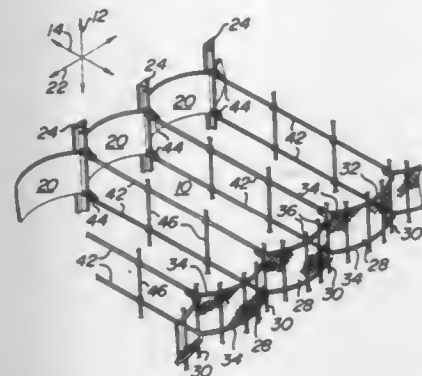
27 Claims

1. A tension loaded earth retaining system comprising:  
(a) a solid continuous frontal wall extending linearly in a



substantially vertical direction, said frontal wall having an arcuate contour in a horizontal plane;

- (b) a rear wall longitudinally aligned in a continuous manner and displaced from said frontal wall, said rear wall extending substantially linearly in said vertical direction and having an arcuate contour in said horizontal plane, said rear wall being substantially formed of a wire mesh screen having a predetermined mesh size opening; and,



- (c) tension load distribution means extending in said horizontal plane and said longitudinal direction, said tension load distribution means fixedly secured to said frontal wall and said rear wall on opposing transverse ends thereof, said arcuate contours of said frontal wall and said rear wall being substantially arcuately similar for distributing force loads throughout each of said walls.

4,341,492

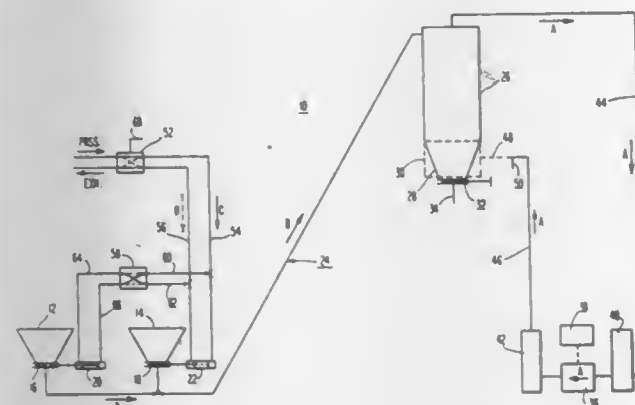
# METHOD FOR PNEUMATICALLY HANDLING AGGLOMERATIVE MATERIALS

William G. Montgomery, Jr., North Wales, and T. Eric Pynor, King of Prussia, both of Pa., assignors to R & M Associates, Inc., Valley Forge, Pa.

Filed Feb. 19, 1980, Ser. No. 122,624  
Int. Cl.<sup>3</sup> B65G 53/40

U.S. Cl. 406—130

9 Claims



1. A method for handling agglomerative material comprising the steps of:

- providing hopper means for accepting said material;
- providing receiver means for accumulating said material, said receiver means including a lower portion which tapers down to a discharge aperture in the bottom thereof;
- providing fluid communication means between said hopper means and said receiver means;
- pneumatically conveying said material from said hopper means to said receiver means through said fluid communication means;
- expediting discharge of said accumulated material through said discharge aperture comprising the step of drawing air into said receiver means from the ambient atmosphere external to said receiver means through said discharge aperture for a predetermined period of time.

4,341,493

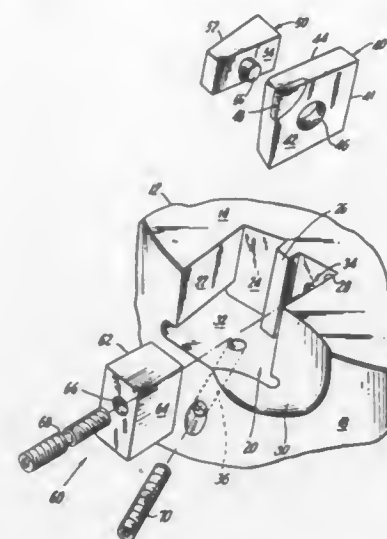
# ADJUSTABLE CLAMPING WEDGE SYSTEM FOR CUTTING INSERT OF A MILLING CUTTER

Donald S. Erkfritz, Clarkston, Mich., assignor to General Electric Company, Detroit, Mich.

Filed Apr. 7, 1980, Ser. No. 137,995  
Int. Cl.<sup>3</sup> B26D 1/12

U.S. Cl. 407—36

10 Claims



5. A cutting tool having a cylindrical body, with a substantially planar base surface and an annular side surface extending perpendicularly from the base surface, said body being adapted to be rotated about a predetermined axis, said body having a pocket formed therein, said pocket having first and second angularly related walls, a base wall parallel to said base surface, a leading wall with said second angularly related wall including an elongated locating rail projecting radially outward therefrom, said pocket further including:

- a cutting insert disposed in said pocket and including a hole extending therethrough,
- a safety wedge having one surface disposed in engagement with one surface of said insert and having an opposed planar surface disposed in engagement with said first wall, said safety wedge including a projection extending through said hole in said cutting insert,
- a wedge assembly having a wedge surface for engagement with the opposed face of said cutting insert and a substantially radially extending locking screw threadably connected between said body and said wedge assembly, said locking screw being selectively operable to shift said wedge assembly into wedging engagement with said cutting insert and said leading wall whereby said cutting insert is clamped intermediate said safety wedge and said wedge assembly with the edge of said cutting insert abutting said locating rail such that the respective wedge assemblies on opposite sides of said cutting insert protect the body of the milling cutter from chip-erosion and damage, and
- an adjustable screw threadably connected to the cutter body and extending from said annular side surface of said body to said base wall of said pocket, said adjustable screw being in engagement with a second edge of the cutting insert, said adjustable screw for altering the position of the cutting insert in a direction within the plane of said cutting insert.

4,341,494

# VARIABLE-LENGTH REDUCED PIVOT FOR RAILWAY CAR

Franco Fedele, Florence, Italy, assignor to Norca Corporation, Great Neck, N.Y.

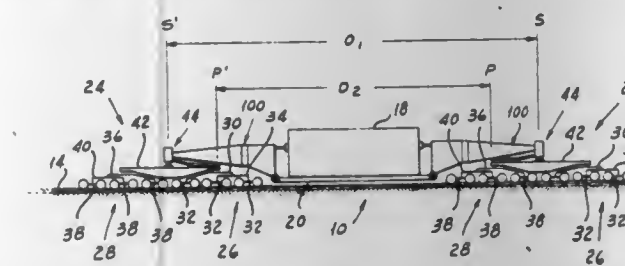
Filed Feb. 13, 1980, Ser. No. 121,021  
Int. Cl.<sup>3</sup> B61D 3/16

U.S. Cl. 410—45

7 Claims

1. An assembly for supporting a load for movement along a

way including in combination a truck having wheels adapted to move along said way, a member for receiving said load on a load support center, means for supporting said member on said truck for lateral movement relative to said way, said truck and said member having longitudinal center lines, a plurality of sensors disposed at respective locations along the longitudinal center line of one of said member and said truck spaced from



said load support center, each of said sensors being operable to sense the lateral displacement of an adjacent portion disposed along the center line of the other of said member and said truck, means adapted to be actuated to shift said member laterally relative to said truck, and means responsive to a selected one of said sensors for actuating said lateral shifting means to shift said member in such a direction as to reduce the lateral displacement sensed by said sensor.

4,341,495

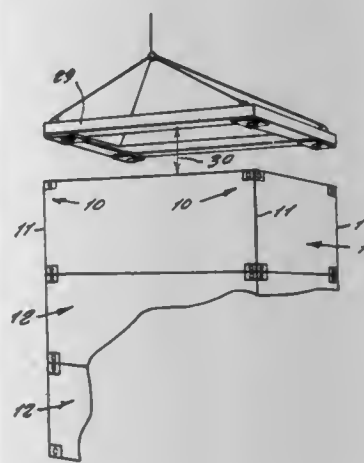
# CONTAINER CORNER POST LOCKING ASSEMBLY

Raymond M. Del'Acqua, 26 Ery Ct., Sayville, N.Y. 11782

Filed Aug. 7, 1980, Ser. No. 176,057  
Int. Cl.<sup>3</sup> B60P 1/64, 7/13; B61D 45/00

U.S. Cl. 410—78

1 Claim



1. A container corner post locking assembly for a cargo container comprising a hollow metal box affixed at the upper and lower ends of each corner of said container; an activating unit extending downward from each said upper end metal box; and a bottom twist lock and shear pin unit extending upwardly from each said lower end metal box and connected to said activating unit; each said activating unit comprising a saddle having an open upwardly facing reception well, said saddle being positioned within an upper metal box, an elongated shaft extending downwardly from the bottom surface of said saddle, and said elongated shaft having an end remote from said saddle and having a first and second flat wing plate extending in opposite directions from said remote end of said elongated shaft; each said bottom twist lock and shear pin unit comprising a secondary shaft having a greater diameter than said elongated shaft of said activating unit, said secondary shaft having an upper end having a hollow opening formed therein for receiving therein said remote end of said elongated shaft, said upper end of said secondary shaft further having a pair of oppositely disposed slots in which slide said first and second flat wing plates to form a shearable vertical unitary shaft for movement of said secondary shaft relative to said elongated shaft, an elongated shear body member having an aperture

formed therethrough, said secondary shaft having a lower end inserted through said aperture of said shear body member such that said lower end of said secondary shaft extends below the bottom face of said shear body member, and a rectangularly-shaped latch member affixed to said lower end of said secondary shaft, said latch member and said shear body member moving together along with the movement of said lower end of said secondary shaft, and a compression spring mounted about the lower portion of said secondary shaft, said compression spring having a first end in abutting relationship against said first and second flat plate wings, and a second end in abutting relationship with the upper face of said shear body member so as to urge said shear body member downwardly into the upper metal box of a container positioned therebelow whereby said shear body member will shear after seating in said upper metal box when said containers are separated by lateral transportation forces; and each said upper metal box having an enlarged opening formed in the top face thereof through which said saddle and therefore said elongated shaft is rotated by a container handling spreader and through which said latch member and said shear body member extend when pushed downwardly therein; each said lower metal box having an enlarged opening in the bottom face thereof, which enlarged opening of said lower metal box is of the same size and shape as said enlarged opening of said upper metal box to provide a mating relationship between a lower and upper enlarged opening to form a continuous passageway therebetween; said shear body member having a peripheral edge flange of greater dimensions than said enlarged opening of said upper metal box whereby said shear body member rests upon lower face of said lower metal box above said enlarged opening of said lower metal box to prevent passage of said shear body member through said enlarged openings, said shear body member having a rectangular cross-sectional shape and positioned on said secondary shaft parallel with respect to said saddle; each said enlarged opening of said upper and lower metal boxes having a size greater than said rectangular cross-sectional shear body member so that said shear body member extends downwardly in said enlarged openings to expose said latch member within said lower metal box, said latch member locking said containers together upon rotation of said elongated and secondary shafts through a right angle, said latch member having a rectangular-shaped cross-section such that the longer dimension is greater than the longer dimension of said shear body member to lock said containers together.

4,341,496

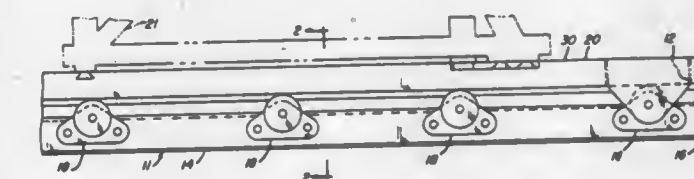
# SEAT PALLET LOCK

Gary J. Carpenter, and Gabor L. Radi, both of Jamestown, N. Dak., assignors to Western Gear Corporation, Lynwood, Calif.

Filed Nov. 23, 1979, Ser. No. 96,656  
Int. Cl.<sup>3</sup> B60P 1/64, 7/06; B63B 25/24

U.S. Cl. 410—79

10 Claims



1. A pallet lock adapted to be carried by a pallet and which lock is selectively operable to engage an elongated latch member comprising:  
a pair of elongated support means adapted to be supported by such a pallet on opposite lateral sides of such a latch member and extending generally parallel thereto;  
elongated arm means pivotally supported at one end thereof by said support means, respectively;  
biasing means operationally carried by said support means and cooperable with said arm means, respectively, for biasing



said arm means to a first position whereat said arm means extend generally laterally of said support means; said arm means being of a length and having the other ends thereof of a configuration to captively encompass such a latch member upon pivotable movement of said arm means from said first position to a second position; actuator means movably supported by at least one of said support means in engagement with said arm means, said actuator means being movable to move said arm means into said second position; and selectively operable retaining means carried by said actuator means and adapted to engage such a pallet to retain said actuator means in engagement with said arm means when said arm means are in said second position.

4,341,497

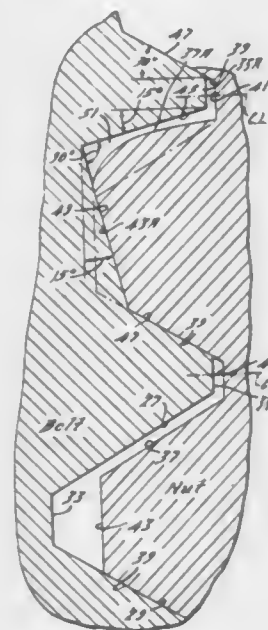
## PREVAILING TORQUE BOLT

Gerald P. Downey, Sterling Heights, and Arthur J. McKewan, Rochester, both of Mich., assignors to Microdot Inc., Darien, Conn.

Filed Apr. 2, 1980, Ser. No. 136,696  
Int. Cl.<sup>3</sup> F16B 39/30

U.S. Cl. 411—311

5 Claims



1. In a threaded fastener, a shank having an end adapted to enter a tapped hole containing a uniform internal helical thread of a standard thread form, said shank having an external helical thread thereon of uniform pitch extending along the length of the shank to said end, said external thread comprising helical leading and trailing flanks, a helical root, and a helical crest, said external thread having a first portion of standard thread form extending to said end and adapted for free running assembly in said internal thread, said external thread having a second portion of modified thread form extending from said first portion in a direction away from said shank end, said modified thread form being asymmetric and having a leading flank that is substantially backset compared to the leading flank of said standard thread form and a trailing flank that has substantially the same flank angle as the trailing flank of said standard thread form, said modified thread form having a root that is substantially larger in diameter and in length than the root of the standard thread form and inclined to converge in a direction extending away from said shank end on an angle of substantially 15° to the axis of the shank, said backset leading flank and said inclined root defining and providing a clearance space to accept the portion of the standard internal thread that is caused to elastically and plastically move upon assembly of said internal thread with said modified thread portion due to swaging of the internal thread by the substantially enlarged and inclined root of said modified thread form.

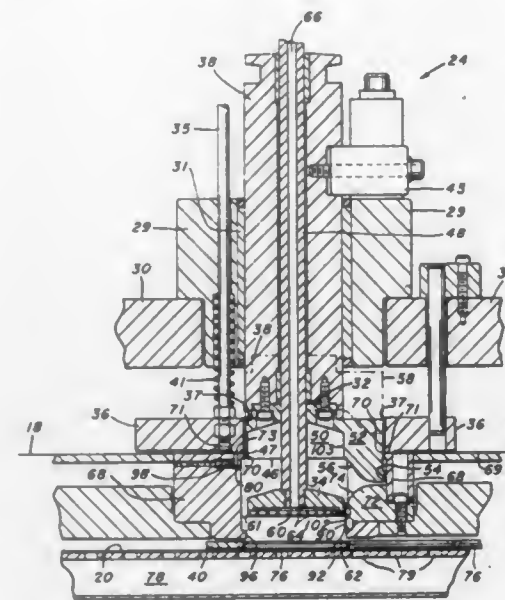
4,341,498  
METHOD AND APPARATUS FOR BLANKING,  
FOLDING AND INSERTING MEMBRANE INTO  
CONTAINER COVERCAP

Darwin L. Ellis, Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 23, 1980, Ser. No. 162,149  
Int. Cl.<sup>3</sup> B21D 51/46

U.S. Cl. 413—3

20 Claims



1. A method of making a closure assembly having a foil membrane and covercap suitable for induction heat sealing the membrane about a container mouth, the method comprises:

- providing a membrane having a disc portion and an integral tab portion from foil stock by initiating blanking of the tab portion and then folding the tab portion as it is being blanked to progressively reverse fold the tab portion toward the disc portion along a line at the periphery of the disc portion and continuing to fold the tab portion to at least an intermediate reverse folded position as the disc portion is blanked;
- inserting the blanked membrane into the covercap and thereby further reverse folding the tab portion between the disc portion and covercap by contacting the partially folded tab portion near its end farthest from the fold line with the interior of the covercap and thereafter pressing the tab portion between the disc portion and covercap to fold the tab portion; and
- said blanking and inserting of the membrane being accomplished in one continuous axial stroke.

4,341,499

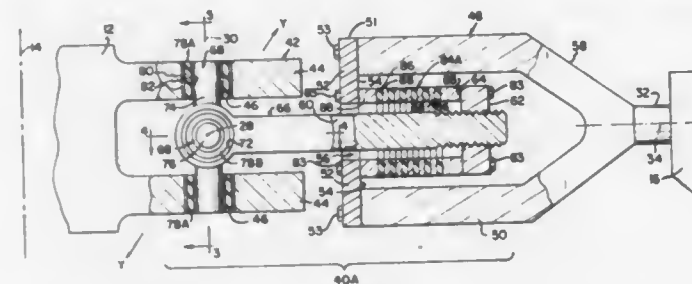
## BLADE RETENTION SYSTEM

Robert R. Peterson, Hudson, Mass., assignor to Barry Wright Corporation, Newton, Mass.

Filed Mar. 24, 1980, Ser. No. 133,015  
Int. Cl.<sup>3</sup> B64C 27/38

U.S. Cl. 416—134 A

21 Claims



1. In a fully articulated rotor head of a rotary wing aircraft of the type including a rotor head rotatable about a central axis and at least one blade, an improved rotor blade retention sys-

tem for coupling said head to said blade, said system comprising:

- retention means comprising (1) elastomeric flap bearing for carrying in shear substantially all and only the flapping motion of said blade about its flapping axis, (2) elastomeric lead-lag bearing, separate from said flap bearing means, for carrying in shear substantially all and only the lead-lag motion of said blade about its lead-lag axis, and (3) elastomeric pitch bearing, separate from said flap and lead-lag bearing, for carrying in shear substantially all and only the pitching motion of said blade about its pitch axis; wherein all of said elastomeric bearing means carry centrifugal loads provided by the rotation of said blade about said central axis substantially entirely in compression.

4,341,500

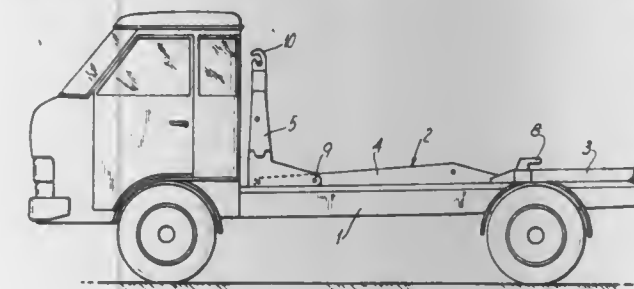
## LOADING EQUIPMENT

Heikki Laitinen, Raisio, Finland, assignor to Oy Partek Ab, Finland

Filed May 12, 1980, Ser. No. 148,588  
Claims priority, application Finland, Apr. 11, 1980, 801153  
Int. Cl.<sup>3</sup> B60P 1/64

U.S. Cl. 414—498

2 Claims



1. An exchange platform system suitable for alternatively loading an exchange platform having either of two different platform frame widths onto a vehicle and for unloading the exchange platform from the vehicle, comprising:

- a first exchange platform having a pair of frame beams spaced apart a first distance;
- a second exchange platform having a pair of frame beams spaced apart a second distance than said first distance;
- an exchange platform device adapted to be mounted on a vehicle and including a pair of rollers near one end thereof, said rollers each having a width and being spaced such that the frame beams of said first exchange platform are respectively supported on said rollers on the outer portions thereof when said first exchange platform is loaded onto the loading device and the frame beams of said second exchange platform are respectively supported on the inner portions of said rollers when said second exchange platform is loaded onto the loading device; and
- locking means on said loading device for automatically securing an exchange platform onto the loading device, said locking means being located in planes perpendicular to the longitudinal axes of said rollers approximately at the respective centers thereof such that said locking means are located between the frame beams of said first exchange platform when it is loaded on the loading device and outside the frame beams of said second exchange platform when it is loaded on the loading device.

4,341,501

## HYDRAULIC CONTROL VALVE CIRCUIT FOR A SWING MECHANISM

Herman J. Maurer, and Carl O. Pedersen, both of Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Aug. 22, 1980, Ser. No. 180,311  
Int. Cl.<sup>3</sup> B66F 9/22; F15B 11/20, 13/06

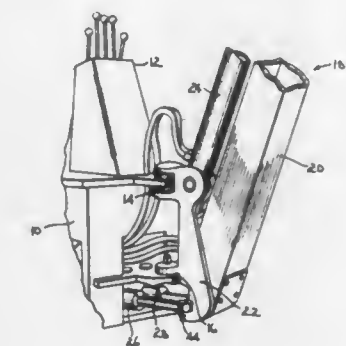
U.S. Cl. 414—694

9 Claims

1. In an implement having a support stand attached to a tractor having a hydraulic system, and a swing tower pivotally

connected to said support stand about a vertical axis and supporting a boom, apparatus for rotating said boom laterally from one side to the other side of said tractor, comprising:

- two hydraulic motors pivotally interconnected between the support stand and the swing tower, each of said motors having a cylinder end and a piston rod end, the cylinder ends being pivotally connected to said support stand and the piston rod ends pivotally connected to the swing tower by a pivotal connection parallel to and spaced from the pivotal connection of the swing tower to the support stand, the rectilinear expansion and contraction of said motors inducing rotational movement to said swing tower about its pivotal axis on the support stand;
- a source of fluid pressure;
- a drain reservoir;
- directional flow control means for selectively delivering a flow of fluid under pressure from the source of fluid



pressure to the piston rod end of one of said two hydraulic motors and for connecting the piston rod end of the other hydraulic motor to the drain reservoir; and

- sequencing valve means operationally associated with the rotational position of said swing tower, for sequentially connecting both of said cylinder ends to the source of fluid pressure; then connecting the cylinder end of said one hydraulic motor to the drain reservoir while connecting the cylinder end of the other hydraulic motor to the source of fluid pressure; and then connecting both of said cylinder ends to the drain reservoir,

whereby said boom is rotated by: first by the other of said two hydraulic motors developing its maximum output force while said one hydraulic motor develops a reduced output force; then by both of said two hydraulic motors; and then by said one hydraulic motor with the other of said two hydraulic motors isolated from high pressure fluid.

4,341,502

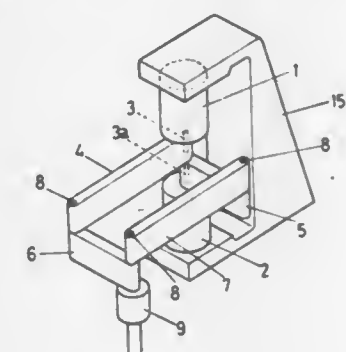
## ASSEMBLY ROBOT

Hiroshi Makino, 1013 Haguro-cho, Kofu City, Yamanashi Prefecture, Japan

Filed Mar. 24, 1980, Ser. No. 133,287  
Claims priority, application Japan, Oct. 12, 1979, 54-131983  
Int. Cl.<sup>3</sup> B25J 13/00, 1/12; G05G 11/00

U.S. Cl. 414—744 R

7 Claims



1. An assembly robot comprising:



a link mechanism formed of four links and movable in a horizontal plane, a first said link being pivotally connected to a second said link about a first vertical axis, said second said link being pivotally connected to a third said link about a second vertical axis, and said third link being pivotally connected to a fourth said link about a third vertical axis;

a base;  
a first motor mounted on said base and having a vertical shaft fixed to said first link;  
a second motor mounted on said base and having a vertical shaft fixed to said fourth link;  
said shafts of said first and second motors being vertically concentrically aligned; and  
an assembly tool mounted on said second vertical axis, whereby operation of said first and second motors rotates said first and fourth links about the axes of said motor shafts and thereby causes said link mechanism to move horizontally the position of said assembly tool.

**4,341,503**  
**PUMP FOR FLUID MEDIA**

Alois Gschwender, Reichenbach; Wolfgang Renner, Maulbronn, and Herbert Hahn, Stuttgart, all of Fed. Rep. of Germany, assignors to Flux-Geräte Gesellschaft mit beschränkter Haftung, Stuttgart, Fed. Rep. of Germany

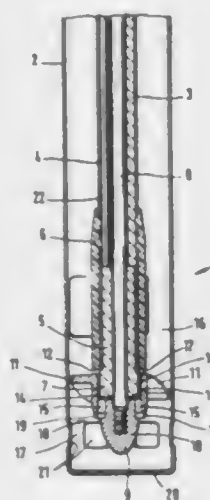
Filed Apr. 14, 1980, Ser. No. 140,413  
Claims priority, application Fed. Rep. of Germany, Apr. 14,  
1979, 2915379

U.S. Cl. 415—112 Int. Cl.<sup>3</sup> F04D 29/10

U.S. Cl. 415-112

Int. Cl.<sup>3</sup> F04D 29/10

### 1 Claim



1. A pump apparatus for fluid media, which comprises:  
a housing;  
an inner tube arranged in said housing in such a way that space remains between the inner wall of said housing and the outer wall of said inner tube;  
a drive shaft journaled in said inner tube;  
a rotor arranged in said housing and including a main body fastened on said drive shaft, said main body being provided with at least one passage extending from the pressure side of said rotor to the suction side thereof, with a suction gap being provided on said inner tube to allow communication between said at least one passage and said space between said housing and said inner tube;  
conveying blades for medium, arranged on said main body;  
a pump arranged on said rotor and operating counter to the transporting direction of said conveying blades, the pres-

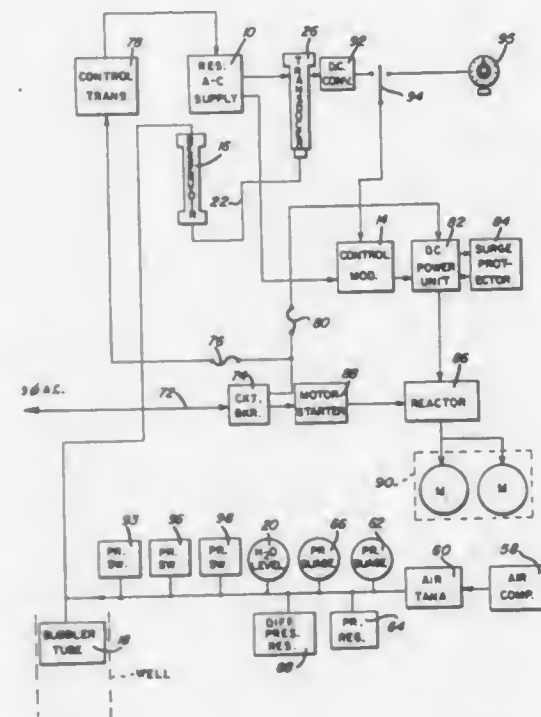
sure side of said rotor including a bore in said main body, and said inner tube including a guide bearing, one end of which is arranged in said bore, a gap serving as a suction gap extension being provided between said guide bearing and the wall of said bore to effect said communication between said suction gap and said at least one passage, said at least one passage being arranged in the plane of said suction-gap extension, and being connected to said pump, said guide bearing being formed by that end of said inner tube directed toward said rotor, a tube sleeve around at least a portion of said inner tube, and a support sleeve in which said guide bearing is arranged, said support sleeve extending over a portion of said tube sleeve.

**4,341,504**  
**PUMP CONTROL SYSTEM**

Frank A. Hignutt, 602 "E" St., Millville, N.J. 08332; Robert F. Hignutt, 26 Greenbriar Rd., Turnersville, N.J. 08012, and Kenneth W. Hignutt, 36 Porreca Dr., Millville, N.J. 08332  
Filed Dec. 6, 1979, Ser. No. 101,009  
Int. Cl.<sup>3</sup> F04B 41/06, 49/06

U.S. Cl. 417-8

## 10 Claims



1. A pump system for maintaining a flow of fluid through a well comprising:

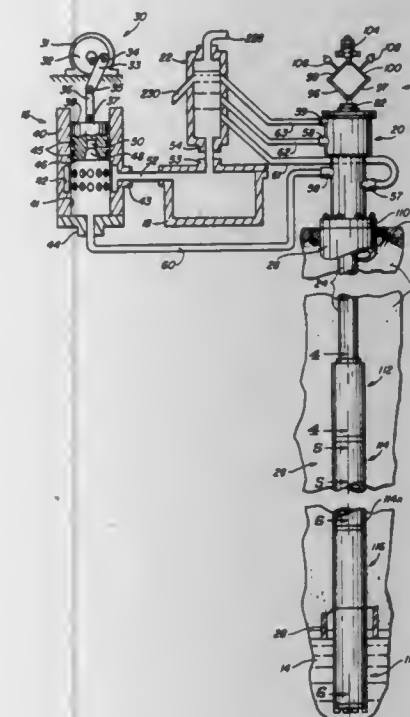
a pair of terminals for connection to a power supply;  
pump means connected to said terminals of said power supply for pumping fluid from said wet well;  
motor means connected to said pump means for driving said pump means, said motor means comprising a variable speed electric motor;  
liquid level sensing means disposed in said wet well for providing an output proportional to the level of fluid in said wet well; and  
control circuit means for receiving said output of said liquid level sensing means and controlling the speed of said motor in response thereto,  
said control circuit means including reactor means connected to said terminals of said power supply and said motor means, said motor means further including a second motor and said pump means including two pumps one of which is connected to said first mentioned motor, the other of which is connected to said second motor, said control circuit means further includes means for operating

said second motor at constant full speed in response to the output from said liquid level sensing means reaching a predetermined level, whereby the first mentioned motor only is operative at a variable speed until the pump connected thereto reaches the maximum capacity at which point the second motor is operated at a constant full speed with the first mentioned motor then being operated at variable speed in response to the output of the liquid level sensing means.

**4,341,505**  
**SONIC PRESSURE WAVE PUMP FOR LOW**  
**PRODUCTION WELLS**

PRODUCTION WELLS  
 Arthur P. Bentley, P.O. Box 1952, Roswell, N. Mex. 88201  
 Continuation-in-part of Ser. No. 958,552, Nov. 8, 1978, Pat. No.  
 4,295,799. This application Jun. 19, 1980, Ser. No. 160,934  
 Int. Cl.<sup>3</sup> F04F 7/00; F04B 9/10, 35/02  
 U.S. Cl. 417—240 14 Claims

## 14 Claims



1. A sonic pressure wave surface operated pump for use in pumping liquid from low production wells and having a column of liquid therein, said pump comprising:

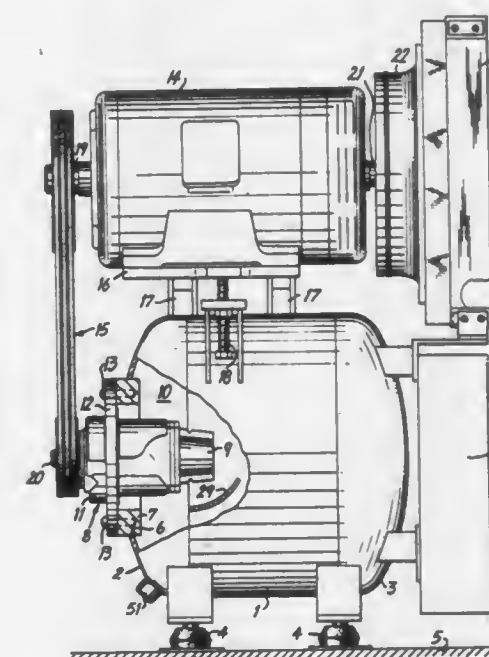
- (a) a sonic pressure wave generator having a reciprocally operable piston for cyclically impacting the column of liquid;
- (b) a metallic production tube coupled to said generator and extending downwardly toward the liquid to be pumped;
- (c) said piston of said generator having a central recess formed in its liquid impacting face for generating the sonic pressure waves which move downwardly along the inner walls of said production tube;
- (d) a liquid discharge unit interposed between said generator and said production tube and having a liquid output port, said liquid discharge unit having means responsive to an increase in hydrostatic pressure in the liquid column for movement from a first position in which said output port is

4,341,506  
APPARATUS FOR THE GENERATION OF  
COMPRESSED AIR

Rüdiger Klein, Dorsten, Fed. Rep. of Germany, assignor to Gutehoffnungshütte Sterkrade A.G., Oberhausen, Fed. Rep. of Germany

Filed Aug. 14, 1979, Ser. No. 66,547  
Int. Cl.<sup>3</sup> F04B 35/04; F01M 1/00  
U.S. Cl. 417-362

#### 4 Claims



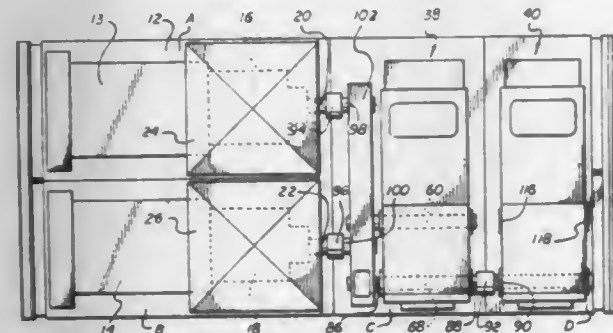
1. In apparatus for the generation of compressed air including compressor means, motor means for driving said compressor means, supply means providing liquid lubricant for cooling said compressor means, storage container means for said liquid lubricant, means for separating said lubricant from compressed air, means for cooling said separated lubricant the control means for controlling and regulating the operating parameters of said apparatus in generating said compressed air, the improvements which comprise: that said storage container means is constructed as a pressure vessel for receiving and collecting said lubricant; that said compressor means includes a high-pressure-conducting housing section and is built into said pressure vessel in a pressure-tight manner at least to the extend of said high-pressure-conducting housing section, with said compressor means comprising air intake means through which air is supplied to said pressure vessel; and that said motor means, said lubricant cooling means and said control means are located on the exterior of said pressure vessel and mounted in proximity thereto; said motor means being mounted on the top of said pressure vessel and being connected to said compressor



means through a V-belt drive mechanism; said motor means including a first power take off pin connected with said V-belt drive and a second power take off pin coupled to a fan which is operably arranged as part of said means for cooling said separated lubricant.

4,341,507  
Patent Not Issued For This Number

4,341,508  
PUMP AND ENGINE ASSEMBLY  
Leroy M. Rambin, Jr., Houston, Tex., assignor to The Ellis Williams Company, Houston, Tex.  
Filed May 31, 1979, Ser. No. 44,172  
Int. Cl.<sup>3</sup> F04B 23/06  
U.S. Cl. 417—426 23 Claims



1. A pump and engine assembly for closely spaced engines and rotary driven piston displacement pumps, said assembly comprising:

- first and second engines;
- a first pump defining a first pump housing;
- first and second drive shafts being supported for rotation by said first housing, said first drive shaft being in driving interconnection with said first pump and being coupled in driven relation with said first engine, said second drive shaft having first and second extremities projecting from opposed sides of said first housing, said first extremity of said second drive shaft being coupled in driven relation with said second engine;
- a second pump defining a second pump housing; and
- a second pump drive shaft being mounted for rotation by said second pump housing and being coupled in driving relation with said second pump, said second pump drive shaft being coupled in driven relationship with said second drive shaft of said first pump.

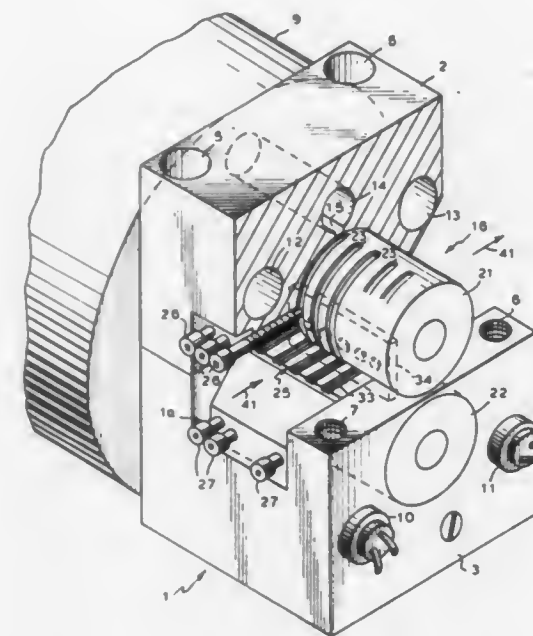
4,341,509  
CROSSHEAD EXTRUSION DIE  
Norman R. Harlow, Cornwall-on-the-Hudson, N.Y., assignor to Carlisle Corporation, Buchanan, N.Y.  
Filed Jun. 8, 1979, Ser. No. 46,927  
Int. Cl.<sup>3</sup> B29F 3/10  
U.S. Cl. 425—114 8 Claims

1. A die assembly for the extrusion of a covering of a thermoeextrudable material over a plurality of bare or covered wires, said assembly comprising:

a two-part die body having an inlet opening at one side thereof and an outlet opening at another side thereof, each part having a manifold for receiving said material;

a pair of distributors removably received between the die body parts, one adjacent the manifold of one said part and the other adjacent the manifold of the other said part, said distributors also being adjacent each other and spaced apart to define a space therebetween intermediate said inlet opening and said outlet opening,

and each said distributor having at least one peripheral flow channel in communication with the manifold adjacent thereto and extending from the manifold adjacent thereto



to said space for directing said material from the adjacent manifold to said space;

- a wire guide removably mounted intermediate said inlet opening and said space and between said die parts, said guide having wire receiving grooves therein for receiving said wires and guiding them from said inlet opening to said space; and
- a die plate, having at least one opening therein, removably mounted between said distributors at the side of said space opposite from the side thereof at which said guide is mounted with said opening aligned with said groove in said guide.

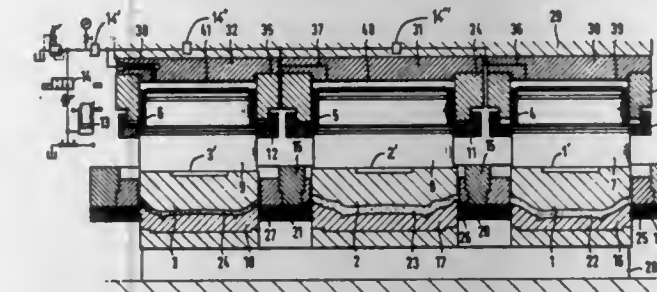
4,341,510  
MULTIPLE PRESS FOR CERAMIC MOLDINGS  
Hans-Henning Croseck, Konz, and Rolf Jung, Trier, both of Fed. Rep. of Germany, assignors to Laeis-Werke AG, Trier, Fed. Rep. of Germany  
Filed Aug. 13, 1980, Ser. No. 177,830  
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1979, 2935156  
Int. Cl.<sup>3</sup> B29C 1/14; B28B 3/06  
U.S. Cl. 425—149 5 Claims

1. A multiple press having molding means for forming ceramic moldings, comprising in combination:
- a base frame
  - a movable mounting plate operatively mounted in said base frame and carrying a plurality of mold halves therein;
  - a fixed mounting plate operatively mounted in said base

frame opposite said movable mounting plate and having a plurality of cavities;

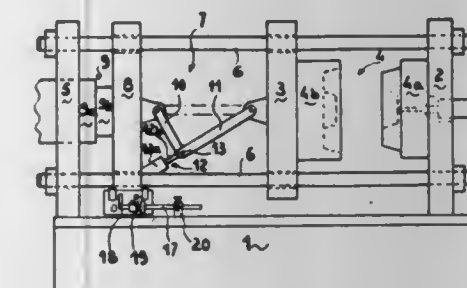
a plurality of punch carriers slidably mounted in said cavities, each punch carrier having a punch which has a mold half which mates with a mold half on said movable mounting plate, as to form a pair of confronting mold halves;

each cavity of said plurality of cavities having a bottom wall and the corresponding punch carrier having a confronting rear wall, said bottom wall and confronting rear wall forming a pressure medium receiving chamber therebetween;



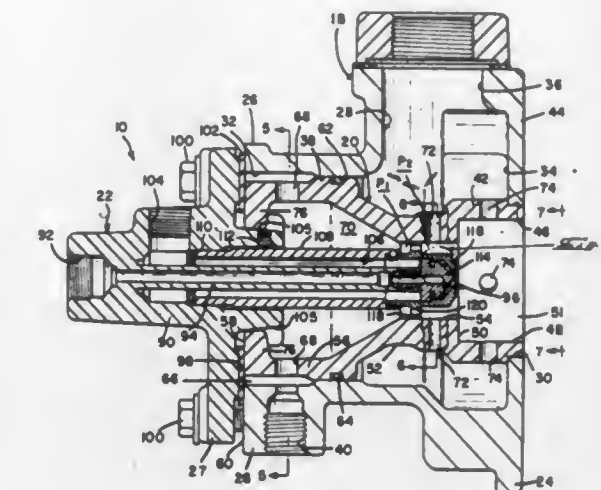
a source of pressure medium; and conduit means connecting each receiving chamber to said source and during the pressing operation to each other; and wherein said plurality of punches of said carriers have different diameters and corresponding filler rings to permit using punches of different diameters on different ones of said carriers, and means for regulating pressure on said punches to provide the same maximum specific pressure for the mold halves on said movable mounting plate during molding.

4,341,511  
DEVICE FOR AUTOMATIC ADJUSTMENT OF AN INJECTION MOLDING PRESS  
Jean Laurent, Oyonnax; Bernard Monnet, Bellignat, and Philippe Pertuis, Oyonnax, all of France, assignors to Pont-a-Mousson, Nancy, France  
Filed Oct. 8, 1980, Ser. No. 195,167  
Claims priority, application France, Oct. 10, 1979, 79 25727  
Int. Cl.<sup>3</sup> B29F 1/06  
U.S. Cl. 425—150 7 Claims



1. An automatic adjustment device for a movement and locking mechanism of an injection molding press including a support base (1), a fixed plate (5) mounted on the base, a first movable half mold bearing plate (3), and a second intermediate movable plate (8), connected to the fixed plate by a locking jack (9) and to the first movable plate by a rapid movement linkage (10-13), the improvement comprising two spaced contactors (15, 16) mounted to the second plate for controlling the extension and retraction of the locking jack, and contactor engagement means disposed between the contactors, said contactor engagement means being frictionally and slidably mounted on said base at a position to be pressed upon by said contactors during movement of said second plate, wherein said contact engagement means is automatically slidably moved to an operative position by movement of said second plate.

4,341,512  
BURNER  
Raymond J. Wojcieszon, Annville; Fred L. Fuhrman, Jonestown, and John J. O'Hara, Annville, all of Pa., assignors to Hauck Manufacturing Company, Lebanon, Pa.  
Filed Jul. 31, 1980, Ser. No. 174,129  
Int. Cl.<sup>3</sup> F23Q 9/00; B05B 1/00  
U.S. Cl. 431—284 14 Claims



1. A combination gas and oil fired burner comprising a hollow body having a downstream end wall with a downstream opening therein, an upstream end with an upstream opening therein aligned with the downstream opening, a gas inlet port extending through the body adjacent the upstream opening, and a secondary air inlet port extending through the body adjacent the downstream opening; a hollow open-ended nozzle extending between said openings within the interior of the body and having a downstream end opening into the downstream opening to communicate the interior of the nozzle with the exterior of the body through such opening, an upstream end adjacent the body upstream end, a gas flow opening through the thickness of the nozzle communicating the gas inlet port with the interior of the nozzle, the nozzle including a reduced interior cross section portion adjacent the nozzle downstream end; an end plate having a primary air inlet port and an oil inlet port; removable securing means for holding the end plate on the upstream end of the body to sandwich the nozzle between the end plate and the body downstream end wall; an oil passage within the nozzle interior extending downstream from the oil inlet port; a primary air passage within the nozzle interior extending downstream from the primary air inlet port; and an atomizing assembly on the downstream ends of said passages and within the reduced interior cross section portion of the nozzle, a gas flow opening in said portion extending past the atomizing assembly to communicate the interior of the nozzle with the exterior of the body through the downstream body opening, and a secondary air flow opening through the nozzle downstream of the gas flow opening at the atomizing assembly to communicate the secondary air inlet port with the downstream end of the nozzle.

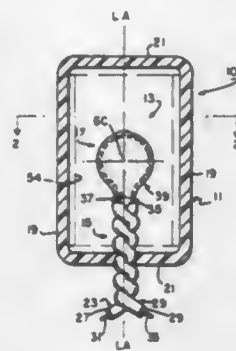
4,341,513  
SUBMINIATURE PHOTOFLASH LAMP HAVING LIGHT-EMITTING PYROTECHNIC CHARGE  
John A. Scholz, Danvers, and George J. English, Reading, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.  
Filed May 5, 1980, Ser. No. 146,574  
Int. Cl.<sup>3</sup> F21K 5/02  
U.S. Cl. 431—362 13 Claims

1. A subminiature photoflash lamp comprising:

- a light-transmitting envelope;
- a pyrotechnic charge located within said envelope at a pre-established distance from the internal surfaces of the walls of said envelope for emitting light through said walls upon



ignition thereof, said pyrotechnic charge including a primer composition and a fuel mixture in physical contact with said primer composition;  
ignition means for electrically igniting said pyrotechnic charge including first and second electrical conductors secured within said envelope, each of said conductors having an end portion extending within said envelope,

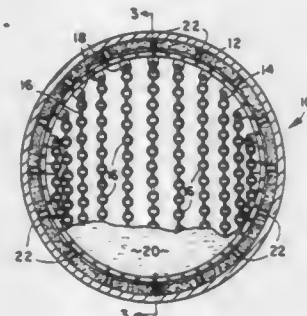


said extending end portions electrically coupled to said pyrotechnic charge; and  
support means for supporting said pyrotechnic charge within said envelope at said prestablished distance from said internal surfaces, said support means located on said extending end portions of said electrical conductors or forming a part thereof, said lamp not including combustible shred material within said light-transmitting envelope.

**4,341,514**  
**STANDOFF FOR TWO COMPONENT LINING AND METHOD OF INSTALLATION**  
Douglas G. Shanks, P.O. Box 1195, Dunedin, Fla. 33528  
Filed Nov. 25, 1980, Ser. No. 210,415  
Int. Cl.<sup>3</sup> F27D 1/16

U.S. Cl. 432—3

12 Claims



12. The method of applying a two component lining to the inside shell of a kiln, comprising the steps of:  
welding a plurality of elongated standoffs to the inside shell of the kiln to form a substantially parallel array of the elongated standoffs extending the entire length of the kiln;  
applying a first castable material having high insulative properties to the inside shell of the kiln to a thickness insufficient to cover the plurality of elongated standoffs;  
welding a grid to the exposed portions of the plurality of elongated standoffs; and  
applying a second castable material having a high resistance to abrasion upon the first castable material to a thickness commensurate with the level of the grid.

**4,341,515**  
**HIGH TURNDOWN RATIO FLUIDIZED BED REACTOR AND METHOD OF OPERATING THE REACTOR**  
Jakob Korenberg, York, Pa., assignor to York-Shipley, Inc., York, Pa.

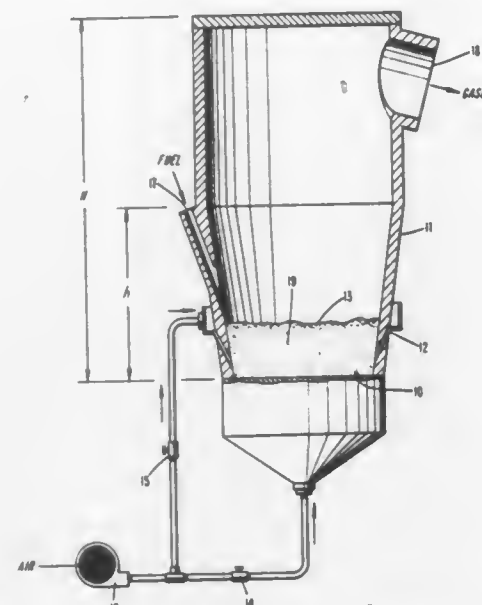
Filed Feb. 11, 1981, Ser. No. 233,507  
Int. Cl.<sup>3</sup> F21B 15/10

U.S. Cl. 432—15

8 Claims

1. A method of operating an adiabatic fluidized bed reactor

that utilizes a bed of granular material for combusting non-uniform particulate matter comprising:  
providing an adiabatic fluidized bed reactor having reactor walls terminating in a support surface that supports a bed of granular material;  
feeding non-uniform particulate matter to said reactor;  
supplying pressurized air to said reactor in excess of the stoichiometric amount needed for combustion both through openings located in said support surface and

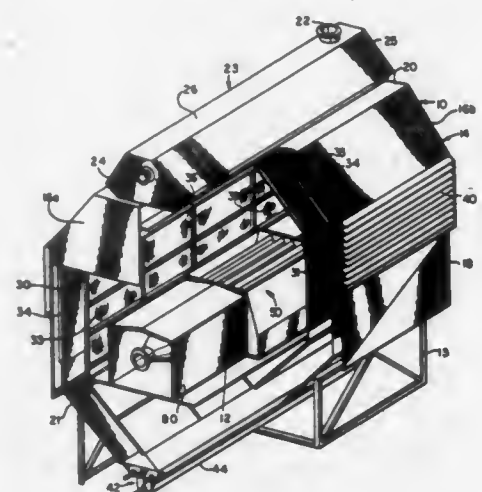


through openings located in said reactor walls having outlets below the surface of said bed of granular material, wherein said supplying pressurized air is independent of said feeding non-uniform particulate matter; and  
adjusting the flow of pressurized air to said reactor by:  
(a) reducing the flow of pressurized air to said reactor wall openings, and  
(b) reducing the flow of pressurized air to said support surface openings only after the flow of pressurized air to said reactor wall openings has been reduced to zero.

**4,341,516**  
**GRAIN DRYER WITH HEAT EXCHANGE ASSEMBLY**  
H. H. Eikerman, Kerney, Nebr., and Joseph L. Naylor, Norman, Okla., assignors to Blount, Inc., Montgomery, Ala.  
Filed May 18, 1981, Ser. No. 264,348  
Int. Cl.<sup>3</sup> F27D 1/08; F26B 17/12

U.S. Cl. 432—95

38 Claims

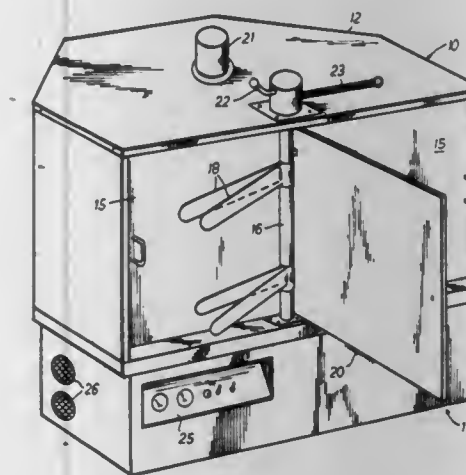


1. An apparatus for drying granular material comprising:  
(a) a housing;  
(b) means defining a granular-material conduit for conducting said granular material through said housing;  
(c) heat exchange means having at least one generally tubular radiator element;

(d) means for producing a flow of hot combustion gas through the interior of said tubular radiator element to transfer heat from said hot combustion gas to said tubular radiator element, said combustion gas being discharged from the interior of said tubular radiator element at a reduced temperature;  
(e) gas conducting means communicating with said tubular radiator element for directing the flow of discharged combustion gas from said tubular radiator element into external communication with said tubular radiator element to increase the temperature of the discharged combustion gas;  
(f) means for introducing the flow of the discharged combustion gas in external communication with said tubular radiator element into said granular-material conduit to treat said granular material therein; and  
(g) separation means in the flow of combustion gas for removing particulate material from the combustion gas prior to its introduction into said granular-material conduit.

**4,341,517**  
**CURING KILN**  
Mervyn Gittins-Thomas, 4, The Points, Cox-Green, Maidenhead, Berkshire, England  
Filed Oct. 7, 1980, Ser. No. 195,067  
Claims priority, application United Kingdom, Aug. 19, 1980, 8027032  
Int. Cl.<sup>3</sup> F27B 9/16; F27D 3/12; F26B 25/00  
U.S. Cl. 432—141

1 Claim



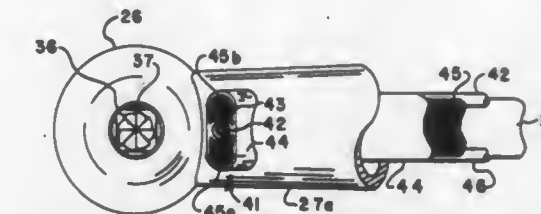
1. A kiln of the type having a housing, heating means for heating the interior of the housing, and transfer means for carrying articles to be cured into and out of the housing whereby additional access to articles in the heated interior is unnecessary, said kiln housing and transfer means comprising:  
a plurality of fixed wall portions defining the housing and an aperture therein, said wall portions being heat insulated;  
axle means vertically positioned within said aperture and rotatably supported at its top and bottom by said wall portions;  
at least three spaced wall panels joined to and extending radially from said axle means to form a roundabout means, said panels being arranged so as to be movable, upon rotation of the axle means, to positions wherein two of the panels cooperate to close off said aperture, said two panels being heat insulated;  
sealing means provided on at least said two panels or said fixed wall portions to reduce heat loss through the aperture when it is closed by said two panels;  
article holding means positioned between adjacent wall portions; and  
a lever and ratchet means for rotating the axle means to selectively position the article holding means and enclose a minimum of 180° of the roundabout means within the

interior of the housing while closing the aperture by means of said two panels.

**4,341,518**  
**DENTAL HANDPIECE**  
Richard A. Wallace, Box 201, Gwynedd, Pa. 19436  
Filed Dec. 20, 1979, Ser. No. 105,595  
Int. Cl.<sup>3</sup> A61C 00/00

U.S. Cl. 433—29

13 Claims

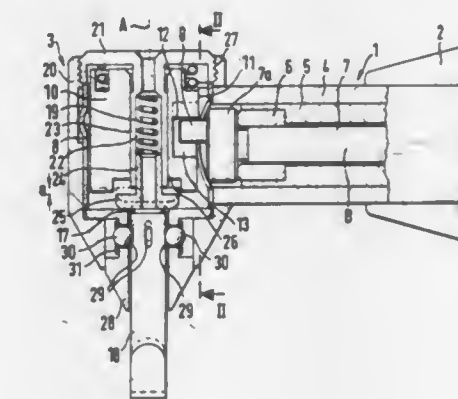


1. In a contra angle dental handpiece for driving a bur within a head, which is attached to the distal end of a hollow handle, with the proximal end of the handle attached to a coupling, the improvement comprising:

a. means respectively located wholly within said handle for conducting chip air, water, and light services from said coupling to the distal end, where the services exit together at a single location in a cluster therefrom,  
b. whereby chip air, water and light emerge immediately adjacent the head without adding bulk to the handle, and light emanating from said light service falling on said bur with minimum shadow.

**4,341,519**  
**DENTAL ANGLED VIBRATION MEMBER**  
Bernhard Kuhn, Biberach, and Eugen Bochtler, Mittelbiberach, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach an der Riss, Fed. Rep. of Germany  
Filed Feb. 26, 1981, Ser. No. 238,664  
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008297  
Int. Cl.<sup>3</sup> A61C 3/08  
U.S. Cl. 433—122

16 Claims



1. In a surgical dental or dental technician's angled vibration member; including a gripping sleeve portion having a drive shaft supported therein; a head sleeve portion arranged at one end of said gripping sleeve portion and having an axis extending at an angle to the axis of the gripping sleeve portion; an impact piston axially reciprocable in said head sleeve portion; an eccentric at the drive shaft end for imparting a return stroke to said impact piston; said impact piston having at its edge a side recess with a contact stop for the engagement of said eccentric; and having an operating spring associated therewith for effecting the operating stroke after passing of the contact stop, said spring being stressed prior to reaching the contact stop, so that the impact piston during its operating stroke will impart to the end of the axially movably supported, tamping-type vibration work tool in the interior of the head sleeve

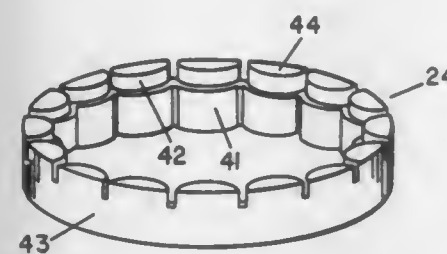


portion; the improvement comprising: a retaining spring in said head sleeve portion acting on the end of the vibration work tool at the interior of the head sleeve portion, said retaining spring being supported on the head sleeve portion; and a hammer piston being arranged intermediate said retaining spring and the vibration work tool.

**4,341,520**  
**DENTAL HANDPIECE BEARING SUSPENSION SYSTEM**  
Richard A. Wallace, 2750 Audubon Rd., Audubon, Pa. 19407  
Filed Jan. 19, 1981, Ser. No. 226,408  
Int. Cl.<sup>3</sup> A61C 1/05

U.S. Cl. 433—132

3 Claims



1. In a dental handpiece for rotating a bur in a housing, having a turbine mounted on a shaft between a front and rear ball bearing, said front bearing having an inner race and a flanged outer race, the improvement comprising:

an elastomeric ring comprising a plurality of equal segments each having an interior arcuate surface, an exterior surface which is smooth and circular, a plurality of discrete, arcuate pads positioned upon said arcuate segments wherein a single pad is integrally formed with and smaller than a single arcuate segment, the remaining surfaces being flat, said elastomeric ring positioned around the front ball bearing outer race, and being held in place radially by the cylindrical section of the outer race, and axially by the flange, whereby the segments of the elastomeric ring provide compensation for dimensional variations of the ring and housing bore, and provide a squeezing force to lessen noise and prevent outer race rotation of the front bearing, and further, whereby the pads of said elastomeric ring provide an axial pre-load on said bearing, independent of the radial squeeze load.

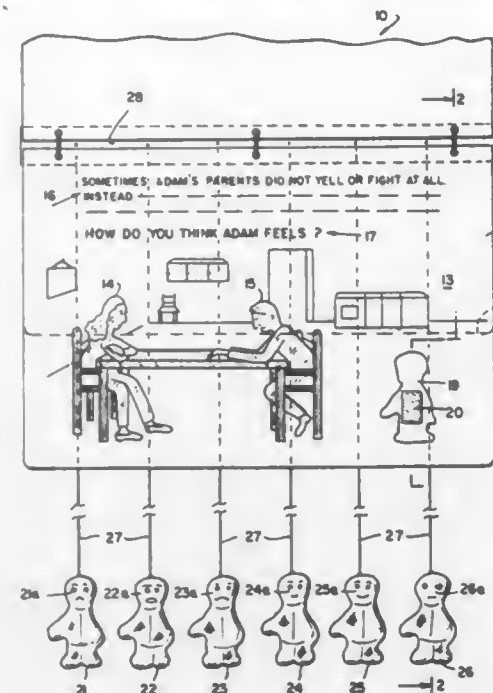
**4,341,521**  
**PSYCHOTHERAPEUTIC DEVICE**  
Laura B. Solomon, 150 Prospect Park W., Brooklyn, N.Y. 11215  
Filed Mar. 2, 1981, Ser. No. 238,669  
Int. Cl.<sup>3</sup> G09B 19/00

U.S. Cl. 434—236

16 Claims

1. A psychotherapeutic device comprising: a sheet having a scene depicted thereon so that a therapist can tell a story to a subject child relative to said scene, and a region disposed within said scene, further comprising a plurality of members depicting a like character and wherein each of said members depicts said character displaying a specific different emotion, said members being formed so as to be selectively received in

said region, whereby the subject upon viewing the scene in light of the story selects one of said members and places the

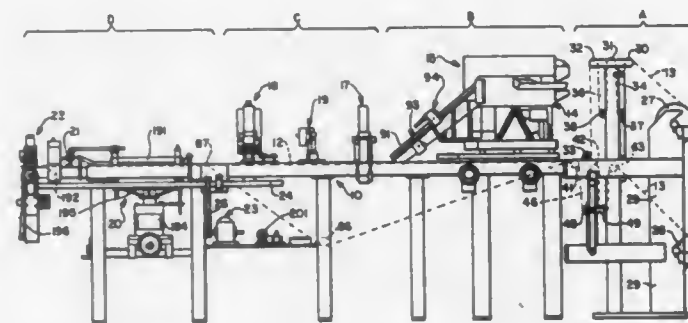


member in said region thereby conveying the emotion felt by the subject child relative to the scene.

**4,341,522**  
**METHOD AND APPARATUS FOR MAKING POUCHES WITH DISPENSING FITTINGS**  
Rene J. Gaubert, 4219 Oakmore Rd., Oakland, Calif. 94602  
Filed May 5, 1980, Ser. No. 146,506  
Int. Cl.<sup>3</sup> B31B 1/84

U.S. Cl. 493—213

8 Claims



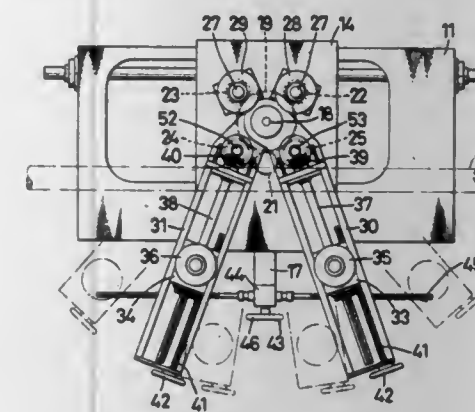
1. In an automated method of forming a pouch of film material with one wall portion of the pouch having an annular fitting secured to the same, the steps of advancing a web of the film material along a substantially horizontal plane, the movement being recurrent with periods of rest between periods of advancing movement, the advancing movement being for equal distances corresponding to successive connected web portions of equal length that are desired for forming the pouches, the advancing movement serving to carry each of such web portions through depositing and fitting securing regions, depositing a dispensing fitting on each web portion in the depositing region, orienting each fitting to the position on the web where it is desired to secure the same, such orienting being carried out by shifting the fitting laterally of the direction of web movement during advancing movement of the web to align the same with the fitting securing region, such lateral shifting being carried out by contacting the fitting with stationary guide rails during such advancing movement, and by arresting the fitting in said region by engaging the fitting with a removable stationary barrier, securing each such fitting to a web portion in the fitting securing region during a rest period and while the fitting is being retained in alignment with the fitting securing region, and then moving the barrier to an

out-of-the-way position and advancing the web with the secured fitting.

**4,341,523**  
**APPARATUS FOR MANUFACTURING PAPER PIPES**  
Shickinosuke Ikuta, 13, 2-chome, Shimoshinjo-cho, Higashi-yodogawa-ku, Osaka-shi, Osaka-fu, Japan  
Filed Jul. 29, 1980, Ser. No. 173,495  
Claims priority, application Japan, Sep. 17, 1979, 54-121270  
Int. Cl.<sup>3</sup> B31C 3/00

U.S. Cl. 493—301

1 Claim



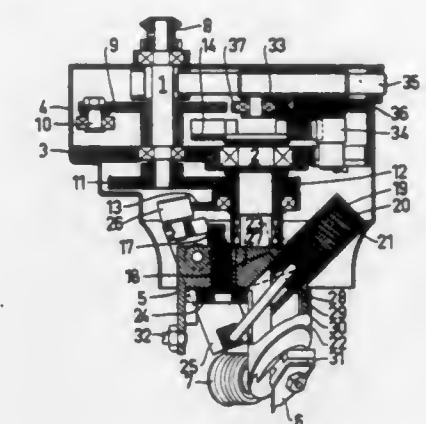
1. An apparatus for manufacturing paper pipes comprising: a horizontal mandrel in a fixed position; a table provided under said mandrel and movable in the axial direction of said fixed mandrel; a gear case fixed to the under surface of said table; a main vertical shaft provided substantially in the center of said gear case, the upper end portion of said main vertical shaft projecting above said table; a large spur wheel rotatably mounted on said main vertical shaft in said gear case; a means on said table for driving said large spur wheel; four vertical countershafts disposed around said large spur wheel; four vertical spur wheels fixed to the lower ends of said four vertical countershafts and engaging with said large spur wheel, the upper ends of said four vertical countershafts projecting above said table; two first drums fixed to the projecting parts of two of said four vertical countershafts so as to be stationary on said table and spaced from one side of said mandrel; two bevel gears on the upper ends of the remaining two of said four vertical countershafts and close to said fixed mandrel; two supporting frames extending horizontally over said table, one end of each of said two supporting frames being rotatably supported on the projecting part of said main vertical shaft; two horizontal shafts on said two supporting frames, respectively, and extending in the longitudinal directions thereof; a bevel gear provided on the end of each of said two horizontal shafts toward said main vertical shaft and engaging corresponding ones of said two bevel gears on the upper ends of said two vertical countershafts close to said fixed mandrel; two sliders mounted on said two supporting frames, respectively, and slidable in the longitudinal directions of said supporting frames; means for adjusting the positions of said two sliders on said two supporting frames; two second drums rotatably mounted on said two sliders, respectively; means for transmitting the rotary motion of said two horizontal shafts to said two second drums, respectively, for rotating said two second drums in the opposite direction to the direction of rotation of said two first drums irrespective of where said two sliders are positioned on said two supporting frames; a means for adjusting the angle formed between said two supporting frames; a belt running over one of said two first drums and one of said two second drums; and another belt running over the other of said two first drums and the other of said two second drums, the side of each of said two belts advancing toward the first drum and the side of each of said two belts receding from the first drum being crossed in such a manner that the advancing side is placed above the receding side and said fixed mandrel being between the advancing and receding sides, the side of one of said two belts advancing toward the first drum winding around said mandrel in a single loop around said fixed mandrel,

and the side of the other of said two belts receding from the first drum winding around said mandrel in a single loop around said fixed mandrel.

**4,341,524**  
**WORKING HEAD FOR A PASSEPARTOUT-MACHINE**  
Hans H. Weil, Östra Tullgatan 8, S-211 20 Malmö, Sweden  
PCT No. PCT/SE79/00120, § 371 Date Jan. 29, 1980, § 102(e)  
Date Jan. 25, 1980, PCT Pub. No. WO79/01139, PCT Pub. Date Dec. 27, 1979  
PCT Filed May 25, 1979, Ser. No. 129,382  
Int. Cl.<sup>3</sup> B26D 1/02

U.S. Cl. 493—355

14 Claims



1. A working head in an apparatus for providing rectangular cuttings in a plain material, comprising:

a holder, said holder having a knife and/or an impression roller mounted thereon, said holder being vertically slidably mounted on a rotatable housing, wherein in the lower position the knife is positioned to cut the plain material, said rotatable housing being fixedly mounted on a first shaft, a Maltese cross connected to the upper portion of said first shaft, a securing means positioned to selectively hold the Maltese cross secure at any given selected position, a drive shaft essentially parallel to said first shaft, said drive shaft operatively engaged with the first said shaft to turn the same, a first cam means operatively connected to the drive shaft to disengage the securing means of the Maltese cross and then permit the securing means to engage and secure the Maltese cross after a certain rotation of the drive shaft, and a second cam operatively connected to the drive shaft to cause the holder to rise up and away from the plain material and then to lower it again upon the said certain rotation of the drive shaft, whereby during said certain rotation of the drive shaft, the Maltese cross is freed to rotate, rotated by a given amount and then secured, while concurrently the holder with the knife and/or impression roller is raised and then lowered.

**4,341,525**  
**ADJUSTABLE MOUNTING FOR COOPERATING DIE CYLINDERS**  
Eugene W. Wittkopf, Suamico, Wis., assignor to Magna-Graphics Corporation, Oconto Falls, Wis.  
Filed Sep. 29, 1980, Ser. No. 192,322  
Int. Cl.<sup>3</sup> B23D 25/12; B26D 1/40

U.S. Cl. 493—370

11 Claims

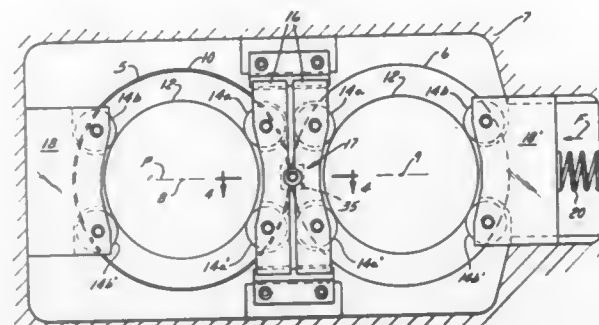
1. Apparatus comprising a pair of spaced apart cylinders carried by a frame for a cooperation that causes said cylinders to impose substantially high radial displacement forces upon one another, said cylinders being rotatable about respective concentric axes that are contained in a common plane and are normally fixed in substantially parallel relation to one another, said apparatus being characterized by:



- A. each of said cylinders having on each end thereof a concentric bearer ring which
- (1) is of smaller diameter than the cylinder and
  - (2) is adjacent to a bearer ring on the other cylinder;
- B. a rigid supporting member for each bearer ring;
- C. guide means mounting said supporting members on the frame for bodily motion in directions parallel to said plane and transverse to said axes, with each supporting member disposed adjacent to its bearer ring and with the supporting members for adjacent bearer rings adjacent to one another and between those bearer rings;
- D. a pair of roller elements carried by each of said supporting members and confined to rotation relative thereto, the roller elements on each supporting member
- (1) being spaced to opposite sides of said plane and
  - (2) having rolling engagement with the bearer ring for the supporting member;
- E. a plurality of other roller elements carried by said frame and confined to rotation relative to it, there being at least one of said other roller elements for each bearer ring, each rollingly engaging the bearer ring in circumferentially spaced relation to the roller elements on the supporting

member for the bearer ring and cooperating with them to confine the bearer ring against radial displacement; and

F. adjustable spacer means reacting between adjacent sup-



porting members substantially on said plane to maintain those supporting members spaced apart by a distance which depends upon the adjustment of the spacer means and which determines the distance between said cylinders.

#### 4,341,526 LEVELLING AGENT AND PROCESS OF LEVELLING FOR THE DISPERSE DYEING OF HYDROPHOBIC MATERIALS

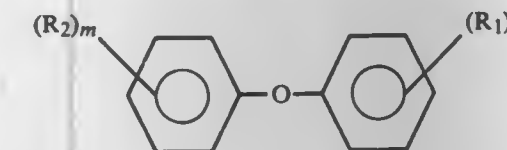
Rolf G. Kuehni, Scotch Plains, and Thomas C. Cox, Boonton, both of N.J., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Aug. 30, 1977, Ser. No. 829,174  
Int. Cl.<sup>3</sup> D06P 1/651

U.S. Cl. 8—610

26 Claims

1. In a process for the disperse dyeing of synthetic hydrophobic fiber materials by immersing said materials into an aqueous dye bath maintained at an elevated temperature the improvement comprising adding an effective amount of a levelling agent which contains diaryl ethers of the formula



wherein

R<sub>1</sub> and R<sub>2</sub> represent lower alkyl groups  
n is an integer of between 1 and 3 and  
m is an integer of between 0 and 3.

#### 4,341,527 PROCESS AND REAGENT FOR DETERMINATION OF THE HEMOGLOBIN CONTENT OF BLOOD

Rolf Zander, Reinhold-Schneider-Str. 1; Werner Lang, Alter Ruh-Weg, both of Mainz, and Hans U. Wolf, Lisztstrasse 10, Neu-Ulm, all of Fed. Rep. of Germany

Continuation of Ser. No. 5,456, Jan. 22, 1979, abandoned. This application Jul. 21, 1980, Ser. No. 170,575

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 2803109

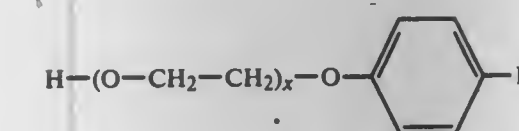
Int. Cl.<sup>3</sup> G01N 33/72

U.S. Cl. 23—230 B

6 Claims

4. In the method of determining the hemoglobin content of blood by hemolyzing the blood, converting the hemoglobins into hematin with an aqueous alkaline solution and photometrically determining the alkaline hematin content, the improvement wherein the conversion of the hemoglobins into hematin is effected with an aqueous 0.05–0.5 M solution of sodium hydroxide or potassium hydroxide comprising 0.5–10% by weight of a water-soluble, liquid, nitrogen-free, non-ionic detergent selected from the group consisting of

(a) a polyethyleneglycol p-alkylphenyl ether of the formula



wherein

x is an integer from 7 to 12, inclusive, and  
R is an alkyl of 1 to 12 carbon atoms;

- (b) a polyethyleneglycol lauryl ether;
- (c) a polyethyleneglycol cetyl ether;
- (d) a polyethyleneglycol oleyl ether; and
- (e) a polyethyleneglycol stearyl ether;

whereby all hemoglobin derivatives which occur in blood and heme derivatives are converted into a uniform product having a distinct absorption maximum in the visible spectral range in which the subsequent photometric measurement is carried out.

## CHEMICAL

#### 4,341,528 SIMPLE, NON-CHROMATOGRAPHIC, HIGHLY SPECIFIC METHOD FOR THE DETERMINATION OF URINARY VANILMANDELIC ACID

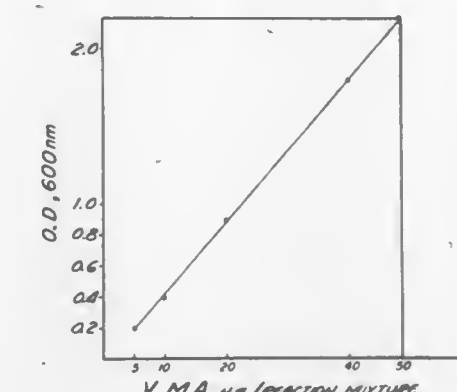
M. Zouheir M. Habbal, Beirut, Lebanon, assignor to Rational Alternative, Mission Viejo, Calif.

Filed Jul. 31, 1980, Ser. No. 174,132

Int. Cl.<sup>3</sup> G01N 33/52; C07C 107/06; C09B 29/00

U.S. Cl. 23—230 B

3 Claims



1. The method for the determination of vanilmandelic acid comprising the steps of:

- (a) forming a diazo derivative by reacting a p-nitrobenzenediazonium salt with vanilmandelic acid;
- (b) extracting said derivative into ethyl acetate;
- (c) forming a stable chromophore of said derivative by adding to the ethyl acetate extract thereof effective amounts of dimethylsulfoxide and 2-amino-2-methyl-1-propanol; and
- (d) quantitatively determining said chromophore.

4,341,529

#### MOTOR FUEL

Lyle D. Burns, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 24, 1980, Ser. No. 200,289

Int. Cl.<sup>3</sup> C10L 1/22

U.S. Cl. 44—63

6 Claims

1. A gasoline composition containing an antiknock quantity of 2-(methylamino) pyridine.

4,341,530

#### SLURRY ATOMIZER FOR A COAL-FEEDER AND DRYER USED TO PROVIDE COAL AT GASIFIER PRESSURE

John L. Loth; William C. Smith, and Gary R. Friggens, all of Morgantown, W. Va., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Continuation of Ser. No. 100,663, Dec. 5, 1979, abandoned. This application Jun. 23, 1981, Ser. No. 276,610

Int. Cl.<sup>3</sup> C10J 3/50

U.S. Cl. 48—73

3 Claims

1. A coal-water slurry atomizer in combination with an apparatus for feeding coal into gasification means operable at a pressure greater than atmospheric pressure comprising mixing means for forming a slurry of coal and water, pumping means coupled to the mixing means for pumping said slurry to a pressure sufficient for introduction into the gasification means, heating means for providing steam at a temperature and flow rate sufficient to vaporize the water in said slurry, an elongated entrained bed coal dryer, conduit means for separately conveying the slurry and the steam to said dryer adjacent one end thereof, a coal-water slurry atomizer coupled to said conduit means and in registry with said coal dryer for atomizing the slurry in the presence of the steam into droplets of a predetermined size and for discharging the droplets and steam into said dryer to effect evaporation of the water from the slurry with-

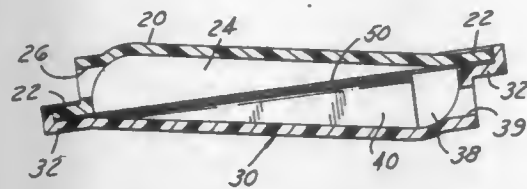






**4,341,538**  
**INTRAVENOUS FILTER**  
 Attila Vadnay, Ann Arbor, and Mary K. Boomus, Chelsea, both of Mich., assignors to Gelman Instrument Company, Ann Arbor, Mich.

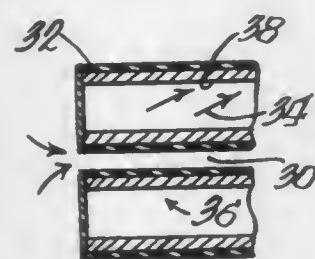
Filed Aug. 18, 1978, Ser. No. 934,957  
 Int. Cl.<sup>3</sup> B01D 31/00  
 U.S. Cl. 55—159



1. A filter housing and assembly for intravenous fluids which can be taped to the limb of a patient which comprises:
- a bottom, rectangular, membrane-support housing having a peripheral flange lying in a plane, and a chamber within said flange descending from substantially no depth at one end to a maximum depth at the other end with a flat bottom surface to provide an elongate wedge-shaped chamber and a luer connection at said other end on an axis substantially parallel with said plane and extending in a direction of the major axis of said housing,
  - a top, rectangular, housing having a peripheral flange lying in said plane and shaped to mate with the peripheral flange of said bottom housing and a chamber within said flange having a maximum height at one end opposite to the end with the maximum depth of the bottom housing and decreasing to substantially no depth at the other end to provide a wedge-shaped elongate chamber with a luer connection formed at the end of maximum height on an axis parallel to the said plane and extending in a direction through the assembly from one end to the other, and
  - a filter membrane peripherally captured between said flanges to lie between said elongate chambers, whereby when said bottom housing is taped to the limb of a patient it conducts body heat to intravenous liquid passing through said filter membrane to said bottom housing.

**4,341,539**  
**THERMALLY REGENERATIVE DESICCANT ELEMENT**  
 Dimitri Gidaspow, 1517 Cedar La., Northbrook, Ill. 60062; Zalman Lavan, 947 Ridge Ct., Evanston, Ill. 60202, and Michael Onischak, 3408 Ithaca Rd., Olympia Fields, Ill. 60461  
 Continuation-in-part of Ser. No. 65,569, Aug. 10, 1979, abandoned. This application Dec. 12, 1980, Ser. No. 215,815  
 Int. Cl.<sup>3</sup> B01D 53/04

U.S. Cl. 55—278

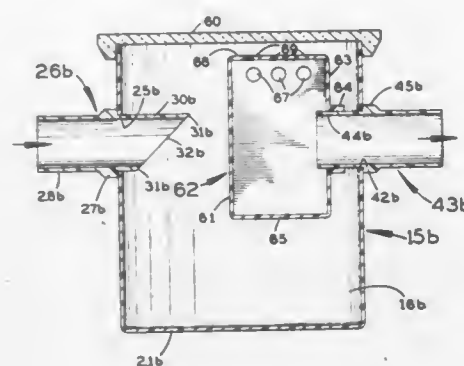


1. A desiccant element, comprising: micron size silica gel, ground ammonium bicarbonate and a fluoroplastic powder blended into a paste and physically worked into a thin sheet by roller reduction, said ammonium bicarbonate then having been made to decompose by heating said sheet; and wall means connected to said sheet for conducting heat away from said sheet and for supporting said sheet on one of its sides, whereby thermal energy on the other side of said wall means is conducted to said sheet to drive off moisture held by said silica gel

and regenerate said desiccant element and a portion of the heat liberated from said silica gel upon the sorption of moisture is transferred to the other side of said wall means.

**4,341,540**  
**VACUUM CLEANER ACCESSORY**  
 Charles R. Howerin, 852 NE. 20th Dr., Wilton Manors, Fla. 33305

Filed Apr. 20, 1981, Ser. No. 255,463  
 Int. Cl.<sup>3</sup> B01D 45/08  
 U.S. Cl. 55—307



1. In an accessory for adapting a vacuum cleaner for wet operation comprising:
- a housing defining a liquid collection chamber;
  - a hollow, open-ended intake fitting extending from the outside into the housing, said intake fitting defining a generally horizontal intake passageway which terminates inside the housing in a generally horizontal discharge opening above said liquid collection chamber;
  - a hollow, open-ended outlet fitting extending from inside said housing above said liquid collection chamber to the outside;
  - a hollow receptacle attached to said outlet fitting inside said housing and providing a baffle in spaced confronting relationship to said discharge opening of the intake fitting for deflecting water and dirt discharged through said discharge opening down into the collection chamber and blocking said outlet fitting from said discharge opening of the intake fitting, said receptacle having its hollow interior in fluid communication with said outlet fitting and having a top with openings formed therein positioned higher than said discharge opening of the intake fitting for passing air from the inside of the housing to said outlet fitting,
- the improvement wherein said receptacle has sides with openings formed therein near the top of the receptacle positioned higher than said discharge opening of the intake fitting for passing air from the inside of the housing to said outlet fitting.

**4,341,541**  
**PROCESS FOR THE PRODUCTION OF OPTICAL FIBER**  
 Franklin W. Dabby, Woodbridge, and Ronald B. Chesler, Cheshire, both of Conn., assignors to Times Fiber Communications, Inc., Wallingford, Conn.

Filed Jul. 13, 1979, Ser. No. 57,458  
 Int. Cl.<sup>3</sup> C03B 19/06

U.S. Cl. 65—3.12

1. A process for the production of optical fiber comprising continuously depositing and continuously sintering glass particles produced by high temperature pyrolysis of gaseous reactants on a cylindrical glass rod to produce an outer region of sintered glass surrounding said rod having an index of refraction lower than that of said rod, heating the resulting preform to the drawing temperature and drawing said preform into optical fiber, wherein said continuous sintering is effected by a heat source disposed beyond the point of the particulate deposition on the cylindrical glass rod.

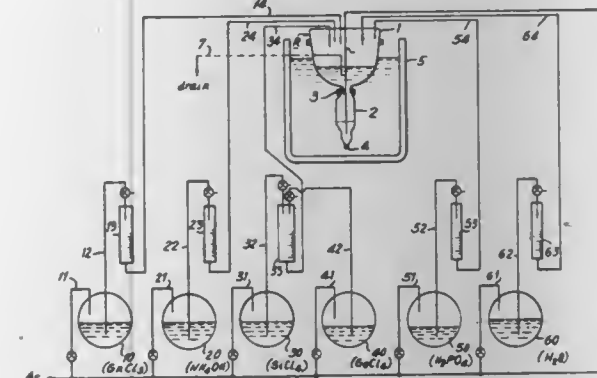
**4,341,542**  
**MANUFACTURING METHOD OF GLASS FOR OPTICAL TRANSMISSION BODY**

Osamu Nakamura, Akashi; Takeshi Akamatsu, Kobe, and Junjiro Goto, Takasago, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Feb. 6, 1981, Ser. No. 231,980  
 Claims priority, application Japan, Feb. 8, 1980, 55-15041  
 Int. Cl.<sup>3</sup> C03C 3/16, 3/30

U.S. Cl. 65—17

5 Claims



1. A method of manufacturing glass for an optical transmission body, said method comprising the steps of precipitating an oxide of at least one glass forming element by the hydrolysis reaction of a halogen compound of said glass forming element in the liquid phase to provide a precipitate; producing a phosphate including said glass forming element by adding a liquidous phosphoric acid to said precipitate to provide a product; removing the water from said product containing said phosphate; and thereafter vitrifying said phosphate by heating.

**4,341,543**  
**METHOD OF MAKING STRENGTHENED TRANSPARENT GLASS-CERAMIC, PARTIALLY BODY-CRYSTALLIZED, AND SURFACE-CRYSTALLIZED GLASS ARTICLES**  
 Ronald L. Andrus, Elmira, N.Y.; Richard F. Reade, deceased, late of Corning, N.Y., and by Clara M. Reade, administratrix, Flushing, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 9, 1981, Ser. No. 223,580  
 Int. Cl.<sup>3</sup> C03B 32/00; C03C 3/22

U.S. Cl. 65—30.1

5 Claims

1. A method for making a transparent glass-ceramic, partially body-crystallized, or surface-crystallized glass article exhibiting an abraded modulus of rupture value in excess of 20,000 psi, wherein beta-quartz solid solution constitutes the predominant crystal phase, which comprises the steps of:
- melting a batch for a glass consisting essentially, expressed in terms of weight percent on the oxide basis, of about 2.5–6% Li<sub>2</sub>O, 0.5–5% RO, wherein RO consists of BaO, CaO, MgO, SrO, and ZnO, 16–25% Al<sub>2</sub>O<sub>3</sub>, 64–73% SiO<sub>2</sub>, and 3.0–6% RO<sub>2</sub>, wherein RO<sub>2</sub> consists of 0–6% TiO<sub>2</sub> and 0–3.5% ZrO<sub>2</sub>;
  - simultaneously cooling the melt to a temperature at least below the transformation range thereof and forming a glass article of a desired configuration therefrom;
  - exposing the glass article to vapors of SO<sub>2</sub> at a temperature between the annealing point and the softening point of the glass for a period of time sufficient to cause a reaction to occur to a depth of at least 0.002" in the surface of the glass between Li<sup>+</sup> ions and SO<sub>2</sub> vapors to form a deposit of Li<sub>2</sub>SO<sub>3</sub> and/or Li<sub>2</sub>SO<sub>4</sub> thereon;
  - removing the deposit of Li<sub>2</sub>SO<sub>3</sub> and/or Li<sub>2</sub>SO<sub>4</sub> from the glass surface; and
  - heating the glass article to a temperature between 750°–1000° C. for a period of time sufficient to cause the

crystallization in situ of beta-quartz solid solution to form a glass-ceramic article, a partially body-crystallized article, or a surface-crystallized glass article.

**4,341,544**  
**METHOD OF MAKING PERALUMINOUS NEPHELINE/KALSILITE GLASS-CERAMICS**  
 George H. Beall, Bldg Flats, and Joseph E. Pierson, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.  
 Division of Ser. No. 202,739, Oct. 31, 1980, Pat. No. 4,310,595.  
 This application Aug. 20, 1981, Ser. No. 294,466  
 Int. Cl.<sup>3</sup> C03B 27/02, 32/00; C03C 3/22

U.S. Cl. 65—30.14

2 Claims

1. A method for making a glass-ceramic article which is extremely resistant to impact and spontaneous delayed breakage, is capable of being sawn with a diamond wheel to a depth of over one-third the cross section thereof without breakage, and exhibits a modulus of rupture of at least 150,000 psi, said article consisting of a body portion and an integral surface compression layer having a thickness of at least 0.005", said method comprising the steps of:

- melting a batch for a glass consisting essentially, expressed in weight percent on the oxide basis, of about 8–13% Na<sub>2</sub>O, 7–13% K<sub>2</sub>O, 30–36% Al<sub>2</sub>O<sub>3</sub>, 35–43% SiO<sub>2</sub>, and 6–10% wherein RO<sub>2</sub> consists of 6–10% TiO<sub>2</sub> and 0–4% ZrO<sub>2</sub>, wherein the molar ratio Al<sub>2</sub>O<sub>3</sub>:SiO<sub>2</sub> is >0.5 but <0.6 and the molar ratio K<sub>2</sub>O:Na<sub>2</sub>O is >1:3 but <1;
- simultaneously cooling said melt to a temperature at least below the transformation range thereof and shaping a glass article therefrom;
- heat treating said glass article at a temperature between about 900°–1050° C. for a sufficient length of time to crystallize said glass article in situ to a glass-ceramic article wherein crystals not exceeding about 0.5 micron in diameter of nepheline solid solution corresponding to the formula Na<sub>8–x</sub>K<sub>x</sub>Al<sub>8</sub>Si<sub>8</sub>O<sub>32</sub>, with x varying from 0.25–4.73, constitute the predominant crystal phase; and then
- contacting said glass-ceramic article with a source of K<sup>+</sup> ions at a temperature between about 800°–900° C. for a sufficient length of time to replace at least part of the Na<sup>+</sup> ions of said nepheline solid solution with K<sup>+</sup> ions to a depth within said glass-ceramic article of at least 0.005", thereby converting said nepheline solid solution to kalsilite and effecting an integral compressively stressed surface layer on said article.

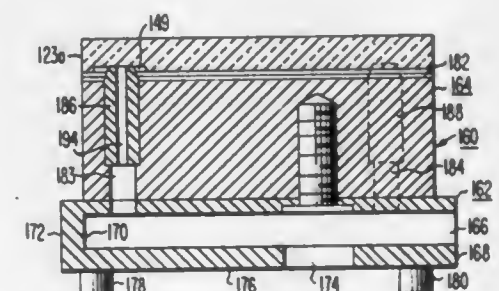
**4,341,545**  
**BEADING APPARATUS FOR MAKING AN ELECTRON GUN ASSEMBLY HAVING SELF-INDEXING INSULATING SUPPORT RODS**

John R. Hale, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 29, 1981, Ser. No. 258,739  
 Int. Cl.<sup>3</sup> C03C 27/02

U.S. Cl. 65—154

7 Claims



1. In a beading apparatus for an electron gun assembly, said



beading apparatus having at least two bead blocks, said gun assembly having at least two insulating support rods with a plurality of indexing cavities formed in a surface of each of said support rods, the improvement wherein each of said bead blocks comprises:

- a beading support surface for supporting one of said insulating support rods, said beading support surface having a plurality of apertures formed therein,
- a plurality of indexing pins, each of said pins being disposed in a different one of said apertures, each of said indexing pins having a reference end extending beyond said beading support surface and projecting into said indexing cavities of one of said insulating support rods, and
- securing means for retaining each of said support rods in contact with said indexing pins.

#### 4,341,546 ROLL DRIVE MECHANISM FOR GLASS SHEET PROCESSING EQUIPMENT

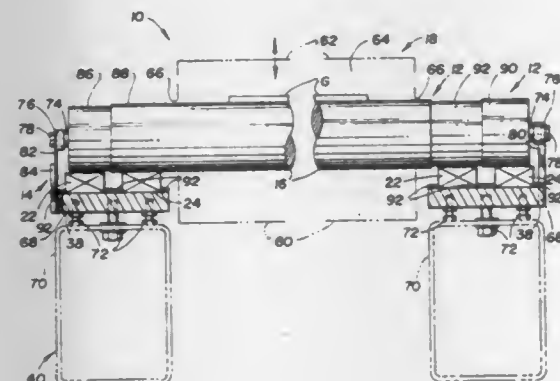
Norman C. Nitschke, 9102 Buck Rd., Perrysburg, Ohio 43551, and Ronald A. McMaster, 420 Water St., Woodville, Ohio 43469

Filed Feb. 25, 1981, Ser. No. 237,828

Int. Cl.<sup>3</sup> C03B 35/18

U.S. Cl. 65—163

13 Claims



1. In glass sheet processing equipment including a horizontal roller conveyor having elongated horizontal rolls spaced along the length thereof extending laterally with respect thereto so as to support and convey glass sheets thereover upon rotation thereof, a roll drive mechanism comprising: first and second continuous drive loops extending along the conveyor in an overlapping relationship with each other and alternately engageable in a driving relationship with the rolls of the conveyor over associated lengths thereof which are selectively adjustable to provide a desired transition between the driving of the rolls; a first drive for driving the first drive loop to rotatively drive the rolls engaged therewith; and a second drive for driving the second drive loop to rotatively drive the rolls engaged therewith, whereby the drive loops can be driven together or independently to provide synchronous or independent glass sheet conveyance over associated lengths of the conveyor.

#### 4,341,547 APPARATUS FOR ENCLOSING HIGHLY RADIOACTIVE WASTE MATERIAL IN A GLASS MELT

Wilfried C. Heimerl, Mol, Belgium, assignor to Deutsche Gesellschaft für Wiederaufarbeitung, Fed. Rep. of Germany

Filed Jul. 1, 1980, Ser. No. 165,214

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1979, 2927795

Int. Cl.<sup>3</sup> C03B 5/28, 7/18

U.S. Cl. 65—165

8 Claims

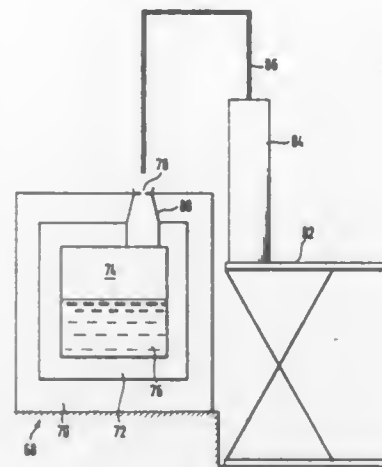
1. Apparatus for filling an evacuated ultimate storage container with a glass melt containing highly radioactive waste material, comprising

- a glass melting furnace having an opening through a wall of

said furnace to permit access to the molten glass within the furnace,

an evacuated ultimate storage container adjacent said furnace,

a filler tube integrally connected to said storage container at one end, and



means for removably disposing the other end of said tube within said access opening,

said other end being sealed with a glass stopper which melts upon immersion in said molten glass.

#### 4,341,548 N-(2-CYCLOHEXYLPHENYL)-N',N'-DIETHYL-ETHYLENE DIAMINE, ALGICIDAL COMPOSITIONS CONTAINING SAME, AND METHOD OF USE

Jaap van Gilse, and Gerard B. Paerels, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Netherlands

Continuation-in-part of Ser. No. 59,420, Jul. 20, 1979, Pat. No. 4,286,983. This application Jun. 5, 1981, Ser. No. 270,826

Claims priority, application Netherlands, Jul. 26, 1978, 7807908

Int. Cl.<sup>3</sup> A01N 33/06; C07C 87/62

U.S. Cl. 71—67

5 Claims

1. N-(2-cyclohexylphenyl)-N',N'-diethyl-ethylenediamine and a salt thereof.
2. An algicidal composition comprising an algicidally effective amount of N-(2-cyclohexylphenyl)-N',N'-diethyl-ethylenediamine or a salt thereof and a solid or liquid inert material.

#### 4,341,549 PHOSPHONIUM SALTS OF N-PHOSPHONOMETHYLGLYCINE AND THEIR USE AS HERBICIDES AND PLANT GROWTH REGULANTS

George B. Large, Orinda, and Lawrence L. Buren, Cupertino, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

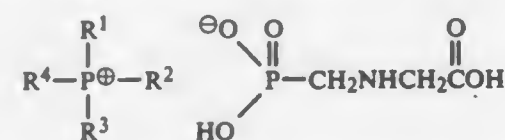
Filed Aug. 24, 1981, Ser. No. 295,345

Int. Cl.<sup>3</sup> C07F 9/38; A01N 57/00

U.S. Cl. 71—86

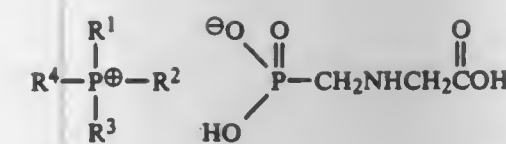
23 Claims

1. A compound having the formula



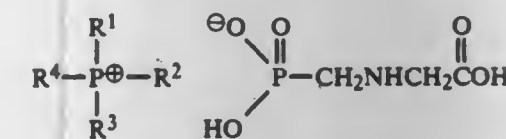
in which R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, and R<sup>4</sup> are independently selected from the group consisting of C<sub>1</sub>-C<sub>10</sub> alkyl and phenyl.

13. A method of controlling undesirable vegetation comprising applying to the vegetation in postemergent state an herbicidal composition comprising an herbicidally effective amount of a compound having the formula



in which R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, and R<sup>4</sup> are independently selected from the group consisting of C<sub>1</sub>-C<sub>10</sub> alkyl and phenyl, and an inert diluent carrier.

19. A method of regulating the natural growth or development of plants which comprises applying to said plants a regulating, nonlethal amount of a compound having the formula



in which R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, and R<sup>4</sup> are independently selected from the group consisting of C<sub>1</sub>-C<sub>10</sub> alkyl and phenyl, and an inert diluent carrier.

#### 4,341,550 HERBICIDE COMPOSITIONS

Ferenc M. Pallos, Walnut Creek; Mervin E. Brokke, Moraga, and Duane R. Arneklev, Sunnyvale, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

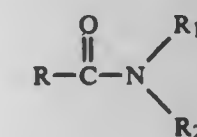
Division of Ser. No. 930,967, Aug. 4, 1978, Pat. No. 4,269,618, which is a continuation-in-part of Ser. No. 134,868, Apr. 6, 1971, abandoned. This application Jul. 9, 1979, Ser. No. 55,578

Int. Cl.<sup>3</sup> A01N 43/00

U.S. Cl. 71—88

9 Claims

1. A herbicidal composition consisting essentially of
- (a) an active herbicidal thiolcarbamate compound; and
- (b) an antidotally effective amount of an antidote compound therefor corresponding to the formula



R is haloalkyl containing from 1 to 6 carbon atoms, inclusive; R<sub>1</sub> and R<sub>2</sub> are taken together with the nitrogen to form an azepinyl group which may contain from 6-8 carbon atoms, inclusive.

#### 4,341,551 1,2,3-THIAZOLE-5-CARBOXYLIC ACID DERIVATIVES

Hans-Rudolf Krüger, Friedrich Arndt, Dietrich Baumert, and Reinhart Rusch, all of Berlin, Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Mar. 5, 1980, Ser. No. 127,496

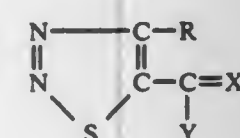
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1979, 2909991

Int. Cl.<sup>3</sup> A01N 43/82; C07D 285/06, 417/06

U.S. Cl. 71—90

93 Claims

1. 1,2,3-Thiazole-5-carboxylic acid compounds of the general formula



wherein

R is hydrogen or methyl,

Y is chloro, amino, methylamino, ethylamino, propylamino,

methylpropylamino, isopropylamino, 1,1-dimethylpropylamino, 1,2,2-trimethylpropylamino, butylamino, tert-butylamino, 3-methylbutylamino, 1,3-dimethylbutylamino, 1,1,3,3-tetramethylbutylamino, N,N-dimethylamino, N,N-diethylamino, N,N-diisopropylamino, N,N-dipropylamino, N,N-dibutylamino, N,N-diisobutylamino, N,N-diethylamino, N-methyl-N-butylamino, N-ethyl-N-propylamino, N-ethyl-N-isopropylamino, N-ethyl-N-butylamino, allylamino, N,N-diallylamino, cyclohexylamino, N-methyl-N-cyclohexylamino, N-ethyl-N-cyclohexylamino, N-allyl-N-cyclohexylamino, phenylamino, methylphenylamino, dimethylphenylamino, halogenophenylamino, dichlorophenylamino, chloromethylphenylamino, nitrophenylamino, N-phenyl-N-methyl-amino, N,N-diphenylamino, cyclohexylmethylamino, benzylamino, N,N-tetramethylenamino, N,N-pentamethylenamino, imidazolyl-1,1,2,4-triazolyl-1, methylmercapto, ethylmercapto, phenylmercapto, methylphenylmercapto, benzylmercapto or chlorobenzylmercapto and X is methylimino, phenylimino, methylphenylimino, dimethylphenylimino, halogenophenylimino, dihalogenophenylimino, chloromethylphenylimino, benzylimino, halogenobenzylimino, or cyclohexylmethylimino, or an acid addition salt thereof.

90. A herbicide and plant growth (controlling) regulating agent comprising (at least a small quantity) an effective amount of a 1,2,3-thiadiazole-5-carboxylic acid derivative of claim 1 in admixture with an inert carrier.

91. A fungicide comprising (at least a small quantity) an effective amount of a 1,2,3-thiadiazole-5-carboxylic acid derivative of claim 1 in admixture with an inert carrier.

#### 4,341,552 GRANULAR PESTICIDAL COMPOSITION AND METHOD OF PREPARING SAME

Willem de Lange, Weesp, Netherlands, assignor to Duphar International Research B.V., Netherlands

Continuation of Ser. No. 58,214, Jul. 16, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,442

Claims priority, application Netherlands, Jul. 26, 1978, 7807907

Int. Cl.<sup>3</sup> A01N 37/34

U.S. Cl. 71—105

7 Claims

1. A granular pesticidal composition wherein each granule comprises:
- (A) a core comprising a herbicidally effective amount of a herbicide having a steam distillation constant in excess of 1 and a finely divided solid inert carrier for said herbicide, and
- (B) a layer surrounding said core, said layer comprising silicon dioxide, the particles of which are provided with mono-, di-, and/or trialkylsilyl groups at their surface.

#### 4,341,553 METHOD OF, AND CUPOLA FURNACE FOR, THE INTRODUCTION OF TREATMENT AGENTS INTO CUPOLA IRON MELTS

Karl Immekus, Kaarst, Fed. Rep. of Germany, assignor to Gesellschaft für Hüttenwerksanlagen mbH, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,696

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932235

Int. Cl.<sup>3</sup> C22C 33/08

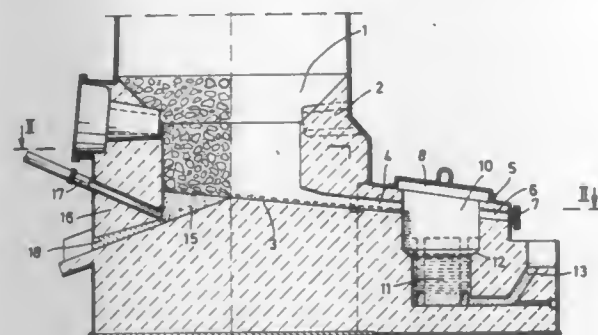
U.S. Cl. 75—53

7 Claims

1. A method for introducing treating agents into a melt in a cupola furnace having tapping ducts and an obliquely extend-



ing furnace floor comprising introducing the treating agent, under reducing atmosphere, into an iron sump situated in a



depression in the furnace floor and being directly connected by said floor with at least one tapping duct.

4,341,554

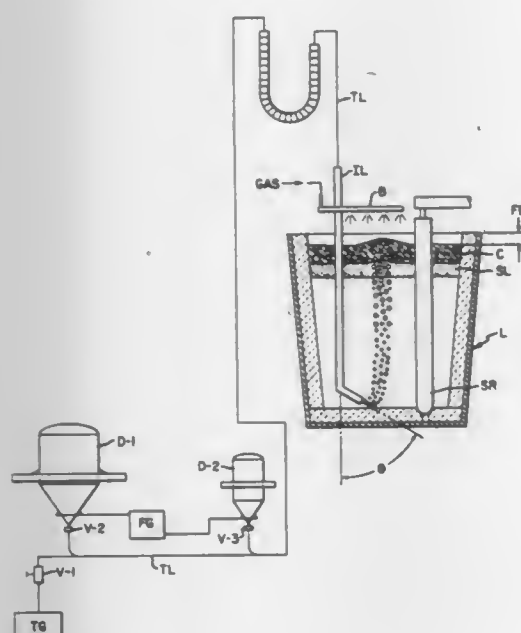
## PROCESS FOR DESULFURIZING STEEL

Peter J. Koros, Pittsburgh, Pa., and Robert G. Petrushka, Parma, Ohio, assignors to Jones & Laughlin Steel Incorporated, Pittsburgh, Pa.

Filed Apr. 2, 1981, Ser. No. 250,328

Int. Cl.<sup>3</sup> C21C 7/02

U.S. Cl. 75—58



1. In a process for desulfurizing steel melt which includes the steps of:

- covering said melt with a synthetic slag layer;
- injecting powdered lime into said melt; and
- adding a desulfurizing reactant agent which vaporizes under the pressure and temperature conditions within said melt;

the improvement characterized by the steps of:

- adding particulate lime to cover said synthetic slag, said particulate lime being in a form and size such that substantially 100% will be retained on a number 80 sieve
- conducting step (b) after step (d) and permitting the powdered lime to rise to the surface of said melt and form together with said pebble lime a crust which deters entry of ambient air into said melt; and
- adding the agent of step (c) by simultaneously extruding into said melt from separate pressurized dispensing vessels (1) powdered lime and (2) said agent.

4,341,555

## HIGH STRENGTH AUSTENITIC STAINLESS STEEL EXHIBITING FREEDOM FROM EMBRITTLEMENT

Joseph A. Douthett, Monroe, and Harry Tanczyn, Middletown, both of Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Mar. 31, 1980, Ser. No. 135,692

Int. Cl.<sup>3</sup> C22C 38/44, 38/48, 38/50, 38/58

U.S. Cl. 75—128 A

6 Claims

1. An austenitic stainless steel exhibiting high strength, good hot workability, good resistance against intergranular, pitting and crevice corrosion, and freedom from embrittlement both in the cold-worked and stress-relieved condition, and in the heat affected zone of weldments, said steel consisting essentially of, in weight percent, 0.06% maximum carbon, about 0.2% to 2.5% manganese, about 21.5% to 24.5% chromium, above 12% to about 16% nickel, about 0.20% to about 0.35% nitrogen, about 0.4% to about 0.7% silicon, about 2% to about 4% molybdenum, about 0.06% maximum phosphorus, about 0.04% maximum sulfur, up to about 0.6% columbium, with residual columbium when carbon is less than about 0.04% and columbium ranging from about 0.1% to 0.6% when carbon exceeds about 0.04%, and balance essentially iron.

4,341,556

## MATERIAL FOR ELECTRICAL CONTACTS

Wolfgang Bohm, Alzenau; Roger Wolmer, Frankfurt; Andreas Szulczyk, Linsengericht, and Willi Malikowski, Aschaffenburg, all of Fed. Rep. of Germany, assignors to Degussa - Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Apr. 30, 1981, Ser. No. 259,197

Claims priority, application Fed. Rep. of Germany, May 7, 1980, 3017424

Int. Cl.<sup>3</sup> C22C 5/06; H01B 1/02

U.S. Cl. 75—173 A

4 Claims

1. A material suitable for electrical contacts consisting essentially of silver containing 5 to 20 weight % tin oxide, 0.05 to 5 weight % tungsten oxide and 0.1 to 5 weight % bismuth oxide.

4,341,557

## METHOD OF HOT CONSOLIDATING POWDER WITH A RECYCLABLE CONTAINER MATERIAL

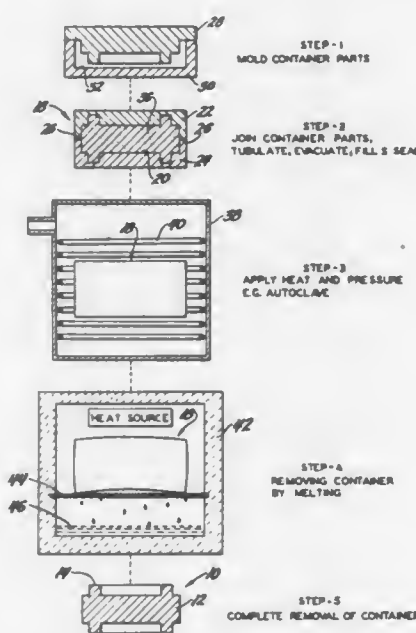
James R. Lizenby, Traverse City, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Continuation-in-part of Ser. No. 73,627, Sep. 10, 1979, abandoned. This application Jul. 30, 1980, Ser. No. 173,648

Int. Cl.<sup>3</sup> B22F 3/00

U.S. Cl. 75—223

13 Claims



1. A method for hot consolidating powder of metallic and nonmetallic composition and combinations thereof by heat and pressure to form a densified article comprising the steps of;

forming a container having walls entirely surrounding a cavity therein from a material which is substantially fully dense and incompressible and which melts at a combination of temperature and time at that temperature which combination would not adversely affect the desired properties of the densified article, filling the cavity in the container with powder, applying heat and pressure to the container to densify the powder into the densified article, and melting the container into molten material to remove the container from the densified article.

4,341,558

## METAL SURFACE COATING AGENT

Kuniji Yashiro, Kanagawa, and Yoshio Moriya, Yokohama, both of Japan, assignors to Hooker Chemicals & Plastics Corp., Warren, Mich.

Filed Feb. 27, 1981, Ser. No. 238,881

Int. Cl.<sup>3</sup> C23F 7/14

U.S. Cl. 106—14.12

8 Claims

1. An aqueous composition which consists essentially of at least one water soluble compound of zirconium or titanium, silica, and as the sole source of phosphate, an inositol 2-6 phosphate ester.

4,341,559

## BINDERS BASED UPON SOLUTIONS OF ALKALI METAL SILICATES

Wolfgang Friedemann; Norbert Maak, both of Neuss, and Kurt Feulner, Essen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 6, 1980, Ser. No. 204,562

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 2946500

Int. Cl.<sup>3</sup> B28B 7/34

U.S. Cl. 106—38.35

10 Claims

1. A binder composition consisting essentially of (a) a concentrated aqueous solution of an alkali metal silicate solution having a molar ratio of  $\text{SiO}_2:\text{Me}_2\text{O}$  of from about 2.0:1 to 3.4:1, with Me signifying an alkali metal, and a solids content of from about 35 to 50 percent by weight, based upon the weight of the total alkali metal solution, and (b) from about 0.1 to 10 percent by weight, based on the weight of the total binder composition, of at least one reductively animated monosaccharide, disaccharide, or oligosaccharide selected from the group consisting of reaction products of a monosaccharide or reducing disaccharide or oligosaccharide with ammonia, a primary amine, or a secondary amine and formed under the action of hydrogen.

4,341,560

## WATERPROOF GYPSUM MOLDED PRODUCT

Masumi Saito, Kobe; Eiichi Hirai, Takarazuka; Masao Endo, and Toru Nishino, both of Nishinomiya, all of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Kurashiki, Japan

Filed Sep. 26, 1980, Ser. No. 191,824

Claims priority, application Japan, Oct. 2, 1979, 54-127488

Int. Cl.<sup>3</sup> C04B 11/14

U.S. Cl. 106—87

8 Claims

1. A composition for a waterproof gypsum molded product which comprises a combination of the following essential components: (a) gypsum (b) alkaline metal alkylsilicate or phenylsilicate and (c) calcium hydroxide or calcium oxide, the amount of (c) being sufficient to counteract a decrease in strength of the molded product attributable to (b).

4,341,561

## FOAMED INSULATING REFRACTORY

James M. Britt, Martinez, and Charles C. Logue, Augusta, both of Ga., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Apr. 22, 1981, Ser. No. 256,415

Int. Cl.<sup>3</sup> C04B 21/02

U.S. Cl. 106—87

8 Claims

1. A two-component foamed cellular refractory product having a density in the range of about 20 to about 120 lb./ft.<sup>3</sup> produced from a mixture consisting of 15%–100% hydraulic cement, 0–85% fine grain inert filler, 0–85% aggregate, all on a dry weight basis, water, wherein the water is added to the dry mixture in an amount to attain a slurry viscosity of about 300 CPS to 3000 CPS and an acid selected from the group consisting of  $\text{H}_3\text{PO}_4$ ,  $\text{H}_2\text{SO}_4$ , HF and HCl.

4,341,562

## LIGHTWEIGHT AGGREGATE

Richard A. Ahlbeck, Toledo, Ohio, assignor to N-Viro Energy Systems, Ltd., Toledo, Ohio

Filed Mar. 21, 1980, Ser. No. 132,660

Int. Cl.<sup>3</sup> C04B 7/02

U.S. Cl. 106—97

2 Claims

1. The method of forming lightweight concrete which comprises mixing cement, pellets of cement kiln dust which have been subjected to a low thermal treatment at high humidity, and water to form a curable mass, and thereafter curing said mass.

4,341,563

## PROTECTIVE COATING COMPOSITIONS

Kozo Kurihara; Toshio Fukazawa; Izuo Ichikawa; Yoshihiko Ikegami; Naohiko Fukiyama, and Masaru Ikeda, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan Continuation of Ser. No. 961,559, Nov. 17, 1978, abandoned, which is a continuation-in-part of Ser. No. 834,848, Sep. 20, 1977, abandoned. This application May 8, 1980, Ser. No. 148,172

Int. Cl.<sup>3</sup> A61K 9/30, 9/36, 9/42; C08L 1/28

U.S. Cl. 106—171

13 Claims

1. An aqueous protective coating composition which comprises dispersed fine particles of a hydrophobic material selected from the group consisting of a metal salt of a higher fatty acid, a higher fatty acid having a melting point of 40°–90° C., a wax having a melting point of 40°–90° C. and mixtures thereof of a water-soluble film base containing an amount effective to increase the hydrophobic properties of the film resulting from said aqueous protective coating composition of a surface active agent having a total HLB value of about 1.7 to 8.6.

4,341,564

## CORROSION INHIBITIVE PIGMENT

Louis Schiffman, 1837 Merritt Rd., Abington, Pa. 19001

Filed Nov. 26, 1980, Ser. No. 210,556

Int. Cl.<sup>3</sup> C04B 31/28; C09C 1/34

U.S. Cl. 106—302

15 Claims

1. The method of preparing a corrosion-inhibiting pigment which comprises reacting a hexavalent chromium compound in aqueous solution with a reducing agent under conditions effective to reduce 5 to 95% of the hexavalent chromium to lower valence state, dispersing in the reaction mixture containing at least about 20% chromium compounds by weight of said mixture, a water soluble or water dispersible polymeric film forming material; evaporating the resulting mixture to dryness at elevated temperature and pulverizing the dried product to pigment size range.

13. A corrosion-inhibiting pigment composition comprising as discrete particles chrome in hexavalent and partially reduced state enveloped in a polymeric film formed from at least one polymer selected from the group consisting of water soluble and water dispersible acrylic polymer compounds, poly-



acrylic acids, polyvinyl alcohols and hydroxy ethyl ethers of cellulose.

14. A corrosion-inhibiting pigment composition as defined in claim 13 wherein said chrome comprises 25 to 75% of unreduced hexavalent chromium compound and 75 to 25% of chromium compound in lower valent state.

15. A metal coating composition comprising as a vehicle a fast setting high molecular weight styrene-acrylic emulsion copolymer incorporating a chromium-chromate pigment as defined in claim 14.

4,341,565

## LIQUID COLORANT COMPOSITION

Irvin W. Martenson, Brea, Calif., assignor to American Organics Corporation, Placentia, Calif.

Filed Sep. 26, 1980, Ser. No. 191,320

Int. Cl.<sup>3</sup> C04B 31/40; C09C 1/56; C08K 3/04

U.S. Cl. 106—307 14 Claims

1. A stable liquid composition of suspended color bodies which consists essentially of:

solid, subdivided color pigment comprising from 10 to about 70 weight percent of said composition;

a liquid vehicle comprising from about 30 to 90 weight percent of said composition and comprising a plasticizer selected from the class consisting of esters of saturated mono- and di-basic alcohols having from 2 to about 20 carbons and a di- or tri-basic saturated aliphatic acid or aromatic acid having from 3 to about 12 carbons, or phosphoric acid; and

a gelling agent in an amount from 1 to about 5 percent of the weight of said liquid vehicle and comprising an organophilic, expanding lattice clay ion exchanged with alkyl quaternary ammonium ions.

3. The composition of claim 1 wherein said pigment is carbon black and is present in an amount from 12 to 15 percent of said composition.

9. The method of preparing a stable liquid suspension of pigments which comprises:

(a) admixing from 1 to about 5 weight percent of an organophilic, expanding lattice clay having its ion exchange sites occupied by mono- and poly-alkyl ammonium ions with a liquid plasticizer of a saturated mono- or di-basic alcohol having from 2 to about 20 carbons esterified with a di- or tri-basic, saturated aliphatic or aromatic acid having from 3 to about 12 carbons, or phosphoric acid;

(b) milling said mixture to form a pre-gel having a viscosity less than the desired final viscosity and from 1,000 to about 3,000 centipoise seconds Brookfield;

(c) blending a finely subdivided solid colorant into said pre-gel in sufficient proportions to provide a concentration in said composition from 10 to about 70 weight percent, and

(d) subjecting the resulting blend to a high shear force to form a gelled suspension of said colorant having the desired viscosity.

4,341,566

## EUTECTIC MIXTURE AS A FLUX FOR GLASS MELTS

Wayne T. Barrett, Malvern, and Patrick M. Brown, Exton, both of Pa., assignors to Foote Mineral Co., Exton, Pa.

Filed Feb. 2, 1981, Ser. No. 230,520

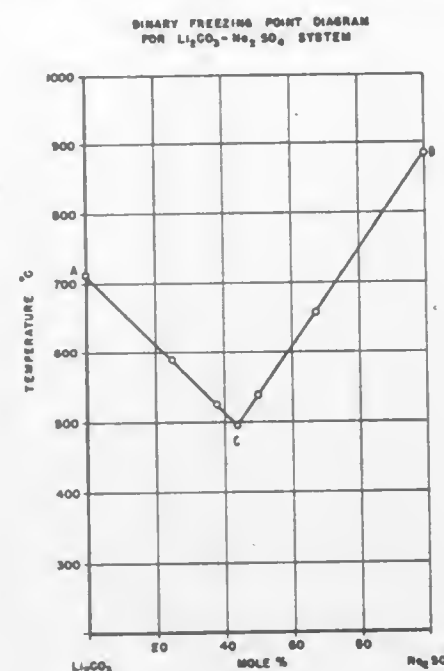
Int. Cl.<sup>3</sup> C04B 35/60; C09K 3/00; C03B 1/00

U.S. Cl. 106—313 15 Claims

1. An eutectic composition particularly useful as a flux in glass manufacture comprising about 56 mole percent lithium carbonate and about 44 mole percent sodium sulfate.

10. In the manufacture of glass wherein the solid raw materials in specified proportions are intimately mixed together and the mixture is converted at high temperatures to a homogeneous melt, the improvement which comprises including in the mixture as a flux an eutectic composition comprising about 56

ous melt, the improvement which comprises including in the mixture as a flux an eutectic composition comprising about 56



4,341,567

## METHOD OF VAPOR DEGREASING

Ernest O. Roehl, Huntington Beach, Calif., assignor to Rho-Chem Corporation, Inglewood, Calif.

Continuation-in-part of Ser. No. 163,988, Jun. 30, 1980, Pat. No. 4,289,542. This application May 7, 1981, Ser. No. 257,578

Int. Cl.<sup>3</sup> B08B 5/00

U.S. Cl. 134—11

14 Claims

1. In the method of vapor degreasing by contacting a contaminated article with vapors of a solvent consisting essentially of 1,1,1 trichloroethane, the improvement which comprises:

(a) adding a sufficient amount of methylene chloride to the solvent to reduce the initial boiling point of the resultant solvent blend to about 135° F., and

(b) continuing vapor degreasing operations with the solvent blend of step (a) at reflux temperatures until the acid acceptance value of the contaminated solvent blend is within the range of about 0.03 to 0.06.

8. In the method of vapor degreasing by contacting a contaminated article with the vapors of a solvent consisting essentially of trichloroethylene, the improvement which comprises:

(a) adding a sufficient amount of methylene chloride to the solvent to reduce the initial boiling point of the resultant solvent blend to about 120° F.

(b) continuing vapor degreasing operations with the solvent blend of step (a) at reflux temperatures until the acid acceptance value of the contaminated solvent blend is within the range of about 0.03 to 0.06.

4,341,568

## METHOD AND APPARATUS FOR WASHING OBJECTS

Kim S. Christensen, Redmond, Wash., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 27, 1980, Ser. No. 163,602

Int. Cl.<sup>3</sup> B08B 3/02; 5/04

U.S. Cl. 134—21

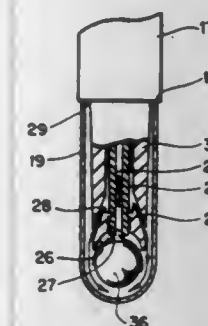
11 Claims

1. A device for washing an object within a receptacle comprising:

an end portion introducible into and cooperative with said receptacle in such a way as to define a substantially enclosed space containing said object;

said end portion including a tip surface adjacent said object; means, adjacent said end portion, for introducing a fluid into said substantially enclosed space; and

means, contiguous with said tip surface, for aspirating said fluid from said substantially enclosed space;



said object being movable between said receptacle and said tip surface.

4,341,569

## SEMICONDUCTOR ON INSULATOR LASER PROCESS

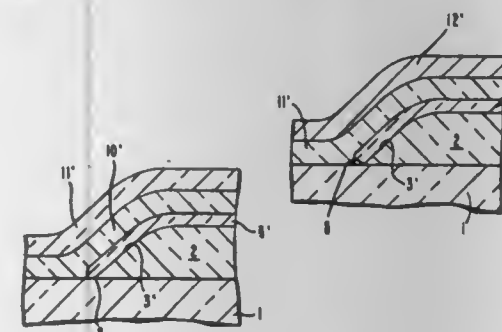
Glora Yaron; Eliyahou Harari, both of Irvine; Samuel T. Wang, Mission Viejo, and LaVerne D. Hess, Thousand Oaks, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 60,081, Jul. 24, 1979, abandoned. This application Jul. 8, 1980, Ser. No. 166,881

Int. Cl.<sup>3</sup> H01L 21/263; B05D 3/06

U.S. Cl. 148—1.5

31 Claims



1. A method for increasing the channel mobility of transistors formed in epitaxial silicon islands over a sapphire substrate and for achieving improved step coverage by conductors deposited over said islands, comprising:

forming a layer of epitaxial silicon over a sapphire substrate; defining a plurality of epitaxial silicon islands in said silicon layer;

exposing said islands to a beam of energy of sufficient magnitude;

placing a first insulating layer over said silicon islands; placing and defining a polycrystalline conductor over said first insulating layer;

ion implanting said silicon islands and said polycrystalline conductor;

placing a second insulating layer over said conductor and said first insulating layer;

opening contacts through said second insulating layer; and, placing and defining a metal conductor over said second insulating layer.

4,341,570

## PROCESS FOR PRODUCING AN INJECTION LASER AND LASER OBTAINED BY THIS PROCESS

Jean Landreau, 107 Avenue de Verdun, 92130 Issy les Moulineaux; Philippe Delpech, 37 rue Louise Michel, 94800 Villejuif, and Jean-Claude Bouley, 35 Avenue du Docteur Durand, 94110 Arcueil, all of France

Filed Sep. 3, 1980, Ser. No. 183,730

Claims priority, application France, Sep. 11, 1979, 79 22650

Int. Cl.<sup>3</sup> H01S 3/00

U.S. Cl. 148—1.5

4 Claims

1. A process for producing an injection laser with a double heterostructure incorporating on a substrate a first confine-

ment layer, an active layer, a second confinement layer and a contact layer, wherein:

(A) a conventional double heterostructure is formed (n-type substrate, n-type first confinement layer, active layer, second confinement layer and P<sup>+</sup>-type contact layer), but the active layer is of the weakly doped n-type;

(B) a masking layer is deposited on the contact layer and its composition is similar to that of the confinement layers;

(C) the latter layer is chemically etched so as to only leave behind a masking mesa;

(D) zinc diffusion is performed using said mesa as the mask, the diffusion time being sufficiently great for the diffusion to affect the active zone;

(E) there is proton bombardment of the structure by once again using the mesa as the mask, the bombarded zone also extending beyond the active zone;

(F) the mesa is eliminated.

4,341,571

## METHOD OF MAKING PLANAR DEVICES BY DIRECT IMPLANTATION INTO SUBSTRATE USING PHOTORESIST MASK

Ludwig Hiss, Endingen, and Ulrich Waldvogel, Sexau, both of Fed. Rep. of Germany, assignors to IIT Industries, Inc., New York, N.Y.

Filed Oct. 29, 1980, Ser. No. 201,884

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1979, 2945854

Int. Cl.<sup>3</sup> H01L 21/26, 21/265

U.S. Cl. 148—1.5

2 Claims



1. A method for making with a reduced failure rate a semiconductor device having a plurality of differently doped regions in a semiconductor substrate, the method comprising:

exposing a surface of said substrate by an oxidizing plasma etching operation performed under predetermined conditions wherein the oxide layer formed by said etching operation is minimized;

forming on said exposed surface a photoresist mask having at least one opening therethrough;

implanting ions in an area of said substrate through said opening;

repeating said exposing, forming and implanting steps to implant ions in a different area of said substrate; and

diffusing said implanted ions only after the last said ion implantation step by heating said substrate.

4,341,572

METHOD FOR PRODUCING Nb<sub>3</sub>SN SUPERCONDUCTORS

Kyoji Tachikawa, Tokyo; Kazumasa Togano, and Takao Takeuchi, both of Sakura, all of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Nov. 10, 1980, Ser. No. 205,243

Claims priority, application Japan, Nov. 12, 1979, 54/145459

Int. Cl.<sup>3</sup> H01L 39/00; C22C 27/02

U.S. Cl. 148—11.5 F

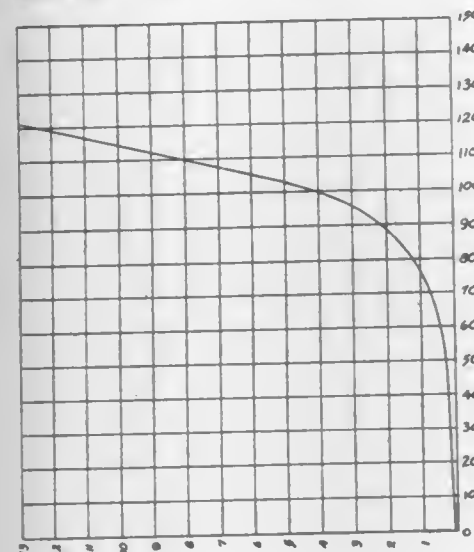
2 Claims

1. In a method for producing a Nb<sub>3</sub>Sn superconductor which comprises drawing a composite having a core of a Nb-Hf alloy containing 0.1 to 30 atomic % of Hf and a sheath containing Cu and Sn, and heat-treating the composite to form a Nb<sub>3</sub>Sn layer between the core and the sheath; the improvement wherein the sheath is formed of a Cu-Ga alloy containing not more than 20 atomic % of Ga, a Cu-Al alloy containing not



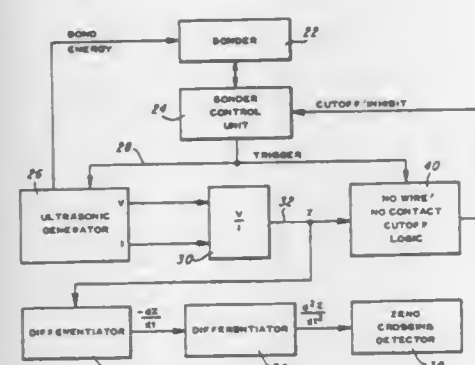
more than 20 atomic % of Al, a Cu-Ga-Sn alloy containing not more than 6 atomic % of Sn and not more than 20 atomic % of Ga or a Cu-Al-Sn alloy containing not more than 6 atomic % of Sn and not more than 20 atomic % of Al; and after the drawing, coating a Sn film onto the surface of the sheath, and then heat-treating the resulting product.

**4,341,573**  
**COMPOSITIONS FOR PULSATING FLARES**  
David W. Donoho, Baltimore, Md., assignor to Pulsar Laboratories, Inc., Baltimore, Md.  
Filed Sep. 5, 1980, Ser. No. 184,516  
Int. Cl.<sup>3</sup> C06B 33/06  
U.S. Cl. 149-42



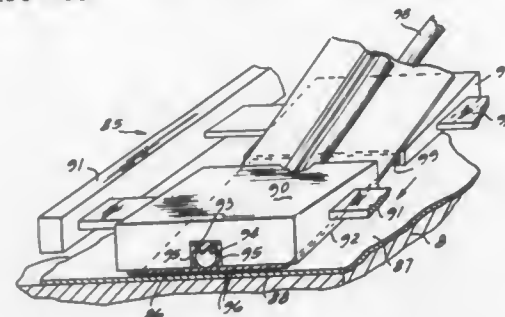
1. A pyrotechnic composition which is characterized by a series of intermittent detonations when ignited comprising sulfur, potassium nitrate and powdered aluminum wherein the range in ratio by weight of the sulfur to the total of the potassium nitrate and aluminum is between approximately 5:4 and 13:4.

**4,341,574**  
**ULTRASONIC BOND ENERGY MONITOR**  
James L. Landes, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.  
Filed Aug. 25, 1980, Ser. No. 180,796  
Int. Cl.<sup>3</sup> B23K 1/06; B29C 27/08  
U.S. Cl. 156-64



1. A method for optimizing the bonding of materials by ultrasonic energy radiating from a transducer, comprising the steps of:  
monitoring the ultrasonic voltage and current in said transducer;  
generating a signal corresponding to the impedance of said transducer as a function of said voltage and said current; and  
terminating said bonding process when the second derivative of said impedance signal with respect to time reaches a predetermined value.

**4,341,575**  
**MEANS FOR JOINING FLEXIBLE FASTENER STRIPS TO FILM**  
Andre M. Herz, Nesles-la-Vallee, France, assignor to Minigrip, Inc., Orangeburg, N.Y.  
Division of Ser. No. 737,141, Oct. 29, 1976, abandoned. This application Oct. 14, 1980, Ser. No. 196,533  
Claims priority, application France, Nov. 3, 1975, 75 33593  
Int. Cl.<sup>3</sup> A44B 19/00  
U.S. Cl. 156-66



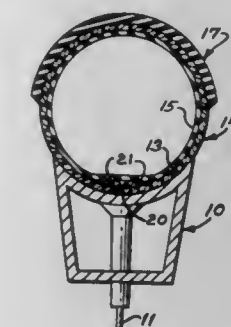
1. Apparatus for attaching to a prefabricated flexible web a first prefabricated flexible separable fastener strip having an interlocking profile projecting away from an interface surface area of the strip and the profile being adapted for interlocking with a complementary second flexible separable fastener profile, comprising:  
means for guiding the web and the fastener strip travelling at high speed and substantially continuously convergently toward one another to join the interface surface area of the fastener strip to an interface surface area of said web; said guiding means having a formation utilizing said profile as guide means for guiding the fastener strip in movement into said convergence with the web;  
means for substantially continuously applying a thin layer of quickly tacky adhesive to at least one of said interface surface areas and as close as practicable to the convergent joining of the web and strip so that the adhesive will reach the joining while tacky;  
and said guiding means pressing said strip and said web together and thereby effecting attachment of the interface surface areas to one another by means of the adhesive layer while the web and fastener strip continue travelling jointly at said high speed.

**4,341,576**  
**FABRICATING LAMINATED SAFETY GLASS WITHOUT AN AUTOCLAVE**  
Charles W. Lewis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.  
Filed Jun. 1, 1981, Ser. No. 269,111  
Int. Cl.<sup>3</sup> B32B 31/12, 17/10  
U.S. Cl. 156-106

1. A method of fabricating a laminated glass window comprising a pair of glass sheets and a plasticized sheet of interlayer material having embossed major surfaces comprising:  
(a) applying to the major surfaces of said sheet of plasticized interlayer material an excess of liquid plasticizer;  
(b) assembling said plasticized sheet between a pair of glass sheets to form an assembly having said excess of liquid plasticizer in contact with the major surfaces of said plasticized sheet;  
(c) soaking said major surfaces of said plasticized sheet with said excess plasticizer at room temperature for sufficient time for the applied plasticizer to soften said embossed major surfaces, but insufficient to normalize the plasticizer concentration throughout the thickness of said plasticized sheet; and  
(d) compressing said assembly at a superatmospheric pressure of not more than two atmospheres to remove excess plasticizer and heating said assembly while so compressed to a temperature range above room temperature and

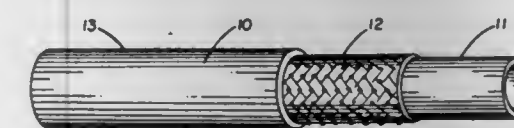
below the temperature at which said plasticizer develops a volatile product to laminate said sheets completely to one another while maintaining the surfaces of said glass sheets of said assembly that do not form interfacial surfaces with said plasticized sheet free of exposure with said plasticizer during the performance of said method.

**4,341,577**  
**VEHICLE TIRE AND METHOD OF MANUFACTURE**  
Garret K. Vandenberg, 1008 Grove St., Winnetka, Ill. 60093  
Filed Apr. 11, 1977, Ser. No. 786,068  
Int. Cl.<sup>3</sup> B29H 15/00  
U.S. Cl. 156-121



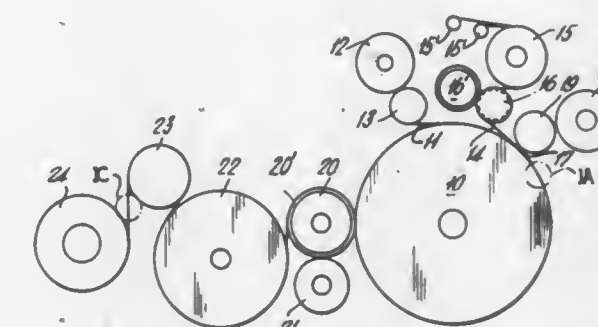
1. In a method of manufacturing a high performance tire which includes a casing encompassing an inner tube inflated to a pressure of at least seventy-five pounds per square inch, said casing being formed from a blank of fabric which fabric has two groups of threads running completely across the blank in two directions respectively, which directions are transverse to each other, and said blank has ends and elongated sides, and wherein said sides are sewn together and said ends are sewn together to form said blank into a toroid about the tube, the improvement comprising the step of:  
cutting said blank from fabric consisting essentially of said threads and so that the threads of one of said groups are at an angle of approximately forty-five degrees to said sides.

**4,341,578**  
**METHOD OF HOSE PRODUCTION**  
Michael A. Chermak; Anil H. Chudgar, and William J. Kronshabel, all of Manitowoc, Wis., assignors to Gould Inc., Rolling Meadows, Ill.  
Continuation of Ser. No. 961,338, Nov. 16, 1978, abandoned. This application Jan. 30, 1981, Ser. No. 230,123  
Int. Cl.<sup>3</sup> B65H 81/00  
U.S. Cl. 156-149



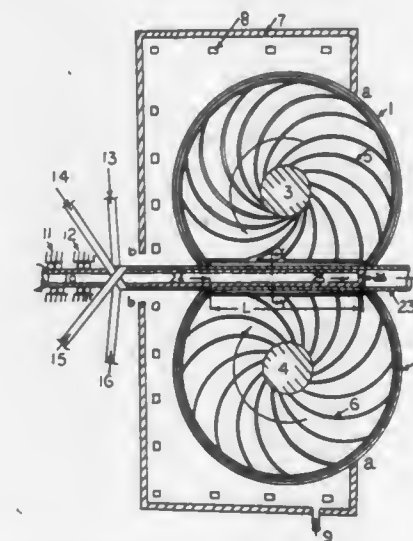
1. The method of continuous forming a hose product comprising the steps of:  
providing a single layer, thermoplastic, load bearing, core tube;  
applying an intersticed metallic reinforcement about said core tube;  
subsequently heating said core tube only in selected portions adjacent the outer surface thereof to soften said portions for migration into and above said interstices wherein said heating is done by heating of the metallic reinforcement by an induction generator thereby providing for only a localized heating effect; and  
cooling said portions to form a mechanical interlock between said core tube and said reinforcement, said mechanical interlock being the sole means bonding said reinforcement to said core tube.

**4,341,579**  
**WIRE REINFORCED CORRUGATED BOARD AND METHOD AND APPARATUS FOR MAKING SAME**  
Marc A. Chavannes, 4044 Roberts Point Ave., Sarasota, Fla. 33581  
Continuation of Ser. No. 913,242, Jun. 6, 1978, Pat. No. 4,228,209, which is a continuation of Ser. No. 771,993, Feb. 25, 1977, abandoned, which is a continuation of Ser. No. 551,978, Feb. 21, 1975, abandoned. This application Sep. 24, 1980, Ser. No. 190,189  
The portion of the term of this patent subsequent to Oct. 14, 1997, has been disclaimed.  
Int. Cl.<sup>3</sup> B32B 29/02; B31F 1/24  
U.S. Cl. 156-166



1. The method of forming a wire grid comprising the steps of feeding successive transversely disposed wires onto a drum and retaining them in spaced parallel relationship, feeding a plurality of spaced parallel longitudinally disposed wires into overlying relationship with said transverse wires, joining each longitudinal wire with each transverse wire to form a self-supporting grid, corrugating said grid to form crest portions on both sides thereof and then sealing a layer of plastic to the crest portions on at least one side thereof.  
5. The method of forming a wire mesh according to claim 1 wherein said longitudinal and transverse wires are coated with a plastic and said wires are heated to cause the plastic to adhere the wires, one to the others, at each intersection of the longitudinal and transverse sets of wires.

**4,341,580**  
**METHOD OF FORMING AN ELONGATED COMPOSITE LAMINATE TUBE**  
Nazeer Ahmed, and Myrna M. Ahmed, both of 17 Wedgewood Dr., Danbury, Conn. 06810  
Filed Jan. 27, 1981, Ser. No. 228,997  
Int. Cl.<sup>3</sup> B61H 81/00  
U.S. Cl. 156-190



1. A method of forming an elongated composite laminate tube, the method consisting of providing a pair of cooperatively rotating annular wheels

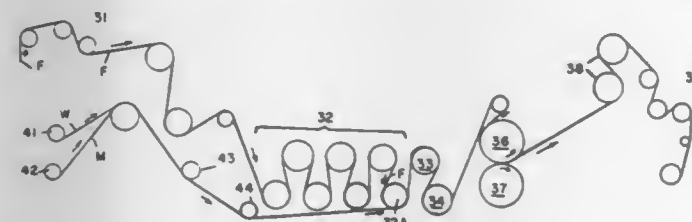


each of which has a rim built up of a plurality of sheets and connected to a rotating shaft by means of flexible means, providing a circumferential groove on the rim of each of the said annular wheels, temporarily deforming said wheels radially against each other so as to cause a contact length  $L$  and pressure  $p$  between them and so that the said grooves cooperate to form a closed orifice, providing a rotating mandrel and inserting said mandrel into the orifice formed between the annular wheels along their contact length so that the radial clearance between the mandrel and said orifice is substantially equal to the thickness of the composite tube to be formed, locating said annular wheels in a heated chamber whose temperature is held at an elevated temperature  $T$  so that between fifty and eighty percent of contact length  $L$  is enclosed by the heated chamber, wrapping a plurality of elongated composite plies around said rotating mandrel, so that said plies form a tube around the mandrel and the tube is clamped and carried by the annular wheels and cured in the said chamber at an elevated temperature  $T$  and pressure  $p$  and is subsequently cooled under pressure and thereafter exits from between the annular wheels as an elongated cured composite laminate tube.

**4,341,581**  
**METHOD OF MAKING LEATHERLIKE MATERIALS (B)**  
Frank P. Civardi, Wayne, and Milan J. Getting, Nutley, both of N.J., assignors to Inmont Corporation, Clifton, N.J.  
Continuation-in-part of Ser. No. 891,834, Mar. 30, 1978, abandoned. This application May 23, 1979, Ser. No. 41,780  
Int. Cl.<sup>3</sup> B32B 27/40

U.S. Cl. 156—209

18 Claims



1. Process for imparting a grain pattern to a continuous sheet material having a layer of microporous polyurethane at least about 10 mils thick which comprises passing said sheet material continuously to the nip between a roll having a hot grain-embossing surface having hot grain-embossing projections and another roll, compressing said layer in said nip and thereby forcing said projections into said layer, passing said sheet material out of said nip and maintaining said sheet material on said grain embossing surface to transfer heat from said projections into said layer while said layer is substantially uncompressed, said hot surface being at a temperature which is within about 15° C. of the melting-sticking temperature of said layer, and then continuously removing said sheet material from said hot roll.

**4,341,582**  
**LOAD-LOCK VACUUM CHAMBER**  
Wayne E. Kohman, Wilton, and Joseph E. Maleri, Bridgeport, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Dec. 22, 1980, Ser. No. 219,060

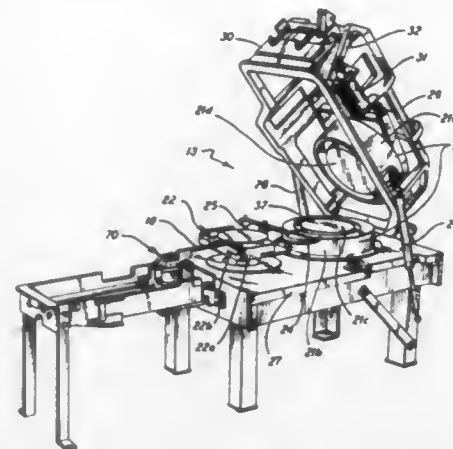
Int. Cl.<sup>3</sup> C23F 1/02

U.S. Cl. 156—345

12 Claims

1. An apparatus for pretreating, etching and stripping a silicon wafer, comprising in combination:  
a first chamber for treating a wafer,  
a second chamber for treating a wafer disposed within said first chamber,

first means for inserting or removing a wafer from said first chamber,



second means for transferring wafers between said first and second chambers.

**4,341,583**  
**GARMENT BAG BOTTOM SEALING MACHINE FOR THE GARMENT MANUFACTURING AND DRY CLEANING INDUSTRIES**

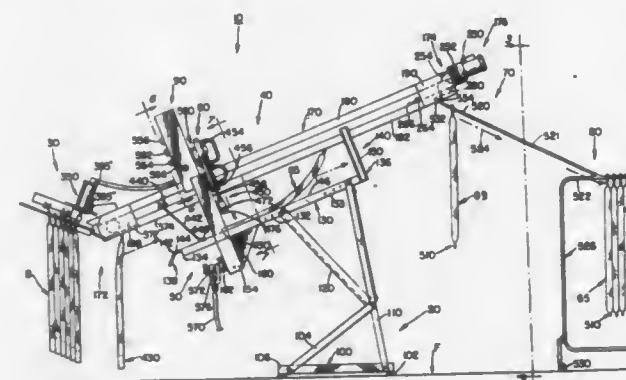
Karl E. Schwarz, 714 Tift Ave., Horseheads, N.Y. 14845

Filed Aug. 27, 1980, Ser. No. 181,800

Int. Cl.<sup>3</sup> G05G 15/00; B29C 27/02; B65B 51/10

U.S. Cl. 156—359

36 Claims



1. A sealing means for sealing garment bags in a garment dry cleaning or garment manufacturing operation comprising:

a support means;

a garment bag supporting ramp mounted on said support means for supporting garment bags to be sealed;

a garment bag conveyor means mounted on said support means, said bag conveyor means including a garment hanger guide rail, a conveyor belt housing, a conveyor belt mounted in said housing and a conveyor belt drive means, said conveyor belt being formed by a plurality of interconnected links with each link having a body with a leading edge and a trailing portion with the leading edge of one link body being connected to the trailing portion of an adjacent link and being offset from that trailing portion to define a step between such connected links, said belt link leading edges each cooperating with said guide rail so that said step and said guide rail form a hanger accommodating pocket;

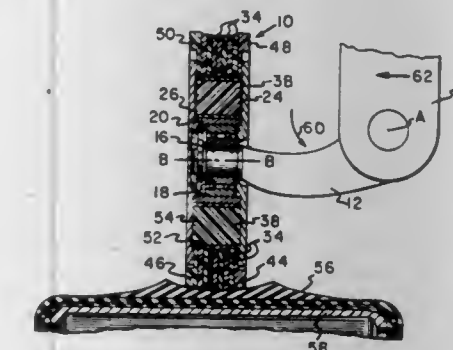
a garment hanger feeder means mounted on said belt housing to receive hanger supported bagged garments in a dry cleaning or garment manufacturing operation and feed such hanger supported garments to said conveyor belt in a manner such that each of the hangers is received in one of said hanger accommodating pockets to directly contact one of said links to be moved along said guide rail by said conveyor belt;

garment bag sealer means mounted on said support means

and sealing each garment bag as such each garment bag is conveyed through said sealer means by said conveyor means; and  
discharge means mounted on said belt housing for discharging sealed garment bags from said conveyor belt.

**4,341,584**  
**MULTIPLE DISC STITCHER**  
Krystian G. Czernichowsky, Ettelbruck, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio  
Filed May 11, 1981, Ser. No. 262,135  
Int. Cl.<sup>3</sup> B29H 17/18; B21B 13/02, 31/08  
U.S. Cl. 156—412

12 Claims



1. A multiple disc stitcher rotatable about a stitcher axis for use in building tires comprising a plurality of disc members positioned generally in concentric laminated relationship about said axis, said disc members having a central opening, support means extending axially through said opening providing a single continuous beam support, each of said disc members being independently rotatable and slidable relative to adjacent disc members, said support means including a plurality of generally cylindrical elastic members spaced circumferentially around an axially extending support member, each of said elastic members extending through said central opening to resiliently support said disc members while permitting radial displacement relative to said support member, and each of said elastic members having a wear-resistant surface with a low resistance to sliding of said disc members on said elastic members to reduce the wear when different disc members are rotated at different speeds relative to said elastic members.

8. A multiple disc stitcher rotatable about a stitcher axis for use in building tires comprising a plurality of disc members positioned generally in concentric laminated relationship about said axis and having a central opening, support means extending axially through said opening providing a single continuous beam support, each of said disc members being independently rotatable and slidable relative to adjacent disc members, said support means including an axially extending support member and a plurality of generally cylindrical elastic members spaced circumferentially around said support member, each of said elastic members extending through said central opening to resiliently support said disc members while permitting radial displacement relative to said support member, and said support member having radially extending arms spaced apart circumferentially and extending between adjacent cylindrical elastic members for spacing and supporting said elastic members.

**4,341,585**  
**DEVICES FOR IMPARTING CURL TO TAPES**  
Thomas W. Seabold, Saint Paul; Richard A. Patterson, Woodbury, and Richard P. de Neui, Lake Elmo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 121,716, Feb. 15, 1980, abandoned. This application Sep. 19, 1980, Ser. No. 188,672

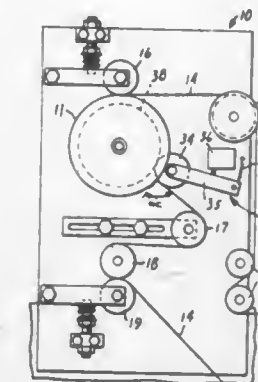
Int. Cl.<sup>3</sup> B65H 17/28

U.S. Cl. 156—443

12 Claims

1. A device for curling tape comprising a backing and an adhesive layer, said device comprising a first roller having

grooves on the peripheral surface of the roller and a second roller which provides means whereby said tape is deformed



into said grooves to impart at least a temporary curl to said tape.

**4,341,586**  
**ARRANGEMENT FOR WRAPPER FEEDING TO BIG PAPER ROLLS**

Pauli Koutonen, Järvenpää, Finland, assignor to Oy Wartsila Ab, Helsinki, Finland

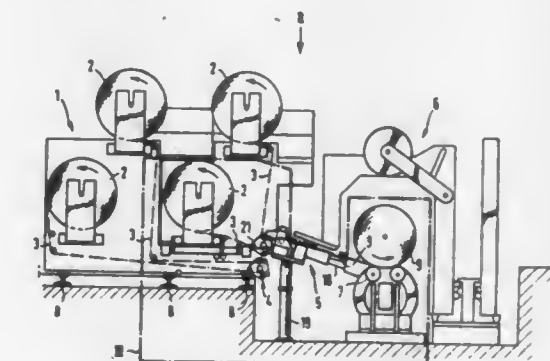
Filed Oct. 9, 1980, Ser. No. 195,391

Claims priority, application Finland, Oct. 19, 1979, 793239

Int. Cl.<sup>3</sup> B32B 31/00

U.S. Cl. 156—518

6 Claims



1. An arrangement for selecting and feeding a wrapper to a big paper roll or the like, said arrangement comprising:

a storage unit containing a plurality of wrapper rolls of different axial length and including separate feeding means for each wrapper in said storage unit;

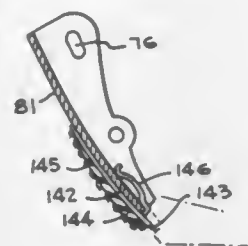
said feeding means being arranged in a substantially vertical line and comprising each, as known per se, at least one wrapper feeding drive roll, said feeding means being arranged to operate as the main wrapper pulling and feeding devices of said arrangement;

said arrangement further comprising a guiding unit receiving a selected wrapper and being provided with means for transversely cutting said wrapper;

said guiding unit being movable mainly vertically and arranged to be selectively positioned in front of and close to any of said feeding means for automatically guiding a selected wrapper from said storage unit to a roll wrapping station; thereby to avoid threading of a new wrapper end when changing to another selected wrapper from said storage unit.

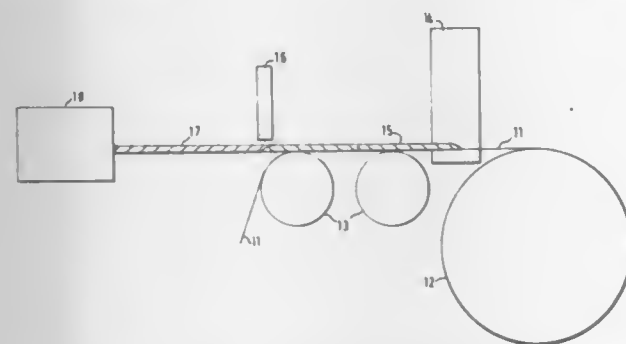


**4,341,587**  
**TAPE DISPENSER**  
 James L. Regan, 2027 Lakeview Ter., Fairbanks, Ak. 99701  
 Division of Ser. No. 110,226, Jan. 7, 1980, Pat. No. 4,253,905.  
 This application Feb. 9, 1980, Ser. No. 214,682  
 Int. Cl.<sup>3</sup> B32B 31/18  
 U.S. Cl. 156—523



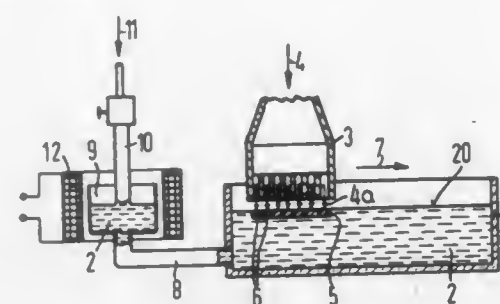
1. A tape positioning and severing blade means removably positionable on a tape dispenser comprising a blade member having an outer face terminating along a transverse cutter edge and cushion means attached to the blade member and positioned on the outer face at a location closely adjacent the transverse cutter edge and wherein said blade means includes spring means attached to said blade member adjacent said transverse cutter edge for permitting said blade member to be removably mounted on a blade-like support member of the tape dispenser.

**4,341,588**  
**SEMICONDUCTOR PROCESSING**  
 Henley F. Sterling, Great Dunmow, England, assignor to ITT Industries, Inc., New York, N.Y.  
 Continuation of Ser. No. 66,961, Aug. 17, 1979, abandoned. This application Nov. 21, 1980, Ser. No. 209,234  
 Claims priority, application United Kingdom, Sep. 7, 1978, 35942/78  
 Int. Cl.<sup>3</sup> C30B 1/04  
 U.S. Cl. 156—601



1. In a process for the continuous manufacture of integrated circuits, the steps of:  
 depositing a self-supporting layer of amorphous silicon material from a vapor phase on a continuously moving substrate for joint movement therewith,  
 separating the self-supporting layer of amorphous silicon material from the substrate,  
 heating increments of said separated layer of amorphous silicon material during continued movement thereof to a temperature sufficient to permit crystallization of the silicon material into a single crystal semiconductor, and  
 effecting cooling of said increments at a rate inductive of crystallization of said silicon material into a single crystal semiconductor.

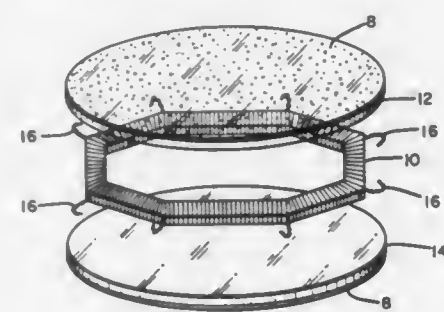
**4,341,589**  
**METHOD FOR PRODUCING LARGE SURFACE PLATE OR DISC-SHAPED SI CRYSTALS WITH COLUMNAR STRUCTURE**  
 Josef Grabmaier, Berg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany  
 Filed Mar. 20, 1980, Ser. No. 132,115  
 Claims priority, application Fed. Rep. of Germany, Apr. 10, 1979, 2914506  
 Int. Cl.<sup>3</sup> C30B 29/06  
 U.S. Cl. 156—606



1. In a method of producing a relatively large surface silicon crystal plate-shaped body having a columnar crystalline structure and which is useful for manufacture of solar cells, said body being produced through a directional solidification of molten silicon in a silicon melting tank, the improvement comprising:

arranging a cooling gas system comprised of a controllable cooling gas source interconnected with a plurality of gas nozzles in working relation with said silicon melting tank; positioning said gas nozzles a relatively short distance above a silicon melt surface in said melting tank and arranging said nozzles relative to one another so that spacing between one nozzle center and an adjacent nozzle center corresponds to the diameter of crystallites forming the desired columnar structure;  
 directing a plurality of cooling gas streams from said cooling gas source through said nozzles and onto the silicon melt surface below such nozzles for a period of time sufficient to attain a desired thickness for said silicon body whereby a substantial spontaneous seed crystal formation occurs in the melt surface in the region thereof lying directly opposite such streams and the area of the melt surface below such streams solidifies about such seed crystals to form columnar crystallite structure; and  
 removing the thus-formed silicon body from said melt surface.

**4,341,590**  
**SINGLE SURFACE LPE CRYSTAL GROWTH**  
 Gary L. Nelson, Apple Valley, and William A. Harvey, Minneapolis, both of Minn., assignors to Sperry Corporation, New York, N.Y.  
 Filed Apr. 27, 1981, Ser. No. 257,830  
 Int. Cl.<sup>3</sup> C30B 19/12  
 U.S. Cl. 156—624

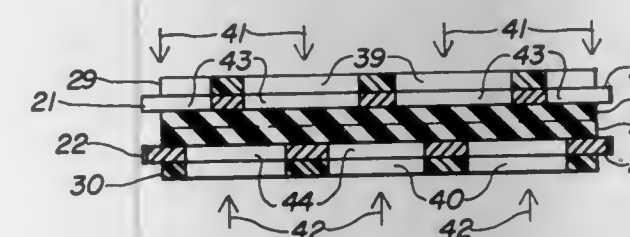


1. In a liquid phase epitaxial process for growing a crystal-

line film upon a supporting crystalline substrate by immersing said substrate in a melt containing a nutrient and a flux, the improvement comprising the inclusion of a step therein prior to immersion of:

assembling means for entrapping an air bubble between a first and second substrate, so that each of said substrates have an exposed upper and lower surface, whereby upon immersion of said assembly into said melt said crystalline film is grown primarily upon the exposed surfaces of said first and second substrates, the growth upon the interior surfaces occurring in only those areas not exposed the entrapped air bubble.

**4,341,591**  
**METHOD OF FABRICATING A COLOR-SELECTION STRUCTURE FOR A CRT**  
 Donald J. Tamutis, Mercerville, N.J., assignor to RCA Corporation, New York, N.Y.  
 Filed Apr. 8, 1981, Ser. No. 252,250  
 Int. Cl.<sup>3</sup> B44C 1/22; C03C 15/00; 25/06; C23F 1/02  
 U.S. Cl. 156—630



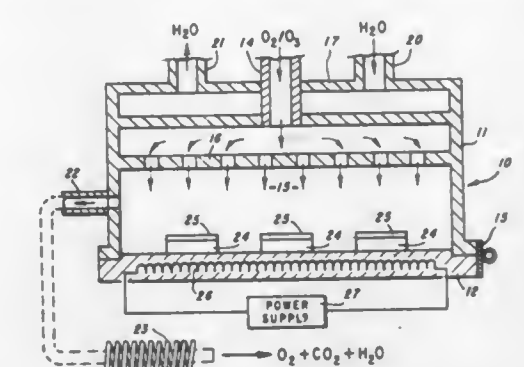
1. A method of fabricating a color-selection structure for a cathode-ray tube comprising  
 A. providing a blank laminate consisting essentially of a positive-acting photosolubilizable central insulator layer, first and second etchable metal layers adhered to opposite major surfaces of said insulator layer, and first and second etch-resistant stencils contacting major surfaces of said first and second metal layers respectively, said stencils having different, related open areas therethrough which leave selected portions of said metal layers unprotected,  
 B. etching through said first metal layer in said selected portions of said first metal layer to produce an apertured plate consisting essentially of first openings in said first metal layer,  
 C. etching through said second metal layer in said selected portions of said second metal layer to produce an array of parallel conductors consisting essentially of second openings in said second metal layer,  
 D. exposing said insulator layer to actinic light through said first openings and said second openings,  
 E. and then removing solubilized portions of said insulator layer.

**4,341,592**  
**METHOD FOR REMOVING PHOTORESIST LAYER FROM SUBSTRATE BY OZONE TREATMENT**  
 Samuel R. Shortes, Lewisville, and Thomas C. Penn, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.  
 Filed Aug. 4, 1975, Ser. No. 601,861  
 Int. Cl.<sup>3</sup> B44C 1/22; C03C 15/00; C23F 1/00; H01L 21/306  
 U.S. Cl. 156—643

1. In the fabrication of an electronic structure, a method for removing a layer of photoresist material from a substrate surface of different material, said method comprising:  
 positioning the substrate on which the photoresist layer is disposed in a reaction zone of a reactor,  
 introducing a gaseous atmosphere containing ozone as an active reagent in an amount sufficient to react with all of the photoresist material in said layer thereof into the reaction zone of said reactor,  
 exposing said layer of photoresist material to said ozone-containing gaseous atmosphere,

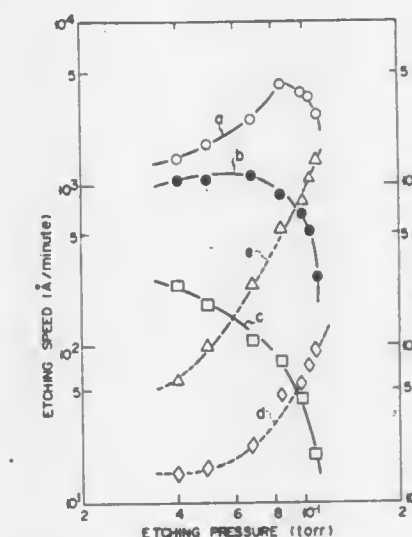
removing photoresist material from the underlying substrate surface in response to exposure of the layer of photoresist material to the ozone while continuously maintaining a sufficient concentration of ozone molecules in the area of the photoresist material at least until the layer of photoresist material is removed,

flowing streams of an inert gaseous atmosphere at the inlet and outlet sides of the reaction zone of said reactor to



confine the ozone-containing gaseous atmosphere within the reaction zone after the introduction thereof and to restrict the exhaust of excess ozone and reaction products to a predetermined exhaust path, and  
 exhausting excess ozone and reaction products including the photoresist material of the removed layer from the reactor along the predetermined exhaust path.

**4,341,593**  
**PLASMA ETCHING METHOD FOR ALUMINUM-BASED FILMS**  
 Tetuo Kurisaki, Kawasaki; Yasuhiro Horike, Tateno, and Takashi Yamazaki, Kawasaki, all of Japan, assignors to Tokuda Seisakusyo, Ltd., Zama and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, both of Japan  
 Filed Aug. 14, 1980, Ser. No. 177,910  
 Claims priority, application Japan, Aug. 17, 1979, 54/104032; Sep. 28, 1979, 54/124207; Sep. 28, 1979, 54/124209  
 Int. Cl.<sup>3</sup> C23F 1/02  
 U.S. Cl. 156—643



1. A plasma etching method comprising the steps of:  
 placing a workpiece including an aluminum-based film with an exposed portion on a cathode arranged in opposition to an anode;  
 charging a plasma generating gas consisting of carbon tetrachloride and chlorine gas at a pressure ranging from 0.01 to 0.06 Torr between said anode and cathode, the ratio of the partial pressure of said chlorine gas to the total pressure being 0.8 or less;  
 applying a high frequency electric power between said anode and cathode to generate a plasma from said plasma generating gas; and

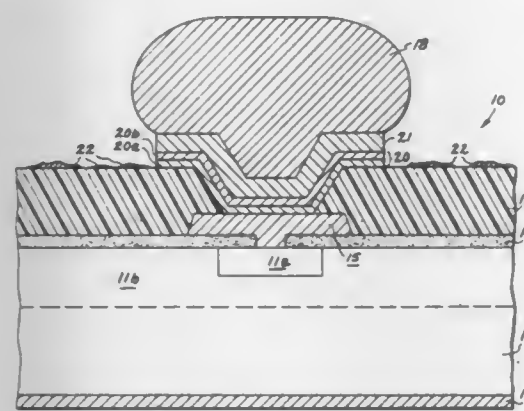


etching said exposed portion of said aluminum-based film by said plasma.

#### 4,341,594 METHOD OF RESTORING SEMICONDUCTOR DEVICE PERFORMANCE

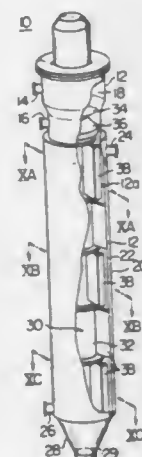
Richard O. Carlson, and Alexander J. Yerman, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 27, 1981, Ser. No. 238,726  
Int. Cl.<sup>3</sup> C23F 1/00; B44C 1/22; C03C 15/00, 25/06  
U.S. Cl. 156—643 10 Claims



1. A method of removing contaminant metal layers from an organic passivation layer of a semiconductor device, comprising wet chemical etching of said layers followed by plasma etching of metal residue of said contaminant metal layers with an etchant gas at sufficient electric field power and for a sufficient time to remove said metal residue.

4,341,595  
ROTARY VANE TYPE EVAPORATOR  
Koichi Chino, Hitachi; Hideo Yusa, Katsuta; Akira Oda, Hitachi; Hideichi Miura, Tokaimura; Susumu Horiuchi, Hitachi, and Yoshiyuki Takamura, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
Division of Ser. No. 54,945, Jul. 5, 1979, Pat. No. 4,279,692.  
This application Nov. 30, 1980, Ser. No. 206,533  
Claims priority, application Japan, Jul. 5, 1978, 53/80997  
Int. Cl.<sup>3</sup> B01D 1/22  
U.S. Cl. 159—6 W 8 Claims



1. A rotary vane type evaporator comprising:  
a vessel having a substantially cylindrical inner peripheral surface defining a substantially cylindrical space about a main axis and having inlet means at one axial end for passing a solution into said vessel at the one end to form a solution region and move axially therethrough to be treated by evaporation so that its viscosity changes in the axial direction to form a slurry region in the axially intermediate portion of said vessel and a powder region at the

other axial end, and further having outlet means for removing the powder at the other end;  
means for heating at least a portion of said inner peripheral surface of said vessel for enhancing said evaporation;  
a rotor including a rotor shaft mounted in said vessel for rotation about said axis and a plurality of radially extending vanes mounted on said rotor shaft for rotation therewith adapted to force and spread said solution, slurry and powder over said vessel inner peripheral surface;  
said vanes being disposed in a plurality of stages arranged in the axial direction of said vessel, each region including at least one vane, each vane being pivotally mounted on said rotor shaft about a pivot axis parallel to and radially spaced from the axis of said rotor shaft, a shoe connected to the radially outer end of said vanes and each said shoe having a cylindrical surface slidingly engaging said vessel inner peripheral surface over an area extending along an arc in the circumferential direction of said vessel;  
said rotor including means to counteract the effect of axially changing viscosity and to urge said shoes against said vessel inner peripheral surface during rotation of said rotary shaft with radial acting centrifugal forces in said solution and powder regions that are substantially smaller than the radial forces within said slurry region so the shoes of the vanes of all the stages are worn at a substantially equal rate with use of an axially varying viscosity fluid, said means including a balance weight with a center of gravity being mounted on each said shoe for rotation therewith about the pivot axis and disposed to counteract the centrifugal force of the vane and shoe acting on said surface, the balance weight in a position of decreasing counterforce in the axial direction from the feed with the maximum centrifugal force being in an intermediate vane of the slurry region; and  
the position of said balance weight varying angularly about the pivot axis along the axial direction to thereby provide the positioning to change the centrifugal force provided by the balance weight from one region to another.

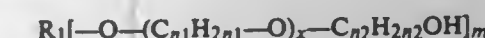
4,341,596  
METHOD OF PREPARING REINFORCED ASBESTOS DIAPHRAGMS FOR CHLORINE-CAUSTIC CELLS  
Paul R. Mucenieks, Lawrenceville, N.J., assignor to FMC Corporation, Philadelphia, Pa.  
Filed Oct. 14, 1980, Ser. No. 196,715  
Int. Cl.<sup>3</sup> C25B 13/00  
U.S. Cl. 162—105 5 Claims

1. A method of preparing a resin modified asbestos diaphragm for use in an electrolytic cell which comprises:  
(a) diluting a heat curable polyvinylidene fluoride homopolymer resin latex having a solids content no greater than about 5% with an aqueous sodium hydroxide solution containing from about 4% to about 5% sodium hydroxide, the amount of sodium hydroxide added to the homopolymer latex being sufficient to freely suspend the asbestos fibers which are added in a subsequent step so that the homopolymer resin is deposited upon the asbestos fibers;  
(b) adding asbestos fibers to the diluted resin latex with agitation to deposit resin on the asbestos fibers and form a slurry of resin coated asbestos fibers in water said asbestos fibers being present in a ratio of from about 6:1 to about 14:1 asbestos fibers to resin solids;  
(c) increasing the amount of sodium hydroxide in the resin coated asbestos fiber slurry to wet the asbestos fibers and to form a stable resin coated fiber dispersion;  
(d) depositing the resin coated asbestos fibers on a screen to form a diaphragm, and  
(e) curing the diaphragm at elevated temperature.

4,341,597  
FIBROUS MATERIAL HAVING GOOD DIMENSIONAL AND HEAT STABILITY  
Arne Andersson, Skovde; Jan Emanuelsson, Stenungsund; Ingemar Johansson, Stenungsund, and Svante Wahlen, Stenungsund, all of Sweden, assignors to Rockwool AB, Skovde, Sweden

Filed May 5, 1980, Ser. No. 146,901  
Claims priority, application Sweden, May 4, 1979, 7903928  
Int. Cl.<sup>3</sup> D21H 1/40, 3/02

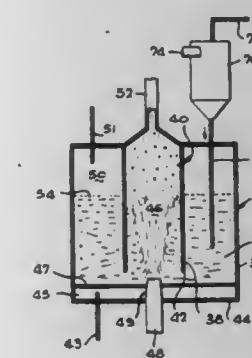
U.S. Cl. 162—127 16 Claims  
1. A fibrous material comprising cellulose fibers and mineral wool fibers in a weight ratio within the range from about 3:7 to about 10:1, and an amount within the range from about 1 to about 30% by weight based on the total weight of the cellulose fibers and mineral wool fibers in the fibrous material, the amount being sufficient to impart dimensional stability thereto, of a water-soluble polyoxyalkylene ether alcohol having the formula:



wherein:

R<sub>1</sub> is selected from the group consisting of hydrocarbon and hydrocarbon substituted with secondary hydroxyl groups and free from primary hydroxyl groups and having from one to about twenty-four carbon atoms;  
m is a number within the range from 1 to about 6;  
n<sub>1</sub> is a number within the range from about 2 to about 4;  
n<sub>2</sub> is a number within the range from 3 to 4; and  
—C<sub>n<sub>2</sub></sub>H<sub>2n<sub>2</sub></sub>—OH is a branched chain propylene or butylene group having only secondary OH groups; and  
the total of x in all of the m groups (x multiplied by m) is a number within the range from about 2 to about 200.

4,341,598  
FLUIDIZED COAL PYROLYSIS APPARATUS  
Norman W. Green, Upland, Calif., assignor to Occidental Research Corporation, Irvine, Calif.  
Division of Ser. No. 66,312, Aug. 14, 1979, Pat. No. 4,280,876, which is a continuation of Ser. No. 873,010, Oct. 27, 1978, abandoned. This application Jun. 30, 1980, Ser. No. 164,818  
Int. Cl.<sup>3</sup> C10B 1/04, 43/14, 49/22  
U.S. Cl. 202—99 3 Claims



1. An apparatus for the pyrolysis in a pyrolysis chamber of agglomerative coal particles which pass through a tacky state during pyrolysis without the formation of deposits on the pyrolysis chamber wall, which comprises:

- a pyrolysis chamber having a lower part;
- a first inlet means operative for introducing a pressurized fluidizing gas into said lower part of said pyrolysis chamber;
- a porous or perforated plate disposed in said lower part of said pyrolysis chamber above said first inlet means, and operative for permitting such pressurized fluidizing gas to flow substantially uniformly through said plate and operative for maintaining a fluidized bed of hot char particles in said pyrolysis chamber;
- an outer chamber, said pyrolysis chamber being positioned within said outer chamber and forming an annular

space between said outer chamber and said pyrolysis chamber, said porous or perforated plate also being disposed in the lower part of said annular space, said pyrolysis chamber being positioned above said porous or perforated plate so that there is a clearance space between said pyrolysis chamber and said porous or perforated plate,

(e) a standpipe positioned in said annular space and which is operative for receiving from a source and discharging such hot char particles into said annular space, wherein said porous or perforated plate is also operative for maintaining a fluidized bed of such hot char particles in said annular space by such introduction of such pressurized fluidized gas through said first inlet means, and wherein said pyrolysis chamber is in communication with said outer chamber in such a way that it is operative for permitting such hot char particles maintained in such a fluidized bed in said annular space to flow from said annular space through said clearance space and into said pyrolysis chamber above said plate, but wherein said pyrolysis chamber is not in communication with said outer chamber at the upper portion thereof above said fluidized bed of hot char particles in said annular space.

(f) a second inlet means in communication with said pyrolysis chamber operative for introducing agglomerative coal particles and a carrier gas into said lower part of said pyrolysis chamber and into the bottom of such a fluidized bed of hot char particles maintained in said pyrolysis chamber;

(g) a nozzle in communication with said second inlet means and operative for injecting upwardly and substantially centrally into such fluidized bed of hot char particles maintained in said pyrolysis chamber a high velocity fluid jet stream of such agglomerative coal particles in a carrier gas, said nozzle being operative for forming an upwardly expanding turbulent jet stream comprising such agglomerative coal particles and an entrained part of such hot char particles, and for heating such agglomerative coal particles by the transfer of heat from such entrained part of such hot char particles to such agglomerative coal particles so that by the time such agglomerative coal particles contact said pyrolysis chamber wall such agglomerative coal particles will no longer be in a tacky state which is sufficient to form a deposit on said pyrolysis chamber wall, and operative for producing a product char and gaseous products from such heated agglomerative coal particles;

(h) an outlet means connected to and in communication with said pyrolysis chamber and operative for removal from said pyrolysis chamber of a combined stream comprising such gaseous products and such carrier gas, and char solids comprising such product char and such entrained part of such hot char particles, but inoperative for removal of such hot char particles which have not been entrained in such upwardly explaining turbulent jet stream;

(i) a first cyclone separator in communication with said outlet means and operative for separating such char solids from such combined gaseous stream and for producing an effluent gas stream, said first cyclone separator having a solids outlet; and

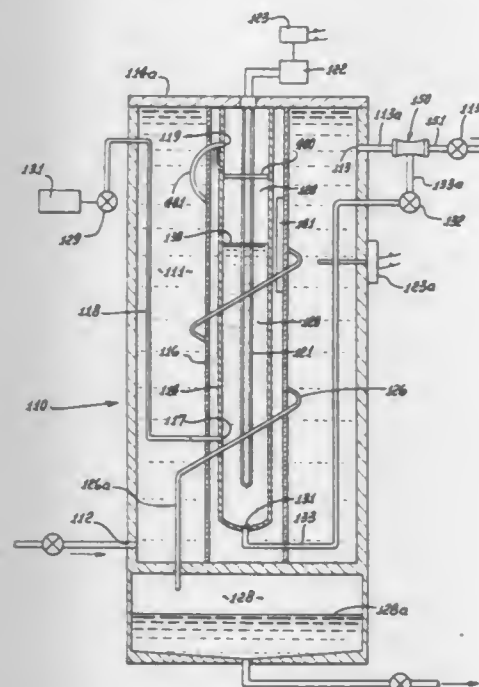
(j) a recycle means spaced between and in communication with the solids outlet of said first cyclone separator and said standpipe which is operative for recycling such separated char solids to said standpipe, wherein said recycle means comprises a char burner having an outlet, and a second cyclone separator having an inlet and a solids outlet, said char burner being in communication with the solids outlet of said first cyclone separator, said char burner being operative for reheating by partial combustion of at least part of such separated char solids and operative for forming such hot char particles and a combustion gas, wherein the outlet of said char burner is in communication with the inlet to said second cyclone



separator, said cyclone separator being operative for separating such hot char particles from such combustion gas, and wherein the solids outlet of said second cyclone separator is in communication with said standpipe.

**4,341,599**  
**HEATING APPARATUS**  
W. Keith R. Watson, P.O. Box 1537, Rancho Santa Fe, Calif. 92067, and Knoxville C. DeLise, 9043 Harmony Grove Rd., Escondido, Calif. 92025  
Filed Oct. 24, 1980, Ser. No. 200,530  
Int. Cl.<sup>3</sup> B01D 3/00

U.S. Cl. 202—176



- For use in heating fluid, apparatus comprising:
  - (a) an enclosed steam vessel having an inlet for water and an outlet for steam, and a fluid filled tank containing said vessel, and having a tank inlet and tank outlet,
  - (b) heating means associated with said vessel to heat water received therein and produce steam,
  - (c) a condenser connected with said vessel outlet to receive steam, said condenser having ductwork extending through the tank in heat transfer relation with said fluid in the tank to heat said fluid in response to condensation of steam in said condenser, the condenser having a condensate outlet, and
  - (d) other means to automatically remove solid particles and/or dissolved salts, from the vessel, to deliver said particles and/or salts to a heated fluid stream flowing from the tank outlet.

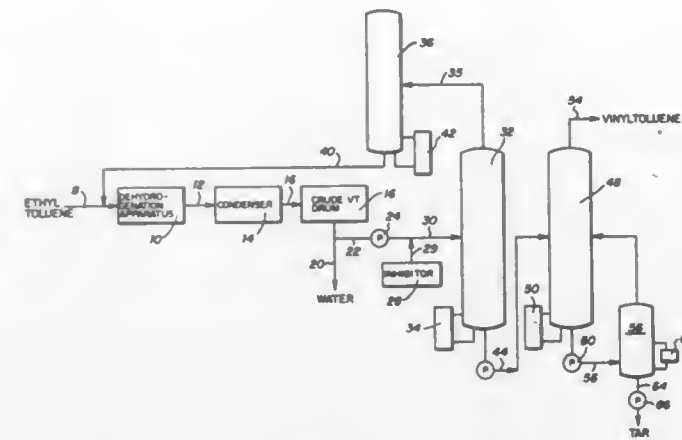
**4,341,600**  
**POLYMERIZATION INHIBITOR FOR VINYLTOLENE**  
James M. Watson, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.  
Filed Apr. 6, 1981, Ser. No. 251,368  
Int. Cl.<sup>3</sup> B01D 3/34

U.S. Cl. 203—9

1. A process for the distillation of vinyltoluene comprising

17 Claims

subjecting said vinyltoluene to distillation conditions in the presence of an effective polymerization inhibiting amount of a

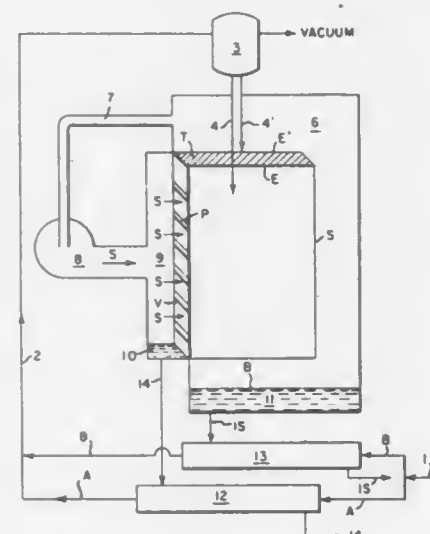


polymerization inhibitor mixture comprising dinitro-p-cresol and N-nitroso-diphenylamine.

**4,341,601**  
**WATER EVAPORATION PROCESS**  
Martval J. Hartig, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
Continuation-in-part of Ser. No. 123,023, Feb. 20, 1980, abandoned. This application Nov. 12, 1980, Ser. No. 206,288  
Int. Cl.<sup>3</sup> B01D 1/22, 1/28, 3/00

U.S. Cl. 203—11

10 Claims



1. In a process for the evaporation of water from an aqueous solution, wherein:
  - (1) The aqueous solution is preheated substantially by means of heat from hot fresh water, and when the volume of liquid concentrate produced downstream is means of heat of liquid concentrate, and is deaerated;
  - (2) the preheated aqueous solution is introduced at or near the top of a single- or multiple-stage falling film evaporator having a plurality of substantially vertical and equidistant heat exchange elements made of a film of a synthetic polymeric material, each such element having two outer heat exchange surfaces and two inner heat exchange surfaces, said outer surfaces communicating with a feed means for the aqueous solution at or near the top of the evaporator and with a liquid concentrate collection means at the bottom of the evaporator; and said inner surfaces being heated by steam having a temperature higher than the boiling point of the aqueous solution at the operating pressure, the average temperature difference,  $\Delta T$ , between condensing steam in contact with said inner surfaces and boiling temperature of the aqueous solution in contact with said outer surfaces being about  $0.1^{\circ}$ – $3.5^{\circ}$  C.;
  - (3) the aqueous solution is distributed among the several heat exchange elements and is allowed to fall as a film down their outer heat exchange surfaces, and a portion of the

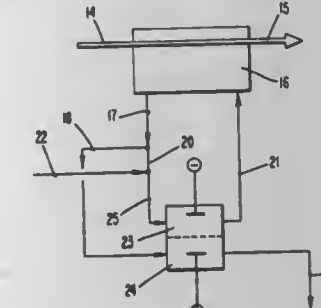
water evaporates from the aqueous solution at its boiling point, evaporation heat being supplied by steam in contact with the inner heat exchange surfaces of the heat exchange elements, whereby steam condenses to hot fresh water; hot fresh water being removed from the falling film evaporator and recovered, its heat being used to preheat the incoming aqueous solution; liquid concentrate, which collects at the bottom of heat exchange elements being removed from the falling film evaporator and disposed of, but if the volume of liquid concentrate is sufficient for an economically attractive operation, its heat being used to preheat the incoming aqueous solution; and steam formed by water evaporating from the outer surfaces of the heat exchange elements being either compressed and recirculated as the heating steam for the same stage of the falling film evaporator or introduced without compression to a second stage of the falling film evaporator operating in the same manner as the first stage but at a lower steam pressure and lower water boiling temperature; the improvement of:

- (a) providing liquid spreading means being made of fibers or particles which are wettable or made wettable by water, said liquid spreading means having a free area of at least 20%, and the spacing and dimensioning of the individual fibers or particles being such that the descending aqueous solution forms droplets which completely fill the voids, such that each liquid spreading means coacts with its closest outer heat exchange surface and with the flowing aqueous solution to form a stable, thin film over said outer heat exchange surface, thereby permitting even evaporation of water from each said surface without formation of either dry spots or rivulets, said liquid spreading means having a horizontal spreading means component;
- (b) maintaining the feed rate of the aqueous solution to be evaporated at less than 300 kg per linear horizontal meter of each outer heat exchange surface per hour, said feed rate always being higher than the evaporation rate of said solution; and
- (c) forming said stable, thin film over the entire area of each of said outer heat exchange surfaces.

**4,341,602**  
**EXTRACTION OF URANIUM USING ELECTROLYTIC OXIDIZATION AND REDUCTION IN BATH COMPARTMENTS OF A SINGLE CELL**  
Thomas Nenner, Chaville, and Dominique Foraison, Paris, both of France, assignors to Rhone-Poulenc Industries, Paris, France  
Filed Aug. 10, 1979, Ser. No. 65,504  
Claims priority, application France, Aug. 17, 1978, 78 23950  
Int. Cl.<sup>3</sup> C25B 1/00; C01G 43/00

U.S. Cl. 204—1.5

41 Claims



1. A continuous process for the recovery and concentration of uranium (VI) contained in an organic phase immiscible with water without recovering significant amounts of uranium (IV), which comprises:
  - (a) treating an organic phase, which is immiscible with water

and which contains uranium (VI), in one or a plurality of liquid-liquid contact zones, with an aqueous extraction solution containing a soluble oxidizing-reducing agent in the partially or completely reduced state, said oxidizing-reducing agent being capable of reducing uranium (VI) to uranium (IV) in said aqueous solution, whereby uranium (VI) is reduced and extracted into said aqueous solution in the form of uranium (IV) ions, and wherein said aqueous extraction solution entering the contact zone or zones issues entirely or partially from the cathodic compartment of an electrolytic separation cell under a direct current potential;

- (b) separating the organic phase depleted of uranium, and the aqueous phase containing the oxidizing-reducing agent and charged with uranium;
- (c) dividing the aqueous phase containing the oxidizing-reducing agent and charged with uranium into two flows;
- (d) supplying one of said two flows to the cathodic compartment of an electrolytic cell under a direct current potential, wherein the flow is electrolytically reduced, and then recycling the resultant aqueous flow issuing from said cathodic compartment as the aqueous extraction solution of step (a); and
- (e) supplying the other of said two flows to the anodic compartment of said electrolytic cell under a direct current potential, wherein the flow is electrolytically oxidized, and then recovering from said anodic compartment the resultant concentrated aqueous phase containing uranium substantially in the form of uranium (VI) and the oxidizing-reducing agent in its oxidized state.

**4,341,603**  
**PROCESS FOR MANUFACTURING SCREENS FOR CENTRIFUGALS, PARTICULARLY WORKING SCREENS FOR CONTINUOUSLY OPERATING SUGAR CENTRIFUGALS**

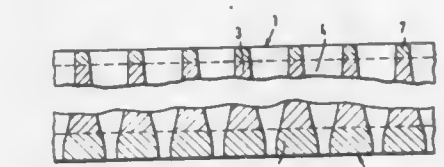
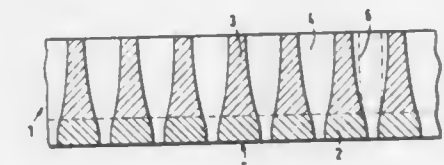
Ernst Heidborn, Brunswick, Fed. Rep. of Germany, assignor to Balco Filtertechnik GmbH, Brunswick, Fed. Rep. of Germany  
Filed Jun. 25, 1979, Ser. No. 51,634

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1978, 2829529

Int. Cl.<sup>3</sup> C25D 1/08

U.S. Cl. 204—11

9 Claims



1. A process for electroforming sugar centrifugal screens having screen slots and a given thickness, comprising preparing an electrically conducting matrix defining a screen pattern, depositing substantially non-etchable screen material by a first electrodeposition on said matrix, terminating said first electrodeposition of the screen material before said given screen thickness is reached and as soon as said screen slots in the substantially non-etchable screen material have reached a given dimension due to lateral growth of the deposited screen material, then depositing an etchable metallic support material by a second electrodeposition on one side of the non-etchable screen material until a thickness corresponding approximately



to said given screen thickness is reached whereby the screen slots in said screen material are gradually filling up during said second electrodeposition from said one side toward the opposite side of the screen material removing the partially finished screen from the matrix, directing an etchant against the surface of the screen material opposite said one side the removed, partially finished screen whereby the screen material itself forms a resist since said liquid etchant is aggressive on the supporting material but does not attack the screen material, and continuing the etchant treatment until the screen slots previously filled up with supporting material are cleared and holes are formed having substantially conical or slanted side walls through the supporting material on the rear side of the screen, whereby the slots in the screen material are defined by a sharp edge of the screen material only on one side of the finished sugar centrifugal screen.

4,341,604

## NOVEL ELECTROLYSIS PROCESS

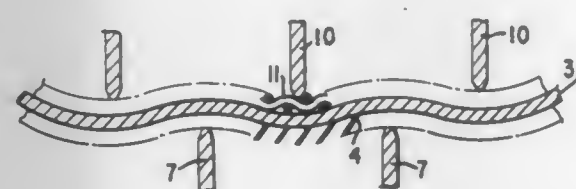
Oronzio DeNora, Milan, Italy, and Placido M. Spaziant, Lugano, Switzerland, assignors to Oronzio deNora Impianti Elettrochimici S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 57,255, Jul. 12, 1979. This application May 20, 1980, Ser. No. 151,695

Claims priority, application Italy, Jul. 27, 1978, 26171 A/78 Int. Cl.<sup>3</sup> C25G 1/34, 9/00

U.S. Cl. 204—98

40 Claims



1. A method of generating halogen which comprises electrolyzing an aqueous alkali metal halide in an electrolytic cell having an anode compartment and a cathode compartment separated by a sandwich, said sandwich comprising an ion permeable diaphragm having an oppositely charged electrode unit in contact with each side of the diaphragm, each said electrode unit having a porous electrode surface in direct contact with the side of the diaphragm and comprising an electroconductive porous screen engaging the surface and adapted to distribute current over said surface, maintaining an electrolyzing potential between said screens, applying resilient spring pressure at a plurality of spaced points of one screen while restraining more rigidly the other screen whereby to compress the electrode units and the diaphragm together, feeding alkali metal halide electrolyte to one electrode and feeding water to the other electrolyte.

4,341,605

## PROCESS FOR CATION PERMEABLE MEMBRANE WITH REINFORCEMENT FABRIC EMBEDDED THEREIN AND PRODUCT THEREOF

John C. Solenberger, Mt. Prospect, Ill., and Michael S. Withers, Landenberg, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 16, 1981, Ser. No. 225,640

Int. Cl.<sup>3</sup> C25B 1/34, 13/02, 13/08

U.S. Cl. 204—98

32 Claims

1. A process for making a reinforced membrane comprising the steps of:

- (a) laminating at a temperature from about 150° C. to about 350° C. first surfaces of both a first film and a reinforcement fabric, wherein said reinforcement fabric contacts a porous support material and during laminating, a vacuum causing a pressure differential of at least 5 mm Hg, draws the first surface of the reinforcement fabric and forces a portion of the first surface of the first film into contact with said porous support material;
- said film comprising a fluorine-containing polymer with

pendant side chains comprising sulfonyl groups present as —SO<sub>2</sub>F or —SO<sub>2</sub>Cl, or carboxyl groups present as —COOR where R is lower alkyl, or —CN groups, each of said sulfonyl or carboxyl groups attached to a carbon atom which has at least one fluorine atom connected thereto;

- (b) separating said reinforcement fabric and said first film from said porous support material whereby a laminate is obtained with holes in an area at least 5% of an overall surface area of said film;

- (c) laminating at a temperature from about 150° C. to 350° C. a second film with

- (i) the first surface of said first film, and
- (ii) a second surface of said reinforcement fabric, and during laminating a vacuum causing a pressure differential of at least 5 mm Hg draws the second film onto (i) and (ii), said second film comprising a fluorine-containing polymer with pendant side chains comprising sulfonyl groups present as —SO<sub>2</sub>F or —SO<sub>2</sub>Cl, or carboxyl groups present as —COOR where R is lower alkyl, or —CN groups, each of said sulfonyl or carboxyl groups attached to a carbon atom which has at least one fluorine atom connected thereto, causing embedment of said fabric in a matrix of at least one said fluorine-containing polymer and causing formation of a membrane substantially free of holes.

4,341,606

## METHOD OF OPERATING ELECTROLYTIC CELLS HAVING MASSIVE DUAL POROSITY GAS ELECTRODES

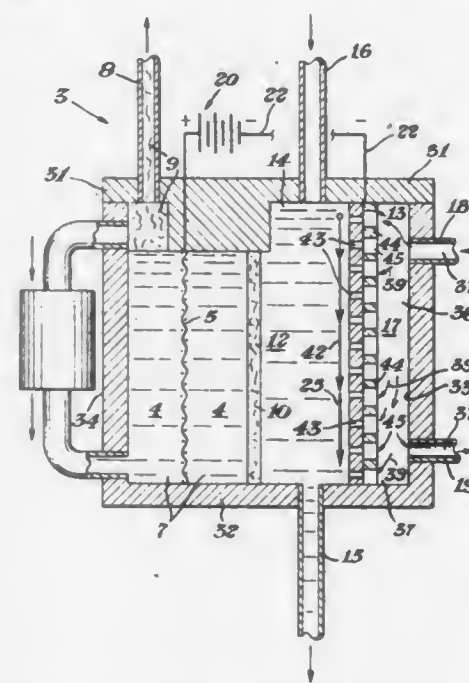
James A. McIntyre; Robert F. Phillips, both of Midland, and Joseph D. Lefevre, Bay City, all of Mich., assignors to The Dow Chemical Co., Midland, Mich.

Continuation-in-part of Ser. No. 939,598, Sep. 5, 1978, Pat. No. 4,260,469. This application Feb. 20, 1981, Ser. No. 236,355

Int. Cl.<sup>3</sup> C25B 1/34

U.S. Cl. 204—98

11 Claims



1. An electrolytic process comprising

- (a) contacting at least a portion of a first layer of a multi-layered cathode with an aqueous electrolyte, wherein the electrolyte exerts a hydraulic pressure on the cathode; said first layer having a plurality of passageways passing therethrough and connecting with a plurality of passageways passing through a second cathode layer; wherein the passageways of the first layer have a first capillary pressure and the passageways of the second layer have a second capillary pressure which is lower than the first capillary pressure;

- (b) contacting at least a portion of the second layer with an oxygen-containing gas at a pressure greater than the sum of the second capillary pressure and the hydraulic pressure of the electrolyte and less than the first capillary pressure; and
- (c) electrolyzing the electrolyte.

4,341,607

## SOLAR POWER SYSTEM REQUIRING NO ACTIVE CONTROL DEVICE

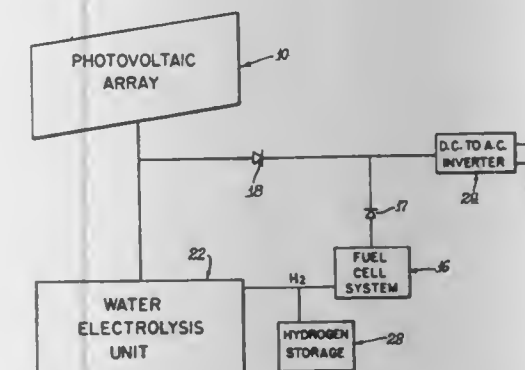
Raymond R. Tison, St. Johns, Mich., assignor to E:F Technology, Inc., St. Johns, Mich.

Filed Dec. 8, 1980, Ser. No. 214,193

Int. Cl.<sup>3</sup> C25B 1/02; H01L 31/04

U.S. Cl. 204—129

30 Claims



30. A method of increasing the useful power in a solar power system comprising the following steps:

- passing a portion of the current from the photovoltaic array through a water electrolysis unit which provides a voltage-dependent variable resistance load and produces hydrogen and oxygen;
- passing the remaining portion of the array current through a demand-dependent variable resistance load; and
- storing hydrogen produced in said electrolysis unit in a hydrogen storage chamber.

4,341,608

## HYDROGEN PRODUCTION BY BIOMASS PRODUCT DEPOLARIZED WATER ELECTROLYSIS

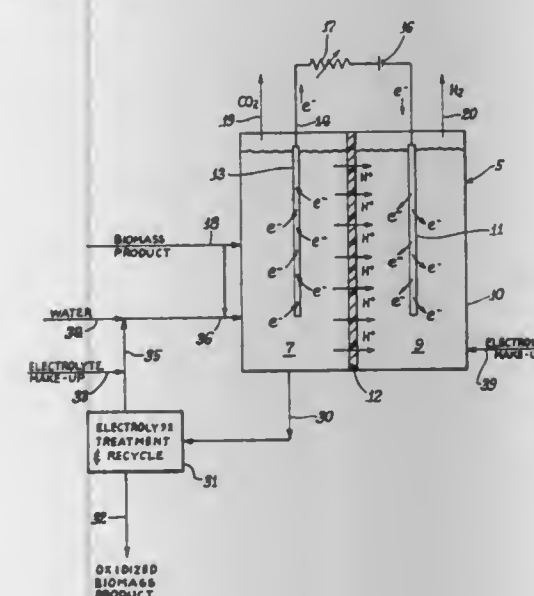
Michael R. St. John, Chicago, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Feb. 17, 1981, Ser. No. 234,692

Int. Cl.<sup>3</sup> C25B 1/04

U.S. Cl. 204—129

44 Claims



1. A process for hydrogen production by biomass product depolarized water electrolysis comprising: maintaining an electrical potential across a metallic anode in an anode zone and a metallic cathode in a cathode zone of an electrolytic cell;

oxidizing, in an aqueous electrolyte in said electrolytic cell anode zone, oxidizable biomass product selected from the group consisting of monosaccharides, lignins and mixtures thereof with water producing oxidized biomass product, hydrogen ions and electrons; transporting said hydrogen ions through said electrolyte to said cathode zone; forming molecular hydrogen in said cathode zone.

4,341,609

## ELECTROCHEMICAL CONVERSION OF BIOMASS

Abolghassem Eskamani, Aurora, and Helen D. Derner, Parma, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Feb. 26, 1981, Ser. No. 238,307

Int. Cl.<sup>3</sup> D21C 3/22

U.S. Cl. 204—132

10 Claims

1. A process for degrading a substrate of lignocellulose or constituents of lignocellulose, the process comprising placing the substrate into the anodic section of an electrolytic cell containing electrodes and an electrolyte selected from the group consisting of sodium hydroxide and sulfuric acid, and applying an electromotive force of sufficient strength to at least partially degrade the substrate.

4,341,610

## ENERGY EFFICIENT PROCESS FOR CONTINUOUS PRODUCTION OF THIN SEMICONDUCTOR FILMS ON METALLIC SUBSTRATES

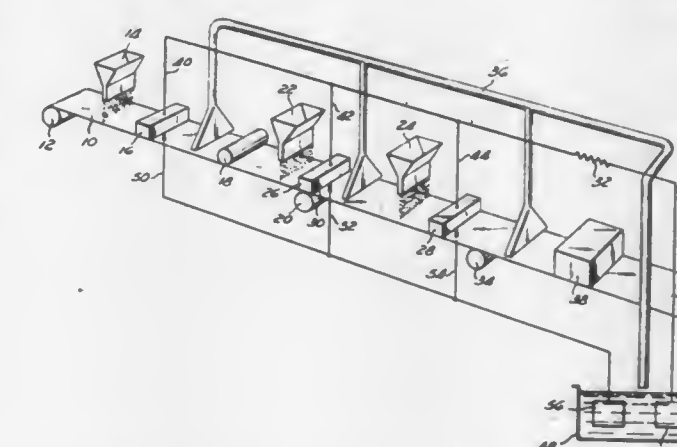
John C. Schumacher, 1444 Calle Buena Ventura, Oceanside, Calif. 92054

Division of Ser. No. 918,034, Jun. 22, 1978. This application Mar. 27, 1980, Ser. No. 134,446

Int. Cl.<sup>3</sup> C25D 17/00, 21/16

U.S. Cl. 204—206

4 Claims



1. An apparatus for providing a semiconductor matrix comprising:

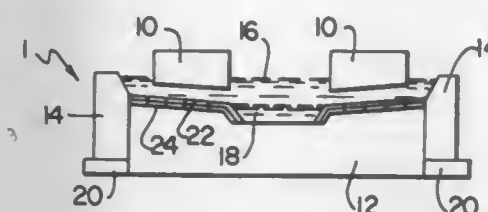
- (a) means for coating an electrical contact material with a solution containing ions of a semiconductor element and appropriate dopant;
- (b) means for contacting said solution with an alkali metal anode to produce a layer of doped elemental semiconductor on said electrical contact material, generation of alkali ions, and release of energy;
- (c) means for introducing an opposite type dopant to said electrical contact material; and
- (d) means for electrodepositing regenerated alkali metal of said alkali metal anode by employing the said released energy.



**4,341,611**  
**ALUMINA REDUCTION CELL**  
 Howard I. Kaplan, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.  
 Filed Dec. 18, 1980, Ser. No. 217,774  
 Int. Cl.<sup>3</sup> C25C 3/08

U.S. Cl. 204—243 R

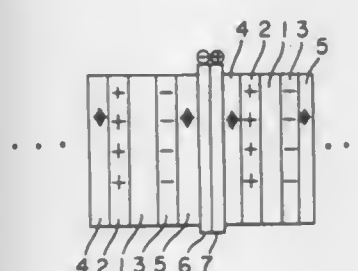
26 Claims



14. In an alumina reduction cell, said cell comprising an anode, sidewalls and a cathode, the improvement wherein said cathode comprises a carbonaceous bed, surface tiles, said surface tiles being formed from  $TiB_2$  or  $TiB_2-AlN$  mixtures, and intermediate tiles connecting said surface tiles to said carbonaceous bed and separating said surface tiles from said carbonaceous bed, said intermediate tiles having a composition different from said surface tiles and selected from the group consisting of nitrides, oxy-nitrides and carbides, to prevent reaction between said surface tiles and said carbonaceous bed in the presence of molten aluminum.

**4,341,612**  
**ELECTROLYTIC CELL**  
 Yoshio Oda; Takeshi Morimoto, and Kohji Suzuki, all of Yokohama, Japan, assignors to Asahi Glass Company, Limited, Tokyo, Japan  
 Filed May 22, 1980, Ser. No. 152,351  
 Claims priority, application Japan, Jun. 1, 1979, 54/67462  
 Int. Cl.<sup>3</sup> C25B 11/08; H01B 1/06  
 U.S. Cl. 204—253

5 Claims

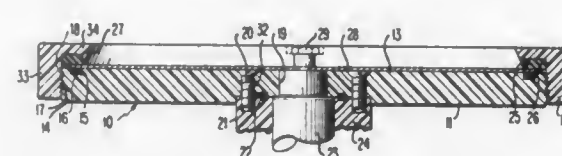


1. An electrolytic cell, comprising:  
 two or more units, wherein each unit comprises  
 a gas and liquid permeable anode wherein said anode contacts one surface of a cation exchange membrane and wherein said anode is made of a pyrochlore type complex oxide having the formula  $Ti_2Ru_{2-x}Ir_xO_7$  wherein  $x$  is from 0.3 to 1.5,  
 a gas and liquid permeable cathode wherein said cathode contacts the other surface of said membrane,  
 a first gas and liquid permeable current collector which closely contacts a back surface of said anode,  
 a second gas and liquid permeable current collector which closely contacts a back surface of said cathode, and  
 a partition wall made of an anode side conductor and a cathode side conductor wherein said anode said conductor contacts said first current collector and said anode side conductor contacts said second current collector.

**4,341,613**  
**APPARATUS FOR ELECTROFORMING**  
 John J. Prusak, and Marshall L. Whitehurst, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.  
 Filed Feb. 3, 1981, Ser. No. 231,266  
 Int. Cl.<sup>3</sup> C25D 1/10, 17/06

U.S. Cl. 204—281

5 Claims



1. An apparatus for holding a flat circular matrix of a first diameter during electroforming of a replica of a second smaller diameter on the surface of the matrix, said apparatus comprising in combination a disc member and a ring member; said ring member having a flat circular configuration with an outer diameter at least as large as said first diameter and having a male thread on the outer edge thereof, said disc member further having a flat face portion for receiving the matrix, said flat face portion including a first concentrically positioned circular seal member of said second diameter located so as to engage a matrix placed on said flat face portion; said ring member having an integral cylindrical portion and a radial portion, said cylindrical portion having an inner diameter with a female thread defined there which is threadably engaged with the male thread on the outer edge of the disc member, said radial portion of the ring member extending radially inward from said first portion for a predetermined distance sufficient to provide a mask over the outer edge of the matrix during electroforming of the replica, said radial portion further including a second concentrically positioned seal member of said second diameter in an opposing relation to said first seal member; whereby when a matrix is placed on said flat face portion of the disc member and the ring member is threaded toward the disc member the first and second seal members engage, hold, and seal the matrix for formation of said replica on the surface of the matrix.

**4,341,614**  
**PRODUCTION OF POROUS DIAPHRAGMS**  
 Aitken M. Couper, and Stuart F. Mellish, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England  
 Filed Oct. 30, 1978, Ser. No. 955,603  
 Claims priority, application United Kingdom, Nov. 15, 1977, 47442/77  
 Int. Cl.<sup>3</sup> C25B 13/04, 13/08

U.S. Cl. 204—296

6 Claims

1. A method of manufacturing a porous diaphragm of an organic polymeric material suitable for use as a diaphragm in an electrolytic cell which method comprises forming a sheet of a mixture of organic fluorine-containing polymeric material and particulate starch, contacting the sheet with dilute acid and thereafter heating the sheet to convert the starch to dextrin, and extracting the dextrin from the sheet.

**4,341,615**  
**DIAPHRAGM FOR ELECTROLYSIS AND PROCESS FOR THE PREPARATION THEREOF**  
 Jean Bachot, Fontenay-aux-Roses, and Jean Grosbois, L'Isle Adam, both of France, assignors to Chloe Chimie, Paris, France  
 Filed Jan. 21, 1981, Ser. No. 226,693  
 Claims priority, application France, Jan. 29, 1980, 80 01843  
 Int. Cl.<sup>3</sup> C25B 13/08, 13/02

U.S. Cl. 204—296

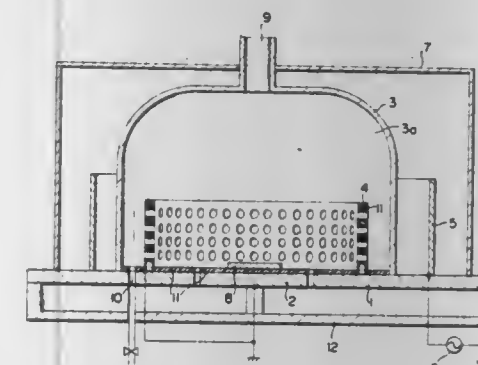
2 Claims

1. A porous hydrophilic diaphragm having a base of fluorinated polymers for electrolysis, characterized by the fact that

it is microporous and covered on at least a part of the inner surface of its pores with a copolymer of unsaturated carboxylic acid and non-ionic unsaturated monomer, the porosity being from about 50 to about 95 percent, the equivalent average diameter of the pores being from about 0.1 to about 12 micrometers, and 0.1 to 6 percent of the pore volume being occupied by dry polymer.

**4,341,616**  
**DRY ETCHING DEVICE**  
 Masao Nagatomo, Itami; Haruhiko Abe, Takarazuka, and Kazuo Mizuguchi, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan  
 Filed Dec. 11, 1980, Ser. No. 215,185  
 Claims priority, application Japan, Jan. 25, 1980, 55-8179  
 Int. Cl.<sup>3</sup> C23C 15/00; C23F 1/00  
 U.S. Cl. 204—298

7 Claims



1. A dry etching device comprising:  
 a support member which is capable of supporting at least an etching workpiece;  
 a case forming, in cooperation with the support member, a chamber which is capable of receiving said etching workpiece;  
 a first electrode having plasma permeability and which is provided within said chamber in a region peripheral to said etching workpiece;  
 a second electrode provided outside said chamber so as to oppose said first electrode;  
 an exhaust outlet provided on said chamber for reducing the pressure within said chamber;  
 reactant gas supply means including an inlet for introducing a reactant gas into said chamber;  
 a high frequency power source for producing a high frequency electrical field between said two electrodes to turn said reactant gas into an etchant plasma containing chemically active atoms and molecules; and  
 a resin coating consisting of resin material containing atoms or molecules of the same type as the chemically active atoms or molecules which constitute the etchant, formed on at least one of the surfaces of said first electrode and the surfaces of said support member within the chamber, said resin coating protecting said surfaces on which it is coated to prevent sputtering of said surfaces, and said coating atoms or molecules of the same type as the chemically active atoms which constitute the etchant being sputtered by the etchant for increasing the quantity of etchant within said chamber to speed etching of a workpiece on said support member.

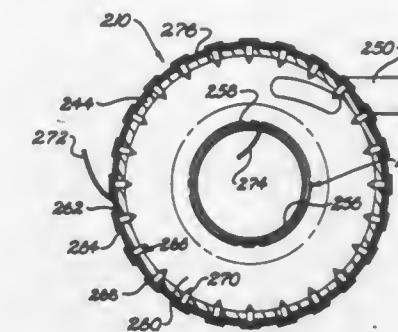
**4,341,617**  
**LIQUID TREATER HAVING ELECTRICAL CHARGE INJECTION MEANS**  
 Arthur S. King, 8021 Cherokee La., Leawood, Kans. 66206  
 Filed Jan. 30, 1981, Ser. No. 229,960  
 Int. Cl.<sup>3</sup> B03C 5/02

U.S. Cl. 204—302

4 Claims

1. An electrical treater for use in causing the flocculation of impurity particles in a liquid comprising:

means for defining a treating chamber;  
 means for introducing liquid to be treated into said chamber and for directing liquid out of said chamber after treatment; and  
 a pair of oppositely electrically charged electrodes associated with said chamber in disposition for exposing the liquid in said chamber to an electric field established between said electrodes,



at least one of said electrodes including a multiplicity of projections each directed toward the other electrode and terminating in an outermost, generally conical tip, said electrodes being electrically insulated from one another to prevent electrical current flow therebetween, said one electrode being provided with an electrical insulator covering said tips of the projections to prevent physical contact of the tips with liquid in said chamber.

**4,341,618**  
**PROCESS FOR THE LIQUEFACTION OF SOLID CARBONACEOUS MATERIALS WHEREIN NITROGEN IS SEPARATED FROM HYDROGEN VIA AMMONIA SYNTHESIS**

Steven S. Stetka, Fleetwood, Pa., and Francisco N. Nazario, Parsippany, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.  
 Continuation-in-part of Ser. No. 71,451, Aug. 31, 1979, abandoned. This application May 29, 1980, Ser. No. 154,349  
 Int. Cl.<sup>3</sup> C10G 1/00; C01C 1/04; C01B 21/00; C01C 3/00  
 U.S. Cl. 208—8 LE

1. In a process for the liquefaction of solid carbonaceous materials wherein a solid carbonaceous material is slurried in a suitable solvent or diluent and contacted with molecular hydrogen at an elevated temperature and pressure to produce a gaseous product, a liquid product and a bottoms product and wherein at least a portion of the bottoms is upgraded in a processing step wherein air is employed to produce a gaseous stream comprising  $H_2$  and  $N_2$  in an  $H_2:N_2$  ratio within the range from about 0.5:1 to about 1:1, the improvement wherein sufficient hydrogen is added to the gas comprising  $H_2:N_2$  to yield a gas comprising  $H_2$  and  $N_2$  in an  $H_2:N_2$  molar ratio of at least 75 and the molecular nitrogen is removed from the gas comprising  $H_2$  and  $N_2$  by ammonia synthesis.

**4,341,619**  
**SUPERCRITICAL TAR SAND EXTRACTION**  
 Forrest L. Poska, Dallas, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.  
 Filed Aug. 11, 1980, Ser. No. 176,749  
 Int. Cl.<sup>3</sup> C10G 1/00

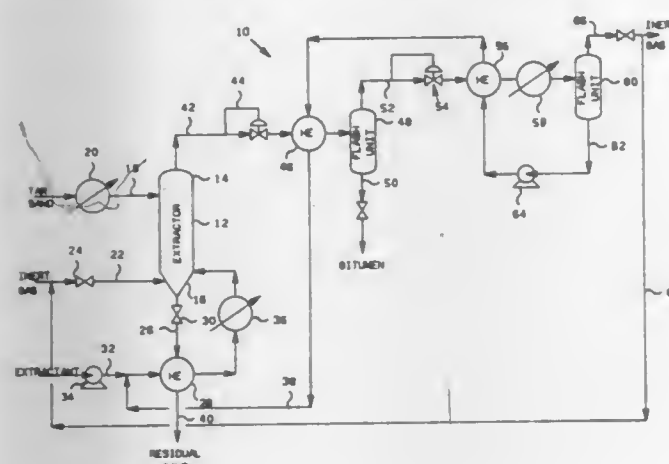
U.S. Cl. 208—11 LE

2 Claims

1. A process for the recovery for the recovery of carbonaceous materials from tar sand comprising  
 (a) heating said tar sands to a temperature near the extraction temperature,  
 (b) countercurrently in an extractor free of added water contacting a stream of tar sands and a stream of solvent under supercritical conditions with respect to the solvent, where the stream of tar sand is introduced into the upper portion of said extractor flowing essentially vertically downward, and where said solvent is introduced into the



- lower portion of said extractor flowing essentially vertically upward, such as to produce a stream of denuded sand and an extract stream essentially free of sand;
- (c) introducing a stream of inert gas into the lower portion of said extractor to purge said solvent from said denuded sand;
- (d) passing said stream of solvent prior to its contact with the tar sand in indirect heat exchange contact with said denuded sand and via additional heating means into said lower part of said extractor;
- (e) passing said extract stream through indirect heat exchange with a stream of recycled solvent;



- (f) flashing said extract stream from step (e) to recover a gas phase comprising said solvent and said inert gas, and a non-gaseous phase comprising bitumen;
- (g) cooling said gas phase by passing it in indirect heat exchange with said stream of recycled solvent;
- (h) separating the so-cooled gas phase into a stream of said inert gas and said stream of recycled solvent;
- (i) recycling said stream of recycled solvent to the extraction step;
- (j) recycling said stream of said inert gas into step (c), with the proviso that the entire process is carried out in the absence of added water.

4,341,620

# METHOD AND APPARATUS FOR PROCESSING OIL SHALE IN A ROTARY HEARTH

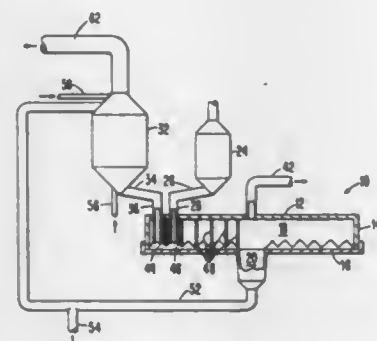
LaVaun S. Merrill, Jr., Englewood, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation of Ser. No. 2,413, Jan. 10, 1979, abandoned. This application Jan. 8, 1981, Ser. No. 232,944

Int. Cl.<sup>3</sup> C10G 1/02; C10B 1/06

U.S. Cl. 208—11 R

13 Claims



1. A process for recovering volatile hydrocarbons and hydrocarbon-containing oil shale including steps of:
- (1) supplying hydrocarbon-containing oil shale to the floor of a rabbled rotary hearth in a chamber;
- (2) supplying at least an equal weight proportion of heated spent oil shale heat exchange medium to the floor of said

- hearth in close radial proximity to the said hydrocarbon-containing oil shale;
- (3) mixing said hydrocarbon-containing oil shale and said heat exchange medium by means of relative rotary motion between said hearth and said rabbles, whereby heat is exchanged from the heat exchange medium to the hydrocarbon-containing oil shale to drive volatile hydrocarbons from said shale and leave spent oil shale;
- (4) quickly removing said volatile hydrocarbons from said chamber; and
- (5) recycling at least a portion of said spent oil shale produced from step 3 to a heating zone wherein the spent shale is heated to obtain heated spent oil shale exchange medium and then introducing said exchange medium to the floor of the hearth via step 2.

4,341,621

# NEOMESOPHASE FORMATION

Cornelius G. Fitzgerald, Wallingford, Pa., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 26, 1979, Ser. No. 23,753

Int. Cl.<sup>3</sup> C10C 3/08

U.S. Cl. 208—45

17 Claims

1. In the process of preparing an optically anisotropic deformable pitch by treating a carbonaceous isotropic pitch with an organic solvent system having a solubility parameter at 25° C. of between 8.0 and 9.5, said solvent system being in an amount sufficient to provide a solvent insoluble fraction which is capable of being converted into a pitch having greater than 75% of an optically anisotropic phase in less than 10 minutes when heated at about 30° C. above the point where the solvent insoluble fraction becomes liquid and thereafter separating and heating said solvent insoluble fraction whereby an optically anisotropic deformable pitch is obtained, the improvement comprising adding a dealkylation catalyst selected from heavy metal halides, Lewis acids, and Lewis acid salts to said organic solvent system and thereafter contacting said catalyst and said pitch in said solvent system at temperatures ranging generally from about ambient temperature to about 250° C. for a time sufficient to increase the solvent insoluble fraction of the pitch over that normally present therein, thereafter separating said solvent insoluble fraction from said solvent system and heating said solvent insoluble fraction at from about 250° C. to about 400° C. whereby an optically anisotropic deformable pitch is obtained.

4,341,622

# MANUFACTURE OF BENZENE, TOLUENE AND XYLENE

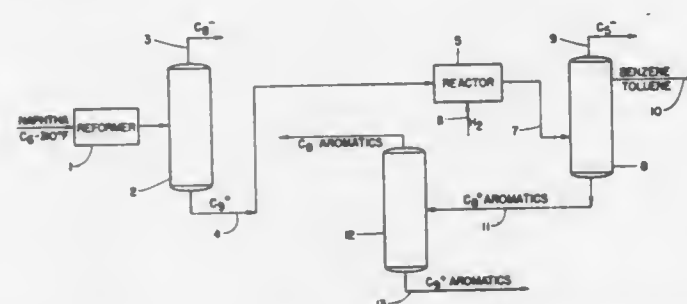
Samuel A. Tabak, Wenonah, and Roger A. Morrison, Deptford, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 4, 1980, Ser. No. 212,770

Int. Cl.<sup>3</sup> C10G 35/04; C07C 5/22, 4/12

U.S. Cl. 208—66

14 Claims



1. A process for the manufacture of aromatic hydrocarbons which comprises subjecting a hydrocarbon naphtha to catalytic reforming under conditions to convert naphthenes to aromatic hydrocarbons in a reformat reaction product, distilling said reformat to separate compounds of less than nine

carbons from a heavy reformat, contacting said heavy reformat at 800°–1000° F. with a zeolite catalyst having a constraint index of 1 to 12, a silica/alumina ratio above about 12 and reduced acid activity such that less than 2 weight percent of xylene is converted to compounds other than xylene when contacted with said catalyst at 900° F., 200 psig and LHSV of 5, whereby to convert ethylbenzene and alkylbenzenes of more than eight carbon atoms to benzene, toluene and xylene, distilling the product of said contacting to separate benzene, toluene and xylene.

4,341,623

# CATALYTIC CRACKING USING A MIXTURE OF CRACKING CATALYST PARTICLES WITH PARTICLES OF PLATINUM GROUP METAL OR RHENIUM ON INERT SUBSTRATES REGENERATED TO UP TO ABOUT 0.1% COKE

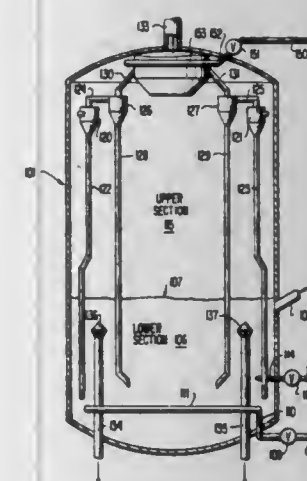
Ralph J. Bertolacini, Chesterton, and William L. Forsythe, Jr., Munster, both of Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 963,991, Nov. 27, 1978, abandoned, which is a continuation of Ser. No. 664,057, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 447,753, Mar. 4, 1974, abandoned. This application Jun. 11, 1980, Ser. No. 158,613

Int. Cl.<sup>3</sup> C10G 11/18, 11/05; B01J 23/96, 29/38

U.S. Cl. 208—113

7 Claims



1. A process for the fluidized catalytic cracking of higher molecular weight hydrocarbon to produce gasoline or distillate fuel range hydrocarbon comprising:
- (a) contacting in a cracking zone said higher molecular weight hydrocarbon with a cracking catalyst which becomes deactivated with coke deposits while being employed in said cracking, and thereby producing gasoline or distillate fuel range hydrocarbon;
- (b) withdrawing coked cracking catalyst particles from said cracking zone, said catalyst particles being in admixture with particles containing platinum group metal or rhenium oxidation promoter supported on a substrate which is substantially inert to said cracking;
- (c) contacting said mixed particles in a regeneration zone with an oxygen-containing regeneration gas stream in excess of that required for substantially complete combustion of carbon monoxide formed and substantially complete burning of coke from said particles to provide effluent gas containing up to about 1 volume % carbon monoxide and regenerated catalyst particles having up to about 0.1% coke, the amount of said oxidation promoter being effective to enhance the oxidation of carbon monoxide at regeneration temperature, said amount being up to about 10 ppm. based on said cracking catalyst, and the amount of said admixture of particles being sufficient to absorb the major amount of the heat from the combustion of said carbon monoxide and burning of said coke;
- (d) withdrawing from the said regeneration zone oxidation

promoter-containing particles admixed with cracking catalyst particles; and

- (e) returning said mixture to said cracking zone wherein cracking catalyst and said platinum group metal or rhenium oxidation promoter are contacted with said higher molecular weight hydrocarbon and said cracking is thereby obtained.

2. The process of claim 1 wherein the oxidation promoter is employed in an amount of about 0.1 ppm.

3. The process of claim 1 wherein the substrate for said oxidation promoter is selected from the group consisting of silica, alumina and silica-alumina.

4,341,624

# CARBO-METALLIC OIL CONVERSION

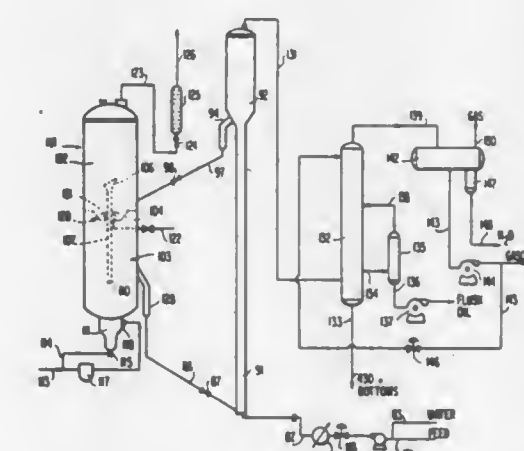
George D. Myers, Ashland, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 14, 1979, Ser. No. 94,216

Int. Cl.<sup>3</sup> C10G 11/05, 11/18

U.S. Cl. 208—120

83 Claims



1. A process for economically converting carbometallic oils to lighter products, comprising:
- I. providing a converter feed containing 650° F. + material, said 650° F. + material being characterized by a carbon residue on pyrolysis of at least about 1 and by containing at least about 4 parts per million of Nickel Equivalents of heavy metal(s);
- II. bringing said converter feed together with cracking catalyst to form a stream comprising a suspension of said catalyst in said converter feed and causing the resultant stream to flow through a progressive flow type reactor having an elongated reaction chamber which is at least in part vertical or inclined for a vapor residence time in the range of about 0.5 to about 10 seconds at a reaction chamber outlet temperature of about 900° to about 1400° F. and under a pressure of about 10 to about 50 pounds per square inch absolute sufficient for causing a conversion per pass in the range of about 50% to about 90% while producing coke in amounts in the range of about 6 to about 14% by weight based on fresh feed, and laying down coke on the catalyst in amounts in the range of about 0.3 to about 3% by weight;
- III. ballistically separating said catalyst from the stream of hydrocarbons formed by vaporized feed and resultant cracking products in the elongated reaction chamber by projecting catalyst particles in a direction established by said elongated reaction chamber or an extension thereof, and causing said products to make an abrupt change of direction relative to the direction in which said catalyst particles are projects;
- IV. stripping hydrocarbons from said separated catalyst;
- V. regenerating said catalyst; and
- VI. recycling the regenerated catalyst to the reactor for contact with fresh feed.



**4,341,625**  
**METHOD FOR PREPARING A CATALYST CARRIER, A CATALYST CONTAINING THE CARRIER, AND A HYDROCARBON HYDRODESULFURIZATION PROCESS USING THE CATALYST**

Paul W. Tamm, Greenbrae, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 91,305, Nov. 5, 1979, abandoned, which is a continuation of Ser. No. 859,421, Dec. 12, 1977, abandoned, which is a continuation of Ser. No. 496,788, Aug. 12, 1974, Pat. No. 4,113,661, which is a continuation-in-part of Ser. No. 387,100, Aug. 9, 1973, abandoned. This application Jun. 16, 1980, Ser. No. 159,887

The portion of the term of this patent subsequent to Jan. 3, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> C10G 45/06

U.S. Cl. 208—216 PP 12 Claims

1. A process for hydrodesulfurizing a hydrocarbon feed containing at least 10 ppm metals which comprises contacting the feedstock under hydrodesulfurizing conditions with a catalyst composition comprising an alumina support, a Group VIB component and a Group VIII component, said components being selected from the group consisting of the metals, oxides and sulfides of the elements of Groups VIB and VIII, said support having a pore volume in the range from about 0.5 to about 1.1 cubic centimeters per gram and having at least 70 percent of said pore volume in pores having a diameter between 80 and 150 Angstroms and less than 3 percent of said pore volume in pores having a diameter above 1000 Angstroms, said pore size distribution for said support corresponding to values obtained by using mercury porosimetry.

**4,341,626**  
**PROCESS FOR THE FLOTATION OF SULFIDE MINERALS EMPLOYING ALKYLARYL HYDROCARBON COMPOUNDS**

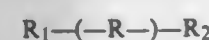
David L. Dauplaise, New Canaan, and D. R. Nagaraj, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 22, 1980, Ser. No. 218,373

Int. Cl.<sup>3</sup> B03D 1/02

U.S. Cl. 209—166 11 Claims

1. A process for the froth flotation of sulfide ores comprising adding to a flotation circuit an effective amount of a frother and a collector wherein said collector is of the general formula



wherein

- R is benzene or naphthalene;
- R<sub>1</sub> and R<sub>2</sub> are alkyl or alkenyl groups having at least three carbon atoms each, except that R<sub>1</sub> may have less than three carbon atoms or may be hydrogen if:
  - R is naphthalene; or
  - R<sub>2</sub> is more than six carbon atoms; and
- the total number of carbon atoms of R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> taken together is not greater than about 20; and wherein said collector is derived from alkylating an aromatic compound with an olefin, conditioning the sulfide ore, introducing a gas into the circuit to effect frothing and thereafter recovering the mineral values.

**4,341,627**  
**SCREEN SEPARATOR**

Joe K. Heilhecker, Houston, Tex., assignor to The Brandt Company, Houston, Tex.

Filed May 6, 1981, Ser. No. 261,144

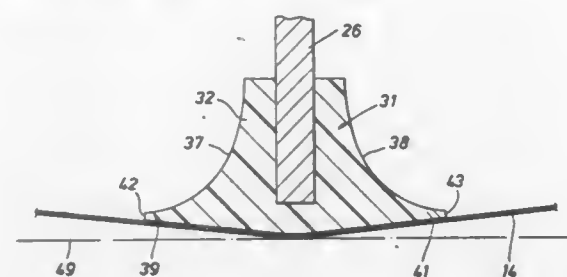
Int. Cl.<sup>3</sup> B07B 1/46

U.S. Cl. 209—409 10 Claims

1. In an oscillating separator mechanism having a screen framework mounting a screen at its peripheral edges between parallel side members adapted to place the screen into tension, at least one cushion rail fixedly disposed between the parallel

side members, and a resilient screen cushion carried by the cushion rail in tight engagement with the tensioned screen, the improvement comprising:

- said resilient screen cushion having an elongated body with a longitudinal slot in its top side for receiving the lower edge of the cushion rail,
- said body having diverging sides extending from the top side adjacent said slot to flared lips at each edge on the bottom side of said body,



- said bottom side of said body having a concave surface between said flared lips before said screen cushion is in contact with said screen, and
- said bottom side of said body producing a downward bow in said screen after being placed under tension in the screen framework and said bottom side providing a surface conforming to the curvature of the bowed screen with substantial compression being extended by said flared lips against said screen to prevent particulate matter from entering and being trapped between said screen cushion and the tensioned screen it engages.

**4,341,628**  
**BELT PRESSURE FILTER**

Susumu Fujinami, Kobe; Hiroaki Miyamoto, Kashihara; Ryochi Morimine, Nara; Toshiki Fukuzawa, Osaka; Toshihiko Ueda, Suita; Shoji Umakoshi, Osaka, and Kiyohiko Tokunaga, Ikoma, all of Japan, assignors to Kubota Ltd., Osaka, Japan

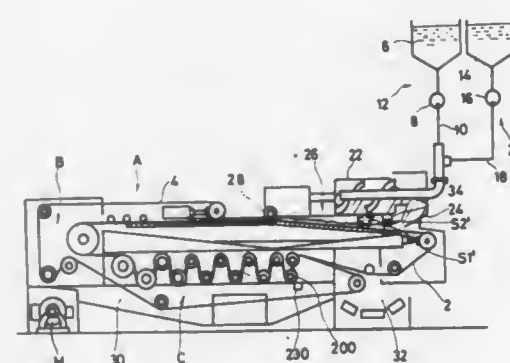
Filed Jan. 27, 1981, Ser. No. 228,913

Claims priority, application Japan, Jan. 30, 1980, 55/9806

Int. Cl.<sup>3</sup> B01D 33/04

U.S. Cl. 210—101

13 Claims



1. A belt pressure filter including a gravity dewatering zone for dewatering a material being dewatered by gravity, and in a forced dewatering zone for forced dewatering the material being processed through external pressure, comprising: endless filter belt means arranged to travel through said gravity dewatering zone and through said forced dewatering zone, material supply means for supplying said material being processed to said filter belt means in said gravity dewatering zone, layer thickness information providing means operatively located for sensing the thickness of a layer of material deposited onto said filter belt means by said material supply means for providing information representing the layer thickness of said material being supplied by said material supply means for processing, and filter belt travelling speed control means operatively connected to said layer thickness information providing

means for controlling the traveling speed of said filter belt means so that the filter belt speed is substantially proportional to said layer thickness.

**4,341,629**  
**MEANS FOR DESALINATION OF WATER THROUGH REVERSE OSMOSIS**

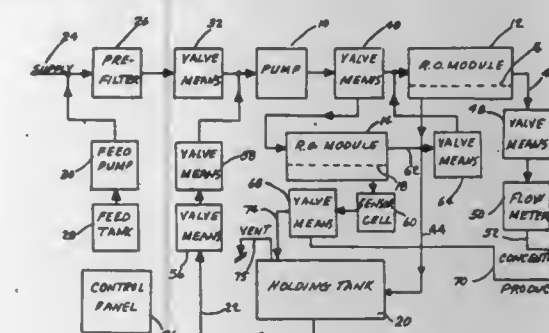
Robert A. Uhlinger, Carlsbad, Calif., assignor to Sand and Sea Industries, Inc., Carlsbad, Calif.

Filed Aug. 28, 1978, Ser. No. 937,324

Int. Cl.<sup>3</sup> B01D 31/00

U.S. Cl. 210—128

2 Claims



1. Means for the desalination of water through reverse osmosis, comprising:

- a single pump to pressurize water in the system,
- a source of water to be processed and reverse osmosis means including a membrane and operative automatically to continuously divide said water to be processed into a first permeate product and a first concentrate,
- said source of water to be purified being connected to said pump and said pump being connected to said reverse osmosis means to supply said water to be processed under pressure,
- a tank and means connecting said tank to said reverse osmosis means operative automatically to continuously receive and to store the first permeate product,
- valved operating means operative to disconnect said source of said water to be processed from said pump and to connect said tank to said pump to run said first permeate product through said reverse osmosis means a second time to produce a second permeate product and a second concentrate,
- a float-operated switch in said tank operating when the level of said first permeate product reaches a selected level, said valved operating means being automatically operative to disconnect said source and to connect said tank upon operation of said switch,
- a second lower float-operated switch in said tank operating when the level of said first permeate product has returned from said selected level to near empty and said valved operating means automatically operating upon operation of said second switch to discontinue feeding said first permeate product to said pump, and
- said float-operated switches and said valved operating means having time delay means so that the influence of sloshing on said switches is eliminated.

**4,341,630**  
**ARRANGEMENT FOR SEPARATION OF A SUSPENSION OR EMULSION FROM LIQUIDS BY FLOTATION**  
 Svatopluk Mackrle, Brno, and Milos Novotny, Ostrava, both of Czechoslovakia, assignors to Agrotechnika, narodny podnik, Zvolen, Czechoslovakia

Filed Jun. 15, 1981, Ser. No. 273,445

Claims priority, application Czechoslovakia, Jun. 16, 1980, 4273-80

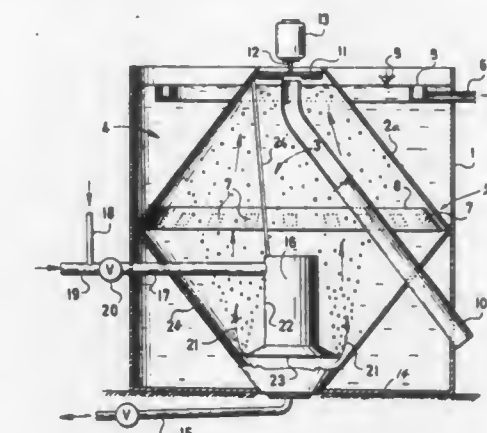
Int. Cl.<sup>3</sup> C02F 1/24

U.S. Cl. 210—221.2

8 Claims

1. Arrangement for the separation of suspensions or emulsions from liquids by flotation, comprising a vessel with a side wall, a partition wall within said side wall defining a flotation space with an upper and a lower part, means for supplying

liquid to be treated to the arrangement, means for the removal of treated liquid, means for the removal of floated foam and of sedimented sludge, the lower part of the flotation space widening from the bottom upwards to a top part, the supply of the treated liquid terminating in the flotation space, means for the removal of foam provided with an inlet at the top part of the flotation space and continuing downwards at an inclination beyond the flotation vessel, a collecting space for cleaned liquid formed between the wall of the vessel and the upper part



of the partition wall in the upper part of the tank and separated by the upper part of the partition wall from the flotation space, transfer openings provided in the partition wall above the maximum width thereof, said transfer openings connecting the flotation space with the space for cleaned liquid, a rectifying wall provided in front of said transfer openings for preventing passage of the floated suspension into the collecting space of cleaned liquid, and means including a collecting trough for the removal of cleaned liquid in the top part of the collecting space for cleaned liquid.

**4,341,631**  
**ULTRAFILTRATION AND REVERSE OSMOSIS DEVICE COMPRISING PLURAL CARBON TUBES BONDED TOGETHER**

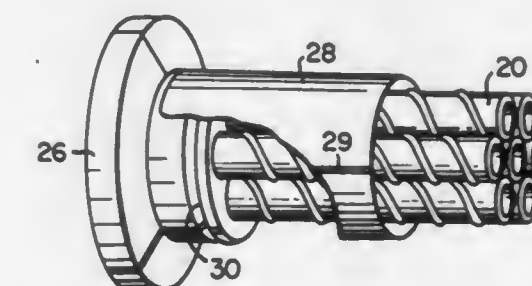
Bartholomew Hargitay, White Plains, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 73,295, Sep. 7, 1979, abandoned. This application Dec. 1, 1980, Ser. No. 211,680

Int. Cl.<sup>3</sup> B01D 31/00

U.S. Cl. 210—323.2

5 Claims



1. In an ultrafiltration and reverse osmosis device including a module shell containing a plurality of axially aligned, longitudinally coextensive, hollow, porous carbon tubes disposed in a permeate collection zone, all of said tubes having an internal diameter of from about 0.3 centimeters to about 3.0 centimeters and average pore diameters, at least 50 percent of which are within the range of from about 0.1 to about 2.0 micrometers, and having an internal coating of aggregates of metal oxide particles; the improvement whereby means are provided for rendering said device mechanically strong and able to withstand substantial axial compression without fracture of said tubes and at the same time is rendered more amenable to cleaning and sterilization, said improvement comprising an elongated







b. inserting the discharge tip of a hand operated pressure means into said cap inlet port in sealed relation and creating a pressure drop across said ion exchange particles by compressing said hand operated pressure means to force said eluent through said ion exchange particles, thereby reducing the time required for chromatographic separation.

4,341,636

## TREATMENT OF WASTEWATER

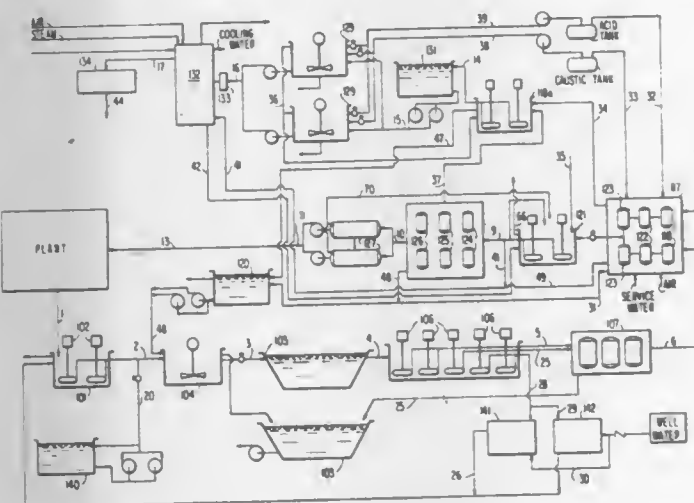
Ursula M. Harder; Karl D. Kaswinkel; James W. Gould; Jon K. West, all of Gainesville, Fla., and Michael J. Wynn, Latham, N.Y., assignors to General Electric Company, Gainesville, Fla.

Filed Sep. 26, 1980, Ser. No. 191,191

Int. Cl.<sup>3</sup> B01D 15/04, 23/14

U.S. Cl. 210—662

27 Claims



1. A process for treating water which contains undesired levels of at least heavy metals, alkali metals, and organic materials which comprises:

- measuring the pH of said water and adjusting said pH to about 10-11;
- subjecting said water from step (a) to filtration treatment for removal of heavy metals therefrom;
- subjecting the water to ion-exchange treatment wherein said ion-exchange treatment includes first subjecting said water to cation-exchange for removal of alkali metals therefrom; then subjecting the water to treatment with activated carbon for removal of organic material therefrom; and then subjecting the water to treatment with anion exchange for removal of acid ions therefrom.

4,341,637

## REMOVING AND COLLECTING OIL

Peter B. Smith, Saltersford Hall, Holmes Chapel, Cheshire, England

PCT No. PCT/GB79/00215, § 371 Date Aug. 19, 1980; § 102(e) Date Aug. 12, 1980, PCT Pub. No. WO80/01293, PCT Pub. Date Jun. 26, 1980

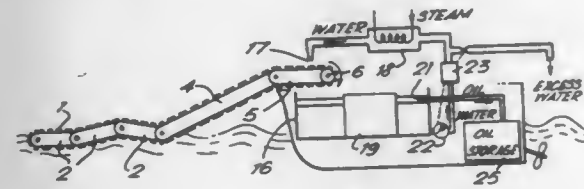
PCT Filed Dec. 19, 1979, Ser. No. 199,467

Claims priority, application United Kingdom, Dec. 19, 1978, 49122/78

Int. Cl.<sup>3</sup> C02F 1/40

U.S. Cl. 210—662

7 Claims



1. Apparatus for the removal and recovery of pollutant oil

and the like floating on the surface of a body of water, comprising:

recovery means for withdrawing pollutant oil and the like with possible additional water from the water surface and carrying it to a recovery station, said recovery means comprising an endless belt formed of expandable mesh material, and having oleophilic properties, which belt is disposed to pass round a plurality of pontoon sections floating at or adjacent the water surface and then out of the water to said recovery station, means for removing the pollutant oil and the like including means for spraying hot water over said recovery means to remove such pollutant oil and the like at said recovery station and means for expanding the mesh of the belt in a direction at right angles to the direction of movement thereof to facilitate detachment of pollutant oil and the like from said belt by said hot water spray; a receiving tank for receiving the oil/water washings resulting from said means for removing; an oil/water separator/coalescer for separating oil containing only a minor quantity of water from the washings; means for receiving such separated oil; means for recirculating water from said separator/coalescer and directing said recirculated water to a heating means and then to said means for spraying; and means for returning any excess purified water from said separator/coalescer to said body of water.

4,341,638

## PURIFICATION OF PHOSPHORIC ACID

William W. Berry, Lakeland, and Hanceford L. Allen, Bartow, both of Fla., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Oct. 17, 1979, Ser. No. 85,677

The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> C02F 1/56; C01B 25/16; B03B 1/00; B03D 3/06  
U.S. Cl. 210—666

6 Claims

1. A process for purifying phosphoric acid comprising the steps of:

- cooling the phosphoric acid;
- mixing said phosphoric acid with a body feed agent to cause flocules of suspended impurities to form;
- adding powdered carbon to the mixture of step (b) in an amount sufficient to absorb remaining impurities in the acid;
- adding a flocculating agent to the mixture of step (c) in an amount sufficient to cause said flocules to settle; and
- separating the supernatant acid solution from the settled sludge.

4,341,639

## WASTEWATER TREATMENT

Scott A. Santora, Hammonton, N.J., assignor to Waste Conversion Technology, Inc., Camden, N.J.

Division of Ser. No. 6,271, Jan. 25, 1979, Pat. No. 4,251,367.

This application Feb. 2, 1981, Ser. No. 230,714

Int. Cl.<sup>3</sup> C02F 1/28

1 Claim

U.S. Cl. 210—673

1. A wastewater treatment process comprising the steps of: mechanically separating solid organic sludge from the wastewater thereby producing a liquid product; introducing at least part of said sludge into a molten salt carbonizer, and treating said part of said sludge therein to produce activated carbon; and introducing at least part of the activated carbon so produced into said wastewater and maintaining contact between said activated carbon and said wastewater for a sufficient time to permit adsorption of dissolved organic substances to take place; in which said activated carbon is introduced into said wastewater before the mechanical separating step, in which at

4,341,641

## PROCESS FOR TREATING CYANIDE AND CYANATE CONTAINING WASTEWATERS

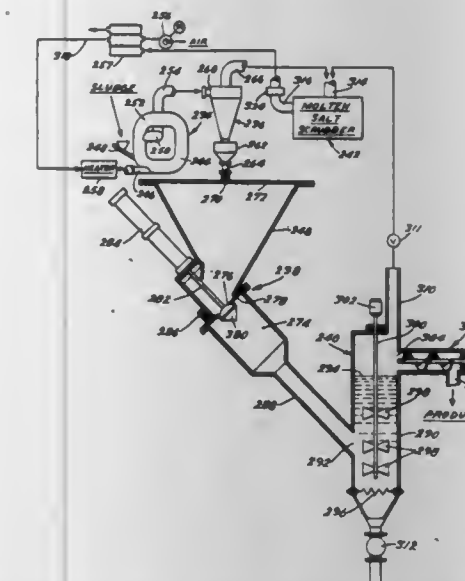
Frederick C. Novak, South Huntington, N.Y., assignor to TII Corporation, Lindenhurst, N.Y.

Continuation of Ser. No. 931,958, Aug. 8, 1978, abandoned. This application Jan. 15, 1980, Ser. No. 112,175

Int. Cl.<sup>3</sup> C02F 1/78

U.S. Cl. 210—752

38 Claims



and in which heavy metal compounds are separated from the carbon in the molten salt carbonizer by gravitational settling of heavy metal compound in a molten salt bath while reactivated carbon and activated carbon formed from sludge float to the surface of the bath.

4,341,640

## UREA HYDROLYSIS

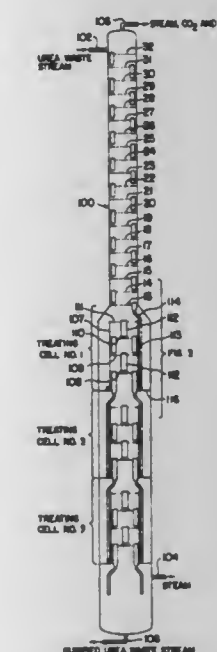
Norris J. Landis, Cleveland Heights, Ohio, assignor to Standard Oil Company, Ohio

Continuation of Ser. No. 726,893, Sep. 27, 1976, abandoned. This application Nov. 1, 1979, Ser. No. 90,202

Int. Cl.<sup>3</sup> B01D 3/26; C02F 1/02

U.S. Cl. 210—752

8 Claims



1. In the process for the purification of an aqueous urea waste stream in a vessel comprising hydrolyzing the urea to reduce the concentration of the urea in the waste stream and stripping the products of the urea hydrolysis and other gases from the waste stream with steam, the improvement comprising conducting the hydrolysis in at least one treating cell comprising an inner cylinder located within the vessel, having inside and outside surfaces, having one or more stripping trays connected to the inside surface, and a liquid holding zone wherein hydrolysis is performed, located between the outer surface of the cylinder and the vessel that is maintained substantially separate from the vapor streams.

1. A process for treating an aqueous cyanide-containing influent consisting essentially of:

- providing an ozone-contacting zone having an operating turbine gas injector associated therewith, said injector comprising: a hollow casing extending into said zone having an enlarged section at the lower end thereof, said enlarged section having an annular elongated gap which communicates with said zone; a shaft rotatably mounted in said casing; a turbine-bladed impeller rotor mounted on said shaft and extending into said enlarged section, said rotor having a liquid intake section; means for rotating said shaft; and a gas inlet communicating with said casing above said enlarged section;
- introducing said influent to said ozone-contacting zone; at least a portion of said influent being introduced to said liquid intake section;
- introducing an ozone-containing gas to said gas inlet;
- mixing by spinning said impeller at least a portion of said influent with said ozone-containing gas in said enlarged section to form a stream of bubbles of ozone-containing gas in said influent and injecting said stream into said zone;
- withdrawing a cyanide-depleted effluent from said zone;
- combining at least a portion of said cyanide depleted effluent with said cyanide-containing influent; and
- repeating steps (b) to (e).



# 4,341,642 PROCESS AND AN APPARATUS FOR CONTINUOUSLY FILTERING LIQUIDS

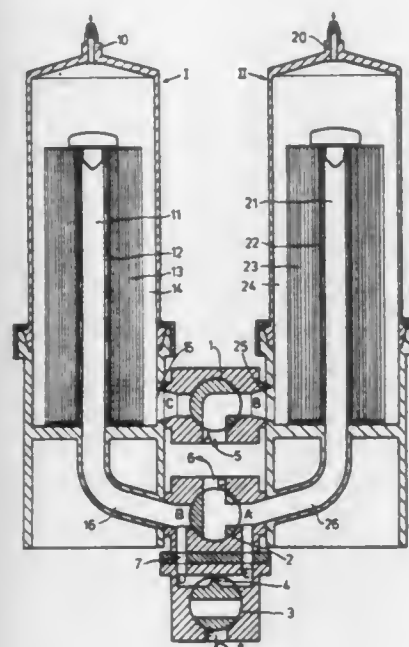
Günther Koepke, Odenthal; Hans Frenken, Odenthal-Osenau, and Josef Friedsam, Langenfeld, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 24, 1981, Ser. No. 295,809

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032690

Int. Cl.<sup>3</sup> B01D 37/00

U.S. Cl. 210—767



1. A process for continuously filtering liquids in at least two candle filter means comprising the steps of introducing a liquid through a first control means into a first candle filter means, filtering said introduced liquid in said first candle filter means from an outer chamber of said first filter means to an inner chamber of said first filter means, filtered liquid being passable from the inner chamber of the first filter means through a second control means into an inner chamber of a second candle filter means, a lesser flow of filtered liquid from the inner chamber of the first filter means being passable through a by-pass control means into the inner chamber of said second filter means, said by-pass control means being adjustable so that the filtered liquid from the inner chamber of the first filter means is drainable through said by-pass control means, said flow of fluid being reversible by introducing a liquid through said first control means into an outer chamber of said second candle filter means, filtering said introduced liquid in said second filter means from the outer chamber to an inner chamber, said filtered liquid being removable from the inner chamber of said second candle filter means by passing through said second control means to the outlet from the combination, said by-pass control means being adjustable so that the filtered liquid from the inner chamber of the second filter means is drainable through said by-pass control means, including the steps of changing the filtering action from the first candle filter means to the second candle filter means comprising first passing filtered liquid from the first candle filter means through the second control means to the outlet, second passing unfiltered liquid into the outer chamber of the second candle filter means through the first control means, third passing filtered liquid out of the inner chamber of the second candle filter means through the second control means to the outlet, draining liquid out of the first candle filter means through the by-pass control means to outside the combination, and including the steps of passing liquid through a candle

filter means and then flowing the liquid away and venting the liquid from said filter means.

# 4,341,643 SETTLING TANKS FOR WASTE DISPOSAL

Bernard Brodoff, 4200-22 Hutchinson River Pkwy. East, Bronx, N.Y. 10475

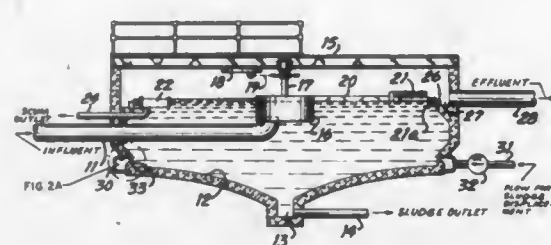
Continuation of Ser. No. 164,789, Jun. 30, 1980, abandoned.

This application Jul. 14, 1981, Ser. No. 283,150

Int. Cl.<sup>3</sup> B01D 21/02

6 Claims U.S. Cl. 210—803

8 Claims



7. A method of separating particulate matter in a settling tank having a contoured settling surface on which the particulate matter settles from a body of liquid in the tank, said contoured surface being substantially below the normal level of the liquid in the tank, comprising supplying liquid containing the particulate matter to the settling tank for removal of the particulate matter therefrom, discharging from the upper region of the settling tank the liquid from which the particulate matter has been removed to maintain a level of liquid in the tank, discharging the particulate matter at the downstream end of said contoured surface, introducing a fluid substantially below the normal level of the liquid in the tank and at substantially the level of said upstream end of the contoured settling surface and flowing said fluid across the contoured surface utilizing the Coanda effect to cause the fluid to cling to the contoured surface and displace the particulate matter settled on the contoured surface before discharging the particulate matter at the downstream end of the contoured surface.

# 4,341,644 QUATERNARY AMMONIUM SALT MIXTURES

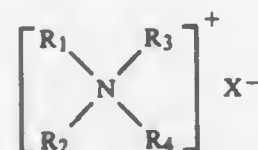
Yvan Bisschops, Antwerp; Emmanuel Draguez Tripels de Hault, Waterloo; Aleksef Jnoff, Nivelles, and Alain Delaby, Brussels, all of Belgium, assignors to Lilachim, Brussels, Belgium

Filed Sep. 28, 1981, Ser. No. 306,457

Claims priority, application Luxembourg, Oct. 10, 1980, 82836

Int. Cl.<sup>3</sup> D06M 13/46

9 Claims  
1. Quaternary ammonium salt compositions comprising a mixture of quaternary ammonium salts having the general formula



wherein R<sub>1</sub> and R<sub>2</sub> are aliphatic radicals having from 10 to 22 carbon atoms, and wherein (a) from 40 to 75% by weight of the entirety of these radicals are saturated aliphatic straight chains, and (b) from 5 to 45% by weight of the entirety of these radicals are unsaturated aliphatic chains, and (c) from 3 to 55% by weight of the entirety of these radicals are branched aliphatic chains, the sum of a + b + c being equal to 100, and wherein R<sub>3</sub> and R<sub>4</sub>, which may be identical or different, are alkyl radicals having from 1 to 4 carbon atoms, and X is a conventional quaternary anion.

# 4,341,645 AQUEOUS DRILLING AND PACKER FLUIDS

Steven R. Blattell, and Larry W. Hilscher, both of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

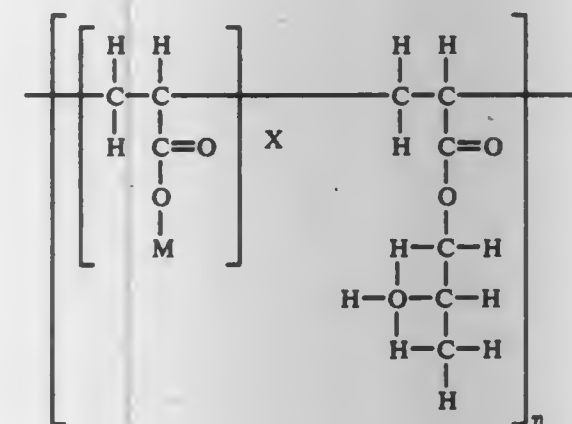
Filed Jan. 16, 1981, Ser. No. 225,671

Int. Cl.<sup>3</sup> C09K 7/02

U.S. Cl. 252—8.5 C

13 Claims

1. An aqueous drilling fluid comprising: an aqueous phase; a clay material suspended in the aqueous phase; from about 1 to about 10 ppb. of a water soluble lignosulfonate which contains a cation selected from the group consisting of iron, chromium, aluminum, copper, zirconium, titanium, and mixtures thereof; and from about 0.5 to about 5 ppb. of a copolymer of acrylic acid and hydroxypropyl acrylate having an average molecular weight in the range from about 5000 to about 10,000 and the following structure:



where n is the degree of polymerization to produce the molecular weight, x represents the mole ratio of acrylic acid salt to hydroxypropyl acrylate in the polymer, and M represents the salt forming cation which is selected from the group consisting of ammonium, the alkali metals, and mixtures thereof.

# 4,341,646 1-ETHOXY-1-ETHANOL ACETATE AND USES THEREOF FOR AUGMENTING OR ENHANCING THE AROMA OF TASTE OF CONSUMABLE MATERIALS

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 176,111, Aug. 7, 1980, Pat. No. 4,296,137.

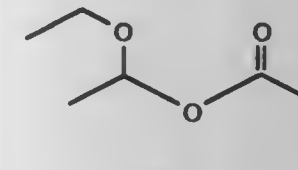
This application Jul. 6, 1981, Ser. No. 280,272

Int. Cl.<sup>3</sup> D06M 13/18

U.S. Cl. 252—8.9

1 Claim

1. The process for augmenting or enhancing the aroma of a drier-added fabric softener article or a fabric softener composition comprising the step of adding to at least one component of a drier-added fabric softener article or to a fabric softener composition, an aroma augmenting, modifying or enhancing quantity of 1-ethoxy-1-ethanol acetate having the structure:

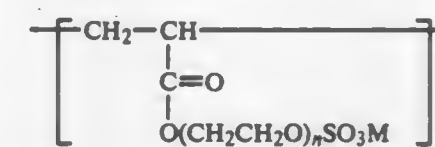


U.S. Cl. 252—8.55 D

9 Claims

1. A process for recovering hydrocarbons from a subterra-

nean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises: (A) injecting into the formation via an injection well a drive fluid comprising water having dissolved therein about 0.01 to about 5.0 weight percent of a sulfated, ethoxylated acrylic acid polymer having recurring units of the formula:



wherein the number average molecular weight is about 3,000 to about 50,000 wherein n is an integer of from 1 to 5 and M is selected from the group consisting of hydrogen, sodium, potassium and ammonium.

(B) forcing the said fluid through the formation, and, (C) recovering hydrocarbons through the production well.

# 4,341,648 METHOD FOR MANUFACTURING MAGNETIC POWDER FOR HIGH DENSITY MAGNETIC RECORDING

Osamu Kubo; Tadashi Ido; Tutomu Nomura, and Koichiro Inomata, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 3, 1980, Ser. No. 203,153

Claims priority, application Japan, Nov. 8, 1979, 54-143859

Int. Cl.<sup>3</sup> C04B 35/26

12 Claims  
1. A method for manufacturing a magnetic powder for high density magnetic recording having a particle size within the range of 0.01 to 0.3 microns, comprising: mixing, together with a glass forming substance, metal oxide or metal oxide precursor components of a substituted ferrite having the formula:

AFe<sub>12-2x</sub>Co<sub>2x</sub>M<sub>2x</sub>O<sub>19</sub> or AFe<sub>12-3/2x</sub>Co<sub>3/2x</sub>M<sub>3/2x</sub>O<sub>19</sub>

wherein A is at least one element selected from the group consisting of barium, strontium, lead and calcium, M is at least one tetravalent element selected from the group consisting of titanium and germanium or at least one pentavalent element selected from the group consisting of vanadium, niobium, antimony and tantalum, and x is a value from 0.5 to 1.1; melting the mixture into a molten material; rapidly cooling the molten material to obtain an amorphous material; heat-treating the amorphous material in the range between 700° and 850° C. to precipitate a substituted hexagonal ferrite as mutually separated fine particles in the amorphous material; and separating the fine particles from the amorphous material wherein said metal oxide or metal oxide precursor components are mixed in an amount sufficient to provide, as said fine particles, a substituted ferrite of said formulation.

# 4,341,649 ENERGY STORAGE MEDIUM AND METHOD

Edward J. Burns, and Geoffrey T. White, both of Omaha, Nebr., assignors to InterNorth, Inc., Omaha, Nebr.

Filed Mar. 16, 1981, Ser. No. 243,760

Int. Cl.<sup>3</sup> C09K 5/06

U.S. Cl. 252—70

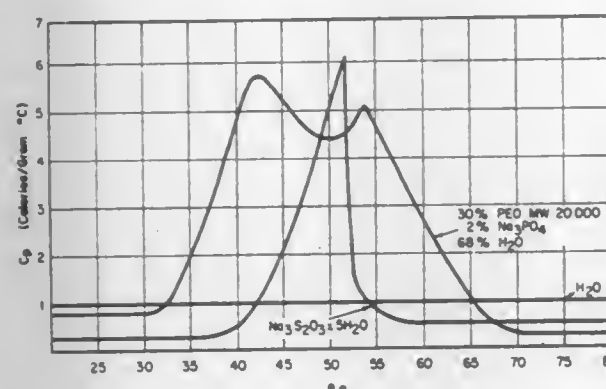
4 Claims

1. A method of storing energy which comprises heating a solution of polyethylene oxide, water, and a salt which causes gelation of polyethylene oxide and water to a temperature at or below about 90° C., thereby forming a gel with a high energy state.



3. A method of energy storage and transfer which comprises the steps of:

- (a) contacting a solution of polyethylene oxide, water, and a salt which causes gelation of polyethylene oxide in water with a warm medium such that the temperature of the solution is raised to at or below about 90° C., thereby forming a gel with a high energy state,



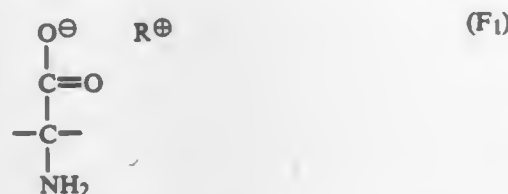
- (b) storing the energy transferred from the warm medium in the gel for a period of time, and  
(c) contacting the gel with a cool medium whereby the gel goes through a phase change to liquid form and the energy stored therein is transferred to the cool medium.

#### 4,341,650 CHEMICALLY STABILIZED AZULMIC ACIDS, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Kuno Wagner, Leverkusen, and Kurt Findeisen, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Division of Ser. No. 64,350, Aug. 3, 1979, Pat. No. 4,263,781.  
This application Nov. 28, 1980, Ser. No. 210,943  
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836154

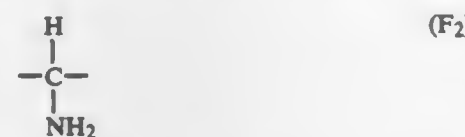
Int. Cl.<sup>3</sup> C08F 4/00; C08G 18/72; C08L 61/20, 61/32  
U.S. Cl. 252—182 1 Claim

1. A method of synthesizing a formose sugar mixture from an aqueous formalin solution of high strength using a catalyst, characterized in that the catalyst is an azulmic acid product comprising azulmic acid, stabilized by reaction with an amino-plast-forming agent and a carbonyl compound or, optionally a chemically modified, condensation product thereof, containing from 0.5 to 55% by weight of ionic groups of the general formula



in which

R represents hydrogen, ammonium, one equivalent of a protonated or quaternized organic nitrogen base or of a sulfonium cation or one equivalent of a metal cation, and containing from 0.5 to 15 percent by weight of groups formed by decarboxylation reactions, of the formula



which azulmic acid product also contains calcium hydroxide, calcium carbonate, lead hydroxide, lead oxide, aluminum hy-

droxide, magnesium hydroxide, zinc hydroxide, tin hydroxide or a mixture of any of these.

#### 4,341,651 COMPOSITIONS AND METHODS FOR GENERATION OF GASES CONTAINING HYDROGEN OR HYDROGEN ISOTOPES

Werner F. Beckert, Las Vegas, Nev.; William H. Barber, Brandywine, Md.; Richard E. Bowen, Woodbridge, and Ottmar H. Dengel, Front Royal, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 26, 1980, Ser. No. 181,526  
Int. Cl.<sup>3</sup> C01B 1/07

U.S. Cl. 252—188.25 19 Claims

1. A composition for generating hydrogen, hydrogen isotopes, and mixtures thereof consisting of a metal hydride selected from the class consisting of lithium hydride, magnesium hydride, calcium hydride, sodium hydride, and mixtures thereof; and an ammonium or hydrazinium salt of an inorganic acid anion selected from the class consisting of chloride, bromide, iodide, nitrate, phosphate, perchlorate, and mixtures thereof in an effective amount.

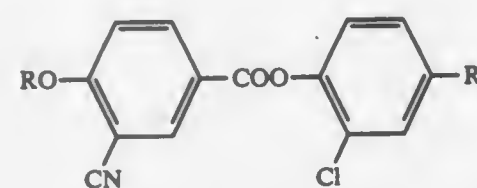
#### 4,341,652 ESTER COMPOUNDS, LIQUID CRYSTAL COMPOSITION INCLUDING SAME AND METHOD OF PRODUCTION

Katsumori Takei; Sadao Kanbe, and Yoshio Shionozaki, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jul. 18, 1980, Ser. No. 171,938  
Claims priority, application Japan, Jul. 20, 1979, 54/93082; Dec. 28, 1979, 54/171819

Int. Cl.<sup>3</sup> C09K 3/34; G02F 1/13; C07C 121/60, 121/75  
U.S. Cl. 252—299.5 21 Claims

1. An ester compound represented by the general formula



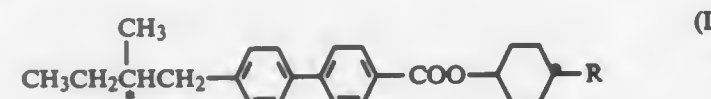
wherein R and R' are alkyl groups selected from the group consisting of straight-chain alkyl groups having from one to eight carbon atoms for defining a (2'-chloro-4'-n-alkylphenyl)-3-cyano-4-n-alkoxybenzoate.

#### 4,341,653 LIQUID-CRYSTALLINE 4-ALKYLCYCLOHEXYL ESTERS

Takashi Inukai; Kenji Furukawa; Shigeru Sugimori, and Hideo Sato, all of Yokohamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Feb. 26, 1981, Ser. No. 238,209  
Claims priority, application Japan, Feb. 29, 1980, 55-24865  
Int. Cl.<sup>3</sup> C09K 3/34; G02F 1/13; C07C 69/75, 69/76

U.S. Cl. 252—299.63 4 Claims  
1. Trans-4'-alkylcyclohexyl esters of 4'-(2-methyl-butyl)-4-biphenylcarboxylic acid expressed by the general formula



wherein R represents a straight chain alkyl group having 1 to 10 carbon atoms, and the symbol \* represents an asymmetric carbon atom.

#### 4,341,654 GETTER FOR MELT-GROWN SCINTILLATOR INGOT Carl F. Swinehart, University Heights, Ohio, assignor to The Harshaw Chemical Company, Cleveland, Ohio Division of Ser. No. 931,323, Aug. 7, 1978, Pat. No. 4,277,303. This application Mar. 9, 1981, Ser. No. 241,566 Int. Cl.<sup>3</sup> C09K 11/12

U.S. Cl. 252—301.4 H 6 Claims

1. A scintillator crystal having a characteristic resistance to visible darkening when exposed for a period of one minute to a 30 watt ultraviolet lamp emitting predominantly 3600 Å wavelength radiation, said crystal consisting essentially of an alkali metal halide, optionally activated with an effective amount of an activator to exhibit scintillation, and having distributed therein from about 5 parts to about 1000 parts per million by weight (ppm) of melt, of each component of a combination getter consisting essentially of reactive oxides of boron as one component, and an insoluble but active silicon dioxide as the other component, at least some of each component being present as a reaction product with said melt, and said ingot exhibiting borate absorption in its transmission spectrum.

#### 4,341,655 METHOD OF PREPARING COLLOIDAL SOL OF PENTAVALENT ANTIMONY John G. Richardson, Middleburg Heights, Ohio, assignor to The Harshaw Chemical Company, Cleveland, Ohio Filed Mar. 28, 1980, Ser. No. 135,046 Int. Cl.<sup>3</sup> B01J 13/00

U.S. Cl. 252—313 R 5 Claims

1. A process for preparing a colloidal aqueous sol of pentavalent antimony containing increased amounts of metal which comprises the steps of

- (a) preparing a mixture of a substantially water-insoluble crystalline metal antimonate and an aqueous pentavalent antimony sol,  
(b) agitating said mixture in the absence of cation exchange resins for a period of time sufficient to convert at least a portion of the crystalline metal antimonate to colloidal antimony, and  
(c) recovering the colloidal pentavalent antimony sol containing an increased amount of metal.

#### 4,341,656 FOAM INHIBITORS AND THEIR USE FOR DEFOAMING AQUEOUS SYSTEMS Heinz Abel, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y. Filed Oct. 25, 1979, Ser. No. 88,265 Claims priority, application Switzerland, Nov. 3, 1978, 11345/78

Int. Cl.<sup>3</sup> B01D 19/04 19 Claims

1. A foam inhibitor for aqueous systems which comprises  
(1) 1 to 10% by weight of a fatty acid salt of a polyvalent metal,  
(2) 1 to 6% by weight of an anionic surfactant or of a non-ionic reaction product of an alcohol or alkylphenol with an alkylene oxide,  
(3) 0.5 to 10% by weight of an aliphatic alcohol of 5 to 10 carbon atoms or of a mixture of such alcohols, and  
(4) 74 to 97.5% of a hydrophobic organic solvent or solvent mixture which is different from component (3).  
17. A method of defoaming aqueous systems, which comprises treating said systems with a foam inhibitor as claimed in claim 1 or with a foam inhibitor preparation as claimed in claim 15.

#### 4,341,657 USE OF QUATERNIZED DERIVATIVES OF POLYMERIZED PYRIDINES AND QUINOLINES AS CORROSION INHIBITORS Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo. Division of Ser. No. 32,044, Apr. 23, 1979, Pat. No. 4,297,484. This application Mar. 12, 1981, Ser. No. 242,863 Int. Cl.<sup>3</sup> C09K 3/00

U.S. Cl. 252—390 14 Claims

1. A process of inhibiting corrosion which comprises treating a system with a quaternized derivative of polymerized pyridine or quinoline compounds, which compounds prior to polymerization are selected from the group consisting of pyridine, 2-methyl pyridine, 4-methyl pyridine, 4-phenyl pyridine, 4-ethyl pyridine, 2-hydroxypyridine, 2,4-lutidine, quinoline, 2-methyl quinoline and 4-methyl quinoline; the nitrogen atoms of which are quaternized by treating said polymerized compounds with a quaternizing agent selected from the group consisting of methyl iodide, ethyl iodide, propyl iodide, ethyl bromide, benzyl bromide, butyl bromide, dodecyl bromide, benzyl chloride, dodecyl benzyl chloride, ethyl bromoacetate, dimethyl sulfate, tetradecyl bromide, and octyl bromide.

#### 4,341,658 CATALYST FOR REACTING PHENOLIC HYDROXYL GROUPS WITH EPOXY GROUPS Georgia A. Monnerat; George E. Ham; Thomas J. Hairston, all of Lake Jackson, Tex., and Melvin J. Hatch, Socorro, N. Mex., assignors to The Dow Chemical Co., Midland, Mich. Division of Ser. No. 139,071, Apr. 10, 1980, Pat. No. 4,276,406. This application Dec. 10, 1980, Ser. No. 214,936 Int. Cl.<sup>3</sup> B01J 31/08, 31/26, 29/04

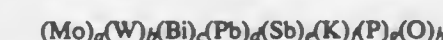
U.S. Cl. 252—428 8 Claims

1. A catalyst resulting from the treatment of (A) a solid substrate containing a plurality of ion-exchangeable cations treated with (B) a polymer containing a plurality of quaternary onium cations associated with a reactive anion; wherein components (A) and (B) are employed in quantities such that the resultant catalyst contains quaternary onium cation-anion sites.  
2. The catalyst of claim 1 wherein component (A) is a cation exchange resin.  
4. The catalyst of claim 1 wherein component (A) is an inorganic substrate.  
5. The catalyst of claim 4 wherein said inorganic substrate is a zeolite.

#### 4,341,659 CATALYTIC COMPOSITION Yoichi Kageyama, Isehara; Masakatsu Hatano, Yokohama; Toru Koyama, Machida; Takao Kaneko; Masayoshi Murayama, both of Yokohama, and Kazunori Oshima, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan Filed Jul. 22, 1980, Ser. No. 171,242 Int. Cl.<sup>3</sup> B01J 27/14, 27/24, 29/16, 29/00

U.S. Cl. 252—435 3 Claims

1. A catalytic composition represented by the formula:



in which a, b, c, d, e, f, g and h stand for the numbers of atoms for molybdenum, tungsten, bismuth, lead, antimony, potassium, phosphorus and oxygen elements, respectively, wherein, given that a+b=12,  
0 ≤ b ≤ 7  
0.4 ≤ c ≤ 7  
2 ≤ d ≤ 12  
0.005 ≤ e/a ≤ 1.14  
0 ≤ f/a ≤ 0.136  
0 ≤ g/a ≤ 0.54, and  
h is one-half the sum of the valences and the



numbers of atoms for the individual constituent elements other than oxygen.

4,341,660

## CATALYTIC CRACKING CATALYST

Ralph J. Bertolacini, Chesterton, and William L. Forsythe, Jr., Munster, both of Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 158,613, Jun. 11, 1980, which is a continuation of Ser. No. 963,991, Nov. 27, 1978, abandoned, which is a continuation of Ser. No. 664,057, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 447,753, Mar. 4, 1974, abandoned. This application Jan. 16, 1981, Ser. No. 225,712

Int. Cl.<sup>3</sup> B01J 29/12, 29/16

U.S. Cl. 252-455 Z

11 Claims

1. A composition of matter comprising a particulate physical mixture of:

- particulate solid cracking catalyst for cracking hydrocarbons; and
- particulate solid oxidation promoter comprising an amount effective to promote the oxidation of carbon monoxide to carbon dioxide of platinum group metal or rhenium supported on a substrate which is substantially inert to hydrocarbon cracking and substantially free of crystalline aluminosilicate zeolite, said amount of platinum group metal or rhenium being in the range from about 0.01 part per million up to less than about 1 part per million based on the weight of (a).

4. A composition of claim 1 wherein (a) contains crystalline aluminosilicate zeolite having pores in the size range of about 6 to 20 Angstrom units.

4,341,661

CATALYSTS FOR REDUCING CO AND SO<sub>2</sub> EMISSIONS FROM CATALYTIC CRACKING UNITS

Kenneth Baron, Diamond Bar, and Dennis P. McArthur, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 109,756, Jan. 7, 1980, Pat. No. 4,311,581.

This application Jan. 26, 1981, Ser. No. 228,266

Int. Cl.<sup>3</sup> B01J 23/10, 29/08

U.S. Cl. 252-455 Z

24 Claims

1. A composition of matter comprising a mixture of solid particles of bastnaesite and particles having catalytic activity for cracking hydrocarbons at an elevated temperature above about 750° F., said bastnaesite being a natural bastnaesite or a treated natural bastnaesite containing a rare earth fluorocarbonate or rare earth oxyfluoride.

2. A composition of matter as defined in claim 1 wherein said catalytically active particles comprise crystalline aluminosilicate zeolite particles dispersed in a porous refractory oxide matrix, said zeolite particles having been ion exchanged to contain less than about 4.0 percent by weight of alkali metals, calculated as the metals, and to contain hydrogen ions and rare earth element ions.

4,341,662

## METHOD OF CATALYTICALLY COATING LOW POROSITY CERAMIC SURFACES

William C. Pfefferle, 51 Woodland Dr., Middletown, N.J. 07748

Filed Apr. 11, 1980, Ser. No. 139,340

Int. Cl.<sup>3</sup> B01J 21/04, 23/10, 23/40

U.S. Cl. 252-462

5 Claims

1. The method of catalytically coating low porosity ceramic surfaces with a catalytically active precious metal film which comprises the steps of applying a coating comprising a solution of a solvent, a precious metal compound and a second metal compound decomposable into a refractory metal and of heating said coating in air to a temperature above the decomposition temperature of said second compound to convert the precious metal compound to metal and other compound to

refractory metal oxide whereby the precious metal is bonded to the ceramic surface by refractory metal oxide.

4,341,663

PROCESS FOR THE PRODUCTION OF SPHERICAL SHAPED BODIES BASED ON Al<sub>2</sub>O<sub>3</sub> AND OPTIONALLY SiO<sub>2</sub>

Helmuth Derleth; Karl-Heinz Bretz, and Günther Säuer, all of Nienburg, Fed. Rep. of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hanover, Fed. Rep. of Germany  
Filed Aug. 29, 1980, Ser. No. 182,708

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2935914

Int. Cl.<sup>3</sup> B01J 21/04

U.S. Cl. 252-463

21 Claims

1. A process for the preparation of shaped bodies comprising:

- preparing a plastic mixture by mixing a predominantly dry component (K1) in powder form of a material selected from the group consisting of aluminum oxides, aluminum hydroxides, and mixtures thereof and a paste component (K2) comprising water in the form of a material selected from the group consisting of gels and sols of aluminum oxides, aluminum hydroxides and mixtures thereof;
- continuously extruding said plastic mixture into extrudates;
- continuously cutting said extrudates into cut lengths;
- shaping said cut lengths into spherical shaped bodies and
- drying said spherical shaped bodies.

4,341,664

## HYDROCARBON DEHYDROGENATION WITH AN ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE FOR USE THEREIN

George J. Antos, Bertlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 48,957, Jun. 15, 1979, Pat. No. 4,229,319, which is a division of Ser. No. 954,684, Oct. 25, 1978, Pat. No. 4,206,040, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Oct. 20, 1980, Ser. No. 198,732

The portion of the term of this patent subsequent to Jun. 12, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> B01J 23/64

U.S. Cl. 252-466 PT

12 Claims

1. A nonacidic catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material, a uniform dispersion of catalytically effective amounts of a silver component, an alkali or alkaline earth component and a platinum group component which is maintained in the elemental metallic state.

4,341,665

## ACYLNORBORNANONE ACETALS, PROCESS FOR PREPARING THE SAME, AND PERFUME COMPOSITIONS CONTAINING THE SAME

Yoshiharu Inoue, Ohsaka; Fumio Tanimoto, Kyoto, and Hisao Kitano, Ohsaka, all of Japan, assignors to Nippon Petrochemicals Co., Ltd., Japan

Filed Mar. 5, 1981, Ser. No. 240,953

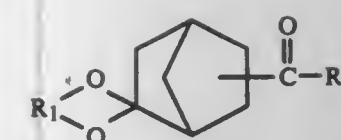
Claims priority, application Japan, Mar. 7, 1980, 55-29693; Mar. 7, 1980, 55-29694; Jun. 18, 1980, 55-82593

Int. Cl.<sup>3</sup> C11B 9/00; C07D 319/04, 317/72

U.S. Cl. 252-522 R

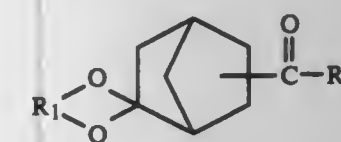
14 Claims

1. An acylnorbornanone acetal represented by the following formula (I):



(wherein R<sub>1</sub> is a saturated hydrocarbon group having 2 to 7 carbon atoms and R<sub>2</sub> is a hydrogen atom or a hydrocarbon group having 1 to 10 carbon atoms).

8. A perfume composition characterized by containing a fragrance-effective amount of an acylnorbornanone acetal represented by formula (I):



(wherein R<sub>1</sub> is a saturated hydrocarbon group having 2 to 7 carbon atoms and R<sub>2</sub> is a hydrogen atom or a hydrocarbon group having 1 to 10 carbon atoms) and a suitable perfume adjuvant.

4,341,666

PERFUMING WITH OXYGEN CONTAINING DERIVATIVES OF TRICYCLO[6.2.1.0<sup>2,7</sup>]UNDECANE

Werner Skorjanetz, Dardagny, and Günther Ohloff, Bernex, both of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Division of Ser. No. 54,028, Jul. 2, 1979, Pat. No. 4,311,852.

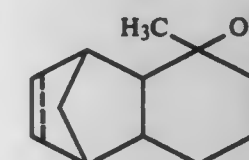
This application Mar. 30, 1981, Ser. No. 249,118

Claims priority, application Switzerland, Jul. 5, 1978, 7320/78 Int. Cl.<sup>3</sup> A61K 7/46

U.S. Cl. 252-522 R

2 Claims

1. A method for modifying, improving or enhancing the organoleptic properties of perfumes or perfumed articles which comprises adding thereto an olfactive effective amount of a compound having the formula:



wherein the dotted line represents a single or a double bond and the symbol R represents either a hydrogen atom or a saturated or unsaturated acyl radical containing from 1 to 6 carbon atoms.

4,341,667

## COMPOSITION AND METHOD OF IMPROVING THE UNVULCANIZED PROPERTIES OF BLENDS CONTAINING RECLAIMED RUBBER

Joginder Lal, Akron, and Sandra J. Walters, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 42,275, May 24, 1979, Pat. No. 4,243,561, which is a division of Ser. No. 779,382, Mar. 21, 1977, Pat. No. 4,198,324. This application Jun. 23, 1980, Ser. No. 161,830

Int. Cl.<sup>3</sup> B29H 19/00; C08L 17/00

U.S. Cl. 525-211

12 Claims

1. A reclaimed rubber-polyolefin composition, comprising: from about 20 parts by weight to about 60 parts by weight of a crystalline or semi-crystalline polyolefin, said polyolefin selected from the group consisting of polyethylene, polypropylene, copolymers of ethylene with about 1 percent to about 20 percent by weight of an alpha-olefin having from 3 to 10 carbon atoms, copolymers of propylene with about 1

percent to about 20 percent by weight of ethylene or alpha-olefins having from 4 to 10 carbon atoms, a copolymer of ethylene with from about 1 percent to about 15 percent by weight of vinyl acetate, and combinations thereof:

from about 40 parts by weight to about 80 parts by weight of reclaimed rubber, said reclaimed rubber made from vulcanized rubber which has been devulcanized by microwave energy, the total amount of said polyolefin and said reclaimed rubber being 100 parts by weight, said reclaimed rubber selected from the group consisting of polychloroprene, chlorobutyl rubber, bromobutyl rubber, nitrile rubber, nitrile rubber-poly(vinyl chloride) blends having up to 30 percent by weight of poly(vinyl chloride), butyl rubber, EPDM, natural or synthetic cis-1,4-polyisoprene, polyalkenyls, elastomers made from monomers selected from the group consisting of conjugated dienes having from 4 to 10 carbon atoms, interpolymers of said dienes (1) among themselves, or (2) with monomers selected from the group consisting of vinyl substituted hydrocarbon compounds having from 8 to 12 carbon atoms; and combinations thereof.

4,341,668

## AQUEOUS COMPOSITION CONTAINING ALDEHYDE CONDENSATE AND USE THEREOF

Jeffrey E. Martin, Columbus; Albert F. Vozella, Worthington; Golden F. Watts, Delaware, and Edwin R. Luckman, Columbus, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Sep. 16, 1980, Ser. No. 187,692

Int. Cl.<sup>3</sup> C08L 89/02, 61/06

U.S. Cl. 524-297

41 Claims

1. A composition comprising a compound capable of providing reactive methylene sites at elevated temperature of about 135° C. and above; a hydrophobic component containing an organic hydrophobic diluent and an isocyanate; and an aqueous component containing a water soluble phenolic-aldehyde condensate having free methylol groups and a pH of at least about 8 and being obtained from about 0.75 to about 3.3 moles of aldehyde per mole of phenolic compound.

4,341,669

## CELLULOSE DERIVATIVE/POLYETHER POLYAMINE/POLYEPoxide REACTION PRODUCT AS ANTISTATIC SOIL RELEASE FINISH FOR POLYESTER

Francis W. Marco, Pauline, and Clarence O. Stokes, Jr., Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 2, 1978, Ser. No. 947,751

Int. Cl.<sup>3</sup> C08L 1/32; B05D 3/02; B32B 27/34, 27/36

U.S. Cl. 523-205

7 Claims

1. A textile product including polyester fibers impregnated with the reaction product of a cellulose derivative chosen from the group consisting of: cellulose ethers and cellulose esters having a degree of substitution of between about 0.5 and about 2.6 and being present in an amount of at least about 0.01% of the weight of the polyester fibers; a polyether polyamine in an amount of at least about 0.05% by weight of the polyester fibers; and a polyepoxide in an amount at least sufficient to cross link the polyether polyamine and the cellulose derivative.



4,341,670

## POLYAMIDE FROM DIAMINE, TRIAMINE AND POLYCARBOXYLIC ACID MIXTURE

Adrien G. Hinze, Dordrecht; Robert P. Roggeveen, and Abraham J. Meulenberg, both of Gouda, all of Netherlands, assignors to Emery Industries, Inc., Cincinnati, Ohio  
Filed Apr. 17, 1980, Ser. No. 141,235

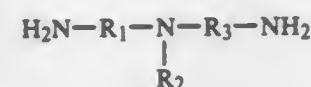
Claims priority, application Netherlands, Apr. 17, 1979, 7902972; United Kingdom, Dec. 28, 1979, 7944527  
Int. Cl.<sup>3</sup> C08L 91/00; C08G 69/26

U.S. Cl. 528—338

5 Claims

1. A solid polyamide having an acid value less than 10 and amine value from 75 to 150 consisting essentially of repeating groups obtained from:

- (a) an aliphatic diamine having 2 or 3 carbon atoms between the nitrogen atoms;  
(b) a triamine having the formula



in which R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are saturated hydrocarbon radicals containing from 1 to 6 carbon atoms;

- (c) an aliphatic dicarboxylic acid having from 6 to 19 carbon atoms; and  
(d) a polymeric fatty acid obtained by the polymerization of a C<sub>18</sub> unsaturated fatty acid and containing at least 75% by weight C<sub>36</sub> dimer acid; the molar ratio of (a) to (b) ranging from 0.4:1 to 1.5:1 and the polymeric fatty acid being present in an amount from 3 to 25 mol percent of the total dicarboxylic acids.

4,341,671

## POLYESTER AMIDE MELT ADHESIVES

Manfred Bolze, Bergkamen-Oberaden, and Manfred Drawert, Froendenberg-Strickherdicke, both of Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 197,787

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1979, 2942680

Int. Cl.<sup>3</sup> C08G 69/14

U.S. Cl. 528—324

7 Claims

1. A polyesteramide melt adhesive having a slow solidification rate, which melt adhesive is the polymeric reaction product of

- (A) a dimerized fatty acid having 16–44 carbon atoms,  
(B) a member selected from the group consisting of caprolactam and 6-aminocaproic acid, wherein 0.25–5.0 mol of component (B) is employed per mol of carboxyl groups present in component (A),  
(C) a monoalkanolamine of the formula



wherein R is a member selected from the group consisting of linear and branched aliphatic hydrocarbon having 2 to 8 carbon atoms and such aliphatic hydrocarbon interrupted by at least one oxygen atom, and

- (D) a member selected from the group consisting of diprimary, disecundary, and primary-secondary diamines, wherein the equivalence ratio of (C):(D) is between 0.1:0.9 and 0.9:0.1.

4,341,672

## SULFUR OR PEROXY CURED EPOXIDIZED DIENE RUBBERS

Henry L. Hsieh, Bartlesville, Okla., and Kishore Udipl, East Longmeadow, Mass., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 862,066, Dec. 19, 1977, abandoned, which is a continuation of Ser. No. 661,082, Feb. 25, 1976, abandoned. This application Sep. 19, 1980, Ser. No. 188,659  
Int. Cl.<sup>3</sup> C08L 15/00

U.S. Cl. 523—451

25 Claims

1. A curable rubbery tread composition, exhibiting wet skid resistance when cured, consisting of rubber, filler, extender oil, and a sulfur or peroxy curing system, wherein said rubber is an epoxidized conjugated diene rubber exhibiting a molecular weight in the range of about 50,000 to 500,000 and an extent of epoxidation of about 5 to 95 percent of olefinically unsaturated sites in the conjugated diene rubber prior to curing.

4,341,673

METHACRYLATE POLYMER CONCRETE MIX WITH REDUCED SHRINKAGE DURING CURE COMPRISING (A) PARAFFINIC OIL AND (B) C<sub>2</sub>-C<sub>4</sub> ALKYL METHACRYLATE

Thomas J. Hyde, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 15, 1981, Ser. No. 273,632

Int. Cl.<sup>3</sup> C08K 5/01; C08L 13/04

U.S. Cl. 524—272

5 Claims

1. An improved methacrylate liquid mixture for use in making a methacrylic polymer concrete, wherein the improvement comprises including in the methacrylate liquid mixture:

- (a) 5–12% by weight of liquid mixture of a paraffinic oil which contains at least 60% by weight of saturated aliphatic hydrocarbons and has a boiling point above 200° C.,  
(b) 4–10% by weight of liquid mixture of an acrylic polymer wherein at least 90% by weight of the units of the acrylic polymer are derived from C<sub>2</sub>-C<sub>4</sub> alkyl methacrylate.

4,341,674

## COMPOSITION FOR IMPREGNATING GLASS FIBER CORDS FOR REINFORCING ELASTOMERIC PRODUCTS

Donn R. Vermillion, and Donald J. Hammond, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 1, 1980, Ser. No. 211,596

Int. Cl.<sup>3</sup> C08L 91/00

U.S. Cl. 524—156

10 Claims

1. In an aqueous composition for impregnating multifilament glass strand with an elastomer-compatible impregnant, said aqueous composition comprising emulsified polybutadiene homopolymer, emulsified butadiene-styrene-vinylpyridine terpolymer, resorcinol-formaldehyde resin, emulsified wax, a thickening agent and a defoaming agent, the improvement for reducing rub-off of said impregnant from said strand impregnated therewith, while retaining desirably low tackiness of said impregnant, which comprises employing synthetic anionic surfactant having sulfate, sulfonate or sulfosuccinate groups as emulsifying agent for said homopolymer and for said terpolymer.

4,341,675

## RUBBER COMPOSITIONS CONTAINING ETHYLENE-PROPYLENE-DIENE TERPOLYMERS OR ETHYLENE-PROPYLENE COPOLYMERS AND SILICONES

Akito Nakamura, Ichihara, Japan, assignor to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Mar. 30, 1981, Ser. No. 248,161

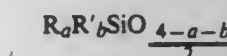
Claims priority, application Japan, Apr. 8, 1980, 55-46072  
Int. Cl.<sup>3</sup> C08J 3/00

U.S. Cl. 524—266

14 Claims

1. A rubber composition comprising

- (A) 95 to 5 parts by weight of unvulcanized ethylene-propylene-diene terpolymer or ethylene-propylene copolymer,  
(B) 5 to 95 parts by weight of a polydiorganosiloxane gum in which the organic radicals are selected from methyl, vinyl, phenyl, and 3,3,3-trifluoropropyl, said organic radicals being at least 50 percent methyl based on the total number of organic radicals, a combination of (A) and (B) being 100 parts by weight,  
(C) 1 to 30 parts by weight of a polyorganosiloxane based on 100 parts by weight of combined (A) and (B), said polyorganosiloxane having an average unit formula



in which R represents a monovalent radical selected from the group consisting of vinyl, alkyl radicals of 1 to 3 carbon atoms, halogenated alkyl radicals of 1 to 3 carbon atoms, aryl radicals, halogenated aryl radicals, and alkyl radicals of 1 to 3 carbon atoms substituted with an aryl radical, R' represents a monovalent radical selected from the group consisting of aliphatic hydrocarbon radicals having from 4 to 20 carbon atoms and their derivatives in which at least one hydrogen atom is substituted with a chlorine atom or a phenyl radical, a has a value of from 1 to 2.5, b has a value of from 0.01 to 1.2, and the sum of a plus b has a value of from 1.8 to 3,

- (D) 1 to 30 parts by weight based on 100 parts by weight of combined (A) and (B), of a polymer selected from polyoxaalkylene-organosiloxane copolymers or poly(hydroxyalkyl)organosiloxanes, in which the oxyalkylene contains 2 or 3 carbon atoms, the hydroxyalkyl radicals contain 1 to 8 carbon atoms, the organic radicals are monovalent radicals selected from the group consisting of vinyl, phenyl, phenylethyl, 3,3,3-trifluoropropyl, and alkyl radicals containing 1 to 8 carbon atoms, and at least 50 percent of the organic radicals are alkyl radicals, and  
(E) 0.1 to 15 parts by weight based on 100 parts by weight of combined (A) and (B), of an organic peroxide.

4,341,676

## SELF-CURABLE RESINOUS COMPOSITIONS CONTAINING N-METHYLOL AMIDE GROUPS USEFUL IN COATING APPLICATIONS

Steven E. Patricca, Pittsburgh, and Stephen L. Buchwalter, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

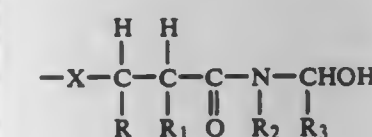
Filed Aug. 4, 1980, Ser. No. 175,163

Int. Cl.<sup>3</sup> C08L 63/02

U.S. Cl. 523—417

26 Claims

1. An aqueous resinous composition comprising a polymer characterized by a pendant group which is of the structure:



wherein X represents sulfur or an amino group



of which R' is hydrogen or an alkyl group containing from about 1 to 6 carbon atoms; and wherein R, R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub>, each independently, is hydrogen or an alkyl group containing from about 1 to 6 carbon atoms; said composition also comprises a water-solubilizing group.

4,341,677

## ANTIOXIDANTS AND REINFORCED POLYMERS AND OIL-IN-WATER EMULSIONS OF ANTIOXIDANTS

Albert E. Tamosauskas, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 137,063, Apr. 3, 1980. This application Sep. 24, 1980, Ser. No. 190,153

Int. Cl.<sup>3</sup> C08L 63/02

U.S. Cl. 523—421

20 Claims

1. An aqueous sizing composition for treating glass fibers to provide additional protection against degradation of polymer reinforced with the treated glass fibers, comprising:

- (a) about 0.5 to about 15 weight percent of an oil-in-water emulsion of an antioxidant having low volatility and good thermal resistance; organic solvent having a boiling point above the temperature of processing glass fibers but low enough to enable the solvent to be vaporized at the temperature of drying glass fibers and having a kauri-butanol value in the range of about 10 to about 50 for the antioxidant that is substantially aliphatic and about 50 to about 100 for the antioxidant that is substantially aromatic and an emulsifier blend of at least two emulsifiers selected from the group of anionic, cationic, and nonionic having an HLB in the range of about 12 to about 27,  
(b) a film-former in an amount in the range of about 0.5 to about 15 weight percent,  
(c) a coupling agent in an amount of about 0.5 to about 10 weight percent, and  
(d) water in an amount to give a total amount of water in the aqueous sizing composition in the range of about 70 to about 99 weight percent.

4,341,678

## WATER-BORNE EPOXY-PHENOLIC COATING COMPOSITIONS

Nick Georgalas, Brooklyn, N.Y., and William P. Keaveney, Pompton Plains, N.J., assignors to Inmont Corporation, Clifton, N.J.

Continuation of Ser. No. 75,765, Sep. 17, 1979, abandoned. This application Jan. 9, 1981, Ser. No. 223,861

Int. Cl.<sup>3</sup> C08L 63/02

U.S. Cl. 523—414

6 Claims

1. An aqueous container coating composition consisting of a blend of

- (a) from about 60 to 85% by weight of a water-miscible amine solubilized epoxy resin, and  
(b) from about 15 to 40% by weight of a water soluble monomeric phenolic compound.



**4,341,679**  
VINYLIDENE CHLORIDE CO-POLYMER LATEX COMPOSITIONS

Anthony J. Burgess, and David L. Gardner, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 12, 1977, Ser. No. 860,312  
Claims priority, application United Kingdom, Dec. 20, 1976, 53021/76

Int. Cl.<sup>3</sup> C08L 27/16  
U.S. Cl. 524—833 12 Claims

1. An aqueous latex of a copolymer capable of forming stable films which have excellent protective properties on metallic substrates, said films having good chemical resistance and low permeability to water vapour, said copolymer consisting essentially of (i) vinylidene chloride, (ii) vinyl chloride, (iii) one or more alkyl acrylates having from 1 to 12 carbon atoms in the alkyl group and/or one or more alkyl methacrylates having from 2 to 12 carbon atoms in the alkyl group and (iv) one or more aliphatic alpha-beta-unsaturated carboxylic acids, the proportion of vinylidene chloride being from 65 to 90 parts by weight, the proportion of the said alkyl acrylates and/or methacrylates being from 2 to 15 parts by weight and the proportion of the said carboxylic acids being from 0.2 to 8 parts by weight, per hundred parts by weight of the total vinylidene chloride and vinyl chloride.

**4,341,680**  
WATER-SOLUBLE, PRESSURE SENSITIVE, SELF-ADHESIVE, COMPOSITION, METHOD OF MANUFACTURE THEREOF, AND TAPES PRODUCED THEREWITH

Rüdiger Hauber, and Günter Guse, both of Hamburg, Fed. Rep. of Germany, assignors to Beiersdorf Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 4, 1980, Ser. No. 118,130  
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1979, 2904233

Int. Cl.<sup>3</sup> C08L 31/00  
U.S. Cl. 525—329 14 Claims

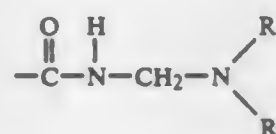
1. A water-soluble, pressure sensitive, self-adhesive composition comprising a mixture of  
(a) a copolymer comprising 70 to 80 parts by weight of monomeric ethyl acrylate and 30 to 20 parts by weight of a monomeric,  $\alpha,\beta$  unsaturated aliphatic monocarboxylic acid and  
(b) a tertiary, ethoxylated N-alkyl alkane diamine having 3 to 18 ethylene oxide units per molecule, said alkyl having 10 to 18 carbon atoms, from 50% to 90% of the acid groups of said acid being neutralized.

**4,341,681**  
MANNICH BASE COPOLYMERS

Kazys Sekmakas, Palatine; Raj Shah, Schaumburg, and Aurelio J. Parenti, Norridge, all of Ill., assignors to De Soto, Inc., Des Plaines, Ill.

Filed May 18, 1981, Ser. No. 264,943  
Int. Cl.<sup>3</sup> C08K 5/20 11 Claims

1. A cationic solution addition copolymer of monoethylenically unsaturated copolymerizable monomers, said copolymer having side chains of the following structure:



where R and R' are selected from C<sub>1</sub>-C<sub>8</sub> alkyl and C<sub>1</sub>-C<sub>8</sub> alkanol, or are together constituted by a C<sub>2</sub>-C<sub>8</sub> alkylene group, at least a portion of the tertiary amine groups in said structure being reacted with a solubilizing acid to form a salt which enables the copolymer to be dissolved in water, said copoly-

mer being reacted with a diepoxide in a stoichiometric deficiency with respect said amine groups.

**4,341,682**  
COMPOSITION COMPRISING ESTER OF EPOXY, CARBONYL CONTAINING POLYBUTADIENE POLYMER AND ACID CONTAINING ADDITION POLYMER, AND AQUEOUS COATING COMPOSITIONS PREPARED THEREFROM

Michael A. Tobias, Bridgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 23, 1980, Ser. No. 219,470  
Int. Cl.<sup>3</sup> C08L 13/00 7 Claims

1. A composition comprising a stable aqueous emulsion of an adduct neutralized with sufficient base to render it emulsifiable in water, in which said adduct contains carboxyl groups, is substantially free of oxirane groups, and comprises the esterification reaction product of  
(a) an acidic copolymer comprising a solution copolymer of monoethylenically unsaturated monomers containing at least 10 weight percent of monoethylenically unsaturated carboxylic acid monomer based on the total weight of the monomers; and  
(b) a partially defunctionalized epoxy resin containing free epoxide groups, which is the reaction product of polyepoxide and a carboxyl containing polybutadiene polymer.

**4,341,683**  
PRINTING INK FORMULATIONS

James A. Snelgrove, Monson, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 157,998, Jun. 9, 1980, Pat. No. 4,303,718. This application May 4, 1981, Ser. No. 260,437

Int. Cl.<sup>3</sup> C08K 5/34 5 Claims

1. A printing ink formulation having an ink base comprising a dye and a solvent medium which further comprises a polyvinyl formal with a weight average molecular weight of from about 8,000 to 200,000 in an amount sufficient to raise the viscosity of the ink formulation to a level dictated by the printing process in which the formulation is to be used.  
5. A printing ink formulation according to claim 1 having a Shell #3 cup viscosity of from 15 to 50 seconds comprising from 3 to 10 percent by weight of the ink base of a polyvinyl formal having a weight average molecular weight of from 15,000 to 40,000 and an acetate content of from 8 to 35 percent by weight, measured as vinyl acetate, and a hydroxyl content of from 2 to 10 percent by weight measured as vinyl alcohol.

**4,341,684**  
COMPOSITIONS AND METHOD FOR IMPROVING THE PROPERTIES OF LIQUID MEDIA

Karl W. Krantz, Schenectady, N.Y., assignor to General Electric Company, New York, N.Y.

Division of Ser. No. 584,417, Jun. 6, 1975, Pat. No. 4,190,069. This application Nov. 7, 1979, Ser. No. 91,989

Int. Cl.<sup>3</sup> C08K 5/01, 5/04; F17D 1/16, 1/17  
U.S. Cl. 523—175 10 Claims

1. A composition for reducing the fluid flow friction loss in the transmission of a hydrocarbon fluid through a pipeline, said composition being an oil-in-oil emulsion comprising:  
(i) a continuous phase of a liquid which is different from, but normally miscible with said hydrocarbon fluid, and, dispersed therein,  
(iii) a stable discontinuous phase predominantly comprising fine particles of a high molecular weight polyhydrocarbon or polydiorganosiloxane having a molecular weight of at least 500,000 which is ultimately miscible with said hydrocarbon fluid,  
(iii) a surface active agent which is preferentially compatible

with continuous phase(i) so as to favor the maintenance of (i) as the continuous phase.

**4,341,685**  
PROCESS FOR PREPARING ORGANIC DISPERSION OF ACID TYPE FLUORINATED POLYMER

Haruhisa Miyake; Yoshio Sugaya, and Tatsuro Asawa, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Nov. 3, 1980, Ser. No. 203,391  
Claims priority, application Japan, Nov. 20, 1979, 54/149479; Dec. 7, 1979, 54/157989

Int. Cl.<sup>3</sup> C08K 5/02  
U.S. Cl. 524—104 11 Claims

1. A process for preparing a dispersion of a fluorinated copolymer containing acid groups or groups convertible to acid groups in an organic solvent, consisting essentially of:  
copolymerizing a fluorinated ethylenically unsaturated monomer and a monomer containing an acid group or group convertible into an acid group in an aqueous medium containing a polymerization initiator thereby obtaining an aqueous dispersion of a fluorinated copolymer having an acid group or a group convertible to an acid group content of 5 to 40 mole %; and  
substituting the aqueous medium of said dispersion with a hydrophilic organic solvent while maintaining the dispersion of said copolymer, whereby a concentration of copolymer exceeding 5% by wt in said dispersion is obtained.

**4,341,686**  
ADHESIVE PRODUCTS AND A PROCESS FOR THEIR USE IN POLYURETHANES

Sarbananda Chakrabarti, Ludwigshafen; John Hutchison, Wachenheim, and Otto Volkert, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 29, 1981, Ser. No. 287,878  
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1980, 3029583

Int. Cl.<sup>3</sup> C08K 3/28  
U.S. Cl. 427—244 12 Claims

1. An adhesive product comprising, based on the total weight,  
(a) 1 to 10 percent by weight of an aminoalkyltrialkoxysilane,  
(b) 1 to 20 percent by weight of a fine particle size polyvinylchloride powder, and/or  
(c) 0.1 to 5 percent by weight of an amorphous hydrophobic silicic acid, and  
(d) 98 to 65 percent by weight of at least one organic solvent.

**4,341,687**  
PEELABLE FILM-FORMING URETHANE/ISOCYANATE PAINTS

Kenichi Ozeki, Ichinomiya; Toyoji Wada, Nagoya; Kunio Ito, Aichi; Tetsuo Tomimori, Nagaokakyo; Isao Takagi, and Mitsunobu Nekado, both of Kobe, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 19, 1980, Ser. No. 188,664  
Claims priority, application Japan, Sep. 25, 1979, 54-122895; Sep. 26, 1979, 54-124500

Int. Cl.<sup>3</sup> C08L 75/04  
U.S. Cl. 524—500 8 Claims

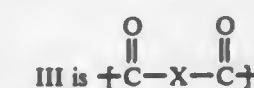
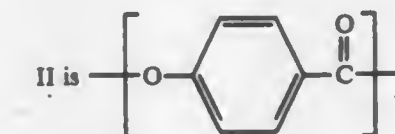
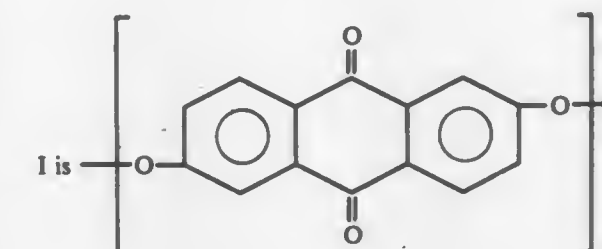
1. A peelable film-forming paint, comprising a mixture of a polyurethane resin, an isocyanate prepolymer and 15% by weight of ethylene glycol monoalkyl ether based on the total weight of said polyurethane resin and said isocyanate prepolymer.

**4,341,688**  
POLY(ESTER-AMIDE) CAPABLE OF FORMING AN ANISOTROPIC MELT PHASE DERIVED FROM DIHYDROXYANTHRAQUINONE, HYDROXYBENZOIC ACID, DICARBOXYLIC ACID, AND AROMATIC MONOMER CAPABLE OF FORMING AN AMIDE LINKAGE

Larry F. Charbonneau, Chatham; Gordon W. Calundann, N. Plainfield, and Anthony J. East, Madison, all of N.J., assignors to Celanese Corporation, New York, N.Y.

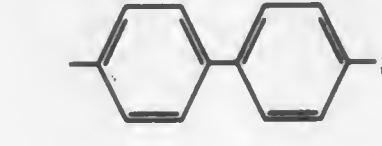
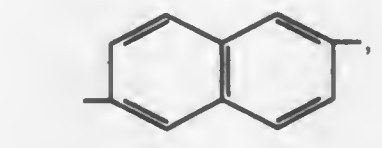
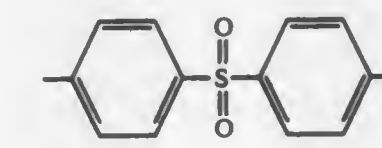
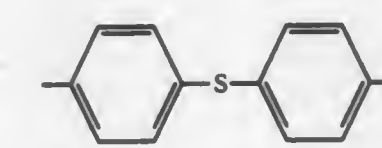
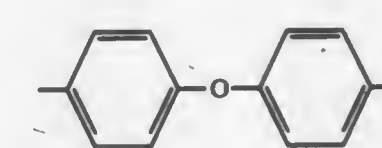
Filed Apr. 7, 1981, Ser. No. 251,818  
Int. Cl.<sup>3</sup> C08G 69/44 33 Claims

1. A melt processable poly(ester-amide) capable of forming an anisotropic melt phase at a temperature below approximately 400° C. consisting essentially of recurring moieties I, II, III, and IV wherein:



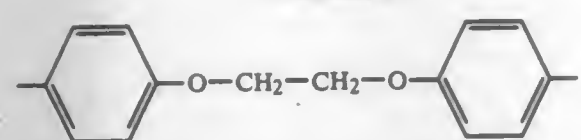
where X is selected from at least one member of the group consisting of

(a) 1,3-phenylene radicals which optionally are replaced with up to 75 mole percent of 1,4-phenylene radicals based upon the total concentration of 1,3-phenylene and 1,4-phenylene radicals present in moiety III,





-continued



(h) a divalent aliphatic carbocyclic radical, and  
(i) mixtures of the foregoing; and  
IV is  $-(Y-Ar-Z)-$ , where Ar is a divalent radical comprising at least one aromatic ring, Y is O, NH, or NR, and Z is NH or NR, where R is an alkyl group of 1 to 6 carbon atoms or an aryl group, wherein at least some of the hydrogen atoms present upon the rings optionally may be replaced by substitution selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, phenyl, and mixtures thereof, and wherein moiety I is present in a concentration within the range of approximately 5 to 35 mole percent, moiety II is present in a concentration within the range of approximately 20 to 80 mole percent, moiety III is present in a concentration within the range of approximately 10 to 40 mole percent, and moiety IV is present in a concentration within the range of approximately 5 to 35 mole percent, with the total molar concentration of moieties I and IV being substantially equal to the molar concentration of moiety III.

#### 4,341,689 TWO COMPONENT POLYURETHANE COATING SYSTEM HAVING EXTENDED POT LIFE AND RAPID CURE

Jyotindra K. Doshi, Mt. Prospect, and Scott A. Wallenberg, Villa Park, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Jul. 2, 1981, Ser. No. 279,821  
Int. Cl.<sup>3</sup> C08G 18/18

U.S. Cl. 523-211 15 Claims

1. A two component polyurethane coating system comprising a first component which is a solution of a soluble resin containing active hydrogen atoms capable of reacting with isocyanate functionality, said resin being dissolved in inert organic solvent, said first component having dispersed therein an amine catalyst for said reaction with isocyanate absorbed in a molecular sieve having a pore size large enough to absorb the amine catalyst, and a second component comprising an organic polyisocyanate in solution in inert organic solvent, whereby said molecular sieve will minimize the catalytic effect of said amine catalyst when the two components are mixed until after coating when absorption of atmospheric moisture by said molecular sieve will force release of said amine catalyst to speed the cure of the applied coating.

#### 4,341,690 STABILIZED POLYPROPYLENE COMPOSITION

Harold P. Marsh, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,403  
Int. Cl.<sup>3</sup> C08L 67/00

U.S. Cl. 524-451 6 Claims

1. Composition comprising polypropylene, about 10-60% by weight based on the weight of polypropylene, of talc, and about 0.5-3.0% by weight based on the weight of polypropylene of a copolyester derived from at least 50 mole percent terephthalic acid and at least 50 mole percent 1,6-hexanediol, said copolyester having a melting point of less than 150° C. and a heat of fusion of from about 0.1 to about 12 calories per gram.

#### 4,341,691 LOW VISCOSITY BONE CEMENT

David A. Anuta, Winona Lake, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Filed Feb. 20, 1980, Ser. No. 122,896  
Int. Cl.<sup>3</sup> C08F 265/06; C08J 3/20; C08K 7/04

U.S. Cl. 523-116 21 Claims

1. An acrylic bone cement composition comprising: a liquid monomer component and a polymer powder component in the form of beads wherein the liquid component to powder component ratio is 1 to 2 (volume weight) there the liquid component is measured in milliliters and the powder component is measured in grams and wherein said liquid monomer component is comprised of methylmethacrylate monomer and said polymer powder component is comprised at least 80% by weight of polymethylmethacrylate polymer powder in which at least 85-95% by weight of the polymethylmethacrylate polymer powder beads are regular beads which fall through a #40 mesh (425 micron openings) screen and a #100 mesh screen (150 micron openings) and which have a maximum average size of about 25 microns and a minimum average size of about 13 microns, and about 5-15% by weight of polymethylmethacrylate polymer powder beads which fall through a #40 mesh (425 micron openings) screen, but not through a #100 mesh screen, (150 micron openings) and are subsequently milled to roughen and break up the surface of the bead, and whereby when the liquid monomer component is mixed with said polymer powder component, the resulting cement has a viscosity of less than 1500 poise at approximately 20 degrees C. (68 degrees F.) for at least six minutes after the components are initially mixed, and such that the resulting bone cement becomes completely hard in not more than ten to eleven minutes from the time the components were initially mixed.

#### 4,341,692 DIHALONEOPENTYL SILICATE FLAME RETARDANTS IN PLASTIC FORMULATIONS

Alfred K. Jung, Ridgewood; Michael Turczyk, Yonkers, and Edward D. Weil, Hastings-on-Hudson, all of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

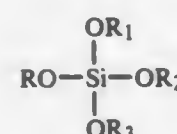
Division of Ser. No. 50,246, Jun. 20, 1979, Pat. No. 4,252,967.  
This application Oct. 8, 1980, Ser. No. 195,034

Int. Cl.<sup>3</sup> C08K 3/34, 5/54

U.S. Cl. 524-263 9 Claims

1. A plastic formulation containing a flame retardant effective amount of solid dibromoneopentyl silicate wherein said silicate is prepared by the process of contacting in a reaction medium;

(1) dihaloneopentyl glycol selected from the group consisting of dibromoneopentyl glycol and monobromomono-chloroneopentyl glycol with, (2) silicate ester represented by the formula:



wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, and R<sub>4</sub> are independently selected from hydrocarbyl radicals; said contact being at a temperature and for a time effective to transesterify the silicate ester.

#### 4,341,693 OLIGOMERIC EPOXIDE RESINS AND THEIR USE AS FLAMEPROOFING AGENTS

Lothar Buxbaum, Villach, Austria, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

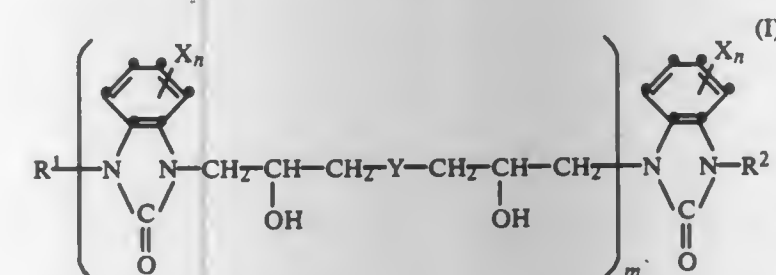
Filed Jun. 15, 1981, Ser. No. 273,799

Claims priority, application Switzerland, Jun. 26, 1980, 4914/80

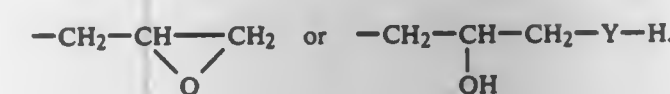
Int. Cl.<sup>3</sup> C08G 59/26, 5/34

U.S. Cl. 524-93 10 Claims

1. A halogen-containing, essentially linear oligomeric epoxide resin of the formula I



in which n is the number 2, 3 or 4, m has a numerical value from 1 to 30, X is chlorine or bromine, Y is the divalent radical of a H-acid compound from the group comprising diols, dihydric phenols, bisphenols, dicarboxylic acids and cyclic ureides and R<sup>1</sup> and R<sup>2</sup> are H atoms,



#### 4,341,694 INTUMESCENT FLAME RETARDANT COMPOSITIONS

Yuval Halpern, Skokie, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jul. 6, 1981, Ser. No. 280,569

Int. Cl.<sup>3</sup> C08K 5/00

U.S. Cl. 252-606 2 Claims

1. An intumescent composition comprising a resin selected from the group consisting of polyolefins, polyvinylaromatic resins, polycarbonate resins, polyacrylate resins, polyamides, polyvinyl chloride and blends thereof, 2,6,7-trioxo-1-phosphobicyclo [2.2.2]octane-4-methanol-1-oxide and a nitrogen compound selected from the group consisting of melamine, ammeline, benzoguanidine, urea, guanidine and salts thereof.

#### 4,341,695 RUBBER MODIFIED TERPOLYMERS WITH IMPROVED HEAT DISTORTION RESISTANCE

Yoon C. Lee, and Quirino A. Trementozzi, both of Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 865,049, Dec. 27, 1977, Pat. No. 4,197,376. This application Jul. 24, 1978, Ser. No. 927,429

Int. Cl.<sup>3</sup> C08K 5/13; C08L 37/00

U.S. Cl. 524-342 9 Claims

9. A polymeric composition produced by polymerizing, in the presence of a polybutadiene rubber having at least 90% cis 1,4-butadiene units, a monomer composition consisting of styrene, maleic anhydride and methyl methacrylate to produce a composition comprising from 2 to 30% of the polybutadiene rubber, (ungrafted basis), grafted with a superstrate polymer and dispersed in a matrix polymer, said superstrate and matrix polymers each comprising from 60 to 75% of styrene, 20 to 30% of maleic anhydride and 4 to 10% of methyl methacrylate, and incorporating in said composition up to 2% of 1,3,5-trimethyl-2,4,6-tris(3,5-di-tert-butyl-4-hydroxybenzyl) benzene; all percentages being by weight.

#### 4,341,696 TRIS-(3-HYDROXYALKYL) PHOSPHINE OXIDE FLAME RETARDANT COMPOSITIONS

Diza P. Braksmayer, and Syed N. Hussain, both of Plainsboro, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jan. 28, 1980, Ser. No. 116,334

Int. Cl.<sup>3</sup> C08K 5/53

U.S. Cl. 524-139 22 Claims

1. A glass filled thermoplastic polyamide polymer rendered flame retardant by having combined therewith an effective amount of a tris-(3-hydroxyalkyl) phosphine oxide having the formula:



wherein R<sub>1</sub> and R<sub>3</sub> are any radical selected from the group consisting of hydrogen, phenyl and alkyl radicals of 1 to 4 carbon atoms and R<sub>2</sub> is any radical selected from the group consisting of hydrogen, phenyl and alkyl radicals of 2 to 4 carbon atoms, provided that when R<sub>1</sub> and R<sub>3</sub> are hydrogen radicals, R<sub>2</sub> is either an alkyl radical of 2 to 4 carbon atoms or a phenyl radical.

#### 4,341,697 ANTIGENIC MATERIAL

David Snary, Orpington, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 134,262, Mar. 26, 1980, Pat. No. 4,298,596.

This application May 18, 1981, Ser. No. 264,637

Claims priority, application United Kingdom, Mar. 29, 1979, 7911049

Int. Cl.<sup>3</sup> C07G 7/00

U.S. Cl. 260-112 R 8 Claims

1. An antigen obtained from *T. cruzi* organisms comprising glycoprotein of molecular weight from about 6 × 10<sup>4</sup> to about 9.5 × 10<sup>4</sup>, said glycoprotein being substantially insoluble in water and being capable of interacting with lectins which have an affinity for glucose, mannose or galactose, said antigen being substantially free from non-proteinaceous matter.

#### 4,341,698 ENKAPHALIN DERIVATIVES

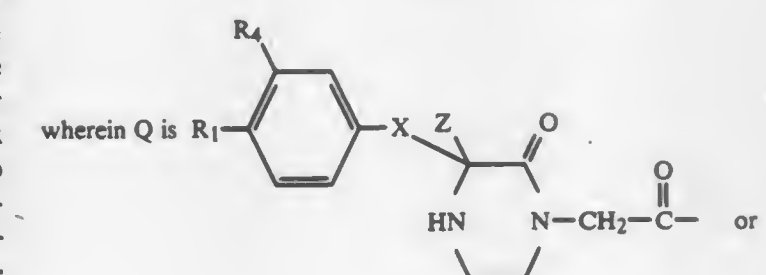
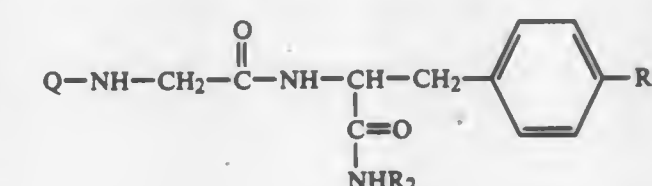
Albert A. Carr; Robert A. Farr, and John M. Kane, all of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Continuation-in-part of Ser. No. 50,950, Jun. 21, 1979, abandoned. This application Mar. 14, 1980, Ser. No. 130,431

Int. Cl.<sup>3</sup> C07C 103/52

U.S. Cl. 260-112.5 R 25 Claims

1. A compound of the formula









Z is hydrogen, C<sub>1</sub>-C<sub>3</sub> alkoxy or C<sub>3</sub>-C<sub>9</sub> dialkylaminoalkoxy; or a pharmaceutically acceptable salt thereof.

4,341,705

## THIENAMYCIN DERIVATIVES

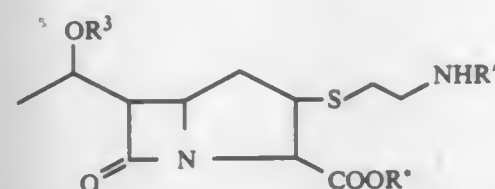
David H. Shih, Manalapan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 10, 1980, Ser. No. 195,993

Int. Cl.<sup>3</sup> C07D 487/04

U.S. Cl. 260—245.2 T

1. A compound having the formula:



wherein: R' is selected from p-nitrobenzyloxycarbonyl, or o-nitrobenzyloxycarbonyl; R' is o-nitrobenzyl or p-nitrobenzyl; and R<sup>3</sup> is o-nitrobenzyloxycarbonyl.

4,341,706

## PROCESS FOR THE PREPARATION OF CARBAPENEM ANTIBIOTICS

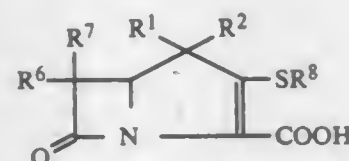
Burton G. Christensen, Scotch Plains, and David H. Shih, Manalapan, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 10, 1980, Ser. No. 196,005

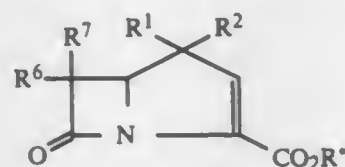
Int. Cl.<sup>3</sup> C07D 487/04

U.S. Cl. 260—245.2 T

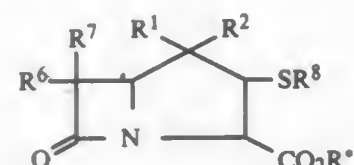
1. A process for preparing a compound having the structure:



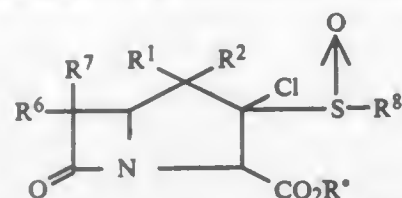
and the pharmaceutically acceptable salts thereof; wherein R<sup>1</sup>, R<sup>2</sup>, R<sup>6</sup>, R<sup>7</sup> and R<sup>8</sup> are independently selected from the group consisting of hydrogen (R<sup>1</sup> and R<sup>2</sup> are not both hydrogen), substituted and unsubstituted: alkyl, alkenyl, and alkynyl, having from 1-10 carbon atoms; cycloalkyl, cycloalkylalkyl, and alkylcycloalkyl, having 3-6 carbon atoms in the cycloalkyl ring and 1-6 carbon atoms in the alkyl moieties; spirocycloalkyl having 3-6 carbon atoms; phenyl; aralkyl, aralkenyl, and aralkynyl wherein the aryl moiety is phenyl and the alkyl chain has 1-6 carbon atoms; thiophenyl, imidazolyl, tetrazolyl, furyl; thiophenylalkyl, imidazolylalkyl, tetrazolylalkyl and furylalkyl wherein the alkyl moiety contains from 1-10 carbon atoms, and wherein the substituent or substituents relative to the above-named radicals are selected from the group consisting of: amino, mono-, di-, and trialkylamino, hydroxyl, alkoxy, mercapto, alkylthio, phenylthio, sulfamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, iodo, cyano and carboxy wherein the alkyl moieties of the above-recited substituents have 1-6 carbon atoms; comprising the steps of treating;



with HSR<sup>8</sup> to yield:



followed by treating with iodobenzenedichloride to yield:



followed by dehydrochlorination in the presence of a strong base at 0° to 6° C., reduction with a reducing agent at -20° to 40° C. and deblocking by hydrogenation in the presence of a catalyst at 0° to 60° C. wherein R' is selected from the group consisting of hydrogen, an alkali metal, nitrobenzyl, tertiary butylbenzyl, trichloroacetoxymethyl, and triloalalkyl ammonium.

4,341,707

## IMIDO CARBONATE COMPOUND, PRODUCTION THEREOF AND USES THEREOF AS REAGENT FOR FORMING ACTIVE ESTER OF AMINO ACIDS

Haruo Ogura, 55, Jinyanae, Tokiwadaira, Matsudo-shi, Chiba-ken, Japan, and Kazuyoshi Takeda, Yokohama, Japan, assignors to Haruo Ogura, Chiba, Japan

Filed Apr. 18, 1980, Ser. No. 141,365

Claims priority, application Japan, May 2, 1979, 54-53347

Int. Cl.<sup>3</sup> C07D 403/12, 207/46; C07F 9/09; C07D 498/04

U.S. Cl. 260—326 C

4 Claims

1. A carbonate compound of the formula (I)



wherein R represents a succinimido, phthalimido or 5-norbornene-2,3-dicarboximido group.

4,341,708

## PROSTACYCLIN AZA ANALOGUE INTERMEDIATES

Frederick Cassidy, Harlow; Keith H. Baggaley, Redhill, and Arthur W. R. Tyrrell, Reigate, all of England, assignors to Beecham Group Limited, England

Division of Ser. No. 82,713, Oct. 9, 1979, Pat. No. 4,262,008.

This application Feb. 2, 1981, Ser. No. 230,539

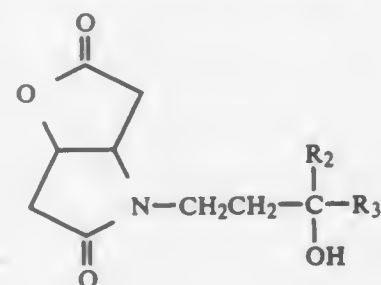
Claims priority, application United Kingdom, Oct. 14, 1978, 40597/78

Int. Cl.<sup>3</sup> C07D 491/048

U.S. Cl. 260—326.29

1 Claim

1. A compound selected from the group consisting of a perhydrofuro[3,2-b]pyrrole of the formula:



and the benzyl ethers thereof, wherein

R<sub>2</sub> is hydrogen or alkyl of 1 to 4 carbon atoms and R<sub>3</sub> is alkyl of 4 to 9 carbon atoms, cycloalkyl of 5 to 7 carbon atoms or alkyl of 1 to 6 carbon atoms substituted with cycloalkyl of 5 to 7 carbon atoms.

4,341,709

## PREPARATION OF ε-CAPROLACTONE

Willi Hofen, Rodenbach; Herbert Klenk; Gerd Schreyer, both of Hanau; Otto Weiberg, Bruchkoebel; Helmut Waldmann, Leverkusen; Hermann Seifert, Cologne; Karl-Hermann Reisinger, Leverkusen, and Wolfgang Swodenk, Odenthal-Globusch, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

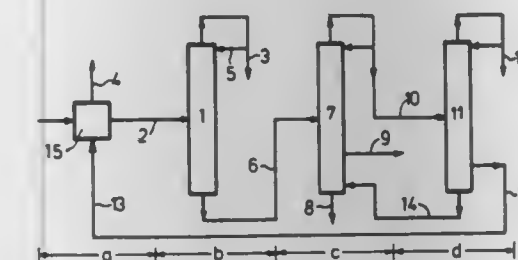
Filed May 15, 1980, Ser. No. 150,260

Claims priority, application Fed. Rep. of Germany, May 19, 1979, 2920436

Int. Cl.<sup>3</sup> C07D 313/02

U.S. Cl. 549—272

20 Claims



1. A process for the preparation of ε-caprolactone comprising:

- reacting cyclohexanone with a solution of propionic acid in an organic solvent selected from the group consisting of an aromatic hydrocarbon consisting 6 to 10 carbon atoms, an aliphatic or cycloaliphatic hydrocarbon containing up to 12 carbon atoms and a chlorinated hydrocarbon containing 1 to 10 carbon atoms and 1 to 4 chlorine atoms at a molar ratio of cyclohexanone; propionic acid of about 1.1-5:1 at a temperature of about 10° to 80° C. to form a reaction mixture consisting essentially of ε-caprolactone, propionic acid and organic solvent,
- distilling the reaction mixture from (a) in a first distillation unit to obtain a distillate comprising the organic solvent and a distillation residue,
- introducing the distillation residue from (b) into a second distillation unit to obtain a distillate comprising propionic acid and unreacted cyclohexanone, removing from the second distillation unit, separately from one another and at a point below the point of introduction into the second distillation unit, ε-caprolactone and any high-boiling constituents, and,
- distilling in a third distillation unit the distillate from (c) to obtain a distillate consisting essentially of propionic acid and a distillation residue comprising a mixture of propionic acid and cyclohexanone.

4,341,710

## INTERMEDIATES FOR 10,10-DIFLUOROPROSTACYCLINS

Martin F. Haslanger, Lambertville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 216,598, Dec. 15, 1980, Pat. No. 4,317,906.

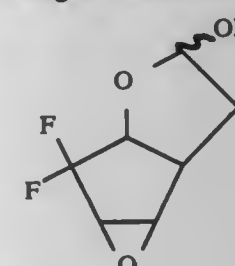
This application Oct. 5, 1981, Ser. No. 308,737

Int. Cl.<sup>3</sup> C07D 307/935, 307/77

U.S. Cl. 549—214

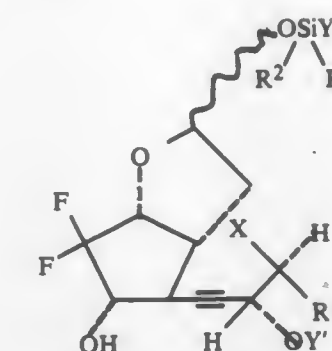
4 Claims

1. A compound having the structure



and all stereoisomers thereof.

3. A compound having the structure



wherein Y and Y' are ether protecting groups, X is H or F, R is lower alkyl, lower alkenyl or aralkyl, and R<sup>2</sup> is lower alkyl or aryl, and all stereoisomers thereof.

4,341,711

## DIMETHACRYLIC ACID ESTERS OF DIMETHYLOLTETRAHYDROFURAN AND ITS DERIVATIVES

Werner Gruber, Dusseldorf, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Jun. 3, 1981, Ser. No. 269,894

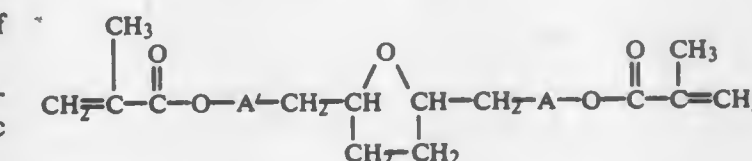
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 3021941

Int. Cl.<sup>3</sup> C07D 307/24

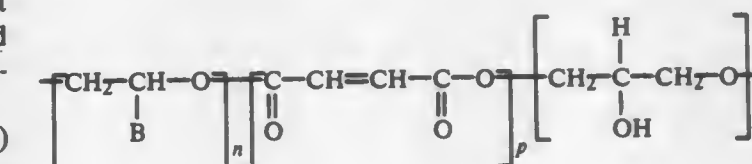
U.S. Cl. 549—500

5 Claims

1. Dimethacrylic acid esters of dimethyloltetrahydrofuran and its derivatives having the formula:



wherein A and A' individually have the formula:



wherein B is a member selected from the group consisting of CH<sub>3</sub> and H, and n is an integer from 0 to 5, m is 0 or 1, and p is 0 or 1.

4,341,712

## FLUORODINITRO COMPOUNDS

Milton B. Frankel, Tarzana, and Edward F. Witucki, Van Nuys, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 17, 1977, Ser. No. 769,748

Int. Cl.<sup>3</sup> C07C 117/00

U.S. Cl. 260—349

7 Claims

1. A new composition of matter selected from the group consisting of:  
1,2-dibromo-3-fluorodinitroethoxypropane,  
1,2-diazido-3-fluorodinitroethoxypropane,  
fluorodinitroethoxy-1-chloro-2-propanol,  
3-fluorodinitroethoxy-1-chloroacetone,  
1-chloro-2,2-bis(difluoramino)-3-fluorodinitroethoxypropane, and  
1-azido-2,2-bis(difluoramino)-3-fluorodinitroethoxypropane.



4,341,713

## PROCESS FOR OBTAINING CORN OIL FROM CORN GERM

Klaus-Dieter Stolp, Grefrath, and Rolf W. Stute, Flein, both of Fed. Rep. of Germany, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Dec. 23, 1980, Ser. No. 219,772

Claims priority, application United Kingdom, Apr. 18, 1980, 8012909

Int. Cl.<sup>3</sup> C09F 5/02; C11B 1/00

U.S. Cl. 260—412.2

8 Claims

1. A process for extracting a high quality corn oil from wet corn germ obtained from the corn wet-milling process, which requires only mild refining to produce an edible oil, comprising the steps of:

- milling the wet corn germ at a pH of from about 3 to about 4 and at a temperature of less than about 50° C. until at least about 80% of the germ is reduced to a particle size of less than 160 microns with at least the final stage of the milling operation being conducted in an aqueous slurry containing from about 10% to about 25% solids on a dry solids basis;
- diluting the aqueous slurry with water if necessary to bring the dry solids content to less than about 17%;
- promptly subjecting the slurry to leaching forces sufficient to separate the slurry into a solid phase and a liquid phase containing substantially all of the oil; and
- promptly separating the oil from the liquid phase.

4,341,714

## ARYLOXYPHOSPHONIUM SALTS

Robert H. Ellison, Schenectady, and Martin A. Byrne, Troy, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 25, 1980, Ser. No. 143,821

Int. Cl.<sup>3</sup> C07F 9/66

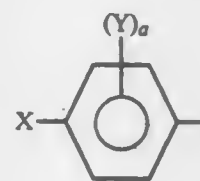
U.S. Cl. 260—440

6 Claims

1. Aryloxyphosphonium salts of the formula,



where R and R<sup>1</sup> are monovalent aryl radicals selected from C<sub>6</sub>(6-13) hydrocarbon radicals and radicals of the formula,



where X is selected from C<sub>1</sub>(-8) alkoxy, nitrile, acyloxy, halogen and nitro, Y is selected from C<sub>1</sub>(-8) alkyl and X radicals, M is selected from B, As, Sb and P, Q is a halogen radical, a is a whole number equal to 0 to 4 inclusive, d is an integer equal to 4-6 inclusive and n is an integer equal to 1 to 4 inclusive.

4. The compound (p-carbomethoxyphenoxy)triphenylphosphonium hexafluoroarsenate.

4,341,715

## S-ALLYL-S'-N-BUTYL-TRITHIOCARBONATE

Robert M. Parlman, and James B. Kimble, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 6, 1980, Ser. No. 194,325

Int. Cl.<sup>3</sup> B03D 1/02; C07C 154/00

U.S. Cl. 260—455 B

1 Claim

1. S-Allyl-S'-n-butyltrithiocarbonate.

4,341,716

## POLYETHER POLYAMINES, THE SALTS THEREOF, PROCESS FOR THEIR MANUFACTURE AND THEIR USE

Helmut Diery, Kelkheim; Wolfgang Wagemann, Tremsbüttel; Joachim Weide, Kelkheim; Reinhold Deubel, Bad Soden am Taunus, and Martin Hille, Liederbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 22, 1980, Ser. No. 189,671

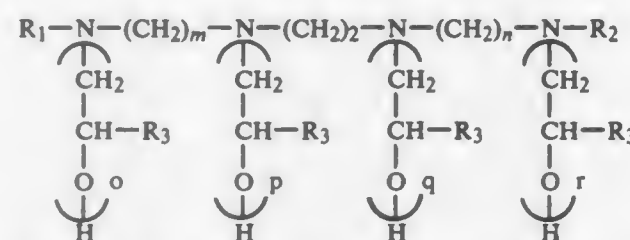
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1979, 2938623; May 5, 1980, 3017198

Int. Cl.<sup>3</sup> C07C 93/04, 91/10, 91/12, 89/02, 143/68; C07F 9/09

U.S. Cl. 260—456 A

4 Claims

1. Polyether polyamines of the formula



in which R<sub>1</sub> and R<sub>2</sub> are identical or different and denote C<sub>8</sub>-C<sub>30</sub>-alkyl, C<sub>8</sub>-C<sub>30</sub>-alkenyl or C<sub>8</sub>-C<sub>24</sub>-alkoxypropyl, m and n are 2 or 3, R<sub>3</sub> is hydrogen or methyl and the sum of o+p+q+r is an integer from 10 to 600, and the salts thereof.

4,341,717

## REACTOR FOR CONTACTING GASES AND A PARTICULATE SOLID

James L. Callahan, Bedford Heights; Harley F. Hardman, Lyndhurst, and Ernest C. Milberger, Solon, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

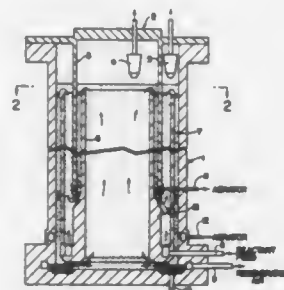
Division of Ser. No. 758,607, Jan. 12, 1977, Pat. No. 4,152,393.

This application Dec. 8, 1978, Ser. No. 967,557

Int. Cl.<sup>3</sup> C07C 120/14

U.S. Cl. 260—465.3

9 Claims



1. A process for effecting separate and successive contact of a particulate solid with a first gas stream and a second gas stream without substantial mixing of said gas streams comprising:

- establishing a particulate solid flowpath for continuous recirculation of particulate solid, said flowpath having in order a first upleg, a first downleg, a second upleg, a second downleg and a return leg for returning particulate solid from said second downleg to said first upleg,
- flowing said first gas stream upwardly through said first upleg so as to fluidize the particulate solid therein and elevate the particulate solid therein to a first junction between said first upleg and said first downleg,
- withdrawing said first gas stream from above said first junction so that particulate solid above said first junction falls through said first downleg and into said second upleg,
- flowing said second gas stream upwardly through said second upleg so as to fluidize the particulate solid therein and elevate the particulate solid therein to a second junction between said second upleg and said second downleg, and

withdrawing said second gas stream from above said second junction so that particulate solid above said second junction falls through said second downleg and into said return leg for return to said said first upleg.

4,341,718

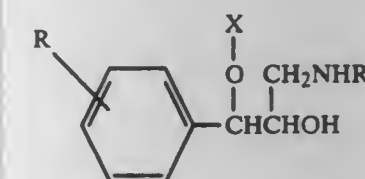
α-[(ALKYLAMINO)-METHYL]-β-ARYLOXY-BENZENEETHANOLS EXHIBITING ANTIARRHYTHMIC ACTIVITY  
Dong H. Kim, Wayne, and Stanley C. Bell, Penn Valley, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,294

Int. Cl.<sup>3</sup> C07C 83/00

U.S. Cl. 260—501.18

1. A compound represented by the formula:



wherein R represents hydrogen, halogen, a lower alkyl group, or a lower alkoxy group; X represents a phenyl group, a 1-naphthyl group, or a phenyl group substituted by halogen, a lower alkyl group or a lower alkoxy group; R<sub>1</sub> represents a lower alkyl group; and the pharmacologically acceptable acid addition salts thereof.

4,341,719

## PROCESS FOR THE PREPARATION OF 1-AMINO-2-ETHOXY-NAPHTHALENE-6-SULPHONIC ACID

Rolf Pütter, Duesseldorf; Theodor Pfister, Wuppertal; Manfred Niese, Leverkusen, and Peter Wenzl, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 26, 1981, Ser. No. 238,327

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1980, 3010372

Int. Cl.<sup>3</sup> C07C 143/66

U.S. Cl. 260—509

12 Claims

1. A process for the preparation of 1-amino-2-ethoxy-naphthalene-6-sulphonic acid from 2-hydroxy-naphthalene-6-sulphonic acid which comprises:

- contacting 2-hydroxy-naphthalene-6-sulphonic acid with at least an equimolar amount of an alkali metal nitrite in an aqueous solution or suspension in the presence of hydrochloric acid, the solution or suspension having a pH in the range of 2 to 5 and being at a temperature of 0° to 20° C.;
- reducing the reaction product of step A in an aqueous suspension by contacting the same with excess iron in the presence of at least an equivalent amount of iron (II) ions, relative to the reaction product obtained according to step A, in the presence of a mineral acid at a temperature from 50° to 120° C., and treating the thus-obtained reaction mixture with aqueous alkali metal hydroxide in the presence of iron oxide;
- contacting the product of step B with excess acetic anhydride in an aqueous solution or suspension at a pH in the range of 3 to 10 at a temperature from 0° to 100° C.;
- contacting the product of step C with an ethylating agent in the presence of an acid binding agent in an aqueous-organic solvent or diluent in a pH range from 8 to 14 at a temperature from 20° to 150° C.; and
- deacetylating the product of step D by contacting the same at reflux with an aqueous alkali metal hydroxide.

4,341,720

## PROCESS FOR THE PREPARATION OF OXALYL CHLORIDE

Axel Vogel; Guido Steffan, both of Odenthal; Karl Mannes, and Viktor Trescher, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 73,980, Sep. 10, 1979, abandoned. This application Mar. 24, 1981, Ser. No. 247,186

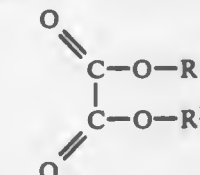
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840435

Int. Cl.<sup>3</sup> C07C 57/00

U.S. Cl. 260—544 Y

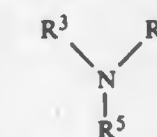
20 Claims

1. In a process for the preparation of oxalyl chloride from an oxalic acid compound of the formula



wherein R<sup>1</sup> and R<sup>2</sup> are identical or different and represent hydrogen or a lower alkyl radical,

and phosphorus pentachloride in the presence of phosphorus oxychloride, the improvement wherein the reaction is carried out in the presence of 0.001 to 0.5 part by weight per part by weight of phosphorus pentachloride of pyridine or an amino compound of the formula



wherein

R<sup>3</sup> represents alkyl, aralkyl, aryl or an acyl group, optionally substituted by amino or carboxamido and R<sup>4</sup> and R<sup>5</sup> are identical or different and represent hydrogen or alkyl, aralkyl, or aryl, optionally substituted by amino or carboxamido, or R<sup>4</sup> and R<sup>5</sup> are linked in an optionally substituted carbocyclic ring with 5 to 7 ring members, which optionally contains nitrogen, sulphur and/or oxygen and is optionally substituted by alkyl, aralkyl, aryl and/or amino groups, and R<sup>3</sup> represents hydrogen or alkyl, which can be linked with R<sup>4</sup> to form a carbocyclic ring, aralkyl or aryl, optionally substituted by an amino or carboxamido group, or optionally forms a double bond in one of the radicals R<sup>4</sup> or R<sup>5</sup>, and the oxalyl chloride formed is distilled off during the reaction.

4,341,721

## DIPHOSPHITES

Wadim Batorewicz, New Haven, Conn., assignor to Uniroyal, Inc., New York, N.Y.

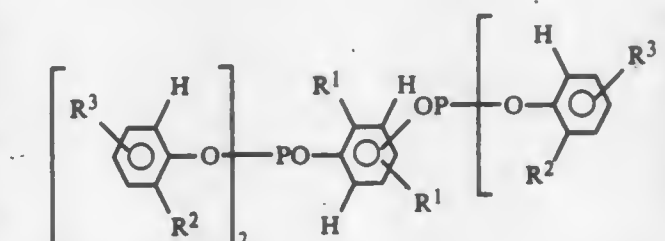
Filed Oct. 1, 1980, Ser. No. 193,220

Int. Cl.<sup>3</sup> C07F 9/141; C08K 5/52

U.S. Cl. 260—930

12 Claims

1. A diphosphite having the structural formula



wherein R<sup>1</sup> and R<sup>2</sup> may be the same or different and are C<sub>4</sub> to C<sub>12</sub> tertiary alkyl or C<sub>9</sub> to C<sub>14</sub> tertiary aralkyl; R<sup>3</sup> is hydrogen, C<sub>1</sub> to C<sub>18</sub> alkyl or C<sub>7</sub> to C<sub>18</sub> aralkyl.



4,341,722

**2-THIONO-(2H) [1,3,2] DIOXAPHOSPHORINANES (PHOSPHOLANES)**

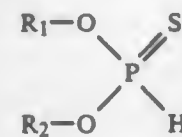
Horst Zinke, Ernstshofen, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,701

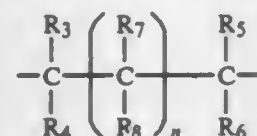
Claims priority, application Switzerland, Jul. 6, 1979, 6351/79 Int. Cl.<sup>3</sup> C07F 9/21

U.S. Cl. 260—937

1. A compound of formula I

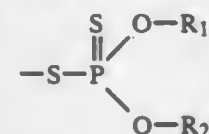


wherein

R<sub>1</sub> and R<sub>2</sub> together form a group of formula II

in which

n is nought or 1,

when n is 1, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub> and R<sub>6</sub> independently of one another are each hydrogen, C<sub>1</sub>-C<sub>4</sub>-alkyl, cyclohexyl or phenyl, andwhen n is nought, R<sub>4</sub>, R<sub>5</sub> and R<sub>6</sub> are as defined above, R<sub>3</sub> is —CH<sub>2</sub>Z in which Z is —XR<sub>10</sub>, —N(R<sub>11</sub>)R<sub>12</sub>, —S—P(S)—(OR<sub>10</sub>)<sub>2</sub> or a group of formula III

wherein R<sub>1</sub> and R<sub>2</sub> are as defined above, X is oxygen or sulfur, R<sub>10</sub>, R<sub>11</sub> and R<sub>12</sub> independently of one another are each C<sub>1</sub>-C<sub>18</sub> alkyl, C<sub>5</sub>-C<sub>12</sub>-cycloalkyl, phenyl, C<sub>7</sub>-C<sub>9</sub>-aralkyl, or said phenyl or said C<sub>7</sub>-C<sub>9</sub>-aralkyl substituted by one or two C<sub>1</sub>-C<sub>12</sub>-alkyl groups, or R<sub>10</sub>, R<sub>11</sub> and R<sub>12</sub> are each C<sub>2</sub>-C<sub>10</sub>-alkoxyalkyl or C<sub>3</sub>-C<sub>20</sub>-alkoxycarbonylalkyl, and R<sub>7</sub> and R<sub>8</sub> independently of one another are each nitro, cyano, C<sub>2</sub>-C<sub>19</sub>-alkoxycarbonyl, C<sub>2</sub>-C<sub>18</sub>-alkanoyl or a group (R<sub>9</sub>O)<sub>2</sub>P(O)— in which R<sub>9</sub> is C<sub>1</sub>-C<sub>18</sub>-alkyl, or R<sub>7</sub> and R<sub>8</sub> together are 2-butenylene or 2-pentenylene, or R<sub>7</sub> can also be hydrogen, C<sub>1</sub>-C<sub>4</sub>-alkyl, cyclohexyl or phenyl.

4,341,723

**VARIABLE VENTURI CARBURETOR**

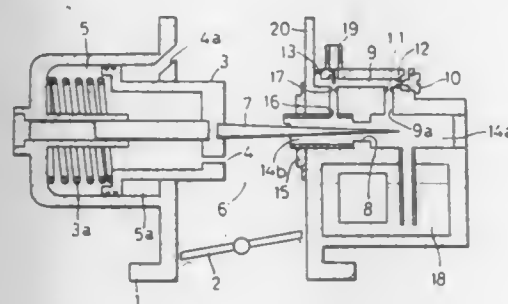
Hidenori Hirose, 6-2, Nishihata, Kyowa-cho, Obu-shi, Aichi-ken, Japan

Filed Dec. 23, 1980, Ser. No. 219,524

Claims priority, application Japan, Aug. 26, 1980, 55-121546[U]

Int. Cl.<sup>3</sup> F02M 9/06

U.S. Cl. 261—44 C



1. In combination with a variable venturi carburetor for an

2 Claims

(I) for supplying part of the fuel in said main fuel passage to said venturi portion, a valve provided at the downstream portion of said fuel bypass for effectively closing said fuel bypass at stoppage of the engine, an air passage provided upstream of said valve and in said fuel bypass for communicating with atmospheric air and at least one air throttle including a variable throttle provided in said air passage.

(II)

4,341,724

**METHOD FOR THE MANUFACTURE OF CERAMIC PRODUCTS**

Leonid L. Koshlyak, Zheleznodorozhny, ulitsa Svobody, 9a, kv. 134; Jury P. Kareev, Elektrougli, ulitsa Mayakovskogo, 22, kv. 62; Evgeny A. Romankov, Elektrougli, ulitsa Shkolnaya, 45, kv. 53; Sergei N. Zotov, Pavlovsky posad, Komsomolsky pereulok, 3, all of Moskovskaya oblast; Marx S. Belopolsky, ulitsa Orskaya, 8, kv. 87, and Villen V. Kalinovsky, Lenin-gradskoe shosse, 92, kv. 54, both of Moscow, all of U.S.S.R.

Filed Jul. 25, 1978, Ser. No. 927,757

Claims priority, application U.S.S.R., Aug. 3, 1977, 2513702 Int. Cl.<sup>3</sup> C04B 33/30

U.S. Cl. 264—27

2 Claims

1. A method for the manufacture of ceramic products comprising moulding products of a starting plastic body and subsequent heat treatment of the moulded products during their continuous movement; said heat treatment being performed at the stage of drying from the moulding moisture content to an equilibrium moisture content with external and internal heat application to the products with an intensity ensuring maximum moisture removal rate of not more than 0.5% per minute, the internal heat application being performed until maximum hygroscopic moisture content of products is achieved, and the external heat application being performed after the shrinkage of the products is over and thereafter firing the products.

4,341,725

**MOLDING REFRACTORY AND METAL SHAPES BY SLIP-CASTING**

Gerald Q. Weaver, Mountain Rd., Princeton, Mass. 01541, and Bruce G. Nelson, Box 42, West Wardsboro, Vt. 05360

Continuation-in-part of Ser. No. 860,129, Dec. 13, 1977, abandoned. This application May 19, 1980, Ser. No. 150,781

Int. Cl.<sup>3</sup> C04B 35/02

U.S. Cl. 264—28

6 Claims

1. A method of slip-casting, comprising the steps of: forming an appropriately shaped slip-casting mold; preparing a casting slip; casting said slip into said mold; freezing the cast slip; drying said frozen casting; and firing the green shape; wherein the improvement comprises; incorporating in said casting slip, an amount of a hydrogen bond forming compound sufficient to prevent the formation, in said frozen casting, of ice crystal large enough to result in scars in the dried casting.

4,341,726

William W. Wilkes, Florence, S.C., assignor to Fiber Industries, Inc., New York, N.Y.

Division of Ser. No. 164,425, Jun. 30, 1980, Pat. No. 4,288,207. This application Apr. 7, 1981, Ser. No. 251,816

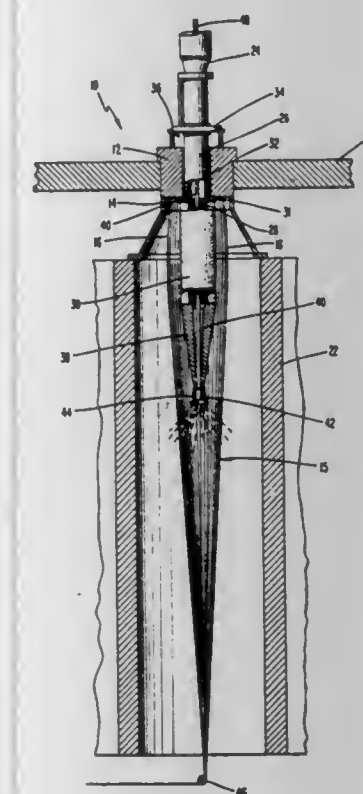
Int. Cl.<sup>3</sup> B29H 21/04

U.S. Cl. 264—130

4 Claims

1. In a melt-spinning process of the type wherein molten

polyester polymer is extruded downwardly through a filter pack and through an annular array of holes of a spinneret to form a circularly arranged group of filaments, quench gas is delivered downwardly through said pack and spinneret coaxially relative to said row of holes and then redirected and discharged outwardly through the group of filaments, a finish substance is applied to the filaments, and the filaments are



gathered and redirected at a stationary or rotating guide, the improvement wherein the finish application comprises the steps of:

conducting the finish substance through said pack and through said spinneret and at least partly internally of the flow of quench gas, and discharging the finish substance, in mist form, outwardly in a low turbulence spray pattern from within the group of filaments at a level below the discharge of quench gas.

4,341,727

**PROCESSING VINYL EXTRUDATE**

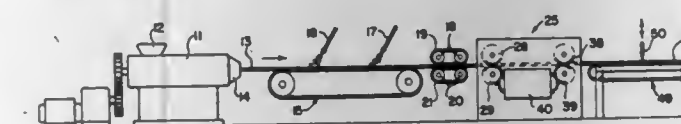
Clifford A. Landsness, Akron; William R. Rinker, Cuyahoga Falls; Thomas E. Barnes, Clinton, and Maurice E. White, Akron, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 14, 1981, Ser. No. 225,070

Int. Cl.<sup>3</sup> B29C 17/08

U.S. Cl. 264—145

6 Claims



1. An apparatus for the continuous processing of an extruded vinyl strip comprising an extruder for extruding a thin vinyl strip of material, a punching machine mounted in alignment with said extruder, conveyor means mounted between said extruder and punching machine for conveying said vinyl strip from said extruder to said punching machine, said punching machine having a first pair of cooperative rotary die means for receiving said vinyl strip in their bite portion, a second pair of cooperative rotary die means having a bite portion in alignment with said bite of said first pair of rotary die means, each

of said first pair of rotary die means having male die cutting means on the peripheral surface thereof, operative to perform embossing cuts on said vinyl strip, one of said second pair of rotary die means having a plurality of male punchout die means on the peripheral surface thereof, and the other one of said second pair of rotary die means having a plurality of female die means on the peripheral surface thereof complementary to said male punchout die means to facilitate the removal of the blanks punched by said punching machine.

3. A process for stamping out a plurality of closely spaced blanks out of a thin sheet of material comprising the steps of extruding a sheet of vinyl material, cooling said material as said material is conveyed, embossing said sheet material on the upper and lower surface at a first station along aligned shapes leaving a thin membrane interconnecting each of said blank with said sheet material, and punching out said membrane of each of said blanks at a second station.

4,341,728

**METHOD FOR MAKING AN IUD WITH SHRINKING OF A MEDICATED ATTACHMENT ONTO A SUPPORT**

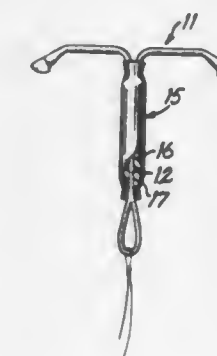
Dale N. Robertson, Scotch Plains, N.J., and John Braun, Westbury, N.Y., assignors to The Population Council, Inc., New York, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,858

Int. Cl.<sup>3</sup> B29C 5/00, 27/00; B29D 3/00

U.S. Cl. 264—161

13 Claims



1. A method of making a combination intrauterine device and drug release attachment comprising:

(a) providing a nonfiller-containing formable silicone rubber for a carrier material; (b) mixing together a drug for in utero administration and a formable carrier material from step (a); (c) providing a nonmedicated and relatively stable platform for intrauterine placement; (d) forming the mixture of drug and carrier material into an attachment adapted to fit onto the platform; (e) mounting the attachment on the platform structure for controlled release of the drug in utero; and (f) said mounting including expanding the attachment by immersion in a solvent suitable for swelling the polymer and in which the polymer and the drug are substantially insoluble, and shrinking the expanded attachment about a portion of the platform.

4,341,729

**METHOD AND APPARATUS FOR MAKING BIAXIALLY STRETCHED TUBULAR FILMS**

Kohtaro Hayashi, Chibaken; Ko Morihara, Chibashi, and Kohji Nakamura, Chibaken, all of Japan, assignors to Chisso Corporation, Tokyo, Japan

Filed Dec. 19, 1979, Ser. No. 105,220

Claims priority, application Japan, Dec. 25, 1978, 53-159456 Int. Cl.<sup>3</sup> B29D 7/24

U.S. Cl. 264—566

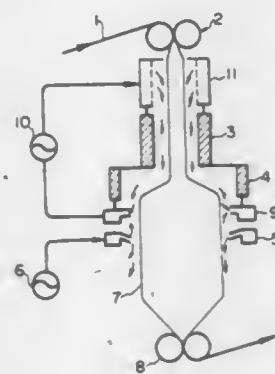
4 Claims

1. In an apparatus for making biaxially stretched thermoplastic synthetic resin, which comprises pinch rolls for the delivery



of a tubular resin film, stretching pinch rolls to take up the resin film, means to inflate said tubular film with pressurized gas to form a bubble having a maximum diameter and heating means intermediate said delivery and stretching rolls that is adapted to apply heat to said resin film, the improvement which comprises

- (a) cooling means located downstream of said heating means and adapted to apply a stream of cooling gas against the maximum diameter portion of said bubble,
  - (b) a suction ring extending annularly around the maximum diameter portion of said bubble at a point intermediate said heating means and said cooling means, the plane of said suction ring being perpendicular to the line extending between said pinch rolls, and
  - (c) a suction fan connected to said suction ring which is adapted to suck gas through said suction ring,
- whereby gas flow around the stretching bubble is made uniform and at least a portion of the hot gases caused by said heating means and at least a portion of the cooling gases generated by said cooling means are simultaneously sucked into said suction ring in an annular zone surrounding the bubble to thereby establish a sharply delineated annular separation line



between the portion of the bubble that is being heated and the portion of the bubble that is being cooled.

4. In a method for making biaxially stretched thermoplastic synthetic resin by longitudinally stretching a tubular resin film between two spaced apart points and at the same time inflating said tubular film with pressurized gas to form a bubble having a maximum diameter, the improvement which comprises

- (a) heating said tubular film in advance of the point where it expands into a bubble having maximum diameter,
- (b) applying a stream of cooling gases against the exterior of said bubble at a location downstream of the point where the bubble first reaches its maximum diameter,
- (c) applying a suction force at a point intermediate the locations where the film is heated and then cooled in accordance with (a) and (b), so that both at least a portion of the hot gases caused by said heating means and at least a portion of the cooling gases generated by the cooling means are simultaneously sucked away from the exterior of the surface of the bubble,

whereby the gas flow around the exterior of the film is made uniform and a sharply delineated annular separation line is established between the stretching portion of the bubble and the cooling portion of the bubble.

4,341,730

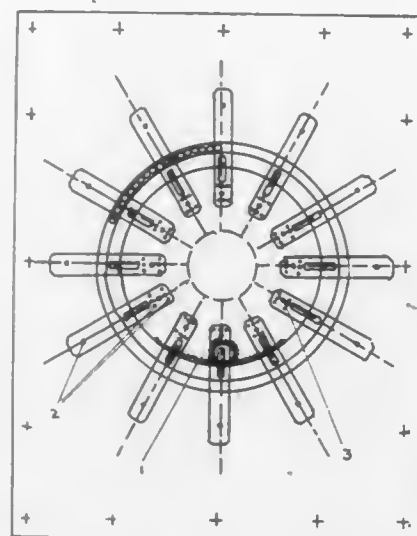
## BEAM DANCER FUSION DEVICE

Henry B. Maier, 6 Sealey Ave., Hempstead, Long Island, N.Y. 11550

Continuation-in-part of Ser. No. 940,332, Sep. 7, 1978, abandoned, and a continuation-in-part of Ser. No. 76,699, Sep. 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 924,386, Jul. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 773,914, Mar. 3, 1977, Pat. No. 4,137,096. This application May 12, 1980, Ser. No. 148,857 - Int. Cl.<sup>3</sup> G21B 1/00

U.S. Cl. 376-103

4 Claims



1. A fusion device comprising

- (a) an energy input device
- (b) an optical waveguide system including at least one first main waveguide having an input end and output end, a plurality of second branched waveguides having input ends and output ends, means for coupling the input end of said first main waveguide to said energy input device, means for coupling the input ends of said plurality of second branched waveguides to the output end of said main waveguide, the diameter of said first main waveguide being substantially larger than the diameter of a single one of said second branched waveguides;
- (c) mechanical means for moving the output ends of said plurality of second branched waveguides;
- (d) means for establishing a focal point, said mechanical means directing the output ends of said plurality of second branched waveguides to said focal point;
- (e) a target including a fusion fuel and a thiosulfate salt, positioned at said focal point, wherein upon activation of the energy input device an energy irradiation is produced at the focal point which then comprises a superimposition of energy flux on the target surface from the mechanical movement of the output ends of said second branched waveguides during irradiation.

4,341,731

## APPARATUS FOR EFFICIENT GENERATION OF LOW-ENERGY POSITRONS

Allen P. Mills, Jr., New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J. Filed Jan. 7, 1980, Ser. No. 109,776

Int. Cl.<sup>3</sup> G21G 1/06

U.S. Cl. 376-156

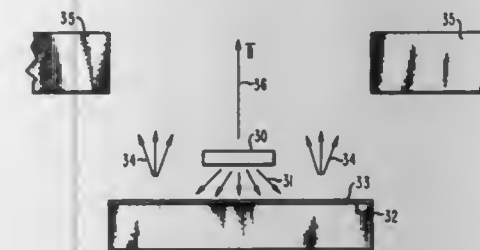
9 Claims

1. Apparatus for generating positrons of approximately thermal energy, comprising

- (a) a source of positrons comprising radioactive atoms that decay by positron emission, distributed throughout an active volume of a substrate, the active volume having a free surface, the radioactive atoms having a concentration profile, measured in a direction normal to the free surface, with the concentration profile having a continuous negative slope with increasing distance from the free surface;

- (b) in an evacuable enclosure, a positron moderator, comprising a solid object having at least one active surface, at least a part of the active surface having a negative positron work function, the moderator being positioned so that a substantial fraction of the positrons emitted from the active volume of the source impinge on the moderator;
- CHARACTERIZED IN THAT
- (c) the substrate of the source comprises a backing layer and a diffusion layer, the diffusion layer covering at least part of a surface of the backing layer, and the slope of the

clearance space comprising an annular trough affixed to one of said components by a member extending downwardly from said one of said components, and an annular blade affixed to the other of said adjacent components and extending downwardly so as to be suspended within said trough, such that said downwardly extending member and downwardly extending blade traverse the region occupied by said cover gas and said upper coolant pool surface, and extend into said liquid coolant pool.



concentration profile of the radioactive atoms, measured in the direction normal to the free surface, has at least one discontinuity.

- (d) the object consists essentially of a single crystal, oriented to make the active surface of the object substantially parallel to a crystallographic plane having a positron work function more negative than that of clean Al (100), and
- (e) the enclosure is maintainable at a pressure less than or equal to about  $10^{-9}$  Torr.

4,341,732

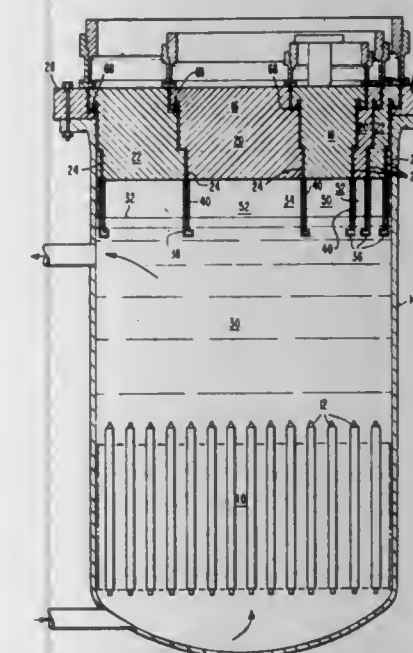
## NUCLEAR REACTOR DIP SEAL

John E. Sharbaugh, Bullsken Township, Westmoreland County, and Joseph M. Kazan, New Stanton, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa. Filed May 29, 1979, Ser. No. 43,407

Int. Cl.<sup>3</sup> G21C 13/06

U.S. Cl. 376-206

3 Claims



1. In a liquid metal cooled nuclear reactor including a vessel, an upper structure atop said vessel, a core disposed within said vessel, within said vessel a liquid coolant pool substantially filling said vessel, said liquid coolant pool having an upper surface located above said core, a cover gas disposed in a region between said coolant pool upper surface and said upper structure, said upper structure having a first component and a second adjacent component with an annular clearance space between said adjacent components, one of said components being rotatable with respect to said adjacent component, improved means for separating said cover gas from said annular

4,341,733

## METHOD OF AND DRIVE FOR ACTUATING ABSORBER RODS IN PEBBLE BED REACTORS

Herbert Haas, Aachen, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

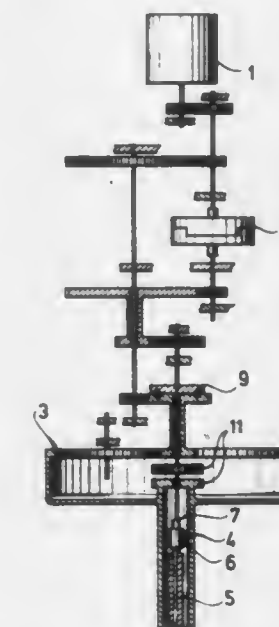
Filed Feb. 8, 1980, Ser. No. 119,764

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1979, 2904941

Int. Cl.<sup>3</sup> G21C 7/16

U.S. Cl. 376-226

4 Claims



1. A drive for actuating absorber rods in pebble bed reactors, with which a respective rod is selectively movable into and out of the ball pile in a rotary manner with limited advancing speed and with both a longitudinal displacement as well as a rotation of a rod operatively connected therewith, said drive comprising in combination;

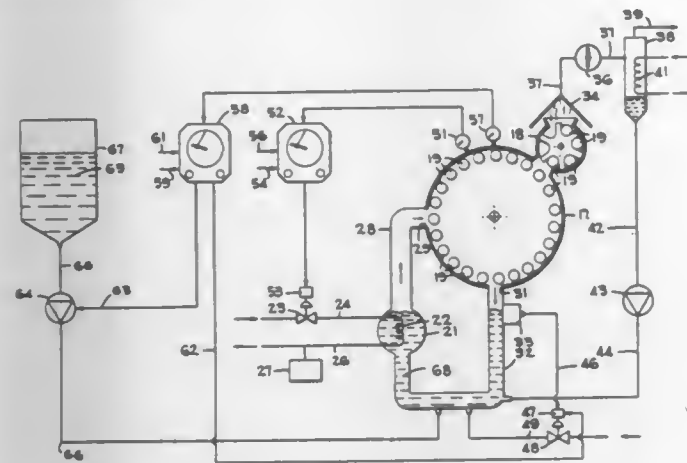
- a drive motor;
- an axially fixed advancing spindle having a spindle nut rigidly connected with said absorber rod;
- a rotary tube driven at constant speed, said spindle nut being journaled in said rotary tube in such a way permitting said nut to be axially displaceable yet having said nut fixed against rotation in said tube;
- a free-running drive or freewheel operatively connected with said drive motor and said spindle, removal of said rod from said ball pile occurring at a fixed ratio between driving mechanism and driven end by said freewheel; and
- a hydrodynamic torque limiting coupling provided between said drive motor and said spindle to limit transferrable torque, the rotary speed of said spindle being limited during introduction of said rod into said ball pile by said free-running drive causing engagement when the driven end speed of said coupling equals the driving speed by transmitting to said rod an advancing force commensurate with ball strength and rod stability so that ball destruction and bending-through of the rod are safely avoided wherein the linear movement of said rod is transmitted thereto only by said coupling.



**4,341,734**  
**METHOD FOR PROVIDING OVERRIDING PRESSURE**  
**IN HEAT PROCESSING SEALED CONTAINERS**  
 Andrea Dareschio, Parma, Italy, assignor to FMC Corporation,  
 Chicago, Ill.

Filed Jun. 19, 1980, Ser. No. 161,085  
 Int. Cl.<sup>3</sup> A61L 2/06; A23L 3/08  
 U.S. Cl. 422-25

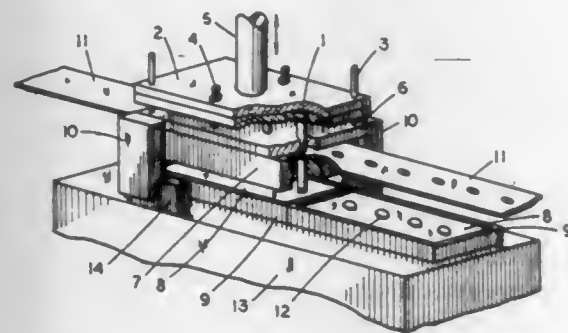
11 Claims



1. A method of maintaining a predetermined pressure differential between the interior and the exterior of sealed containers at a predetermined temperature wherein the containers are disposed in a sealed chamber and contain a first liquid and a headspace therein, said containers being of the type capable of maintaining an internal pressure therein that is different than the pressure acting on the exterior of the containers; comprising the steps of  
 heating a second liquid to the predetermined temperature, said second liquid when heated generating a vapor having a predetermined higher vapor pressure than the first liquid, and  
 introducing only the second liquid vapors into the sealed chamber for heating the containers to substantially said predetermined temperature and for providing a pressure within the chamber acting on the exterior of the containers that is higher than the pressure within the containers to prevent damage to the sealed containers.

**4,341,735**  
**SAMPLE CARRIER MATERIAL HANDLING**  
**APPARATUS**  
 Paul E. Seifried, New City, N.Y., assignor to American Cyanamid Company, Stamford, Conn.  
 Filed Mar. 28, 1980, Ser. No. 134,843  
 Int. Cl.<sup>3</sup> G01N 1/04, 1/10, 33/48  
 U.S. Cl. 422-66

1 Claim



1. An apparatus for handling sample carrier material comprising:  
 (a) a punch holder;  
 (b) at least one punch means raisably and lowerably mounted on said holder;  
 (c) a die having an upper and a lower surface, the thickness of said die being less than the punch means lower travel from said die upper surface, said die in functional alignment with said punch means, and said die upper and lower

surface in a cutting and delivery position, respectively, of said sample material; and

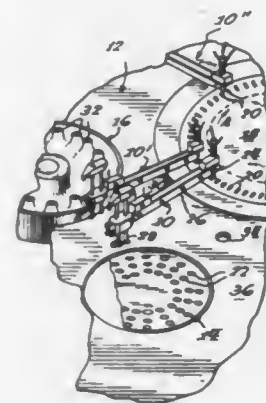
(d) control means to regulate said punch means whereby sample carrier material is placed on said die upper surface; said punch means is lowered by said control means such that said sample material is cut and forced through said die by said punch means, is delivered out of said die at said lower surface and is deposited onto a media; and said punch means is raised by said control means.

**4,341,736**  
**FLUID TRANSFER MECHANISM**  
 Vladimir J. Drbal, Hollywood Hills; Guenter Ginsberg, Miami; Bruce J. Hodgins, Hialeah, all of Fla.; John A. Richardson, Shirley, Mass.; Ted W. Britton, Opa Locka, Fla.; Richard M. Grimm, Zolfo Springs, Fla.; Ernesto Bello, Miami Springs, Fla.; Rodolfo R. Rodriguez, Miami, Fla., and Ivan K. Saltz, Cooper City, Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Continuation of Ser. No. 115,691, Jan. 28, 1980, Pat. No. 4,276,260. This application Mar. 27, 1981, Ser. No. 248,276. The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.  
 Int. Cl.<sup>3</sup> G01N 1/12, 1/14

U.S. Cl. 422-100

3 Claims



1. A multiple position fluid transfer mechanism having a generally elongate, movable arm member for holding fluid probe means at a distal end thereof to pick up and dispense fluid, comprising oscillating means mounted to said arm member for oscillation of said probe to stir fluid into which said probe is inserted.

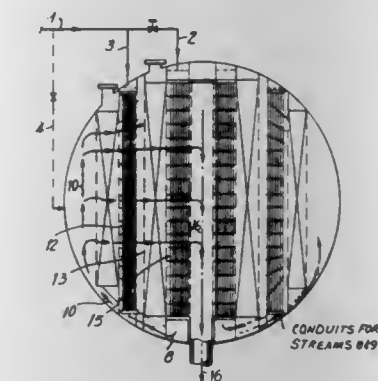
**4,341,737**  
**APPARATUS FOR CARRYING OUT CATALYTIC**  
**EXOTHERMIC AND ENDOTHERMIC HIGH-PRESSURE**  
**GAS REACTIONS**  
 John V. Albano, Oradell, and George Friedman, Clark, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.  
 Filed May 22, 1979, Ser. No. 41,378  
 Int. Cl.<sup>3</sup> B01J 8/04; C01C 1/04

U.S. Cl. 422-148

6 Claims

1. A reactor for performing catalytic reactions in the gaseous phase, consisting essentially of a single-walled pressure shell, containing means defining a plurality of spaced apart, in a radial direction, substantially concentrically disposed annular catalyst beds with particulate catalyst in each bed; a plurality of annular shaped, substantially concentrically disposed cross-flow heat exchange means; said annular catalyst beds and said annular heat exchange means being substantially concentric and alternately disposed: means for passing a synthesis fluid into said shell through said heat exchange means and said catalyst beds in a radial direction; each said cross-flow heat exchange means being operatively associated with each of said catalyst beds for providing inter-stage feed-effluent heat exchange and having a shell side and a tube side adjacent one end

of said bed wherein the shell-side fluid in each said cross-heat exchange means flows in a radial direction and substantially



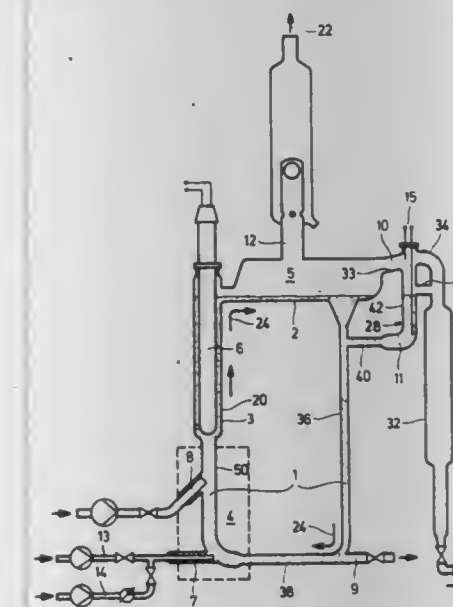
normal to that in which the tube-side fluid flows; and means for withdrawing a product gas from the pressure shell.

**4,341,738**  
**DECOMPOSITION AND OXIDATION SYSTEM**  
 Gerhard Kemmler, Karlsruhe; Herbert Wiczorek, Weingarten, and Jürgen Plessing, Stutensee, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe Gesellschaft mit beschränkter Haftung, Karlsruhe, Fed. Rep. of Germany  
 Filed Oct. 16, 1980, Ser. No. 197,703  
 Claims priority, application Fed. Rep. of Germany, May 8, 1980, 3017547

Int. Cl.<sup>3</sup> B01J 19/24

U.S. Cl. 422-184

14 Claims



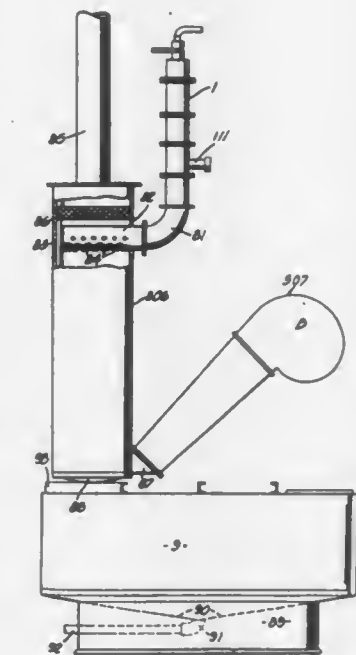
1. An apparatus for decomposing difficultly soluble substances, or for oxidizing organic wastes containing difficultly soluble substances and decomposing the difficultly soluble substances contained therein, in which apparatus the substances and/or wastes are reacted with at least one hot acid, and from which apparatus, heat losses are compensated, comprising:

- (a) a ring-shaped reaction vessel containing said hot acid and including at least one horizontally extending region and at least one vertically extending region;
- (b) a feeder means connected to said vertically extending region for adding to said reaction vessel the substances and/or wastes, further acid, and gas;
- (c) degasification means conducted to said horizontally extending region; and
- (d) driving means to cause the circulation of materials present in said reaction vessel in the form of a reaction gas produced during the introduction of at least one of the substances, the wastes, and the further acid.

**4,341,739**  
**PHOSPHORIC ACID AMMONIATION APPARATUS**  
 John D. Ellis, Upland, Calif.; George Crichton, Guadalajara, Mexico; Millard C. Godwin, and George C. Morris, both of Lakeland, Fla., assignors to Leathers Chemical Company, Limited, Yorkshire, England  
 Continuation of Ser. No. 145,493, May 20, 1971, Pat. No. 4,185,075, which is a continuation-in-part of Ser. No. 684,348, Nov. 20, 1967, abandoned, and Ser. No. 785,321, Dec. 19, 1968, abandoned, and a continuation of Ser. No. 853,683, Aug. 28, 1969, abandoned. This application Jul. 24, 1979, Ser. No. 60,044. The portion of the term of this patent subsequent to Jan. 22, 1997, has been disclaimed.  
 Int. Cl.<sup>3</sup> B01J 8/04; C01B 15/16; C05B 11/00

U.S. Cl. 422-207

14 Claims

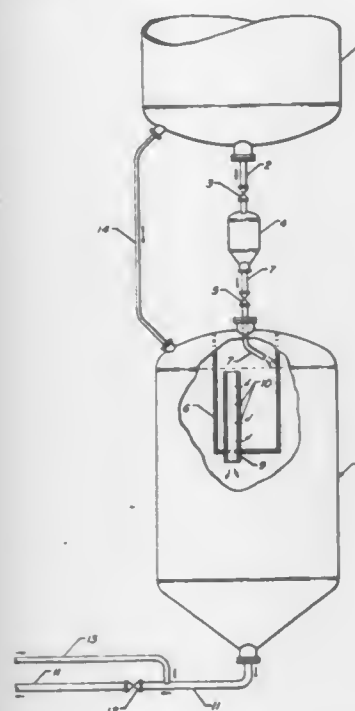


1. Apparatus suitable for the ammoniation of phosphoric acid and the production of an aqueous ammonium phosphate solution, assembled in combination, comprising,

- (a) a fluid reactor means having a plurality of inlet means at one end thereof suitable for the admission of phosphoric acid, ammonia and water, said inlet means being so positioned as to provide for rapid ammoniation of the phosphoric acid with the evolution of heat, to produce a reaction product mixture containing a liquid portion and steam, said fluid reactor means having an exit means adapted for the expulsion, at the other end thereof, of the reaction products mixture therefrom by steam generated by the heat liberated in the ammoniation process;
- (b) columnar vessel means having an outlet means at one end thereof and enclosing at the other end thereof the said other end of said fluid reactor means;
- (c) a plurality of barrier means obturating said columnar vessel means in a spaced-apart relationship, said barrier means having a plurality of apertures therein for the passage of reaction products mixture therethrough;
- (d) inlet quench means connected to said columnar vessel means for the introduction into said columnar vessel means of a liquid aqueous quenching fluid; and
- (e) means, in communication with said other end of said fluid reactor means, for separating steam from the liquid portion of the reaction mixture and removing the separated steam from said apparatus.



**4,341,740**  
**CATALYST FLOW DAMPENER**  
 Arthur R. Greenwood, Niles, Ill., assignor to UOP Inc., Des Plaines, Ill.  
 Division of Ser. No. 132,969, Mar. 24, 1980, abandoned. This application Jun. 18, 1981, Ser. No. 274,909  
 The portion of the term of this patent subsequent to Dec. 29, 1998, has been disclaimed.  
 Int. Cl.<sup>3</sup> B01J 8/12; B65G 65/23, 65/32  
 U.S. Cl. 422—310



1. An apparatus for the recovery of hot regenerated catalyst particles from a moving bed regenerator column which comprises:

- means for periodically discharging a measured volume of said hot particles from said regenerator column into a flow dampener situated inside a catalyst hopper of substantially larger volume;
- said flow dampener comprising an enclosed chamber and an open-ended standpipe, the major portion of the standpipe being within said chamber and having its lower open end below the bottom of the chamber, said major portion of the standpipe within the chamber containing a plurality of vertically spaced apart outlet openings through which said flow dampener is in open communication with said catalyst hopper;
- said outlet openings being vertically spaced apart to provide a particle hold up volume between said outlet openings substantially equivalent to the aforesaid measured volume; and
- said outlet openings being individually sized to accommodate a particle flow rate up to about 50% of the average flow rate at which said particles are discharged into said flow dampener, whereby a substantially continuous flow of hot particles is discharged from said flow dampener through said outlet openings and into said catalyst hopper.

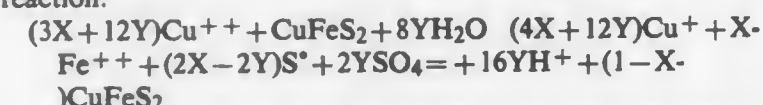
**4,341,741**  
**RECOVERY OF RHODIUM FROM CARBONYLATION RESIDUES**  
 Walter C. Davidson, Mahwah, N.J., and Benjamin F. Fieselmann, Congers, N.Y., assignors to The Halcon SD Group, Inc., New York, N.Y.  
 Filed Mar. 6, 1981, Ser. No. 241,193  
 Int. Cl.<sup>3</sup> C01G 55/00

U.S. Cl. 423—22  
 1. A process for recovering Group VIII noble metals bound to residues of noble metal catalyzed carbonylation reactions wherein said residues are separated from the carbonylation reaction mixture and thereafter residues containing unex-

tracted bound noble metals are treated with a reagent comprising an amine, in an amount sufficient to free said noble metals from said residues and enable said bound noble metals to be extracted by a subsequent contact with an aqueous halogen acid.

**4,341,742**  
**CUPROUS CHLORIDE PRODUCTION FROM CHALCOPYRITE**  
 Robert H. Clark, Tucson, and Joseph P. Wilson, Tubac, both of Ariz., assignors to Cyprus Metallurgical Processes Corp., Los Angeles, Calif.  
 PCT No. PCT/US80/01315, § 371 Date Oct. 6, 1980, § 102(e) Date Oct. 6, 1980, PCT Pub. No. WO82/01197, PCT Pub. Date Oct. 15, 1982  
 PCT Filed Oct. 6, 1980, Ser. No. 261,124  
 Int. Cl.<sup>3</sup> C01G 3/04

U.S. Cl. 423—39  
 1. A process for producing cuprous chloride from copper sulfide ores containing chalcopyrite comprising performing an initial leach of the chalcopyrite in accordance with the general reaction:



under a balance of reaction conditions of reaction temperature and time, of initial mole ratio of cupric ion to chalcopyrite copper and of initial mole ratio of ferrous chloride to chalcopyrite copper, such that "X" is maintained from about 0.35 to about 0.9, "Y" is maintained from about 0.075 to about 0.4, and the initial summation of 3X + 12Y is greater than 3, wherein the cupric ion to chalcopyrite copper mole ratio is initially within the range of about 3 to about 6, the ferrous chloride to chalcopyrite copper mole ratio is initially at least 3, the reaction temperature is maintained from about 80° C. to the solution boiling point, and the reaction is conducted for a time of from about 2 to about 12 hours.

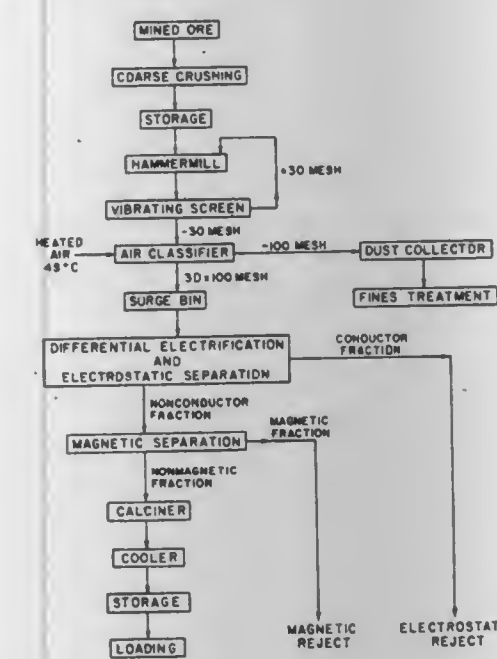
**4,341,743**  
**SIMULTANEOUS OXIDATION AND EXTRACTION OF VANADIUM FROM WET-PROCESS PHOSPHORIC ACID**  
 Frederick N. Tebbe, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
 Filed Dec. 29, 1980, Ser. No. 220,822  
 Int. Cl.<sup>3</sup> C01G 31/00

U.S. Cl. 423—63  
 1. In an extraction process for recovering vanadium values from wet-process phosphoric acid solution wherein vanadium in the solution is oxidized to vanadium (V) and thereafter extracted from the solution by contact with a DEPA-TOPO or DOPPA-TOPO water immiscible organic phase, the improvement which comprises combining the vanadium oxidation and extraction steps by adding sufficient oxidant to the phosphoric acid solution to convert vanadium to the vanadium (V) oxidation state and simultaneously extracting the vanadium values.

**4,341,744**  
**SODA ASH PRODUCTION**  
 Robert J. Brison, Arvada, Colo., and Michael E. Webber, Martinez, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

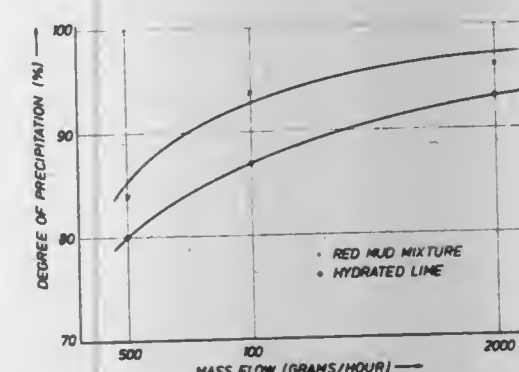
Continuation-in-part of Ser. No. 5,644, Jan. 22, 1979, abandoned. This application Nov. 16, 1979, Ser. No. 95,035  
 Int. Cl.<sup>3</sup> C22B 26/10; B03C 7/00, 1/00; C01D 31/24  
 U.S. Cl. 423—206 T  
 1. A process for the production of soda ash from trona ore which comprises  
 (a) reducing the ore particle size to a maximum of about 4.0 millimeters in diameter,  
 (b) removing fines from the ore to produce a minimum particle size of about 0.1 millimeter in diameter,

- differentially electrifying the ore particles according to differences in conductance,
- segregating the ore particles by electrostatic separation into at least two fractions according to the differences in electrical charge resulting from the electrification of step (c), and



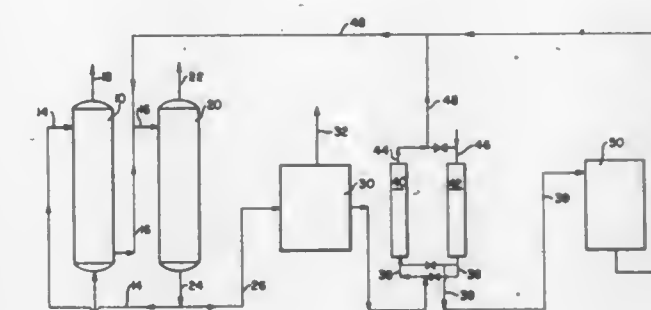
- calcining the fraction of least conductance to convert the trona contained therein to soda ash, steps (a) through (d) occurring at a temperature not to exceed about 100° C.

**4,341,745**  
**PROCESS FOR ELIMINATING ACIDIC COMPONENTS FROM WASTE GASES**  
 Hans Zopff, Ratekau, and Hans-Ekkehard Müller, Hamburg, both of Fed. Rep. of Germany, assignors to Kommanditgesellschaft "ALBERTA" Chemische Fabrik GmbH & Co., Hamburg, Fed. Rep. of Germany  
 Filed Jul. 18, 1980, Ser. No. 170,063  
 Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931169  
 Int. Cl.<sup>3</sup> B01D 53/34  
 U.S. Cl. 423—210



1. Process for eliminating acidic components from waste gases by means of finely particulate basic adsorbents introduced into the waste gas stream, characterized in that the adsorbent used is a direct reaction product of a mixture of red mud, an iron rich residue from the purifying of bauxite by the Bayer process, and an alkaline earth metal hydroxide or aluminium hydroxide, which reaction product has been prepared by reacting alkaline earth metal oxides or aluminium oxide with stoichiometric quantities of water in the presence of red mud.

**4,341,746**  
**REMOVAL OF DEGRADATION PRODUCT FROM GAS TREATING SOLUTION**  
 Jan A. Sarsten, Millington; Fred J. Heinzelmann, Fanwood, and Ferdinand C. Cataneo, Randolph, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.  
 Filed Jun. 1, 1981, Ser. No. 269,258  
 Int. Cl.<sup>3</sup> B01D 53/34, 9/02  
 U.S. Cl. 423—228



- A method for at least partially removing cyclic urea from a solution containing the cyclic urea comprising the steps of:  
 a. passing the solution containing the cyclic urea into a vacuum crystallization zone and cooling the entering solution at a rate of at least 4.6° C. per minute to thereby crystallize at least a portion of the cyclic urea in the solution; and  
 b. passing the solution containing the crystallized cyclic urea from the crystallization zone to a separation zone wherein at least a portion of the cyclic urea crystals are separated from the solution.

**4,341,747**  
**PROCESS OF REMOVING NITROGEN OXIDES FROM GASEOUS MIXTURES**  
 Gale D. Downey, Pennington, N.J., assignor to FMC Corporation, Philadelphia, Pa.  
 Filed Aug. 15, 1978, Ser. No. 933,694  
 Int. Cl.<sup>3</sup> C01B 21/40

U.S. Cl. 423—235  
 1. A process of removing nitrogen oxides from a gaseous mixture comprising contacting the mixture with an aqueous solution of nitric acid having a concentration by weight of from about 35% to about 58% and containing by weight at least 0.001% of hydrogen peroxide whereby the said nitrogen oxides are converted to nitric acid.

**4,341,748**  
**METHOD FOR PRODUCING ZEOLITES**  
 Charles J. Plank, Woodbury; Edward J. Rosinski, Pedricktown, both of N.J., and Mae K. Rubin, Bala Cynwyd, Pa., assignors to Mobil Oil Corporation, New York, N.Y.  
 Division of Ser. No. 23,117, Mar. 23, 1979, which is a continuation-in-part of Ser. No. 841,622, Oct. 13, 1977, Pat. No. 4,175,114, which is a continuation-in-part of Ser. No. 650,481, Jan. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 424,481, Dec. 13, 1973, abandoned. This application Jul. 15, 1980, Ser. No. 169,005  
 The portion of the term of this patent subsequent to Nov. 20, 1996, has been disclaimed.  
 Int. Cl.<sup>3</sup> C01B 33/28

U.S. Cl. 423—328  
 1. An uncalcined zeolite having the characteristic X-ray



diffraction pattern of zeolite ZSM-5 having a nitrogen content of no more than 0.2 wt. %, substantially free of organic nitrogen and being capable of substantially complete ion exchange of its original metal cations without prior calcination.

**4,341,749**  
**HEATING METHOD FOR SILANE PYROLYSIS REACTOR**

Sridhar K. Iya, Williamsville; Richard A. Van Slooten, East Aurora; Mark E. Braaten, Tonawanda, and James R. Lay, North Tonawanda, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 14, 1981, Ser. No. 292,426

Int. Cl.<sup>3</sup> C01B 23/02; C30B 25/10

U.S. Cl. 423—349 3 Claims

1. In a process for producing silicon powder by thermally decomposing silane gas in a heated free-space reaction zone of a decomposition reactor the improvement which comprises

- (i) introducing a turbulent jet of silane gas into a free-space reaction zone extending a desired length along the central axis of a substantially cylindrical decomposition reactor surrounding said free-space reaction zone, said jet of silane gas being introduced along the central axis of said reactor into said free-space reaction zone,
- (ii) applying heat circumferentially to the outer wall of the decomposition reactor surrounding the reaction zone, said heat being sufficient to establish a temperature in said reaction zone sufficient to decompose silane to provide silicon and hydrogen gas, the applied heat being a maximum at the circumferential location surrounding the introducing of the jet of silane into said reaction zone and decreasing substantially linearly along the length of the reaction zone with the heat applied circumferentially at the end of the reaction zone being about 30 to 50% of the maximum applied heat.

**4,341,750**  
**CARBON BLACK PRODUCTION**  
John W. Vanderveen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.  
Filed Jun. 20, 1977, Ser. No. 808,002  
Int. Cl.<sup>3</sup> C01B 31/02; C09C 1/48

U.S. Cl. 423—450 17 Claims

1. In a process for producing carbon black by introducing a carbonaceous feed material, air, fuel and a quench fluid into a reactor, combusting at least a portion of the fuel with a portion of the air to heat the feed to a temperature sufficiently high to decompose the feed to produce a carbon black effluent, cooling the effluent with the quench fluid, removing the carbon black effluent from the reactor, and collecting the carbon black thus produced, wherein operating conditions include the rates at which the carbonaceous feed material, air, fuel and quench fluid are introduced; the positions from which the carbonaceous feed material, air, fuel and quench fluid are introduced; the characteristics of the carbonaceous feed material, air, fuel and quench fluid and the pressure and temperature at which the reactor is operated; the improvement which comprises:

- (a) varying said operating conditions from a first set of conditions which produce a carbon black having a first tint value to a second set of conditions which produces a carbon black having a second tint value by varying at least one of said operating conditions, and
- (b) repeating step (a) at an intervallic interval in the range of from about 2 seconds to about 15 minutes, the frequency of repetition being sufficiently high so that the collected carbon black has a substantially constant tint residue, and the amount by which said set of operating conditions is varied being sufficiently large so that the collected carbon black has a tint residue of less than about —6.

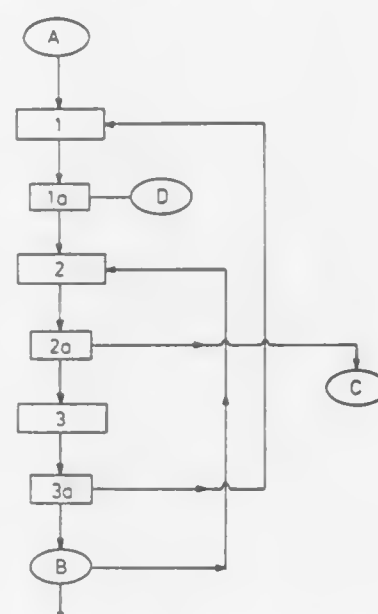
**4,341,751**  
**REDUCING CARBOXY REACTIVITY IN COKE**  
Oliver A. Kilkka, Willoughby, Ohio, and Keith A. Connors, Moundsville, W. Va., assignors to The Standard Oil Company, Cleveland, Ohio  
Continuation of Ser. No. 221,184, Dec. 30, 1980, abandoned.  
This application Aug. 5, 1981, Ser. No. 290,039  
Int. Cl.<sup>3</sup> C01B 31/02

U.S. Cl. 423—461 8 Claims

1. A process for reducing the reactivity of calcined coke by the steps of:
  - (a) calcining the coke to densify and remove volatiles therefrom; and
  - (b) cooling said calcined coke by contacting said coke with water treated with a member selected from the group consisting of monomeric, dimeric, or polyphosphate acids and salts thereof.

**4,341,752**  
**METHOD FOR PURIFICATION AND CONCENTRATION OF MGCL<sub>2</sub>-BRINES**  
Hendrik C. Groenhof, Oslo, Norway, assignor to Norsk Hydro a.s., Oslo, Norway  
Filed Mar. 13, 1981, Ser. No. 243,453  
Claims priority, application Norway, Apr. 18, 1980, 801137; Jun. 11, 1980, 801737  
Int. Cl.<sup>3</sup> C01D 3/06

U.S. Cl. 423—497 5 Claims



1. A method for purifying and concentrating a crude magnesium chloride-containing brine which also contains magnesium sulphate, potassium chloride and sodium chloride, which method comprises the steps of:

- (1) mixing crude magnesium chloride-containing brine (A) with carnallite and sodium chloride from step (3) below and decomposing the carnallite;
  - (1a) separating crystals of potassium and sodium chloride from the resulting brine;
- (2) adding to the resulting brine a quantity of purified and concentrated magnesium chloride-containing brine from step (3) below and evaporating the brine to cause sodium chloride and kieserite crystals to form;
  - (2a) separating the thus produced sodium chloride and kieserite crystals from the brine to obtain a solution;
- (3) Cooling the solution to cause sodium chloride and carnallite crystals to form;
  - (3a) separating the resulting sodium chloride and carnallite from the solution and feeding the sodium chloride and carnallite to step (1) above and feeding a portion of the purified and concentrated magnesium chloride-containing brine product to step (2).

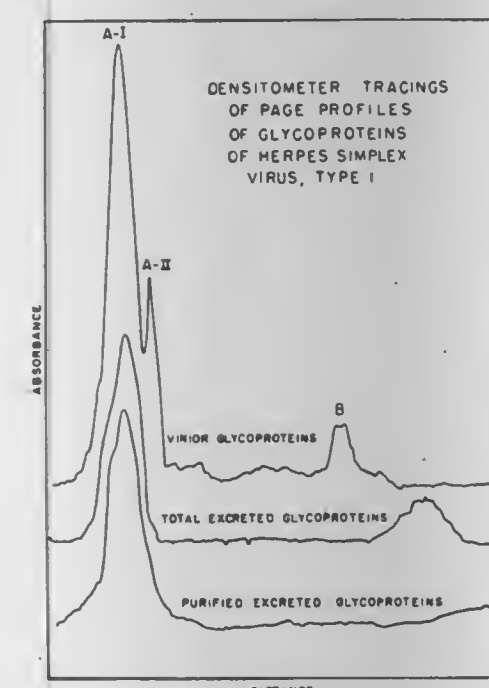
**4,341,753**  
**METHOD AND APPARATUS FOR CONVERTING SULFUR DIOXIDE IN GAS TO SULFUR**  
Toshikatsu Mori; Teruo Kumagai, both of Hitachi; Shimpei Matsuda, Tokai, and Fumito Nakajima, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Babcock-Hitachi Kabushiki Kaisha, both of Tokyo, Japan  
Filed Sep. 8, 1980, Ser. No. 184,759  
Claims priority, application Japan, Sep. 7, 1979, 54/115531  
Int. Cl.<sup>3</sup> C01B 17/04

U.S. Cl. 423—569 3 Claims

2. Apparatus for converting SO<sub>2</sub> in an exhaust gas containing SO<sub>2</sub> to S comprising:
  - (a) means for measuring the SO<sub>2</sub> concentration in the exhaust gas stream and generating a signal;
  - (b) means for dividing the exhaust gas stream into a first and a second stream;
  - (c) means for passing said first stream into a reduction reactor;
  - (d) means for removing a gas stream containing H<sub>2</sub>S, S, SO<sub>2</sub> from the reactor;
  - (e) means for removing S from said stream from the reactor;
  - (f) means for measuring the SO<sub>2</sub> and the H<sub>2</sub>S concentration and the flow rate of said stream from the reactor and generating a signal;
  - (g) means for combining said stream from the reactor with said second stream from (b) and passing said combined stream to a Claus reactor;
  - (h) means for removing S from the product gas of said Claus reactor; and
  - (i) means for controlling the flow of gas in said second stream based on signals generated by (a) and (f) above to maintain the ratio of H<sub>2</sub>S to SO<sub>2</sub> in the feed to the Claus reactor at 2.

**4,341,754**  
**DIAGNOSTIC REAGENT FOR HERPES SIMPLEX VIRUS ENCEPHALITIS**  
Albert S. Kaplan; Tamar B. Kaplan, both of Nashville, Tenn., and Anthony B. Chen, Milpitas, Calif., assignors to Vanderbilt University, Nashville, Tenn.  
Filed Jan. 24, 1980, Ser. No. 114,739  
Int. Cl.<sup>3</sup> A61K 43/00; G01N 33/56, 33/60

U.S. Cl. 424—1 2 Claims



1. A cerebrospinal fluid diagnostic reagent for herpes simplex virus encephalitis, consisting essentially of the glycoprotein derived from Type 1 herpes simplex virus (HSV-1) having an approximate molecular weight of 132,000 and being antigenically reactive with HSV-1 antiserum, said reactive glycoprotein being in a radiolabeled form for radioimmunoassay use

and comprising at least 50% by weight of the total radiolabeled protein present in said reagent.

**4,341,755**  
**PARATHYROID RADIOIMMUNOASSAY**  
Arnold W. Lindall, Marine on St. Croix, Minn., assignor to Immuno Nuclear Corporation, Stillwater, Minn.  
Filed Jul. 15, 1980, Ser. No. 169,492  
Int. Cl.<sup>3</sup> 424 12; G01N 33/56

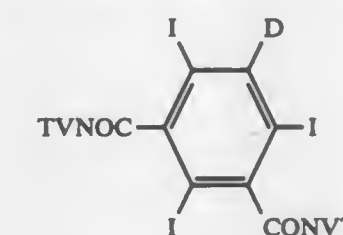
U.S. Cl. 424—1 119 Claims

1. A method of double antibody radioimmunoassay measurement of the concentration in biological or other fluids of mammalian parathyroid hormone and/or C-terminal fragments thereof which comprises incorporating in the assay as the radioactively labeled peptide a radioactively labeled fragment within the range of about 65-84 of bovine PTH or hPTH.

**4,341,756**  
**NOVEL AMINO-DIOXEPANE INTERMEDIATES FOR THE SYNTHESIS OF NEW NON-IONIC CONTRAST MEDIA**  
Milos Sovak, La Jolla, and Ramachandran Ranganathan, San Diego, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.  
Continuation-in-part of Ser. No. 117,151, Jan. 31, 1980, abandoned. This application Apr. 17, 1980, Ser. No. 141,097  
Int. Cl.<sup>3</sup> A61K 29/02; C07C 103/78

U.S. Cl. 424—5 31 Claims

1. A compound of the formula:



wherein:  
D is —CONVT or NVCOE;  
T is trihydroxybutyl;  
V is hydrogen or lower alkyl of from 1 to 2 carbon atoms;  
E is hydrogen, an alkyl group of from one to three carbon atoms having from zero to two oxy groups, which oxy groups are hydroxyl or ether groups of from one to two carbon atoms or two Es may be taken together to provide a linking group which may be a bond or an alkylene group of from one to four carbon atoms having from zero to four oxy groups, which oxy groups are hydroxy or alkoxy of from one to two carbon atoms.

**4,341,757**  
**STABLE ISOTOPIC IMMUNOASSAY METHOD EMPLOYING NON-RADIOACTIVE SELENIUM LABEL**  
Julian E. Spallholz, Lubbock, Tex., assignor to Nutrition 21, San Diego, Calif.  
Filed Sep. 2, 1980, Ser. No. 183,467  
Int. Cl.<sup>3</sup> G01N 33/52, 33/54

U.S. Cl. 424—8 12 Claims

1. In a competitive immunoassay wherein at least one standard solution and at least one unknown solution of a reactive biological compound are admixed with known quantities of tracer labelled reactive biological compound and a conjugating compound which forms a complex with said reactive biological compound, the resultant mixtures are incubated and said solutions are treated to remove unreacted quantities of reactive biological compound and are analyzed for their contents of labelled and unlabelled complexes, the improvement which comprises the use of a non-radioactive selenium labelled binding compound as said tracer labelled reactive biological







at a pH level of 5.5 or greater and at a temperature of 95° Centigrade or lower.

5. A pharmaceutical composition containing the factor of claim 1 in a therapeutically effective amount and a pharmaceutically acceptable carrier therefor.

4,341,766

# DEACTIVATION OF ANTIBIOTIC-HYDROLYZING ENZYMES

Jed F. Fisher, Somerville, and Jeremy R. Knowles, Cambridge, both of Mass., assignors to Harvard College, Cambridge, Mass.

Continuation of Ser. No. 26,456, Apr. 2, 1979, abandoned. This application Jun. 27, 1980, Ser. No. 163,524

Int. Cl.<sup>3</sup> A61K 35/00, 31/43

U.S. Cl. 424—114

1 Claim

1. A therapeutic mixture comprising penicillin and quinacillin sulfone in relative amounts from 1:100 to 100:1 by weight.

4,341,767

# NONAPEPTIDE AND DECAPEPTIDE ANALOGS OF LHRH, USEFUL AS LHRH ANTAGONISTS

John J. Nestor, San Jose; Gordon H. Jones, and Brian H. Vickery, both of Cupertino, all of Calif., assignors to Syntex Inc., Palo Alto, Calif.

Filed Oct. 6, 1980, Ser. No. 194,180

The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> A61K 37/00; C07C 103/52

U.S. Cl. 424—177

21 Claims

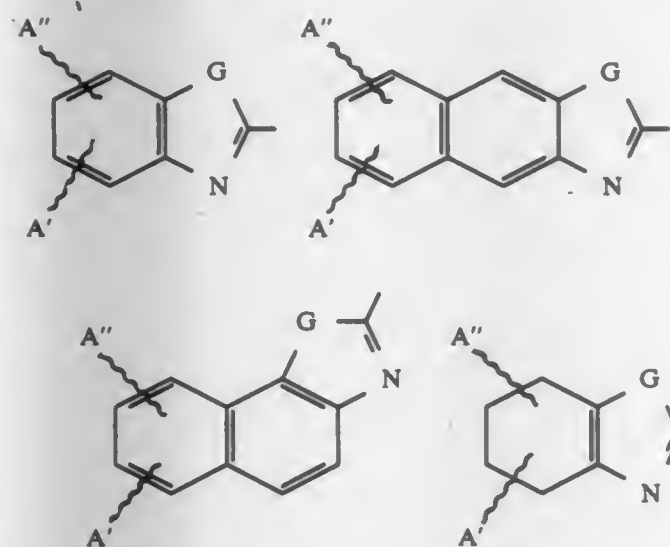
1. A compound of the formula:



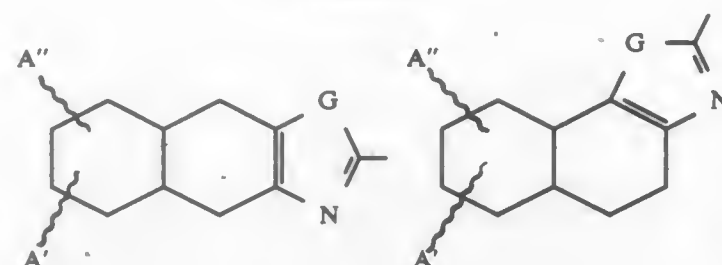
(I)

and the pharmaceutically acceptable salts thereof, wherein: X is a D-alanyl residue wherein one hydrogen on C-3 is replaced by:

- a carbocyclic aryl-containing radical selected from the group consisting of phenyl substituted with three or more straight chain lower alkyl groups, naphthyl, anthryl, fluorenyl, phenanthryl, biphenyl and benzhydryl; or
- a saturated carbocyclic radical selected from the group consisting of cyclohexyl substituted with three or more straight chain lower alkyl groups, perhydronaphthyl, perhydrobiphenyl, perhydro-2,2-diphenylmethyl, and adamantyl; or
- a heterocyclic aryl containing radical selected from the group consisting of radicals represented by the following structural formulas:



-continued



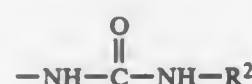
wherein A'' and A' are independently selected from the group consisting of hydrogen, lower alkyl, chlorine, and bromine, and G is selected from the group consisting of oxygen, nitrogen, and sulfur;

A is an aminoacyl residue selected from the group consisting of L-pyrroglutamyl, D-pyrroglutamyl, N-acyl-L-prolyl, N-acyl-D-prolyl, N-acyl-D-tryptophanyl, N-acyl-D-phenylalanyl, N-acyl-D-p-halophenylalanyl, and N-acyl-X, wherein X is as defined previously;

B is an amino acyl residue selected from the group consisting of D-phenylalanyl, D-p-halophenylalanyl, 2,2-diphenylglycyl, and X wherein X is as defined previously;

C is an amino acyl residue selected from the group consisting of L-tryptophanyl, D-tryptophanyl, D-phenylalanyl and X wherein X is as defined above;

E is glycine or —NH—R<sup>1</sup>, wherein R<sup>1</sup> is lower alkyl, cycloalkyl, fluoro lower alkyl or



wherein R<sup>2</sup> is hydrogen or lower alkyl.

4,341,768

# ANTIBIOTIC COMPOUNDS

Masataka Konishi; Takeo Miyaki, both of Yokohama; Hiroshi Tsukiura, and Hiroshi Kawaguchi, Tokyo, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

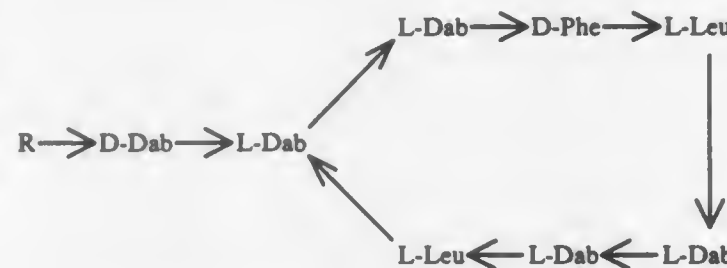
Filed Apr. 3, 1981, Ser. No. 250,987

Int. Cl.<sup>3</sup> A61K 37/00; C07C 103/52; A61K 35/00

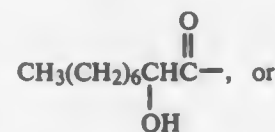
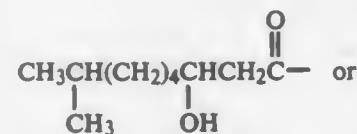
U.S. Cl. 424—177

14 Claims

1. A peptide antibiotic compound of the formula



wherein R is hydrogen, CH<sub>3</sub>CH<sub>2</sub>CH(CH<sub>2</sub>)<sub>4</sub>CHCH<sub>2</sub>C(=O)—, or



a pharmaceutically acceptable acid addition salt thereof,

wherein Dab represents α,γ-diaminobutyric acid, Leu represents leucine and Phe represents phenylalanine.

4,341,769

# 2,6-DIAMINONEBULARINES, THEIR PRODUCTION AND USE

Ryuji Marumoto, Ashiya; Shunsuke Shima, Minoo, and Masao Tanabe, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 2, 1981, Ser. No. 250,297

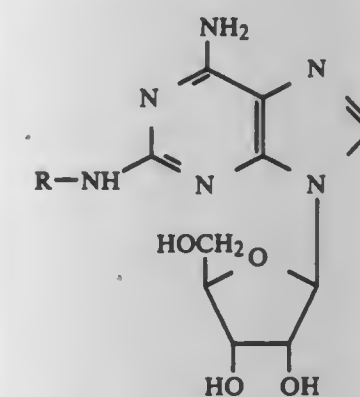
Claims priority, application Japan, Apr. 14, 1980, 55-49432

Int. Cl.<sup>3</sup> A61K 31/70; C07H 19/16

U.S. Cl. 424—180

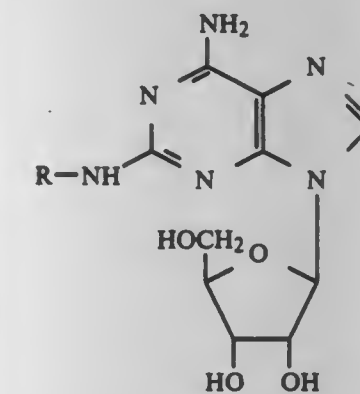
10 Claims

1. A compound of the formula:



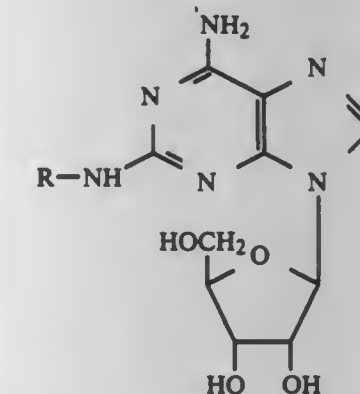
wherein R is 2-pyridyl or 3-pyridyl which may be substituted with lower alkyl, lower alkoxy, amino, (mono- or di-C<sub>1-2</sub> alkyl)amino and/or anilino, or an acid addition salt thereof.

9. A pharmaceutical composition which contains an effective amount for the treatment of ischemic heart diseases in mammals of a compound of the formula:



wherein R is 2-pyridyl or 3-pyridyl, which may be substituted with lower alkyl lower alkoxy, amino, (mono- or di-C<sub>1-2</sub> alkyl)amino and/or anilino, or an acid addition salt thereof, and a pharmaceutically acceptable carrier, vehicle or diluent therefor.

10. A method for the treatment of ischemic heart diseases in mammal, which comprises administering to the mammal an effective amount of a compound of the formula:



wherein R is 2-pyridyl or 3-pyridyl, which may be substituted

4,341,770

# METHOD OF CONTROLLING UREAPLASMA INFECTIONS

Earl E. Ose, Greenfield, and Herbert A. Kirst, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 20, 1981, Ser. No. 255,575

Int. Cl.<sup>3</sup> A61K 31/71, 31/70

U.S. Cl. 424—181

7 Claims

1. A method for controlling Ureaplasma infections which comprises administering to an infected or susceptible animal selected from the group consisting of humans, cattle or sheep an amount effective for treating the Ureaplasma infection of a composition comprising 5-O-mycaminosyl tylosolide or a pharmaceutically acceptable acid addition salt of 5-O-mycaminosyl tylosolide and a suitable pharmaceutical vehicle.

4,341,771

# METHOD OF CONTROLLING PASTEURILLA INFECTIONS

Herbert A. Kirst, Indianapolis, and Earl E. Ose, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 20, 1981, Ser. No. 255,577

Int. Cl.<sup>3</sup> A61K 31/71, 31/70

U.S. Cl. 424—181

7 Claims

1. A method for controlling Pasteurella infections which comprises administering to an infected or susceptible animal selected from cattle, sheep, pigs and fowl an amount effective for treating said Pasteurella infection of a composition comprising 5-O-mycaminosyl tylosolide or a pharmaceutically acceptable acid addition salt of 5-O-mycaminosyl tylosolide and a suitable pharmaceutical vehicle.

4,341,772

# AGRICULTURAL PHOSPHORUS-CONTAINING SULFENAMIDES

Gary D. Grantham, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

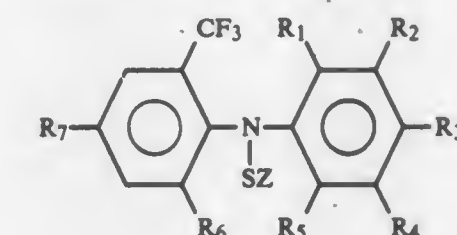
Filed May 5, 1980, Ser. No. 146,420

Int. Cl.<sup>3</sup> A01N 57/28, 57/30, 57/32; C07F 9/44

U.S. Cl. 424—211

45 Claims

1. A compound of the formula

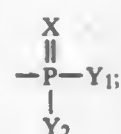


(I)

wherein

R<sub>1</sub>, R<sub>3</sub> and R<sub>4</sub> are independently H, F, Cl, Br, NO<sub>2</sub>, CF<sub>3</sub>, OCHF<sub>2</sub>, OCF<sub>3</sub>, OCF<sub>2</sub>CF<sub>2</sub>H or S(O)<sub>k</sub>R<sub>8</sub>; or R<sub>3</sub> and R<sub>4</sub> may be taken together to form —OCF<sub>2</sub>O— or —OCF<sub>2</sub>—; R<sub>2</sub> is H, F, Cl, Br, NO<sub>2</sub>, CF<sub>3</sub> or S(O)<sub>k</sub>R<sub>8</sub>; R<sub>5</sub> is H, Cl, F, Br or NO<sub>2</sub>; R<sub>6</sub> is H, NO<sub>2</sub> or CF<sub>3</sub>; R<sub>7</sub> is NO<sub>2</sub> or CF<sub>3</sub>; k is 0, 1 or 2; R<sub>8</sub> is C<sub>1</sub>–C<sub>2</sub> alkyl optionally substituted with 2–4 Cl and/or F; Z =





X is O or S;

Y<sub>1</sub> or Y<sub>2</sub> are independently: C<sub>1</sub>-C<sub>4</sub> alkyl optionally substituted with one or more F, Cl, Br or I, OCH<sub>3</sub>, OCH<sub>2</sub>CH<sub>3</sub>, CN, CH<sub>3</sub>S, CH<sub>3</sub>CH<sub>2</sub>S; C<sub>2</sub>-C<sub>4</sub> alkenyl optionally substituted with one or more of F or Cl; C<sub>1</sub>-C<sub>4</sub> alkoxy, optionally substituted with one to three atoms of F, Cl, Br, CH<sub>3</sub>O, CH<sub>3</sub>CH<sub>2</sub>O or combinations thereof; C<sub>1</sub>-C<sub>4</sub> thioalkyl optionally substituted with one to three atoms of F, Cl, Br, I, or combinations thereof;

provided that

- (1) at least two of R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub> are hydrogen;
- (2) no more than two of the substituents R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> are simultaneously NO<sub>2</sub> or CF<sub>3</sub>;
- (3) when two NO<sub>2</sub> or two S(O)<sub>2</sub>R<sub>8</sub> groups are present, they are not ortho to one another;
- (4) R<sub>6</sub> and R<sub>7</sub> are not simultaneously CF<sub>3</sub>; and
- (5) further provided that when R<sub>6</sub> is NO<sub>2</sub>, then
  - (a) R<sub>1</sub> is H, F or Cl when R<sub>3</sub> is other than H, F or Cl;
  - (b) when R<sub>1</sub>=R<sub>3</sub>=R<sub>5</sub>, then R<sub>1</sub>, R<sub>3</sub> and R<sub>5</sub> are either H or F; and
  - (c) R<sub>5</sub> is either H or F.

29. A method for control of mites, insects, fungus, mite eggs or insect eggs which comprises applying to a locus to be protected a miticidally, insecticidally, fungicidally or ovicidally effective amount of a compound of claim 1.

4,341,773

**2,4-DIAMINO-5-SULFAMOYL BENZENE SULFONIC ACIDS AND PROCESS FOR THEIR MANUFACTURE**  
Karl Sturm, Hildesheim, and Roman Muschawek, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

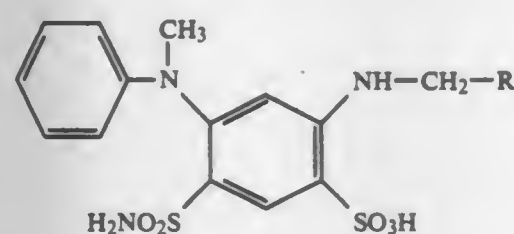
Filed Mar. 9, 1981, Ser. No. 241,666

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1980, 3009229

Int. Cl.<sup>3</sup> A61K 31/63, 31/625; C07D 231/42; C07C 143/78  
U.S. Cl. 424-229

4 Claims

1. Compounds of the formula I



wherein R is furyl, thienyl or phenyl and physiologically acceptable salts thereof.

4,341,774

**METHOD FOR SUPPRESSING ABNORMAL RISE IN IMMUNOLOGICAL FUNCTION AND AGENT USEFUL THEREFOR**

Takao Aoki; Hideo Miyakoshi; Yoshihei Hirasawa, all of Nii-gata, and Yasuo Nishii, Tokyo, all of Japan, assignors to Chugai Selyaku Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 176,642

Claims priority, application Japan, Aug. 10, 1979, 54-101211  
Int. Cl.<sup>3</sup> A01N 45/00

U.S. Cl. 424-236

7 Claims

1. A method for immunosuppression in humans which comprises administering cholecalciferol and/or its derivative to a

human in need of immunosuppression, in an amount sufficient to suppress abnormal rise in immunological function.

4,341,775

**CEPHEM COMPOUNDS**

Takao Takaya, Kawanishi; Takashi Masugi, Toyonaka; Hisashi Takasugi, Kohamanishi, and Hiromu Kochi, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 941,660, Sep. 12, 1978, Pat. No. 4,220,761. This application Aug. 30, 1979, Ser. No. 71,302

Claims priority, application United Kingdom, Sep. 11, 1978, 36399/78; Mar. 13, 1979, 7908799; Mar. 26, 1979, 7910499

Int. Cl.<sup>3</sup> C07L 501/36

U.S. Cl. 424-246

3 Claims

1. 7-[2-(2-aminothiazol-4-yl)-2-allyloxyiminoacetamido]-3-[1-(2-aminoethyl)-1H-tetrazol-5-ylthiomethyl]-3-cephem-4-carboxylic acid (syn isomer).
2. 7-[2-(2-aminothiazol-4-yl)-2-propargyloxyiminoacetamido]-3-[1-(2-aminoethyl)-1H-tetrazol-5-ylthiomethyl]-3-cephem-4-carboxylic acid (syn isomer), or its dihydrochloride.
3. A pharmaceutically antibacterial composition comprising an effective amount of the compound of claims 1 or 2 in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,341,776

**CEPHALOSPORIN DERIVATIVES**

Nobuhiro Oi, Hoya; Bunya Aoki, Tama; Teizo Shinozaki, Matsudo; Kanji Moro, Kuki; Isao Matsunaga, Tokyo; Takao Noto, Machida; Toshiyuki Nebashi, Kawagoe; Yusuke Harada, Tokyo; Hisao Endo, Yokohama; Takao Kimura, Chiba; Hiroshi Okazaki, Sayama; Haruki Ogawa, Chofu, and Minoru Shindo, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 47,781, Jun. 11, 1979, Pat. No. 4,298,605. This application Mar. 28, 1980, Ser. No. 136,061

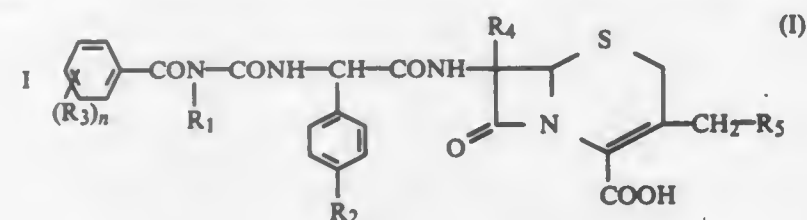
Claims priority, application Japan, Jun. 22, 1978, 53-74868; Ser. 11, 1978, 53-110627; Apr. 26, 1979, 54-50841

Int. Cl.<sup>3</sup> C07D 501/36

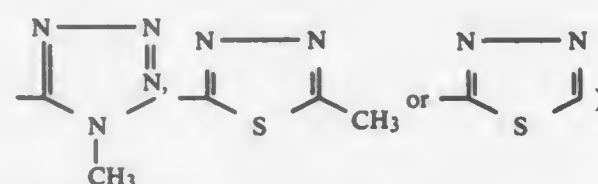
U.S. Cl. 424-246

5 Claims

1. A cephalosporin derivative represented by the formula



wherein R<sub>1</sub> is a hydrogen atom or a lower alkyl group, R<sub>2</sub> is a hydrogen atom; R<sub>3</sub> is a hydroxyl group or a lower alkanoyloxyl group; n is 2 or 3; at least two of R<sub>3</sub> are bonded to adjacent carbon atoms, the position of substituent R<sub>3</sub> being selected from 3 to 5 position when R<sub>1</sub> is a lower alkyl group and R<sub>3</sub> is a hydroxyl group, and 2 to 6 position when R<sub>1</sub> and R<sub>3</sub> are other substituents; R<sub>4</sub> is a methoxyl group; and R<sub>5</sub> is -S-R<sub>6</sub> (wherein R<sub>6</sub> is a five-membered heterocyclic ring selected from



or a pharmaceutically acceptable salt thereof.

4,341,777

**CEPHALOSPORIN ANTIBIOTIC**

Herbert J. White, Chalfont St. Giles, England, assignor to Glaxo Group Limited, London, England

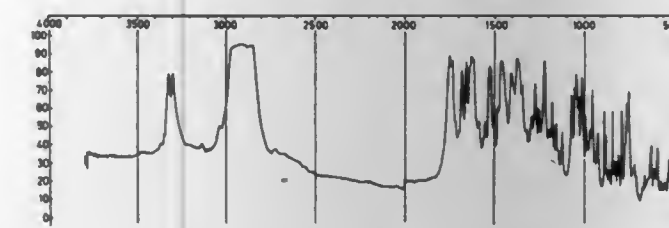
Filed Sep. 5, 1980, Ser. No. 184,383

Claims priority, application United Kingdom, Sep. 10, 1979, 7931379

Int. Cl.<sup>3</sup> A61K 31/545; C07D 501/34

U.S. Cl. 424-246

12 Claims



1. A sodium salt of (6R,7R)-3-acetoxymethyl-7-[(Z)-2-(fur-2-yl)-2-methoxyiminoacetamido]ceph-3-em-4-carboxylic acid containing less than 1% m/m of water and being non-hygroscopic at relative humidities within the range 25-83%.

12. A method of combatting a bacterial infection in an animal which comprises administering to said animal a therapeutically effective amount of the sodium salt claimed in claim 1.

4,341,778

**3,1 BENZOXAZIN-2-ONES AND USE THEREOF**

Anton Mentrup, Mainz-Kastel; Kurt Schromm; Ernst-Otto Renth, both of Ingelheim; Wolfgang Hoefke, Wiesbaden; Wolfram Gaida, Ingelheim; Ilse Streller, Stromberg, and Armin Fügner, Gau-Algesheim, all of Fed. Rep. of Germany, assignors to C. H. Boehringer Sohn, Ingelheim, Fed. Rep. of Germany

Filed Jul. 6, 1981, Ser. No. 280,349

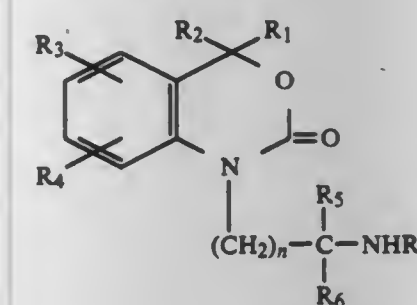
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1980, 3026534

Int. Cl.<sup>3</sup> A61K 43/86; C07D 265/18

U.S. Cl. 424-248.5

5 Claims

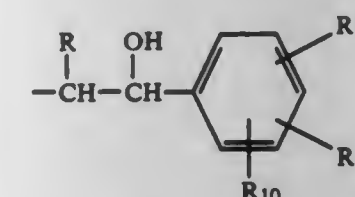
1. A compound of the formula



wherein

R<sub>1</sub> and R<sub>2</sub> are each hydrogen or alkyl of 1 to 4 carbon atoms; R<sub>3</sub> and R<sub>4</sub> are each hydrogen, fluorine, chlorine, hydroxyl, methyl, ethyl or alkoxy of 1 to 4 carbon atoms; or R<sub>3</sub> and R<sub>4</sub>, together with each other are methylenedioxy; R<sub>5</sub> and R<sub>6</sub> are each hydrogen or methyl;

R<sub>7</sub> is



R is hydrogen or alkyl of 1 to 4 carbon atoms; R<sub>8</sub> is fluorine, chlorine, alkyl of 1 to 4 carbon atoms, (alkyl of 1 to 4 carbon atoms)thio, hydroxymethyl,

-CONHR<sub>11</sub>, -SO<sub>2</sub>NHR<sub>11</sub>, -OR<sub>12</sub>, methoxycarbonyl, ethoxycarbonyl or -NHSO<sub>2</sub>CH<sub>3</sub>;

R<sub>9</sub> is hydrogen, fluorine, chlorine or -OR<sub>12</sub>;

R<sub>10</sub> is hydrogen, chlorine, amino, methyl or methoxy;

R<sub>11</sub> is hydrogen, methyl, ethyl or hydroxyethyl;

R<sub>12</sub> is hydrogen, alkyl of 1 to 4 carbon atoms, (alkyl of 1 to 4 carbon atoms)carbonyl, aryl-CH<sub>2</sub>- or arylcarbonyl; and

n is 1, 2 or 3;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4,341,779

**ESTERS OF AMIDINEPENICILLINS**

Jerzy Cieslak; Irena Busko-Oszczapowicz, and Marek Stepniak, all of Warsaw, Poland, assignors to Tarchominskie Zakłady Farmaceutyczne, Warsaw, Poland

Filed Aug. 17, 1979, Ser. No. 67,278

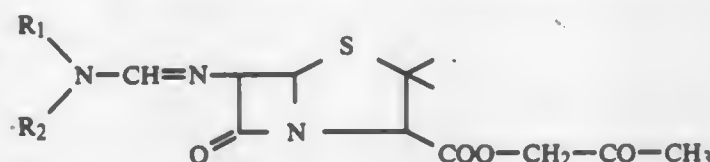
Claims priority, application Poland, Sep. 8, 1978, 209487; Apr. 13, 1979, 214914

Int. Cl.<sup>3</sup> C07D 499/22

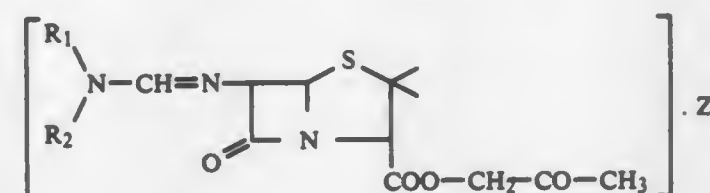
U.S. Cl. 424-248.51

7 Claims

1. Acetylmethyl esters of amidinopenicillins of the formula



wherein each of R<sub>1</sub> and R<sub>2</sub>, which are the same or different, is selected from the group consisting of a straight or branched chain alkyl group containing from 1 to 6 carbon atoms, which may be substituted with a radical selected from the group consisting of a cycloalkyl group containing from 5 to 7 carbon atoms; an alkenyl group containing from 3 to 6 carbon atoms; an aryl group selected from the group consisting of phenyl, benzyl, naphthyl, phenylethyl, diphenylmethyl, naphthylmethyl and cinnamyl groups; and a heterocyclic group selected from the group consisting of furyl, thienyl, pyrrolidyl, piperidyl and morpholinyl; or R<sub>1</sub> and R<sub>2</sub> together with the adjacent nitrogen atom form a heptamethyleneimine, hexamethyleneimine, piperidine, pyrrolidine or morpholine ring system, unsubstituted or substituted with an aminoalkyl or azidoalkyl group, wherein the alkyl group contains up to 4 carbon atoms; and addition salts thereof of the formula



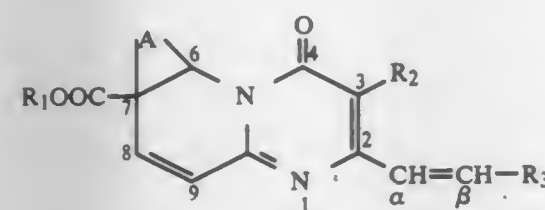
wherein R<sub>1</sub> and R<sub>2</sub> are as defined above, and Z is a pharmaceutically acceptable organic or inorganic acid.



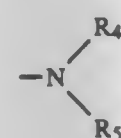
4,341,780  
SUBSTITUTED PYRIDO [1,2-A] PYRIMIDINES USEFUL  
AS ANTI-ALLERGIC, ANTI-ULCER AND  
ANTI-DIABETIC AGENTS

Gianfederico Doria, Milan; Ciriaco Romeo, Serino; Piero Sberze, Varese; Marcellino Tibolla, Canale d'Agordo, and Maria L. Corno, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy  
Continuation of Ser. No. 138,879, Apr. 10, 1980, Pat. No. 4,310,526. This application May 27, 1981, Ser. No. 267,450  
Claims priority, application United Kingdom, May 8, 1979, 7915810

Int. Cl.<sup>3</sup> A61K 31/505; C07D 471/04  
U.S. Cl. 424—248.55 29 Claims  
1. Compounds having the following general formula

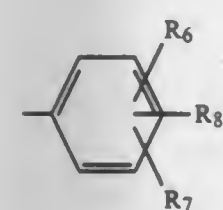


wherein A completes a bond, thereby providing a double bond between the 6- and 7-carbon atoms:  
R<sub>1</sub> represents a hydrogen atom or a C<sub>1</sub>-C<sub>12</sub> alkyl group which is unsubstituted or substituted by a



group, wherein each of R<sub>4</sub> and R<sub>5</sub> independently represents a hydrogen atom or a C<sub>1</sub>-C<sub>10</sub> alkyl group, or R<sub>4</sub> and R<sub>5</sub>, taken together with the nitrogen atom to which they are attached, form a N-pyrrolidinyl, piperidino or morpholino group;  
R<sub>2</sub> represents a hydrogen atom or a C<sub>1</sub>-C<sub>6</sub> alkyl group or a C<sub>3</sub>- or C<sub>4</sub>-alkenyl group;

R<sub>3</sub> represents (a) a furyl, thienyl or pyridyl group each of which is unsubstituted or substituted by a methyl group; or (b) a group of formula



wherein each of R<sub>6</sub>, R<sub>7</sub> and R<sub>8</sub> independently represents a hydrogen or halogen atom, a hydroxy group, a C<sub>1</sub>-C<sub>4</sub> dialkylamino group, a group —CF<sub>3</sub> or a group —R<sub>9</sub> or —OR<sub>9</sub>, where R<sub>9</sub> represents a C<sub>1</sub>-C<sub>6</sub> alkyl or C<sub>3</sub>- or C<sub>4</sub>-alkenyl group and pharmaceutically acceptable salts thereof.

24. A pharmaceutical composition suitable for use as an anti-allergy agent, said composition comprising a therapeutically effective amount of a compound as claimed in any one of claims 1, 2, 23, 20, 21 or 22 in association with a pharmaceutical acceptable carrier or diluent.

26. A pharmaceutical composition suitable for use as an anti-diabetic agent, said composition comprising a therapeutically effective amount of a compound as claimed in any one of claims 1, 2, 23, 20, 21 or 22 in association with a pharmaceutically acceptable carrier or diluent.

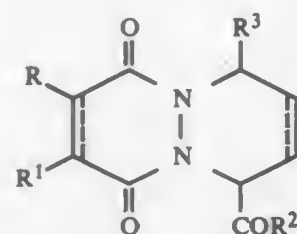
4,341,781

## PYRIDAZOPYRIDAZINE DERIVATIVES

Cedric H. Hassall, Hatfield, and Christopher J. Moody, Stevenage, both of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sep. 11, 1980, Ser. No. 186,237  
Claims priority, application United Kingdom, Sep. 19, 1979, 7932531; Jul. 11, 1980, 8022701  
Int. Cl.<sup>3</sup> A61K 31/50; C07D 487/04, 237/04

U.S. Cl. 424—250 15 Claims  
1. Pyridazopyridazine compounds of the formula

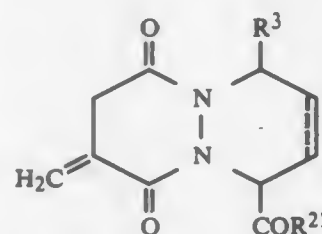


wherein one of the symbols R and R<sup>1</sup> is hydrogen or lower alkyl and the other symbol is a group of the formula



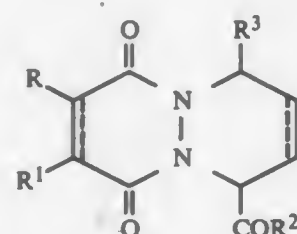
in which A is methylene, ethylene or propylene which may be substituted by lower alkyl, Y is mercapto, lower alkanoylthio, aroylthio or aryl-(lower alkylthio) and n is zero or 1, R<sup>2</sup> is hydroxy, lower alkoxy or amino, R<sup>3</sup> is hydrogen or lower alkyl or phenyl optionally substituted with halogen, lower alkyl, lower alkoxy or trifluoromethyl, and the broken lines denote optional bonds, and salts of the acids of formula I with pharmaceutically acceptable bases.

8. A compound of the formula



wherein R<sup>3</sup> is hydrogen or lower alkyl or phenyl optionally substituted with halogen, lower alkyl, lower alkoxy or trifluoromethyl, R<sup>21</sup> is hydroxy or lower alkoxy, and the broken line denotes an optional bond.

10. An antihypertensive composition comprising antihypertensively-effective amounts of pyridazopyridazine compounds of the formula



wherein one of the symbols R and R<sup>1</sup> is hydrogen or lower alkyl and the other symbol is a group of the formula



in which A is methylene, ethylene or propylene which may be substituted by lower alkyl, Y is mercapto, lower alkanoylthio, aroylthio or aryl-(lower alkylthio) and n is zero or 1, R<sup>2</sup> is hydroxy, lower alkoxy or amino, R<sup>3</sup> is hydrogen or lower alkyl or phenyl optionally substituted with halogen, lower alkyl, lower alkoxy or trifluoromethyl, and the broken lines denote optional bonds, and salts of the acids of formula I with pharmaceutically acceptable bases.

ceutically acceptable bases in combination with a pharmaceutically acceptable carrier material.

rectly to the psoriasis lesions an effective amount of dyphylline.

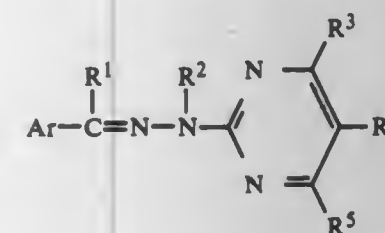
4,341,782

## PYRIMIDINE DERIVATIVES AND AGRICULTURAL USES

Kazuo Konishi, Takatsuki, and Kazuho Matsuura, Kyoto, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

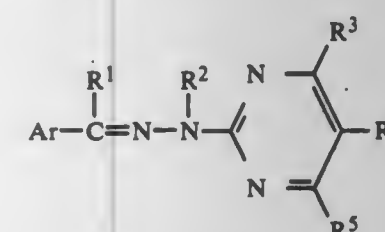
Filed May 6, 1980, Ser. No. 147,148  
Claims priority, application Japan, May 15, 1979, 54-60069  
Int. Cl.<sup>3</sup> A61K 31/505; C07D 239/42

U.S. Cl. 424—251 8 Claims  
1. A pyrimidine derivative of the formula:



wherein Ar is phenyl, naphthyl, phenyl having 1 to 5 substituents or naphthyl having 1 to 7 substituents, said substituents being selected from the group of lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, halogen, nitro, trifluoromethyl and di-lower alkylamino, R<sup>1</sup> is lower alkyl, lower cycloalkyl, trifluoromethyl, lower alkoxy-carbonyl, phenyl, benzyl, or phenyl having 1 to 5 halogen substituents, R<sup>2</sup> is hydrogen or lower alkyl, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> are hydrogen, lower alkyl, lower alkenyl or lower alkoxy, or R<sup>3</sup> and R<sup>4</sup> or R<sup>4</sup> and R<sup>5</sup> combine with each other to represent trimethylene, tetramethylene or butadienylene, or a salt thereof.

8. An antimicrobial agent for agricultural uses which contains as an active ingredient a pyrimidine derivative of the formula:



wherein Ar is phenyl, naphthyl, phenyl having 1 to 5 substituents or naphthyl having 1 to 5 substituents said substituents being selected from the group of lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, halogen, nitro, trifluoromethyl and di-lower alkylamino, R<sup>1</sup> is lower alkyl, lower cycloalkyl, trifluoromethyl, lower alkoxy-carbonyl, phenyl, benzyl or phenyl having 1 to 5 halogen substituents, R<sup>2</sup> is hydrogen or lower alkyl, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> are hydrogen, lower alkyl, lower alkenyl or lower alkoxy, or R<sup>3</sup> and R<sup>4</sup> or R<sup>4</sup> and R<sup>5</sup> combine with each other to represent trimethylene, tetramethylene or butadienylene, or a salt thereof, together with a suitable carrier or carriers.

4,341,783

## TOPICAL USE OF DYPHYLLINE AND DYPHYLLINE CONTAINING COMPOSITIONS

Stanley Scheindlin, 3011 Nesper St., Philadelphia, Pa. 19152, assignor to Lemmon Company, Sellersville, Pa.

Filed Jul. 31, 1980, Ser. No. 174,090  
Int. Cl.<sup>3</sup> A61K 31/52

U.S. Cl. 424—253 4 Claims  
1. A method of treating psoriasis comprising applying di-

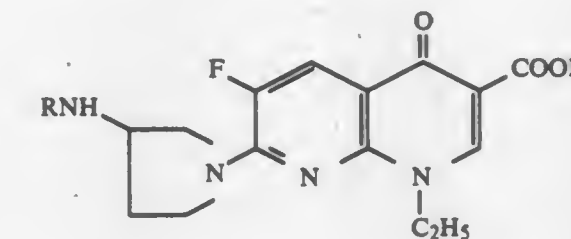
4,341,784

## NAPHTHYRIDINE DERIVATIVES

Jun-ichi Matsumoto, Ikoma; Yoshiyuki Takase, Amagasaki, and Yoshiro Nishimura, Neyagawa, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan and Laboratoire Roger Bellon, Neuilly sur Seine, France

Filed Sep. 15, 1980, Ser. No. 187,081  
Claims priority, application Japan, Sep. 28, 1979, 54-126223  
Int. Cl.<sup>3</sup> A61K 31/44; C07D 471/04

U.S. Cl. 424—256 7 Claims  
1. A 1,8-naphthyridine compound of the formula



wherein R is hydrogen, methyl, ethyl or propyl, or a nontoxic pharmaceutically acceptable salt thereof.

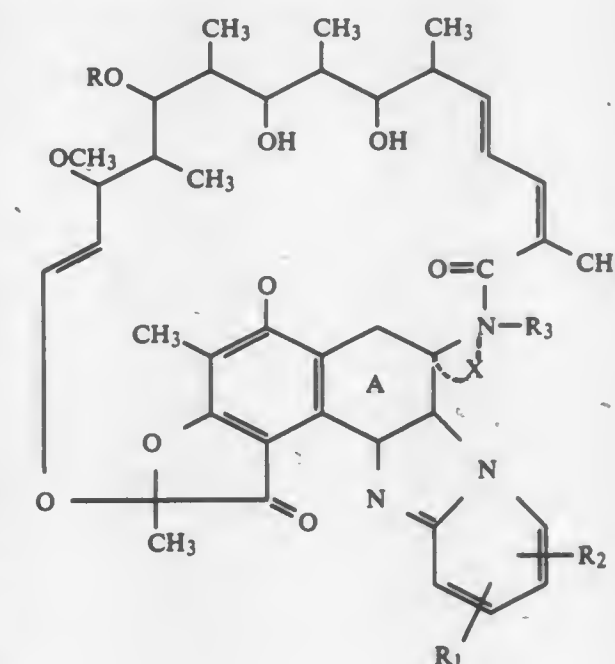
4,341,785

## IMIDAZO-RIFAMYCIN DERIVATIVES WITH ANTIBACTERIAL UTILITY

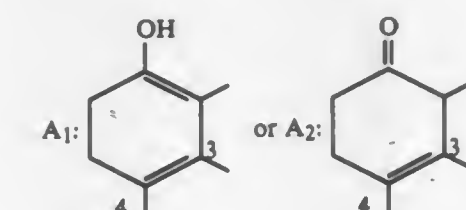
Egidio Marchi, and Lauretta Montecchi, both of Casalecchio di Reno, Italy, assignors to Alfa Farmaceutici S.p.A., Bologna, Italy

Filed May 11, 1981, Ser. No. 262,123  
Claims priority, application Italy, May 22, 1980, 3429 A/80  
Int. Cl.<sup>3</sup> A61K 31/44; C07D 491/22

U.S. Cl. 424—256 13 Claims  
1. A compound of formula



wherein:  
A is





—x— is a covalent chemical bond or nil;  
R is hydrogen or acetyl;

R<sub>1</sub> and R<sub>2</sub> independently represent hydrogen, (C<sub>1-4</sub>) alkyl, benzyloxy, mono- and di-(C<sub>1-3</sub>) alkylamino-(C<sub>1-4</sub>) alkyl, (C<sub>1-3</sub>)alkoxy- (C<sub>1-4</sub>)alkyl, hydroxymethyl, hydroxy-(C<sub>2-4</sub>)-alkyl, nitro or R<sub>1</sub> and R<sub>2</sub> taken together with two consecutive carbon atoms of the pyridine nucleus form a benzene ring unsubstituted or substituted by one or two methyl or ethyl groups; R<sub>3</sub> is a hydrogen atom or nil; with the proviso that, when A is A<sub>1</sub>, —x— is nil and R<sub>3</sub> is a hydrogen atom; with the further proviso that, when A is A<sub>2</sub>, —x— is a covalent chemical bond and R<sub>3</sub> is nil.

10. A pharmaceutical antibacterial composition containing, as the active ingredient, an antibacterial effective amount of a compound as defined in claim 1 in admixture with one or more solid or liquid pharmaceutically acceptable carriers.

4,341,786

# PHARMACEUTICAL COMPOSITIONS AND METHOD OF PRODUCING CENTRAL ALPHA<sub>1</sub> AGONIST ACTIVITY UTILIZING

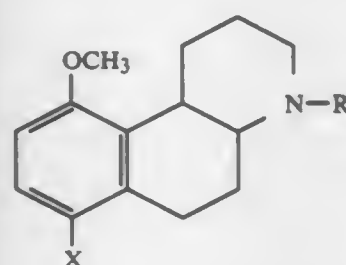
OCTAHYDROBENZO[F]QUINOLINE COMPOUNDS  
Robert M. DeMarinis, Ardmore, and Dinubhai H. Shah, Norristown, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Mar. 2, 1981, Ser. No. 239,778  
Int. Cl.<sup>3</sup> A61K 31/47; C07D 221/10

U.S. Cl. 424—258

9 Claims

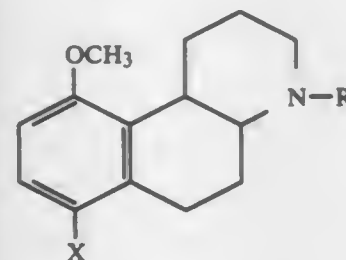
1. A pharmaceutical composition in dosage unit form having alpha<sub>1</sub> agonist activity comprising a pharmaceutical carrier and an effective amount of a compound of the formula:



in which:

R is hydrogen or lower alkyl having 1 to 3 carbon atoms;  
X is methoxy, methylthio or ethylthio; or a pharmaceutically acceptable acid addition salt thereof.

6. A method of producing alpha<sub>1</sub> agonist activity which comprises administering to an animal requiring said treatment an amount sufficient to produce said activity of a chemical compound of the formula:



in which:

R is hydrogen or lower alkyl having 1 to 3 carbon atoms;  
X is methoxy, methylthio or ethylthio; or a pharmaceutically acceptable acid addition salt thereof.

4,341,787

# PHARMACOLOGICALLY ACTIVE COMPOUNDS

Graham J. Durant, Welwyn Garden City; John C. Emmett, Codicote, and Charon R. Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 60,324, Jul. 25, 1979, Pat. No. 4,282,221, which is a division of Ser. No. 893,859, Apr. 6, 1978, Pat. No. 4,181,730, which is a division of Ser. No. 736,662, Oct. 29, 1976, Pat. No. 4,104,381, which is a division of Ser. No. 619,985, Oct. 6, 1975, Pat. No. 4,005,205, which is a division of Ser. No. 463,647, Apr. 24, 1974, Pat. No. 3,932,644. This application Mar. 3, 1981, Ser. No. 239,238

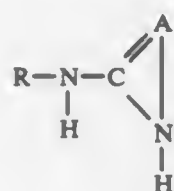
Claims priority, application United Kingdom, May 3, 1973, 21063/73; Jul. 26, 1973, 35551/73

Int. Cl.<sup>3</sup> A61K 31/425

U.S. Cl. 424—270

5 Claims

1. A method of inhibiting H-2 histamine receptors, said H-2 histamine receptors being those histamine receptors which are not inhibited by mepyramine but are inhibited by burimamide, which comprises administering to an animal in need of inhibition of said receptors in an effective amount to inhibit said receptors a heterocyclic compound of the formula:



wherein A taken together with the nitrogen and carbon atoms shown forms a thiazoline ring, said ring having a keto group and optionally substituted by one lower alkyl, phenyl or benzyl group; R is a grouping of the formula:

Het—CH<sub>2</sub>Z(CH<sub>2</sub>)<sub>n</sub>—

wherein Het is a nitrogen containing heterocyclic ring selected from imidazole, thiazole, isothiazole or thiadiazole, said ring being optionally substituted by lower alkyl, amino, hydroxy or halogen; Z is sulphur and n is 2 or 3 or a pharmaceutically acceptable acid addition salt thereof.

4,341,788

# 2-(2-CHLORO-4-CYCLOPROPYL-PHENYL-IMINO)-IMIDAZOLIDINE, AND ACID ADDITION SALTS THEREOF AS BRADYCARDIACS

Helmuth Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim am Rhein; Wolfgang Hoeffke, Wiesbaden, all of Fed. Rep. of Germany, and Ludwig Pichler, Vienna, Austria, assignors to C. H. Boehringer Sohn, Ingelheim am Rhein, Fed. Rep. of Germany

PCT No. PCT/EP80/00081, § 371 Date Apr. 15, 1981, § 102(e) Date Apr. 15, 1981, PCT Pub. No. WO81/00565, PCT Pub. Date Mar. 5, 1981

PCT Filed Aug. 20, 1980, Ser. No. 253,860

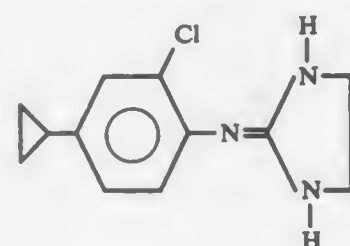
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1979, 2933930

Int. Cl.<sup>3</sup> A61K 31/415; C07D 233/50

U.S. Cl. 424—273 R

3 Claims

1. A compound of the formula



(I)

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3. A method for slowing the heart rate of a warm-blooded animal in need thereof, which comprises orally, parentally, or rectally administering an effective bradycardiac amount of a compound of claim 1.

4,341,789

# CYCLOALIPHATIC PROSTAGLANDIN ANALOGUES

Frederick Cassidy, Harlow, and Gordon Wootton, Sawbridge-worth, both of England, assignors to Beecham Group Limited, England

Division of Ser. No. 732,726, Oct. 15, 1976, Pat. No. 4,138,407.

This application Nov. 20, 1978, Ser. No. 962,057

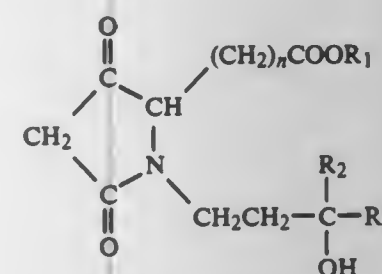
Claims priority, application United Kingdom, Oct. 25, 1975, 43990/75; May 22, 1976, 21278/76

Int. Cl.<sup>3</sup> C07D 207/38; A61K 31/40

U.S. Cl. 424—274

7 Claims

1. A compound of the formula:

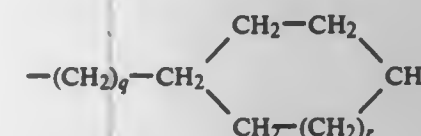


or a pharmaceutically acceptable salt thereof wherein n has a value of 4 to 8;

R<sub>1</sub> is hydrogen, alkyl of 1 to 12 carbon atoms, phenyl, benzyl or tolyl;

R<sub>2</sub> when taken independently of R<sub>4</sub> is hydrogen or alkyl of 1 to 4 carbon atoms; and

R<sub>4</sub> when taken independently of R<sub>2</sub> is



in which

q has a value of 0 to 6 and

r has a value of 0 to 3; or

R<sub>2</sub> and R<sub>4</sub>, together with the carbon atom to which they are attached, are cycloalkylidene of 5 to 8 carbon atoms.

7. A pharmaceutical composition for effecting a prostaglandin-like activity which comprises an effective amount of a compound according to claim 1 in combination with a pharmaceutical carrier.

4,341,790

# PYRROLIDINYLALKYLCARBOXYLIC ACID AMIDE DERIVATIVES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Hans Betzing, Kerpen-Horrem; Jürgen Biedermann, Pulheim-Stommel; Carsten Materne, Bonn, and Volker Neuser, Bergheim-Ahe, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie. GmbH, Fed. Rep. of Germany

Filed Jun. 3, 1980, Ser. No. 155,952

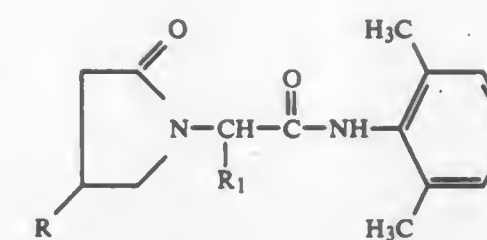
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1979, 2923975; Jun. 13, 1979, 2924011

Int. Cl.<sup>3</sup> A61K 31/40, 31/44; C07D 207/27, 207/273

U.S. Cl. 424—274

6 Claims

1. 2-oxo-1-pyrrolidinylalkylcarboxylic acid amides of the general formula I



in which R is selected from the group consisting of hydrogen and hydroxyl and R<sub>1</sub> is selected from the group consisting of hydrogen and methyl, and the pharmaceutically tolerable acid addition salts of compounds of formula I having a basic nitrogen atom.

6. A method of treating a patient for cerebral circulatory disturbance, which comprises administering to the patient a therapeutically effective dose of at least one compound defined in any one of claims 1, 4 or 5.

4,341,791

6-2- AND

# 1,1-DISUBSTITUTED-1-CARBADETHIAPEN-2-EM-3-CARBOXYLIC ACID S-OXIDES

Burton G. Christensen, Scotch Plains, and David H. Shih, Manalapan, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

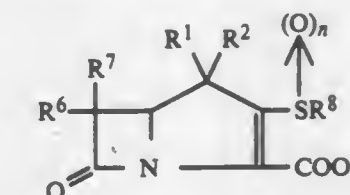
Filed Oct. 10, 1980, Ser. No. 196,004

Int. Cl.<sup>3</sup> A61K 31/40; C07D 487/04

U.S. Cl. 424—274

7 Claims

1. A compound having the formula:



and the pharmaceutically acceptable salts and esters thereof; and R<sup>1</sup>, R<sup>2</sup>, R<sup>6</sup>, R<sup>7</sup> and R<sup>8</sup> are independently selected from the group consisting of: hydrogen (R<sup>1</sup> and R<sup>2</sup> are not H); substituted and unsubstituted: alkyl, alkenyl, and alkynyl each having from 1-10 carbon atoms; cycloalkyl, cycloalkylalkyl, and alkylcycloalkyl having 3-6 carbon atoms in the cycloalkyl rings and 1-6 carbon atoms in the alkyl moieties; phenyl, aralkyl, aralkenyl, and aralkynyl wherein the aryl moieties are phenyl and the alkyl, alkenyl and alkynyl moieties have 1-6 carbon atoms; wherein the substituent or substituents relative to the above-named radicals are selected from the group consisting of: amino, mono-, di-, and trialkylamino, hydroxyl, alkoxy, mercapto, alkylthio, phenylthio, sulfamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, cyano and carboxy; and wherein the alkyl moieties of the above-recited substituents have 1-6 carbon atoms; n is 1 or 2; R<sup>1</sup> and R<sup>2</sup> may be joined together to form spirocycloalkyl having 3-6 ring carbon atoms.

6. An antibiotic pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim 1 and a pharmaceutical carrier therefor.

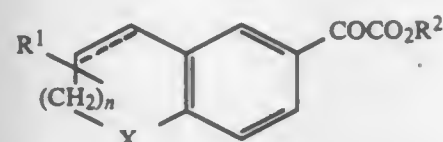


**4,341,792**  
**HETEROBICYCLIC KETO- AND AMINO-ACIDS, ESTERS AND AMIDES**

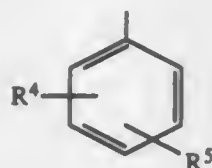
Ian T. Barnish, Ramsgate, and Peter E. Cross, Canterbury, both of England, assignors to Pfizer Inc., New York, N.Y.  
 Continuation-in-part of Ser. No. 187,431, Sep. 15, 1980, abandoned. This application Jul. 6, 1981, Ser. No. 280,862  
 Claims priority, application United Kingdom, Sep. 15, 1979, 7932049

Int. Cl.<sup>3</sup> A61K 31/34, 31/35; C07D 307/84, 311/041  
 U.S. Cl. 424-275 39 Claims

1. A compound of the formula

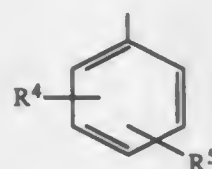


or a pharmaceutically acceptable cationic salt thereof, wherein R<sup>1</sup> is hydrogen, alkyl having from one to four carbon atoms or

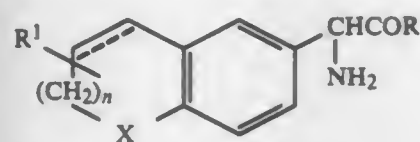


where R<sup>4</sup> and R<sup>5</sup> are the same or different and are each a member selected from the group consisting of H, OH, F, Cl, Br, I and alkyl and alkoxy having from one to four carbon atoms;

R<sup>2</sup> is hydrogen or alkyl having from one to four carbon atoms;  
 X is oxygen or sulfur;  
 n is 0 or 1;  
 and the broken line is a bond or no bond; with the proviso that when X is oxygen and the broken line is no bond, R<sup>1</sup> is

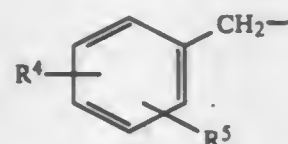


16. An L- or DL-glycine derivative of the formula



or a pharmaceutically acceptable cationic and acid addition salt thereof wherein

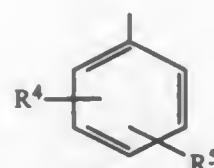
R is OR<sup>2</sup> or NHR<sup>3</sup> where R<sup>2</sup> is hydrogen or alkyl having from one to four carbon atoms and  
 R<sup>3</sup> is a member selected from the group consisting of hydrogen, alkyl having from one to four carbon atoms, alkoxy-alkyl having from one to four carbon atoms in each of the alkyl groups and



where R<sup>4</sup> and R<sup>5</sup> are the same or different and are each a

member selected from the group consisting of H, OH, F, Cl, Br, I and alkyl and alkoxy having from one to four carbon atoms;

R<sup>1</sup> is hydrogen, alkyl having from one to four carbon atoms or



where R<sup>4</sup> and R<sup>5</sup> are as defined above;  
 X is oxygen or sulfur;  
 n is 0 or 1 and  
 the broken line is a bond or no bond; with the proviso that when X is oxygen, n is 0 and the broken line is no bond, R is NHR<sup>3</sup>.

29. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and a cardiovascular blood flow, oxygen availability or carbohydrate metabolism increasing amount of a compound of claim 1.

30. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and a cardiovascular blood flow, oxygen availability or carbohydrate metabolism increasing amount of a compound of claim 16.

**4,341,793**  
**SECONDARY AMINES AND THEIR USE IN PHARMACEUTICAL COMPOSITIONS**

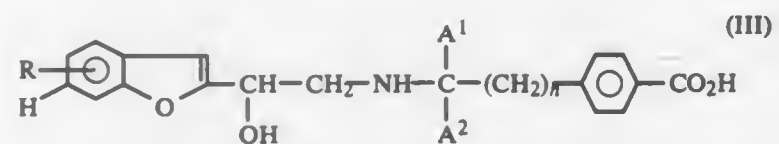
Michael J. Ferris, Sutton, England, assignor to Beecham Group Limited, England

Filed Nov. 7, 1980, Ser. No. 204,846  
 Claims priority, application United Kingdom, Nov. 15, 1979, 7939536

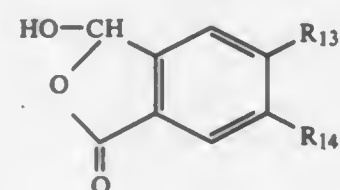
Int. Cl.<sup>3</sup> A61K 31/365; C07D 307/88; A61K 31/34; C07D 307/81

U.S. Cl. 424-279 10 Claims

1. A compound of formula (III):



or an ester thereof based on a lower alkanol optionally substituted by a hydroxy group not on the α-carbon atom or alcohols of the formula HOCHR<sub>11</sub>-OCO-R<sub>12</sub> and



wherein R<sub>11</sub> is a hydrogen atom or methyl, R<sub>12</sub> is lower alkyl or phenyl, R<sub>13</sub> is hydrogen, methyl, or methoxy and R<sub>14</sub> is hydrogen, methyl, or methoxy, an amide thereof wherein the amide comprises and amino, mono or di-(C<sub>1-6</sub>) alkyl amino moiety, or pharmaceutically acceptable salt of the carboxylic acid group, wherein

A<sup>1</sup> is hydrogen or methyl;

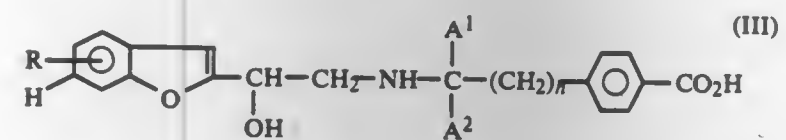
A<sup>2</sup> is hydrogen or methyl;

n is 1, 2 or 3; and

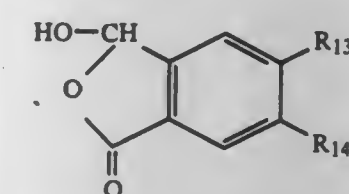
R is hydrogen, chlorine, bromine, hydroxy, methoxy, nitro, amino or trifluoromethyl.

7. A method for treating hyperglycaemia or obesity in humans and domestic mammals comprising the administration of

an effective, non-toxic amount of a compound of formula (III):



or an ester thereof based on a lower alkanol optionally substituted by a hydroxy group not on the α-carbon atom or alcohols of the formula HOCHR<sub>11</sub>-OCO-R<sub>12</sub> and



wherein R<sub>11</sub> is a hydrogen atom or methyl, R<sub>12</sub> is lower alkyl or phenyl, R<sub>13</sub> is hydrogen, methyl, or methoxy and R<sub>14</sub> is hydrogen, methyl, or methoxy, an amide thereof wherein the amide comprises and amino, mono or di-(C<sub>1-6</sub>) alkyl amino moiety, or pharmaceutically acceptable salt of the carboxylic acid group, wherein

A<sup>1</sup> is hydrogen or methyl;

A<sup>2</sup> is hydrogen or methyl;

n is 1, 2 or 3; and

R is hydrogen, chlorine, bromine, hydroxy, methoxy, nitro, amino or trifluoromethyl.

**4,341,794**  
**2-NITRONAPHTHOFURAN DERIVATIVES AND USE AS CELL GROWTH REGULATORS**

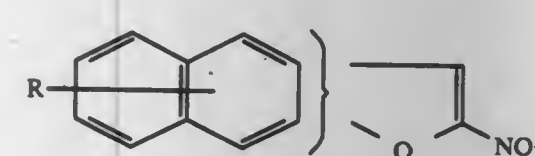
Rene R. Royer, Paris, and Jean-Pierre Buisson, Sartrouville, both of France, assignors to Agence Nationale de Valorisation de la Recherche, Paris, France

Filed Jan. 30, 1981, Ser. No. 229,860  
 Claims priority, application France, Feb. 4, 1980, 80 02354

Int. Cl.<sup>3</sup> A61K 31/345; C07D 307/92

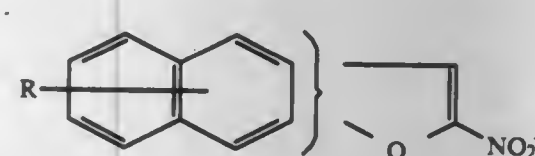
U.S. Cl. 424-285 5 Claims

1. A 2-nitronaphthofuran derivative of the formula



in which the linkage between the furan ring and the naphthalene nucleus is formed in a position selected from the 1,2-, 2,3- and 2,1- positions of the said naphthalene nucleus, and R, which can be located in any free position of the said naphthalene nucleus, is selected from the group consisting of a halogen atom and a methoxy group.

5. A method of regulating cell growth which comprises administering to the cells a cell growth regulating amount of a 2-nitronaphthofuran derivative of the formula



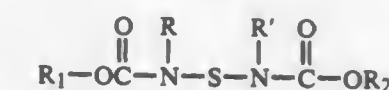
in which the linkage between the furan ring and the naphthalene nucleus is formed in a position selected from the 1,2-, 2,3- and 2,1- positions of the said naphthalene nucleus, and R, which can be located in any free position of the said naphthalene nucleus, is selected from the group consisting of a halogen atom and a methoxy group.

**4,341,795**  
**ASYMMETRICAL BIS-CARBAMATE COMPOUNDS**  
 Wei C. Liang, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 1, 1975, Ser. No. 636,623  
 Int. Cl.<sup>3</sup> A01N 47/12; C07C 153/00

U.S. Cl. 424-300 54 Claims

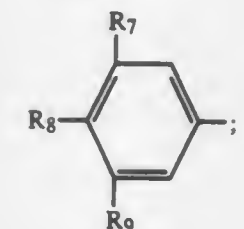
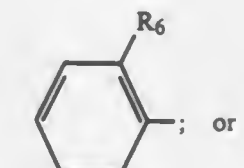
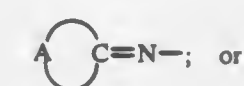
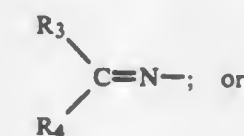
1. A compound of the formula:



wherein:

R and R' are individually alkyl radicals having from 1 to 4 carbon atoms;

R<sub>1</sub> is: naphthyl, benzothienyl, benzofuranyl or:



R<sub>2</sub> is other than R<sub>1</sub> and is a substituted or unsubstituted alkyl, cycloalkyl, phenylalkyl, naphthylalkyl or a heterocycloalkyl group, wherein the heterocyclic moiety is a five- or six-member ring which includes in any combination, one or two oxygen, sulfur, sulfinyl or sulfonyl groups and which may also include one divalent, amino, alkylamino or carbonyl group; wherein the permissible substituents on said groups are one or more halogen, nitrile, nitro, alkyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy, alkoxycarbonylamino, or alkylcarbonylamino groups in any combination, or R<sub>2</sub> is alkoxyalkyleneoxyalkyl, alkoxy(dialkyleneoxy)alkyl or alkoxy(trialkyleneoxy)alkyl; with the proviso that except where R<sub>2</sub> is alkyl, no single alkyl or alkylene moiety in any R<sub>2</sub> group may include more than six carbon atoms;

R<sub>3</sub> is hydrogen, alkyl, alkylthio or cyano;

R<sub>4</sub> is alkyl, alkylthio, alkoxy, alkanoyl or alkoxycarbonyl, all of which may be unsubstituted or aliphatically substituted in any combination with one or more cyano, nitro, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy, aminocarbonyl, alkylaminocarbonyl, or dialkylaminocarbonyl groups or R<sub>4</sub> is phenyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl or a R<sub>5</sub>CONH- or R<sub>5</sub>CON(alkyl)-group, where R<sub>5</sub> is hydrogen, alkyl, alkoxy or alkylthio; and

A is a divalent aliphatic chain, completing a five or six member ring, which includes in any combination, one or two oxygen, sulfur, sulfinyl or sulfonyl groups and which may also include one divalent amino, alkylamino or carbonyl group;

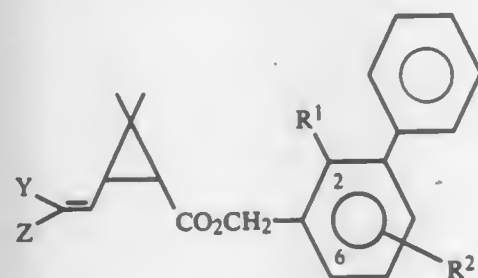


R<sub>6</sub> is alkoxy, alkylthio, alkyl, alkylthioalkyl, 2-dioxolanyl or halogen;  
 R<sub>7</sub> is alkyl;  
 R<sub>8</sub> is hydrogen, alkyl, halogen, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy, dialkylamino, formylamino, alkylcarbonylamino, alkoxy carbonylamino or dialkylaminomethyleneimino;  
 R<sub>9</sub> is hydrogen or alkyl;  
 with the proviso that the number of aliphatic carbon atoms in R<sub>3</sub>, R<sub>4</sub>, A, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub> and R<sub>9</sub>, individually, may not exceed eight.

18. S-Methyl-N-[N'-(N'-methyl-N''-(n-dodecyloxycarbonyl)aminosulfonyl)N'-methylcarbamoyloxy]thioacetimide.

**4,341,796**  
**CONTROL OF ACARIDS WITH BIPHENYLMETHYL PERHALOALKYL VINYL CYCLOPROPANECARBOXYLATES**  
 John F. Engel, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.  
 Continuation-in-part of Ser. No. 52,043, Jun. 25, 1979, Pat. No. 4,238,505, and a continuation-in-part of Ser. No. 927,198, Jul. 24, 1978, abandoned, and Ser. No. 870,973, Jan. 20, 1978, abandoned. This application Oct. 8, 1980, Ser. No. 195,035. The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> A01N 37/00, 37/08  
 U.S. Cl. 424—305  
 5 Claims  
 1. A method of controlling acarids which comprises applying to said acarids or a locus where control is desired an acaricidal or acarid repellent amount of a compound of the formula



wherein one of Y and Z is trifluoromethyl, and the other of Y and Z is halogen, R<sup>1</sup> is halogen or lower alkyl and R<sup>2</sup> is hydrogen, halogen or lower alkyl, or R<sup>1</sup> and R<sup>2</sup> are both hydrogen.

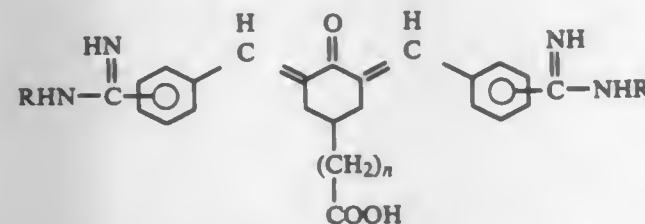
**4,341,797**  
**BIS-(AMIDINE PHENYL)CYCLOHEXANECARBOXYLIC ACID KETONES, COMPOSITIONS CONTAINING SAME AND METHOD OF USE**

George C. Rovnyak, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 5, 1981, Ser. No. 270,720  
 Int. Cl.<sup>3</sup> C07C 123/00; A61K 31/195

U.S. Cl. 424—319  
 8 Claims

1. A compound of the structure

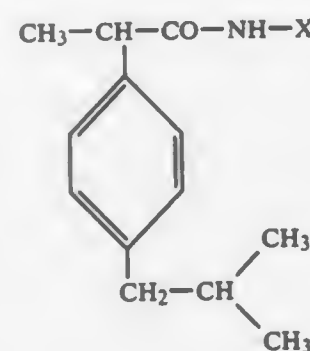


wherein R is H, lower alkyl, phenyl or phenyl substituted with a lower alkyl, lower alkoxy, halogen or trifluoromethyl group, and n is 0, 1 or 2, or pharmaceutically acceptable acid-addition salts thereof.

7. An anti-inflammatory composition comprising a therapeutic

effectively effective amount of a compound as defined in claim 1 in a physiologically acceptable carrier therefor.

**4,341,798**  
**AMIDE DERIVATIVES OF P-ISOBUTYL-PHENYL-PROPIONIC ACIDS AND RELATED PHARMACEUTICAL COMPOSITIONS**  
 Alberto Reiner, Como, Italy, assignor to Laboratori Prophin S.p.A., Milan, Italy  
 Filed Jul. 15, 1981, Ser. No. 283,430  
 Claims priority, application Italy, Jul. 22, 1980, 2360 A/80  
 Int. Cl.<sup>3</sup> A61K 31/195; C07C 101/22  
 U.S. Cl. 424—319  
 6 Claims  
 1. Amide derivatives of the p-isobutylphenyl-propionic acid, having the general formula:



wherein X represents the radical of a substituted amine of the group consisting of essential lysine, metatrifluorotoluidine, glutamic acid and aspartic acid.

6. A pharmaceutical composition having anti-inflammatory activity, characterized by containing an effective amount of the amide derivative of p-isobutylphenylpropionic acid according to claims 1, 2, 3, 4 or 5, together with a suitable pharmaceutical carrier.

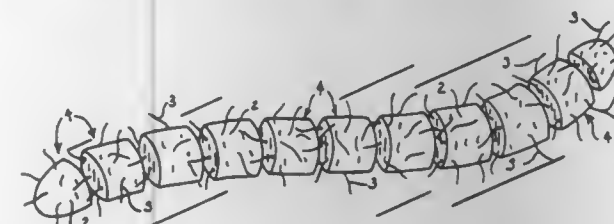
**4,341,799**  
**LOTION AND METHOD FOR CLEANSING AND CONDITIONING THE SKIN THEREWITH**  
 Allen H. Good, 149 Kent Place Blvd., Summit, N.J. 07901  
 Filed Dec. 29, 1980, Ser. No. 220,367  
 Int. Cl.<sup>3</sup> A61K 7/00, 7/50

U.S. Cl. 424—365  
 10 Claims  
 1. A skin lotion composition for the skin comprising  
 (a) from about 55 to about 80 percent by weight of water;  
 (b) from about 1.1 to about 5.5 percent by weight of at least one C<sub>10</sub> to C<sub>18</sub> saturated or monoolefinic fatty acid;  
 (c) from about 15 to about 30 percent by weight of a mineral oil having a viscosity in the range of from about 60 to about 350 SSU at 100° F.;  
 (d) from about 0.4 to about 2.0 percent by weight of a C<sub>12</sub>-C<sub>15</sub> alkali metal alcohol ether sulfate; and  
 (e) a cosmetically compatible alkaline neutralizing agent in amount sufficient to obtain a pH for the composition in the range of 6.5 to 7.5.

**4,341,800**  
**FOOD FOR FROGS**  
 Dozier Lester, 156-F Guilbeau Rd., Duxon, La. 70529  
 Filed Dec. 1, 1980, Ser. No. 211,566  
 The portion of the term of this patent subsequent to May 10, 1994, has been disclaimed.  
 Int. Cl.<sup>3</sup> A23K 1/10

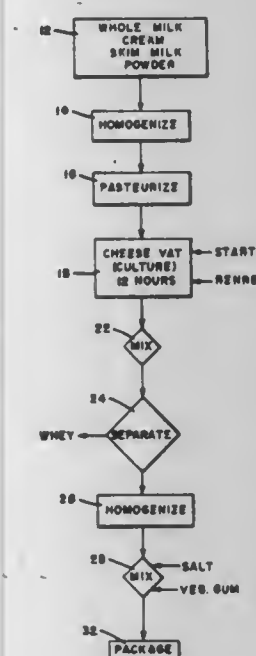
U.S. Cl. 426—1  
 2 Claims  
 1. A food for ingestion by frogs, said food prepared by mixing fish meal, ground crawfish hulls, sodium alginate, xanthan gum and ground limestone, and sodium hexametaphosphate in selective proportions with an equal quantity of water by weight to form a nutriment; adding horsehair to said nutriment; rolling said nutriment on a flat surface to shape an elongated

gated mass; cutting slots in said elongated mass in spaced relationship without severing said horsehair; and allowing said nutriment to dry, whereby said horsehair projects from said



elongated mass, and from discrete particles broken from said elongated mass along said slots, and said horsehair stimulates the frogs to swallow when said discrete particles are ingested by the frogs.

**4,341,801**  
**ULTRAFILTRATION PROCESS FOR THE PREPARATION OF CREAM CHEESE**  
 Barry J. Weissman, Norwalk, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.  
 Filed Oct. 17, 1977, Ser. No. 842,654  
 Int. Cl.<sup>3</sup> A23C 9/12  
 U.S. Cl. 426—40  
 10 Claims



1. In a process for making cream cheese from raw materials comprising milk and cream wherein at least a portion of the raw materials are subjected to ultrafiltration and the retentate thereof is employed in a pre-cheese mix which is subsequently cultured and stabilized, the improvement comprising, introducing into the pre-cheese mix prior to ultrafiltration an addition of whey protein solids.

**4,341,802**  
**PRODUCTION OF PROTEIN WITH REDUCED NUCLEIC ACID**  
 Thomas R. Hopkins, Bartlesville, Okla., assignor to Provost Corporation, Bartlesville, Okla.  
 Filed Oct. 24, 1980, Ser. No. 200,367  
 Int. Cl.<sup>3</sup> A23L 1/28

U.S. Cl. 426—60  
 16 Claims  
 1. A process for producing nucleic acid reduced protein (NARP) from a single cell protein (SCP) mixture comprising  
 (a) subjecting an SCP mixture containing single cells with high nucleic acid content and a liquid to a nucleic acid removal step wherein said SCP mixture is heated with a mineral acid at temperatures between about 50° C. and about 100° C. so at least a significant portion of the nucleic acid in the single cells is transferred to said liquid while the single cells remain essentially intact thus producing a

mixture of cells with reduced nucleic acid content and a nucleic acid containing fluid,  
 (b) separating said cells with reduced nucleic acid content from said nucleic acid containing fluid,  
 (c) extracting the cells with reduced nucleic acid content with base at a pH of about 10.6 or more to obtain a NARP mixture of a liquid and a solid phase,  
 (d) separating the liquid phase being essentially free of insoluble cellular material and the solid phase being essentially free of the liquid,  
 (e) recovering said liquid phase as a NARP solution and the first product of the process, and  
 (f) recovering the solid phase as a NARP cell product and the second product of the process.

**4,341,803**  
**METHOD FOR PRODUCING DRY FRUIT CHIP**  
 Daikichi Koshida, 1-19-10, Hotarugaik Nishi-Machi, Toyonaka-Shi, Osaka-Fu; Ko Sigisawa, 2-8-15, Chiyogaoka, Nara-Shi, Nara-Ken; Junji Majima, 12-21, Kita Showa-Machi, Nishinomiya-Shi, Hyogo-Ken, and Ryuichi Hattori, 96 Koyama Higashi Ohno-Cho, Kita-Ku, Kyoto-Shi, Kyoto-Fu, all of Japan  
 Filed Feb. 5, 1981, Ser. No. 231,911  
 Claims priority, application Japan, Feb. 5, 1980, 55-11997  
 Int. Cl.<sup>3</sup> A23B 7/02  
 U.S. Cl. 426—242  
 5 Claims

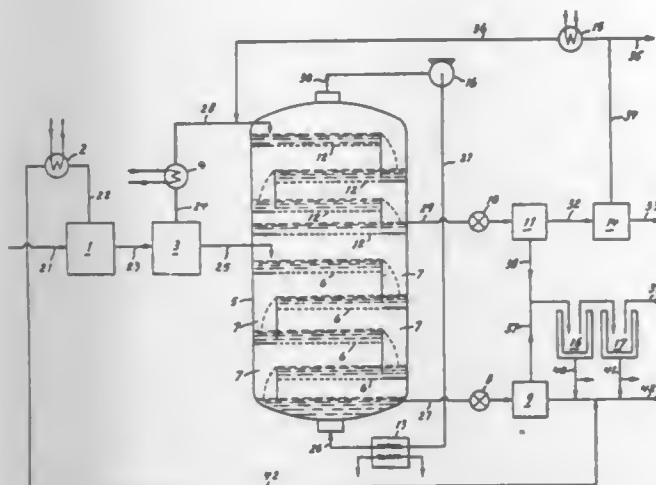
1. A method for producing dry fruit chips for ready eating as snack fruit comprising the steps of freeze-drying fresh fruit chips having a predetermined volume and an adjusted water-soluble sugar concentration in the range of 6-25% by weight to reduce the moisture content in said fresh fruit chips to 15-60% by weight so as to maintain the predetermined volume of said fruit chips, microwave irradiation-drying said freeze-dried fruit chips under vacuum to thaw the remaining moisture content and to uniformly disperse the water-soluble sugar concentration throughout said freeze-dried fruit chips and to further reduce the moisture content to 10-40% by weight, and vacuum-drying said microwave-irradiation dried fruit chips to still further reduce the moisture content to below 5% by weight so as to produce dry fruit chips having a moderate hardness.

**4,341,804**  
**DECAFFEINATION OF AQUEOUS ROASTED COFFEE EXTRACT**  
 Ravi Prasad, Middletown, N.Y.; Martin Gottesman, Paramus, N.J., and Robert A. Scarella, Hawthorne, N.Y., assignors to General Foods Corporation, White Plains, N.Y.  
 Division of Ser. No. 23,878, Mar. 26, 1979, Pat. No. 4,246,291.  
 This application Sep. 15, 1980, Ser. No. 187,223  
 The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.  
 Int. Cl.<sup>3</sup> A23F 5/18

U.S. Cl. 426—387  
 4 Claims  
 1. A method for decaffeinating an aqueous caffeine-containing extract of roasted coffee comprising the steps of:  
 (a) stripping volatiles from a roasted coffee extract and condensing said volatiles,  
 (b) evaporatively concentrating the stripped extract and condensing the evaporate,  
 (c) feeding the concentrated extract to the midsection of a sieve-plate contact tower where it is contacted in counter-current fashion in the bottom-section of the tower at a temperature between 10° C. and 180° C. and a pressure between 50 and 450 atmospheres with a rising and recirculating stream of a decaffeinating fluid, said fluid being either a liquid gas or a supercritical fluid at the conditions present in the tower,  
 (d) removing the decaffeinated extract from the bottom of the tower,  
 (e) feeding an essentially caffeine-free aqueous stream to the



- top of the sieve-plate contact tower, said stream containing the condensed evaporate of step (b),  
 (f) passing the caffeine-containing fluid from step (c) through the top-section of the sieve-plate contact tower where it is contacted in countercurrent fashion with and decaffeinated by the aqueous stream of step (e),



- (g) removing the caffeine-containing aqueous stream at the mid-section of the tower at a point above the elevation of the extract feed,  
 (h) removing the decaffeinated fluid at the top of the tower and recirculating this fluid to the bottom of the tower.

4,341,805

## HIGH DIETARY FIBER PRODUCT

Vinod K. Chaudhary, Manhattan, Kans., assignor to Miller Brewing Company, Milwaukee, Wis.

Continuation of Ser. No. 73,953, Sep. 10, 1979, abandoned. This application Dec. 11, 1980, Ser. No. 215,291

Int. Cl.<sup>3</sup> A23L 1/185; C12C 7/00; A21D 13/02

U.S. Cl. 426—481

2 Claims

1. A method of preparing a product for human consumption containing protein and having a high dietary fiber content and a low phytic acid content, which method consists essentially of drying brewer's spent grain to less than about 12% moisture by weight, milling the dried brewer's spent grain to obtain a ground product having particle sizes ranging from about 600 microns down to about 50 microns and isolating the ground particles having a particle size of at least about 120 microns which constitute said product and contain about 18% to 22% protein and about 65% to 75% dietary fiber.

4,341,806

## METHOD OF HEATING AND FREEZING A TEXTURIZED MYCELIAL FUNGAL MASS

Bruce Gadsby, and Kate A. Simmons, both of High Wycombe, England, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 116,666, Jan. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 2,708, Jan. 10, 1979, abandoned, which is a continuation-in-part of Ser. No. 872,081, Jan. 25, 1978, abandoned. This application Aug. 14, 1981, Ser. No. 292,804

Claims priority, application United Kingdom, Jan. 25, 1977, 2959/77

Int. Cl.<sup>3</sup> A23J 3/00

U.S. Cl. 426—511

5 Claims

1. A method of improving the toughness and increasing the succulence of a texturized mycelial fungal mass having a macrofiber structure similar to the fibers of natural meat and having a solids content of from about 20 to about 40% by weight, the solids content of which consists essentially of fungal mycelia, consisting essentially of:

- (a) heating the texturized mass in an atmosphere of substantially saturated steam for a period of from 1-150 minutes

so that the entire mass is at a temperature of at least 90° C. to reduce the bound water of the mass by about 4% by weight and increase the free water of the mass by about 4% by weight; and  
 (b) freezing the heated, texturized mass slowly at a rate of about 0.5° C. per minute to a temperature between -10° C. and -40° C. to further reduce the amount of bound water and increase the amount of free water of the mass; said method being conducted so as to maintain the solids content of the fungal mass at its initial level of from about 20 to about 40% by weight throughout said method.

4,341,807

## FOOD PRODUCTS CONTAINING MICROFIBRILLATED CELLULOSE

Albin F. Turbak, Convent Station; Fred W. Snyder, Wharton, both of N.J., and Karen R. Sandberg, Shelton, Wash., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,741

Int. Cl.<sup>3</sup> A23L 1/04

U.S. Cl. 426—570

9 Claims

1. A process for the preparation of a food product comprising mixing together an edible liquid which swells cellulose, an additive which imparts a food flavor and fibrous cellulose to form a liquid suspension, said liquid suspension containing no more than 10% by weight of fibrous cellulose, repeatedly passing said liquid suspension through a high pressure homogenizer having a small diameter orifice in which the mixture is subjected to a pressure drop of at least 3000 pounds per square inch gauge and a high velocity shearing action followed by a high velocity decelerating impact against a solid surface, said process converting said cellulose into microfibrillated cellulose and forming a stable homogeneous suspension of said microfibrillated cellulose, liquid and food additive.

4,341,808

## FROZEN RAW CUSTARD

Barbara A. Croyle, Parma, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Jan. 9, 1981, Ser. No. 223,838

Int. Cl.<sup>3</sup> A23L 1/04, 1/32

U.S. Cl. 426—573

9 Claims

1. A frozen, uncooked raw custard preparation, a substantial proportion of which is whole egg or egg white based whole egg replacer, capable of withstanding freeze-thaw cycling, and capable of homogeneous suspension of food particulates prior to freezing, comprising  
 (1) an organoleptically effective amount of said food particulates;  
 (2) uncooked, whole egg or egg white based whole egg replacer; and  
 (3) a milk-derived portion wherein said egg and milk-derived portion are present in the weight ratio of about 0.45:1 to about 0.75:1;  
 the milk derived portion comprising fluid milk, a thixotropic gum, and a water-absorbing quantity of a protein concentrate, in proportion to provide with said whole eggs or egg replacer a viscosity sufficient for homogeneous suspension of said food particulates prior to freezing, the protein content by Kjeldahl analysis from the fluid milk and protein concentrate being at least about 4% by weight of the milk derived portion.

4,341,809

## STABILIZED STARCH COMPOSITION

Richard R. Leshik, and Jay H. Katcher, both of Dover, Del., assignors to General Foods Corporation, White Plains, N.Y.

Filed Nov. 12, 1980, Ser. No. 206,101

Int. Cl.<sup>3</sup> A23L 1/195

U.S. Cl. 426—576

26 Claims

1. A process for preparing a dry starch composition which is resistant to degradation when dry mixed with an acid and stored dry comprising:

- (a) forming an aqueous starch slurry;  
 (b) adding buffer to the slurry, wherein the amount of buffer added is between 0.05% and 10% by weight of the starch so that the pH of the starch slurry is between 5 and 12 after said buffer addition; and then  
 (c) drying the starch and buffer slurry.

4,341,810

## GELLED GELATIN FOOD PRODUCT PREPARED FROM NON-GELLED AQUEOUS GELATIN COMPOSITIONS

Joseph L. Shank, Matteson, Ill., assignor to Dynagel Incorporated, Calumet City, Ill.

Filed Aug. 27, 1981, Ser. No. 295,795

Int. Cl.<sup>3</sup> A23L 1/04

U.S. Cl. 426—576

38 Claims

1. A method of preparing a gelled food product comprising the steps of:

- providing an ungelled aqueous gelatin concentrate comprising about 10 to about 30 weight percent gelatin and urea, the weight ratio of said gelatin to said urea being about 1:0.3 to about 1:1.5, said concentrate having a gel-set temperature less than about 20° C. and a pH value of between about 2.5 and about 7, and having the property whereby dilution thereof with water to a gelatin concentration of about 2 weight percent of the total composition while maintaining substantially the pH value of the concentrate produces a diluted composition having a gel-set temperature higher than that of said concentrate; and diluting said gelatin concentrate with an aqueous composition to a gelatin concentration of about 1 to about 5 weight percent of the total composition, and maintaining said diluted composition at a temperature not higher than said diluted composition gel-set temperature for a period of time sufficient to produce a gel.

4,341,811

## FLUID NON-DAIRY CREAMER

Charles E. Rule, Lakewood, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Apr. 15, 1981, Ser. No. 254,467

Int. Cl.<sup>3</sup> A23C 11/00

U.S. Cl. 426—602

9 Claims

1. A protein-free, lipoidal coffee whitener, the functional ingredients of which consist essentially of a pasteurized, homogenized water-rich lipoidal emulsion of about 6-15% edible fat and about 0.6-2% mixed lipoidal emulsifier, and water, said fat having a Wiley Melting Point below about 120° F., said emulsifier constituting about 0.3-1% low HLB, not substantially greater than 5, mono- and diglyceride or propylene glycol partial ester of fatty acids having an HLB value above about 10, a hydroxyl value of about 400-600, a saponification number of about 60-100, and acid values of less than about 10.

4,341,812

## EDIBLE FAT PRODUCT I

John Ward, Mississauga, Canada, assignor to Nabisco Brands, Inc., New York, N.Y.

Filed Sep. 16, 1980, Ser. No. 187,697

Int. Cl.<sup>3</sup> A23D 3/02, 5/00

U.S. Cl. 426—603

22 Claims

1. A process of forming a low-trans-isomer-containing edible

fat product with a trans-isomer content no greater than about 1%, which comprises:

- preparing a randomly interesterified mixture of saturated babassu nut oil having an iodine value of less than 2.0 and a second saturated edible oil having an iodine value of less than 2.0, the mixture comprising said babassu nut oil and said second oil in the weight proportions of about 75:25 to about 40:60, the interesterified mixture resulting in a hardstock having an SFI solids content of at least about 45% at 92° F., and, blending said hardstock with a liquid vegetable oil in proportions such that the resulting blend contains about 5% to about 20% by weight of said hardstock.

4,341,813

## EDIBLE FAT PRODUCT II

John Ward, Mississauga, Canada, assignor to Nabisco Brands, Inc., New York, N.Y.

Filed Sep. 16, 1980, Ser. No. 187,698

Int. Cl.<sup>3</sup> A23D 3/02, 5/00

U.S. Cl. 426—603

19 Claims

1. A process of forming a low-trans-isomer-containing edible fat product with a trans-isomer content no greater than about 1%, which comprises:

- preparing a randomly interesterified mixture of a first saturated oil, obtained from babassu nut oil or a fractionated lauric oil having fatty acid components equivalent to babassu nut oil, having an iodine value of less than 2.0 and a second saturated edible oil having an iodine value of less than 2.0, the mixture comprising said first oil and said second oil in the weight proportions of about 75:25 to about 40:60, the interesterified mixture resulting in a hardstock having an SFI solids content of at least about 30% at 92° F., and, blending said hardstock product with a liquid vegetable oil in proportions such that the resulting blend contains about 20% to about 30% by weight of said hardstock.

4,341,814

## PEANUT BUTTER STABILIZER

Stephen A. McCoy, Villa Hills, Ky., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 24, 1980, Ser. No. 200,123

Int. Cl.<sup>3</sup> A23D 5/00

U.S. Cl. 426—607

14 Claims

1. A peanut butter stabilizer composition comprising:  
 (a) an intermediate melting fat fraction having an IV of from about 25 to about 45 and a solid content of between 80% and 95% at temperatures of from 50° F. to 90° F., and a solid content below 50% at 115° F.; and  
 (b) a hydrogenated oil fraction having an IV of less than 10, which comprises a substantially completely hydrogenated fat and oil having a high proportion of fatty acids containing 20 to 24 carbon atoms;  
 wherein the ratio of the intermediate melting fat fraction to the hydrogenated oil fraction is from 4:1 to 1:1.5.

4,341,815

## METHOD OF ELECTROSTATICALLY COATING AN ARTICLE WITH PAINT

Thomas L. Bagby, Washington; Gary L. Demeny, Delavan, and Robert G. Smead, St. Charles, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 18,019, Mar. 6, 1979, Pat. No. 4,258,655, which is a continuation of Ser. No. 678,844, Apr. 21, 1976, abandoned. This application Nov. 10, 1980, Ser. No. 205,827

Int. Cl.<sup>3</sup> B05D 1/06

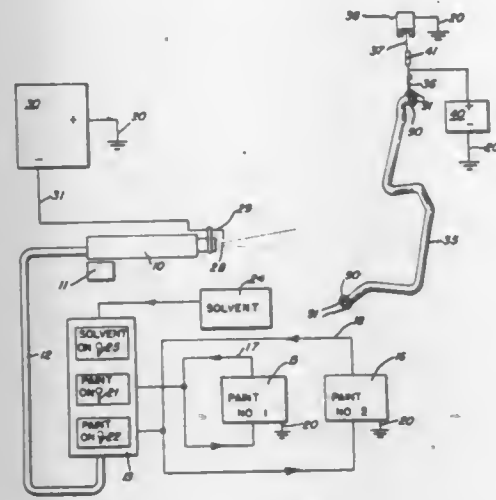
U.S. Cl. 427—33

10 Claims

1. A method of electrostatically coating an article (35) with paint, comprising:  
 atomizing and projecting the paint from a nozzle (33) of a



gun (10), said gun (10) having an electrode (29) insulated therefrom and so spaced from the nozzle (33) and so shaped as to be capable of generating a corona discharge in its vicinity when adequately charged; imparting an electric charge of one polarity to the paint particles at the nozzle (33) by establishing a preselected electric field (32) between said electrode (29) and the nozzle (33), said field (32) being of sufficient intensity to generate said corona discharge;



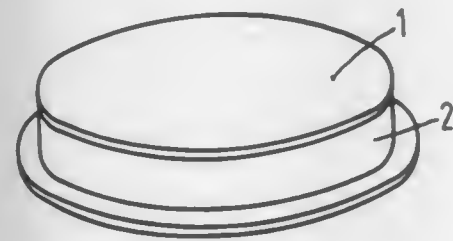
projecting the paint along a path through the vicinity of said electrode (29) and thus through a zone of ions (80) established there by the corona discharge, thereby imparting an electric charge of the opposite polarity to another portion of the paint particles and including reversing the polarity of a portion of the paint particles emanating from the nozzle (33) and providing a plurality of diversely charged particles; and electrically charging the article (35) to be coated in order to influence the direction of motion of the diversely charged particles.

#### 4,341,816 METHOD FOR ATTACHING DISC- OR PLATE-SHAPED TARGETS TO COOLING PLATES FOR SPUTTERING SYSTEMS

Richard Lauterbach, Munich, and Hartmut Keller, Poeking, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany  
Filed Jul. 11, 1980, Ser. No. 168,653  
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2933835

Int. Cl.<sup>3</sup> B05D 1/08  
U.S. Cl. 427-34

12 Claims



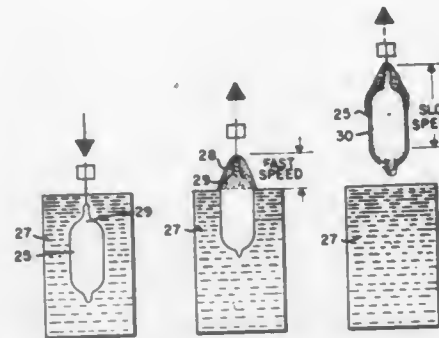
1. A method of attaching a body composed of a select target material onto a cooling plate for sputtering systems, comprising: applying a layer of an adhesive material compatible with said select target material onto a surface of said body; plasma spraying said adhesive layer with a relatively thick solderable layer having a thickness in the range of about 30 to 100  $\mu$ m and being composed of a material selected from the group consisting of copper, copper/glass mixtures and silver, and

soft-soldering such coated surface of the body with a surface of a cooling plate.

#### 4,341,817 FLASHLAMP CONTAINMENT COATING

John E. Tozier, and John W. Shaffer, both of Williamsport, Pa., assignors to GTE Products Corporation, Stamford, Conn.  
Filed May 14, 1981, Ser. No. 263,657  
Int. Cl.<sup>3</sup> B05D 3/06  
U.S. Cl. 427-54.1

10 Claims



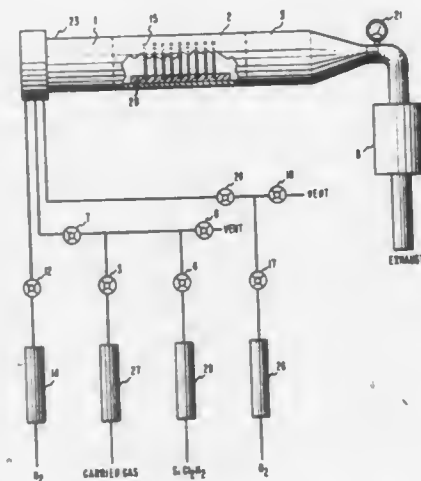
1. A process for coating a photoflash lamp with a UV-curable resin including the steps of applying varying amounts of UV-curable resin to different portions of the photoflash lamp and curing said UV-curable resin by impingement thereof with energy from a radiant energy source, said process characterized by the improvement wherein a different thickness of said UV-curable coating is applied to different portions of said photoflash lamp by a dip-coating process wherein said photoflash lamp is withdrawn from the coating composition at a non-uniform rate.

#### 4,341,818 METHOD FOR PRODUCING SILICON DIOXIDE/POLYCRYSTALLINE SILICON INTERFACES

Arthur C. Adams, and Hyman J. Levinstein, both of Berkeley Heights, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Jun. 16, 1980, Ser. No. 159,865  
Int. Cl.<sup>3</sup> B05D 5/12

U.S. Cl. 427-85

9 Claims



1. A process for producing a body comprising a region of silicon dioxide in intimate contact with a region of polycrystalline silicon wherein said body is suitable for a semiconductor device application, said process comprising the steps of oxidizing silicon in said body to produce said region of silicon dioxide and depositing said region of polycrystalline silicon on said region of silicon dioxide characterized in that said silicon is oxidized in oxygen at a partial pressure in the range 0.2 to 10 Torr and at an oxidation temperature in the range 900 to 1000 degrees C., said oxygen is removed after oxidation while main-

taining a protected environment, and said deposition of polycrystalline silicon is performed utilizing a reactant mixture comprising dichlorosilane wherein said reactant mixture is subjected to a temperature within 1 percent of said oxidation temperature to produce said region of silicon dioxide and wherein said region of polycrystalline silicon is deposited.

#### 4,341,819 EPOXY COATING POWDERS WITH WRINKLE FINISHES

Dean A. Schreffler, Hamburg, and Charles M. Noonan, Bernville, both of Pa., assignors to The Polymer Corporation, Reading, Pa.  
Filed Dec. 29, 1980, Ser. No. 220,709  
Int. Cl.<sup>3</sup> B05D 5/02, 5/00

U.S. Cl. 427-195

4 Claims



4. A method for obtaining a wrinkled surface when coating a substrate in fusion coating processes with heat reactive epoxy resins, the improvement comprising the use of methylene disalicylic acid as the curing agent.

#### 4,341,820 COMPOSITION OF MATTER

Lynn J. Taylor, Haslett, Mich., and John D. Grier, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio  
Division of Ser. No. 731,956, Oct. 13, 1976, abandoned, which is a continuation of Ser. No. 302,062, Oct. 30, 1972, abandoned, which is a division of Ser. No. 174,197, Aug. 23, 1971, Pat. No. 4,014,845. This application Aug. 5, 1980, Ser. No. 175,464  
The portion of the term of this patent subsequent to Dec. 18, 1990, has been disclaimed.

Int. Cl.<sup>3</sup> B05D 3/02  
U.S. Cl. 427-226

12 Claims

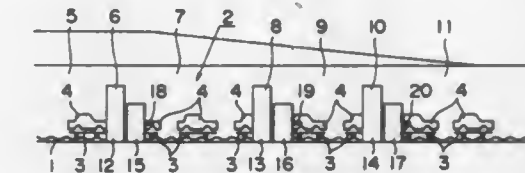
1. A process for coating a substrate with a layer of inorganic material which comprises (a) applying to the substrate a composition of matter containing particulate inorganic material dispersed in a fugitive vehicle system, said particulate material having a fusion temperature and said fugitive vehicle system comprising at least two organic components, at least one component being a polymeric material which is a solid at ambient temperature, has a pyrolysis temperature below said fusion temperature of said particulate material and following pyrolysis in a non-oxygen containing environment, leaves no carbonaceous residue having a deleterious affect on said particulate material, and at least one other component being a solvent for dissolving said polymeric material, said solvent being a liquid at ambient temperature and having a volatilization or decomposition temperature range of about 200° C. to about 350° C. but below the pyrolysis temperature of said polymeric material, (b) heating said composition containing said fugitive vehicle system and said particulate inorganic material to a temperature sufficient to volatilize said solvent to form a coating of said polymeric material containing said particulate inorganic material, and (c) further heating said resultant coating to higher tempera-

tures sufficient to pyrolyze said polymeric material and fuse said particulate inorganic material to said substrate.

#### 4,341,821 METHOD OF APPLYING WATER-BASE PAINT

Kimio Toda, and Yasuo Tokushima, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan  
Continuation of Ser. No. 650,711, Jan. 20, 1976, abandoned. This application Nov. 27, 1978, Ser. No. 963,894  
Claims priority, application Japan, Jan. 25, 1975, 50-10647  
Int. Cl.<sup>3</sup> B05D 3/00  
U.S. Cl. 427-299

9 Claims

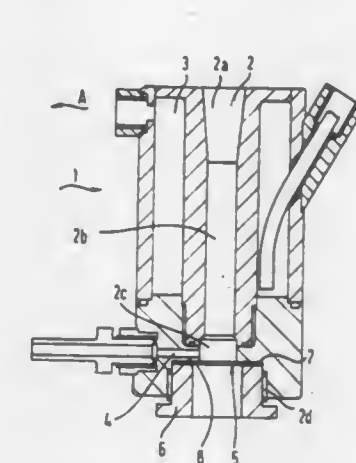


1. In the known process of coating a surface by spraying with a water-base paint which is susceptible to running down or other coating defects after application, the improvement which comprises also applying to said surface before said water-base paint dries a solvent that increases the viscosity of said water-base paint, whereby a smooth glossy coated surface is produced.

#### 4,341,822 METHOD OF AND APPARATUS FOR IMPREGNATING FABRIC REINFORCEMENT STRUCTURES WITH A LIQUID IMPREGNANT

Reginald D. Singer, Solihull; Brian J. Holden, and John H. Hughes, both of Tamworth, all of England, assignors to Dunlop Limited, London, England  
Filed Sep. 11, 1980, Ser. No. 186,507  
Claims priority, application United Kingdom, May 29, 1980, 8017509  
Int. Cl.<sup>3</sup> B05D 3/02, 1/18; B05C 3/02, 3/12  
U.S. Cl. 427-389.9

28 Claims



1. A method of impregnating an elongate fabric reinforcement structure with an impregnant which is liquid at impregnation temperature and chemically reacts to form an elastomer comprising continuously advancing said reinforcement structure downwards through a substantially vertical column of liquid impregnant and continuously supplying liquid impregnant to the lower end of said column at a rate substantially equal to the rate at which said impregnant is taken up by the reinforcement structure whereby said impregnant entering the column is continuously displaced upwards along the length of said column towards the upper end.  
2. A method according to claim 1 wherein said reinforcement structure is made of textile material.



18. A method according to claim 1 or 2 wherein the cure of the impregnant is aided by the application of heat.

**4,341,823**  
**METHOD OF FABRICATING A FIBER REINFORCED METAL COMPOSITE**

Richard W. Sexton, Grove City, and David M. Goddard, Powell, both of Ohio, assignors to Material Concepts, Inc., Columbus, Ohio

Filed Jan. 14, 1981, Ser. No. 224,869  
Int. Cl.<sup>3</sup> B32B 15/02

U.S. Cl. 427—404 11 Claims

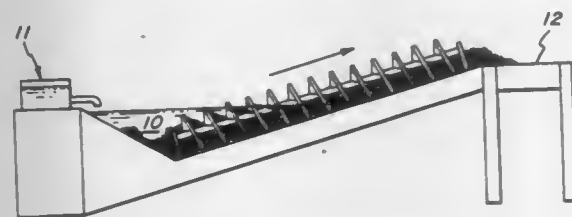
1. A method of treating a fiber, selected from the group consisting of graphite and ceramics, comprising the steps of: coating said fiber with nickel, coating said nickel-coated fiber with copper, coating said nickel and copper-coated fiber with a noble metal, immersing said coated fiber in molten metal in the absence of a vacuum or protective atmosphere, said molten metal being selected from the group consisting of lead, aluminum, tin, or alloys thereof in which said lead, aluminum or tin is the base metal.

**4,341,824**  
**METHOD OF UPGRADING ROCK AND TREATED ROCK OBTAINED THEREFROM**

Donald G. LeGrand, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 62,914, Aug. 2, 1979, abandoned. This application Apr. 9, 1981, Ser. No. 252,523  
Int. Cl.<sup>3</sup> A01N 1/00, 3/00

U.S. Cl. 428—15 26 Claims



1. A method for treating rock in the absence of unhardened cement to upgrade the rock's resistance to environmental degradation which comprises

- (1) wetting the rock with an aqueous ionic polymer solution having at least 1% by weight of the ionic polymer which has a molecular weight of up to about 1,000 and is a member selected from the class consisting of a polyacid, a polybase, and a polyampholite, and
  - (2) allowing or effecting the drying of the treated rock.
10. Aggregate having an average diameter of at least 1/4" treated with a water soluble ionic polymer selected from the class consisting of a polyacid, a polybase, and a polyampholite in the absence of unhardened cement.

**4,341,825**  
**FOG-RESISTANT, HEAT-SEALABLE FILM**  
Michael B. Kanski, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

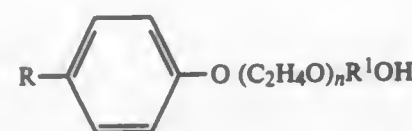
Filed Feb. 25, 1980, Ser. No. 124,421

Int. Cl.<sup>3</sup> C09J 7/02; B65D 75/00

U.S. Cl. 428—35 9 Claims

1. A transparent, heat-sealable, laminated film that comprises a first film layer of a difficultly heat-sealable biaxially oriented and heat set saturated polyester, and a second film layer of a readily heat-sealable organic polymer chemically interfacially joined to said first film layer by a bond that is so strong that said layers cannot be mechanically separated from one another, wherein said second film layer comprises a non-linear polyolefin polymer and from about 0.3 to 0.7 percent by

weight of an anti-fogging agent which consists essentially of an alkylphenyl polyethylene glycol ether of the formula:



wherein R is an alkyl group containing from 10 to 15 carbon atoms, R<sup>1</sup> is an alkylene group containing from about 1 to 3 carbon atoms, and n is an integer of from 4 to 10.

2. A package that contains a moisture-producing material, said package comprising a heat-sealed, laminated film according to claim 1.

**4,341,826**  
**INTERNAL COMBUSTION ENGINE AND COMPOSITE PARTS FORMED FROM SILICON CARBIDE FIBER-REINFORCED CERAMIC OR GLASS MATRICES**

Karl M. Prew, Vernon, and John J. Brennan, Portland, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 121,081, Feb. 13, 1980, and Ser. No. 147,672, May 7, 1980, Pat. No. 4,314,852. This application May 14, 1980, Ser. No. 149,603

Int. Cl.<sup>3</sup> B32B 5/12; C04B 35/74, 35/80; F02B 77/00  
U.S. Cl. 428—35 20 Claims



1. An internal combustion engine combustion chamber component comprising a plurality of substantially titanium-free ceramic layers selected from the group consisting of (a) aluminosilicate, (b) lithium aluminosilicate, (c) magnesium aluminosilicate, and (d) mixtures thereof, each layer reinforced with a plurality of unidirectional, continuous length silicon carbide fibers, each layer having an axial flexural strength greater than 70,000 psi, a high fracture toughness exemplified by a critical stress intensity factor greater than  $10 \times 10^3$  psi (inch)<sup>1/2</sup>, high temperature strength, high temperature oxidation stability, and good insulating properties.

2. An internal combustion engine combustion chamber component comprising a silicon carbide fiber reinforced glass composite consisting essentially of about 30% to about 70% by volume silicon carbide fibers in a glass matrix selected from the group consisting of borosilicate glass, high silica content glass, aluminosilicate-glass and mixtures thereof, the composite having a fracture toughness exemplified by a critical stress intensity factor above about 15,000 psi (inch)<sup>1/2</sup>, high temperature strength, high temperature oxidation stability and insulating properties.

15. The component of claims 1 or 2 wherein the component is a cylinder head hot plate.

16. The component of claims 1 or 2 wherein the component is a piston, piston cap, cylinder wall sleeve, or valve.

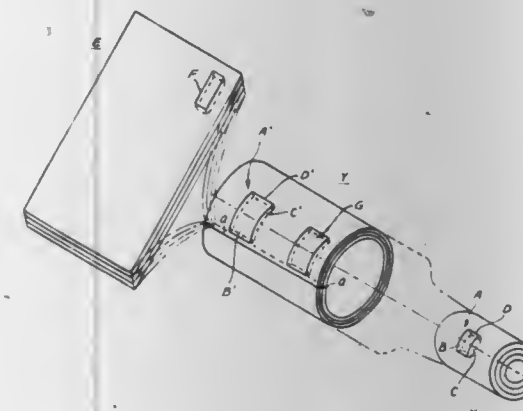
**4,341,827**  
**BIAXIALLY ORIENTED THERMOPLASTIC POLYMER FILM AND METHOD OF MANUFACTURE**

Alfred A. Austen, Center Valley, and Darral V. Humphries, Allentown, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 72,807, Sep. 5, 1979, Pat. No. 4,282,277, which is a continuation-in-part of Ser. No. 941,116, Sep. 8, 1978, abandoned. This application Jul. 30, 1981, Ser. No. 288,575

Int. Cl.<sup>3</sup> B29C 23/00; F16L 9/12; B32B 27/06, 27/32; C08F 110/06, 38/00, 22/26, 36/00

U.S. Cl. 428—36 35 Claims



1. A rigid conduit comprising of a plurality of tubular-like, concentric, discrete separable layers of at least one thermoplastic crystalline polymer, each layer being a flexible film having a substantially uniform thickness within the range of 0.13 and 0.76 mm and characterized by a structure of platelet-like, discrete, generally polygonal spherulitic crystalline aggregates radially compressed and biaxially oriented in the plane of the wall of the conduit, each of the films being characterized by substantially the same density, decreased gas permeability and an increased thermal conductivity, compared to a corresponding film of the non-oriented thermoplastic crystalline polymer or of the same thermoplastic crystalline polymer which has been biaxially oriented to the same degree by conventional stretch orienting processes, a tensile impact strength at 24 C. which is at least 5 times the tensile impact strength at 24 C. of a corresponding film of the non-oriented polymer, a tensile impact strength at -45 C. which is not less than 20 percent of the tensile impact strength of 24 C. and a ratio of tensile impact strength over ultimate tensile strength which is at least 50 percent greater than such ratio determined for a corresponding film of the polymer biaxially oriented to the same degree by conventional stretch orienting processes.

2. A method for producing the rigid conduit of claim 1, comprising:

- (a) preheating a preform comprised of a plurality of concentric tubular-like discrete layers of at least one thermoplastic crystalline polymer,
- (b) hydrostatically extruding the preform in a solid state through an extrusion zone comprising a converging wall, converging cross-section and a diverging geometry into an extrudate comprised of a plurality of concentric tubular-like discrete layers, each layer of which has a substantially uniform thickness within the range of 0.13 and 0.76 mm, and
- (c) cooling the extrudate.

9. A flexible film comprised of at least one thermoplastic crystalline polymer having a substantially uniform thickness between 0.13 and 0.76 mm and characterized by a biaxially oriented structure of platelet-like, discrete, generally polygonal spherulitic crystalline aggregates compressed in a plane transverse to the plane of the film and biaxially oriented in the plane of the film and further characterized by substantially the same density, decreased gas permeability, increased thermal conductivity compared to a corresponding film of the non-oriented thermoplastic crystalline polymer or of the same thermo-

plastic crystalline polymer which has been biaxially oriented to the same degree by conventional stretch orienting processes, a microstructure substantially devoid of process induced microvoids and microfibrils other than those formed during melt processing, a tensile impact strength at 24 C. (75 F.) which is at least five times and an ultimate tensile strength which is at least one and three quarters that of a corresponding film of the thermoplastic crystalline polymer in a non-oriented state when tested in the plane of the film and the tensile impact strength at -45 C. (-50 F.) which is not less than 20 percent of the tensile impact strength at 24 C. (75 F.) and a ratio of tensile impact strength over ultimate tensile strength which is at least 50 percent greater than such ratio determined for a corresponding film of the polymer biaxially oriented to the same degree by conventional stretch orienting processes.

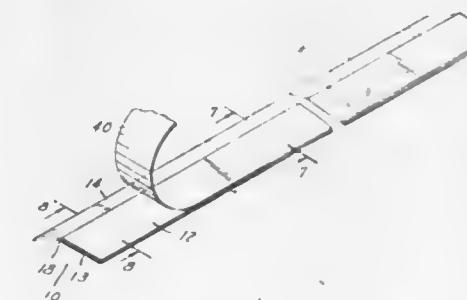
28. A method for producing a flexible film of claim 9 comprising:

- (a) preheating a preform comprised of a plurality of concentric tubular-like discrete layers of at least one thermoplastic crystalline polymer,
- (b) hydrostatically extruding the preform in a solid state through an expansion zone comprising a converging wall, a converging cross-section and a diverging geometry, into an extrudate comprised of a plurality of concentric tubular-like discrete layers, each layer of which has a substantially uniform thickness within the range of 0.13 and 0.76 mm,
- (c) cooling the extrudate, and
- (d) separating the layers into discrete flexible films.

**4,341,828**  
**REFINISH PAINTING APPARATUS**  
Charles E. Stephens, 10037 Dixie Hwy., Anchorville, Mich. 48004

Division of Ser. No. 954,907, Oct. 26, 1978, Pat. No. 4,201,799, which is a continuation of Ser. No. 754,229, Dec. 27, 1976, abandoned. This application Feb. 15, 1980, Ser. No. 121,673. The portion of the term of this patent subsequent to Dec. 30, 1992, has been disclaimed.

Int. Cl.<sup>3</sup> B32B 3/04; B05C 21/00  
U.S. Cl. 428—40 5 Claims



1. Masking tape adapted for use in defining a selected portion of a surface for refinish spray painting, comprising, in combination:

- a flexible elongated strip of material having co-extensive first and second lateral portions disposed at an obtuse angle to each other such that when the first lateral portion is arranged to juxtapose the surface to be refinish painted the second lateral portion will overhang in spaced sloping relation the portion of such surface to be sprayed;
- adhesion means overlying a surface of said first lateral portion for removably securing such portion in the aforesaid juxtaposition to a surface to be refinish painted, and
- angle maintenance means for maintaining said angle between the first and second lateral portion such that the angle of the overhang between the second lateral portion and the surface portion to be refinish painted is between approximately 15° and 45°, said angle maintenance means between the first and second lateral portions.

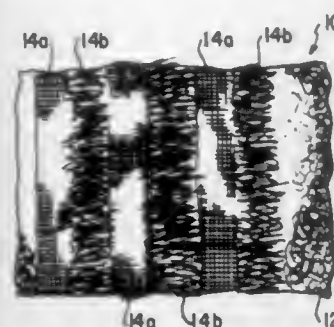


**4,341,829**  
**FABRIC AND METHOD OF MANUFACTURE USING SELVAGE BANDS**  
 Kenneth A. Gold, 29 Wildwood Gardens, Port Washington, N.Y. 11050

Filed Feb. 6, 1980, Ser. No. 119,129  
 Int. Cl.<sup>3</sup> B32B 29/00

U.S. Cl. 428—53

13 Claims



1. A non-woven fabric including as a primary component a fringed selvage band of the type obtained as a by-product of the manufacture of certain woven fabrics, said fabric further comprising a non-woven backing to which said selvage bands are secured by needling.

**4,341,830**  
**COMPOSITE STRUCTURE IN THE FORM OF A DISC OF KNITTED CARBON FIBERS**

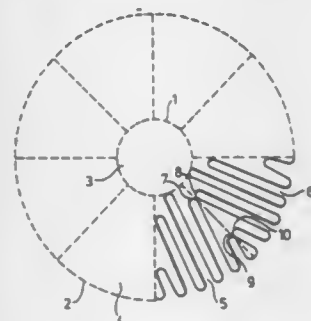
Max W. Betts, Coventry; Thomas R. Burrow, Earlsdon; Frank Robinson, Breaston, and Patrick A. White, Walsgrave, all of England, assignors to Courtaulds Limited, London, England  
 Continuation of Ser. No. 847,614, Nov. 1, 1977, abandoned. This application Jan. 11, 1980, Ser. No. 111,362

Claims priority, application United Kingdom, Nov. 3, 1976, 45817/76

Int. Cl.<sup>3</sup> B32B 3/02

U.S. Cl. 428—65

22 Claims



1. A fabric panel suitable for reinforcing a matrix material to provide a composite structure which comprises yarn of carbon fibres or oxidised fibres suitable as precursors for carbon fibres and is knitted in courses of varying length which give it the general shape of a disc with the wales lying substantially concentric with the circumference of the disc, and having one or more additional yarns of carbon fibres or oxidised fibres suitable as precursors for carbon fibres, laid in along at least some of the knitted courses.

**4,341,831**  
**SHAPES FOR WINDOWS OR DOORS**  
 Joachim Kleiss, Dettelbach, Fed. Rep. of Germany, assignor to Fulgeritwerke Seelze und Eichriede in Luthe bei Hannover Adolf Oesterheld GmbH & Co. Kommanditgesellschaft, Wunstorf, Fed. Rep. of Germany

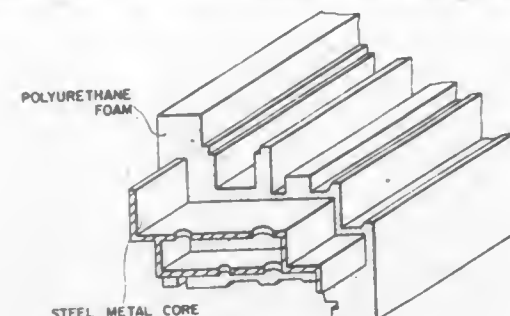
Filed May 4, 1981, Ser. No. 260,407  
 Int. Cl.<sup>3</sup> B32B 1/08, 1/10, 3/30, 15/08

U.S. Cl. 428—188

11 Claims

1. In a shape for windows and doors consisting of a hollow aluminum extruded shape with a plastic sheath made of poly-

urethane foam and having a primer consisting of an adhesive substrate between the surface of said aluminum shape and said polyurethane foam, the improvement comprising said primer



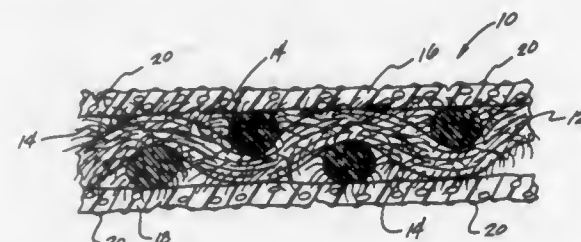
consisting of a compound of a resin selected from the group consisting of phenolic resin, polyvinylbutyral or a mixture thereof; pigment and acid.

**4,341,832**  
**SYNTHETIC CHAMOIS WIPING CLOTHS**  
 Gary A. Barnett, Lyman, and James P. Shealy, Jr., Rock Hill, both of S.C., assignors to M. Lowenstein Corporation, New York, N.Y.

Filed May 29, 1981, Ser. No. 268,258  
 Int. Cl.<sup>3</sup> B32B 3/00

U.S. Cl. 428—196

21 Claims



1. A composite sheet material having the visual appearance, feel and drape of natural chamois leather, and excellent liquid absorption and retention comprising, in combination, a reinforcing textile fabric having opposed raised fiber surfaces, a soft water-absorbent porous polymeric acrylonitrile foam layer secured to each of the raised fiber faces of the textile fabric with the surface fibers of the fabric at least partially embedded therein, and wherein small discontinuous generally uniformly dispersed areas of the exposed porous surfaces of said foam layers are coated with a non-tacky, water-insoluble, film-forming polymer, said sheet material being characterized by no noticeable surface tack and an ability to absorb and retain liquid therein in an amount of at least about 300 percent of its dry weight.

**4,341,833**  
**FORGERY-RESISTANT FILM**  
 Helmut Schäfer, Rüsselsheim, and Manfred Unger, Schlangenberg, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany  
 Filed Oct. 15, 1979, Ser. No. 84,551  
 Claims priority, application Fed. Rep. of Germany, Nov. 4, 1978, 7832840[U]

Int. Cl.<sup>3</sup> B32B 7/02, 27/06, 27/36

U.S. Cl. 428—212

1 Claim



1. A film which offers protection against forgeries and is

suitable for marking articles, comprising a laminate comprised of two transparent films joined to one another over their surface, each of said films being oriented by stretching and being comprised of a polyester resin and in admixture therewith an organic dyestuff which is heat stable at temperatures above about 260° C., wherein one of the laminated transparent film layers comprises as the dyestuff anthracene [2, 1-m; 1,9 a-n; 9a, 9-a] thioxanthene and the other film layer comprises as the dyestuff N-(n-octadecyl)-benzo [k,l] thioxanthene-3,4-dicarboximide.

**4,341,834**  
**COATED SUPER-HARD ALLOY ARTICLES**  
 Noribumi Kikuchi, Omiya; Yasuo Suzuki, Ageo; Taijiro Sugizawa, and Fumio Washizu, both of Tokyo, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

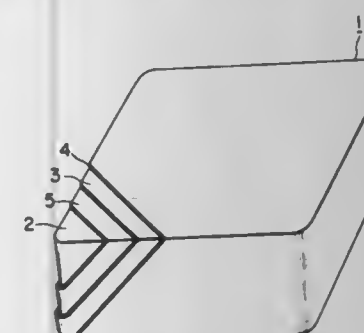
Continuation of Ser. No. 813,774, Jul. 7, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,737

Claims priority, application Japan, Jul. 10, 1976, 51-82261

Int. Cl.<sup>3</sup> B32B 7/02

U.S. Cl. 428—216

4 Claims



1. A coated super-hard alloy article consisting of a substrate and two layers as follows: a substrate of a super-hard alloy comprising at least one member selected from the group consisting of carbides, nitrides, and carbonitrides of metals of Groups 4a, 5a, and 6a, of the periodic table and at least one member selected from the group consisting of Fe, Ni, Co, W, Mo, and Cr; an intermediate, crystalline layer of a titanium oxycarbide as determined by X-ray diffraction, of the formula of from  $TiC_{0.9}O_{0.1}$  to  $TiC_{0.4}O_{0.6}$  formed with a thickness of 0.5 to 10 microns on the surface of the substrate by reacting thereon, at a temperature of 800° to 1,200° C., a halide of titanium, hydrogen, and a member selected from the group consisting of carbon monoxide, carbon dioxide, and mixtures of carbon monoxide and carbon dioxide; and an outer coating layer of aluminum oxide formed with a thickness of 0.5 to 5 microns on the outer surface of the intermediate layer.

3. A coated super-hard alloy article consisting of a substrate and three layers as follows: a substrate of a super-hard alloy comprising at least one member selected from the group consisting of carbides, nitrides, and carbonitrides of metals of Groups 4a, 5a, and 6a of the periodic table and at least one member selected from the group consisting of Fe, Ni, Co, W, Mo, and Cr; an inner layer consisting of at least one member selected from the group consisting of titanium carbide, titanium nitride and titanium carbonitride formed with a thickness of 0.5 to 10 microns on the surface of the substrate; an intermediate, crystalline layer of a titanium oxycarbide as determined by X-ray diffraction, of the formula of from  $TiC_{0.9}O_{0.1}$  to  $TiC_{0.4}O_{0.6}$  formed with a thickness of 0.5 to 5 microns on the outer surface of the inner layer by reacting thereon, at a temperature of 800° to 1,200° C., a halide of titanium, hydrogen, and a member selected from the group consisting of carbon monoxide, carbon dioxide, and mixtures of carbon monoxide and carbon dioxide; and an outer coating layer of aluminum oxide formed with a thickness of 0.5 to 5 microns on the outer surface of the intermediate layer.

**4,341,835**  
**MACROFILAMENT-REINFORCED COMPOSITES**  
 John F. MacDowell, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 26, 1981, Ser. No. 228,195  
 Int. Cl.<sup>3</sup> B32B 15/00

U.S. Cl. 428—292

6 Claims

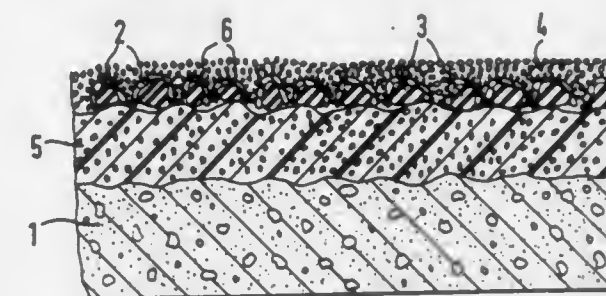
1. A composite article comprising a matrix phase and a high-aspect-ratio reinforcing phase, wherein the high-aspect-ratio reinforcing phase consists of multiple elongated, pre-stressed glass or glass-ceramic members having a minimum thickness in the range of about 0.010–1.00 inches, a minimum length: thickness ratio of at least about 10:1, and compressively stressed surface layers imparting to each of said members an abraded flexural modulus of rupture strength of at least 100,000 psi.

**4,341,836**  
**SURFACING FOR SPORTS AREAS, MORE PARTICULARLY TENNIS COURTS**  
 Heinz Becker, Gottfried-Keller-Str. 2, 6204 Taunusstein 1, Fed. Rep. of Germany  
 Continuation of Ser. No. 2,400, Jan. 10, 1979, abandoned. This application Sep. 23, 1980, Ser. No. 189,588  
 Claims priority, application Fed. Rep. of Germany, Jun. 15, 1978, 2826206

Int. Cl.<sup>3</sup> B32B 5/16

U.S. Cl. 428—308.4

11 Claims



1. A surfacing for sports areas comprising: a polyurethane bearing layer applied to a surface; resilient rubber fragments embedded substantially two-thirds within the bearing surface at spaced locations relative to each other thus forming voids therebetween, the depth of said voids being about one-third or more of the size of said fragments; and a top covering layer of fine rubber grains substantially entirely filling the voids.

**4,341,837**  
**LAMINAR THERMOPLASTIC RESIN STRUCTURE**  
 Takayuki Katsuto; Shunzo Endo; Hideaki Doi, and Naohiro Murayama, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Japan  
 Filed Aug. 7, 1979, Ser. No. 64,626  
 Claims priority, application Japan, Aug. 11, 1978, 53-97217; Mar. 14, 1979, 54-29796

Int. Cl.<sup>3</sup> B32B 27/36

U.S. Cl. 428—336

7 Claims

1. A laminar thermoplastic resin structure comprising a plurality of thermoplastic resin layers, at least one adjacent pair of which is bonded to a layer of an ionically cross-linked maleinated block copolymer of a conjugated diene and an aromatic vinyl monomer having a maleic anhydride content of 0.1 to 10% by weight and said maleinated block copolymer being ionically cross-linked to a metal compound selected from the group consisting of oxides, hydroxides, organic acid salts and alkoxides of mono- or divalent metals, said thermoplastic resin layers bonded to a layer of the maleinated block copolymer comprising at least one resin selected from the group consisting



of polyvinylidene chloride resins, polyvinyl chloride resins, polyolefin resins, polyamide resins, polyester resins, polycarbonate resins and unsaturated nitrile resins.

4,341,838

**MOLDING COMPOSITIONS AND DIAPHRAGMS, ARM PIPES AND HEAD SHELLS MOLDED THEREFROM**  
Kunio Imai, Tokorozawa; Tsunehiro Tsukagoshi, Tokyo; Shinichi Yokozeki, Tokyo; Toshikazu Yoshino, Tokyo, and Yasuyuki Arai, Tokyo, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 132,980

Claims priority, application Japan, Mar. 23, 1979, 54/033263; May 25, 1979, 54/063957

Int. Cl.<sup>3</sup> B32B 27/30

U.S. Cl. 428—338

31 Claims

1. A diaphragm for use in acoustic instruments comprising a shaped body of 10–90% by weight of a thermoplastic resin in a kneaded admixture with 90–10% by weight of a combination of flaky graphite and carbon black, the weight ratio of carbon black to graphite flakes being 1:10 to 20:10, the graphite flakes being oriented in parallel with the surface of the body.

8. An arm pipe comprising a shaped body of 10–90% by weight of a thermoplastic resin in a kneaded admixture with 90–10% by weight of a combination of flaky graphite and carbon black, the weight ratio of carbon black to graphite being 1:10 to 20:10, the graphite flakes being oriented in parallel with the surface of the body.

15. A head shell comprising a shaped body of 10–90% by weight of a thermoplastic resin in a kneaded mixture with 90–10% by weight of a combination of flaky graphite and carbon black, the weight ratio of carbon black to graphite being 1:10 to 20:10, the graphite flakes being oriented parallel with the surface of the body.

4,341,839

**WATER AND SOLVENT RESISTANT COATED PAPER AND METHOD FOR MAKING THE SAME**

Michael J. Shaw, Paw Paw, and Robert J. Thiessen, Richland, both of Mich., assignors to Allied Paper Incorporated, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 44,661, Jun. 1, 1979, abandoned, which is a division of Ser. No. 827,127, Aug. 24, 1977, abandoned. This application Dec. 17, 1980, Ser. No. 217,523

Int. Cl.<sup>3</sup> B32B 21/06

U.S. Cl. 428—342

3 Claims

1. A coated paper having improved solvent and water resistance comprising

- a paper base; and
- a formed coating on said paper base comprising a binding amount of a natural or synthetic hydrophobic binder and a filler at least a portion of which is an amount of plastic particles soluble in a solvent, said binding amount being at least about 10% based on the weight of filler, the plastic particles being present in sufficient amount and in a coalesced state in said coating to provide a substantially continuous plastic particle film;
- the coat weight being about 0.5–15 lbs./side/3,300 sq. ft. applied to at least one side;
- said particles having the property of being non-coalescible at ambient temperature and under the conditions of drying and finishing of the coated paper,
- said coating being free of materials which would adversely affect solvent and water resistance.

4,341,840

**COMPOSITE BEARINGS, SEALS AND BRAKES**

Karl M. Prew, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 13, 1981, Ser. No. 243,317

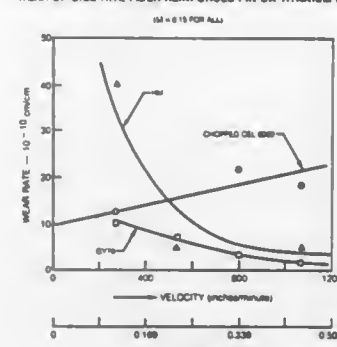
The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> B32B 9/00

U.S. Cl. 428—408

5 Claims

WEAR OF GRAPHITE FIBER REINFORCED PH ON TITANIUM DISC



1. A bearing, seal or brake material comprising a graphite fiber reinforced glass matrix having a coefficient of friction of about 0.15 to about 0.7 and a steady state wear rate less than about  $40 \times 10^{-10}$  cm/cm.

4,341,841

**MULTI-LAYER COATING PROTECTIVE FILM FORM**

Akira Ohno; Shitomi Katayama; Suguru Nomura; Susumu Senaha; Suizo Kyo; Susumu Shimomura; Akira Akagami, and Hiroshi Imai, all of Yokohama, Japan, assignors to NHK Spring Co., Ltd. and Yokohama Kiko Co., Ltd., both of Kanagawa, Japan

Filed Nov. 13, 1979, Ser. No. 93,563

Claims priority, application Japan, Nov. 13, 1978, 53-138907

Int. Cl.<sup>3</sup> G02B 5/08; B32B 17/10, 15/08

U.S. Cl. 428—414

13 Claims

1. A multi-layer coated article comprising a substrate and two protective layers, said substrate being sufficiently thermal resistant to withstand the conditions of vacuum deposition thereon and not evolving volatile substances when vacuum deposition is carried out thereon, said protective layers consisting of a vacuum-deposited crystalline layer of at least one thermally stable water-insoluble inorganic compound selected from the group consisting of metallic oxides, nitrides, borides, carbides and silicides and a hard abrasion resistant high bending resistant thermosetting resin layer capable of withstanding a vacuum-deposition operation thereon comprised of a cross-linked resin selected from the group consisting of epoxy resins, polyester resins, allyl resins, phenol resins and silicone resins, which protective layers are in any desired order.

4,341,842

**METHOD OF COATING AUTOMOTIVE PARTS WITH SILICONE COMPOSITIONS**

Warren R. Lampe, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,611

Int. Cl.<sup>3</sup> B32B 15/08

U.S. Cl. 428—450

39 Claims

1. A method of coating the underside of a metal automotive part with a room temperature vulcanizable silicone rubber composition comprising (1) applying to an automotive part a thin layer of a room temperature vulcanizable silicone rubber composition having (A) 100 parts of a silanol end-stopped diorganopolysiloxane polymer with a viscosity varying from 100 to 500,000 centipoise at 25° C. where the organo group is a monovalent hydrocarbon radical; (B) from 0.1 to 15 parts by weight of an alkyl silicate of the formula,

 $R_aSi(OR^1)_4-a$ 

and partial hydrolysis products of the silicate where R and R<sup>1</sup> are monovalent hydrocarbon radicals, a is 0 or 1 and (C) from 0.01 to 5 parts by weight of an effective metal salt of a carboxylic acid and (2) allowing the layer of silicone rubber composition to cure at room temperature to a silicone elastomer.

4,341,843

**REFRACTORY COATINGS**

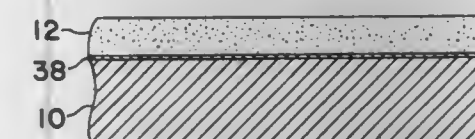
William A. Brainard, Berea, and Donald R. Wheeler, Bay Village, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 102,003, Dec. 7, 1979. This application Sep. 29, 1980, Ser. No. 191,746

Int. Cl.<sup>3</sup> C23C 15/00

U.S. Cl. 428—457

1 Claim



1. A hard coated article of manufacture having improved properties comprising a steel substrate, and a sputtered coating of titanium carbide on said steel substrate, said coating consisting essentially of an interfacial region in contact with said steel substrate containing of mixture of titanium nitride and iron nitride, and a titanium carbide film covering said inner facial region, said film being substantially free of said nitrides whereby said interfacial region provides improved adhesion of said titanium carbide film to said steel substrate.

4,341,844

**ARTICLE HAVING ORGANO-PHOSPHONITRILE RUBBER COATING BONDED TO NATURAL OR SYNTHETIC RUBBER AND METHOD OF MAKING**

Koon-Wah Leong, Schaumburg, Ill., assignor to The Kendall Company, Boston, Mass.

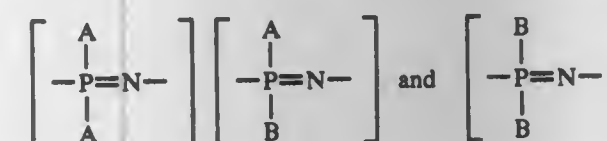
Division of Ser. No. 88,157, Oct. 25, 1979, Pat. No. 4,311,736, which is a continuation-in-part of Ser. No. 21,336, Mar. 19, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,298

Int. Cl.<sup>3</sup> B32B 25/08; A61F 7/12; B32B 27/08

U.S. Cl. 428—492

5 Claims

1. A cured article of natural or synthetic rubber having on its surface a primer coating comprising a cross-linked di- or polyvinyl compound, and an outer coating comprising a cured organo-phosphonitrile polymer containing randomly distributed repeating units having the structures:



wherein A represents RO—, RNH—, X(CF<sub>2</sub>)<sub>m</sub>CH<sub>2</sub>O—, or X(CF<sub>2</sub>)<sub>m</sub>CH<sub>2</sub>NH— and B represents R'O—, R'NH—, Y(CF<sub>2</sub>)<sub>n</sub>CH<sub>2</sub>O—, or Y(CF<sub>2</sub>)<sub>n</sub>CH<sub>2</sub>NH—, R and R' each being selected from the group consisting of lower alkyl and aryl such as phenyl, tolyl, chlorophenyl, X and Y each being selected from the group consisting of hydrogen and fluorine, and m and n each being an integer from 1 to 8 inclusive, said outer coating being bonded to said article by said primer coating.

4,341,845

**HELICAL METALLIC RIBBON FOR CONTINUOUS EDGE WINDING APPLICATIONS**

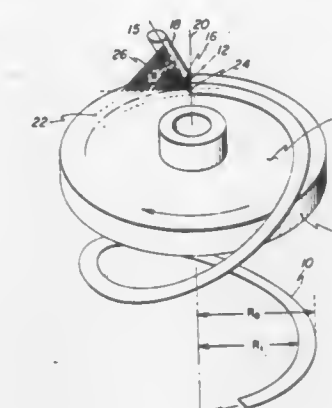
Howard H. Liebermann, Schenectady; Peter G. Frischmann, Scotia, both of N.Y., and George M. Rosenberry, Jr., Hender-sonville, Tenn., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,239

Int. Cl.<sup>3</sup> B21C 37/00; B21F 3/00

U.S. Cl. 428—592

7 Claims



1. A continuous length of cast edge-wound metallic ribbon having a helical shape, a pair of substantially parallel opposed major surfaces, an inner peripheral edge and an outer peripheral edge.

4,341,846

**PALLADIUM BORON PLATES BY ELECTROLESS DEPOSITION ALLOY**

William V. Hough, Butler; John L. Little, Evans City, and Kevin E. Warheit, Butler, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Division of Ser. No. 165,479; Jul. 3, 1980, Pat. No. 4,279,951, which is a division of Ser. No. 3,351, Jan. 15, 1979, Pat. No. 4,255,194. This application Feb. 2, 1981, Ser. No. 230,522

Int. Cl.<sup>3</sup> C23C 3/02

U.S. Cl. 428—670

2 Claims

1. A palladium alloy plate electrolessly deposited on a catalytically active substrate and consisting of about 1 to 3% by weight of amorphous boron, about 1 to 3% by weight of crystalline Pd or intermetallic compounds of palladium and hydrogen, the remainder being amorphous palladium.

4,341,847

**ELECTROCHEMICAL ZINC-OXYGEN CELL**

Anthony F. Sammells, Naperville, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Oct. 14, 1980, Ser. No. 196,749

Int. Cl.<sup>3</sup> H01M 4/00

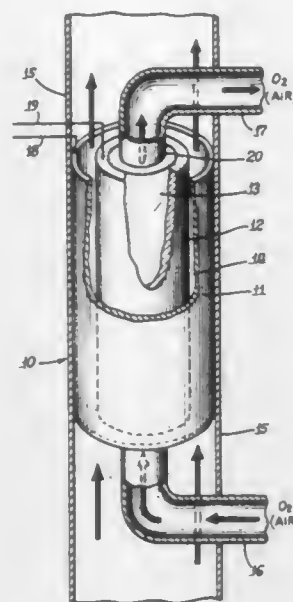
U.S. Cl. 429—27

12 Claims

1. An electrochemical zinc-oxygen cell comprising: a tubular catalyst containing oxygen diffusion cathode which is electrically conducting and oxygen porous, said tubular cathode providing a tubular through passage open at each end; a concentric tubular ion conducting separator surrounding and in ionic contact with said oxygen cathode; a concentric tubular electrically conducting anode spaced radially from and surrounding said separator forming an annular electrolyte space between said separator and said anode, said annular electrolyte space providing an annular through passage open at each end; means for pressurizing and passing oxygen containing gas through and in contact with the central portion of said tubular oxygen diffusion cathode, said oxygen containing gas entering at one end and exiting at the other end of said tubular through passage; means for passing liquid electrolyte through said annular



electrolyte space in ionic contact with said ion conducting separator and said anode, said electrolyte entering at one end and exiting at the other end of said annular through passage and;

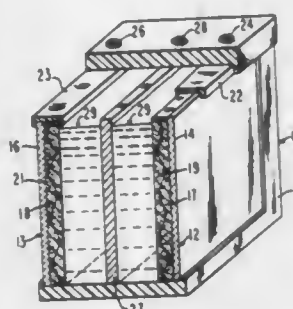


an anode active zinc material in contact with said electrolyte.

**4,341,848**  
**BIFUNCTIONAL AIR ELECTRODES CONTAINING ELEMENTAL IRON POWDER CHARGING ADDITIVE**  
 Chia-tsun Liu, Monroeville; Brian G. Demczyk, Rostover Township, Westmoreland County, and Paul R. Gongaware, Penn Township, Westmoreland County, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.  
 Filed Mar. 5, 1981, Ser. No. 240,659  
 Int. Cl.<sup>3</sup> H01M 4/00

U.S. Cl. 429—27

10 Claims



1. A bifunctional air electrode for use in electrochemical energy cells comprising:

A. a hydrophilic layer consisting essentially of:

- (1) a hydrophilic composite comprising:
    - i. about 1 part by weight of carbon particles having a total surface area of from about 30 to about 1,500 sq. meters/gram, where at least about 50 wt.% of the carbon particles have a total surface area of from about 30 to about 300 sq. meters/gram;
    - ii. about 0.1 to about 1 part by weight of elemental iron particles having a particle size of between about 25 microns and about 700 microns diameter;
    - iii. up to about 1 part by weight of an oxygen evolution material;
    - iv. an effective amount of a bonding/nonwetting agent; and
    - v. an effective amount of a catalyst for oxygen reduction and decomposition of perhydroxides; and
  - (2) at least one metal current collector formed into said composite to provide a hydrophilic layer, and
- B. a hydrophobic layer pressed to said hydrophilic layer.

**4,341,849**  
**SODIUM RESISTANT SEALING GLASSES AND SODIUM-SULFUR CELLS SEALED WITH SAID GLASSES**

Dong-Sil Park; Manfred W. Breiter, both of Schenectady; Bruce S. Dunn, Saratoga Springs, and Louis Navias, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 99,597, Dec. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 954,177, Oct. 24, 1978, abandoned. This application Mar. 2, 1981, Ser. No. 239,751  
 Int. Cl.<sup>3</sup> H01M 10/36; C03C 3/14

U.S. Cl. 429—104

3 Claims

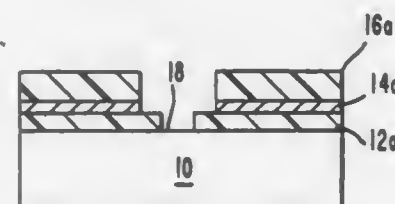
1. In a sodium-sulfur cell having an electrically insulating alpha alumina ceramic supporting a solid ion-conductive ceramic electrolyte selected from the group consisting of beta-alumina, beta''-alumina and mixtures thereof, the improvement consisting of a sodium resistant aluminoborate sealing glass sealing said alpha alumina ceramic to said ceramic electrolyte, said sealing glass being significantly stable against interfacial reactions and significantly resistant to devitrification consisting of 10 to 30 weight percent alumina, 35 to 50 weight percent boron oxide, 15 to 40 total weight percent of a mixture of alkali earth oxides consisting of 2 to 15 weight percent of calcium oxide, 2 to 15 weight percent of barium oxide and 2 to 15 weight percent of strontium oxide, 0 to 20 weight percent of silica, and 0 to 5 weight percent of a mixture of alkali metal oxides of sodium oxide, lithium oxide, and potassium oxide.

**4,341,850**  
**MASK STRUCTURE FOR FORMING SEMICONDUCTOR DEVICES, COMPRISING ELECTRON-SENSITIVE RESIST PATTERNS WITH CONTROLLED LINE PROFILES**

Philip J. Coane, Mahopac, N.Y., assignor to Hughes Aircraft Company, Culver City, Calif.  
 Division of Ser. No. 59,010, Jul. 19, 1979, Pat. No. 4,283,483.  
 This application Feb. 2, 1981, Ser. No. 230,186  
 Int. Cl.<sup>3</sup> H01L 21/312

U.S. Cl. 430—11

6 Claims



1. A mask structure formed on the surface of a chosen substrate for defining a predetermined region on and above said surface of said substrate comprising:

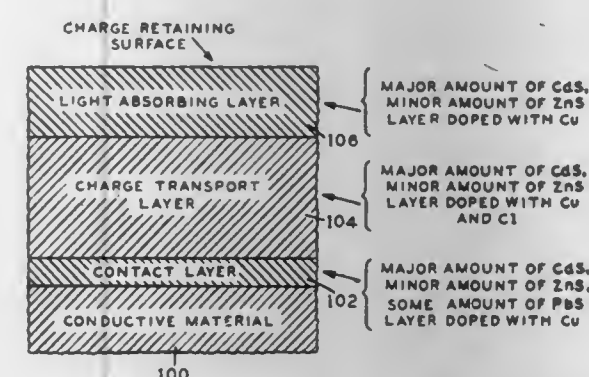
- (a) a bottom layer of an electron-beam sensitive resist material formed on the surface of said substrate;
- (b) a relatively thin layer of a chosen conductive material deposited on said bottom layer of said resist; and
- (c) a top layer of said resist material deposited on said conductive layer to form a composite resist/conductor/resist structure, said composite structure having an opening with a T-shaped profile formed therein by a process comprising exposure to said electron beam as the sole resist-exposing means, and with the base of said "T" adjacent said surface of said substrate, to form a mask which defines said region of said substrate, said region having said T-shaped profile.

**4,341,851**  
**ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR COMPRISING Cds AND ZnS**

John B. Mooney, Saratoga, and Ivor Brodie, Palo Alto, both of Calif., assignors to Savin Corporation, Valhalla, N.Y.  
 Continuation-in-part of Ser. No. 147,704, May 8, 1980, abandoned. This application Feb. 23, 1981, Ser. No. 236,739  
 Int. Cl.<sup>3</sup> G03G 5/082

U.S. Cl. 430—56

12 Claims



1. An electrophotographic photoconductor including in combination a conductive substrate having formed thereon a layer of a homogeneous alloy of metal sulphides approximately at least three microns thick, said layer comprising a major amount of cadmium sulphide and a minor amount of zinc sulphide.

3. An electrophotographic photoconductor including in combination a conductive substrate having formed thereon a layer of metal sulphides approximately at least three microns thick, said layer comprising a major amount of cadmium sulphide and a minor amount of zinc sulphide, said layer having a zone adjacent said conductive substrate, said zone containing an amount of lead sulphide.

6. An electrophotographic photoconductor including in combination a conductive substrate having pyrolytically formed thereon a layer of metal sulphides from an aqueous solution of major amounts of thiourea and cadmium acetate and a minor amount of zinc acetate, said layer having a thickness of approximately at least three microns, said layer being doped with copper.

**4,341,852**  
**POLYCYANOANTHRACENES AND USE AS SENSITIZERS FOR ELECTROPHOTOGRAPHIC COMPOSITIONS**

Susan L. Mattes, and Samir Y. Farid, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.  
 Filed Oct. 2, 1980, Ser. No. 193,062  
 Int. Cl.<sup>3</sup> G03G 5/09, 5/06; C07C 121/64

U.S. Cl. 430—83

5 Claims

1. An electrically insulating organic photoconductive composition comprising an electron donor organic photoconductor and a sensitizing amount of a polycyanoanthracene containing three or more cyano groups.

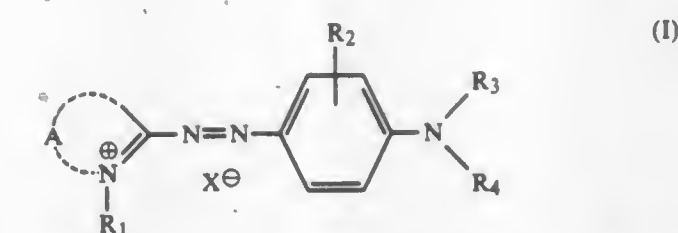
**4,341,853**  
**SPECTRAL SENSITIZATION OF ORGANIC PHOTOCONDUCTORS WITH DIAZASTRYL DYES**  
 Seiji Horie, and Hideo Sato, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan  
 Filed Dec. 3, 1980, Ser. No. 212,652

Claims priority, application Japan, Dec. 3, 1979, 54-155592  
 Int. Cl.<sup>3</sup> G03G 5/04

U.S. Cl. 430—83

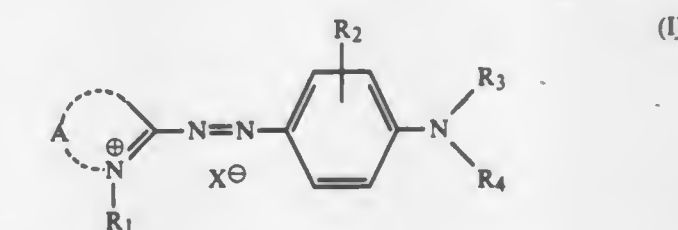
11 Claims

1. A photoconductive composition comprising an organic photoconductive substance and a spectral sensitizer represented by formula (I)



wherein R<sub>1</sub> represents an alkyl group, R<sub>2</sub> represents hydrogen, an alkyl group or an alkoxy group, R<sub>3</sub> and R<sub>4</sub> each represent an alkyl group, or R<sub>3</sub> and R<sub>4</sub> together represent a group completing a nitrogen-containing heterocyclic group, and A represents a group completing a (a) benzothiazolium ring, (b) thiazolium ring, (c) imidazolium ring, (d) triazolium group, (e) thiadiazolium ring, (f) pyridinium ring, (g) indazolium ring, or (h) indolenium ring.

7. A photosensitive material comprising a photoconductive composition said composition comprising a photoconductive substance and a spectral sensitizer, provided on a base, or comprising a membrane produced from said photoconductive composition, wherein said spectral sensitizer is represented by formula (I)



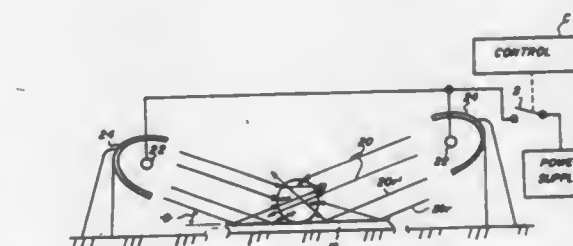
wherein R<sub>1</sub> represents an alkyl group, R<sub>2</sub> represents hydrogen, an alkyl group, or an alkoxy group, R<sub>3</sub> and R<sub>4</sub> each represent an alkyl group, or R<sub>3</sub> and R<sub>4</sub> together represent a group completing a nitrogen-containing heterocyclic group, and A represents a group completing a (a) benzothiazolium ring, (b) thiazolium ring, (c) imidazolium ring, (d) triazolium ring, (e) thiadiazolium ring, (f) pyridinium ring, (g) indazolium ring or (h) indolenium ring.

**4,341,854**  
**METHOD FOR FLASH FUSING TONER IMAGES**  
 Wei C. Lu, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,492  
 Int. Cl.<sup>3</sup> B05B 5/00; H05B 11/00

U.S. Cl. 430—124

3 Claims



1. Method of fusing dry resinous marking particles supported on the surface of an energy reflective receiver member by sufficiently irradiating the particles with energy from a source to at least partially melt the particles at the interface between the particles and receiver member so that the particles adhere to the receiver member, said method including the step of:

directing irradiating energy toward the surface of the particles and the receiver member from opposite sides and along a path having a major low-angle component relative to the member to irradiate the particles, over a substantial portion of their surface area, with energy which has not



been reflected by the member and with energy which has been reflected by the member.

4,341,855

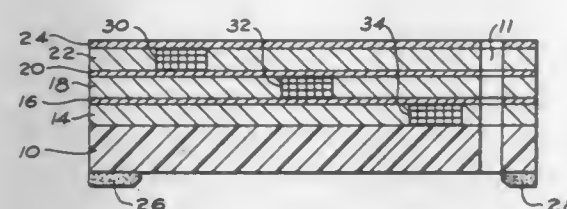
# PHOTOGRAPHIC ELEMENT PROVIDED WITH A MAGNETIC RECORDING STRIPE AND METHOD AND COMPOSITION FOR MANUFACTURE THEREOF

Edward D. Morrison, Rochester; Harry J. Krall, Webster; David L. Carr, Fairport, and Chen-I Lu, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.  
Continuation of Ser. No. 40,605, May 18, 1979, abandoned. This application Jun. 18, 1980, Ser. No. 160,759

Int. Cl.<sup>3</sup> G04B 35/04

U.S. Cl. 430—140

35 Claims



1. A method of forming a magnetic stripe on a photographic element, said element comprising a support having thereon an anti-halation layer which contains an alkali-soluble binder that renders such layer removable by an alkaline photographic processing solution, said magnetic stripe being composite with said anti-halation layer and bonded to said support so as to resist removal by an alkaline photographic processing solution, which method comprises the steps of:

- (1) depositing on the anti-halation layer of said element a stripe of a composition comprising a suspension of finely-divided magnetic particles in a liquid medium which is capable of penetrating through said anti-halation layer and being cured to an alkali-insoluble cross-linked polymeric matrix which surrounds said magnetic particles and bonds to said support, said liquid medium consisting essentially of (a) an acrylated epoxy resin, (b) a polymerizable acrylic monomer, and (c) an organic solvent that is capable of solubilizing said anti-halation layer, and
- (2) curing said stripe to convert said liquid medium to an alkali-insoluble cross-linked polymeric matrix which surrounds said magnetic particles and bonds to said support, thereby forming a magnetic stripe which is composite with said anti-halation layer and resistant to removal by alkaline photographic processing solutions.

14. A photographic element comprising a support, an anti-halation layer on said support which contains an alkali-soluble binder that renders such layer removable by an alkaline photographic processing solution, and a magnetic stripe which is composite with said anti-halation layer and bonded to said support so as to resist removal by an alkaline photographic processing solution, said magnetic stripe having been formed by:

- (1) depositing on the anti-halation layer of said element a stripe of a composition comprising a suspension of finely-divided magnetic particles in a liquid medium which is capable of penetrating through said anti-halation layer and being cured to an alkali-insoluble cross-linked polymeric matrix which surrounds said magnetic particles and bonds to said support, said liquid medium consisting essentially of (a) an acrylated epoxy resin, (b) a polymerizable acrylic monomer, and (c) an organic solvent that is capable of solubilizing said anti-halation layer, and
  - (2) curing said stripe to convert said liquid medium to an alkali-insoluble cross-linked polymeric matrix which surrounds said magnetic particles and bonds to said support, thereby forming a magnetic stripe which is composite with said anti-halation layer and resistant to removal by alkaline photographic processing solutions.
26. A coating composition which is useful for forming a magnetic stripe on a photographic element comprising a sup-

port and an anti-halation layer, said anti-halation layer containing an alkali-soluble binder that renders said layer removable by an alkaline photographic processing solution and said magnetic stripe being composite with said anti-halation layer and bonded to said support so as to resist removal by an alkaline photographic processing solution, said coating composition comprising a suspension of finely-divided magnetic particles in a liquid medium which is capable of penetrating through said anti-halation layer and being cured to an alkali-insoluble cross-linked polymeric matrix which surrounds said magnetic particles and bonds to said support, said liquid medium consisting essentially of (a) an acrylated epoxy resin, (b) a polymerizable acrylic monomer, and (c) an organic solvent that is capable of solubilizing said anti-halation layer.

4,341,856

# PHOTOSENSITIVE LITHOGRAPHIC PRINTING PLATE PRECURSORS

Tadao Toyama; Sho Nakao; Keisuke Shiba, all of Shizuoka; Hidefumi Sera, and Masasi Ogawa, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 23, 1981, Ser. No. 237,057

Claims priority, application Japan, Feb. 22, 1980, 55/21372

Int. Cl.<sup>3</sup> G03C 1/76; G03F 7/02

U.S. Cl. 430—156

13 Claims

1. A photosensitive lithographic printing plate precursor, comprising:

- a support having a hydrophilic surface and having thereon a non-silver photosensitive layer capable of forming a water-insoluble oleophilic image and a hardened gelatin silver halide photosensitive emulsion layer on said non-silver photosensitive layer, wherein;
- said photosensitive emulsion layer is hardened to an extent that the dissolution time in a 0.01 weight % aqueous solution of a protease (1,000,000 tyrosine units/g) at 40° C. is 7 to 150 seconds.

4,341,857

# PHOTOGRAPH FILM UNIT

Nanao Aoki, Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

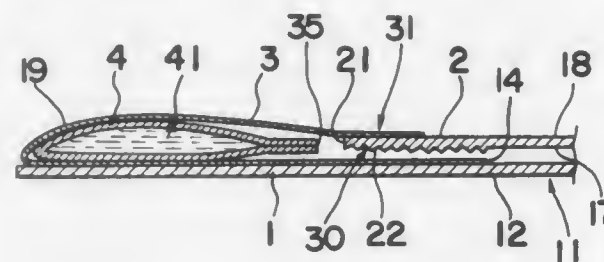
Filed Jun. 23, 1980, Ser. No. 162,234

Claims priority, application Japan, Jun. 27, 1979, 54-81927

Int. Cl.<sup>3</sup> G03B 17/50; G03C 1/42

U.S. Cl. 430—207

4 Claims



1. A photograph film unit comprising a sensitive first sheet having a picture border surrounding an image area, a second sheet having a leading cross edge portion and being superposed on the first sheet in face-to-face relation, and a processing liquid container being disposed on one end portion of said first sheet and of said second sheet, near the second sheet's cross edge portion, to supply a processing liquid between the first sheet and the second sheet, characterized in that a bumpy strip is formed near and parallel to the leading cross edge portion of the second sheet, on at least one face of the mutually opposite faces between the first sheet and the second sheet, in a zone extending only from the cross edge portion of the second sheet on the side of said treating liquid container to the edge portion of the image area of the first sheet, whereby said bumpy strip forms a dam for catching any air trapped between the sheets

when said container is ruptured and the processing liquid is spread through said zone toward said image area, thereby preventing the air from reaching the image area.

4,341,858

# IMAGE-TRANSFER REVERSAL EMULSIONS AND ELEMENTS WITH INCORPORATED QUINONES

Eleanor Chaffee, Webster, and Richard C. Tuites, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 1, 1981, Ser. No. 259,790

Int. Cl.<sup>3</sup> G03C 7/00, 1/40, 1/10

U.S. Cl. 430—217

13 Claims

1. In a radiation-sensitive silver halide photographic element comprising a support having thereon a layer comprising a redox dye-releasing compound and having associated therewith an internal latent image silver halide emulsion and a nucleating amount of a hydrazine compound, the improvement wherein said silver halide layer comprises a nucleation-promoting amount of a quinone oxidizing agent.

2. In a radiation-sensitive diffusion transfer silver halide photographic film unit:

- (a) a layer comprising a redox dye-releasing compound,
- (b) a dye image-receiving layer and
- (c) a layer comprising a binder, internal latent image silver halide emulsion and a nucleating amount of a hydrazine compound,

the improvement wherein said silver halide layer comprises a nucleation-promoting amount of a quinone oxidizing agent.

4,341,859

# EMULSION FOR MAKING DRY FILM RESISTS

John J. Keane, Ballston Lake, and Richard F. Zopf, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 23, 1980, Ser. No. 190,029

Int. Cl.<sup>3</sup> G03C 1/68

U.S. Cl. 430—270

10 Claims

1. A homogeneous self-sustaining emulsion of coating viscosity useful for the manufacture of photo-polymerizable resist films comprising:

- (i) colloidal droplets of a solution in a solvent comprising acetone, methylene chloride, methylformate, or propylene carbonate of a polyaryl iodonium or sulfonium salt of a complex halogenide latent catalyst dispersed in a continuous aqueous phase containing
- (ii) a water-soluble normally solid polyvinyl alcohol as latent film-forming component, and
- (iii) an effective amount of a water soluble thermo-setting polymethylol compound to cross-link said polyvinyl alcohol to water-insoluble state at elevated temperature therefor,

the amount of said catalyst being sufficient to catalyze the cross-linking action of said polymethylol compound when said emulsion is dried and irradiated with ultraviolet light at said temperature.

4,341,860

# PHOTOIMAGING COMPOSITIONS CONTAINING SUBSTITUTED CYCLOHEXADIENONE COMPOUNDS

Peter K. Sysak, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

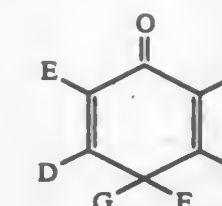
Filed Jun. 8, 1981, Ser. No. 271,241

Int. Cl.<sup>3</sup> G03C 1/52, 1/68

U.S. Cl. 430—277

17 Claims

1. A photoimaging composition comprising an admixture of (A) a cyclohexadienone compound of the formula:



wherein each of A, B, D and E can be hydrogen, an alkyl group of 1 to 9 carbon atoms, bromo, chloro, an aryl group of 6 to 10 carbon atoms, an aralkyl group wherein the aryl moiety is of 6 to 10 carbon atoms and the alkyl moiety is of 1 to 5 carbon atoms, an alkaryl group wherein the aryl moiety is of 6 to 10 carbon atoms and the alkyl moiety is of 1 to 5 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, and A and B and D and E when taken together may form a benzene ring; F is CCl<sub>3</sub> or CHCl<sub>2</sub>; and G can be an alkyl group of 1 to 18 carbon atoms and an aryl group of 6 to 10 carbon atoms; and at least one compound taken from the group consisting of (B<sub>1</sub>) a leuco dye that is oxidizable to dye by the cyclohexadienone compound; and (B<sub>2</sub>) an addition polymerizable ethylenically unsaturated monomeric compound.

4,341,861

# AQUEOUS DEVELOPABLE POLY(OLEFIN SULFONE) TERPOLYMERS

Thomas R. Pampalone, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 23, 1980, Ser. No. 219,517

Int. Cl.<sup>3</sup> G03F 7/10

U.S. Cl. 430—296

8 Claims

1. A method of forming a patterned layer on a substrate comprising:

- (a) coating said substrate with a composition comprised of a terpolymer of a monomer component and sulfur dioxide in a 1:1 molar ratio, said monomer component being comprised of from about 70 to about 93 mole percent 3-methylcyclopentene and from about 7 to about 30 mole percent 3-cyclopentene-1-acetic acid, said terpolymer having a molecular weight of from about 250,000 to about 1,000,000 and a molecular weight distribution of less than 4, and a suitable solvent therefor;
- (b) drying said coating to form an aqueous developable recording medium;
- (c) exposing selected portions of said medium to electron beam irradiation; and
- (d) developing the exposed portions of said medium with an aqueous alkaline developer.

4,341,862

# VESICULAR RECORDING MATERIALS

Stuart G. Clarke, Colchester, and William A. Craig, Capel St. Mary, both of England, assignors to Bexford Limited, London, England

Filed Jan. 19, 1981, Ser. No. 226,022

Claims priority, application United Kingdom, Jan. 24, 1980, 8002474

Int. Cl.<sup>3</sup> G03C 1/76

U.S. Cl. 430—327

8 Claims

1. A process for the production of a vesicular recording material, which comprises producing a plastics vehicle comprising a thermoplastics component having dispersed uniformly therein a sensitising agent which releases a vesicle-forming gas upon exposure to light, said thermoplastics components being water-insoluble and softenable upon heating to permit the gas released insoluble and softenable upon heating to permit the gas released by the sensitising agent in the light-struck areas to form light-scattering or reflecting vesicles therein, wherein a layer of an aqueous medium is applied to the surface of the plastics vehicle, and the wet recording material is wound into a roll, the wound wet recording material then



being maintained at a temperature in the range 5° to 30° C. for at least 45 minutes.

**4,341,863**  
**ARCHIVAL OPTICAL RECORDING MEDIUM**  
Nicholas F. Borrelli, Elmira; Arthur J. Whitman, Horseheads, both of N.Y., and Peter L. Young, North Wales, Pa., assignors to Corning Glass Works, Corning, N.Y.  
Filed Sep. 25, 1980, Ser. No. 190,519  
Int. Cl.<sup>3</sup> G03C 1/28

**U.S. Cl. 430—346** **7 Claims**  
1. An optical information storage medium which includes a light-sensitive film in the form of a layer containing a polycrystalline deposition product of silver, lead, chlorine and oxygen, produced by vapor-depositing AgCl and PbO in proportions of about 30-70% PbO and 30-70% AgCl by weight, as calculated on the total weight of the film, on a substrate.

**4,341,864**  
**PHOTOGRAPHIC ELEMENTS CONTAINING CYAN-FORMING COUPLERS**  
Jan J. Vandewalle; Marcel J. Monbaliu, both of Mortsel, and Raphaël K. Van Poucke, Berchem, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium  
Filed Mar. 12, 1981, Ser. No. 243,039  
Claims priority, application United Kingdom, Apr. 9, 1980, 8011694  
Int. Cl.<sup>3</sup> G03C 1/76, 1/40

**U.S. Cl. 430—505** **6 Claims**  
6. Photographic multilayer colour element comprising at least three silver halide emulsion layers, which are differently optically sensitized, a red-sensitized silver halide emulsion layer thereof or a non-light-sensitive colloid layer in water-permeable relationship therewith incorporating at least one phenol-type colour coupler capable of forming a cyan indoaniline dye by reaction with an oxidized aromatic primary amino developing agent and comprising a fluorine-containing alkyl-carbonamido group, wherein said fluorine-containing alkyl-carbonamido group is a 3-chloro-2,2,3-trifluoro-propionamido group in the 2-position of the phenol.

**4,341,865**  
**DETERMINATION OF THYROXINE BINDING GLOBULIN**  
Houston F. Voss, Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.  
Filed Jul. 21, 1980, Ser. No. 170,361  
Int. Cl.<sup>3</sup> G01N 33/54

**U.S. Cl. 435—7** **4 Claims**  
1. A method for measuring unsaturated thyroxine binding globulin in serum comprising:  
(a) intermixing with the serum (i) thyroxine irreversible enzyme inhibitor conjugate which binds to the unsaturated thyroxine binding globulin thereby inactivating the irreversible enzyme inhibitor portion of the conjugate (ii) an enzyme which is irreversibly inhibited by the thyroxine irreversible enzyme inhibitor conjugate unbound by the thyroxine binding globulin and (iii) a substrate for the enzyme;  
(b) monitoring the enzyme substrate reaction to obtain test results; and  
(c) comparing test results with a reference.

**4,341,866**  
**ANTIENZYME TERMINATION IN ENZYME IMMUNOASSAYS**  
Robert A. Yoshida, San Diego, Calif., assignor to Syva Company, Palo Alto, Calif.  
Filed Jun. 2, 1980, Ser. No. 155,367  
Int. Cl.<sup>3</sup> G01W 33/54; C12W 9/99  
**U.S. Cl. 435—7** **9 Claims**  
1. In an enzyme immunoassay for haptens employing en-

zyme-hapten conjugates, where said enzyme is NAD or NADP dependent with the amount of antihapten binding to the hapten being related to the amount of hapten in a sample added to an assay medium, and determining the amount of hapten by analyzing for the change in concentration of an enzyme cofactor which is NAD, NADP or the reduced form thereof,

wherein the assay is performed by combining said sample, said enzyme-hapten conjugate, a hapten receptor, and an enzyme substrate resulting in said enzyme cofactor, in an aqueous buffered medium; and allowing sufficient time for transformation of said enzyme substrate; the improvement which comprises:  
quenching said transformation by the addition of antienzyme to the assay medium at the end of said sufficient time.

**4,341,867**  
**PROCESS FOR RECOVERING ENZYMES FROM BLOOD**  
Jack T. Johansen, Rungsted Kyst, Denmark, assignor to De Forende Bryggerier A/S, Copenhagen, Denmark  
Filed May 13, 1980, Ser. No. 149,393  
Claims priority, application Denmark, Apr. 21, 1980, 1688/80  
Int. Cl.<sup>3</sup> C12N 9/02, 9/08, 9/88

**U.S. Cl. 435—189** **6 Claims**  
1. A process for recovery one or more of the enzymes Cu,Zn-superoxide dismutase (SOD), catalase and carbonic acid anhydrase from blood by lysing the blood cells and isolating the desired enzymes from the solution obtained, characterized by admixing wholly or partly isolated blood cells with an alkanol having 2 to 4 carbon atoms until a concentration of 10 to 70% by volume and allowing them to stand for hemolysis of the blood cells and denaturation of the hemoglobin and then adding water in an amount so as at least approximately to double the volume of the mixture, removing the precipitate of cell residuals, hemoglobin and other denatured proteins from the suspension, and finally isolating the desired enzymes from the solution obtained.

**4,341,868**  
**METHOD AND TEST COMPOSITION FOR THE DETERMINATION OF THE SUBSTRATE FOR XANTHINE OXIDASE**  
Toru Nakanishi, Atsugi, and Yozo Machida, Machida, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan  
Filed Apr. 18, 1980, Ser. No. 201,067  
Claims priority, application Japan, Aug. 18, 1978, 53-100784; Feb. 10, 1979, 54-13828; PCT Int'l Appl., Aug. 17, 1979, PCT/JP79/00219  
Int. Cl.<sup>3</sup> C12N 9/06; C12Q 1/26; C12R 1/01

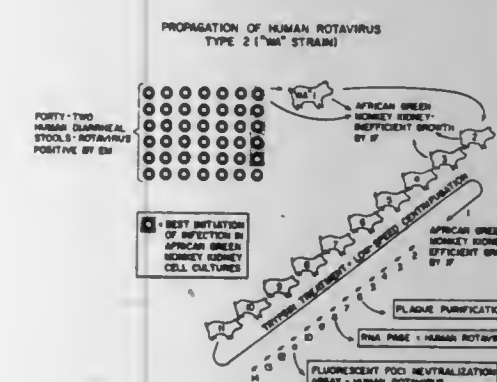
**U.S. Cl. 435—191** **17 Claims**  
1. Xanthine oxidase having the following enzymological properties:  
(1) Stable pH range: 6.2-6.8  
(2) Optimum pH: about 7.1  
(3) Optimum temperature: 35°-45° C.  
(4) Molecular weight: 128,000  
(5) Best acceptor of the enzyme: oxygen.  
15. A process for producing xanthine oxidase which comprises culturing a microorganism belonging to the genus *Enterobacter* and capable of producing xanthine oxidase in a nutrient medium, forming xanthine oxidase in the culture liquor and recovering the same therefrom.

**4,341,869**  
**PROCESS FOR PRODUCING HEPARINASE**  
Robert S. Langer, Jr., Cambridge; Robert Linhardt, Somerville; Charles L. Cooney, Brookline, and Parrish M. Galliher, West Newton, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.  
Filed Aug. 25, 1980, Ser. No. 180,780  
Int. Cl.<sup>3</sup> C12N 9/88

**U.S. Cl. 435—232** **4 Claims**  
1. In a process for producing purified heparinase by growing *Flavobacterium heparinum* in a growth medium until heparinase is formed, the improvement which comprises admixing an extract of the *Flavobacterium heparinum* containing heparinase intimately with between about 5 and 15 weight percent hydroxylapatite based upon the weight of the mixture to bind said heparinase to said hydroxylapatite, recovering said hydroxylapatite containing bound heparinase and, recovering said bound heparinase by elution and wherein said growth medium is free of protein and yeast extract.

**4,341,870**  
**CULTIVATABLE HUMAN ROTAVIRUS TYPE 2**  
Richard G. Wyatt, Potomac; Walter D. James, Beltsville, both of Md.; Edward H. Bohl, Wooster, Ohio; Kenneth W. Theil, Wooster, Ohio; Linda J. Saif, Wooster, Ohio; Anthony R. Kalica, Rockville, Md.; Harry B. Greenberg, Washington, D.C.; Albert Z. Kapikian, Rockville, Md., and Robert M. Chanock, Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Department of Health & Human Services, Washington, D.C.  
Filed Nov. 19, 1980, Ser. No. 208,389  
Int. Cl.<sup>3</sup> C12N 7/08; A61K 39/12

**U.S. Cl. 435—237** **2 Claims**



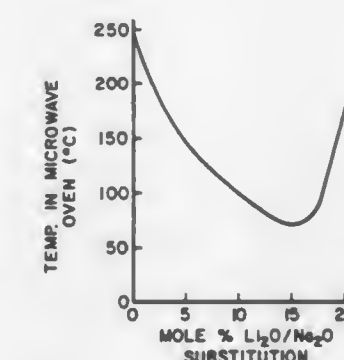
1. A precursor for a diarrhea vaccine which is a human rotavirus type 2 prepared by a method of cultivation of the Wa strain of human rotavirus type 2 through eleven passages in vivo using gnotobiotic piglets, then taking that virus and passing it through 14 to 25 passages in vitro in African green monkey kidney cell cultures; and wherein prior to each of said kidney cell cultures the rotavirus is treated with an effective amount of trypsin and where at each passage the tissue culture inoculated with rotavirus is subjected to low force centrifugation.

**4,341,871**  
**ACTIVE DRIED BAKER'S YEAST**  
Arend Langejan, and Basile Khoudokormoff, both of Delft, Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands  
Continuation of Ser. No. 945,440, Sep. 25, 1978, abandoned, which is a continuation of Ser. No. 836,436, Sep. 25, 1977, abandoned, which is a continuation of Ser. No. 627,836, Nov. 3, 1975, abandoned, which is a continuation of Ser. No. 463,207, Apr. 23, 1974, abandoned, which is a continuation of Ser. No. 133,436, Apr. 12, 1971, abandoned. This application Apr. 24, 1981, Ser. No. 257,241  
Claims priority, application United Kingdom, Apr. 14, 1970, 17795/70  
The portion of the term of this patent subsequent to Nov. 23, 1993, has been disclaimed.  
Int. Cl.<sup>3</sup> C12N 1/18; A21D 2/00

**U.S. Cl. 435—256** **5 Claims**  
1. An active dried bakers' yeast having a protein content of 47 to 60% (% N x 6.25, as determined by the Kjeldahl method) based on dry matter content, said dried yeast being obtained from a compressed yeast selected from the group consisting of Ng 2031 and Ng 2103 and having a dry matter content of at least 85% by weight, which exhibits (a) an activity of at least 510 when determined by the test procedure consisting of mixing a quantity of the active dried yeast corresponding to 450 mg of dry matter with 100 g of flour and adding 55 ml of an aqueous solution containing 2 g of sodium chloride and thereafter mixing the mass for 6 minutes at 28° C., maintaining the dough obtained at 28° C. and measuring the activity as the volume of gas in ml at 28° C. and 760 mm Hg evolved in the period from 10 to 175 minutes after the start of mixing the dough; and (b) an activity of at least 385 when measured by the test procedure consisting of maintaining a quantity of the active dried yeast corresponding to 450 mg of dry matter in contact with 8 ml of water for 10 minutes at 28° C., mixing the suspension obtained with 100 g of flour and 47 ml of an aqueous solution containing 2 g of sodium chloride, and thereafter mixing the mass and measuring the activity in the manner specified above, the said yeast being dried by dividing a fresh compressed yeast into particles and drying the particles to a dry matter content of at least 85% by weight by passing there-through a drying gas at a temperature of not more than 160° C. in not more than 120 minutes with a drying gas flow so that the temperature of the yeast particles are held within a temperature range of 20° to 50° C.

**4,341,872**  
**MICROWAVE-COMPATIBLE NEPHELINE GLASS-CERAMICS**  
John F. MacDowell, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.  
Filed Jun. 5, 1981, Ser. No. 270,870  
Int. Cl.<sup>3</sup> C03C 3/22

**U.S. Cl. 501—6** **11 Claims**



1. A glass-ceramic body in which the primary crystal phase is composed of nepheline crystals less than 20 microns in diameter, the body has a microwave compatibility value of less than 150° C., and the composition of the body, in percent by weight

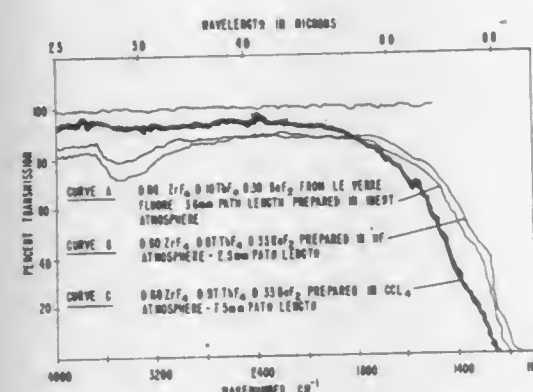


as calculated on an oxide basis, consists essentially of 30-55% SiO<sub>2</sub>, 28-38% Al<sub>2</sub>O<sub>3</sub>, 5-12% TiO<sub>2</sub> as a nucleating agent, and 10-20% R<sub>2</sub>O (Na<sub>2</sub>O+K<sub>2</sub>O+Li<sub>2</sub>O), each mole of R<sub>2</sub>O being composed of 0.65-0.95 moles Na<sub>2</sub>O, 0.05-0.15 moles Li<sub>2</sub>O and 0-0.20 moles K<sub>2</sub>O.

**4,341,873**  
**FLUOROZIRCONATE, GLASS AND THE PROCESS FOR MAKING THE SAME**  
 Morton Robinson, Agoura; Ricardo C. Pastor, Manhattan Beach, and Morris Braunstein, Marina del Rey, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.  
 Continuation-in-part of Ser. No. 131,605, Mar. 19, 1980, abandoned. This application Aug. 26, 1981, Ser. No. 296,098  
 Int. Cl.<sup>3</sup> C03C 3/12, 13/00

U.S. Cl. 501-40

9 Claims



1. An improved process for making infrared-transparent glasses from the fluorides of zirconium, thorium and barium wherein said improvement is comprised of the steps of:

- forming a melt from preselected molar proportions of ultra pure ZrF<sub>4</sub>, BaF<sub>2</sub> and ThF<sub>4</sub>, in the presence of a reactive atmosphere comprised of HF and He, and soaking said melt in said atmosphere thereby reducing the OH<sup>-</sup> and/or O<sup>=</sup> concentration of said melt to an insignificant level;
- subsequently replacing said reactive atmosphere with a rectification mixture of He and CCl<sub>4</sub> as a nascent chlorine source thereby eliminating the color-center formation which occurs during the exposure of said melt to said HF/He mixture; and
- subsequently casting, annealing and cooling said melt to a glass in the presence of said rectification mixture.

**4,341,874**  
**Si<sub>3</sub>N<sub>4</sub> CERAMIC POWDER MATERIAL AND METHOD FOR MANUFACTURING THE SAME**

Katsutoshi Nishida; Michiyasu Komatsu, both of Yokohama, and Tadashi Miyano, Sagami-hara, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan  
 Division of Ser. No. 78,584, Sep. 27, 1979, Pat. No. 4,284,432, which is a continuation of Ser. No. 867,299, Jan. 5, 1978, abandoned. This application Dec. 31, 1980, Ser. No. 221,813  
 Int. Cl.<sup>3</sup> C04B 35/58

U.S. Cl. 501-97

2 Claims

1. A ceramic powder material consisting essentially of silicon nitride powder consisting essentially of from 0.05 to 2.5% by weight of aluminium and from 0.4 to 8.0% by weight of yttrium, in which all or a part of the yttrium contained in the silicon nitride powder is present in the form of a crystalline compound of silicon nitride and yttrium oxide and in which the total oxygen content W<sub>O</sub> (% by weight) as measured by activation analysis falls within the range expressed by the following formula denoting the relationship between the content of aluminium W<sub>Al</sub> (% by weight) and the content of yttrium W<sub>Y</sub> (% by weight):

$$W_O \leq 2.0 + 1.5 \times \left( W_{Al} \times \frac{\text{atomic weight of oxygen}}{\text{atomic weight of aluminium}} + \right.$$

$$\left. W_Y \times \frac{\text{atomic weight of oxygen}}{\text{atomic weight of yttrium}} \right)$$

**4,341,875**  
**HIGH FLEXURAL MODULUS REACTION INJECTION MOLDED URETHANES**

Robert L. Visger, Madison, and Mark A. Plano, East Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 5, 1979, Ser. No. 100,594  
 Int. Cl.<sup>3</sup> C08G 18/14, 18/32, 18/48

U.S. Cl. 521-164

18 Claims

1. A foamable liquid composition capable of yielding when cured a microcellular urethane product with improved flexural modulus properties, said composition comprising:

- an organic isocyanate; and
- a mixture which comprises
  - a base polyol having
    - an equivalent weight in the range from about 1,800 to about 7,000, and
    - an average functionality in the range from about 2 to about 4,
  - a chain extending agent comprising
    - a glycol, and
    - at least one high functionality supplemental polyol having an average molecular weight in the range from about 300 to about 1,550 and an average functionality of at least about 3,
  - a catalyst and
  - a foaming agent; and

wherein the stoichiometric equivalent weight of said organic isocyanate to said base polyol is in the range from about 95 to about 125, the amount of said chain extending agent employed is in the range from about 12 to about 40 parts per 100 parts of said mixture, and the amount of said high functionality supplemental polyol employed in said chain extending agent is at least about 2 parts per 100 parts of said mixture.

**4,341,876**  
**PROCESS FOR THE PRODUCTION OF A FOAMABLE MIXTURE FROM AT LEAST TWO FLUID, FOAM FORMING REACTANTS AND AGGREGATES**

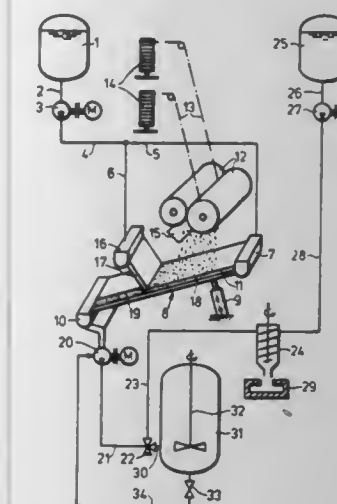
Karl D. Kreuer, and Klaus Schulte, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
 Division of Ser. No. 42,683, May 25, 1979, Pat. No. 4,242,306. This application Jul. 24, 1980, Ser. No. 171,875  
 Claims priority, application Fed. Rep. of Germany, Jun. 29, 1978, 2828506  
 Int. Cl.<sup>3</sup> B29J 1/02; C08G 18/14; C08J 9/00

U.S. Cl. 521-170

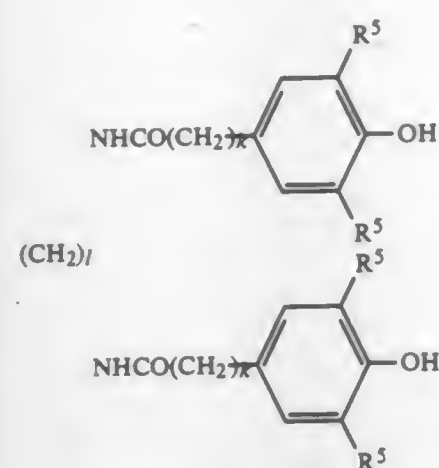
4 Claims

1. In a process for the production of a foamable mixture of at least two fluid, foam forming reactants and at least one aggregate, in which the aggregate is mixed with one of the reactants, the resulting preliminary mixture is then mixed with the other reactant, the improvement wherein the first reactant which is

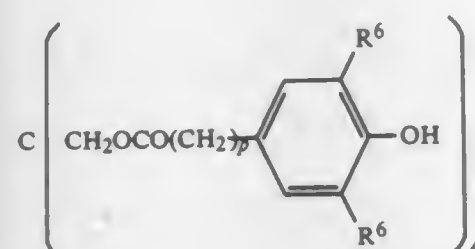
to be mixed with the aggregate is spread out to form a film and the aggregate is applied to this flowing film and the resulting







wherein  $R^5$  represents an alkyl group having 1 to 10 carbon atoms,  $k$  is an integer of 1 to 4, and  $l$  is an integer of 2 to 10, and  
(4) compounds of the formula



wherein  $R^6$  represents an alkyl group having 1 to 10 carbon atoms, and  $p$  is an integer of 1 to 4.

4,341,880

## RESIN COMPOSITIONS OF IMPROVED HUE

Takashi Toyoda, Yozo Ohba, and Masaaki Yamanaka, all of Hasaki, Japan, assignors to Oji Yuka Goseishi Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1981, Ser. No. 236,303

Claims priority, application Japan, Feb. 26, 1980, 55-23265

Int. Cl.<sup>3</sup> C08L 23/00, 23/06, 23/12

U.S. Cl. 524—101

13 Claims

1. A resin composition of improved hue which comprises 100 parts of an olefin-based resin, 3 to 300 parts of finely divided calcium carbonate, 0.05 to 5 parts of a fatty acid having 12 or more carbon atoms and at least three members selected from the following antioxidants (a) through (c) in the stated proportions:

- 2,6-di-*t*-butyl paracresol, in a quantity of 0.05 to 1 part;
- an antioxidant selected from the group consisting of tri(mono- and/or di-nonylphenyl)phosphite and di-stearyl pentaerythritol di-phosphite, in a quantity of 0.05 to 1 part; and
- an antioxidant selected from the group consisting of tris(3,5-di-*t*-butyl-4-hydroxybenzyl)isocyanurate and octadecyl-3-(3,5-di-*t*-butyl-4-hydroxyphenyl)-propionate, in a quantity of 0.05 to 1 part, all parts being by weight.

4,341,881

## FLEXIBLE POLYVINYL CHLORIDE PLASTICS HAVING IMPROVED FLAME RETARDANCY AND REDUCED SMOKE GENERATING PROPERTIES

John J. Kracklauer, Longmont, and Charles J. Sparkes, Boulder, both of Colo., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation of Ser. No. 738,495, Nov. 3, 1976, abandoned. This application Apr. 19, 1979, Ser. No. 31,673

Int. Cl.<sup>3</sup> C08K 5/56

U.S. Cl. 524—176

9 Claims

1. A flexible polyvinyl chloride plastic having improved flame retardancy and smoke suppression properties, containing

in chemically uncombined form, per 100 parts, by wt., of polyvinyl chloride resin, a flame-retarding, smoke-suppressing mixture consisting essentially of from about 1 to about 20 parts, by weight, of antimony oxide and from about 0.01 to about 0.2 parts, by wt., based on iron content, of an organic compound containing a ferrocenyl radical of ferrocene nucleus, said organic compound having a molecular weight of a least 360, wherein the weight ratio of said antimony oxide to said organic compound (based on iron content) is in the range of about from 10 to 150 and wherein said organic compound is selected from the group consisting of monoalkyl and dialkyl substituted dicyclopentadienyl iron derivatives, alkanoyl substituted dicyclopentadienyl iron derivatives, and dimers and polymers of dicyclopentadienyl iron selected from the group of condensation products of dicyclopentadienyl iron, or alkyl derivatives thereof, with an aldehyde or ketone, copolymers of vinyl ferrocene with vinyl chloride, acrylic acid, methyl methacrylate, butadiene or cyclopentane and dicyclopentadienyl iron addition products with polyvinyl chloride or polyvinylidene chloride; and mixtures thereof.

4,341,882

## LOW RESISTIVITY THERMOPLASTIC COMPOSITIONS

Arthur Katchman, Delmar, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 27, 1981, Ser. No. 296,589

Int. Cl.<sup>3</sup> C08L 61/04

U.S. Cl. 525—68

9 Claims

1. In a thermoplastic composition comprising polyphenylene ether and alkenyl aromatic resin, the improvement wherein said composition contains an effective amount of an anti-static agent selected from the group consisting of styrene-allyl alcohol copolymer, anionically polymerized poly(ethylene oxide) and a combination thereof.

4,341,883

## IMPACT RESISTANT BLENDS OF ACRYLATE THERMOPLASTIC WITH SEQUENTIALLY POLYMERIZED FOUR COMPOSITION PARTICULATE ADDITIVE

Warren H. Gift, Morrisville, Pa., assignor to Plaskolite, Inc., Columbus, Ohio

Filed Oct. 29, 1980, Ser. No. 201,820

Int. Cl.<sup>3</sup> C08L 33/12, 51/00; C08F 265/06

U.S. Cl. 525—82

9 Claims

1. A blend of from about 40 to 70 weight percent of an extrudable acrylate co-polymer resin with from about 60 to 30 weight percent of particles produced by the successive polymerizations, according to the following order, in the same emulsion of:

- a first monomer mixture, which produces a core for the particles that is approximately 10 weight percent of the particles, and includes a portion of up to 5 weight percent butylene diacrylate and the balance of the monomer mixture includes over 50 weight percent butyl acrylate;
- a second monomer mixture, which produces an elastomer within the particles that is approximately 55 weight percent of the particles, and includes a portion of up to 5 weight percent butylene diacrylate; a further portion of up to 5 weight percent allyl methacrylate; and the balance of the monomer mixture includes over 50 weight percent butyl acrylate;
- a third monomer mixture, which produces an encapsulation shell for the particles that is approximately 20 weight percent of the particles, and includes a portion of up to 5 weight percent of allyl methacrylate and the balance of the monomer mixture includes over 85 weight percent methyl methacrylate;
- a fourth monomer mixture, which produces a transition coating for the particles that is approximately 15 weight percent of the particles, and includes over

4,341,884

## POLYMER COMPOSITION

Herman A. J. Schepers, Stein, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Apr. 1, 1981, Ser. No. 249,878

Claims priority, application Netherlands, Apr. 4, 1980, 8002023; Jul. 30, 1980, 8004377

Int. Cl.<sup>3</sup> C08L 45/00

U.S. Cl. 525—211

4 Claims

1. An impact resistant polymer composition combination formulated from the combination of:

- 50 to 90 parts by weight of at least one copolymer obtained by the copolymerization of 10 to 90% by weight of a styrene monomer with 90 to 10% by weight of acrylonitrile or methacrylonitrile monomer;
- 5 to 50 parts by weight of
  - a rubber having a substantially-saturated main chain, and
  - a chlorinated polyethylene having a chlorine content of between 32 and 40% by weight and a DSC crystallinity of 0 to 7%,

while maintaining the weight ratio of said chlorinated polyethylene to said rubber is between 1:1 and 4:1.

4,341,885

## POLYMER COMPOSITION

Herman A. J. Schepers, Stein, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Apr. 1, 1981, Ser. No. 249,879

Claims priority, application Netherlands, Apr. 4, 1980, 8002022; Jul. 30, 1980, 8004377

Int. Cl.<sup>3</sup> C08L 45/00

U.S. Cl. 525—211

11 Claims

1. An impact resistant polymer composition combination formulated from the combination of

- 50–95 parts by weight of at least one copolymer obtained by the copolymerization of 10 to 90% by weight of a styrene monomer with 90 to 10% by weight of an acrylonitrile monomer, and
- 5 to 50 parts by weight of
  - a rubber substantially free from chain unsaturation,
  - a chlorinated polyethylene having a chlorine content of at least 10% by weight, a DSC crystallinity of at least 10% and a glass transition temperature of at least  $-15^{\circ}\text{C}$ .

4,341,886

## PROCESS FOR PREPARING BIMODAL OR MULTIMODAL POLYMERS OF CONJUGATED DIENES

Christian Freppel, Chamalières, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Apr. 6, 1981, Ser. No. 251,856

Claims priority, application France, Apr. 9, 1980, 80 08111

Int. Cl.<sup>3</sup> C08F 2/38

U.S. Cl. 526—79

10 Claims

1. A process of preparing a bimodal or multimodal homopolymer of a conjugated diene or a bimodal or multimodal copolymer of a conjugated diene with another conjugated diene or with a vinyl aromatic compound, consisting in polymerizing the monomer(s) in a reaction medium at a temperature of between  $20^{\circ}\text{C}$ . and  $200^{\circ}\text{C}$ . in the presence of a catalyst system comprising an organolithium initiator, a barium, strontium or calcium compound, and an organometallic compound of a metal of group 2B or 3A of the periodic classification of elements of the Mendeleev Table,

characterized by

adding to the reaction medium during the course of the polymerization reaction, as a modifying agent which is not a polymerization initiator, a compound of a transition metal of groups 1B to 7B and 8 of the periodic classification of the elements of the Mendeleev Table or a magnesium compound of the general formula  $\text{MG}(\text{A})_2$  in which A represents an alkyl radical having from 1 to 10 carbon

atoms or an alcoholate, phenate, beta-diketonate or carboxylate radical.

4,341,887

## AZETIDINIUM SALTS AND POLYMERS AND COPOLYMERS THEREOF

Rudolf S. Buriks, and Eva G. Lovett, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Mar. 7, 1980, Ser. No. 128,337

Int. Cl.<sup>3</sup> C08F 14/14, 26/02

U.S. Cl. 526—263

4 Claims

1. Homo- and copolymers of N,N-diallyl-3-hydroxy azetidinium halide, formed under free radical conditions where, in the copolymers, one of the monomers of the copolymer is a vinyl monomer.

4,341,888

## DIORGANOPOLYSILOXANE COPOLYMERS AND PROCESS FOR THE PREPARATION THEREOF

John S. Razzano, Watervliet, N.Y., assignor to General Electric Company, New York, N.Y.

Continuation of Ser. No. 790,010, Apr. 22, 1977, abandoned,

which is a continuation of Ser. No. 574,332, May 5, 1975,

abandoned, which is a continuation-in-part of Ser. No. 463,435,

Apr. 24, 1974, Pat. No. 3,937,684. This application Aug. 14,

1980, Ser. No. 178,175

The portion of the term of this patent subsequent to Feb. 10, 1993, has been disclaimed.

Int. Cl.<sup>3</sup> C08G 77/06

U.S. Cl. 528—14

9 Claims

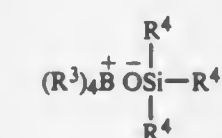
1. A process for producing diorganopolysiloxane copolymers having a viscosity of from 50 to 200,000 centipoise at  $25^{\circ}\text{C}$ . comprising (a) reacting a mixture of (i) a cyclic polysiloxane of the formula,



or a mixed such polysiloxane and (ii) a cyclic polysiloxane of the formula,



wherein  $y$  is from 3 to 6, or mixed such polysiloxanes, (i) being present in an amount of from 30 to 98 mol % of the mixture of (i) and (ii) at a temperature in the range of  $0^{\circ}$  to  $90^{\circ}\text{C}$ . in the presence of 5 to 300 parts per million of a catalyst selected from the group consisting of  $\text{CsOH}$ , a silanolate thereof, or a compound of the formula,



wherein  $\text{R}^3$  is alkyl of 1 to 8 carbon atoms, cycloalkyl of 4 to 8 carbon atoms or phenyl, B is nitrogen or phosphorous,  $\text{R}^4$  is alkyl of 1 to 8 carbon atoms, cycloalkyl of 4 to 8 carbon atoms, phenyl, a siloxane chain of the unit formula,  $\text{R}_2\text{SiO}_{(4-2)/2}$  and mixtures thereof wherein  $\text{R}^5$  is monovalent hydrocarbon or halogenated monovalent hydrocarbon, a is from 1.5 to 2.5, and (b) neutralizing the catalyst in the reaction mixture after equilibrium has been reached, and wherein  $\text{R}^1$  is  $\text{R}^7\text{CH}_2\text{CH}_2-$  and  $\text{R}^7$  is perfluoroalkyl of 1 to 6 carbon atoms, R is the same as  $\text{R}^1$  and in addition, methyl, ethyl, vinyl or phenyl, and  $\text{R}^2$  is, independently, methyl, ethyl, vinyl or phenyl.



**4,341,889**  
**POLYSILOXANE COMPOSITION AND BIOMEDICAL DEVICES**

William G. Delchert, Macedon; Gary D. Friends, Ontario; John B. Melpolder, Hilton, and Joon S. Park, Rochester, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Feb. 26, 1981, Ser. No. 238,525  
 Int. Cl.<sup>3</sup> C08G 77/14; C08F 220/06

U.S. Cl. 528—26 17 Claims

1. A shaped article suitable for use in biomedical applications being a polymer formed by polymerizing (a) one or more polysiloxane monomers  $\alpha,\omega$  terminally bonded through divalent hydrocarbon groups to an activated unsaturated group with (b) tertiary butyl styrene and (c) a tear film stabilizer to form a crosslinked three-dimensional polymeric network, said polymer having a tangent modulus of elasticity value of at least 25,000 g/mm<sup>2</sup> and an oxygen permeability of at least  $10 \times 10^{-11}$  cm<sup>3</sup>/(sec.cm<sup>2</sup> mmHg), said tertiary butyl styrene being present in an amount from 80 to 40 parts per 20 to 60 parts of polysiloxane monomers and the sum of parts equals 100, and wherein 2 to 20 parts of tear film stabilizer are present per 100 parts of tertiary butyl styrene and polysiloxane monomer, said stabilizer being selected from the group consisting of hydroxyethylmethacrylate, hydroxyethylacrylate, hydroxypropylmethacrylate, hydroxypropylacrylate, acrylic acid, methacrylic acid and mixtures thereof.

**4,341,890**  
**POLY(BROMINATED PHENYLENE OXIDE) AND FLAME-RETARDED HIGH IMPACT POLYSTYRENE COMPOSITION**

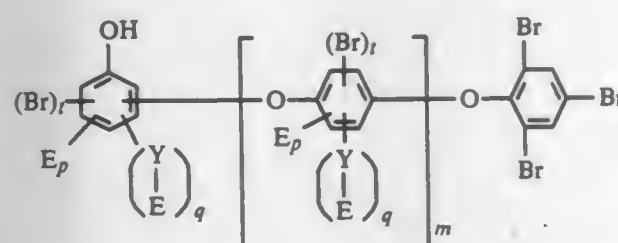
Michael W. Lindvay, Ft. Wayne, Ind., assignor to Great Lakes Chemical Corporation, West Lafayette, Ind.

Division of Ser. No. 83,745, Oct. 11, 1979, which is a continuation-in-part of Ser. No. 911,642, Jun. 1, 1978, abandoned. This application Nov. 10, 1980, Ser. No. 205,829

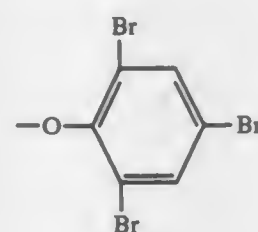
Int. Cl.<sup>3</sup> C08G 65/38, 65/44

U.S. Cl. 528—212 2 Claims

1. A branched polymer having a hydroxyl number of from 2.8 to about 30 of the structural formula



wherein each repeating unit set out within the brackets of the structural formula is attached in an ortho or para configuration to its adjacent phenyl and phenoxy moiety; and wherein E is an end group of the formula



Y is a side chain of the same structure and configuration as said repeating unit; the substituents Br, E and Y on each phenyl ring are attached only to the ortho or para positions relative to the hydroxyl group in the structural formula and the oxygen atom in the repeating unit; each t, p and q are independently the integer 0 or 1, provided that the sum of t plus p plus q equals 2, and provided that from about 10 to about 80 percent of the repeating units have the side chain and end unit —Y—E

attached thereto; and m is an integer such that the total molecular weight of the polymer ranges from 2000 to 20,000.

**4,341,891**  
**METHOD FOR REDUCING GELS IN POLYOLEFIN**  
 Donald E. Gessell, and David M. Courter, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 29, 1980, Ser. No. 221,090  
 Int. Cl.<sup>3</sup> C08F 6/00, 8/04

U.S. Cl. 528—483 5 Claims

1. A method for decreasing gel formation in articles fabricated from polymers prepared by polymerizing at least one  $\alpha$ -olefin, said method consisting essentially of the steps of:

- (a) polymerizing said at least one  $\alpha$ -olefin in a reaction system under slurry conditions and in the presence of a Ziegler-Natta catalyst thereby forming a polymer of said at least one  $\alpha$ -olefin, said polymer being characterized as having a molecular weight that is controlled by conducting said polymerization in the presence of a predetermined quantity of hydrogen; and
- (b) contacting said polymer formed in step (a), after it has been removed from said reaction system, with an additional quantity of hydrogen without introducing additional quantities of  $\alpha$ -olefin, thereby terminating continuing post-reaction system polymerization of higher molecular weight polymer thereby decreasing the formation of gels in articles fabricated from the polymer.

**4,341,892**  
**PREPARATION OF ALKALI CELLULOSE HAVING A LOW WATER CONTENT**

Norbert Kühne, Haan; Hasso Leischner; Wilfried Rähse, both of Düsseldorf, and Willi Wüst, Ratingen-Hösel, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Mar. 13, 1981, Ser. No. 243,502

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010464

Int. Cl.<sup>3</sup> C08B 1/08

U.S. Cl. 536—101 14 Claims

1. A process for the preparation of alkali cellulose having a low water content, wherein finely divided cellulose suspended in an inert organic solvent is presteeped with an alkali metal hydroxide and optionally an alcohol and the presteeped suspension is contacted with an aqueous alkali metal hydroxide alkalization solution of different concentration.

**4,341,893**  
**QUINAZOLINE DERIVATIVES**  
 Philippe M. J. Manoury, L'Hay les Roses, France, assignor to Synthelabo, Paris, France

Filed May 9, 1977, Ser. No. 795,375

Claims priority, application France, May 7, 1976, 76 13681; Aug. 24, 1976, 76 25563

Int. Cl.<sup>3</sup> C07D 239/95, 401/04, 413/12, 413/14

U.S. Cl. 544—284 7 Claims

1. 4-Amino-6,7-dimethoxy-2-[4-(3,4-methylenedioxy-benzoyl)-piperidino]-quinazoline and its pharmaceutically acceptable acid addition salts.
2. 4-Amino-6,7-dimethoxy-2-[4-(3-methoxybenzoyl)-piperidino]-quinazoline and its pharmaceutically acceptable acid addition salts.
3. N<sub>1</sub>-(4-amino-6,7-dimethoxyquinazolinyl-2)-N<sub>1</sub>N<sub>2</sub>-dimethyl-N<sub>2</sub>-(furoyl-2)-propylenediamine and its pharmaceutically acceptable acid addition salts.
4. N<sub>1</sub>-(4-amino-6,7-dimethoxyquinazolinyl-2)-N<sub>2</sub>-benzoyl-N<sub>1</sub>N<sub>2</sub>-dimethylpropylenediamine and its pharmaceutically acceptable acid addition salts.
5. 4-Amino-6,7-dimethoxy-2-[4-(5-methylthio-1,3,4-oxadiazole-2-carbonyl)-piperidino]-quinazoline and its pharmaceutically acceptable acid addition salts.

**4,341,894**  
**SENSITIZERS FOR PHOTOCONDUCTIVE COMPOSITIONS**

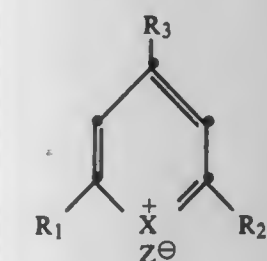
Michael T. Regan, Fairport; George A. Reynolds, Rochester; Donald P. Specht, Spencerport, and James A. VanAllan, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 885,927, Mar. 13, 1978, Pat. No. 4,167,412, which is a continuation-in-part of Ser. No. 711,046, Aug. 2, 1976, abandoned. This application Apr. 26, 1979, Ser. No. 33,614

Int. Cl.<sup>3</sup> C07D 309/32, 335/00

U.S. Cl. 544—333 5 Claims

1. A 2,4,6-trisubstituted pyrylium dye salt having the structure:



wherein:

each of R<sub>1</sub> and R<sub>2</sub>, which may be the same or different, represent a phenyl radical, thienyl, furyl, pyridyl, pyrrolyl, pyrimidinyl, thiadiazolyl or thiazolyl, with the proviso that no more than one of R<sub>1</sub> and R<sub>2</sub> is a phenyl radical; R<sub>3</sub> represents an alkylamino-substituted phenyl radical, dialkylaminopyridyl, dialkylaminofuryl, dialkylaminothiophenyl, dialkylaminopyrimidinyl, dialkylaminothiadiazolyl or dialkylaminothiazolyl; X represents oxygen or sulfur; Z represents an anion and wherein at least one of R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> is one of the above enumerated heterocyclic moieties.

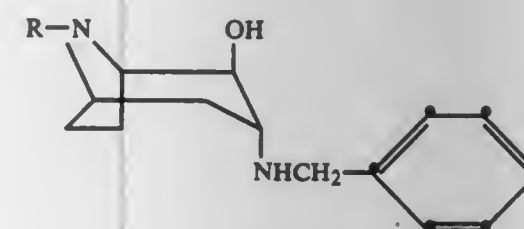
**4,341,895**  
**TROPANE DERIVATIVES**  
 Robert L. Clarke, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Mar. 3, 1981, Ser. No. 240,179

Int. Cl.<sup>3</sup> C07D 451/02

U.S. Cl. 546—129 5 Claims

1. A compound of the formula



where R is alkoxy-carbonyl or alkanoyl having from two to four carbon atoms; or a pharmaceutically acceptable acid-addition salt thereof.

**4,341,896**  
**1-HYDROXY-4-HETEROARYLAMINOANTHRAQUINONES**

Max Jost, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

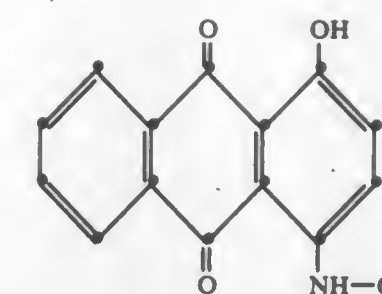
Filed May 19, 1980, Ser. No. 151,224

Claims priority, application Switzerland, May 30, 1979, 5035/79

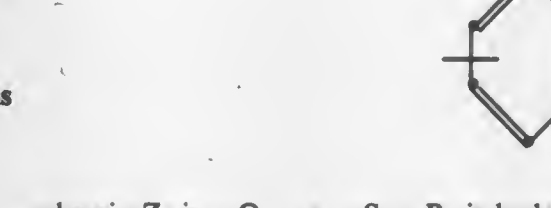
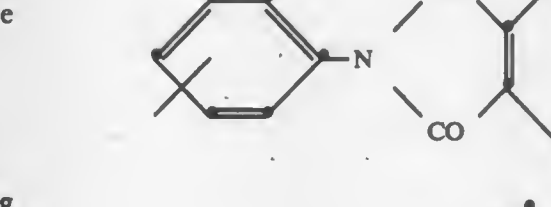
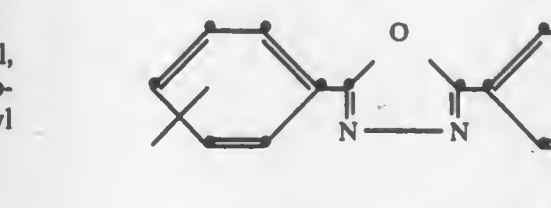
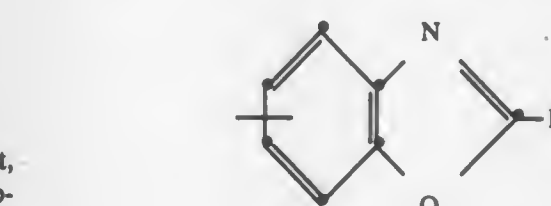
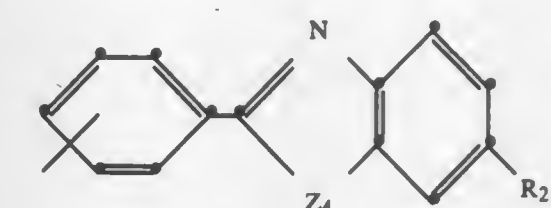
Int. Cl.<sup>3</sup> C07D 271/10, 263/56, 277/66; C08L 67/00

U.S. Cl. 548—143 7 Claims

1. A 1-hydroxy-4-heteroarylaminoanthraquinone of the formula



wherein Q is a group selected from the group consisting of



wherein Z<sub>4</sub> is —O— or —S—, R<sub>1</sub> is hydrogen, C<sub>1-4</sub>-alkyl or phenyl, and R<sub>2</sub> is hydrogen or C<sub>1-4</sub>-alkyl.

**4,341,897**  
**PYRANIC DERIVATIVES FOR USE IN THE PREPARATION OF MUSCONE**

Karl-Heinrich Schulte-Elte, Onex; Arnold Hauser, Petit-Lancy, and Günther Ohloff, Bernex, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Division of Ser. No. 96,054, Nov. 20, 1979, Pat. No. 4,277,625.

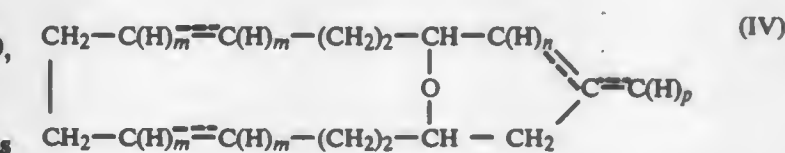
This application Mar. 30, 1981, Ser. No. 249,117

Claims priority, application Switzerland, Dec. 7, 1978, 12510/78

Int. Cl.<sup>3</sup> C07D 311/00

U.S. Cl. 549—355 1 Claim

1. A pyranic compound having the formula:



wherein m represents 1 or 2, as a result which necessitated



external cooling and  $n$  represents 1 and  $p$  represents 3 and the bond between C and C(H)<sub>p</sub> is a single bond and the bond between C(H)<sub>n</sub> and C is a double bond or  $n$  represents 2 and  $p$  represents 2 and the bond between C and C(H)<sub>p</sub> is a double bond and the bond between C(H)<sub>n</sub> and C is a single bond.

4,341,898

**SYNTHESIS OF ISOCYANATES FROM NITROALKANES**  
Barton Milligan, Coplay, and Robert K. Pinschmidt, Jr., Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

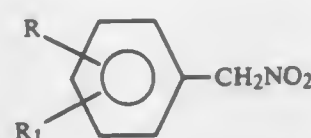
Filed May 18, 1981, Ser. No. 264,253

Int. Cl.<sup>3</sup> C07C 118/00, 125/063, 125/07

U.S. Cl. 560—24

16 Claims

1. A process for the preparation of an aromatic isocyanate which comprises heating a compound of the general formula I:



wherein R and R<sub>1</sub> represent hydrogen, halogen, nitro, a C<sub>1</sub>–C<sub>5</sub> alkyl radical, a C<sub>1</sub>–C<sub>4</sub> alkoxy radical, isocyanato, an alkoxy carbonylamino radical of the formula —NH—COOR<sub>2</sub> wherein R<sub>2</sub> represents a C<sub>1</sub>–C<sub>5</sub> alkyl radical, or a nitromethyl radical, with R and R<sub>1</sub> being the same or different, in the presence of an effective amount of a Lewis acid or Bronsted acid substance to yield an aromatic isocyanate of the general formula II:



wherein R and R<sub>1</sub> are the same as above and provided that if R or R<sub>1</sub> were a nitromethyl radical in the general formula I, such R or R<sub>1</sub> now represents an isocyanato group.

4,341,899

**VAPOR PHASE DECHLORINATION PROCESS**

Ross A. Kremer, Belle Mead, and Leopoldo C. Mansueto, Jr., Gillette, both of N.J., assignors to Rhone-Poulenc Agrochimie, Lyons, France

Filed Feb. 4, 1980, Ser. No. 118,174

Int. Cl.<sup>3</sup> C07C 69/78

U.S. Cl. 560—103

3 Claims

1. A selective dechlorination process that consists essentially of contacting a vaporized mixture of methyl 2,5-dichlorobenzoate and hydrogen, in a molar ratio respectively of 1:3–4, together with between about 1% and about 10% of methanol by weight of methyl 2,5-dichlorobenzoate with a nickel catalyst at a temperature between about 200° C. and about 300° C. and for a residence time of between about 2.0 seconds and about 5.0 seconds.

4,341,900

**CATALYTIC PROCESS FOR THE PREPARATION OF UNSATURATED CARBOXYLIC ACID**

Hiroichi Ishii, Hideo Matsuzawa, Masao Kobayashi, and Masato Otani, all of Otake, Japan, assignors to Mitsubishi Rayon Company, Limited, Tokyo, Japan

Filed Mar. 3, 1976, Ser. No. 663,361

Claims priority, application Japan, Mar. 5, 1975, 50-25800; Mar. 5, 1975, 50-26732

Int. Cl.<sup>3</sup> C07C 51/25, 57/055

U.S. Cl. 562—532

9 Claims

1. A process for the preparation of unsaturated carboxylic acid, which comprises catalytically oxidizing acrolein, methac-

Mo<sub>12</sub>P<sub>2</sub>Q<sub>6</sub>R<sub>2</sub>X<sub>2</sub>Y<sub>2</sub>Z<sub>2</sub>O<sub>8</sub>

wherein Mo is molybdenum, P is phosphorus, O is oxygen, Q is calcium, magnesium or a mixture thereof, R is at least one element selected from the group consisting of potassium, rubidium, cesium and thallium, X is at least one element selected from the group consisting of boron, silicon, manganese, iron, cobalt, zinc, germanium, uranium, tin, lead, chromium, titanium, tantalum, antimony, niobium and bismuth, Y is at least one element selected from the group consisting of vanadium, copper and nickel, Z is strontium, barium or a mixture thereof, and wherein a, b, c, d, e, f, and g represent the atomic ratio of each component and a is 0.5 to 6, b is 0.2 to 6, c is 0.2 to 6, d is 0.01 to 6, e is 0.01 to 6, f is 0 to 6, and g is a value determined by the valencies of the elements present in the catalyst.

4,341,901

**4-ALKYLTHIO-2-TRIFLUOROMETHYLALKANESULFONANILIDES AND DERIVATIVES THEREOF**

Sharon L. Ruffing, Oakdale, Wallace E. Burg, Lakeland, and Ezzat A. Mikhail, New Brighton, all of Minn., assignors to Minnesota Mining and Manufacturing Co., Saint Paul, Minn.

Continuation-in-part of Ser. No. 879,079, Feb. 21, 1978,

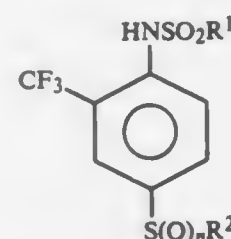
abandoned, which is a continuation-in-part of Ser. No. 786,222, Apr. 11, 1977, abandoned. This application Oct. 14, 1980, Ser. No. 196,757

Int. Cl.<sup>3</sup> C07C 143/75; A01N 9/16

U.S. Cl. 564—99

26 Claims

1. A compound of the formula



wherein R<sup>1</sup> and R<sup>2</sup> are independently alkyl groups containing from 1 to 4 carbon atoms and  $n$  is 0–2, provided that R<sup>1</sup> and R<sup>2</sup> are not both methyl, and agriculturally acceptable salts thereof.

4,341,902

**PROCESS FOR THE PRODUCTION OF 5-NITRO-ACET-2,4-XYLIDINE**

Karl W. Thiem, Charleston, and Daniel P. Vanderpool, Hana-han, both of S.C., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jun. 26, 1981, Ser. No. 278,545

Int. Cl.<sup>3</sup> C07C 102/00

U.S. Cl. 564—218

7 Claims

1. A process for preparing 5-nitro-acet-2,4-xylylidine comprising

- dissolving acet-2,4-xylylidine in an aqueous sulfuric acid solution,
- nitration the resultant solution with a mixture of nitric acid and sulfuric acid,
- adding the resultant nitration mixture to an aqueous sulfuric acid solution containing from 25 to 45% by weight of sulfuric acid, while maintaining the temperature at from 20° to 50° C. to thereby produce a slurry containing sulfuric acid in a concentration of from 30 to 50% by weight based solely on the weight of water and sulfuric acid, the total amount of sulfuric acid in said slurry being

such that the molar ratio of sulfuric acid to the nitro-acet-2,4-xylylidine isomers is from 53:1 to 10:1, and (d) recovering 5-nitro-acet-2,4-xylylidine.

4,341,903

**PROCESS FOR REARRANGEMENT OF ALKYL GROUPS ON AROMATIC AMINES**

John C. Wollensak, Bloomfield Hills; Kryn G. Ihrman, Farmington, and Chester P. Jarema, Sterling Heights, all of Mich., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 240,752, Mar. 5, 1981, Pat. No. 4,317,931, which is a continuation-in-part of Ser. No. 72,931, Sep. 6, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,099

The portion of the term of this patent subsequent to Mar. 2, 1999, has been disclaimed.

Int. Cl.<sup>3</sup> C07C 85/24

U.S. Cl. 564—409

11 Claims

1. A process for producing nuclearly methyl-substituted anilines from N-methyl substituted anilines comprising heating an N-methyl substituted aniline at a temperature of about 100°–500° C. in the presence of an aluminum anilide catalyst and a metal-containing cocatalyst, said metal being selected from nickel, cobalt, molybdenum, and titanium.

4,341,904

**DERIVATIVES OF**

**2-HYDROXY-6,9-METHANO-11-AMINO-5,6,7,8,9,10-HEXAHYDRO-BENZOCYCLOCTENE**

Patrice C. Belanger, Dollard des Ormeaux, and Robert N. Young, Senneville, both of Canada, assignors to Merck & Co., Inc., Rahway, N.J.

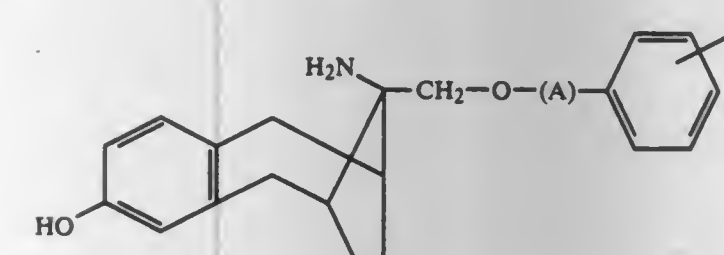
Filed Feb. 19, 1980, Ser. No. 117,701

Int. Cl.<sup>3</sup> C07C 87/40

U.S. Cl. 564—427

2 Claims

1. A compound of the formula:



wherein

A is absent or is a lower alkylene substituent of from 1–3 carbons, and X is hydrogen; halo; C<sub>1</sub>–alkyl; C<sub>1</sub>–alkoxy; amino; and mono- and di-C<sub>1</sub>–alkyl substituted amino; cyano; trifluoromethyl; trifluoromethylthio; C<sub>1</sub>–alkylthio; C<sub>1</sub>–alkylsulfoxide; or C<sub>1</sub>–alkylsulfone.

4,341,905

**INORGANIC HALIDE SALT CATALYSTS FOR HYDROXYALKYLATION OF PHENOLS OR THIOPHENOLS**

Paul E. Stregge, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 58,705, Jul. 18, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 179,129

Int. Cl.<sup>3</sup> C07C 41/16

U.S. Cl. 568—45

9 Claims

1. In the method of hydroxyalkylation wherein phenol- or thiophenol-containing compounds are reacted with cyclic organic carbonate compounds in the presence of a catalyst followed by recovery of the hydroxyalkylaryl ether or thioether formed, the improvement wherein the reaction is conducted without addition of strong acid or base and the catalyst is an inorganic halide salt selected from a group consisting of potassium fluoride, rubidium fluoride, cesium fluoride, lithium chloride, sodium chloride, potassium chloride, rubidium chlo-

4,341,906

**1,9-DIHYDROXYOCTAHYDROPHENANTHRENES**

Thomas H. Althuis, Groton; Charles A. Harbert, Waterford; Michael R. Johnson, Gales Ferry, and Lawrence S. Melvin, Jr., Ledyard, all of Conn., assignors to Pfizer Inc., New York, N.Y.

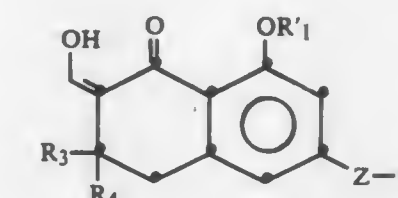
Division of Ser. No. 78,474, Sep. 24, 1979, Pat. No. 4,270,005, which is a division of Ser. No. 851,503, Nov. 14, 1977, Pat. No. 4,188,495. This application Dec. 22, 1980, Ser. No. 219,320

Int. Cl.<sup>3</sup> C07C 49/637, 49/447

U.S. Cl. 568—328

22 Claims

1. A compound of the formula



wherein

R<sup>1</sup> is selected from hydrogen, alkanoyl of 1 to 6 carbon atoms and benzoyl;

R<sub>3</sub> is selected from hydrogen, methyl and ethyl;

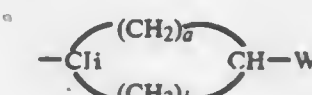
R<sub>4</sub> is selected from hydrogen, alkyl of 1 to 6 carbon atoms and benzyl;

Z is —(alk<sub>1</sub>)<sub>m</sub>—X—(alk<sub>2</sub>)<sub>n</sub>— wherein each of (alk<sub>1</sub>) and (alk<sub>2</sub>) is alkylene having from 1 to 9 carbon atoms, with the proviso that the summation of carbon atoms in (alk<sub>1</sub>) plus (alk<sub>2</sub>) is not greater than 9;

m and n are each 0 or 1;

X is selected from O, S, SO and SO<sub>2</sub>; and

W is selected from hydrogen, methyl, pyridyl, piperidyl, phenyl, monochlorophenyl, monofluorophenyl and



wherein W<sub>1</sub> is selected from hydrogen, phenyl, monochlorophenyl and monofluorophenyl; a is an integer from 1 to 5 and b is 0 or an integer from 1 to 4, with the proviso that the sum of a and b is not greater than 5.

4,341,907

**CATALYTIC OXIDATION OF CYCLOPARAFFINS**

Ronald A. Zelonka, Whitby, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Continuation-in-part of Ser. No. 74,096, Sep. 10, 1979, abandoned. This application Jan. 30, 1981, Ser. No. 229,873 Claims priority, application United Kingdom, Sep. 19, 1978, 37305/78

Int. Cl.<sup>3</sup> C07C 45/00, 7/12

U.S. Cl. 568—360

4 Claims

1. A process for the catalytic oxidation of a liquid cycloparaffin to partial oxidation products thereof which comprises introducing a molecular oxygen-containing gas into a cycloparaffin of from 5 to 12 carbon atoms at elevated pressure and at a temperature of from 130° to 180° C. and in the presence of an oxidation catalyst comprising cobalt bis[di(2-ethylhexyl)-phosphate] in combination with pyridine, said oxidation catalyst being capable of forming a concentrate in the cycloparaffin, having a cobalt concentration of at least 0.1%.



4,341,908

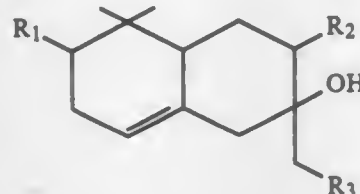
## AMBRINOL AND ITS HOMOLOGUES

Brian J. Willis, Bergenfield; Philip A. Christenson, Midland Park, both of N.J., and Robert A. Mack, Valley Stream, N.Y., assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.  
Filed Jun. 20, 1980, Ser. No. 161,329  
Int. Cl.<sup>3</sup> C07C 35/23

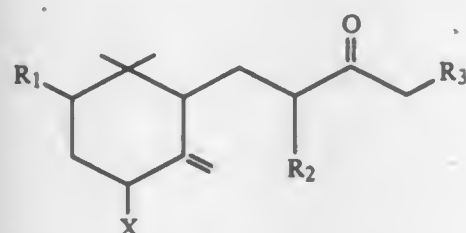
U.S. Cl. 568—819

10 Claims

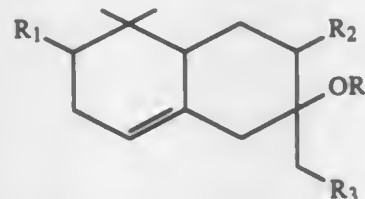
1. A method of preparing a bicyclic alcohol having the structure



wherein each of R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are hydrogen or methyl which comprises reacting under suitable conditions a halogen-containing cyclohexane having the structure



wherein each of R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are hydrogen or methyl and X is a halogen with a reagent capable of effecting intramolecular cyclization of said halogen-containing cyclohexane compound and selected from the group consisting of metals from Groups 1 and 2 of the Periodic Table; electron transfer reagents such as Na/naphthalene; alloys including amalgams of Group 1, 2 and 3 elements; Transition metals such as Fe, Cu, Cd and Hg; salts of elements of Groups 1, 2 and 3 of the Periodic Table; and salts of Transition metals such as Zn<sup>2+</sup>, Cu<sup>2+</sup>, Hg<sup>2+</sup>, Cr<sup>2+</sup>, V<sup>2+</sup> and Ti<sup>3+</sup> and containing a moiety R, in the presence of a non-protic solvent to form a bicyclic intermediate having the structure



wherein R is a moiety derived from said reagent, and hydrolyzing under suitable conditions said intermediate to produce said bicyclic alcohol.

4,341,909

## PREPARATION OF LOW MOLECULAR WEIGHT POLYHYDROXYL COMPOUNDS

Gottfried Schneider, Kuno Wagner, and Hanns P. Müller, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Continuation of Ser. No. 829,172, Aug. 30, 1977, abandoned.  
This application Sep. 14, 1981, Ser. No. 301,609

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1976, 2639084

Int. Cl.<sup>3</sup> C07C 47/19; C08G 18/32, 18/14

U.S. Cl. 568—863

9 Claims

1. In a process for the preparation of mixtures of low molecular weight polyhydroxyl compounds and hydroxyl aldehydes and hydroxy ketones by condensation of formaldehyde in the presence of compounds of divalent lead as catalysts and in the

presence of co-catalysts containing a mixture of hydroxy aldehydes and hydroxy ketones, at a reaction temperature of from 70° to 110° C., the improvement which comprises

(1) condensing aqueous formalin solutions and/or paraformaldehyde dispersions containing from 20 to 65% by weight of formaldehyde in the presence of:

(a) soluble or insoluble lead (II) salts or divalent lead attached to a high molecular weight resinous carrier; and

(b) a co-catalyst comprising a mixture of hydroxy aldehydes and hydroxy ketones obtainable by condensation of formaldehyde, which mixture contains at least 75% by weight of C<sub>3</sub>-C<sub>6</sub>-compounds and is characterized by the following molar ratios:

compounds having 3 carbon atoms/compounds having 4 carbon atoms from 0.5:1 to 2.0:1;

compounds having 4 carbon atoms/compounds having 5 carbon atoms from 0.2:1 to 2.0:1;

compounds having 5 carbon atoms/compounds having 6 carbon atoms from 0.5:1 to 5.0:1;

(2) maintaining the pH of the reaction solution at from 6.0 to 7.0 by controlled addition of inorganic or organic base until from 10 to 60% by weight of the starting material has undergone reaction,

(3) thereafter, lowering the pH of the reaction solution by from 0.5 to 3.0 units to a pH of from 4 to 6,

(4) continuing the reaction at a pH of from 4.0 to 6.0, and

(5) stopping the self-condensation of formaldehyde hydrate by cooling and/or by inactivation of the lead catalyst by means of acids when the residual formaldehyde content in the reaction mixture is from 0 to 10% by weight of formaldehyde and thereafter removing the catalyst in the known manner.

4,341,910

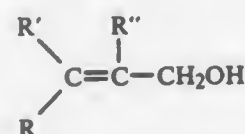
## PREPARATION OF UNSATURATED ALCOHOLS

Dennis B. Malpass, La Porte, and G. Scott Yeargin, Pasadena, both of Tex., assignors to Texas Alkyls, Inc., Deer Park, Tex.  
Filed Jan. 25, 1979, Ser. No. 6,323  
Int. Cl.<sup>3</sup> C07C 29/00, 33/025

U.S. Cl. 568—878

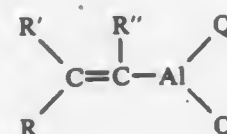
7 Claims

1. A process for the production of compounds selected from the group consisting of cis and trans isomers of compounds having the formula



in which R, R' and R'' are independently hydrogen or alkyl groups having from 1 to 20 carbon atoms, comprising

(a) reacting the corresponding cis or trans isomer of a compound having the formula



in which R, R' and R'' are as defined and Q is an alkyl group having from 1 to 20 carbon atoms, with paraformaldehyde and

(b) hydrolyzing the product of step (a) in the presence of an acid.

4,341,911

## HYDROCARBON CONVERSION PROCESS FOR THE PRODUCTION OF GASOLINE

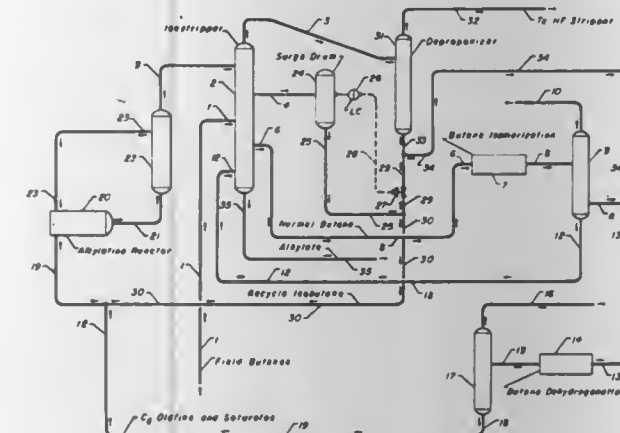
Bipin V. Vora, Elk Grove Village, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 29, 1980, Ser. No. 220,547

Int. Cl.<sup>3</sup> C07C 2/58

U.S. Cl. 585—332

14 Claims



1. A hydrocarbon conversion process which comprises the steps of:

(a) passing a feed stream which comprises normal butane into a fractionation zone comprising one fractionation column;

(b) removing a first process stream, which is rich in normal butane, from the fractionation zone and passing the first process stream into a butane isomerization zone operated at isomerization conditions to produce a butane isomerization zone effluent stream which comprises isobutane and normal butane;

(c) passing the butane isomerization zone effluent stream and a hereinafter characterized second process stream into a butane dehydrogenation zone operated at dehydrogenation conditions to produce a dehydrogenation zone effluent stream comprising isobutane, normal butane, and butylenes;

(d) passing the butane dehydrogenation zone effluent stream into an alkylation zone operated at alkylation conditions to produce an alkylation zone effluent stream which comprises isobutane, normal butane and C<sub>8</sub> hydrocarbons;

(e) passing the alkylation zone effluent stream into the fractionation zone comprising said one column of step (a);

(f) removing a third process stream, which is rich in isobutane, from the fractionation zone and passing at least a portion of the third process stream into the alkylation zone;

(g) removing a fourth process stream, which comprises propane and isobutane, from the fractionation zone and passing substantially all the hydrocarbons present in the fourth process stream into a depropanizer column;

(h) removing an isobutane-rich fifth process stream from the depropanizer column and passing the fifth process stream into the butane dehydrogenation zone as at least a portion of said second process stream; and,

(i) removing a net product stream comprising saturated C<sub>8</sub> hydrocarbons from the fractionation zone of step (a).

4,341,912

## PROCESS FOR PRODUCING ALKENYL-SUBSTITUTED AROMATIC COMPOUNDS AND CATALYST THEREFOR

Kunimasa Takahashi; Makoto Imanari, and Yoshihisa Watanabe, all of Amimachi, Japan, assignors to Mitsubishi Petrochemical Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 837,270, Sep. 27, 1977, abandoned. This application Jul. 16, 1979, Ser. No. 57,810

Claims priority, application Japan, Oct. 1, 1976, 51-117253

Int. Cl.<sup>3</sup> C07C 4/02

U.S. Cl. 585—443

18 Claims

1. A process for producing an alkenyl-substituted aromatic compound by the oxidative dehydrogenation of the corre-

sponding alkyl-substituted aromatic compound which comprises catalytically reacting at a temperature in the range of about 200° C. to about 400° C. an alkyl-substituted aromatic compound in the vapor phase in the presence of molecular oxygen and a catalyst composed of palladium metal having a crystal size of about 200 Å, a metal halide compound and at least one promotor selected from the group consisting of elements of Groups Ia, IIa, IIb and VIa of the periodic table, and elements of Group VIII of the periodic table other than palladium to convert said alkyl substituted aromatic compound to the corresponding alkenyl-substituted aromatic compound wherein said palladium metal, metal halide compound and promotor element are supported on an alumina carrier containing at least 80% by weight of the total alumina of α-alumina wherein the alumina carrier has a pore volume ratio (V<sub>min</sub>), expressed by the following equation

$$V_{\min} = V_A / (V_A + V_B)$$

wherein V<sub>A</sub> is the volume (ml/g) of pores which require a penetration pressure by the mercury penetration method of 6,000 psi to 60,000 psi, and V<sub>B</sub> is the volume (ml/g) of pores which require a penetration pressure of 900 psi to less than 6,000,

of not more than 0.2 said reaction being carried out in the presence of a compound selected from the group consisting of bromine compounds and chlorine compounds which are gaseous under the reaction conditions and in an amount of 0.1 to less than 50 ppm as its concentration in the mixture of the alkyl-substituted aromatic compound gas and the molecular oxygen-containing gas.

4,341,913

## PROCESS FOR THE PRODUCTION OF CUMENE

Benedetto Calcagno, Milan; Emanuele Sartorio, Messina; Claudio Divo, Saronno, and Luigi Verde, Busto Arsizio, all of Italy, assignors to Euteco Impianti S.p.A., Milan, Italy

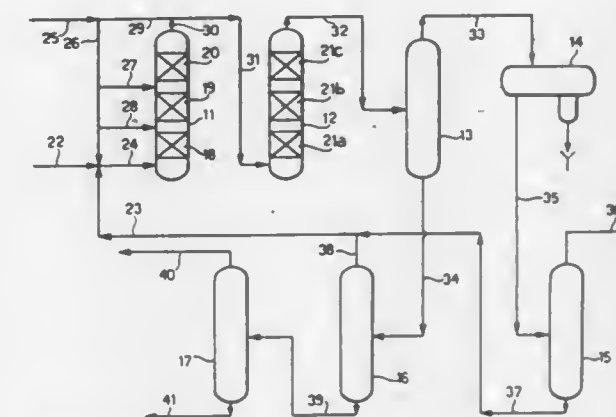
Filed Dec. 19, 1980, Ser. No. 217,736

Claims priority, application Italy, Dec. 19, 1980, 28220 A/79

Int. Cl.<sup>3</sup> C07C 2/68

U.S. Cl. 585—449

9 Claims



1. A continuous process for the production of cumene by alkylation of benzene with propylene on a solid phosphoric acid catalyst, which comprises:

using two reaction steps in series, the first step being carried out in a plurality of catalyst beds in series and the second step in a catalyst bed having a volume substantially equal to the overall volume of the catalyst beds of the first step; operating in said first and second steps in a substantially liquid phase, at a temperature of from 170° C. to 270° C. and under a pressure of from 30 to 50 Kg/sq. cm.; using an overall benzene/propylene molar ratio of from 6:1 to 10:1, continuously delivering the whole of the benzene in the liquid form to the first catalyst bed of the first step, continuously delivering a series of streams of liquid propylene respectively to the first catalyst bed of the first step and, in the form of a cold stream, between each pair of



contiguous beds of the first and second steps, in such amounts that the benzene/propylene molar ratio be about 16:1 to 25:1 at the inlet of each individual catalyst bed of the first step, and higher than about 25:1 at the inlet of the catalyst bed of the second step; and recovering cumene from the reaction products discharged from the second step.

**4,341,914**  
**TRANSALKYLATION PROCESS WITH RECYCLE OF C<sub>10</sub> HYDROCARBONS**

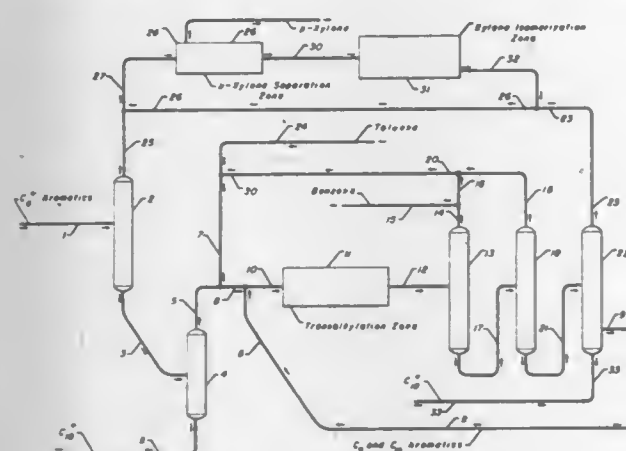
Charles V. Berger, Western Springs, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 22, 1980, Ser. No. 219,001

Int. Cl.<sup>3</sup> C07C 5/22

U.S. Cl. 585-474

9 Claims



1. A transalkylation and isomerization process for the production and recovery of p-xylene which comprises the steps of:  
(a) separating a feed stream comprising indane, C<sub>8</sub>, C<sub>9</sub> and C<sub>10</sub> alkylaromatic hydrocarbons, in a first fractionation zone comprising two fractionation columns into a first C<sub>8</sub> stream rich in C<sub>8</sub> alkylaromatic hydrocarbons and which

stream contains less than 5 mole percent C<sub>9</sub>+ hydrocarbons, a first C<sub>9</sub> stream rich in C<sub>9</sub> alkylaromatic hydrocarbons and a first bottoms stream rich in C<sub>10</sub> alkylaromatic hydrocarbons and which stream contains at least 50 mole percent of said indane in said feed stream;

(b) passing said first C<sub>9</sub> stream, a first recycle stream rich in toluene and a second recycle stream comprising C<sub>9</sub> and C<sub>10</sub> alkylaromatic hydrocarbons into a transalkylation zone maintained at transalkylation conditions to produce a transalkylation zone effluent stream comprising C<sub>7</sub> to C<sub>10</sub> alkylaromatic hydrocarbons;

(c) separating said transalkylation zone effluent stream in a second fractionation zone to produce a light aromatic hydrocarbon stream rich in toluene and which is used as said first recycle stream, a heavy hydrocarbon stream comprising C<sub>10</sub> alkylaromatics and which is rich in C<sub>9</sub> alkylaromatic hydrocarbons and which is used as said second recycle stream, a second C<sub>8</sub> stream rich in C<sub>8</sub> alkylaromatic hydrocarbon and a second bottoms stream rich in C<sub>10</sub> alkylaromatic hydrocarbon and which is removed from said process;

(d) combining said first and second C<sub>8</sub> streams with a herein-after defined third recycle stream;

(e) passing said combined streams of (d) into a paraxylene separation zone wherein paraxylene is concentrated in a paraxylene-rich product stream, which is recovered as the product stream of said process, and a paraxylene separate zone effluent stream is produced comprising metaxylene;

(f) passing said paraxylene separate zone effluent stream comprising metaxylene into a xylene isomerization zone to isomerize said effluent to produce an isomerization zone effluent stream comprising paraxylene, orthoxylene and metaxylene; and

(g) recycling at least a portion of said isomerization zone effluent stream to said paraxylene separation zone as said third recycle stream of step (d).

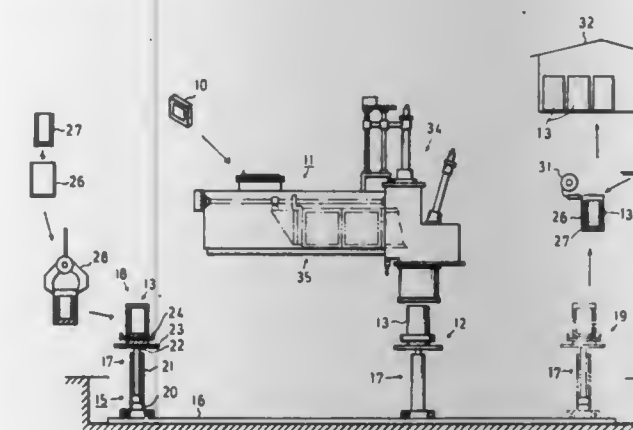
**4,341,915**  
**APPARATUS FOR FILLING OF CONTAINER WITH RADIOACTIVE SOLID WASTES**  
Toshio Adachi, Nagoya, and Susumu Hiratake, Kasugai, both of Japan, assignors to Daidotokushuko Kabushikikaisha, Japan  
Filed Mar. 10, 1980, Ser. No. 128,984

Claims priority, application Japan, Mar. 13, 1979, 54-28899; Feb. 12, 1980, 55-15805

Int. Cl.<sup>3</sup> G21F 9/30

U.S. Cl. 373-22

4 Claims



1. An apparatus for filling a container with radioactive solid wastes, said apparatus comprising:

(i) a transfer frame having a charge port at one end and a delivery port at the other end and interiorly having a floor extending from the charge port to the delivery port so that radioactive solid wastes introduced through the charge port and placed on the floor may be laterally moved in substantially horizontal direction on the floor towards the delivery port;

(ii) a transfer means arranged within said transfer frame so that the radioactive wastes introduced through said charge port and placed on said floor may be laterally moved on the floor towards said delivery port;

(iii) a hollow furnace body interiorly having a bottom wall on which the wastes are placed and a space for melting the radioactive solid wastes while being fed in substantially horizontal direction, said space being above the bottom wall and being of great height relative to its width in the direction of substantially horizontal feed of the wastes, said furnace body having first and second side walls which are respectively provided with an inlet for introducing the radioactive solid wastes and an outlet for discharging a melt of said wastes, said second wall being opposite to the discharge port for preventing further advance of the wastes in the feed direction thereby to prevent wastes from moving through the heating space in unmelted condition, said inlet formed in the first side wall being in communication with the delivery port of the transfer frame, said bottom wall including a groove the base of which is inclined downwardly in the direction of feed of the wastes, said outlet being below the lower end of said groove;

(iv) a heating means comprising at least one plasma torch attached to said furnace body to direct heating gases used to melt the radioactive wastes into said space; and

(v) a tray, to receive a container placed thereon, disposed at a position under the outlet formed in the second side wall of said furnace body;

said transfer frame having two guide walls which extend upright from said floor and are opposed to each other so as to bound between them a space above said floor into which the solid wastes are introduced, said two guide walls extending from the charge port to the delivery port;

whereby the radioactive wastes placed on the floor are guided along said guide walls into the melting space within said furnace body, the wastes being melted by the heating gases in the melting space within the furnace

body, and the resultant melt being poured through said outlet into an open-topped container placed on said tray.

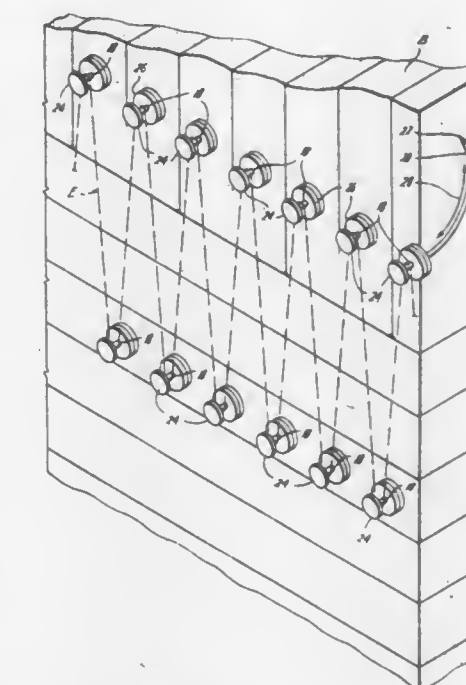
**4,341,916**  
**ELECTRIC FURNACE INSULATION MODULE**  
Carlisle O. Byrd, Jr., and Mack A. Hounsell, both of Houston, Tex., assignors to Manville Service Corporation, Denver, Colo.

Filed Oct. 30, 1980, Ser. No. 202,360

Int. Cl.<sup>3</sup> H05B 3/66

U.S. Cl. 373-128

60 Claims



1. A product comprising:  
(a) a block of refractory fiber blanket insulation material;  
(b) an electric heating element;  
(c) holder member means for supporting said electric heating element;  
(d) arcuate spearing means mounted with said holder member means for attaching said holder member means to said block;  
(e) said spearing means comprising means for supporting said holder member means on said module independently of other supporting structure wherein said holder member may be located at any desired location on said block; and  
(f) means for attaching said block to the inner wall of the electric furnace.

**4,341,917**  
**BUILDING STRUCTURAL ELEMENT**  
Anthony G. Martin, 12 Scattergood Pl., Spence, Australian Capital Territory, Australia

Continuation of Ser. No. 37,064, May 8, 1979, abandoned. This application May 7, 1981, Ser. No. 263,806

Claims priority, application Australia, May 10, 1978, PD4339

Int. Cl.<sup>3</sup> H01L 35/00; E04C 1/10

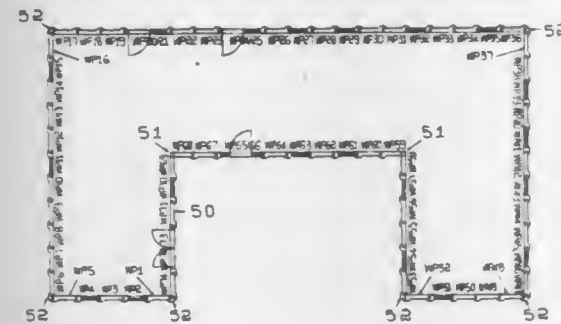
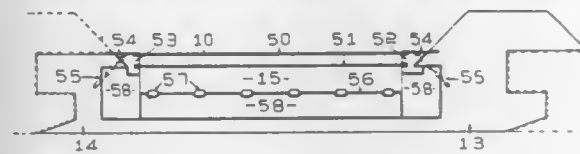
U.S. Cl. 136-206

14 Claims

1. A modular, concrete structural element for a building or the like structure comprising a panel member; said panel member including a pair of parallel, spaced apart side members having first and second, parallel, external faces, said panel member having a pair of edge portions extending between and along the edges of said side members to define a hollow core extending longitudinally of said panel member, each of said edge portions having flange means for providing structural strength to said structural element and said flange means being so dimensioned relative to each other so as to form a cavity with the flange means of an adjacent edge portion of an adjacent structural element to provide a concealed, weatherproof expansion joint between the adjacent structural elements, said



flange means on a first one of said edge portions comprising first and second flange members extending longitudinally along one side of said panel member, said first and second flange members being spaced to define between them a first recess which extends longitudinally along said one side of the panel member; and said flange means on a second one of said edge portions comprising third and fourth flange members extending longitudinally along the opposite side of said panel member, said third and fourth flange members being spaced to define between them a second recess which extends longitudinally along said opposing side of the panel member; said first flange member protruding outwardly of the plane of one of said external faces of the panel member to increase the structural strength of the element, said second flange member being adapted in use to be received within the second recess of an



identical structural element adjacent to said first edge portion of the panel member and said third flange member being adapted in use to be received within the first recess of a second identical structural element adjacent to said second edge portion of the panel member so that in use said first and second external faces of said panel member are coplanar with the first and second external faces respectively of the panel members of said adjacent structural elements.

7. A structural element as defined in claim 1, wherein one of said side members is transparent, and said hollow core incorporates means to collect solar heat energy transmitted through said transparent side member.

9. A structural element as defined in claim 7, wherein said means to collect solar heat energy includes means to convert said solar heat energy into electrical energy.

#### 4,341,918 HIGH VOLTAGE PLANAR MULTI-JUNCTION SOLAR CELL

John C. Evans, Jr., Ravenna; An-Ti Chai, N. Ridgeville, and Chandra P. Goradia, Cleveland, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

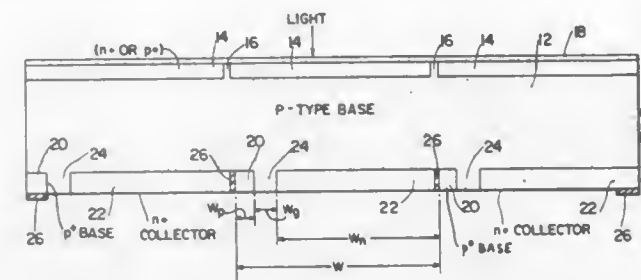
Filed Dec. 24, 1980, Ser. No. 219,677  
Int. Cl.<sup>3</sup> H01L 31/06

U.S. Cl. 136-249

12 Claims

1. A high voltage multijunction solar cell comprising:  
a generally planar semiconductor body of one conductivity type;  
a plurality of unit cells formed within at least one surface of said semiconductor body, each said unit cell comprising a pair of doped regions of opposite conductivity type formed in said at least one surface and separated by a gap region consisting essentially of an undiffused region of

said semiconductor body, each said gap region providing electrical isolation means between adjacent unit cells; and

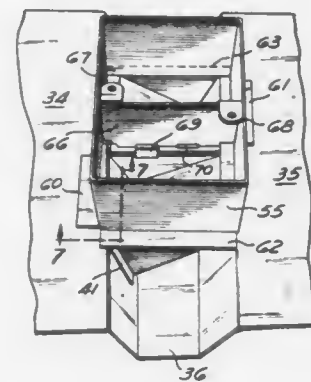


means for connecting said unit cells together so that the voltage outputs of the unit cells are additive.

#### 4,341,919 INSERT DEVICE John E. Kohaut, 10 Hepworth Pl., West Orange, N.J. 07052 Filed Jan. 23, 1981, Ser. No. 227,755 Int. Cl.<sup>3</sup> H02G 3/28

U.S. Cl. 174-48

27 Claims



1. An insert conduit unit for use in connection with raceway members, whereby elongated members may be passed through said raceway members and said insert conduit unit and connected to apparatus, said insert conduit unit comprising:

- a pair of insert conduit sections,
- each section having a pair of side wall members and an end wall member connecting the side wall members in spaced parallel relation and defining the bottom and one end of said section,
- each section being open at the other end thereof, and
- means connecting said sections contiguously, with their open ends in oppositely opening position, thereby aligning said oppositely disposed open ends thereof for passage of said elongated members therethrough and through said insert conduit unit, for connection to said apparatus, said means further so connecting said sections relatively rotatably.

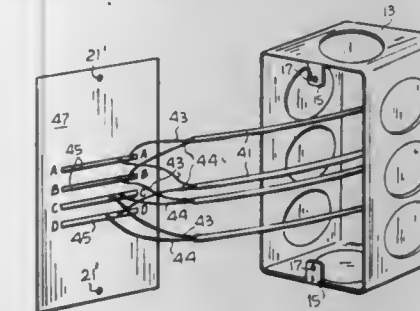
#### 4,341,920 CAMOUFLAGED BUSBAR-CARRYING COVER FOR A WALL-INCASED JUNCTION-BOX Arthur A. Reich, 1059 N. 6th St., Springfield, Ill. 62702 Filed Jan. 13, 1981, Ser. No. 224,755 Int. Cl.<sup>3</sup> H02G 5/08

U.S. Cl. 174-66

4 Claims

1. A camouflaged busbar-carrying cover for a standard in-wall-mounted junction box, comprising: a plate formed at least partly of insulating material and of a size to cover said junction box, a plurality of busbar-like elements fixed to the

rear surface of said plate so as to be insulated from each other, and means carried by the face of said plate to simulate the

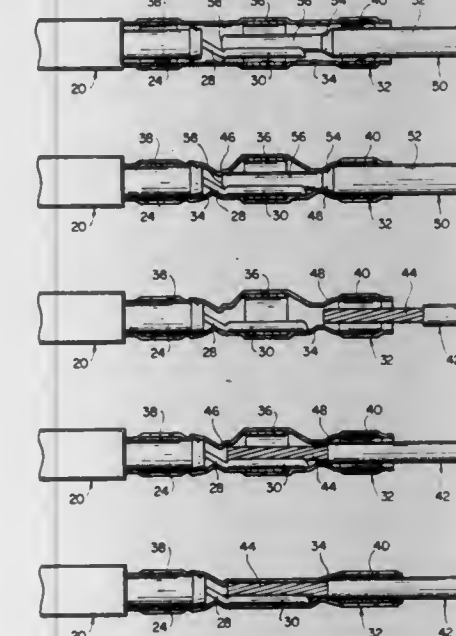


exposed portions of a conventional electrical device normally substantially incased behind a plate of this type.

#### 4,341,921 COMPOSITE CONNECTOR HAVING HEAT SHRINKABLE TERMINATOR Damon G. Simpson, Los Altos, Calif., assignor to Raychem Corporation, Menlo Park, Calif. Filed Mar. 27, 1980, Ser. No. 134,356 Int. Cl.<sup>3</sup> H01R 4/70

U.S. Cl. 174-84 R

10 Claims



1. A composite electrical connector, comprising:

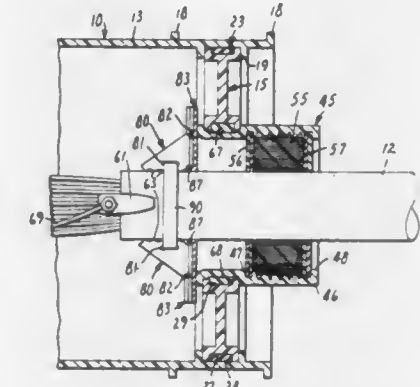
- a rigid connector body adapted for connection to a compatible connector and having at least one conductor termination portion, each said conductor termination portion comprising a terminal boss extending from said connector body and having a terminal protruding from the end thereof; and
- a heat-shrinkable terminator for each said conductor termination portion, each said terminator comprising a heat-shrinkable polymeric sleeve having inner, center, and outer sections in axially aligned abutting relationship; wherein
  - said inner section contains a first thermoplastic environmental seal ring located coaxially within said sleeve;
  - said center section contains a fluxed solder ring located coaxially within said sleeve;
  - said sleeve is positioned such that said inner section and said first seal ring lie about said terminal boss and said inner section is sealed to said terminal boss by said first seal ring, and said solder ring lies about said terminal;
- stop means to prevent overinsertion of a conductor entering said terminator through said outer and center sections, said stop means being integrally formed within

said sleeve and located between said end of said terminal boss and said solder ring; and  
(v) guide means to correctly align a conductor entering said terminator through said outer section with respect to said terminal, said guide means being integrally formed within said sleeve and located on that side of said solder ring remote from said first seal ring.

#### 4,341,922 STRAIN-RELIEF BRACE FOR CABLE SPLICE CASE Ronald G. Bossard, St. Paul, and Robert B. Goodin, Brooklyn Park, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn. Continuation-in-part of Ser. No. 58,451, Jul. 18, 1979, Pat. No. 4,262,167. This application Dec. 22, 1980, Ser. No. 218,968 Int. Cl.<sup>3</sup> H02G 15/113

U.S. Cl. 174-92

5 Claims



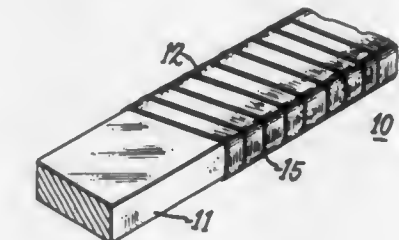
1. A device for relieving strain while a cable splice case which encloses a splice area in a communications cable of a communications system, said cable splice case having an outer shell, one end plate at each end of said case for receiving at least one cable collar, and one cable collar around each cable end, said device comprising

- a horizontal portion having a plurality of downwardly projecting tangs which grip the outer sheath of said communications cable,
- a vertical portion projecting upwardly from said horizontal portion for abutment against the interior end of a cable collar extending through said end plate of said cable splice case,
- reinforcing means between said horizontal portion and said vertical portion, said reinforcing means having receiving means for receiving an element for clamping said device to said communications cable.

#### 4,341,923 COATED ASBESTOS INSULATION TRANSFORMER WIRES Benjamin F. Allen, Rome, Ga., assignor to General Electric Company, New York, N.Y. Filed Oct. 14, 1980, Ser. No. 196,669 Int. Cl.<sup>3</sup> H01B 7/08

U.S. Cl. 174-117 R

2 Claims

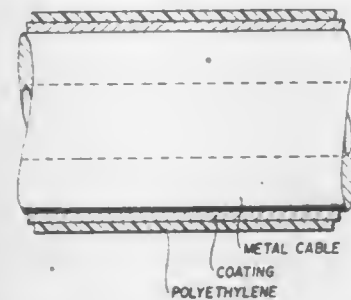


1. An insulated transformer wire comprising:  
a rectangular metal conductor; an



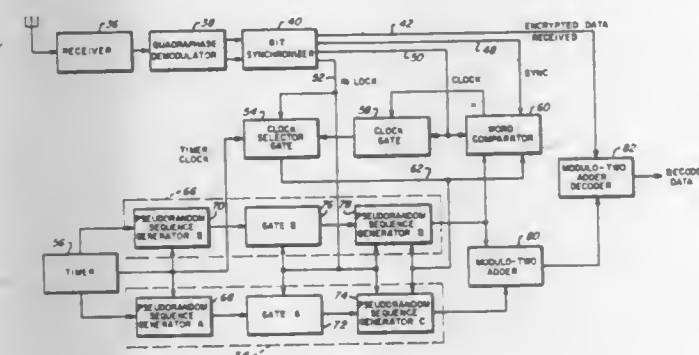
a continuous wrapping of insulating paper containing a plurality of permanent strips of a heat curable resin adhered to and extending above the surface of said paper for the protection of said paper and the lubricity of the wire during a coil winding process.

**4,341,924**  
**SUPERCONDUCTOR**  
William K. T. Gleim, 1250 NW, 120th St., Seattle, Wash. 98177  
Filed Feb. 4, 1980, Ser. No. 118,234  
Int. Cl.<sup>3</sup> H01B 7/34  
U.S. Cl. 174—15 S 9 Claims



1. A superconductive article comprising an electrically normal conductive metal cable having cobalt phthalocyanine and an alkali metal layer thereupon, the ratio of alkali metal atoms to cobalt phthalocyanine molecules in said layer being about 8:1.

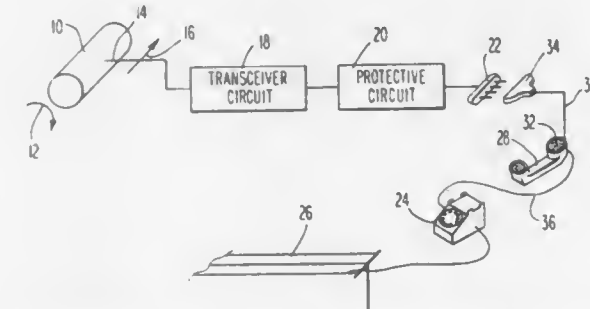
**4,341,925**  
**RANDOM DIGITAL ENCRYPTION SECURE COMMUNICATION SYSTEM**  
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and George D. Doland, Houston, Tex.  
Filed Apr. 28, 1978, Ser. No. 900,841  
Int. Cl.<sup>3</sup> H04K 1/00; H04L 9/00  
U.S. Cl. 178—22.17 2 Claims



1. A secure communication receiver for receiving and decoding an encrypted digital signal, comprising:  
(a) means for receiving said encrypted signal wherein said means for receiving comprises means for forming a bit sync signal indicating bit synchronization with bit transitions in said encrypted signal;  
(b) first generator means for forming a first local pseudorandom code wherein said first generator means comprises:  
(1) a first digital data pseudorandom sequence generator;  
(2) a second digital data pseudorandom sequence generator adapted to receive said bit sync signal and wherein said second sequence generator comprises means functioning as a shift register prior to receipt of said bit sync signal and functioning as a pseudorandom sequence generator thereafter; and  
(3) a gate connecting said first and said second digital data sequence generators for serial flow of digital bits from said first to said second generators, being adapted to receive said bit sync signal and wherein said gate com-

prises gate means responding to said bit sync signal to block flow of digital bits from said first to said second generator;  
(c) second generator means for forming a second local pseudorandom code;  
(d) means for forming a local product code from said first and said second local pseudorandom codes; and  
(e) decoder means for decoding said encrypted signal with said local product code.

**4,341,926**  
**APPARATUS FOR THE DIRECT CONNECTION OF ANCILLARY EQUIPMENT TO THE TELEPHONE NETWORK**  
Douglas R. Chester, Orlando, Fla., assignor to Exxon Research & Engineering Co., Florham Park, N.J.  
Filed May 8, 1980, Ser. No. 147,723  
Int. Cl.<sup>3</sup> H04M 11/00  
U.S. Cl. 179—2 C 11 Claims

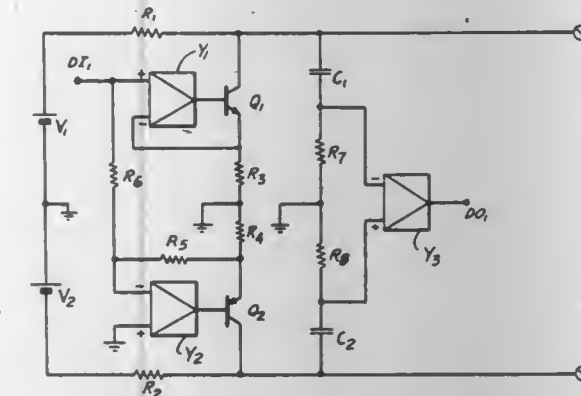


1. Apparatus for coupling facsimile means to a telephone network comprising:  
a telephone handset including transducer means and connective means connected to the telephone network, said telephone handset including a first flexible conductor means extending from said handset to said network;  
a second flexible conductor means connected to said transducer means and extending from said telephone handset;  
a third flexible conductor means connected to said connective means and extending from said telephone handset;  
and  
switch means for selectively connecting said facsimile means or said second flexible conductor means to said third flexible conductor means for coupling facsimile or voice signals to the telephone network, said switch means being controlled by operation of said facsimile means.

**4,341,927**  
**DATA TRANSMISSION APPARATUS**  
Tsuyoshi Shinoi, Yokohamashi, and Fumikazu Hamatani, Kawasaki, both of Japan, assignors to TIE/Communications, Inc., Shelton, Conn. and Nippon Tsushin Kogyo K.K., Kawasaki, Japan  
Continuation of Ser. No. 7,899, Jan. 30, 1979, abandoned. This application Aug. 11, 1980, Ser. No. 176,734  
Claims priority, application Japan, May 2, 1978, 53-52269  
Int. Cl.<sup>3</sup> H04L 25/00  
U.S. Cl. 179—2 DP 8 Claims

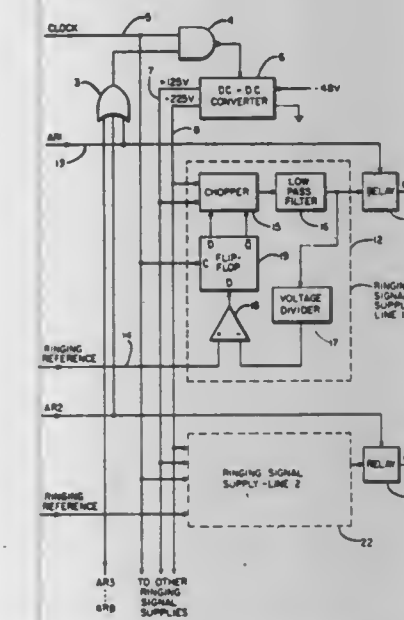
1. A data transmitting and receiving system, comprising:  
(1) data signal generating circuit means operative to generate data signals and having output terminals connected between first and second power-carrying conductors at a first power transmitting site, comprising:  
(a) a non-inverting voltage follower circuit means having first and second input terminals and first and second output terminals; and  
(b) an inverting voltage follower circuit means having first and second input terminals and first and second output terminals, said second output terminals being connected to a common ground and said first output

terminals being connected to said first and second power-carrying conductors at said site, said first input terminals being connected through input network means in said inverting voltage follower circuit means; and  
(2) data signal detection circuit means connected between said first and second power-carrying conductors at a



second power receiving site at which a variable load is connected across said power carrying conductors, and operative to receive each of said data signals as two inputs of equal magnitude and opposite polarity and, in response thereto, to generate data signals corresponding to the data signals generated by said data signal generating circuit means.

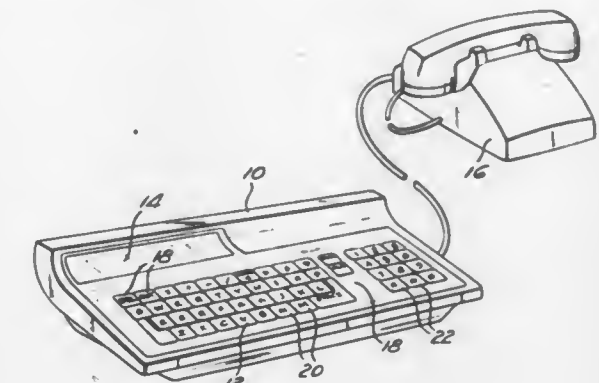
**4,341,928**  
**RINGING SIGNAL SUPPLY**  
Mark V. Stanson, Ottawa, and Garth I. Riley, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada  
Filed Jan. 28, 1981, Ser. No. 229,166  
Int. Cl.<sup>3</sup> H04M 5/12  
U.S. Cl. 179—51 AA 7 Claims



1. A ringing signal supply comprising:  
a low pass filter whose output constitutes the output of the ringing signal supply;  
switching means for selectively connecting either of two d.c. supply voltages to an input of said low pass filter;  
means for comparing a representation of a signal at said output with a reference ringing signal; and  
means, comprising a bistable device, responsive to the comparing means for controlling said switching means in dependence upon the comparison to produce a ringing signal, corresponding to said reference ringing signal, at said output;  
the switching means being responsive to each of the two states of the bistable device to connect a respective one of

the two d.c. supply voltages to the input of the low pass filter.

**4,341,929**  
**MEMORY ACCESSING SYSTEM**  
Richard D. Alexander, Santa Ana; John L. Christofferson, Vista, and William H. Ward, Jr., Santa Ana, all of Calif., assignors to Zelex, Inc., Santa Ana, Calif.  
Filed Mar. 20, 1980, Ser. No. 132,338  
Int. Cl.<sup>3</sup> H04M 1/274  
U.S. Cl. 179—90 B 21 Claims



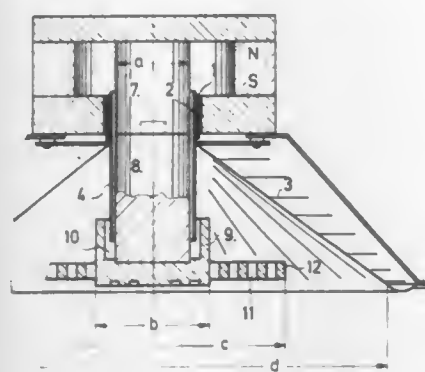
1. A method of addressing data in an electronic memory, said data including plural words, each including a first plurality of characters in a predetermined order, comprising:  
inputting a series of characters, one character at a time, to provide a second plurality of characters, said second plurality increasing by one each time an additional character is input;  
investigating said first plurality of characters in each of said plural words, by comparing, after each character of said series of second plurality of characters has been input, said series of second plurality of characters with all subsets of characters in said predetermined order in said first plurality of characters, each of said subsets equal in number of characters to said series of second plurality of characters; and  
providing an electrical signal output when said series of second plurality of characters input during said investigating step is found to uniquely match only one of said plural words.

**4,341,930**  
**ELECTRODYNAMIC LOUDSPEAKER**  
Günter Steinle, Mönchweiler, and Edwin Lüssle, Langenau, both of Fed. Rep. of Germany, assignors to Dual Gebrüder Steidl-Inger GmbH & Co., St. Georgen, Fed. Rep. of Germany  
Filed Mar. 14, 1980, Ser. No. 130,502  
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1979, 2909880  
Int. Cl.<sup>3</sup> H04R 9/06  
U.S. Cl. 179—115.5 R 3 Claims

1. An electrodynamic loudspeaker with a cone diaphragm and a body arranged concentrically within the cone diaphragm in order to influence the acoustic radiation, the cone diaphragm defining a cone opening, said body comprises a disc-shaped covering which is arranged in the vicinity of a plane of the edge of the loudspeaker, the covering having a diameter equal to about one-half of the diameter of the cone opening, said covering has:  
a central part of a size equal to approximately one and a half times the diameter of the magnet core of the moving coil, said central part forms a closed surface; and



an edge area, constituting the rest of said covering other than said said central part, being formed with axially



disposed passages, the cross-sections of said passages occupying approximately one-half of said edge area.

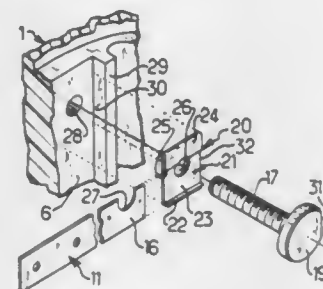
**4,341,931**  
**SWITCHING DEVICE COMPRISING AT LEAST ONE CONTACT MEMBER MOUNTED PIVOTALLY ABOUT AXIS PARALLEL TO THE AXIS OF A CASING, AGAINST THE ACTION OF A LEAF SPRING MOUNTED IN CURVED POSITION BETWEEN SAID CASING AND SAID MEMBER**

Marcel L. A. Paulve, Moulin des Serres, 83490 Le Muy, France  
Filed Dec. 5, 1980, Ser. No. 213,721

Claims priority, application France, Dec. 7, 1979, 79 30113;  
Oct. 16, 1980, 80 22143

Int. Cl.<sup>3</sup> H01H 19/62  
U.S. Cl. 200—30 A

18 Claims



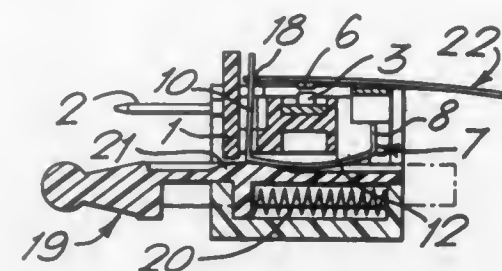
1. An improvement in an electric switching device, of the type comprising essentially at least one leaf spring mounted in curved position between the internal surface of a casing and the opposite surface of a member mounted pivotally about an axis parallel to the axis of the casing, under the action of an actuating member against the action of the said spring, said casing being provided with a stationary electric contact device and the movable member being provided with a contact element forming a movable contact intended to cooperate with one of the said stationary contacts, the said leaf spring being fixed at one end on the internal surface of the casing by the head of a screw with a tightening nut, wherein a stop member is interposed between the said spring end to be fixed and the said internal surface of the casing and provided with a recess of a shape complementary to the shape of the said spring end so as to lock the said spring end in the said recess, and stop means are provided integral with the said casing and comprising a flat stop surface perpendicular to the internal surface of the casing, upon which bears a planar lateral surface of the head.

**4,341,932**  
**ELECTRIC SWITCHES**  
Terence J. C. Foster, Buxton, England, assignor to Otter Controls Limited, England

Filed Oct. 3, 1980, Ser. No. 193,447  
Int. Cl.<sup>3</sup> H01H 21/40

U.S. Cl. 200—74

18 Claims



1. In an electric switch comprising a stationary contact and a movable contact, the movable contact being mounted on a carrying member for movement between a first and a second position, the switch further comprising actuator means including a stressed member of resilient sheet material movable with snap-action between two configurations to control the making and breaking of the contacts, the actuator means defining a plane, an improved latching means for restraining return movement of the contact carrying member after the actuator member has snap-acted in a first direction comprising:

a spring member having an arm extending generally transversely to the plane defined by the actuator means, said arm having a portion configured to engage the contact carrying member in the second position of the movable contact to prevent return of the movable contact to the first position, said spring member further comprising an operating portion integral with said arm and extending therefrom in a direction which is generally parallel to the plane defined by the actuator means, said spring member operating portion being at least partly movable in a direction generally transverse to the plane of the actuator means, movement of said spring member operating portion in said transverse direction imparting movement to said spring member arm in a direction generally parallel to the plane defined by said actuator means to cause disengagement of said engaging portion thereof from the contact carrying member whereby the movable switch contact may return to its first position.

**4,341,933**  
**METHOD AND APPARATUS FOR EXTINGUISHING AN ELECTRIC ARC IN A CIRCUIT BREAKER**

Jakob Keller, Fislisbach, Switzerland, assignor to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland  
Filed Dec. 20, 1979, Ser. No. 105,737

Claims priority, application Switzerland, Dec. 20, 1978, 12924/78

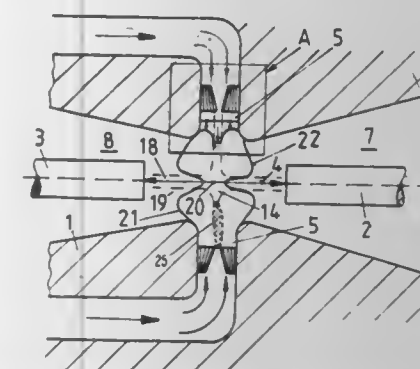
Int. Cl.<sup>3</sup> H01H 33/70

U.S. Cl. 200—148 R

15 Claims

1. A method for extinguishing the electric arc drawn between a pair of electrical contacts included within a gas-blast circuit breaker as the electrical contacts separate from each other along a common axis during the opening operation of the circuit breaker, said circuit breaker including a hollow body of electrically insulating material having an internal chamber in which said electrical contacts are situated, and having inlet canal means at least partially surrounding the region in which separation of the contacts occurs for introducing gaseous extinguishing medium into the chamber and into the space between the separating electrical contacts, said extinguishing medium being deflected by boundary surfaces defining said chamber so as to be subsequently exhausted from the chamber substantially parallel to said common axis, said method comprising the steps

conducting said extinguishing medium into said canal means as said contacts are separated;  
producing a variation in the flow resistance across the flow cross-section in said canal means by means of at least one flow resistance element such that the flow resistance in the vicinity of a theoretical stagnation streamline is less than the flow resistance at the inlet of the at least one flow



element and such that the difference between the local velocity at a point on the theoretical stagnation streamline and the mean velocity of the velocity profile development at said point exceeds the corresponding difference at the equivalent point in a circuit breaker without said flow resistance element by an amount which is at least ten percent of the mean velocity at said point.

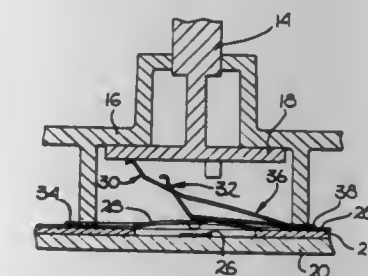
**4,341,934**  
**ACTUATOR FOR KEYBOARD SWITCHES**  
Michael Muller, Newport Beach, Calif., assignor to The Keyboard Company, Garden Grove, Calif.

Filed Nov. 21, 1980, Ser. No. 208,672

Int. Cl.<sup>3</sup> H01H 3/12

U.S. Cl. 200—159 A

11 Claims



1. An improved actuator assembly for use in a key, as part of a keyboard, for closing a first electrical contact and a second electrical contact in response to the depression of said key by a user, said improvement comprising:

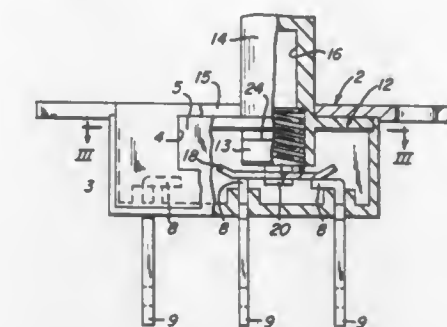
a first actuator member including a base portion and a free end;  
a second actuator member including a base portion and a free end;  
said first and second actuator members being integrally formed from the same sheet of metal and joined thereto at said base portion;  
said first actuator member being bent at its base such that prior to the assembly of said key the entire length of said first actuator member extends to a first side of the plane of said sheet of metal;  
said second actuator member being bent at its base and at a point intermediate said base and its free end such that prior to the assembly of said key only the free end of said second actuator member extends to said first side of the plane of said sheet of metal.

**4,341,935**  
**SLIDE SWITCH**  
Leo J. M. Josemans, Farmville, Va., assignor to Stackpole Components Company, Raleigh, N.C.

Filed Jul. 17, 1980, Ser. No. 169,665  
Int. Cl.<sup>3</sup> H01H 15/04

U.S. Cl. 200—252

2 Claims



1. A slide switch comprising a rectangular housing having a top provided with a longitudinal slot, a slide inside the housing movable lengthwise thereof and formed of insulating material, an actuating knob integral with the slide extending out through said slot, a movable metal contact below the slide, a pair of hooks extending downwardly from the slide at opposite sides of said housing, said movable contact being provided with a pair of openings through which said hooks extend with the lower ends of the hooks extending laterally beneath the contact for locking it to the slide, the slide above the contact being provided with a downwardly opening bore, a spring in said bore pressing said contact downwardly, the slide and knob and spring and movable contact forming a unitary subassembly, a pair of stationary electric contacts mounted in the bottom of said housing in positions to be bridged by said movable contact when the slide is in a predetermined position in the housing, said lower ends of the hooks being spaced apart laterally of the lengthwise path of movement of said slide and far enough to freely pass one of said stationary contacts when the slide moves said movable contact away from the adjacent stationary contact, and electric terminals joined to said stationary contacts and extending out of the housing.

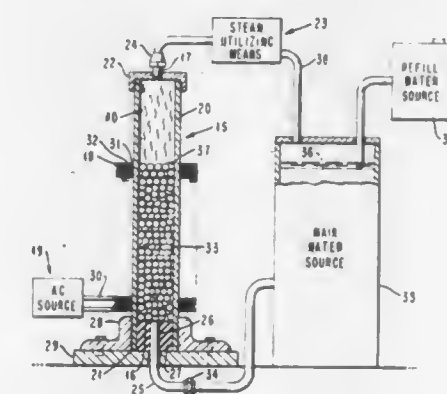
**4,341,936**  
**ELECTROMAGNETIC INDUCTION ENERGY CONVERTER**

George C. Virgin, North Rd., Tivoli, N.Y. 12583  
Filed Dec. 17, 1979, Ser. No. 104,367

Int. Cl.<sup>3</sup> H05B 5/08

U.S. Cl. 219—10.51

9 Claims



1. An electromagnetic induction energy converter adapted for connection to a source of alternating electrical current including:

a plurality of magnetizable cores, each including an inlet for a fluid to be heated, and an outlet;  
a source of fluid connected to each said inlet, effective to maintain the fluid in contact with each said magnetizable core without reaching said outlet; and



an induction heating coil surrounding each of said cores, all of said coils being connected together in an electrical network connectable to a source of alternating electrical current whereby each of said plurality of magnetizable cores is heated to produce vapor at said outlet.

#### 4,341,937 MICROWAVE OVEN COOKING PROGRESS INDICATOR

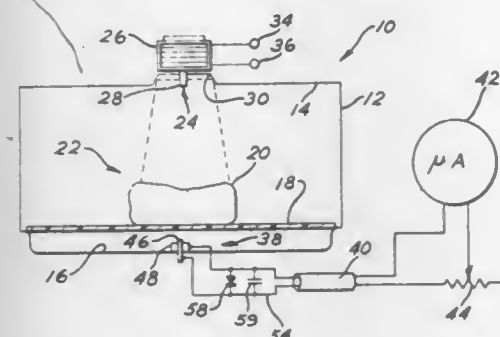
James E. Staats, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 28, 1980, Ser. No. 211,019

Int. Cl.<sup>3</sup> H05B 6/28

U.S. Cl. 219—10.55 M

6 Claims



1. In a microwave oven of the type having a cooking cavity bounded by conductive walls, and which employs electromagnetic field strength sensing within the cavity, the improvement comprising:

- a support for supporting a food load at an intermediate region within the cavity;
- a feed point along one wall of the cavity for introducing microwave energy into the cavity in a direction generally away from the one wall and toward said intermediate region where the food is supported within the cavity; and
- an electromagnetic field strength sensor located along a wall of the cavity opposite said feed point such that the intermediate region where the food load is supported within the cavity lies substantially directly between said feed point and said field strength sensor; whereby sensed electromagnetic field strength provides a sensitive measure of the amount of microwave energy not absorbed by the food load, but which rather flows around and through the food load.

#### 4,341,938 METHOD AND APPARATUS FOR SEAM-WELDING STEEL PIPES

Hiroyoshi Matsubara; Kenji Takeshige, both of Fukuyama; Tatsumi Osuka, Tokyo; Takashi Nagamine; Osamu Hirano, both of Fukuyama; Jinkichi Tanaka, Yokohama; Itaru Watanabe, Yokohama; and Motoaki Suzuki, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 24,697, Mar. 28, 1979, abandoned. This application Dec. 12, 1980, Ser. No. 215,757

Int. Cl.<sup>3</sup> B23K 9/02

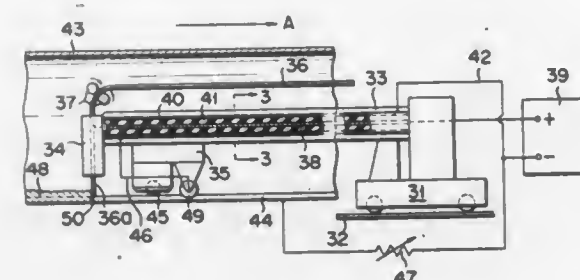
U.S. Cl. 219—61

13 Claims

1. In a steel pipe seam-welding method comprising conducting an electrode wire through a welding head; causing an end of the electrode wire to face a longitudinal groove of a steel pipe which is to be welded together; setting the welding head above said groove; and supplying a first direct electric current to the welding head from a terminal of a power source through an elongated electrically insulative covered conductor extending lengthwise of the steel pipe, thereby welding said groove, said first direct electric current creating a first magnetic field around said elongated conductor, the improvement comprising:

surrounding said elongated conductor with an elongated

conductive enclosure tube which is substantially coaxial with said elongated conductor, said enclosure tube and said elongated conductor being located within said steel pipe and extending from the vicinity of said welding head and being substantially coaxial with said steel pipe; electrically connecting an end portion of said enclosure tube in the vicinity of said welding head to a portion of said steel pipe located in the vicinity of said welding head; supplying a second direct electric current from another terminal of said power source through said elongated enclosure tube in a direction opposite to a direction in which the first direct electric current passes through said elongated conductor to create a second magnetic field around said elongated enclosure tube;



supplying a direct electric current to a portion of said steel pipe remote from said welding head from said another terminal of said power source to conduct direct electric current through said steel pipe in said direction opposite to that in which the first direct current passes through said elongated conductor; and

adjustably controlling the magnitudes of said direct electric currents flowing through said elongated enclosure tube and said steel pipe to thereby control said second magnetic field so that it substantially cancels, at least at said steel pipe, said first magnetic field which has lines of force in a direction opposite to said second magnetic field.

#### 4,341,939 WIRE ELECTRODE FOR CUTTING AN ELECTRODE WORKPIECE BY ELECTRICAL DISCHARGES

Jean-Paul Briffod, Monnetier-Mornex; Roland Martin, Digny en Vuache, both of France; Jean Pfau, Collonge-Bellerive, Switzerland; Bernard Bommeli, Dully, Switzerland, and Danielle Schnellmann, Geneva, Switzerland, assignors to Ateliers des Charmilles, S.A., Geneva, Switzerland

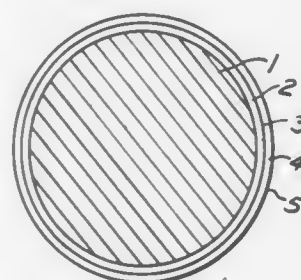
Filed Sep. 22, 1980, Ser. No. 189,675

Claims priority, application Switzerland, Oct. 11, 1979, 9170/79; Mar. 25, 1980, 2318/80

Int. Cl.<sup>3</sup> B23P 1/12

U.S. Cl. 219—69 W

18 Claims



1. An electrode wire for cutting a workpiece by electrical discharges, said electrode wire comprising a core of electrically conductive first material and a coating on said core of a second material having a vaporization and melting temperature lower than that of the first material, said coating comprising at least one layer of said second material provided with a superficial thin film of a non-metallic third material, said thin film having a thickness such as to display semi-conductor

electrical characteristics when said film is placed in contact with a surface of a workpiece and when a voltage of a few volts is applied across said wire and said workpiece and such as to become electrically conductive when the voltage applied thereacross is comprised between said few volts and about 100 volts.

#### 4,341,940 MONITORING RESISTANCE WELDING

Jacques Defourny, St. Nicolas, Belgium, assignor to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

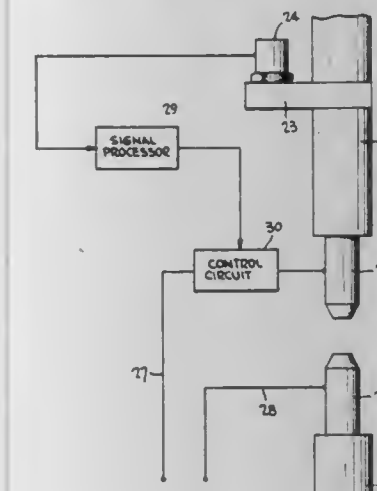
Filed Jul. 7, 1980, Ser. No. 166,617

Claims priority, application Belgium, Jul. 6, 1979, 877559

Int. Cl.<sup>3</sup> B23K 11/24

U.S. Cl. 219—117.1

9 Claims



1. A method of monitoring the operation of a resistance welding machine having two electrode supports and two electrodes mounted on the respective supports, means for supplying electrical power to the electrodes, and means for applying pressure along a given axis via the supports and the electrodes to members being welded together between the electrodes, the method comprising the steps of making a series of welds, detecting—during each period in which electrical power is supplied to the electrodes—whether the weld is subject to flash, determining the frequency with which flash occurs in the series of welds, determining the quality of the operation of the machine as a function of the frequency of occurrence of flash, and adjusting the electrical power in such a way as to maintain the frequency of occurrence of flash within given limits, by increasing the power if the frequency is below a given lower limit and by decreasing the power if the frequency is above a given upper limit.

#### 4,341,941 METHOD OF OPERATING A PLASMA GENERATING APPARATUS

Haruo Tateno, Kiyose, Japan, assignor to Rikagaku Kenkyusho, Wako, Japan

Filed Feb. 26, 1980, Ser. No. 124,938

Claims priority, application Japan, Mar. 1, 1979, 54-23629; Mar. 1, 1979, 54-23630

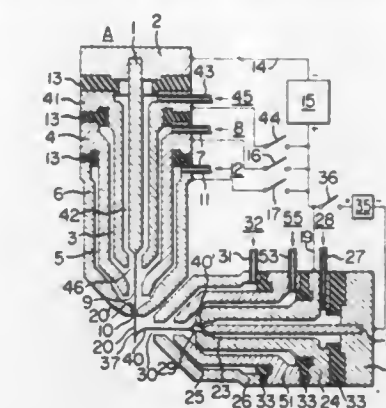
Int. Cl.<sup>3</sup> B23K 9/00

U.S. Cl. 219—121 PU

1 Claim

1. A method of operating a single plasma torch generating apparatus which comprises determining the thermal loss at the outermost bushing by operating said torch structure with a gas flowing only in the outside channel thereby causing a "hair-pin arc" to appear from the cathode rod to a workpiece; relocating the workpiece to such a position that no "hair-pin arc" appears; applying a magnetic force perpendicular to the space between the throttle of the outermost bushing and the throttle of the inside bushing so as to cause a thermal loss equal to the thermal loss caused by the "hair-pin" arc; measuring the thermal loss

while increasing the flow rate of a first gas in the inside bushing and accordingly decreasing the flow rate of a second gas in the outside bushing, plotting the thermal loss to the inside gas flow rate curve to determine the coordinate of the valley point on the curve; and operating said torch structure by adjusting and



maintaining the flow rate of the first gas equal to or larger than the coordinate of the valley point and the flow rate of the second gas equal to the remainder when subtracting the flow rate of the first gas from the fixed total flow rate of first and second gases, so as to maintain the electric arc of the torch unit in alignment with the center axis of said torch unit.

#### 4,341,942 METHOD OF BONDING WIRES TO PASSIVATED CHIP MICROCIRCUIT CONDUCTORS

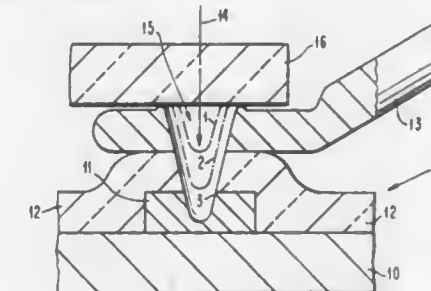
Praveen Chaudhari, Briarcliff Manor; John B. Kiessling; David J. Perlman, both of Wappingers Falls; Eugene E. Tynan, Mahopac Falls, and Robert J. von Gutfeld, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 956,158, Oct. 31, 1978. This application Jun. 6, 1980, Ser. No. 157,628

Int. Cl.<sup>3</sup> B23K 27/00

U.S. Cl. 219—121 LD

12 Claims

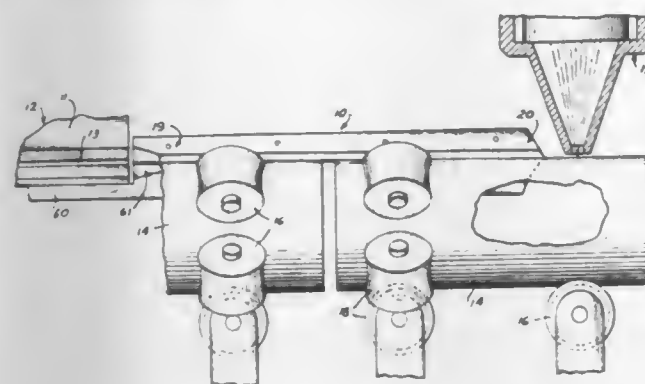


1. A method of bonding a separate metallic wire to a metallic conductor deposited upon a substrate and covered by an insulating layer comprising:

- positioning said wire upon said insulating layer above said conductor and mechanically retaining said wire in intimate contact with said insulating layer during a subsequent drilling step,
- directing an initial beam of predetermined energy at a point on said wire to drill a hole through said wire and said insulating layer to said conductor, and
- subsequently directing a subsequent beam of less energy than said initial beam upon the periphery of said hole in said wire only to melt metal from said wire down into said hole and to bond said wire to said conductor, whereby a low electrical resistance bond is provided between said wire and said conductor, said bond having enhanced mechanical strength and reduced electrical resistance as the result of melting metal down into said hole.

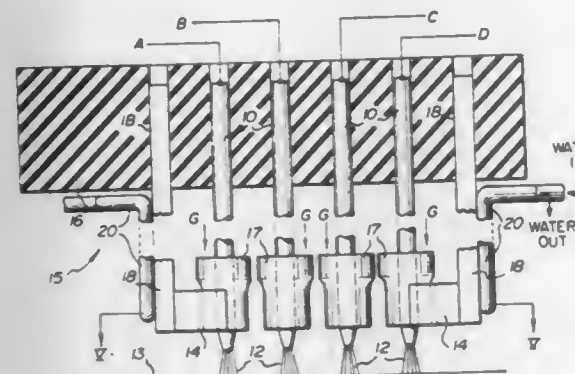


**4,341,943**  
**METHOD OF BUTT WELDING SHEET METAL**  
 Carl J. Nilsen, Hopatcong, N.J., assignor to SWS Incorporated, Landing, N.J.  
 Division of Ser. No. 88,197, Oct. 23, 1979, Pat. No. 4,272,004.  
 This application Feb. 13, 1981, Ser. No. 234,081  
 Int. Cl.<sup>3</sup> B23K 27/00  
 U.S. Cl. 219—121 LD 4 Claims



1. The method of butt welding opposed edges of sheet material, in a continuous process, comprising the steps of, urging said edges into vertically spaced overlapping relationship with each other under pressure, causing said edges to converge toward each other while in said overlapping relationship as said edges are being continuously advanced in a longitudinal direction, spreading said edges out of overlapping relationship against the urging pressure so that said edges intersect each other in intimate abutting engagement at a point of convergence and welding said edges which are in intimate engagement at the point of convergence to form a butt welded seam.

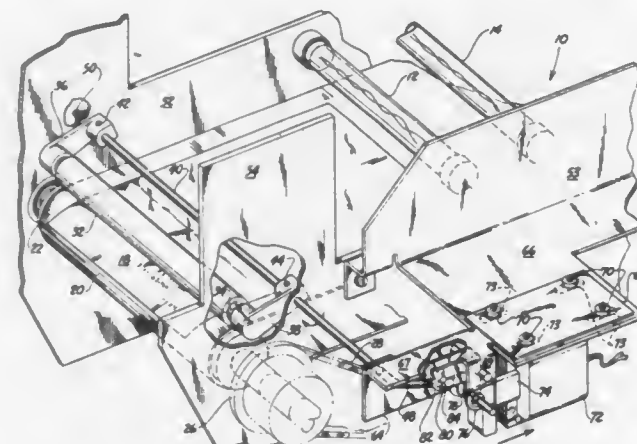
**4,341,944**  
**REDUCTION OF ARC BLOW IN MULTI-ELECTRODE WELDING**  
 Nixon B. Breen, Kingston, Canada, assignor to Alcan Research and Development Limited, Montreal, Canada  
 Filed Dec. 8, 1978, Ser. No. 967,847  
 Claims priority, application Canada, Dec. 21, 1977, 293606  
 Int. Cl.<sup>3</sup> B23K 9/08  
 U.S. Cl. 219—123 17 Claims



1. A multi-electrode welding gun for arc welding a metallic workpiece comprising  
 (a) a plurality of spaced welding electrodes, each producing an independent arc and having an arc-producing end, arranged in a row with a first one of said electrodes at one end of the row and a second one of said electrodes at the other end of the row;  
 (b) housing means for holding said row of electrodes; and  
 (c) a pair of magnetically permeable shunts respectively disposed adjacent the arc-producing ends of said first and second electrodes for reducing inward deviation of the arcs at the ends of said row.  
 16. A method of reducing arc blow in the multi-electrode welding of a metallic workpiece, in which a plurality of welding arcs are produced by a welding gun having a plurality of closely spaced electrodes arranged in a row with their longitu-

dinal axes generally parallel, which method comprises locating a shunt made of magnetically permeable material adjacent the arc-producing tip of the electrode at each end of the row in such a position that inward deviation of the arcs at each end of the row caused by magnetic attraction between the arcs is reduced or eliminated.

**4,341,945**  
**FIRE EXTINGUISHING DEVICE FOR ELECTROPHOTOCOPIER**  
 Frederick J. Pelda, White Plains, N.Y., and Eugene A. Wirth, Huntington, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.  
 Filed Dec. 31, 1979, Ser. No. 108,607  
 Int. Cl.<sup>3</sup> H05B 1/02  
 U.S. Cl. 219—216 6 Claims



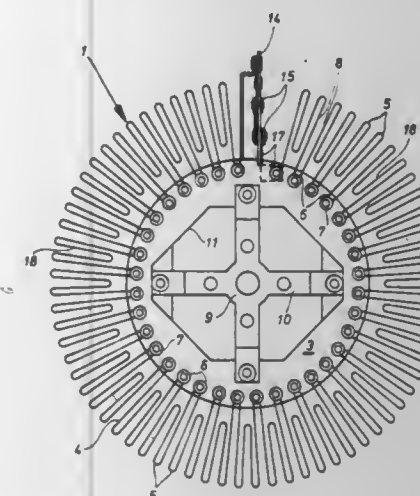
1. A device for extinguishing fires on a copy paper exiting a heat fusing apparatus in an electrophotocopying machine, comprising:  
 a heat resistant roller movably mounted above and in contact with a copy paper conveyor associated with and located downstream of the heat fusing apparatus;  
 means for lifting said roller out of contact with said conveyor when the print cycle for said electrophotocopying machine is energized;  
 means for maintaining said roller out of contact with said conveyor during the copying operation; and  
 means for moving said roller into rolling contact with said conveyor when a copy paper fails to clear the fusing apparatus within a predetermined period of time, whereby any fire of the copy paper is extinguished.

**4,341,946**  
**ELECTRICAL RESISTANCE HEATING ELEMENT**  
 Helmut Ohnmacht, and Klaus Meywald, both of Kandel, Fed. Rep. of Germany, assignors to Fritz Eichenauer GmbH & Co. KG, Kandel, Fed. Rep. of Germany  
 Filed Nov. 3, 1980, Ser. No. 203,483  
 Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944132  
 Int. Cl.<sup>3</sup> H05B 3/06; F24H 3/00  
 U.S. Cl. 219—375 8 Claims

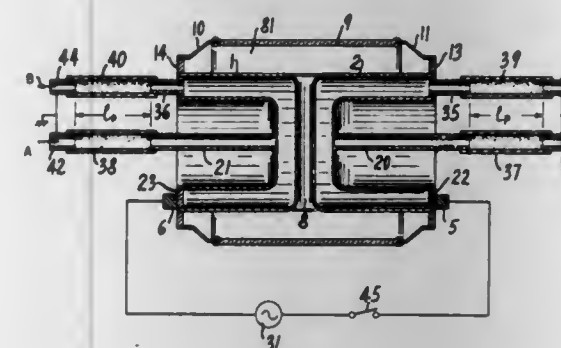
1. An electrical resistance heating element, for use in heating flowing gaseous media, comprising a heating conductor support of insulating material having a boundary edge with an essentially circular contour and a heating conductor of resistance wire which is sinuously coiled to form loops having inner and outer loop ends and loop legs, the loops being circularly arranged about said heating conductor support substantially in a plane, at least some of the inner loop ends being directly secured to the heating conductor support in the vicinity of said boundary edge, the heating conductor support being con-

structed as a flat plate substantially co-planar with the loops of the heating conductor, and the outer loop ends remote from

insulative fluid conduit sections to ground to a value less than a certain predetermined current value.

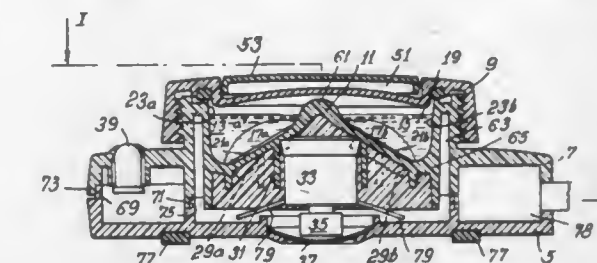


**4,341,947**  
**GLOW DISCHARGE HEATING APPARATUS**  
 Hirotugu Komura; Shigeo Ueguri, and Youichiro Tabata, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan  
 Division of Ser. No. 6,780, Jan. 26, 1979. This application May 22, 1980, Ser. No. 152,507  
 Claims priority, application Japan, Feb. 7, 1978, 53-13090  
 Int. Cl.<sup>3</sup> B23K 9/32; H05B 7/18  
 U.S. Cl. 219—383 15 Claims



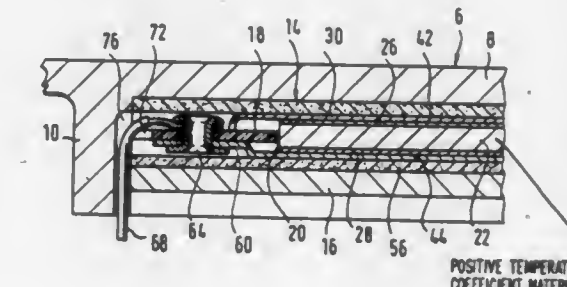
12. A glow discharge heating apparatus, comprising:  
 a pair of metallic discharge electrodes electrically biased in use to develop a glow discharge therebetween, one of said discharge electrodes operating as a cathode and defining a fluid conduit having an inlet and an outlet for flowing a fluid therethrough and for heating the fluid when said pair of discharge electrodes are electrically biased to develop a glow discharge therebetween;  
 a pair of electrically insulative fluid conduit sections each connected to a respective one of the cathode discharge electrode inlet and outlet for defining electrically insulative extensions of the fluid conduit through said cathode discharge electrode;  
 metallic fluid conduit sections connected to respective end portions of said electrically insulative fluid conduit sections remote from said cathode discharge electrode for defining electrically conductive extension of the fluid conduit through said cathode electrode and said electrically insulative fluid conduit sections;  
 means for grounding said metallic fluid conduit sections to prevent electrical shock upon contact with said metallic fluid conduit sections; and  
 wherein said pair of electrically insulative fluid conduit sections are sufficiently long to reduce a leakage current from said discharge electrodes through said electrically

**4,341,948**  
**APPARATUS WITH BUILT-IN HEATING DEVICE FOR DISINFECTING CONTACT LENSES**  
 Staffan Sundström, and Tore Herlestad, both of Helsingborg, Sweden, assignors to AB Leo, Helsingborg, Sweden  
 Filed Feb. 2, 1981, Ser. No. 230,704  
 Claims priority, application Sweden, Feb. 4, 1980, 80009250  
 Int. Cl.<sup>3</sup> F27D 11/02  
 U.S. Cl. 219—521 10 Claims



1. Apparatus for disinfecting contact lenses by heating, comprising a reservoir adapted for holding a liquid and having a tight lid together with a heating device for heating of liquid therein, wherein the reservoir comprises a raised middle part or bridge for dividing said reservoir into two separate chambers or wells, said raised middle part being equipped with at least one hollow recess at its top, which enables liquid to communicate between the chambers in such a way that spillage of liquid is avoided when a lens is removed from either of said chambers, said raised middle part having side-walls, and having a built-in heating device for heating of the liquid in said chambers, said heating device being located adjacent to each of said side-walls for heating of liquid in each of said chambers of said reservoir, said heating device being of the electric resistance type.

**4,341,949**  
**ELECTRICAL HEATING APPARATUS WITH A HEATING ELEMENT OF PTC MATERIAL**  
 Herbert Steiner, Traunstein, and Johann Magg, St. Georgen, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany  
 Filed Aug. 6, 1980, Ser. No. 175,637  
 Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2932026  
 Int. Cl.<sup>3</sup> H05B 3/12, 3/36  
 U.S. Cl. 219—553 13 Claims



1. Electrical heating apparatus, comprising a frame formed of insulating material having an opening formed therethrough, a heating element formed of positive temperature coefficient material having two opposing outer surfaces and being disposed in said opening formed in said frame, an electrically-conducting current supply contact layer disposed on each of said two opposing outer surfaces of said heating element, an electrically conducting current input electrode plate formed of yieldable material and being disposed in electrical contact on the



outer surface of each of said contact layers, said electrode plates being anchored in said frame forming an integral structural unit enclosing said heating element, and a heat conducting plate formed of electrically insulating material disposed on each of said electrode plates receiving heat transferred through said contact layers.

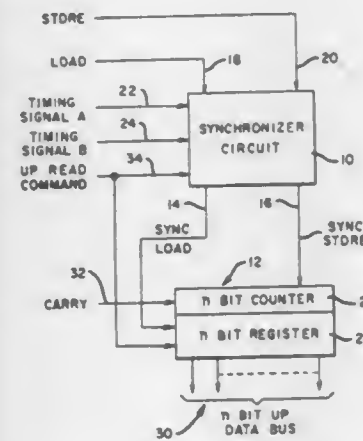
**4,341,950**  
**METHOD AND CIRCUITRY FOR SYNCHRONIZING THE READ AND UPDATE FUNCTIONS OF A TIMER/COUNTER CIRCUIT**

Ronald H. Kyles, Colorado Springs, and Richard B. Woodard, Elbert, both of Colo., assignors to NCR Corporation, Dayton, Ohio

Filed Jan. 24, 1980, Ser. No. 114,925  
Int. Cl.<sup>3</sup> H03K 21/30

U.S. Cl. 235—92 EA

8 Claims



1. A synchronizer circuit for controlling the counting operation of an associated timer/counter circuit which is suitable for use in a microcomputer system to perform various timing and counting functions, said synchronizer circuit comprising:

- a load input for receiving load pulses from an external source;
- a load output;
- a read input for receiving read commands from an external source;
- a clock input for receiving a clock signal from an external source, said clock signal being arranged to periodically oscillate between a first logic state and a second logic state and to be disabled for a set period of time prior to and after a load pulse; and

search means for monitoring said read input for receipt of a read command, said search means being operable to produce an output pulse at said load output within a first time interval after receipt of a load pulse if a read command was not received at said read input during the period preceding said load pulse when said clock signal was disabled and to produce an output pulse at said load output within a second time interval after receipt of a load pulse if a read command was received at said read input during the period preceding said load pulse when said clock signal was disabled.

**4,341,951**  
**ELECTRONIC FUNDS TRANSFER AND VOUCHER ISSUE SYSTEM**

William M. Benton, Rte. 1, Box 191, Middleburg, Va. 22117  
Filed Jul. 2, 1980, Ser. No. 166,689

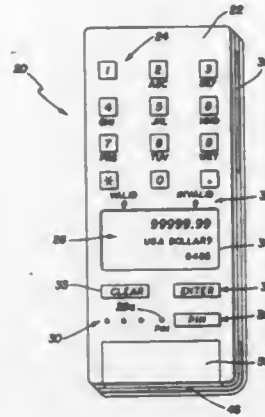
Int. Cl.<sup>3</sup> G06F 15/30

U.S. Cl. 235—379

13 Claims

1. An apparatus for transferring funds data in lieu of cash, comprising a portable unit to be carried by a vendee, said portable unit including a keyboard for manually entering transaction and identification data, terminal means accessible only by an authorized institution for receiving an initial funds balance; means coupled to said terminal means for storing a funds balance, means responsive to said keyboard for storing a re-

quested transaction amount, means for storing vendee identification data issued by said institution, means responsive to said keyboard for storing vendee entered identification data, means for comparing said stored identification data with said keyboard entered identification data and for generating a first signal in response to a positive comparison, means for comparing said stored funds balance with said requested transaction amount and for generating a second signal if said funds balance is at least as large as said requested transaction amount, an inlet for receiving a voucher issued by a vendor, manually actuated



printing roll means within said inlet for printing encoded identification data onto said voucher to verify the transaction, means for maintaining said printing roll means normally out of contact with said voucher within said inlet, means for manually moving said printing roll means into contact with said voucher, means responsive to said manual means and to said first and second signals for updating said stored funds balance by said requested transaction amount, and display means for displaying said stored funds balance and said requested transaction amount.

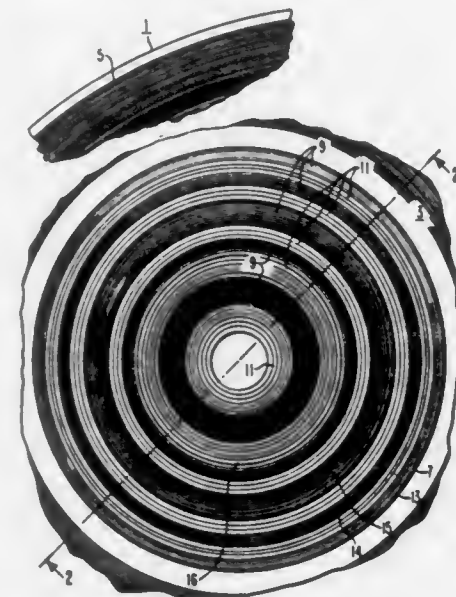
**4,341,952**  
**VARIABLE PITCH GROOVED LABEL FOR VIDEO DISC**  
Gunter John, Indianapolis, Ind.; Philip M. Heyman, Trenton, and David P. Bortfeld, Kendall Park, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,855

Int. Cl.<sup>3</sup> G06K 19/06; G11B 7/24, 23/40

U.S. Cl. 235—487

6 Claims



- 1. A disc record for storing information signals of a given program, said disc record comprising:
  - a first annular area on a surface of said disc having an information track therein comprising elements corresponding to the information signals of said given program stored on said disc record; and

a second annular area on said surface of said disc having a continuous spiral groove formed therein, said second annular area comprising a first plurality of surface regions and a second plurality of surface regions; the portions of said continuous spiral groove formed in said first plurality of surface regions having a first spiral pitch, said spiral groove of said first pitch deflecting light incident thereon in a first direction; the portions of said continuous spiral groove formed in said second plurality of surface regions having a second spiral pitch, said spiral grooves of said second pitch deflecting light incident thereon substantially away from said first direction; the arrangement of said first surface regions with respect to the arrangement of said second surface regions being representative of the identity of the information signals of said given program stored in said first annular area.

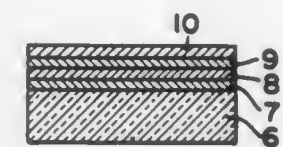
**4,341,954**  
**PHOTO-ELECTRIC CONVERTING APPARATUS**  
Yoshihiko Mizushima, Fuchu; Akitsugu Takeda, Tokyo; Kazumi Komiya, Yokosuka; Masahiro Sakane, Hachioji; Toshio Ogino, Higashiyamato; Hideo Itoh, Tokyo, and Masayoshi Oka, Kashiwa, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp. and Origin Electric Co., Ltd., both of Tokyo, Japan

Filed Feb. 6, 1980, Ser. No. 118,907

Int. Cl.<sup>3</sup> H01J 40/14

U.S. Cl. 250—211 J

8 Claims



1. A photo-electric converting apparatus comprising a substrate, a plurality of photo-electric converting elements arranged on said substrate said photo-electric converting elements including electrode layers at least one of which is transparent and a semiconductor film layer interposed between said electrode layers and having a rectifying contact or junction with the electrode layers, capacitive means arranged in parallel with said photoelectric converting elements, respectively, to form circuits for storing electric signals corresponding to light information, and a read-out arranged to include the above capacitive means in common with said respective circuits, with light under such condition that substantially no voltage is applied across the electrode layers of said photoelectric converting elements and said respective capacitive means are electrically charged with the photo-current produced at the outputs of the respective photo-electric converting elements under the action of the electromotive force induced at said rectifying contact or junction of the respective photoelectric converting elements, with its higher energy level side being positive and lower side being negative, owing to the light incident thereupon, so that the charges stored in said capacitive means are successively and periodically discharged under the action of scanning pulses to said read-out, whereby light signals are converted into periodic timed pulse signals.

**4,341,955**  
**IMAGE INTENSIFIER OF THE PROXIMITY-FOCUS TYPE**

Hendrik Mulder, and Johannes J. Houtkamp, both of Delft, Netherlands, assignors to N.V. Optische Industrie "De Oude Delft", Netherlands

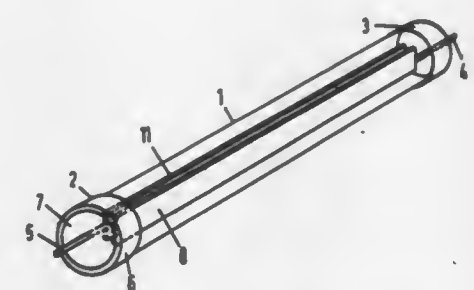
Filed Jan. 30, 1980, Ser. No. 116,973

Claims priority, application Netherlands, Feb. 2, 1979, 7900878

Int. Cl.<sup>3</sup> H01J 31/50

U.S. Cl. 250—213 VT

18 Claims



1. A focus detecting system for detecting focusing state of an image forming optical system relative to an object, said optical system having a predetermined focal plane, and said focus detecting system comprising:

- (A) means for detecting imaging states of an object image formed by said optical system at first and second positions optically equivalent to before and behind said focal plane of the optical system and at a third position optically equivalent to said focal plane, said detecting means producing first, second and third signals corresponding to the imaging states of the object image at said first, second and third positions, respectively; and
- (B) means for deciding the focusing state of said optical system relative to the object on the basis of said first, second and third signals produced by said detecting means, said deciding means being arranged to form a fourth signal on the basis of said first and second signals and to decide the focusing state by using the fourth signal together with said third signal.



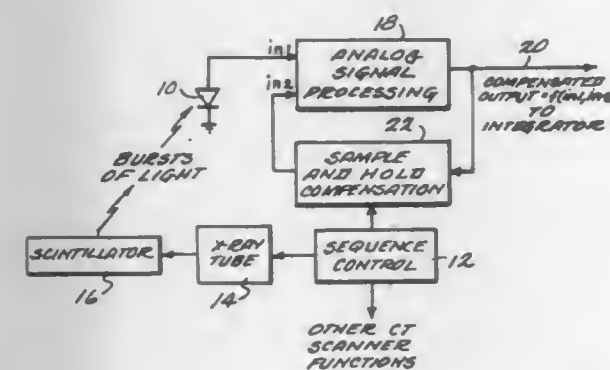
a vacuum prevails and wherein during use, there is provided an electrical field between said photocathode surface and said anode screen surface, characterized in that said photocathode surface and said anode screen surface extend substantially parallel to said longitudinal axis of said hollow body and are spaced apart a distance insufficient to require focussing electrodes.

**4,341,956**  
**APPARATUS AND METHOD FOR COMPENSATING THE DARK CURRENT PHOTOELECTRIC TRANSDUCERS**

Ronald F. Bax, Columbia, Md., assignor to Pfizer, Inc., New York, N.Y.

Continuation of Ser. No. 78,396, Sep. 24, 1979, abandoned. This application Mar. 3, 1981, Ser. No. 240,242

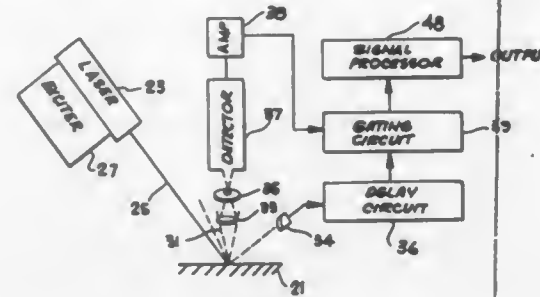
Int. Cl.<sup>3</sup> G01J 3/50  
U.S. Cl. 250—214 C 34 Claims



1. Apparatus for reducing errors in photon measurements made with a photoelectric transducer having a variable offset component in its output electrical signal and which transducer is sometimes exposed to a source of photons, said apparatus comprising:

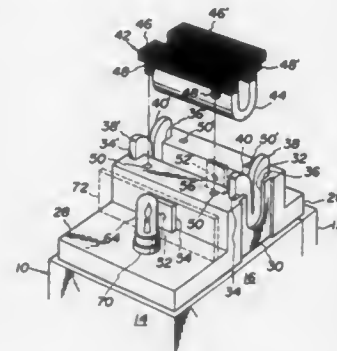
- a signal amplifier circuit including a non-linear amplifier and having an input connected to receive the electrical output signal of said photoelectric transducer, including said variable offset component and to provide a corresponding output, and
  - a sample-and-hold feedback circuit connected to receive the output of said signal amplifier circuit and to sample same only during periods when said transducer is not exposed to said source of photons and to thereafter provide and maintain a respectively corresponding output feedback signal during periods when the transducer is exposed to the source of photons,
- said sample-and-hold feedback circuit having its output signal connected to control said signal amplifier circuit such that its output is compensated for said variable offset component.

**4,341,957**  
**FLUORESCENT ANTIBODY COMPOSITION FOR IMMUNOFUOROMETRIC ASSAY**  
Irwin Wieder, Los Altos, Calif., assignor to Analytical Radiation Corporation, Los Altos, Calif.  
Filed Nov. 26, 1975, Ser. No. 635,411  
Int. Cl.<sup>3</sup> G01N 21/64; G09K 3/00  
U.S. Cl. 250—461.2 22 Claims



1. A fluorescent antibody comprising, an antibody specific to an antigen to be detected, and a fluorescent rare-earth chelate conjugated with said antibody, said rare-earth chelate consisting of a rare-earth ion coordinated by chelating ligands.

**4,341,958**  
**YARN-BREAK/YARN-STOP DETECTING DEVICE**  
Shiuji Ohsawa, No. 10-2, 2-chome, Tsutsumi-cho, Kiryu City, Gumma Prefecture, Japan  
Filed Feb. 20, 1980, Ser. No. 123,059  
Claims priority, application Japan, Aug. 21, 1979, 54-114031  
Int. Cl.<sup>3</sup> G01N 21/86  
U.S. Cl. 250—561 27 Claims



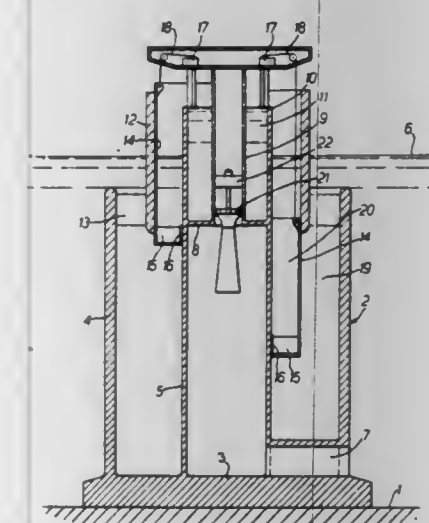
1. A yarn-break/yarn-stop detecting device having a lateral direction parallel with the direction in which a yarn is to travel through the detecting device and a front-and-rear direction perpendicular to said lateral direction, comprising in combination:

- a casing structure;
- a yarn passage assembly fast on said casing structure and formed with a gap longitudinally extending in a lateral direction of the detecting device, the yarn passage assembly including a transparent portion received in said gap;
- a light emitter element fixedly positioned with respect to said yarn passage assembly and arranged to project a substantially constant beam of light through said transparent portion of the yarn passage assembly in a predetermined front-and-rear direction of the detecting device when the light emitter element is electrically energized,
- a photoelectric transducer element fixedly positioned with respect to said yarn passage assembly and located substantially in alignment with said light emitter element across said transparent portion of the yarn passage assembly in said predetermined front-and-rear direction for being operative to produce an electric current when irradiated with the beam of light emitter element and incident on the transducer element through said transparent portion of the yarn passage assembly,

output delivery means operative to produce an output signal when actuated electrically, and a control circuit electrically intervening between said photoelectric transducer element and said output delivery means for actuating the output delivery means when the current produced by the transducer element is in a predetermined condition,

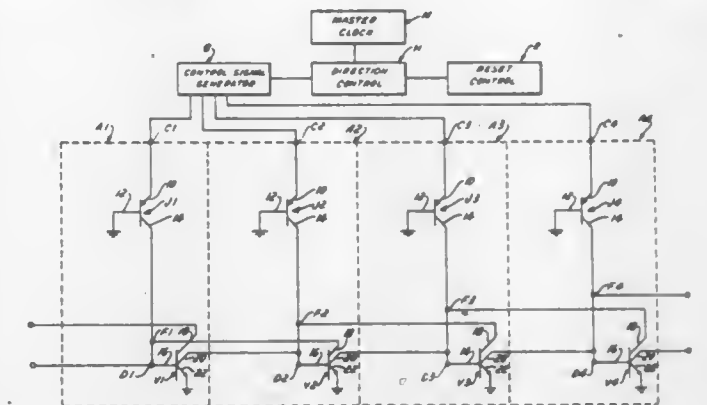
wherein: said yarn passage assembly comprises first and second bracket members fixedly positioned with respect to said casing structure and spaced apart from each other in a front-and-rear direction of the detecting device for forming said gap therebetween and a dust-proof plug member having a portion constituting said transparent portion of the yarn passage assembly, said transparent portion being closely received in said gap and being detachably in contact with both of said bracket members, said transparent portion of said plug member having a generally U-shaped cross section and has front and rear walls which are spaced apart from each other in a front-and-rear direction of the detecting device and which are closely and detachably in contact with said bracket members, respectively.

**4,341,959**  
**WAVE ENERGY POWER STATION**  
Nils Ambli, Oslo, Norway, assignor to Kvaerner Brug A/S, Oslo, Norway  
Filed Apr. 8, 1980, Ser. No. 138,401  
Claims priority, application Norway, Apr. 19, 1979, 791300  
Int. Cl.<sup>3</sup> F03B 13/12  
U.S. Cl. 290—53 16 Claims



1. In a wave energy power station comprising two water-filled chambers in communication with each other at the bottom, a first one of said chambers being in communication with the sea at the upper end thereof and the second chamber being defined by at least one wall which projects above the surface of the sea, the water in said first and second chambers comprising a continuous body of water, the water in said second chamber having an exposed upper surface out of communication with the sea, said upper surface rising above the level of the surface of the sea with an oscillating movement in opposite directions under the influence of wave action, and means to utilize the potential energy of the water in the second chamber which is higher than the surface of the sea; the improvement comprising means to tune the resonant frequency of said body of water in said chambers to that of the waves, said tuning means comprising means for selectively changing at least one of the length of said body of water and the area of said exposed upper surface.

**4,341,960**  
**I<sup>2</sup>L STATIC SHIFT REGISTER**  
Kenneth L. Naiff, Hauppauge, N.Y., assignor to General Instrument Corporation, Hicksville, N.Y.  
Filed Feb. 21, 1980, Ser. No. 123,434  
Int. Cl.<sup>3</sup> G11C 19/28  
U.S. Cl. 307—221 R 1 Claim



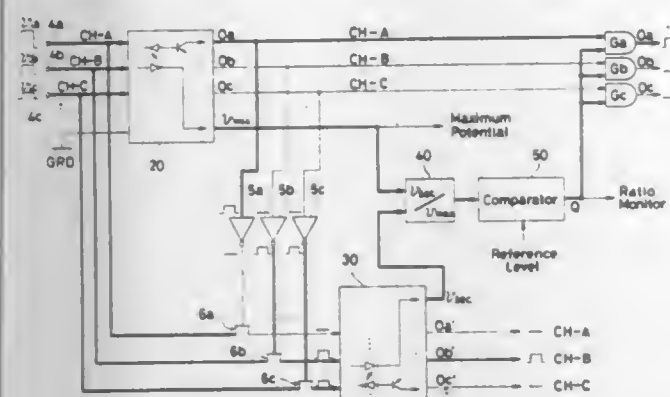
1. An I<sup>2</sup>L shift register comprising a bit, said bit comprising a given number of units operably interconnected in sequence, each unit comprising a control input, a data input, a data output, a feedback output, an injector transistor having a collector, a base and an emitter and an inverter transistor having a base, first and second collectors and an emitter, said emitter of said injector transistor being operably connected to said control input, said base of said injector being operably connected to ground, said collector of said injector transistor being operably connected to said base of said inverter transistor, said base of said inverter transistor being operably connected to the data output from the previous unit and the feedback output from the subsequent unit, said first and second collectors of said inverter transistor being operably connected to said data output and feedback output, respectively, and means for generating a series of control signals, one for each unit in the bit, said generating means having separate outputs, each of which is operably connected to said control input of a different one of said units in the bit, said register further comprising control reset means operably connected to said control signal generating means for causing said control signal generating means to temporarily cease generating control signals for a time longer than the decay time of the charge on said bases of said inverter transistors thereby automatically resetting said shift register.

**4,341,961**  
**DISCRIMINATION APPARATUS FOR EXTRACTING MAXIMUM-VALUE OUTPUT FROM A PLURALITY OF SIGNALS AND INDEXING THE RELEVANT CHANNEL**  
Kiyoshi Komoriya, 3-2 Kami-Kitazawa 3 chome, Setagaya-ku, Tokyo, Japan  
Filed Feb. 29, 1980, Ser. No. 125,993  
Claims priority, application Japan, Mar. 3, 1979, 54/24819  
Int. Cl.<sup>3</sup> H03K 5/24  
U.S. Cl. 307—355 1 Claim

1. An apparatus for the extraction of the signal of the maximum potential from a plurality of input signals and for the indexing of the particular channel transmitting the signal of the maximum potential, which apparatus comprises a pair of discrimination circuits each composed of a plurality of photocouplers each consisting of an electroluminescent element whose output terminal is connected to the output terminals of the electroluminescent elements of the other photocouplers to form an OR circuit and a photoelectric element adapted to operate to derive an output signal in response to the emission of light from said electroluminescent element, and transistors possessing respective independent output terminals and adapted to generate a switching action in response to the bias applied to the base in consequence of the operation of said photoelectric elements thereby deriving a signal as an output of the discrimination circuits; inverters connected to the output

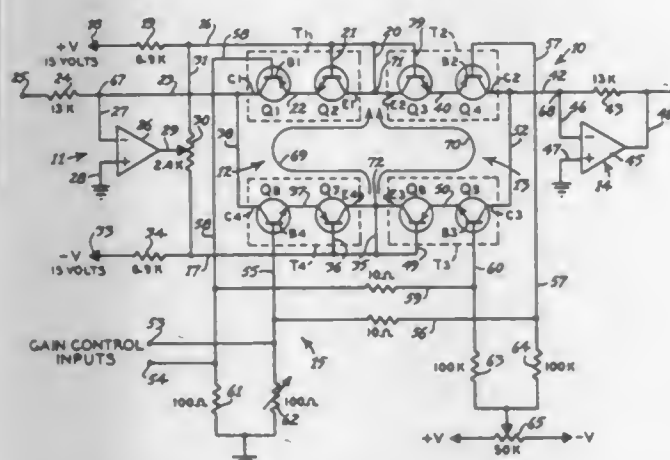


signal of one of the discrimination circuit circuits, analog switches adapted to operate in response to the output signals of said inverters and connected to respective output terminals of the other discrimination circuit; an arithmetic circuit adapted to obtain the ratio between the output signals issued from the two discrimination circuits, comparator adapted to compare the ratio of the two potential signals from the arithmetic circuit with a preset reference level signal; and gates adapted to operate in response to the output of said comparator and permit passage of the output from said one of the discrimination cir-



cuits, whereby the potential of the input signal of the maximum potential is extracted through said one of the discrimination circuits and the input channel transmitting that particular signal is indexed, the potential of the input signal of the second largest potential is extracted through the other discrimination circuit and, at the same time, the channel transmitting that particular signal is indexed, and the gate corresponding to the input channel transmitting the signal of the maximum potential issues the channel discrimination signal when the ratio of the two potentials from the two discrimination circuits is found as allowable with respect to the preset reference level signal.

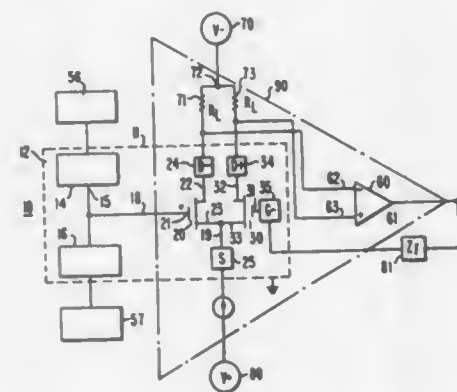
**4,341,962**  
**ELECTRONIC GAIN CONTROL DEVICE**  
Paul C. Buff, Nashville, Tenn., assignor to Valley People, Inc., Nashville, Tenn.  
Filed Jun. 3, 1980, Ser. No. 156,059  
Int. Cl.<sup>3</sup> G06G 7/12, 7/24  
U.S. Cl. 307-492 **24 Claims**



1. An electronic gain control device, comprising:
  - (a) a first bipolar circuit having an input for receiving an input signal and an output, said first bipolar circuit comprising first elements for producing log transfer functions and adapted to produce a log signal all said output logarithmically related to said input signal,
  - (b) means for summing a gain control signal with said log signal at said output,
  - (c) a second bipolar circuit connected to the output of said first bipolar circuit and comprising second elements for producing anti-log transfer functions and adapted to pro-

duce an output signal anti-logarithmically related to the sum of said log signal and said gain control signal, and  
(d) bias means for applying a bias current of said first and second elements of such value that said elements are continuously in electrical conduction through both polarities of an AC input signal applied to said input, to cause said first and second bipolar circuits to operate in a class A domain.

**4,341,963**  
**INTEGRATED CIRCUIT FOR CHIP OP/AMP INTERFACE**  
Arthur S. Jensen, and Keefer S. Stull, Jr., both of Baltimore, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.  
Filed Jun. 27, 1980, Ser. No. 163,549  
Int. Cl.<sup>3</sup> G06G 7/12  
U.S. Cl. 307-497 **3 Claims**

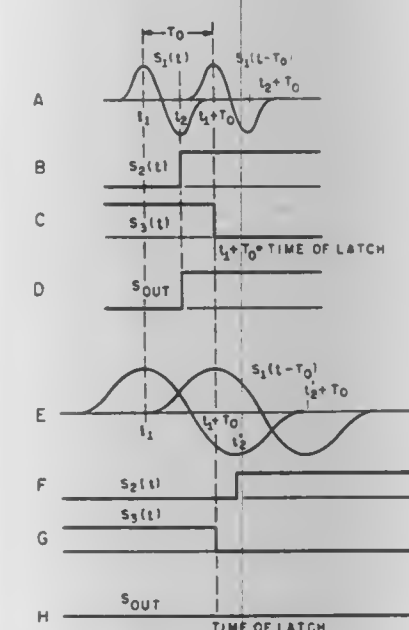
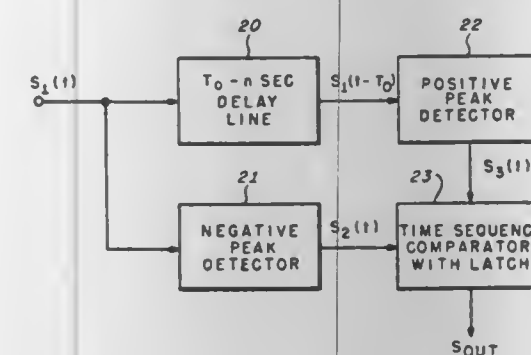


1. An integrated circuit for coupling an electrical signal in said integrated circuit to an operational amplifier external to said integrated circuit, said operational amplifier including differential inputs and a feedback circuit, said integrated circuit comprising:
  - (a) a semiconductor substrate;
  - (b) signal means in said substrate for providing an electrical signal;
  - (c) differential amplifying means in said substrate;
  - (d) means in said substrate for coupling said differential amplifying means to said electrical signal;
  - (e) means in said substrate responsive to a set of potentials for including said differential amplifying means within the feedback circuit of said operational amplifier.

**4,341,964**  
**PRECISION TIME DURATION DETECTOR**  
Chad S. Chi, Shrewsbury, Mass., and John W. Craig, Scottsdale, Ariz., assignors to Sperry Corporation, New York, N.Y.  
Filed May 27, 1980, Ser. No. 153,492  
Int. Cl.<sup>3</sup> H03K 5/153  
U.S. Cl. 307-517 **6 Claims**

1. Apparatus for detecting whether the time duration between two events of an analog waveform is greater or less than a predetermined time interval, comprising:
  - delay means for providing a delayed version of said waveform delayed by said predetermined time interval, thereby providing a delayed waveform,
  - first detector means responsive to said delayed waveform for detecting the first occurring of said two events of said delayed waveform and providing a signal at the time of occurrence thereof,
  - second detector means responsive to said waveform for detecting the second occurring of said two events of said waveform and providing a signal at the time of occurrence thereof, and
  - time sequence comparator means coupled to receive said signals from said first and second detector means for providing a first indication when said signal from said first

detector means occurs prior to said signal from said second detector means and a second indication when said



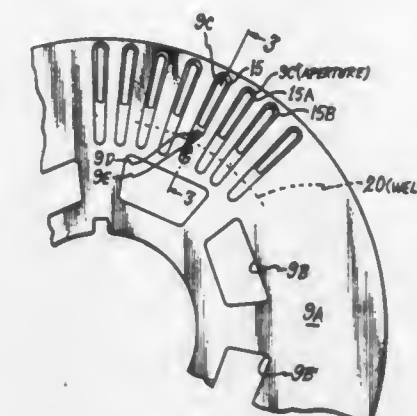
signal from said second detector means occurs prior to said signal from said first detector means.

**4,341,965**  
**COMPOSITE ELECTRODE AND INSULATING WALL ELEMENTS FOR MAGNETOHYDRODYNAMIC POWER GENERATING CHANNELS CHARACTERIZED BY FIBERS IN A MATRIX**  
Takayasu Okuo, Ibaragi; Takaki Masaki, and Keisuke Kobayashi, both of Ohtsu, all of Japan, assignors to Agency of Industrial Science & Technology; Ministry of International Trade & Industry and Toray Industries, Inc., all of Tokyo, Japan  
Filed Mar. 27, 1981, Ser. No. 248,210  
Claims priority, application Japan, Mar. 31, 1980, 55-40462  
Int. Cl.<sup>3</sup> H02N 4/02 **113 Claims**

1. A composite electrode element for a magnetohydrodynamic power generating channel, comprising a matrix composed of at least one member selected from the group consisting of oxide, carbide, nitride and boride and a fibrous material composed of at least one member selected from the group consisting of carbon, graphite, oxide, carbide, nitride and boride, said fibrous material being embedded in said matrix and unified with said matrix so as to form a composite.

64. A composite wall element for a magnetohydrodynamic power generating channel, comprising a matrix composed of at least one member selected from the group consisting of oxide, nitride and boride and a fibrous material composed of at least one member selected from the group consisting of carbon, graphite, oxide, carbide, nitride and boride, said fibrous material being embedded in said matrix and unified with said matrix so as to form a composite.

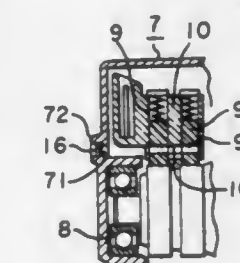
**4,341,966**  
**LAMINATED DYNAMOELECTRIC MACHINE ROTOR HAVING CAST CONDUCTORS AND RADIAL COOLANT DUCTS AND METHOD OF MAKING SAME**  
William W. Pangburn, Schenectady, N.Y., assignor to General Electric Co., Schenectady, N.Y.  
Filed Jun. 9, 1980, Ser. No. 157,576  
Int. Cl.<sup>3</sup> H02K 9/19 **13 Claims**



1. In a laminated rotor having cast conductors in spaced axially-extending passageways adjacent the peripheral surface of the stacked rotor laminations and having radial coolant ducts extending between spaced groups of the rotor laminations, the improvement comprising:

- (a) a plurality of laminated spacer assemblies, each comprising a plurality of metal plates, locking means for securing such plates to each other in stacked relationship, and wall means defining an aperture through each plate, the apertures in all of said plates of each spacer assembly being positioned in alignment to define a conductor passageway through the assembly, and
- (b) mounting means fastening each of said spacer assemblies, respectively, to at least one rotor lamination of a respective juxtaposed group of rotor laminations with each spacer assembly conductor aperture aligned with a respective axially-extending passageway through the rotor laminations, thereby to define continuous axially-extending conductor passageways through the aligned rotor laminations and spacer assemblies, said continuous conductor passageways each being sealed from the radial coolant ducts by said wall means of the respective spacer assemblies.

**4,341,967**  
**CHARGING GENERATOR FOR VEHICLE**  
Yoshiyuki Iwaki, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan  
Filed Mar. 12, 1981, Ser. No. 243,144  
Claims priority, application Japan, Mar. 21, 1980, 55/37955[U] **1 Claim**



1. A charging generator for a vehicle, comprising: a stator;



a rotor facing said stator and separated therefrom by a gap;  
at least one slip ring mounted on said rotor;  
brush means for contacting each said slip ring;  
a brush holder supporting each said brush means;  
first bore means extending through said brush means, said  
first bore means extending coaxially and being parallel to  
the axis of said rotor;  
a housing surrounding said rotor;  
second bore means coaxial with said first bore means and  
having a first diameter, said second bore means extending  
through said housing such that a pin can pass through said  
first and second bore means;  
a lubricant holder for holding a viscous grease lubricant, said  
lubricant holder being positioned against one end of said  
second bore means opposite said brush holder, said lubricant  
holder being defined by walls extending parallel to  
said axis of said rotor and spaced from one another by a  
distance greater than said first diameter of said second  
bore means, whereby said pin passing through said first  
and second bore means will not completely fill said reser-  
voir; and  
a viscous grease plugging means filling said lubricant holder  
and sealing said one end of said second bore means,  
whereby said pin passing through said first and second bore  
means will pierce and displace said grease plugging means  
and said walls will retain said grease plugging means in  
said reservoir.

4,341,968

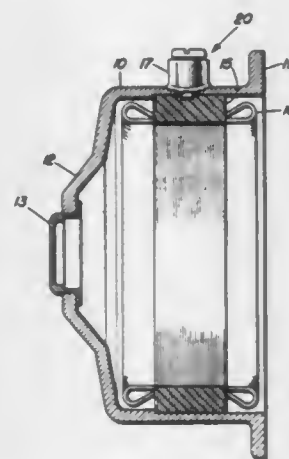
SUPPORT MEANS FOR HIGH-TEMPERATURE  
GENERATOR STATORS

Raymond W. Borden, Farmingdale, and James E. DeBard, Ea-  
tontown, both of N.J., assignors to The Bendix Corporation,  
Teterboro, N.J.

Filed Jul. 30, 1980, Ser. No. 173,780  
Int. Cl.<sup>3</sup> H02K 5/00

U.S. Cl. 310—91

7 Claims



1. In a rotating electrical machine having a stator of gener-  
ally cylindrical form and a housing surrounding said stator in  
close fitting relationship at lower temperatures, said housing  
and said stator being subject to thermal expansion in different  
amounts resulting in loss of close fit at higher temperature;  
means for securing said stator against relative movement in  
said housing and for maintaining said stator centered  
therein, comprising  
a keyway formed in the outer periphery of said stator;  
a threaded aperture in said housing aligned with said key-  
way;  
a key in said aperture engaging said keyway, said key being  
so dimensioned as to maintain shear contact with the walls  
of said aperture and said keyway throughout the range of  
thermal expansion to which said housing and said stator  
are subject;  
spring means in said aperture and bearing on said key to

exert a radially directed thrust on said key and said stator  
when loading forces are applied to said key; and  
a loading screw threaded into said aperture and bearing on  
said spring means to exert a loading force on said spring  
means according to the distance said loading screw is  
threaded into said aperture, and to the degree necessary  
for maintaining the stator centered within the housing and  
for maintaining the shear contact even after the spring  
loading force is relaxed by the thermal expansion of the  
housing and stator in different amounts.

4,341,969

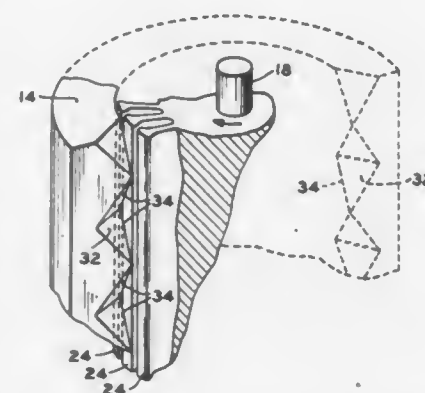
DIRECT CURRENT MOTOR WITH IMPROVED POLE  
PIECE THAT REDUCES COGGING

Dale W. Sievert, Freeport, Ill., assignor to Honeywell Inc.,  
Minneapolis, Minn.

Filed Dec. 1, 1980, Ser. No. 211,887  
Int. Cl.<sup>3</sup> H02K 23/42

U.S. Cl. 310—154

17 Claims



12. A direct current motor comprising in combination: a  
pole piece;  
an armature having a series of armature bars disposed  
around its periphery;  
means supporting said armature and said pole piece; and  
a series of notches formed in said pole piece along at least  
one edge thereof.

4,341,970

THREE PHASE WINDING FOR HIGH VOLTAGE  
MACHINES WITH Y-CONNECTED PHASES

Herbert Aulinger, Nürnberg, Fed. Rep. of Germany, assignor to  
Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

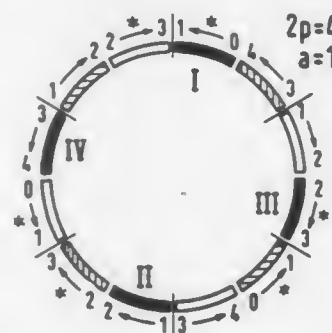
Filed Aug. 27, 1979, Ser. No. 69,990

Claims priority, application Fed. Rep. of Germany, Sep. 22,  
1978, 2841415

Int. Cl.<sup>3</sup> H02K 3/00

U.S. Cl. 310—184

13 Claims



1. In a three phase winding for a high voltage machine with  
Y-connected phases whose coil groups, disposed along the  
circumference cyclically distributed, in slots, each consist of  
several series connected coils, the magnetic flux of which  
points alternately in opposite directions, forming at least two  
poles, the improvement comprising, the coils being disposed so  
that the magnetic flux direction in the one half of the coil

groups is the same as the direction of increase in potential,  
these forming "with" coil groups, and the magnetic flux direc-  
tion in the other half of the coil groups is opposed to the direc-  
tion of increase in potential, these forming "counter" coil  
groups, the "with" and "counter" coil groups of the various  
phases being so distributed over the circumference and so  
interconnected phasewise that at most the phase voltage is  
present at the phase transitions between adjacent coil sides.

4,341,971

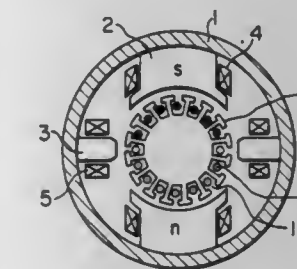
## ARMATURE OF ELECTRIC ROTATING MACHINE

Kazuo Tahara, Hitachi; Seizi Yamashita, Katsuta; Takayuki  
Matsui, Hitachi; Shoji Motegi, Hitachi, and Noriyoshi  
Takahashi, Hitachi, all of Japan, assignors to Hitachi, Ltd.,  
Tokyo, Japan

Filed Nov. 18, 1980, Ser. No. 208,075  
Int. Cl.<sup>3</sup> H02K 3/48

U.S. Cl. 310—195

3 Claims



1. An armature of a D.C. rotating machine comprising an  
armature core fixedly carried on a rotating shaft, a plurality of  
axial slots formed on the outer periphery of said armature core  
at predetermined spaces circumferentially, a plurality of arma-  
ture windings each including electrically connected upper and  
lower coil sides which are mounted in said axial slots such that  
the upper and lower coil sides of each winding are spaced with  
a predetermined circumferential distance, while each axial slot  
contains a predetermined number of such upper and lower coil  
sides of different windings, and a commutator electrically  
connected to said armature winding and supported on said  
rotating shaft; the improvement comprising:

at least one circumferential slot formed in a predetermined  
axial position of said armature core so as to cross said axial  
slots and communicate the adjacent slots;  
a part of the upper and lower coil sides of the different  
windings contained in predetermined axial slots being  
shifted from said predetermined axial slots to adjacent  
axial slots through said circumferential slot, while the  
predetermined circumferential distance between the  
upper and lower coil sides of each winding is maintained.

4,341,972

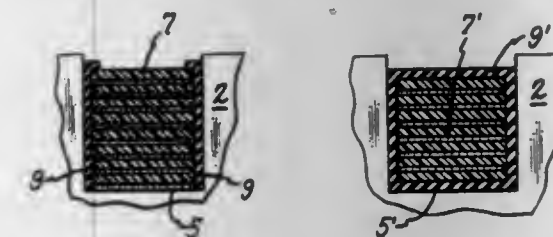
DYNAMOELECTRIC MACHINE COMMUTATOR  
STRUCTURE AND METHOD OF MAKING SAME

William B. Penn, and Martin A. Zraggen, both of Erie, Pa.,  
assignors to General Electric Co., Schenectady, N.Y.

Filed Mar. 17, 1981, Ser. No. 244,586  
Int. Cl.<sup>3</sup> H02K 23/38; B65H 81/00

U.S. Cl. 310—233

7 Claims



1. A dynamoelectric machine commutator structure com-  
prising a plurality of commutator conductive segments  
mounted in a cylindrical array on a supporting hub member, said

commutator segments being electrically insulated from one  
another and from said hub member, at least one annular groove  
defined in the outer surface of said array of commutator seg-  
ments for receiving a commutator banding therein, a commuta-  
tor banding mounted in said groove to apply a radially inward  
force to the commutator segments, and the improvement com-  
prising a coating of flexible, thermally stable and electrical  
track resistant material mounted on and adhered to a predeter-  
mined upper portion of the side walls of said groove and at  
least the edge part of the radially outer surface of said banding  
to completely seal the junction between the radially outer edge  
surface of the banding and the commutator segments thereby  
to prevent electrically conductive contaminants from collect-  
ing in that junction and causing electrical tracking between the  
commutator segments.

4,341,973

## ARMATURE IN ELECTRICAL ROTARY MACHINE

Yutaka Maruko, Iruma; Susumu Sako, Kawagoe, and Tamotu  
Kobayashi, Hidaka, all of Japan, assignors to Kabushiki Kai-  
sha Yaskawa Denki Seisakusho, Kitakyushu, Japan

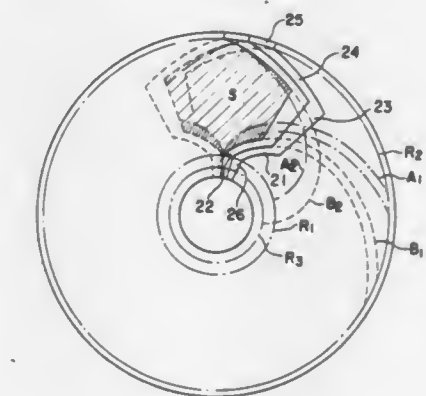
Filed Jul. 17, 1980, Ser. No. 169,586

Claims priority, application Japan, Jul. 27, 1979, 54-  
104561[U]

Int. Cl.<sup>3</sup> H02K 1/22

U.S. Cl. 310—268

3 Claims



1. An armature in an electrical rotary machine, which com-  
prises a plurality of half coils printed on both surfaces of an  
insulating disc, each half coil being constituted by a radially  
extended linear conductor and an inner sloped conductor and  
an outer sloped conductor which are extended from both ends  
of said linear conductor towards the inner circumference and  
outer circumference of said disc, respectively, said half coils on  
both surfaces of said disc being connected to one another at the  
inner and outer ends thereof by radially extending connecting  
portions; wherein  
each of said inner sloped conductors is extended along an  
involute line with a first circle as a base circle, which is  
smaller than a second circle formed by the inner ends of  
the half coils.

4,341,974

PIEZOELECTRIC CRYSTAL ELEMENT FOR USE IN  
FORCE, PRESSURE AND ACCELERATION  
TRANSDUCERS

Reto Calderara, Bern, Switzerland, assignor to Kistler In-  
strumente AG, Winterthur, Switzerland

Filed May 28, 1980, Ser. No. 154,022

Claims priority, application Switzerland, Sep. 14, 1979,  
8315/79

Int. Cl.<sup>3</sup> H01L 41/08

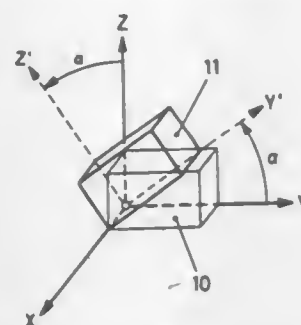
U.S. Cl. 310—360

6 Claims

1. A piezoelectric crystal element for use in force and pres-  
sure transducers and accelerometers, consisting of a monocrys-  
talline cubic-polar material, comprising electrode faces that  
intersect one of the crystallographic principal axes X, Y, Z at  
an angle  $\alpha = \arcsin \sqrt{p}$  and the other principal axes at  $\beta' = \pm \frac{1}{2}$



are  $\cos p$ , wherein  $p$  is substantially 0 for the piezoelectric orthoaxial shear effect, substantially  $\frac{1}{2}$  for the longitudinal and substantially 1 for the transverse piezoeffect, and substantially plane-parallel force introduction surfaces which essentially



coincide with the electrode faces for shear and longitudinal effects, and which essentially correspond to diagonal planes perpendicular to the electrode faces for the transverse piezoeffect.

#### 4,341,975 JACKETED LAMP HAVING TRANSVERSELY MOUNTED ARC TUBE

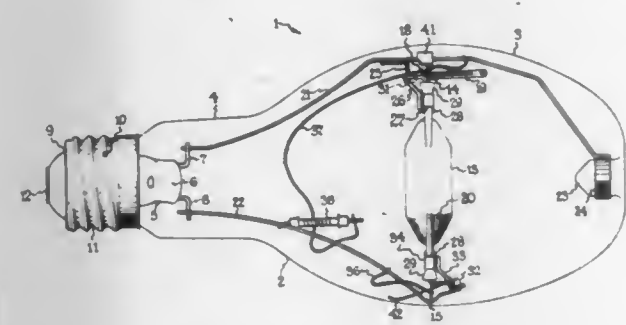
Robert G. Philipp, Parma, Ohio; Theodore S. Apple, Philadelphia, Pa., and Paul W. Ernest, Cleveland Hts., Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 12, 1980, Ser. No. 158,932

Int. Cl.<sup>3</sup> H01J 61/30, 61/36

U.S. Cl. 313—25

9 Claims



1. An electric lamp comprising:
  - a glass jacket having a bulb portion with a reduced diameter neck portion closed by a stem having a pair of lead-in wires sealed therethrough,
  - a base fastened to the end of said neck and having contact members,
  - an elongated arc tube within the bulb portion of greater overall length than the internal diameter of the neck portion, said arc tube having electrodes attached to inleads sealed into opposite ends of the tube,
  - and a mount structure comprising a pair of divergent support rods extending from said lead-in wires into the bulb portion, hinged attachments of the ends of the arc tube to said rods, said attachments allowing folding of the mount assembly in line with one rod leading and the other trailing for passage through the neck when only said one rod is fastened to its lead-in wire but assuring transverse erection of the arc tube within the bulb after said other rod is fastened to its lead-in wire, and flexible wire interconnections between the arc tube in-leads and said support rods.

#### 4,341,976 DISPLAY SYSTEM

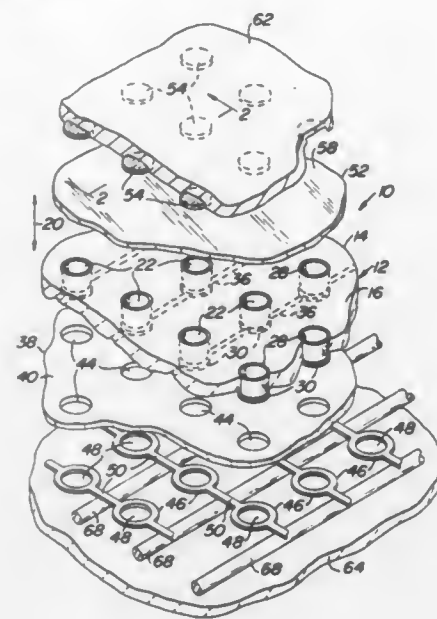
Jacques M. Hanlet, Loxahatchee, Fla., assignor to Alpha-Omega Development, Inc., Loxahatchee, Fla.

Filed Mar. 5, 1980, Ser. No. 121,918

Int. Cl.<sup>3</sup> H01J 1/20, 61/09, 61/42

U.S. Cl. 313—210

58 Claims



1. A display system comprising:
  - (a) cathode means for producing energy in the ultraviolet bandwidth of the electromagnetic spectrum from ionization of metal atoms, said cathode means defining a plate member having opposing first and second surfaces, said plate member having a plurality of openings formed therethrough, each of said openings defining a sidewall having a metallic coating formed thereon;
  - (b) a dielectric film member having first and second opposing surfaces, said dielectric film member first surface being bonded to said second surface of said plate member, said dielectric film member having a plurality of openings formed therethrough, each of said film member openings having an axis line substantially aligned with an axis line of each of said plate member openings;
  - (c) anode means bonded to said second surface of said dielectric film member, said anode means having an opening formed therethrough, said anode means opening defining an axis line substantially coincident with said plate member openings;
  - (d) a display panel member secured to said plate member first surface, said display panel being substantially transparent to a bandwidth of the electromagnetic spectrum substantially comprising the ultraviolet spectrum, said display panel having formed thereon a plurality of fluorescent material coatings for intercepting said ultraviolet energy from said ionization of said metal atoms, said coatings being in registration with said plate member openings;
  - and,
  - (e) a back panel member displaced from said dielectric film member and coupled thereto to form a hermetic seal.

#### 4,341,977 ARC SPREADING WITH INITIATORS

Leo Gross, 3611 217 St., Bayside, N.Y. 11361, and S. Merrill Skeist, 1620 Cedar Swamp Rd., Brookville, Glen Head, N.Y. 11545

Filed Feb. 4, 1980, Ser. No. 117,949

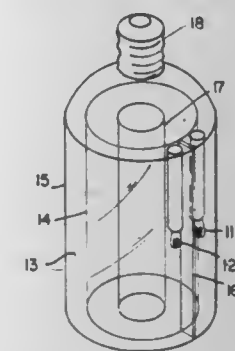
Int. Cl.<sup>3</sup> H01J 61/12

U.S. Cl. 313—485

6 Claims

1. An arc discharge device such as a fluorescent lamp comprising an envelope having an inner phosphor coating, arc discharge means in said envelope, a rare gas in said envelope and an arc spreading initiator gas in said envelope for spread-

ing the arc, said rare gas being argon at a pressure of from 1-3 torr together with sufficient mercury to establish a vapor



pressure of about 10 microtorr, said arc spreading initiator gas being a combination of nitrogen at a range of 0.1 to 0.2 microtorr and dichloro-difluoro ethane at about 0.25 microtorr.

#### 4,341,978 HIGH-INTENSITY-DISCHARGE LAMP WITH IMPROVED COLOR RENDITION OF ILLUMINATED OBJECTS

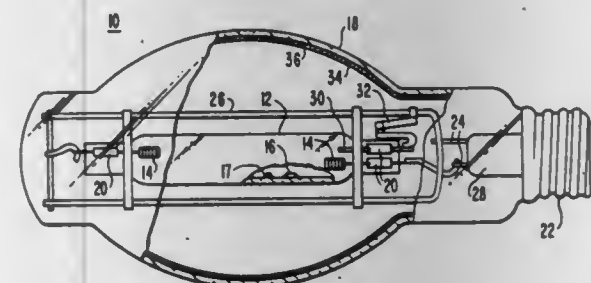
William A. Thornton, Jr., Cranford, and Daniel A. Larson, Cedar Grove, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 12, 1980, Ser. No. 158,858

Int. Cl.<sup>3</sup> H01J 61/20, 61/44

U.S. Cl. 313—487

3 Claims



1. A high-intensity-discharge lamp intended for operation at a predetermined wattage input and comprising:
  - a sealed elongated radiation-transmitting arc tube having electrodes operatively disposed therein proximate the ends thereof, a sealed light-transmitting protective envelope in which said arc tube is operatively mounted with the environment enclosed by said protective envelope being non-reactive for the lamp elements enclosed thereby, electrical lead-in means sealed through said arc tube and connecting to said electrodes, electrical adaptor means affixed to the outer surface of said protective envelope to facilitate electrical connection to a source of electrical power, and electrical conductor means electrically connecting said electrical adaptor means to said electrical lead-in means, said arc tube enclosing discharge-sustaining constituents plus a small charge of inert ionizable starting gas, the principal discharge-sustaining constituent in said arc tube being mercury present in predetermined amount to provide a predetermined voltage drop between said electrodes when said lamp is operating at said rated wattage input, and cadmium included within said arc tube as a supplemental discharge-sustaining constituent, and the weight ratio of said mercury constituent to said cadmium constituent in said arc tube being from about 50:1.5 to about 50:0.2; and
  - a predetermined amount of finely divided phosphor means carried as a coating on the inner surface of said protective envelope, said phosphor means principally comprising trivalent-europium-activated phosphor having a strong red emission located at about 620 nm.

#### 4,341,979 FLUORESCENT LAMP WITH ROTATING MAGNETIC FIELD ARC SPREADING DEVICE

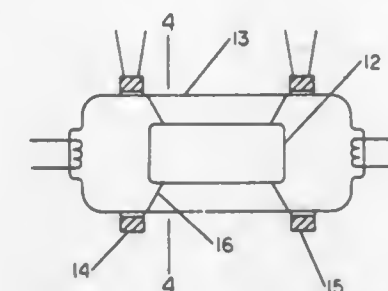
Leo Gross, 3611 217 St., Bayside, N.Y. 11361, and S. Merrill Skeist, 1620 Cedar Swamp Rd., Brookville, Glen Head, N.Y. 11545

Filed Feb. 14, 1980, Ser. No. 102,547

Int. Cl.<sup>3</sup> H01J 7/44, 17/34, 19/78; H01K 1/62

U.S. Cl. 315—57

3 Claims



1. A fluorescent lamp comprising an envelope having a phosphored surface, and means at each end of the lamp to create a rotating magnetic field to force the arc of the lamp to flow close to phosphored surface and increase the light output of the lamp, said means comprises filed coils for producing said rotating magnetic field, said coils being arranged in pairs and included opposed pairs of poles and means for 90 degree phase delaying one pair of said coils with respect to the other pair of said coils.

#### 4,341,980 FLAT DISPLAY DEVICE

Mikio Noguchi, Chigasaki; Kazuho Kobayashi, Yokohama; Shigeo Takenaka, Fukaya, and Masaru Shimbo, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

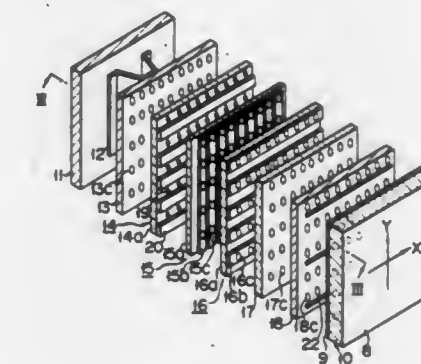
Filed Sep. 4, 1980, Ser. No. 183,995

Claims priority, application Japan, Sep. 5, 1979, 54-112830; Sep. 5, 1979, 54-112831

Int. Cl.<sup>3</sup> H01J 63/02

U.S. Cl. 315—169.1

5 Claims



1. A flat display device comprising:
  - a vacuum envelope constituted by a back base plate and a flat display panel provided with an inner fluorescent material layer;
  - a flat thermionic cathode structure disposed at a position separated from the inner side of said back base plate and parallel to said display panel; and
  - a plurality of flat electrode structures stacked together with intervening insulators between said thermionic cathode structure and said fluorescent material layer, said flat electrode structures each having a plurality of thermionic electron beam passage holes;
  - said plurality of flat electrode structures being arranged to control and accelerate thermionic electron beams emitted from said thermionic cathode structure such that said thermionic electron beams strike respective picture element regions predetermined in a regular array on said



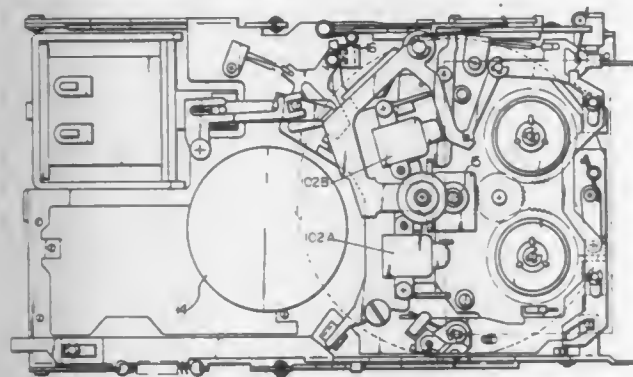
fluorescent material layer and thus cause fluorescence of said picture element regions;  
said back base plate being constituted by an elastic metal plate;  
said thermionic cathode structure comprising a plurality of sections, said sections each including a plurality of coiled heaters, said coiled heaters each having an effective thermionic electron emitting portion having a coating of a thermionic electron emitting material, said individual effective thermionic electron emitting portions being arranged such that each corresponds to each of said picture element regions, said coiled heaters having portions thereof other than said effective thermionic electron emitting portions supported by a plurality of conductive support members such that said effective thermionic electron emitting portions are held in space, said plurality of conductive support members being connected to a plurality of voltage supply terminals for supplying heating power to all said coiled heaters connected in parallel, and said plurality of voltage supply terminals being led out through said back base plate via insulating members; and  
said thermionic electron beam passage holes formed in each said flat electrode structures being arranged such that each corresponds to each of said effective thermionic electron emitting portions.

**4,341,981**  
**ROTARY DIRECTION REVERSING APPARATUS FOR A MOTOR OF A MICROCASSETTE TAPE TRANSPORT**  
Akira Osanai, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,465  
Claims priority, application Japan, Apr. 20, 1979, 54/48692  
Int. Cl.<sup>3</sup> H02P 5/16

U.S. Cl. 318-6

6 Claims



1. A rotary direction reversing apparatus for a motor of a microcassette type tape recorder, comprising:  
a microcassette tape transport having a rotatable capstan for driving a recording tape in a microcassette in both forward and reverse directions of tape transporting;  
reversible motor means including a single motor provided in said tape transport for selectively driving said capstan in opposite rotational directions to selectively transport said tape in respective reverse directions, said motor means having substantially the same characteristic for both the forward and reverse directions of rotation thereof;  
said tape transport being arranged such that the mechanical load applied to said motor means via said recording tape is substantially the same for both the forward and reverse directions of recording tape transporting;  
motor control means for generating a motor drive current and for setting a motor speed of said motor means to a given value, said motor control means and said motor means forming a single servo loop which is operable for both forward and reverse directions of tape transporting; and  
switching means connected between said motor means and said motor control means for reversing the direction of said motor drive current generated by said motor control means and which is supplied to said motor means so that

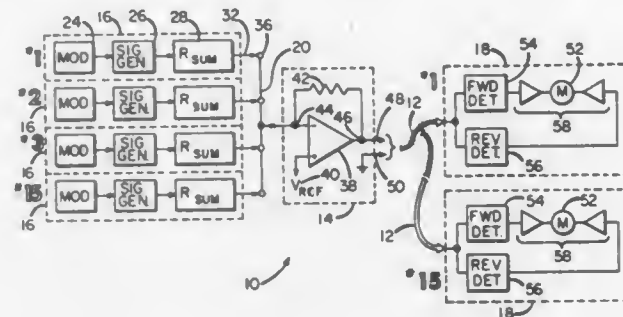
a transfer function of said single servo loop including said motor means and said motor control means is substantially fixed to be substantially the same in both directions of rotation of said motor.

**4,341,982**  
**SIMULTANEOUS INDEPENDENT CONTROL SYSTEM FOR ELECTRIC MOTORS**  
Abbott W. Lahti, Cambridge, and Stephen R. Russell, Acton, both of Mass., assignors to Power Systems, Inc., Cambridge, Mass.

Filed Jul. 3, 1980, Ser. No. 165,413  
Int. Cl.<sup>3</sup> H02P 7/68

U.S. Cl. 318-51

15 Claims



1. A system for simultaneously and independently controlling a plurality of motors comprising:  
(a) A common power line;  
(b) a plurality of motors connected to said power line;  
(c) a power supply unit comprising a wide bandwidth feedback regulated amplifier and power supply for generating low voltage propulsion power for said motors to said power line;  
(d) a common signal transmission cable coupled to the negative inverting input of said wide bandwidth feedback regulated amplifier and power supply;  
(e) a plurality of means for generating a plurality of modulated selected frequencies and for superimposing said frequencies via said power supply unit on said low voltage propulsion power, each of said means being portable and being removably parallel coupled to said common signal transmission cable;  
(f) a plurality of replaceable and interchangeable frequency selectors, one each for each one of said plurality of means for generating said plurality of modulated selected frequencies, for determining each of said selected frequencies; and  
(g) a plurality of receivers coupled to said common power line, each of said receivers tuned to one of said modulated selected frequencies and associated with and controlling one of said motors.

**4,341,983**  
**AUTOMATIC SEQUENCE CONTROL SYSTEM**  
Mayo Gottliebson, 419 E. Main St., Lancaster, Ohio 43130  
Continuation-in-part of Ser. No. 941,324, Sep. 11, 1978, abandoned. This application Jul. 11, 1980, Ser. No. 168,180  
Int. Cl.<sup>3</sup> H02P 1/58; F04B 41/06

U.S. Cl. 318-102

7 Claims

1. A system for controlling a plurality of motors comprising starting circuitry for sequentially starting said motors in accord with a predetermined cyclic motor order, and stopping circuitry for sequentially stopping said motors in accord with said cyclic motor order; said starting circuitry comprising a master starting control circuit for respectively developing first and second states in response to the sensed presence and absence of a predetermined first condition, a plurality of motor control starting circuits which are coupled to and operate under the control of said master starting control circuit for starting the respective motors, and a plurality of starting circuit condition-

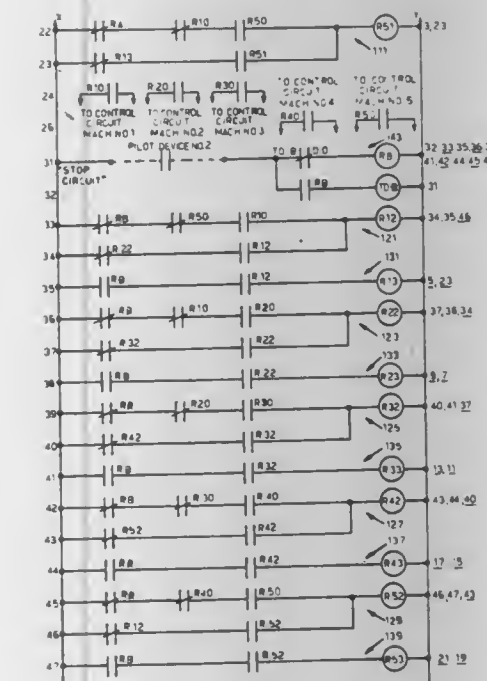
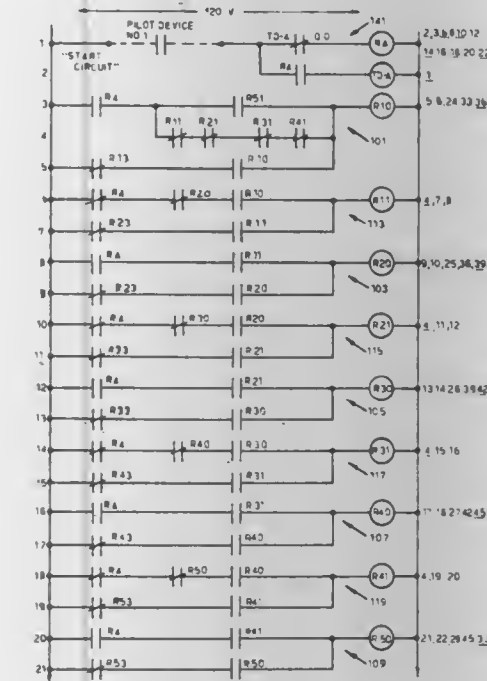
ing circuits which are coupled to and for conditioning the respective motor control starting circuits to respond sequentially to successive developments of said first state, said starting circuit conditioning circuits being coupled to said master starting control circuit and operating under the control thereof to respond to second state developments by said master starting control circuit; and said stopping circuitry comprising a master stopping control circuit for respectively developing third and fourth states in response to the sensed presence and absence of a predetermined second condition, a plurality of motor control

**4,341,984**  
**ELECTRONIC COMMUTATION FOR DIRECT CURRENT ELECTRIC MOTORS**  
Louis W. Parker, 2040 N. Dixie Hwy., Ft. Lauderdale, and Rhey W. Hedges, Ft. Lauderdale, Fla., assignors to Louis W. Parker, Ft. Lauderdale, Fla.

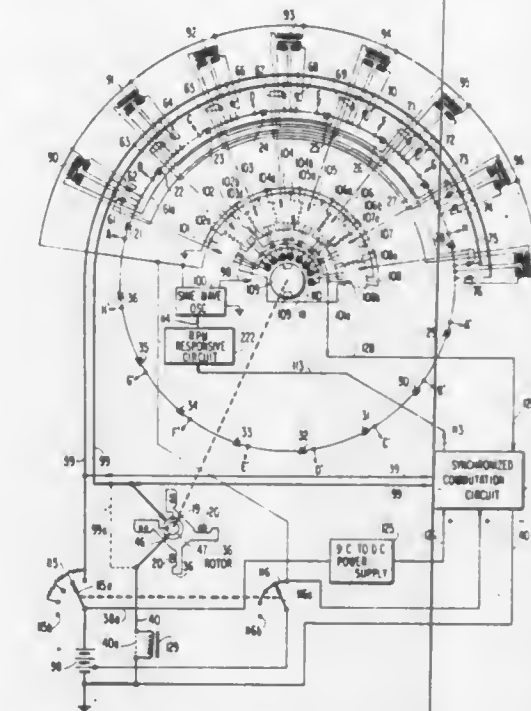
Filed May 15, 1980, Ser. No. 149,816  
Int. Cl.<sup>3</sup> H02K 29/00

U.S. Cl. 318-138

35 Claims



stopping circuits which are coupled to and operate under the control of said master stopping control circuit for stopping the respective motors, and a plurality of stopping circuit conditioning circuits which are coupled to and for conditioning the respective motor control stopping circuits to respond sequentially to successive developments of said third state, said stopping circuit conditioning circuits being coupled to said master stopping control circuit and operating under the control thereof to respond to fourth state developments by said master stopping control circuit.



1. In a motor of the type comprising a stator consisting of a plurality of coils connected in series with one another in a closed loop configuration, means connecting the junction between adjacent pairs of said coils to diametrically opposed ones of said junctions in said closed loop configuration, a plurality of pairs of oppositely poled gate controlled solid state rectifiers connected respectively to the junctions of different adjacent pairs of said coils for selectively conducting current into and out of said stator coil junctions, a current source for energizing each of said pairs of rectifiers, a rotor mounted for rotation adjacent said stator, and means including a distributor driven by said rotor for energizing the gate electrodes of different ones of said rectifiers in sequence thereby to produce a plurality of stator poles which are angularly displaced from the rotor poles and which stator poles shift in position about said closed loop coil configuration with rotation of said rotor, the improvement comprising rpm responsive electronic switch means responsive to particular rotor speeds, control means responsive to the operating state of said electronic switch means for controlling the conduction of said rectifiers to effect a starting mode of operation when said rotor is rotating below a predetermined speed and to effect a running mode of operation different from said starting mode when said rotor is rotating above a different predetermined speed, said means for energizing the gate electrodes of said rectifiers in sequence comprising a plurality of induction coils spaced from one another along an arcuate path, means connected to said coils to provide a plurality of frequency selective attenuator circuits, said distributor comprising a magnetic element mounted for rotation with said rotor for movement along an arcuate path past said coils to vary the inductances of said coils in sequence thereby to vary the resonant frequencies and thereby the attenuation of said frequency selective circuits in sequence, and oscillator means coupled to said plurality of frequency selective attenuator circuits, said oscillator means being operable to produce at least two different frequencies and having means responsive to said electronic switch means for supplying a signal at one of said output frequencies to said frequency selective circuits in said starting mode and for supplying a signal at another of said output frequencies to said circuits in said running mode.







# 4,341,990 HIGH FREQUENCY LINE RIPPLE CANCELLATION CIRCUIT

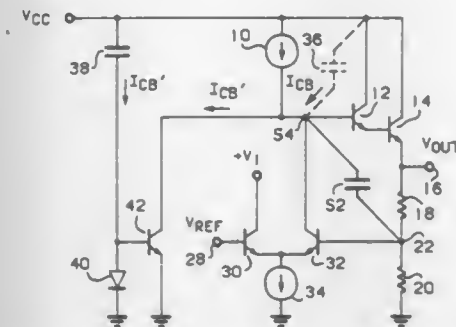
William F. Davis, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 27, 1981, Ser. No. 258,227

Int. Cl.<sup>3</sup> G05F 1/56

U.S. Cl. 323-303

11 Claims



6. A circuit for cancelling parasitic current at a node due to voltage excursions across a first capacitance coupled to said node, comprising:

- capacitive means responsive to said voltage excursions for generating a first current substantially equal to said parasitic current; and
- means coupled to said capacitive means and to said node for substantially cancelling the net current at said node due to said voltage excursions.

# 4,341,991 VOLTAGE STABILIZER SUITABLE FOR A TELEPHONE SET

Josephus J. A. Geboers; Daniel J. G. Janssen, and Johannes Bloos, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

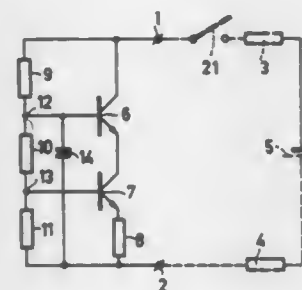
Filed Sep. 29, 1980, Ser. No. 191,724

Claims priority, application Netherlands, Oct. 1, 1979, 7907275

Int. Cl.<sup>3</sup> G05F 1/613

U.S. Cl. 323-311

5 Claims



1. A voltage stabiliser which is suitable for a telephone set comprising a first and second terminal, a first transistor the main current path of which is coupled to the terminals, a voltage divider arranged between the terminals, a first tapping point of the voltage divider being connected to the base of the transistor, and a capacitor connected between the base of the transistor and a second terminal, the emitter of the first transistor circuit is coupled to this second terminal, characterized in that the stabiliser comprises a resistor and a second transistor circuit the main current path of which is connected in series with the resistor between the main current path of the first transistor and the second terminal and that the base of the second transistor is connected to a second tapping point on the voltage divider, this second tapping point being located on the part of the voltage divider lying between the first tapping point and the second terminal.

# 4,341,992 CONDUCTIVE PROBE COVER

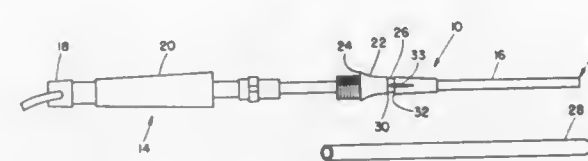
Harold Goldstein, Westbury, N.Y., assignor to Control Electronics Co., Inc., Farmingdale, N.Y.

Filed Jan. 21, 1980, Ser. No. 113,508

Int. Cl.<sup>3</sup> G01R 31/02; G01K 7/22

U.S. Cl. 324-65 R

19 Claims



1. A protective probe cover, for a sensor probe component of an electronic thermometer, having an improved design to ensure that the probe cover is properly fitted onto the probe of the electronic thermometer, the electronic thermometer including a verification circuit for electrically ascertaining that the probe cover is properly fitted onto the probe, said probe cover being formed of a relatively thin layer of synthetic resin material, said synthetic resin material having a conductive material therein to render the probe cover electrically conductive to allow the verification circuit to conductively ascertain that the probe cover is properly positioned on the probe, said probe and said probe cover forming a resistive path having a predetermined resistance when said probe cover is properly fitted on said probe, wherein said verification circuit comprises means connected to said probe and probe cover for comparing the resistance of said resistive path to at least one predetermined resistance value and operative when the predetermined resistance of said resistive path is below the predetermined resistance value, and means responsive to operation of said operative means for enabling the electronic thermometer to respond to the temperature of its sensor probe.

# 4,341,993 REFLECTOR OPTICS WITH IMPEDANCE SENSING ORIFICE

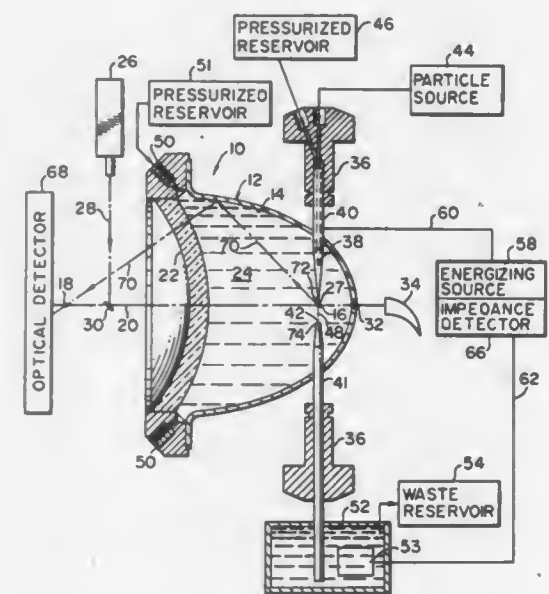
Albert Brunsting, Miramar; Walter R. Hogg, and William A. Newton, both of Dade County, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Aug. 25, 1980, Ser. No. 181,447

Int. Cl.<sup>3</sup> G01N 27/00

U.S. Cl. 324-71 CP

16 Claims



1. A particle analyzing apparatus for detecting the physical properties of particles, said particle analyzing apparatus including first vessel means containing a first electrode disposed in a first quantity of electrolyte, second vessel means containing a second electrode disposed in a second quantity of electro-

lyte, orifice means for establishing a constricted electrical path between said electrodes by providing a passageway between the vessel means for a sample flow of one of said quantities of electrolyte having a stream of said particles suspended therein, means for energizing said electrodes to provide an electrical current through said orifice means, means for detecting the impedance of said constricted electrical path, the particle analyzing apparatus further comprising:

- said second vessel means being defined by at least a portion of a reflector chamber;
- said reflector chamber including a concave reflector surface with a first focus and a second focus;
- means for moving said stream of particles through said first focus;
- a source of radiant energy arranged to irradiate the particles as they pass through said first focus to produce a source of detectable radiation signals at said first focus; and
- means for detecting the detectable radiation signals after they have been reflected from said concave reflector surface.

# 4,341,994 POWER LEVEL MEASUREMENT SYSTEM

Tetsuro Kawasaki, and Hiromichi Toda, both of Tokyo, Japan, assignors to Anritsu Electric Company Limited, Tokyo, Japan

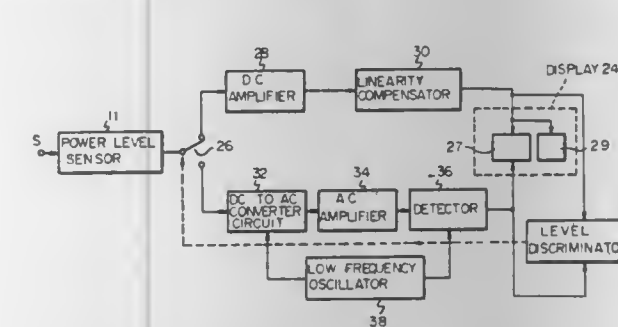
Filed Mar. 31, 1980, Ser. No. 135,904

Claims priority, application Japan, Mar. 31, 1979, 54-37741

Int. Cl.<sup>3</sup> G01R 15/10, 21/04

U.S. Cl. 324-132

5 Claims



1. A power level measuring system for measuring the power level and amplitude of an input signal, comprising: a power level sensor comprising a diode, coupled to receive said input signal and responsive thereto for producing an output signal indicative of the power level of said input signal, said output signal varying in amplitude in a linear manner with respect to variations in the power level of said input signal for values of said input signal power level which are below a predetermined threshold value of said diode; first amplifier means for amplifying said output signal from said power level sensor; second amplifier means for amplifying said output signal from said power level sensor and further for compensating for a non-linear relationship between said input signal applied to said power level sensor and said output signal from said power level sensor when said input signal is above a predetermined level, said second amplifier means comprising a DC amplifier coupled to receive said power level sensor output signal and a linearity compensation circuit coupled to receive an output signal from said DC amplifier for compensating said power level of said output signal from said DC amplifier when said input signal is above said predetermined threshold value of said diode; display means for displaying the power level and amplitude of said input signal applied to said power level sensor, said display means comprising a display device coupled to receive output signals from said first and second amplifier means for thereby displaying a power level of said input signal, and a cathode ray tube display device coupled to receive an output signal from said second amplifier means for thereby displaying an amplitude of said input signal; level discriminator means coupled to receive output signals

from said first and second amplifier means, for selectively producing control signals in accordance with whether either one of an output signal from said first amplification means and an output signal from said second amplifier means is above a value corresponding to said predetermined level of said input signal; and switching means responsive to said control signals from said level discriminator means for selectively applying said output signal from said first amplifier means and said output signal from said second amplifier means to said display means.

# 4,341,995 VELOCITY PROFILE ANALYZER

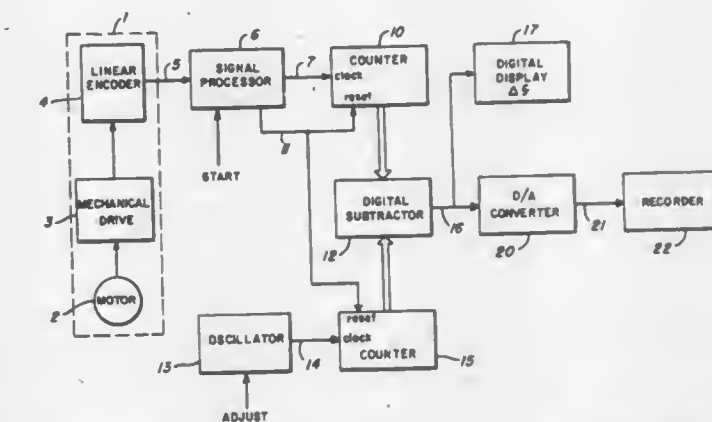
Robert P. Hennick, Dudley, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed May 29, 1981, Ser. No. 268,637

Int. Cl.<sup>3</sup> G01P 3/56

U.S. Cl. 324-161

9 Claims



1. An apparatus for measuring the velocity change of a moving mechanical component, including means for generating an encoded electrical signal in accordance with movement of said mechanical component, said encoded electrical signal including an index signal and a velocity representative signal, comprising: signal processing means coupled to receive said encoded electrical signal, for providing said velocity representative signal at a first output and said index signal at a second output; first counter means coupled to said signal processing means, said first counter means having a clock input connected to said first output for receiving said velocity representative signal, and a reset input connected to said second output for receiving said index signal, said first counter means having an output; oscillator means for generating a signal having a predetermined frequency; second counter means having a clock input coupled to receive said oscillator signal, and a reset input connected to said second output for receiving said index signal, said second counter means having an output; digital subtractor means having a first input connected to the output of said first counter means, and a second input connected to the output of said second counter means, said digital subtractor means having an output; and, digital display means connected to the output of said digital subtractor means for providing a numerical display of the velocity change of the moving mechanical component.







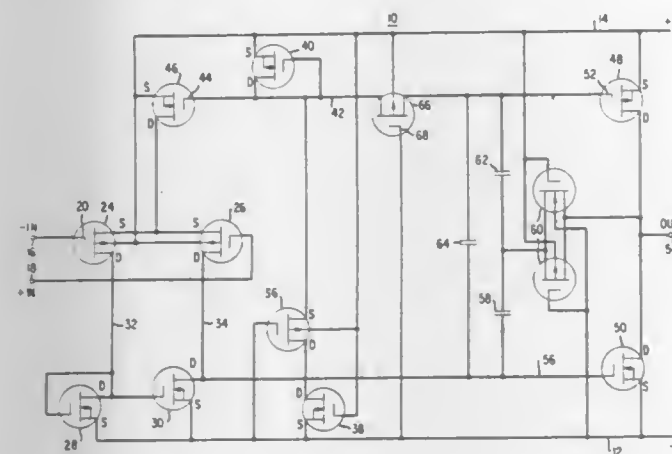
the audio frequency range, and wherein the signal amplification means consists of a plurality of separate amplifiers each arranged to amplify less than all of the divided signals and each located with its input adjacent the active filter device and its output adjacent the signal output means.

#### 4,342,003 OPERATIONAL AMPLIFIER WITH INCREASED SETTLING SPEED

Veikko R. Saari, Spring Lake Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Mar. 17, 1980, Ser. No. 131,238  
Int. Cl.<sup>3</sup> H03F 3/45

U.S. Cl. 330—253

8 Claims



1. An operational amplifier (10) comprising positive and negative power supply nodes (14, 12); a differential input stage with first and second inputs (16, 18) and first and second output nodes (34, 32); an output stage comprising a first, output transistor (50) connected in a common-source configuration and having a first control electrode (56) connected to said first input stage node (34); and, bias means for elements of said input stage and output stage; said bias means comprising a control node (42) and a second, bias current source transistor (48) connected in series with said output transistor (50) between said power supply nodes (14, 12) and having a second control electrode (52), said amplifier being characterized by: barrier means (66), connected at one side to said second control electrode (52) and at another side to said control node (42) of said bias means, for substantially preventing signals of at least a selected frequency or amplitude threshold value from passing to other elements of said bias means from said second control electrode (52), and filter means (64, 72, 78, 80) connected between a signal source and said second control electrode (52), said filter means (64, 72, 78, 80) being responsive to pass signals of at least said selected frequency or amplitude threshold value to result in additional current output through said bias current source transistor (48).

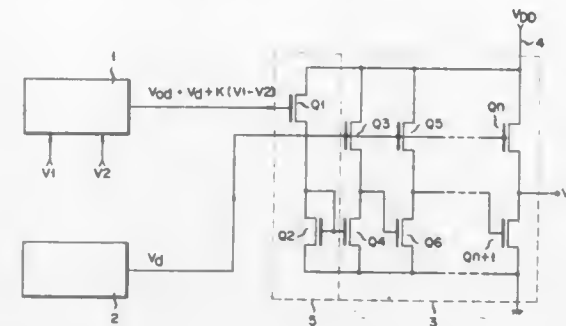
4,342,004  
VOLTAGE COMPARATOR CIRCUIT  
Tetsuya Iida, and Tatsuo Sakane, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan  
Filed May 12, 1980, Ser. No. 148,724  
Claims priority, application Japan, May 15, 1979, 54-59303; May 15, 1979, 54-59304  
Int. Cl.<sup>3</sup> H03F 3/45

U.S. Cl. 330—253

22 Claims

1. A voltage comparator comprising: a differential amplifier section for producing a signal corresponding to a difference between two input signals; a differential amplifier section output bias voltage generating section for producing a voltage corresponding to the output bias voltage of said differential amplifier section; a linear amplifier section in which a plurality of driver elements and a plurality of load elements are connected, and

of which a DC operating point is determined by a voltage from said differential amplifier section output bias voltage generating section; and a converting section which is inserted between said differential amplifier section and said linear amplifier section, and converts the DC output bias voltage from said differential

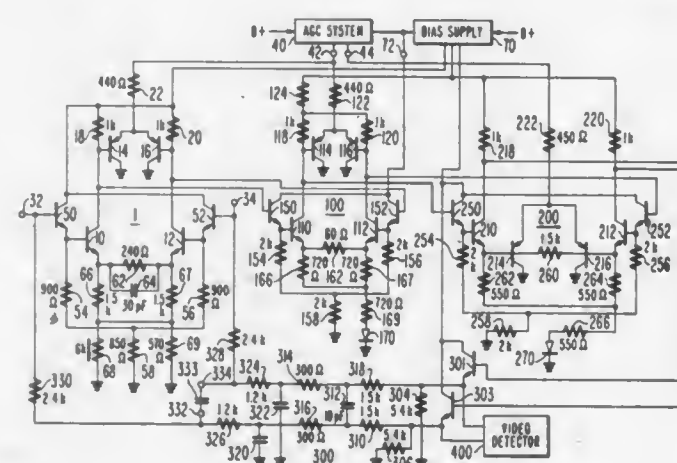


amplifier section into the DC operating point of said linear amplifier section; wherein said differential amplifier section, the differential amplifier section output bias voltage generating section, said linear amplifier section, and said converting section are comprised of MOS transistors of the same channel.

4,342,005  
TELEVISION INTERMEDIATE FREQUENCY  
AMPLIFIER WITH FEEDBACK STABILIZATION  
Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.  
Filed Jun. 26, 1980, Ser. No. 163,144  
Int. Cl.<sup>3</sup> H03G 3/30

U.S. Cl. 330—254

6 Claims



1. A feedback stabilized television intermediate frequency amplifier system comprising: an automatic gain control system for supplying a gain control signal; a plurality of gain controlled differential amplifiers direct current coupled in a cascade configuration for amplifying intermediate frequency signals, each of said amplifiers being coupled to said automatic gain control system and responsive to said gain control signal for varying the intermediate frequency signal gain of each of said amplifiers, the D.C. biasing of at least one of said amplifiers being substantially invariant to changes of said gain control signal, the first of said cascade coupled amplifiers including first and second differentially coupled amplifying transistors having base electrodes coupled to respective first and second input terminals, and the last of said cascade coupled amplifiers including third and fourth differentially coupled amplifying transistors having respective collector electrodes comprising first and second output electrodes of said amplifying system; and

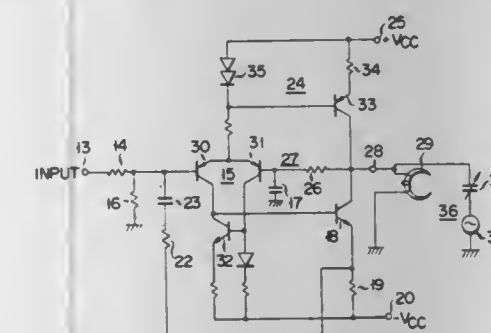
a first D.C. feedback path coupled between said first output electrode and said first input terminal, and a second D.C. feedback path coupled between said second output electrode and said second input terminal, said feedback paths each exhibiting a voltage gain not greater than unity over a range of frequencies including D.C. and said television intermediate frequencies.

#### 4,342,006 AMPLIFIER CIRCUIT FOR SUPPLYING LOAD WITH OUTPUT SIGNAL CURRENT PROPORTIONAL TO INPUT SIGNAL VOLTAGE

Yuzo Ishigaki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan  
Filed Feb. 12, 1980, Ser. No. 120,767  
Claims priority, application Japan, Feb. 16, 1979, 54-18841[U]

Int. Cl.<sup>3</sup> H03F 3/45  
U.S. Cl. 330—259

7 Claims



1. An amplifier circuit comprising: an output terminal; first and second power supply terminals; an amplifier having first and second inputs and an output, said first input being connected to receive an input signal and being one of inverting and noninverting inputs and said second input being the other of inverting and noninverting inputs; a transistor having a base, an emitter and a collector, said base of said transistor being coupled to said output of said amplifier, and said collector of said transistor being connected to said output terminal of said amplifier circuit; a constant-current source connected between said collector of said transistor and said first power supply terminal; a resistor connected between said emitter of said transistor and said second power supply terminal; an AC negative feedback circuit connected between said emitter of said transistor and said first input of said amplifier; and a DC negative feedback circuit connected between said collector of said transistor and said second input of said amplifier.

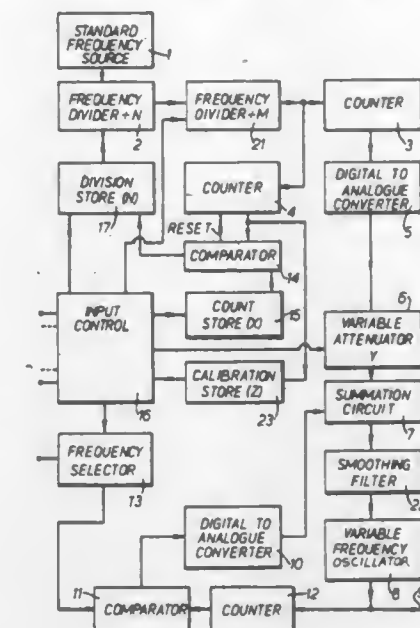
4,342,007  
SWEEP FREQUENCY OSCILLATOR WITH  
COMPENSATION FOR VARIATIONS IN TUNING  
SENSITIVITY  
Robert Elliott, St. Albans, England, assignor to Marconi Instruments Limited, Chelmsford, England  
Filed May 2, 1980, Ser. No. 146,731  
Claims priority, application United Kingdom, May 4, 1979, 7915711  
Int. Cl.<sup>3</sup> H03B 23/00; H03L 7/08

U.S. Cl. 334—4

13 Claims

1. A swept frequency oscillator arrangement including a variable frequency oscillator which provides a variable frequency output signal in dependence on the magnitude of a control signal; means for generating a succession of pulses derived from a fixed frequency source; means responsive to

said pulses for producing said control signal; and means for varying the rate at which said pulses are generated so as to

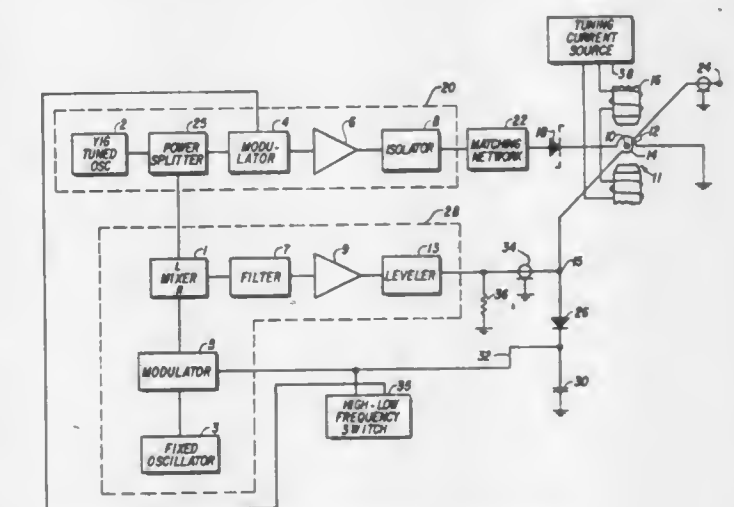


compensate for variations in the tuning sensitivity of said oscillator.

4,342,008  
SWITCHED TUNEABLE FREQUENCY MULTIPLIER  
Robert E. Jewett, Berkeley, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.  
Filed Jan. 29, 1981, Ser. No. 229,473  
Int. Cl.<sup>3</sup> H03B 19/00, 23/00; H01P 1/218

U.S. Cl. 331—49

9 Claims



1. A tuneable frequency multiplier comprising: electromagnetically resonant means having a variable resonance frequency; first signal input means for receiving a first electromagnetic signal; harmonic signal generating means connected to the first signal input means for generating a harmonic signal in response to the first electromagnetic signal; first coupling means connected to the harmonic signal generating means for coupling the harmonic signal to the electromagnetically resonant means; an output; second coupling means connected to the output for coupling a signal from the electromagnetically resonant means to the output; second signal input means for receiving a second electromagnetic signal connected to the second coupling means at a coupling node; electrically controlled shunt means connected to the coupling node and having a control input for shunting the coupling node means to ground in response to a first



control signal on the control input and for isolating the coupling node from ground in response to a second control signal on the control input whereby a signal from the electromagnetically resonant means is coupled to the output when the first control signal is applied to the shunt means control input and a signal from the second signal input is coupled to the output when the second control signal is applied to the shunt means control input.

#### 4,342,009 ELECTRONICALLY TUNED GUNN OSCILLATOR AND MIXER INCLUDING THE SAME

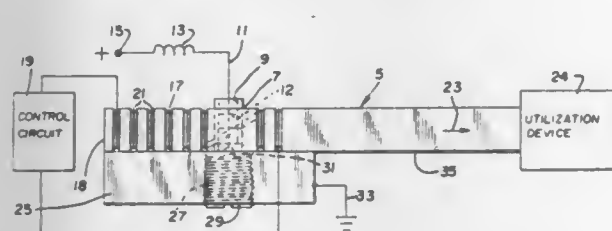
Samuel Dixon, Jr., Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 5, 1980, Ser. No. 184,456

Int. Cl.<sup>3</sup> H03B 9/14; H04B 1/26

U.S. Cl. 331-107 DP

12 Claims



7. A mm and sub mm oscillator comprising a length of dielectric image waveguide capable of supporting low loss propagation at mm and sub mm wavelengths, a Gunn diode mounted with its anode projecting inside a hole in said waveguide near one end therein, means to bias said Gunn diode into a negative resistance region, means to vary the dc magnetization of said waveguide between said hole and said one end of said waveguide, whereby said oscillator frequency will change with changes in said magnetization.

#### 4,342,010 DIELECTRIC WAVEGUIDE POWER LIMITER

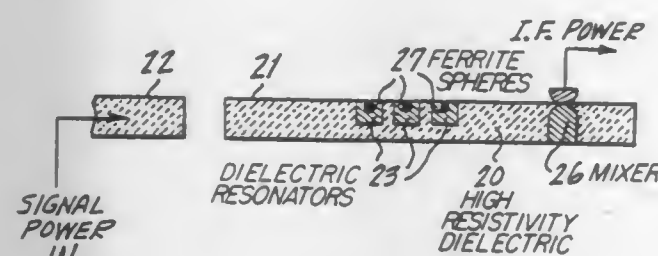
Samuel Dixon, Jr., Neptune, and Harold Jacobs, West Long Branch, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 27, 1980, Ser. No. 153,299

Int. Cl.<sup>3</sup> H01P 1/23

U.S. Cl. 333-17 L

14 Claims

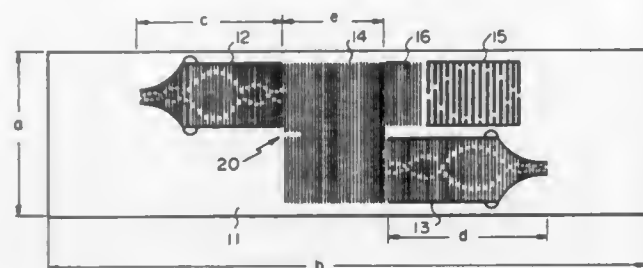


1. A microwave device, which comprises:  
a high resistivity dielectric waveguide including means for coupling millimeter or sub-millimeter wave microwave energy from an external source into the waveguide;  
a self-oscillating device positioned in said dielectric waveguide; and  
a plurality of high dielectric-constant resonators, comprising ferrite and biased to a subsidiary resonance state, interposed between said energy coupling means and said self-oscillating device for limiting the power fed to said self-oscillating device.

#### 4,342,011 SURFACE ACOUSTIC WAVE DEVICE

Hisao Iwamoto, and Noboru Wakatsuki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan  
Filed Sep. 25, 1980, Ser. No. 190,645  
Claims priority, application Japan, Sep. 25, 1979, 54-121933  
Int. Cl.<sup>3</sup> H03H 9/25, 9/42, 9/64, 9/66  
U.S. Cl. 333-151

5 Claims



1. A surface acoustic wave device comprising:  
a substrate made of piezoelectric material and having a plane surface for propagation of surface acoustic waves;  
an input transducer formed on said substrate surface, for converting electrical signals into surface acoustic waves;  
an output transducer formed on said substrate surface and arranged diagonally to said input transducer, for converting said surface acoustic waves into electrical signals;  
a multistrip coupler formed on said substrate surface and interposed between said input and output transducers to as to be substantially orthogonal to the propagation direction of said surface acoustic waves, said coupler including a plurality of parallel conductors;  
a reflecting transducer formed on said substrate surface and arranged opposite to said input transducer with said multistrip coupler therebetween and parallel to said output transducer, the reflecting transducer including electrodes and adapted to reflect said surface acoustic waves;  
said electrodes of said reflecting transducer being weighted and the number of conductors of said multistrip coupler being adjusted, whereby the intensity of reflection of said surface acoustic waves by said output transducer is equal to the intensity of reflection of said surface acoustic waves by said reflecting transducer; and  
means for adjusting to a phase difference between said reflections so as to be  $(2n-1)\lambda/2$ , where " $\lambda$ " is a wavelength at a center frequency of said surface acoustic waves and " $n$ " is a positive integral number, said phase difference adjusting means comprising phase adjusting strips formed on said substrate surface and interposed between said reflecting transducer and said multistrip coupler, said phase adjusting strips including a plurality of parallel conductors.

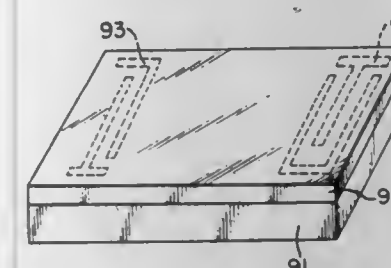
#### 4,342,012 SURFACE ACOUSTIC WAVE DEVICE

Ritsuo Inaba, Hirakata, and Kiyotaka Waga, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan  
Filed Feb. 18, 1981, Ser. No. 235,751  
Claims priority, application Japan, Feb. 19, 1980, 55/20267  
Int. Cl.<sup>3</sup> H03H 9/42, 9/64; H03B 5/32; H01L 41/18  
U.S. Cl. 333-155

11 Claims

1. A surface acoustic wave device comprising  
an X-cut LiTaO<sub>3</sub> single crystal substrate,  
a SiO<sub>2</sub> film formed over one major surface of said substrate, and

interdigital electrodes formed over said major surface and oriented such that the direction of propagation of surface

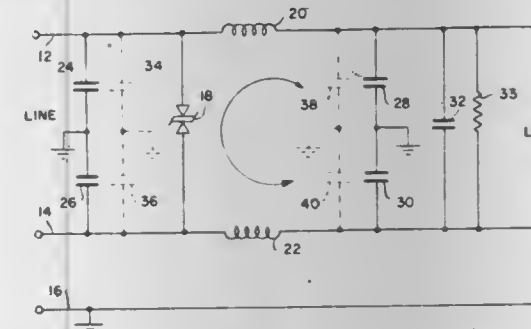


acoustic waves is between 80° and 180° measured from the Y-axis toward the Z-axis.

#### 4,342,013 BIDIRECTIONAL POWER LINE FILTER

Mathew R. Kallman, East Norwich, N.Y., assignor to Pilgrim Electric Co., Plainview, N.Y.  
Filed Aug. 25, 1980, Ser. No. 181,017  
Int. Cl.<sup>3</sup> H03H 7/01, 7/09  
U.S. Cl. 333-181

14 Claims

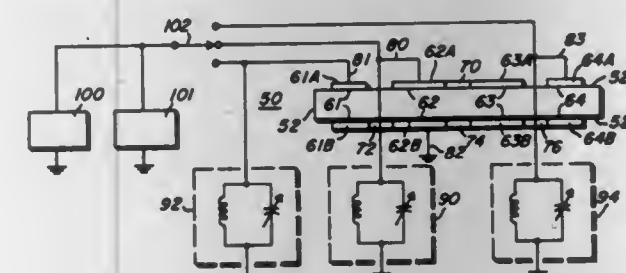


1. A bidirectional filter for connection in the phase, neutral, and ground lines of a power distribution system, comprising:  
first and second inductors arranged in the phase and neutral lines, respectively;  
at least one lumped parameter capacitor connected between the phase line and the ground line and the neutral line and the ground line electrically before and electrically after said inductors in said phase and neutral lines; and  
distributive capacitance means connected in shunt electrically with each of said lumped parameter capacitors from the phase line to the ground line and from the neutral line to the ground line, respectively.

#### 4,342,014 MULTI-RESONATOR CRYSTAL FILTER HAVING A REDUCED NUMBER OF PINS AND METHOD OF FABRICATION THEREOF

Aristotelis Arvanitis, Addison, Ill., assignor to Motorola, Inc., Schaumburg, Ill.  
Filed Jan. 5, 1981, Ser. No. 222,430  
Int. Cl.<sup>3</sup> H03H 3/04, 9/56, 9/15  
U.S. Cl. 333-191

5 Claims



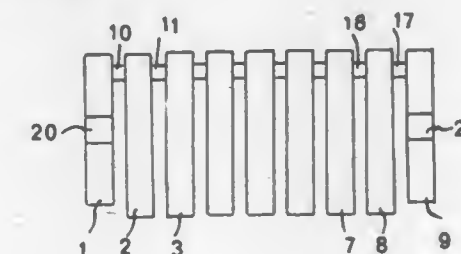
1. A multi-resonator crystal device comprising:

a piezoelectric crystal blank having first and second opposed surfaces;  
at least four resonators disposed on said crystal blank, each resonator including a first electrode situated on said first surface and a second electrode situated on said second surface opposite said first electrode, two of said at least four resonators being designated input and output resonators;  
first connecting means situated on said first surface for electrically coupling together the electrodes on said first surface other than the electrodes of said input and output resonators;  
second connecting means situated on said second surface for electrically coupling together said second electrodes, and said first and second connecting means being situated sufficiently far apart on said opposed crystal surfaces so as to prevent formation of another resonator by said first and second connecting means.

#### 4,342,015 ELECTROMECHANICAL BAND PASS FILTERS

Herbert Ernyei, Conflans Ste Honorine, France, assignor to Lignes Telegraphiques et Telephoniques, Conflans Ste Honorine, France  
Filed Jul. 17, 1980, Ser. No. 169,655  
Claims priority, application France, Jul. 18, 1979, 79 18570  
Int. Cl.<sup>3</sup> H03H 9/24, 9/50  
U.S. Cl. 333-197

4 Claims



1. An electromechanical band pass filter comprising a plurality of cells in cascade, each cell including:  
two parallel cylindrical bars forming longitudinally vibrating resonators; and  
a flexurally vibrating cylindrical coupler connected between said two resonators, wherein the cell of rank  $i$  is dimensioned such that one of the relative limiting frequencies  $(\Omega_i^-)$  of its frequency band  $(\Omega_i^- - \Omega_i^+)$  is linked with the limiting frequency  $(f_i^+)$  of a cell for an electrical low-pass filter corresponding to said electromechanical filter to be obtained by the relationship:

$$f_i^+ = \frac{A}{\sin a_{ci} + \sinh a_{ci}} \left[ \frac{\tan a_{ci}}{\sqrt{\Omega_i^-}} (1 - \cos a_{ci} \cosh a_{ci}) - 2.539 (\Omega_i^- - 1) (\sin a_{ci} \cosh a_{ci} + \cos a_{ci} \sinh a_{ci}) \right]$$

where:  
 $A$  is a constant

$$a_{ci} = \sqrt{\Omega_i^-} \cdot \frac{l_c}{l_0}$$

where  $l_c$  is the length of said coupler and  $l_0$  the length of said coupler corresponding to a quarter wave effect at the central frequency of the band of frequencies to be transmitted by said electromechanical filter  
 $a_{ci} = 2\pi n \Omega_i^- l_m$  where  $m$  is the order of the vibration mode



and where  $n_r = (l_r/\lambda_0)$  with  $l_r$  the length of said resonators and  $\lambda_0$  the wavelength at the tuning frequency of said resonators in longitudinal vibration.

4,342,016

# TRANSFER-TYPE ELECTROMAGNETIC RELAY COMPRISING A COIL AROUND A HOUSING OF THE RELAY AND AN ARMATURE CARRYING MOVABLE CONTACTS AT BOTH ENDS

Kiyotaka Yokoo; Sadayuki Mitsuhashi, and Kazutoshi Wakamatsu, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

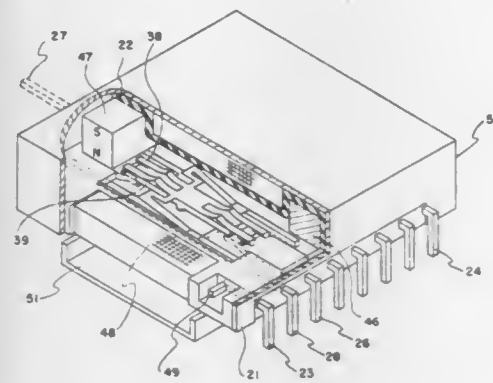
Filed Aug. 18, 1980, Ser. No. 179,269

Claims priority, application Japan, Aug. 20, 1979, 54-105796; Aug. 20, 1979, 54-105797; Nov. 8, 1979, 54-144698; Nov. 8, 1979, 54-144699

Int. Cl.<sup>3</sup> H01H 50/04, 51/01, 51/29

U.S. Cl. 335—79

17 Claims



1. In a transfer-type electromagnetic relay comprising a housing and a contact assembly, said housing comprising a base member having a generally flat insulative inner surface and a cap member defining in cooperation with said inner surface a space having a predetermined height, a first and a second space end, and a space axis extended parallel to said inner surface through said first and said second space ends, said contact assembly comprising a first, a second, and a third lead member fixed to said inner surface adjacent to said first and said second space ends and between said first and said second space ends, respectively, and extended outwardly of said housing, a first and a second fixed contact stud attached in said space to a first predetermined point of said first lead member and a second predetermined point of said second lead member, respectively, an armature member in said space, and a first and a second movable contact stud carried by said armature member so as to form a first and a second contact in cooperation with said first and said second fixed contact studs, respectively, said armature member having a transverse axis transversely of said space axis and intermediately between said first and said second space ends, said armature member being held on said third lead member for seesaw movement about said transverse axis and electrically connecting said first and said second movable contact studs to said third lead member, said relay further comprising energizing means for selectively electromagnetically energizing and deenergizing said armature member to carry out transfer of contact between said first and said second contacts, and latching means for latching said armature member so as to keep at least a predetermined one of said first and said second contacts closed while said armature member is left deenergized, the improvement wherein:

said third lead member comprises a support portion fixed intermediately between said first and said second space ends to said inner surface and a lead portion extended from said support portion towards at least a predetermined one of said first and said second space ends and further extended outwardly of said housing; said first lead member comprising a first inner portion fixed to said inner surface between said support portion and said

first space end and a first outer portion extended from said first inner portion outwardly of said housing; said second lead member comprising a second inner portion fixed to said inner surface between said support portion and said second space end and a second outer portion extended from said second inner portion outwardly of said housing; said first and said second lead members having a first elongated portion comprising said first inner portion and a second elongated portion comprising said second inner portion, respectively, each of said first and said second elongated portions being made of a predetermined material having a predetermined magnetic property and extended parallel to said space axis; said armature member comprising: an armature having said transverse axis and mounted on said support portion for said seesaw movement; an electroconductive leaf spring comprising a central portion fixed onto said armature and a first and a second extension extended from said central portion transversely of said transverse axis towards said first and said second space ends, respectively, with said first and said second movable contact studs attached to said first and said second extensions, respectively; and connecting means for electrically connecting said leaf spring to at least a predetermined one of said support and said lead portions; said energizing means comprising: a coil wound around said housing; and means for electrically selectively energizing said coil to produce a magnetic field in said space in a direction of said space axis with a preselected one of a first and a second sense of said direction of magnetically energizing said armature so as to produce a north and a south pole adjacent to an armature end nearer to said first contact, respectively, and for electrically deenergizing said coil to make the magnetic field disappear and thereby to magnetically deenergize said armature.

4,342,017

# ELECTRICAL RELAY MEANS

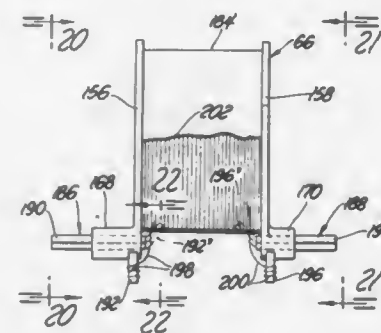
Norman A. Rautiola, 430 Upton, Reed City, Mich. 49677

Filed Jul. 23, 1980, Ser. No. 171,451

Int. Cl.<sup>3</sup> H01H 67/02; H01F 5/04

U.S. Cl. 335—128

56 Claims



1. A relay assembly, comprising bobbin means, said bobbin means comprising a generally tubular body carrying spaced generally transversely extending bobbin walls, coil means situated generally about said tubular body and contained between said spaced bobbin walls, said coil means being adapted to at times be electrically energized, said coil means comprising wire means having first and second end portions, first and second terminal means for connection to associated circuit means, and intermediate first and second connection means, said first intermediate connection means being effective to electrically interconnect said first end portion to said first terminal means and said second intermediate connection means being effective to electrically interconnect said second end portion to said second terminal means, said first intermediate

4,342,019

# ELECTROMAGNETIC RELAY WITH A FLAT ARMATURE

Helmut Schedele, Hoegling, Fed. Rep. of Germany; assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

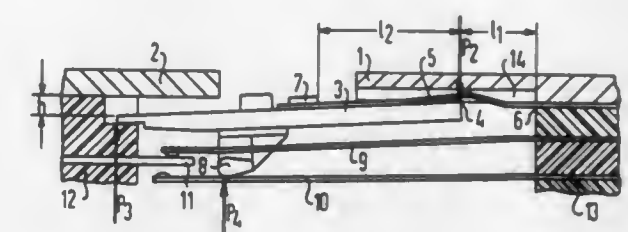
Filed Nov. 28, 1980, Ser. No. 211,394

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950243

Int. Cl.<sup>3</sup> H01H 3/00; H01F 7/08; H01H 51/08

U.S. Cl. 337—274

5 Claims



1. An electromagnetic relay comprising: a yoke plate having a recess therein; a pole plate disposed substantially coplanar with said yoke plate; an armature pivotable between a rest position and an operating position which is substantially parallel to said yoke plate and said pole plate for making breaking spring contacts in said relay, said armature having a bearing edge; and a bearing spring for supporting and biasing said armature, said bearing spring being disposed in said recess in said yoke plate and being connected to said armature at an attachment point about which said armature pivots, said attachment point disposed at a selected distance from said bearing edge such that said bearing edge moves on substantially a single line when said armature is pivoted between said rest position and said operating position whereby said armature pivots causing substantially no contact between said bearing spring and said yoke plate.

4,342,020

# ELECTRICAL NETWORK

Ferdinand Utner; Harald Vetter, both of Regensburg, and Ludwig Nutz, Heidenheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 9, 1980, Ser. No. 138,708

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916329

Int. Cl.<sup>3</sup> H01C 1/012

U.S. Cl. 338—314

10 Claims



1. An electrical network comprising: a metal carrier; a pair of insulating layers materially bonded to opposite sides of said carrier, said insulating layers being temperature resistant up to at least 200° C.; a nickel/chromium resistance layer, conductive paths and terminal elements materially bonded to said insulating layers, said terminal elements located adjacent an edge of the network contacting said conductive paths; and a copper layer carried on said resistance layer.

4,342,018

# MAGNET CONTROL DEVICE FOR CAMERAS

Saburo Numata, Urawa, and Fumio Kobayashi, Omiya, both of Japan, assignors to Fujii Photo Optical Co., Inc., Saitama, Japan

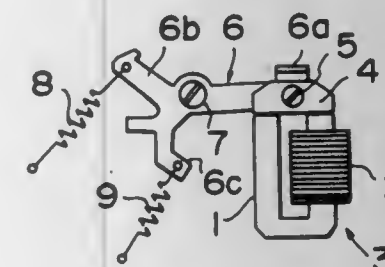
Filed Jul. 11, 1980, Ser. No. 168,677

Claims priority, application Japan, Jul. 12, 1979, 54-88437

Int. Cl.<sup>3</sup> H01F 7/08

U.S. Cl. 335—270

4 Claims



1. A magnet control device for use in a camera comprising a magnet means having an attracting face, a member to be attracted by the magnet means having an attracted face to be put into contact with the attracting face of the magnet means, and a control lever carrying said attracted member, said attracted member being mounted around an axle secured to said control lever for rotation thereabout, wherein the improvement comprises a resilient material disposed between said axle and said attracted member for allowing said attracted member to tilt around the axle to follow an inclination of the attracting face, whereby said attracted face is positionable in perfect face contact with said attracting face.



4,342,021

## POSITION OR MOVEMENT SENSOR, E.G. FOR CONVEYANCES SUCH AS LIFTS

Ronald W. Schaller, London, England, assignor to Seltrust Engineering Limited, London, England

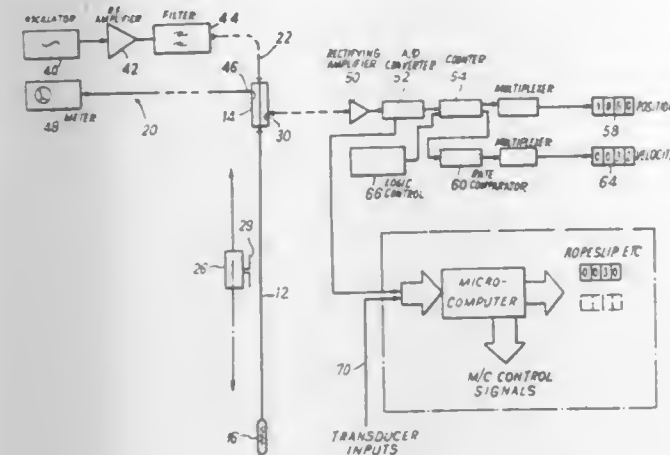
Filed Jul. 3, 1980, Ser. No. 165,828

Claims priority, application United Kingdom, Jul. 6, 1979, 7923672

Int. Cl.<sup>3</sup> G08G 1/01; B66B 3/02; G01D 5/00

U.S. Cl. 340—38 L

8 Claims



1. A position or movement sensor responsive to relative movement of an object along a path, comprising: an elongate radiating conductor along the path; means coupled to one end of said conductor for forming an electromagnetic standing wave in the conductor; a resonator carried by the object; and detector means coupled to the said one end of the conductor for detecting cyclical changes in the standing wave characteristics as the resonator moves through the radiated standing wave pattern.

4,342,022

## WARNING LAMP ARRANGEMENTS FOR VEHICLE BATTERY CHARGING SYSTEMS

Thomas Nichol, Oxted, England, assignor to Lucas Industries Limited, Birmingham, England

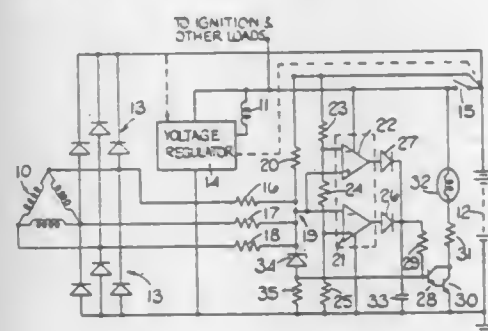
Filed Dec. 28, 1979, Ser. No. 108,198

Claims priority, application United Kingdom, Jan. 6, 1979, 7900489

Int. Cl.<sup>3</sup> G08B 21/00

U.S. Cl. 340—52 R

5 Claims



1. A warning lamp arrangement for a vehicle battery charging system including an alternator having an armature winding, a resistor network comprising a plurality of resistors, one end of each resistor being connected to a respective output phase of the armature winding and the other end being connected to a common point, and means sensitive to the voltage waveform at said common point for illuminating a warning lamp when the voltage waveforms exceeds its normal amplitude relationship to the battery voltage, said voltage sensitive means comprising a pair of voltage comparators and a pair of voltage reference sources defining said normal amplitude relationship, and each comparator having one input connected to

said common point and its other input connected to a respective one of said voltage reference sources.

4,342,023

## NOISE LEVEL CONTROLLED VOICE WARNING SYSTEM FOR AN AUTOMOTIVE VEHICLE

Masakazu Tsunoda, Fujisawa, and Teruo Kawasaki, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

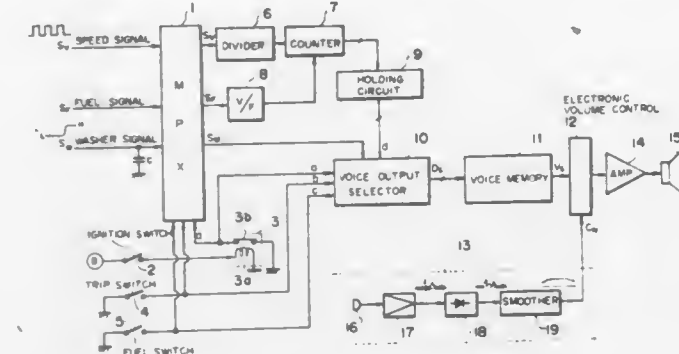
Filed Aug. 28, 1980, Ser. No. 182,238

Claims priority, application Japan, Aug. 31, 1979, 54-119116[U]

Int. Cl.<sup>3</sup> G08B 21/00; B60Q 5/00

U.S. Cl. 340—52 F

3 Claims



1. A voice warning system for an automotive vehicle, which comprises:
  - (a) a plurality of information switches;
  - (b) a multiplexer for selectively outputting one of various signals indicating vehicle operating conditions when one of said switches is depressed;
  - (c) a voice output selector for outputting a voice output designation signal  $D_s$  in accordance with the signal from said multiplexer;
  - (d) a voice memory for storing a number of voice outputs and for outputting a series of voice signals  $V_s$  in response to the voice output designation signal  $D_s$  from said voice output selector;
  - (e) an electronic volume control for controlling the level of voice signals  $V_s$  outputted from said voice memory; and
  - (f) a noise level sensor for detecting the noise level within the passenger compartment and for outputting a control signal  $C_n$  to said electronic volume control, whereby the volume of warning information is automatically controlled according to the noise level within the passenger compartment.

4,342,024

## VEHICLE BURGLAR ALARM APPARATUS WITH ELECTRONIC MEMORY AND DIGITAL DISABLING COMBINATION

Giovanni Rossi, Milan, Italy, assignor to R.B.M. S.r.l., Milan, Italy

Filed Jan. 27, 1981, Ser. No. 228,712

Claims priority, application Italy, Jan. 29, 1980, 19550 A/80

Int. Cl.<sup>3</sup> H04Q 3/02; G08B 13/22

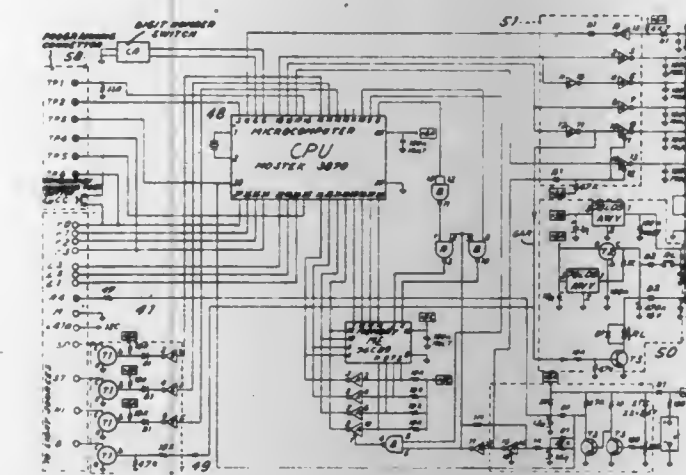
U.S. Cl. 340—64

19 Claims

1. A burglar alarm apparatus with electronic memory and digital disabling combination, particularly for use in motor-cars, motor boats or the like, comprising:
  - (a) an electronic control board having:
    - (i) a keyboard provided with a plurality of digit combination entering keys, an engine start key, an engine stop key, a garage key, by means of which garage key the apparatus can be disabled after a valid combination has been entered, still keeping the normal ignition key operation on,
    - (ii) a processing unit, responsive to said keyboard and preferably including a microcomputer, controlling the operation of the whole apparatus, an electronic memory connected

to said microcomputer and having the initial combination stored in, a reset circuit for generating an enabling reset signal for said microcomputer whenever said stop key is depressed; and

- (b) an electronic actuating board, responsive to said electronic control board and acting on the main engine circuits and alarms, having:



- (i) a driver circuit responsive to the microcomputer outputs and issuing control signals, upon the ignition key insertion, to the power relays which operate the signalling and electrical engine circuits of the motor-car,
- (ii) at least one alarm circuit with a time-delay relay.

4,342,025

## ARRANGEMENT FOR DETERMINING THE POSITION, ESPECIALLY THE ANGULAR POSITION, OF A MOVABLE BODY

Max Spälti, Mutschellen, and Vladimir Vanek, Urdorf, both of Switzerland, assignors to SSIG Equipment S.A., Bienne, Switzerland

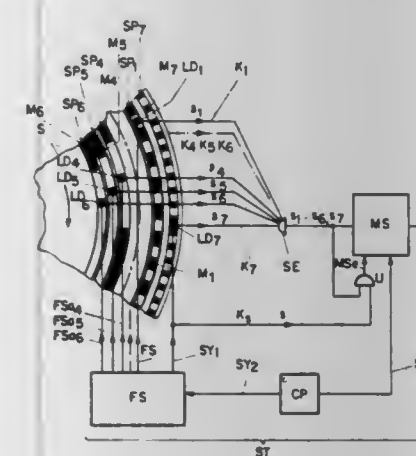
Filed May 9, 1980, Ser. No. 148,201

Claims priority, application Switzerland, May 16, 1979, 4537/79

Int. Cl.<sup>3</sup> H03K 13/18

U.S. Cl. 340—347 P

29 Claims



1. An arrangement for determining the position of a body having a plurality of tracks of position markings representing coded position information, said arrangement comprising:
  - (a) a signal generator associated with each of said tracks and arranged to direct detecting signals towards the respective track;
  - (b) a transmitting channel associated with each of said tracks and arranged to convey information signals received from the respective track in response to said detecting signals away from the respective track;
  - (c) a signal receiver for said information signals operatively associated with at least some of said transmitting channels;
  - (d) controlling means operative to cause a batch of said information signals including an information signal from

each of said tracks to be delivered to said signal receiver in periodic cycles, said controlling means further being operative to cause the information signals of each batch to be delivered to said signal receiver in a predetermined sequence, and said controlling means also being operative to generate a control signal at a predetermined instant during each of said cycles so as to enable the information signals of each batch to be correlated with the respective tracks;

- (e) generating means for intermittently generating a safety signal to prevent garbling of said information signals; and
- (f) blocking means for blocking said information signals and operative to pass the same only when said control and safety signal are generated simultaneously.

4,342,026

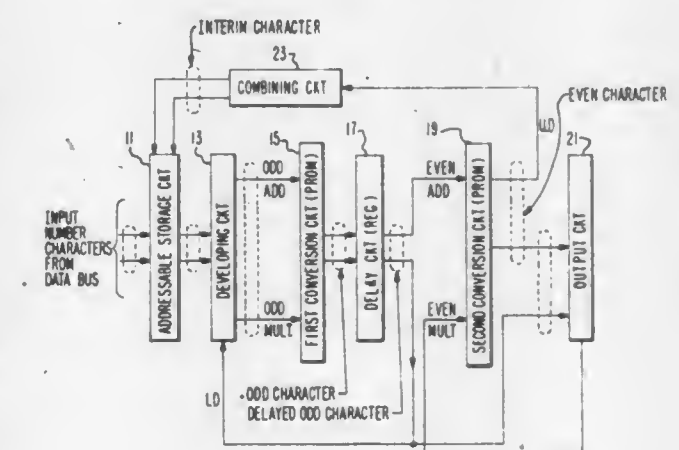
NUMBER CONVERSION APPARATUS  
Lawrence G. Hanson, Temple City, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 3, 1980, Ser. No. 156,201

Int. Cl.<sup>3</sup> G06F 5/02

U.S. Cl. 340—347 DD

9 Claims



1. Electrical apparatus for automatically converting an input number in a first form of either a BCD or binary number into an output number representing the input number and being in a second form of the remaining one of the BCD and binary number forms, each of said input and output numbers comprising at least one two-digit character, said apparatus comprising:
    - input circuit means for selectively storing digits of the input number and subsequent interim digits and for selectively outputting each stored digit as an odd addend;
    - first conversion circuit means responsive to each odd addend and to an associated odd multiplier for generating an even addend and a first lower digit together forming a character which is equal to the sum of the odd addend and the product of the odd multiplier and a preselected multiplicand;
    - developing circuit means selectively responsive to the first lower digit for developing the odd multiplier;
    - second conversion circuit means operating concurrently with said first conversion circuit means and responsive to each even addend and to an associated even multiplier for generating an interim digit and a second lower digit together forming a character which is equal to the sum of the even addend and the product of the even multiplier and the preselected multiplicand; and
    - output circuit means responsive to associated first and second lower digits for selectively developing the even multiplier and the output number in its second form;
- each of said first and second conversion circuit means including a PROM having internal look up tables which are addressed by the combination of the associated input addend and input multiplier to develop an associated output character, said internal look up tables having a preselected multiplicand equal to ten for a BCD-to-binary



conversion and equal to sixteen for a binary-to-BCD conversion.

4,342,027

## RADIX CONVERSION SYSTEM

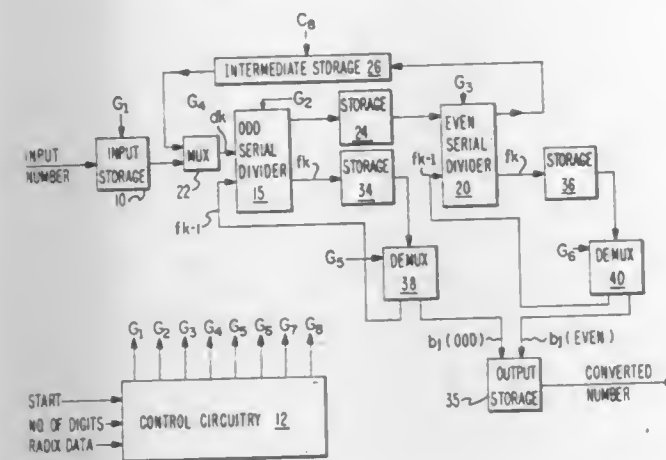
Lawrence G. Hanson, Temple City, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 156,201, Jun. 3, 1980. This application Aug. 1, 1980, Ser. No. 174,431

Int. Cl.<sup>3</sup> G06F 5/02

U.S. Cl. 340—347 DD

11 Claims



1. Electrical apparatus for converting an input number in a first number system of radix  $r_1$  into an equivalent output number in a second number system of radix  $r_2$  comprising: input circuit means for receiving input electrical signals representing said input number in said first number system; and electrically operable conversion means responsive to said input electrical signals for producing output electrical signals representing said equivalent number in said second number system by performing a plurality of successive divisions in accordance with the divide-by-radix iterative equation:

$$\frac{Q_{j-1}}{r_2} = Q_j + b_j$$

where  $j = 1, 2, \dots, n$ , where  $Q_0$  is said input number in said first number system, where  $r_2$  is radix  $r_2$  expressed in said first number system, where  $Q_j$  is the quotient of the  $j$ th division, where  $n$  is the number for which the quotient  $Q_j = 0$ , where  $b_j$  is the remainder of the  $j$ th division and is also a digit of said equivalent output number in said second number system, and where said equivalent output number in said second number system is formed by assembling the  $b_j$  remainders as  $b_n \dots b_2 b_1$  with  $b_1$  being the least significant digit;

said conversion means including serial division circuit means for performing each of the divisions required by said divide-by-radix iterative equation using electrical signal representations for the values in said equation and the outputs obtained therefrom, said serial division circuit means including a first serial divider to which the digits of an input number  $Q_{j-1}$  are serially applied as dividend digits beginning with the most significant dividend digit, said first serial divider being responsive to these serially applied dividend digits so as to serially produce output quotient digits of the quotient  $Q_j$  in accordance with said equation beginning with the most significant output quotient digit and for also producing a final remainder digit  $b_j$  corresponding to a digit of said equivalent number in said second number system;

said serial division means also including a second serial divider connected so as to serially receive and serially operate on the output quotient digits produced by said

first serial divider beginning with the most significant quotient digit.

4,342,028

## CABLE DRUM ROTATION INDICATOR

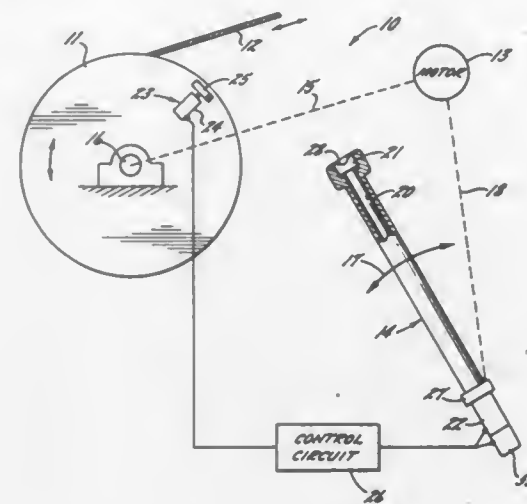
James C. Schroeder, Two Rivers, Wis., assignor to The Manitowoc Company, Inc., Manitowoc, Wis.

Filed Nov. 25, 1980, Ser. No. 210,325

Int. Cl.<sup>3</sup> G08B 1/00

U.S. Cl. 340—407

4 Claims



1. For use with a power driven cable drum controlled by a hand positioned operator's lever, a drum rotation indicator comprising, in combination, an arbor mounted within and substantially coaxially with said lever, said arbor having an end exposed for physical contact with the hand of an operator using said lever, a reversible variable speed motor coupled for rotating said arbor within said lever, a power source coupled for driving said motor and positioned to be driven by said drum so that rotation of said drum causes rotation of said arbor which can be felt by the operator.

4,342,029

## COLOR GRAPHICS DISPLAY TERMINAL

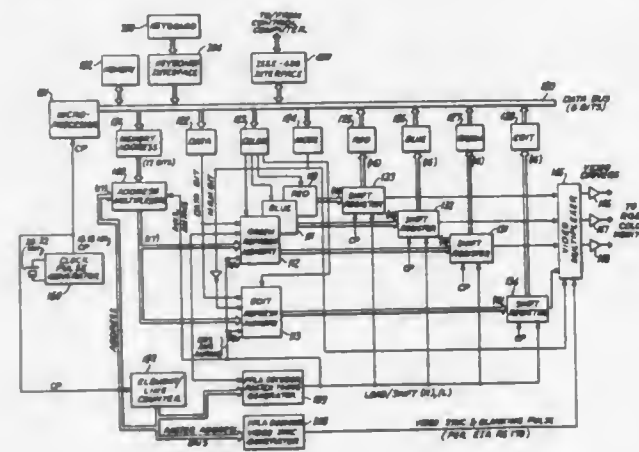
Ilmar A. Hofmanis, Commack, and Joseph A. Lebel, New Hyde Park, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jan. 31, 1979, Ser. No. 8,425

Int. Cl.<sup>3</sup> G09G 1/28

U.S. Cl. 340—703

23 Claims



1. A color graphics display terminal having an edit mode of operation and a graphic mode of operation and adapted for real-time data communication with a control computer comprising:

- (a) means for entering control commands and data into said terminal;
- (b) means for transmitting the control commands and data from said terminal to said control computer for format-

ing operating instructions, said operating instructions including terminal operating instructions;

(c) means for receiving the terminal operating instructions from said control computer;

(d) means for decoding the terminal operating instructions, said decoding means including means for producing a plurality of color video signals; and

(e) means for transforming the plurality of color video signals into a multi-colored visual display.

4,342,030

## ANALOGUE DISPLAYS FOR ELECTRONIC TIMEPIECES OR METERS

Ian A. Shanks, Malvern, England, assignor to National Research Development Corporation, London, England

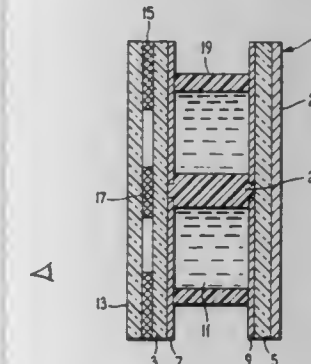
Filed Mar. 7, 1980, Ser. No. 128,059

Claims priority, application United Kingdom, Mar. 13, 1979, 7908903

Int. Cl.<sup>3</sup> G09G 3/36

U.S. Cl. 340—753

16 Claims



1. An analogue display comprising in combination: a display panel; address means for providing a set of voltage signals to operate the display panel; and selector means, capable of response to input data, for selecting voltage signals from the address means, and for applying these signals to the display panel to enable display of two indices on the display panel against an optically contrasting background; wherein, the display panel includes: two parallel substrates; an electrically sensitive medium contained between the two substrates, the medium being capable of adopting simultaneously in different regions thereof each of two optical states, an ON state, and an OFF state, respectively, in response to different electrical fields developed thereacross;

a first set of electrodes arranged in a plurality of segments, each segment being divided into an inner and an outer portion, each portion being planar and having a plurality of joined digits, the digits of one portion being interposed alternate with and in between the digits of the other portion, the first set of electrodes being mounted on the inwardly facing surface of the first substrate, and connected to the selector means; and

a second set of electrodes having a configuration in which a single electrode is interposed between meandering electrodes in folds formed by the meandering electrodes to form collectively a modified meander structure, the second set of electrodes being mounted on the inwardly facing surface of the second substrate, and connected to the selector means;

the two sets of electrodes being registered one set over the other with alternate digits and alternate meander electrodes defining two subsets of selectable index positions each subset to display a different index; and,

the selector means being constructed to respond to input data and connected to the two sets of electrodes to drive the panel medium in the ON state at two different selected index positions simultaneously, the panel me-

dium being in the OFF state at all other selectable index positions.

4,342,031

## LIQUID CRYSTAL AND NUMERICAL DISPLAY DEVICES

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, Harahan, La.

Filed Jan. 15, 1980, Ser. No. 112,198

The portion of the term of this patent subsequent to Mar. 18, 1992, has been disclaimed.

Int. Cl.<sup>3</sup> G09G 3/04

U.S. Cl. 340—756

25 Claims

1. A display system producing a numerical display from a plurality of discrete electrically actuated element positions in a material exhibiting visibly changeable characteristic, with the positions placed in side-by-side relationship in a crossover grid matrix with the element positions aligned in an array forming a substantially isosceles triangle with each electrode position and two adjacent electrode positions, consisting of a set of electrode positions arranged to present a set of recognizable characters including Arabic numerical digits 0 to 9 with different subsets of said electrode positions and energization means for visually changing said elements comprising opposed electrode pairs defining each element position in said grid, the electrodes being connected in a matrix wiring pattern of separate conductors each connecting a plurality of said element electrodes together and being disposed to actuate an element at a coordinate of two conductors to define each of said discrete element positions when both conductors are energized.

4,342,032

## DEVICE FOR THE DETECTION OF AND DEFENSE AGAINST MASKED HELICOPTERS

Hansjoerg Roesch, Hofstetten, and Helmut Eberle, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

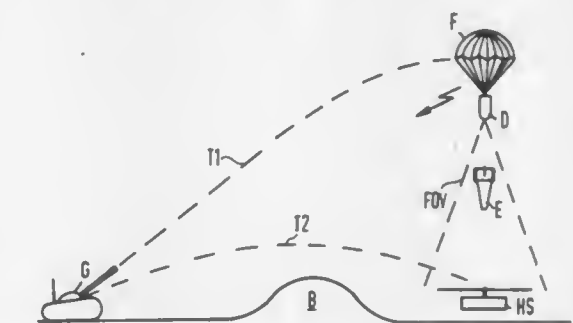
Filed Feb. 21, 1980, Ser. No. 123,466

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1979, 2907249

Int. Cl.<sup>3</sup> G01S 7/50; G01T 5/00

U.S. Cl. 343—6 ND

9 Claims



1. A system for detection of and defense against low-flying helicopters, having a drive means and rotary lifting blades operating at an angular frequency and disposed above said drive means, which are hidden by ground cover, said system comprising:

- a detector for detecting thermal radiation produced by said drive means and generating an electric signal upon such detection;
- a band pass optical filter disposed between said detector and said blades of said helicopter for admitting only thermal radiation to said detector having a temperature corresponding to the temperature of said drive means, said thermal radiation being modulated by periodic blocking of said thermal radiation at said angular frequency of said blades;
- a means for positioning said detector above a zone in which the presence of low-flying hidden helicopters is suspected;



an amplifier post-connected to said detector for receiving said signal therefrom;  
 an electrical filter post-connected to said amplifier, said electrical filter admitting only signals from said amplifier having a frequency corresponding to said frequency of the blades, said optical filter and said electrical filter operating in combination for admitting only signals corresponding to the temperature of said drive means at a frequency of said blades, thereby indicating the presence of a helicopter in said zone; and  
 a means post-connected to said amplifier for providing a signal to a ground station indicating the presence of a detected helicopter.

4,342,033

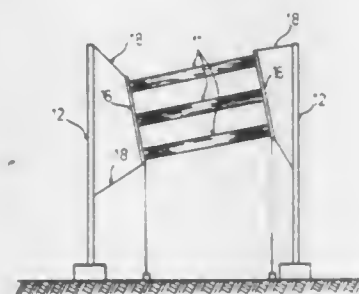
## WAVE ACTION DEVICE FOR RADIO FREQUENCIES

Luiz M. V. de Camargo, Rua Gomes Carneiro, 34 Apt. 901 - Ipanema, Rio de Janeiro, RJ, Brazil  
 Continuation-in-part of Ser. No. 837,156, Sep. 28, 1977, abandoned. This application Jan. 25, 1980, Ser. No. 115,445  
 Claims priority, application Brazil, Oct. 15, 1976, 17606976[U]

Int. Cl.<sup>3</sup> H01Q 19/06

U.S. Cl. 343—753

6 Claims



1. A wave action device for a wave beam emitted from a source, said wave action device operating as a lens at a relay station remote from said source of said beam to redirect the beam in selective high concentration of said beam to one or more specific points, said wave action device being positioned in the region of a wave link at the remote relay station, said wave action device comprising

- a pair of spaced supports; intercepting means for intercepting the beam to eliminate that portion of said beam which forces the appearance of a null field at selected points of reception, said intercepting means comprising elongated spaced blades of predetermined dimensions positioned in a plane substantially transverse to the direction of propagation of said beam, said blades having spaces of predetermined dimensions between them, each of said blades having a side knife-edge, spaced opposite ends and a longitudinal axis extending therebetween, each of said blades having a width of a dimension determined by the operating characteristics of said device, said spaces having dimensions determined by the operating characteristics of said device;
- modifying means for modifying the phase and the amplitude of the remaining portion of the intercepted beam to redirect said remaining portion of said beam in a passive manner, said modifying means selectively concentrating and diverging said remaining portion of said beam with respect to said selected points of reception, said modifying means comprising said spaces and said knife-edges of said blades for modifying the phase and the amplitude of said remaining portion of said beam; and
- mounting means mounting said blades at their ends on said supports in a manner whereby said blades are adjustably inclinable relative to horizontal.

4,342,034  
RADIO FREQUENCY ANTENNA WITH POLARIZATION CHANGER AND FILTER

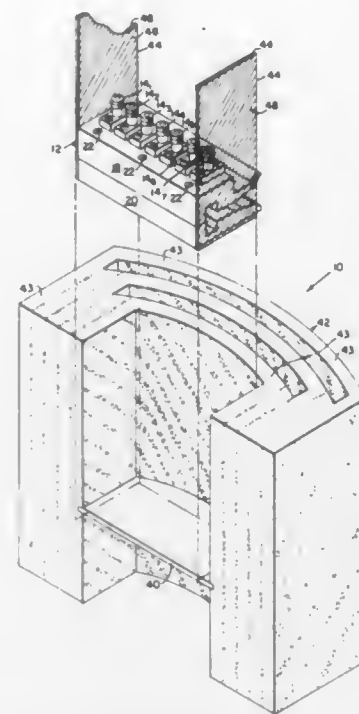
George J. Monser, Goleta, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 24, 1980, Ser. No. 209,935

Int. Cl.<sup>3</sup> H01Q 15/12

U.S. Cl. 343—756

8 Claims



1. A radio frequency antenna comprising:
  - (a) an array of antenna elements adapted to produce radio frequency energy having linear polarization;
  - (b) a polarizer means disposed between a frontal portion and side portions of the array for converting the linearly polarized radio frequency energy into circularly polarized radio frequency energy;
  - (c) a pair of polarization filters disposed between the side portions of the array and the polarizers, such filters being disposed at an acute angle with respect to the linear polarization of the energy produced by the array.

4,342,035

## FREQUENCY COMPENSATING REFLECTOR ANTENNA

Iain Anderson, Ralph Benjamin, and Thomas R. Morgan, all of Cheltenham, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Oct. 11, 1979, Ser. No. 83,917

Claims priority, application United Kingdom, Jul. 33, 1979, 7925563

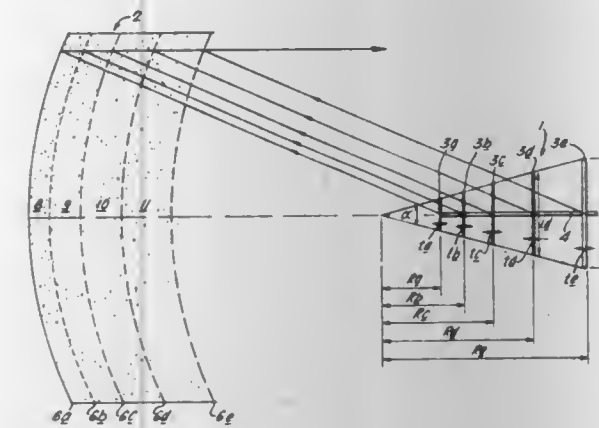
Int. Cl.<sup>3</sup> H01Q 11/10

U.S. Cl. 343—792.5

16 Claims

1. A reflector antenna adapted to avoid defocussing with frequency of an antenna beam being emitted or received by the antenna, said antenna comprising a reflector system, a broadband feed system for illuminating said reflector system to produce a focussed antenna beam, said feed system being operative over a continuous frequency band with the phase center of said feed system moving along an axis towards the reflector system as the frequency increases, the reflector system comprising a structure having a plurality of parts which are dimensioned respectively in relation to the different wavelengths in said frequency band of said feed system to provide a plurality of effective surfaces of reflection that are located at different depths within said structure which depths increase respectively with increasing frequency over said frequency band, whereby radiation in a given frequency region of said band is reflected at an effective surface of reflection located at a given depth within said structure while radiation of higher frequency

penetrates beyond it, said structure being dimensioned depthwise in relation to the axial movement of the phase center of said feed system so that changes in the axial position of the phase center of said feed system are matched by changes in the



depth of the effective surface of reflection in said structure thereby to maintain the position of the focus of the reflector system substantially coincident with the position of the phase center of said feed system as the frequency changes over said frequency band.

4,342,036

## MULTIPLE FREQUENCY BAND, MULTIPLE BEAM MICROWAVE ANTENNA SYSTEM

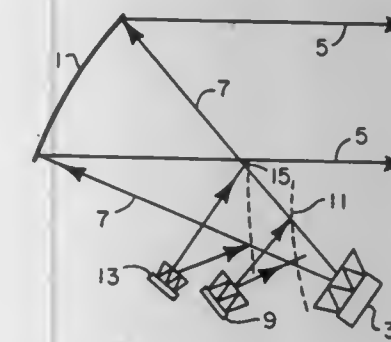
William G. Scott, Saratoga, and Howard H. Lub, Sunnyvale, both of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Dec. 29, 1980, Ser. No. 220,866

Int. Cl.<sup>3</sup> H01Q 21/00

U.S. Cl. 343—836

11 Claims



1. A multiple frequency band, multiple beam microwave antenna system, comprising in combination:
  - a reciprocal focusing means for focusing planar-front microwave energy impinging thereon to a focal region at a prime focus thereof, and for reciprocally focusing microwave energy emanating from said focal region into a propagating beam of microwave energy;
  - a first multiple-beam microwave feed array located within said focal region and oriented to propagate microwave energy of a first frequency toward, and receive microwave energy of said first frequency from said focusing means along a unitary, straight first axis between said feed array and said focusing means, said first feed array comprising a plurality of discrete, individually energizable microwave horns arrayed generally transverse to said first axis and oriented to propagate energy therealong;
  - a second multiple beam microwave feed array located between said focusing means and said first feed array, spaced from said first axis and oriented to propagate microwave energy of a second frequency toward, and receive microwave energy from, a first point on said first axis, said second feed array comprising a plurality of discrete, individually energizable microwave horns;
  - a first frequency selective surface located at said first point on said first axis, said frequency selective surface being

transparent at said first frequency and reflective at said second frequency, and being oriented to direct microwave radiation from said second feed array along said first axis toward said focusing means;

a third multiple beam microwave feed array located between said focusing means and said first feed array, spaced from said first axis and oriented to propagate microwave energy of a third frequency toward, and receive microwave energy from a second point on said first axis intermediate said first point and said focusing means, said third feed array comprising a plurality of discrete, individually energizable microwave horns;

a second frequency selective surface located at said second point on said first axis, said second frequency selective surface being transparent at said first and second frequencies and reflective at said third frequency, and being oriented to direct microwave radiation from said third feed array along said first axis toward said focusing means.

4,342,037

## DECOUPLING MEANS FOR MONOPOLE ANTENNAS AND THE LIKE

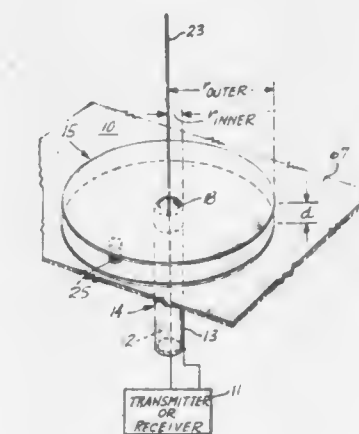
Thomas G. Dalby, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 22, 1980, Ser. No. 180,558

Int. Cl.<sup>3</sup> H01Q 1/48

U.S. Cl. 343—846

16 Claims



1. A stub antenna having means for decoupling it from surrounding electrically conductive elements comprising:
  - (a) an electrically conductive sheet which is not necessarily planar;
  - (b) a dielectric material disposed on said sheet and being contoured to minimize wind resistance;
  - (c) an upper conductive plate disposed on said dielectric material, said sheet, material and plate forming a radial transmission line and having a central circular aperture extending therethrough;
  - (d) a stub antenna having a lower portion resting on said plate and an upper portion spaced therefrom;
  - (e) a second dielectric material for spacing and insulating said stub antenna portions from each other; and
  - (f) a coaxial transmission line for feeding the antenna, said coaxial line having an inner conductor electrically connected to the upper portion of said stub antenna and an outer conductor electrically connected to the lower portion of said stub antenna.

4,342,038

## WEIGHING APPARATUS AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Jul. 11, 1980, Ser. No. 167,673

Int. Cl.<sup>3</sup> G01D 9/00, 15/18; G01G 23/38

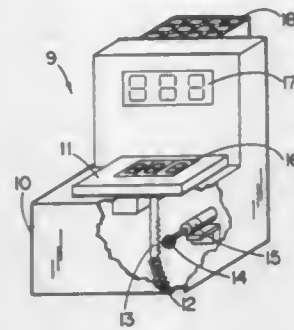
U.S. Cl. 346—9

13 Claims

1. A weighing and marking apparatus comprising in combination with a support including a platform adapted to receive



an article, means supported by said support responsive to the weight of an article disposed on said platform for generating an electrical signal which is representative of the article's weight, means for printing a plurality of indicia directly against the surface of an article disposed on said platform, control means for said printing means for varying the operation thereof to cause said printing means to vary the indicia it applies to the surface of an article, said control means being operatively connected to said means responsive to the weight of an article and operable so as to predeterminately vary the operation of said printing means while an article is disposed on said plat-



form and means operable after said printing means has been predeterminately varied to permit said printing means to print indicia on the surface of an article located on said platform which indicia is indicative of the article's weight, said printing means including means for variably forming printing ink into the configuration of selected characters and means for moving said variably formed ink configurations from a first location away from the surface of an article disposed on said scale through space to a selected portion of said article's surface to disposed said ink in the configuration of said characters on the surface of said article.

4,342,039

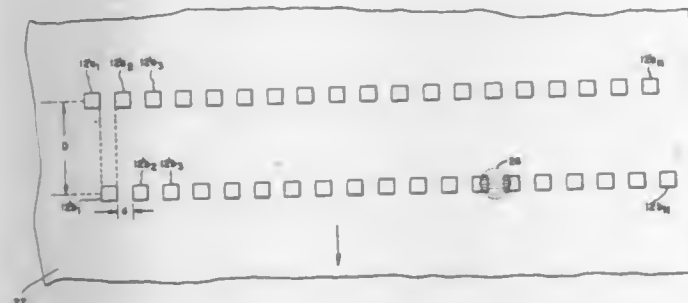
**HIGH RESOLUTION MAGNETIC PRINTING HEAD**

Jish M. Wang, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 69,833, Aug. 27, 1979, abandoned. This application Jan. 23, 1981, Ser. No. 227,863 Int. Cl.<sup>3</sup> G06F 3/14

U.S. Cl. 346—74.5

8 Claims



1. A magnetic printing head comprising:
  - (A) a first sub-assembly including:
    - a high magnetic permeability, insulated toothed comb;
    - a first support means having an elongated slot therein with electrically conductive word drive lines mounted thereon so as to cross said slot and
    - a second support means having an elongated slot therein with electrically conductive digit drive lines mounted thereon to cross said slot, said word and digit drive lines being substantially parallel in the vicinity of said slots and said slots in said first and second support means being aligned so that the teeth of said comb protrude through the elongated slots and so that a word and a digit drive line passes through the gaps between the teeth of the comb; and
  - (B) a second sub-assembly substantially the same as said first sub-assembly, said first and second sub-assemblies being fixedly positioned so that said comb structures are adja-

cently disposed and so that said comb teeth are aligned in parallel but with said teeth being offset so that the teeth of the comb in the first sub-assembly align opposite the gaps in the comb of the second sub-assembly.

4,342,040

**HEAT SENSITIVE RECORDING SYSTEM**

Yoshio Fujita, Yokohama, and Kiyoshi Hosoya, Fujisawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

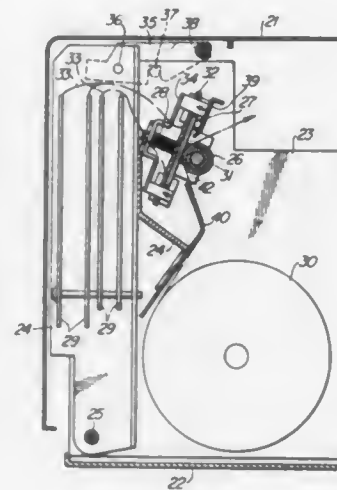
Filed Aug. 25, 1980, Ser. No. 180,584

Claims priority, application Japan, Aug. 24, 1979, 54-107257

Int. Cl.<sup>3</sup> G01D 15/10; H05B 3/20

U.S. Cl. 346—76 R

6 Claims



4. A heat sensitive recording system comprising: a stationary housing, a shaft mounted on said housing, a roller mounted on said shaft, a heat sensitive recording head having thereon a linear heat generating element, and a head support having said recording head mounted thereon and being formed with guide grooves, said head support being mounted for movement between a first position in which said shaft is fitted into said guide grooves and said recording head is in engagement with said roller so that the generatrix of said roller is aligned with said linear heat generating element, and a second position in which said guide grooves and said recording head are disengaged from said shaft and said roller, respectively.

4,342,041

**INK JET TYPE RECORDING APPARATUS**

Yukio Kasugayama, Yokohama; Koji Terasawa, Fuchu, and Yoshihumi Hattori, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

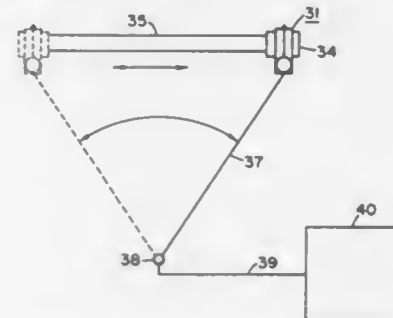
Filed Jul. 31, 1980, Ser. No. 173,999

Claims priority, application Japan, Aug. 15, 1979, 54-103188

Int. Cl.<sup>3</sup> G01D 15/16

U.S. Cl. 346—140 R

3 Claims



1. An ink jet type recording apparatus comprising:
  - a main tank for containing therein an amount of recording liquid;
  - a subsidiary tank disposed to receive a supply of recording liquid from said main tank through a supply line;

a recording head to which the recording liquid is supplied from said subsidiary tank through a supply pipe; and a carriage carrying thereon said subsidiary tank and said recording head; wherein said supply line is fixed at an optionally selected point and the segment of said supply line extending between said subsidiary tank and said fixed point is swing movable to describe circular arcs having a center at said fixed point in accordance with the movement of said carriage so that recording liquid is supplied to said subsidiary tank from said main tank by a pumping pressure produced in said supply line.

4,342,042

**INK SUPPLY SYSTEM FOR AN ARRAY OF INK JET HEADS**

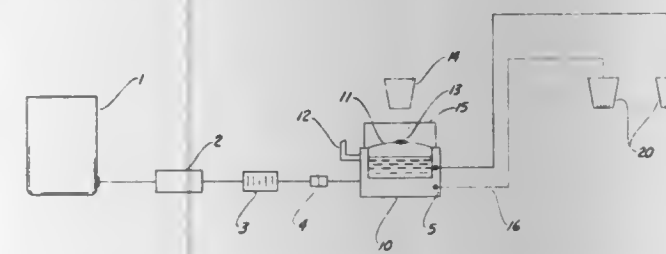
Antonio S. Cruz-Urbe, Cobalt; Peter J. Lewis, Monroe, and Peter T. Miller, Norwalk, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 19, 1980, Ser. No. 218,391

Int. Cl.<sup>3</sup> G01D 15/18

U.S. Cl. 346—140 R

24 Claims



1. An ink supply system for an impulse type ink jet printer which comprises in combination a primary ink supply container for said printer, a secondary ink supply reservoir which communicates with and receives ink from said primary ink supply container, a level sensing mechanism juxtapositioned above said secondary ink supply reservoir for detecting a change in fluid level within said secondary reservoir and means for directing ink from said secondary ink supply reservoir to at least one ink jet print head of said ink jet printer.

4,342,043

**SHEET FEEDING FOR A FACSIMILE SYSTEM WITH ANTI-STATIC ELECTRICITY ADDITIVE**

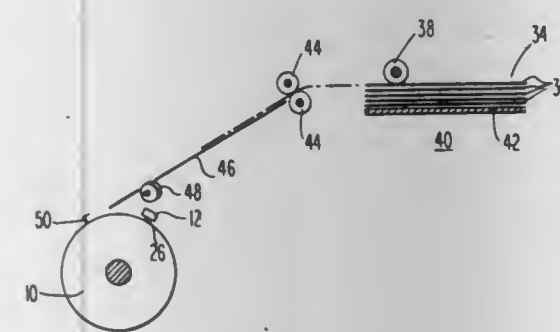
Frank M. Palermi, Maitland, and Ronald F. Schley, Ocoee, both of Fla., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 11, 1980, Ser. No. 120,336

Int. Cl.<sup>3</sup> G01D 15/08

U.S. Cl. 346—163

10 Claims



1. A facsimile system comprising:
  - scanning means;
  - sheet storage means;
  - a stack of sheets in said storage means;
  - each of said sheets comprising a spark-discharge medium including:
    - a base support;
    - a dark colored conductive layer on said support and
    - a contrasting light colored layer on said conductive layer

combustible at the temperature developed during passage of marking current through each of said sheets; sheet separating means adapted to successively contact the uppermost of said sheets in said stack as said uppermost sheets are removed from said stack, said separating means including a surface in frictional engagement with an uppermost surface of said sheet; drive means for moving said surface in a direction substantially parallel to the sheets in said stack so as to pull each of said uppermost sheets from said stack in a direction generally parallel with the uppermost sheet in said stack, said pulling force being substantially equal on each of the uppermost sheets and sufficient to overcome the frictional force between the uppermost sheets and the sheets beneath the uppermost sheets; each of said sheets in said stack carrying an anti-static electricity additive for substantially minimizing the electrostatic attractive force between said sheets so as to substantially equalize said pulling force required to separate the uppermost sheets from the sheets beneath regardless of atmospheric conditions; and means for transporting said sheets from said storage means to said scanning means.

4,342,044

**METHOD FOR OPTIMIZING PHOTOSENSITIVE AMORPHOUS ALLOYS AND DEVICES**

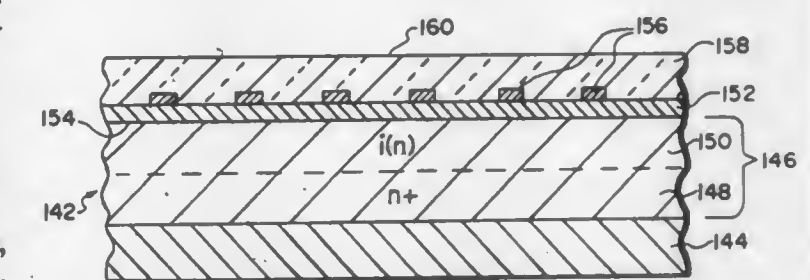
Stanford R. Ovshinsky, Bloomfield Hills, and Masatsugu Izu, Birmingham, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 884,664, Mar. 8, 1978, Pat. No. 4,217,374, and Ser. No. 104,285, Dec. 17, 1979, abandoned, which is a division of Ser. No. 884,664, Mar. 8, 1978. This application Sep. 9, 1980, Ser. No. 185,520

Int. Cl.<sup>3</sup> H01L 45/00

U.S. Cl. 357—2

26 Claims



1. An improved photoresponsive amorphous alloy, said alloy including silicon and incorporating at least one density of states reducing element therein, said element being fluorine, said alloy having a band gap adjusting element incorporated therein without substantially increasing the states in the gap, said alloy having a band gap adjusted for a specified photoreponse wavelength threshold.

4,342,045

**INPUT PROTECTION DEVICE FOR INTEGRATED CIRCUITS**

Kyoung Kim, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 28, 1980, Ser. No. 144,472

Int. Cl.<sup>3</sup> H01L 27/04

U.S. Cl. 357—41

12 Claims

1. An input protection device for an integrated circuit on a semiconductor substrate of a first conductivity type comprising at least one metal pad on said substrate for forming external electrical connection, said metal pad being connected to a conducting region of a second conductivity type in said substrate by a metal-semiconductor alloy contact, said contact having significantly rounded edges whereby the tendency to form higher local currents through specific areas of said







means for generating a plurality of recurring sequences of binary digits for each said scanned line paths, said binary digits in each of the recurring sequences being shifted in their relative positions in response to the scanning of each elemental area; and

means for detecting the presence of a said binary digit in one of said recurring sequences in a response to said detected image density to represent the scanned elemental area with said detected binary digit.

2. A signal conversion circuit comprising:

first means for scanning an image field along each of a plurality of parallel line paths of elemental picture areas to detect the image density of each of the scanned elemental areas, a predetermined number of said elemental areas being arranged in rows and columns forming an image field matrix;

second means for selecting a corresponding digital pattern from among a plurality of digital patterns according to the detected image density, each of said digital patterns being composed of a conversion dot matrix having digital values of "1"s and "0"s in a predetermined number and arrangement corresponding to the detected image density, the total number of "1"s and "0"s in said conversion dot matrix being equal to the total number of elemental areas in the corresponding image field matrix; and

third means for detecting the presence of a "1" or "0" in the selected digital pattern in a location corresponding to the location of said elemental area in said image field matrix to represent said elemental area by a "1" in a recording field in response to the detection of said "1" or by a "0" in said recording field in response to the detection of said "0", further comprising:

means for detecting the average value of said detected image densities of previously scanned elemental picture areas;

means for detecting the average value of the digital values which represent said previously scanned elemental picture areas;

means for detecting the difference between said average values; and

means for adding said difference value to the detected image density of a subsequently scanned elemental picture area.

4,342,052

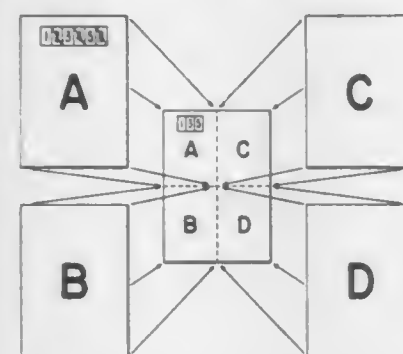
## MULTIPLE IMAGE FACSIMILE

Darwin P. Rackley; Timothy L. Schneider, both of Longmont, and Milton H. Woodward, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.  
Filed Jun. 16, 1980, Ser. No. 159,740

Int. Cl.<sup>3</sup> H04N 1/38

U.S. Cl. 358—287

19 Claims



1. In facsimile apparatus having a transmitting station for transmitting a scanned image and a receiving station for receiving the transmitted image, apparatus for producing multiple image print copies at the receiver comprising:

means for scanning original documents serially to produce a series of scanned images from a series of original documents;

means for reducing each scanned image in two dimensions before transmission;

means at the receiver for printing the reduced images successively; and

means for controlling said printing means to print the successive reduced images at separate locations on one copy document.

4,342,053

## VIDEO SIGNAL, SPEED-CHANGE REPRODUCING SYSTEM

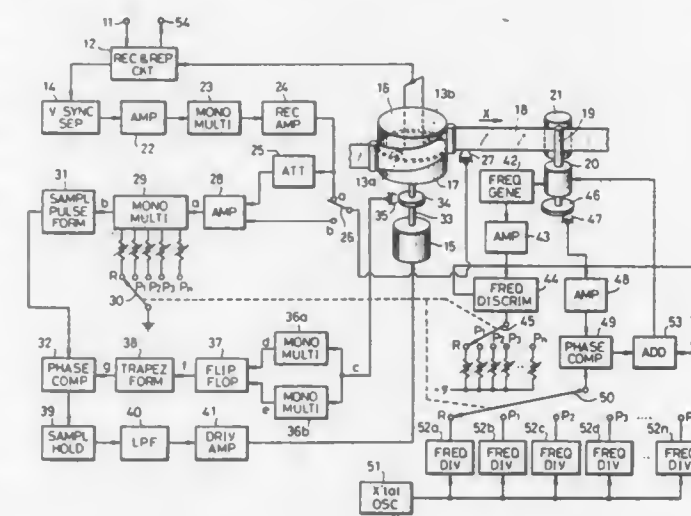
Akira Hirota, Chigasaki, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 892,147, Mar. 31, 1978, abandoned. This application Jul. 19, 1979, Ser. No. 58,818

Claims priority, application Japan, Apr. 1, 1977, 52-37081  
Int. Cl.<sup>3</sup> H04N 5/78; G11B 15/52

U.S. Cl. 360—10

5 Claims



1. A video signal, speed-change reproducing system for reproducing video signals which are recorded by a pair of rotary recording heads mounted on diametrically opposite sides of a rotating member, said heads being activated alternately to reproduce said video signals from recorded video tracks disposed contiguously and obliquely relative to the tape longitudinal direction, said recording heads having gaps of mutually different azimuth angles, said tape further having a control signal track recorded along a transverse edge, said control signals corresponding to the rotation of the recording heads, the reproducing system comprising:

driving means for transporting said tape;

a first control means for controlling said driving means to cause said tape to travel at a selected speed  $V$  represented by the equation

$$V = V_0 \left( \frac{n-1}{n} \right)$$

wherein  $V_0$  is the tape speed for normal reproduction (and recording), and  $n$  is a positive or negative integer, and to cause the tape to stop;

means comprising a rotational member having a pair of reproducing heads mounted on diametrically opposite sides thereof, said reproducing heads having gaps of mutually different azimuth angles which are the same as said azimuth angles of the recording heads, said reproducing heads successively scanning said video tracks on the tape to reproduce said recorded video signal, the centers of track widths of the reproducing heads being in different height positions in said rotational planes;

a fixed head for picking up the control signal from said edge track; and

a second control means for controlling the relative phases of the rotating member and the tape travel so that said rotational phase of the rotating member is maintained in a predetermined phase relationship with respect to the

picked up control signal, said predetermined phase with respect to the picked up control signal being such that each time instant when the level of the reproduced signal becomes a minimum value is within or in the vicinity of a vertical blanking period, and the minimum level of the reproduced signal does not become zero.

4,342,054

## INFORMATION READ DEVICE

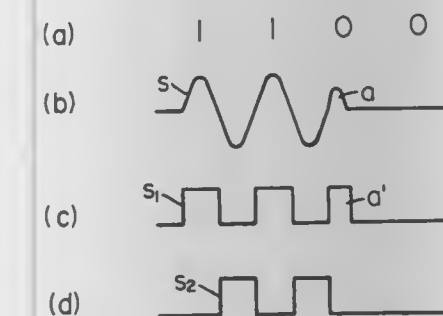
Nobuo Terui, Hino, and Kozo Kobayashi, Kodaira, both of Japan, assignors to Nakamichi Corporation, Tokyo, Japan

Filed Jun. 2, 1980, Ser. No. 155,783

Claims priority, application Japan, Jun. 6, 1979, 54-76765[U]  
Int. Cl.<sup>3</sup> G11B 5/09, 5/02

U.S. Cl. 360—40

2 Claims



1. An information read device for reading the information of a coded AC signal wherein a bit "1" is represented by one cycle of an AC signal and a bit "0" is represented by an absence of said AC signal comprising:

a first square wave converter to generate a first square wave signal corresponding to positive components of said coded AC signal;

a second square wave converter to generate a second square wave signal corresponding to negative components of said coded AC signal; and

gate means to selectively pass one of said first and second square wave signals so that said first square wave signal is passed when said AC signal of said coded AC signal begins with a negative component while said second square wave signal is passed when said AC signal of said coded AC signal begins with a positive component.

4,342,055

## AUTOMATIC REVERSE TAPE RECORDER

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 90,900, Nov. 5, 1979. This application Mar. 24, 1980, Ser. No. 133,260

Claims priority, application Japan, Nov. 16, 1978, 53-141616; Nov. 16, 1978, 53-141618; Nov. 16, 1978, 53-157809

Int. Cl.<sup>3</sup> G11B 15/18, 17/00

U.S. Cl. 360—69

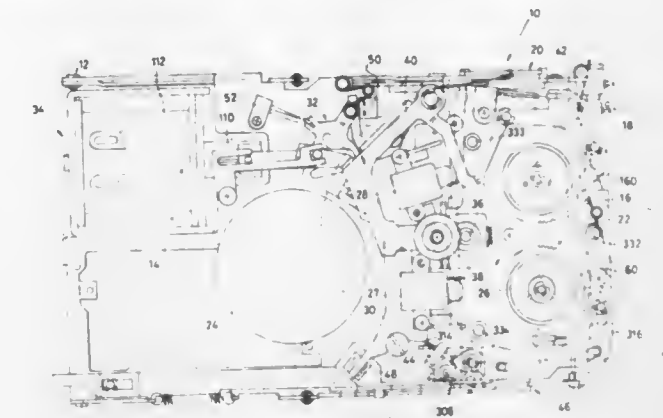
2 Claims

1. A tape recorder comprising: a single motor for moving a recording tape in forward and reverse direction, respectively, a reel mechanism provided with a pair of reel shafts;

a motive power-transmitting mechanism provided with a pair of drive members which are respectively concentrically fitted to the pair of reel shafts so as to be rotatable relative to the respective reel shaft and supplied with motive power of the motor, respectively;

a pair of one-way clutch mechanisms, each of which is received in the respective reel mechanism, and, during rotation of the drive member fitted to the respective reel shaft in one direction, transmits the motive power of said drive member to the respective reel shaft, and during rotation of the drive member in the other direction, ceases to transmit the motive power of said drive member, the reel shafts being capable of rotating in opposite directions by means of the respective one-way clutch mechanism, means for effecting a constant rotation speed of said motor

in both the forward and reverse direction, including means for detecting the actual number of rotations of the motor and means for making a comparison between a value obtained by said detection and a control target value designed to set the motor rotation at a prescribed speed, and means for minimizing the difference resulting from the comparison; and



means for accelerating the rotation speed of said motor for fast forward and rewinding of the tape, including means for releasing a servo control to let the motor run at a maximum speed, whereby the motor is driven in the forward direction for the fast forward run and in the reverse direction for the rewind tape run at high speed and further in the forward direction for the reproduction and in the reverse direction for reversing the tape.

4,342,056

## INFORMATION BLOCK LOCATING DEVICE

Shouichi Ishii, Warabi; Masanobu Shimanuki, and Akira Morizono, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

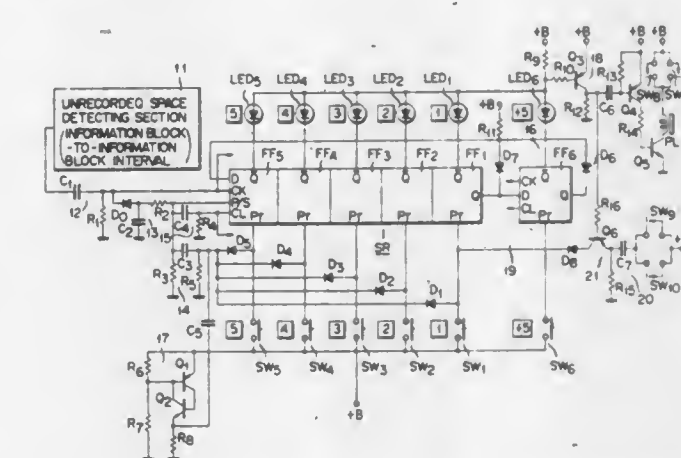
Filed Feb. 8, 1980, Ser. No. 119,996

Claims priority, application Japan, Feb. 14, 1979, 54-15664; Feb. 14, 1979, 54-15665; Feb. 14, 1979, 54-17496[U]; Feb. 14, 1979, 54-17497[U]

Int. Cl.<sup>3</sup> G11B 15/16; G17B 27/22

U.S. Cl. 360—72.1

6 Claims



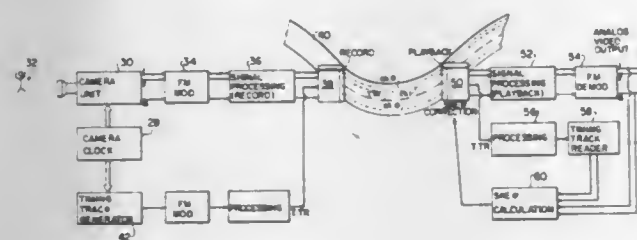
1. In an information block locating device which responds to a substantial coincidence of an interval signal corresponding to the detection of intervals between information blocks obtained by subjecting a tape recorded with a plurality of information blocks to high-speed reproduction, with a preset value of a desired information block-number, thereby to change over the tape operation from high-speed reproduction to a normal-speed reproduction, to permit automatic location of the desired information block, the improvement comprising: a presetting section for presetting the desired information block-number, which presetting section includes a first presetting subsection having first means for independently designating one of a



plurality of consecutive information block-numbers (1), (2), . . . (n) and a second presetting subsection having second means for designating a predetermined number (+N) to be arithmetically added to said one of said consecutive information block-numbers designated by said first presetting subsection thereby to designate one of a plurality of consecutive block numbers (1+N), (2+N), . . . (n+N).

**4,342,057**  
**SKEW CALCULATION USING INFORMATION RECORDED ALONG A SINGLE TIMING TRACK**  
 Gary A. LaBeau, La Mesa, and James A. Bixby, San Diego, both of Calif., assignors to Eastman Technology, Inc., Rochester, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,423  
 Int. Cl.<sup>1</sup> G11B 5/43  
 U.S. Cl. 360—76 4 Claims



1. Apparatus for use in measuring the skew distortion of first and second information signals that are recorded on magnetic tape and played back from said tape through first and second channels of a multi-channel longitudinal recorder, said information signals each having a recurring detectable characteristic, said apparatus comprising:

- (a) means for producing a timing signal that is recordable by said multi-channel longitudinal recorder, said timing signal having a plurality of reference markers each bearing, before the recording of said timing signal, a predetermined time relationship to a detectable characteristic in each of said first and second information signals;
- (b) means for recording said timing signal on said magnetic tape and playing back said timing signal from said magnetic tape through a third channel of said multi-channel longitudinal recorder; and
- (c) means for measuring, upon playback of said information and timing signals, the time relationship between the reference markers and corresponding detectable characteristics in each of said first and second information signals, thereby providing a measure of the skew introduced by said multi-channel longitudinal recorder to said first and second information signals relative to said timing signal, said time relationship measuring means comprising:

first and second counters each of which increments at a predetermined clocking rate in response to an enable signal, and each of which stops incrementing in response to a disable signal;

means for detecting the played back reference markers of said timing signal;

means for detecting the played back detectable characteristics of said first and second information signals;

means for producing a first enable signal in response to the first detected of a reference marker or a detectable characteristic of said first information signal, and for applying said first enable signal to said first counter;

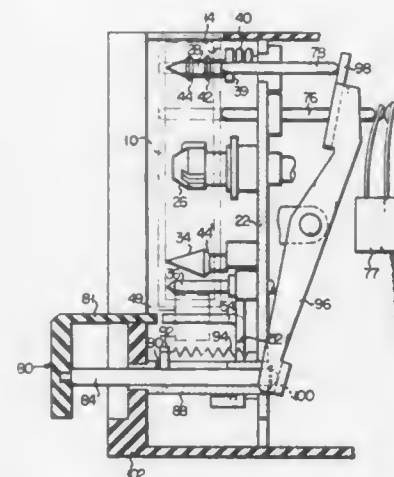
means for producing a second enable signal in response to the first detected of a reference marker or a detectable characteristic of said second information signal, and for applying said second enable signal to said second counter;

means for producing a first disable signal in response to the second detected of a reference marker or a detectable characteristic of said first information signal, and for applying said first disable signal to said first counter; and

means for producing a second disable signal in response to the second detected of a reference marker or a detectable

characteristic of said second timing signal, and for applying said second disable signal to said second counter.

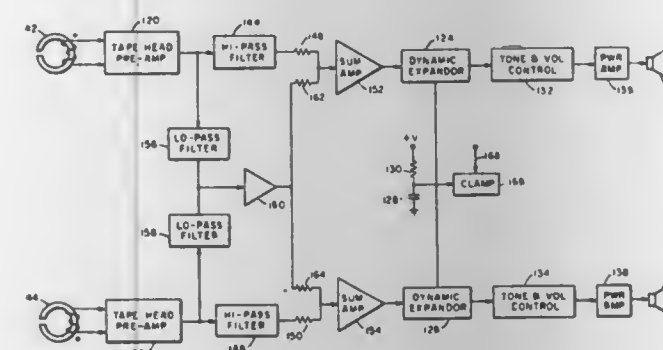
**4,342,058**  
**APPARATUS FOR RUNNING MAGNETIC TAPES**  
 Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan  
 Filed Apr. 14, 1980, Ser. No. 139,743  
 Claims priority, application Japan, Apr. 20, 1979, 54-48697; Apr. 20, 1979, 54-48699; May 8, 1979, 54-60933[U]; May 8, 1979, 54-60934[U]  
 Int. Cl.<sup>1</sup> G11B 15/66, 23/04  
 U.S. Cl. 360—96.5 20 Claims



1. An apparatus for running magnetic tapes in tape cassettes, comprising:

- a plurality of elongated cassette-holding means (28, 30, 34), each of which has a cylindrical portion and a free end portion and which hold at the cylindrical portions thereof a tape cassette (10) containing a roll of magnetic tape selectively in a first position and a second position, said first position being an operating position and said second position being a partially disengaged position where the cassette is retained in said apparatus but not in an operable state, said tape cassette when in said second position being closer to the free end portions of said cassette-holding means than when in said first position;
- a first radially extending projection (42) provided on the cylindrical portion of at least one (28) of said cassette-holding means for engaging the tape cassette (10) when it is in said first position for preventing the tape cassette (10) from moving between said first position and said second position;
- a second radially extending projection (44, 44') provided on the cylindrical portion of each of said cassette-holding means (28, 30, 34) for engaging the tape cassette (10) when it is in said second position for preventing the tape cassette (10) from being released from said cassette-holding means; said first and second projections on said at least one cassette-holding means (28) being axially spaced from each other along the length of said at least one cassette-holding means (28);
- a tape-running mechanism which has a tape-running mode for running the magnetic tape when the tape cassette is placed in said first position and a tape-stop mode for stopping the magnetic tape; and
- a switching mechanism responsive to the position of said tape cassette for setting the tape-running mechanism to the tape-running mode by the tape cassette when the tape cassette moves from the second position to the first position and to the tape-stop mode by the tape cassette when the tape cassette moves from the first position to the second position.

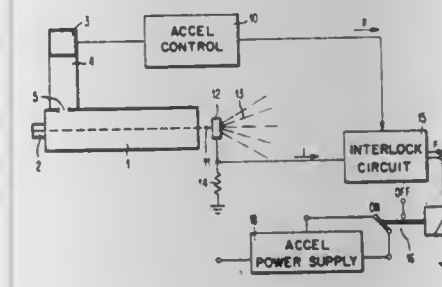
**4,342,059**  
**ELECTRONIC GAIN AND NOISE CONTROL FOR RECORDING OF ANALOG INFORMATION**  
 William R. Wray, Sudbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.  
 Division of Ser. No. 32,942, Apr. 24, 1979, Pat. No. 4,271,439.  
 This application Jul. 29, 1981, Ser. No. 287,880  
 Int. Cl.<sup>1</sup> G11B 5/20, 5/02  
 U.S. Cl. 360—123 4 Claims



1. In magnetic recording apparatus having first and second record/playback transducers disposed for substantially like pick-up of noise during playback operation, the apparatus further having a record section for applying to the transducers information signals to be recorded and a playback section for receiving from the transducers information signals read from a magnetic recording medium, the apparatus having an improvement for controlling noise introduced during playback operation, comprising:

- means for connecting the first and second transducers for recording information signals from the record section in phase opposition relative to each other and for playing back information signals to the playback section in phase opposition relative to each other, and
- means for summing playback signals from the first and second transducers and for applying the resultant summation signal for processing in the playback section, whereby the transducers record information signals with a phase reversal relative to one another and play back information signals with like relative phase reversal, and the transducers pick up noise signals during the playback operation with relative opposite phase such that the noise signals at least in part cancel upon summing.

**4,342,060**  
**ENERGY INTERLOCK SYSTEM FOR A LINEAR ACCELERATOR**  
 Robert Gibson, Walnut Creek, Calif., assignor to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.  
 Filed May 22, 1980, Ser. No. 152,484  
 Int. Cl.<sup>1</sup> H05G 1/46  
 U.S. Cl. 361—1 10 Claims



1. An energy monitoring system for supervision of a particle accelerator, which emits particle beam pulses, comprising in combination:

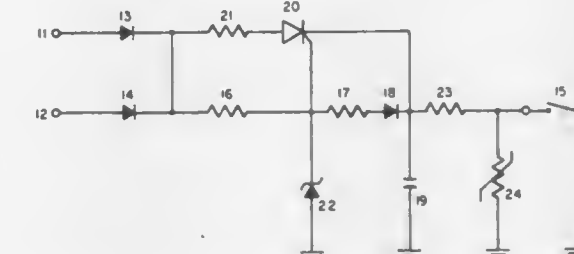
- (a) means for measuring the level of the particle beam pulses, said means including a target which is exposed to said

particle beam pulses for deriving a signal responsive to said particle beam pulses;

(b) discriminator means connected to said measuring means for determining if the level of said particle beam pulses has crossed a predetermined value; and

(c) switch means operated by said discriminator means and connected to said particle accelerator for interlocking the operation of said accelerator.

**4,342,061**  
**VOLTAGE REDUCTION SAFETY CIRCUIT**  
 Darrell Rice, Tulsa, and Bill E. Baker, Bixby, both of Okla., assignors to Frank W. Murphy Manufacturer, Inc., Tulsa, Okla.  
 Filed Mar. 4, 1981, Ser. No. 240,319  
 Int. Cl.<sup>1</sup> H02H 9/00  
 U.S. Cl. 361—58 7 Claims



1. A voltage reduction safety circuit, comprising:

- a voltage input means;
- a voltage divider network including first and second parallel branches coupled to said voltage input means;
- a storage capacitor electrically connected to the output of said first and second parallel branches;
- an SCR in series in said first parallel branch, said SCR including a gate electrode electrically connected to said second parallel branch;
- a gating resistor and diode connected in series in said second parallel branch and electrically positioned between said SCR gate electrode and said storage capacitor;
- a zener diode electrically connected to said SCR gate electrode for providing a reference voltage level to which said storage capacitor may charge; and
- an output circuit means electrically connected to said storage capacitor and said first and second parallel branches.

**4,342,062**  
**SEQUENCE NETWORK CIRCUITS FOR PROTECTIVE RELAYING APPLICATIONS**  
 Merwyn E. Hodges, Springfield, Pa., assignor to General Electric Company, Philadelphia, Pa.  
 Continuation of Ser. No. 41,137, May 21, 1979, abandoned. This application Aug. 31, 1981, Ser. No. 297,542  
 Int. Cl.<sup>1</sup> H02H 3/34, 3/26  
 U.S. Cl. 361—76 23 Claims

1. A sequence network circuit for use in combination with a three-phase (X, Y, Z) a-c power system, which comprises:

- (a) input circuit means for receiving: (1) three separate input signals respectively representative of the phase-to-neutral voltage in the three phases (X, Y, Z) and a fourth input signal representative of the negative of the zero sequence voltage therein, said input signals having a common reference potential; or, (2) three separate input signals respectively representative of the line current in the three phases (X, Y, Z) and a fourth input signal representative of the negative of the zero sequence current in the system, said input signals having a common reference potential;
- (b) signal processing means receiving said input signals and comprising:

- (1) an operational amplifier having a non-inverting input adapted to be coupled to the reference potential and an

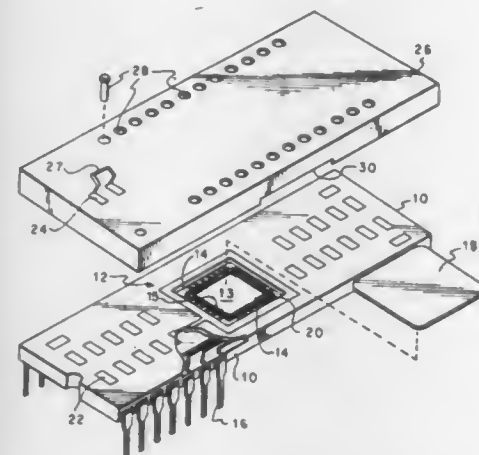






member, a hole in said flange and holes in said top wall, said member and said board all in alignment with each other, a spacer having a hole, said spacer being disposed upon said flange and between said top wall and said flange with said spacer hole aligned with said holes in said top wall, said flange, said member and said board, and threaded fastener means associated with said spacer and extending through said aligned holes and into said spacer for independently clamping (a) said heat dissipating member and said flange between said spacer and said board and (b) said cover upon said member.

**4,342,069**  
**INTEGRATED CIRCUIT PACKAGE**  
Joseph Link, Carrollton, Tex., assignor to Mostek Corporation, Carrollton, Tex.  
Continuation of Ser. No. 53,879, Jul. 2, 1979, abandoned. This application Feb. 13, 1981, Ser. No. 234,400  
Int. Cl.<sup>3</sup> H05K 1/14  
U.S. Cl. 361—401 14 Claims



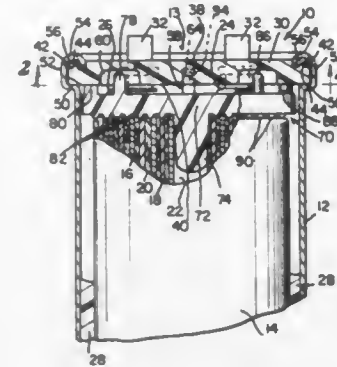
1. A unitized integrated circuit package for actively interconnecting an integrated circuit to an active circuit comprising:

- a supporting package having a top and bottom,
- a die cavity in the package,
- bonding finger pads for connecting an integrated circuit die,
- a die cavity lid for sealing the integrated circuit die,
- external lead pins extending from the package bottom in a first pattern and interconnected with the bonding finger pads, and
- socket contacts spaced in the supporting package top in a second pattern and interconnected with the bonding finger pads to receive an integrated circuit package to provide a functionally active interconnection between the integrated circuit die and the integrated circuit package.

**4,342,070**  
**ANCHORING APPARATUS FOR AN ELECTRICAL DEVICE**  
William J. Evans, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.  
Filed Mar. 18, 1980, Ser. No. 131,437  
Int. Cl.<sup>3</sup> H01G 9/06  
U.S. Cl. 361—433 7 Claims

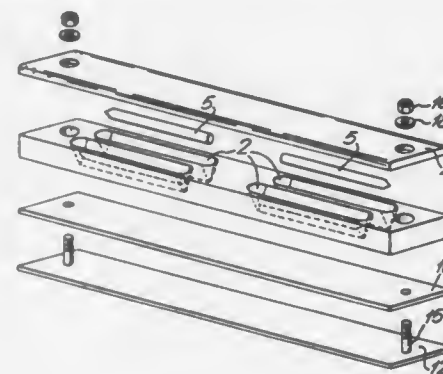
1. In an electrical device including a housing having an open end for receiving an electrical component and a rigid member for sealing the open end to contain the electrical component within the housing, the improvement comprising: means positioned between the electrical component and the rigid sealing member for anchoring the electrical component within the housing; the anchoring means including a hub, at least two angularly spaced arms extending radially outward from the hub, a plurality of fingers extending axially outward from each of said angularly spaced arms and engaging said electrical

component, means extending axially outward from the hub for engaging the electrical component; and means for engaging



both the rigid sealing member and the arms to restrict movement of the hub and arms relative to the rigid sealing member.

**4,342,071**  
**UNDERWATER LIGHTING**  
William B. Chamberlain, Aberdeen, Scotland, assignor to Challenger Diving Limited, Aberdeen, Scotland  
Continuation of Ser. No. 956,967, Nov. 2, 1978, abandoned. This application Aug. 11, 1980, Ser. No. 177,132  
Claims priority, application United Kingdom, Nov. 8, 1977, 46528/77  
Int. Cl.<sup>3</sup> F21V 31/00  
U.S. Cl. 362—158 12 Claims



1. An undersea lamp comprising, in combination, a housing body portion having an elongate recess therein, a translucent housing cover portion extending over said recess and permanently sealed to said housing body portion, said elongate recess having a substantially V-shaped transverse section, an elongate light-reflective insert of V-shaped cross-section and length similar to those of said recess and firmly secured in said recess and opening to said translucent cover portion, and an elongate substantially cylindrically shaped self-energising radiation-type light source having a length substantially equal to that of the recess and fixedly mounted in said light-reflective insert in spaced relation to the walls thereof, the combination providing a self-contained lamp unit independent of external power sources and capable of duty in deep sea conditions.

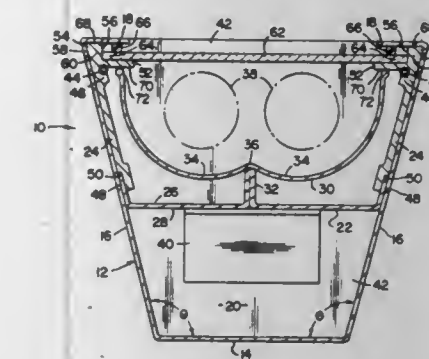
**4,342,072**  
**LIGHTING FIXTURE**  
Kenneth E. Guritz, 570 Emerald Harbor Dr., Longboat Key, Fla. 33548, and Michael L. Guritz, 6904 Manatee Ave., W., Bradenton, Fla. 33508  
Filed Jun. 5, 1980, Ser. No. 156,674  
Int. Cl.<sup>3</sup> F21V 19/04  
U.S. Cl. 362—222 4 Claims

1. A lighting fixture comprising a housing including a substantially planar housing base plate having side walls extending upwardly from said substantially planar housing base plate and terminating in a pair of inwardly projecting uppermost ends to cooperatively form an elongated cavity, a pair of supporting members disposed on the upper portion of said upperwardly

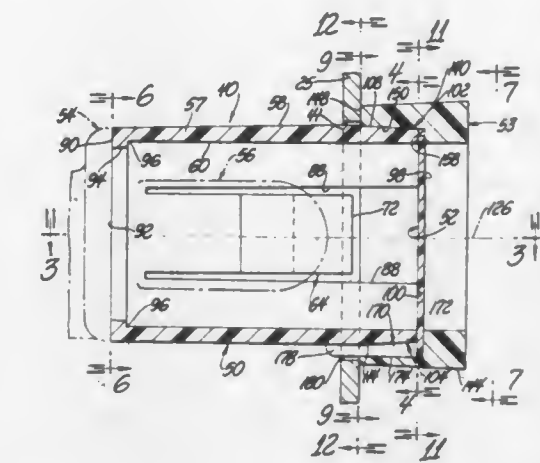
projecting side walls each comprising a detent formed on the lower portion therefrom and a shelf extending inwardly formed on the upper portion thereof in spaced relation relative to said respective inwardly projecting uppermost ends, a substantially transparent material operatively supported on said oppositely disposed shelves, said supporting members further include an open channel threaded portion formed below said oppositely disposed shelves to partially receive a fastening member to affix a pair of end plates to opposite ends of said

alignment with said motor and spaced radially outwardly of and adjacent said rotor housing.

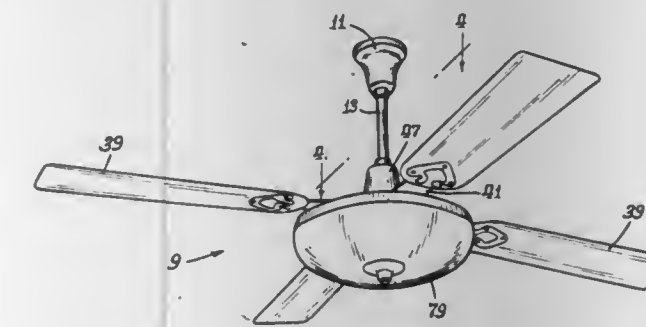
**4,342,074**  
**LAMP HOUSING**  
Dale L. Bull, and Norman A. Rautiola, both of Reed City, Mich., assignors to Nartron Corporation, Reed City, Mich., a part interest  
Filed Sep. 7, 1978, Ser. No. 940,268  
Int. Cl.<sup>3</sup> F21S 1/06, 17/06  
U.S. Cl. 362—365 34 Claims



housing, and a tray having a substantially planar tray base plate and upwardly projecting side walls to cooperatively press fit slidably within said detents, circuitry disposed on the lower surface of said substantially planar tray base plate and reflective shield and light source supported on the upper surface of said substantially planar tray base plate, the uppermost portions on opposite sides of said reflection shield disposed to engage said oppositely disposed shelves to press fit said reflective means between said tray and said oppositely disposed shelves.



**4,342,073**  
**CEILING FAN WITH ILLUMINATION MEANS**  
Richard Ranten, Mitcham, Australia, assignor to Mistral Incorporated, Anaheim, Calif.  
Filed May 22, 1980, Ser. No. 152,487  
Int. Cl.<sup>3</sup> F21V 29/00  
U.S. Cl. 362—294 12 Claims



1. A ceiling fan with illumination means comprising:  
a motor to be supported from a ceiling, said motor having a central stator and a rotor disposed radially outwardly of the stator, the dimension of said motor in the radial direction being substantially greater than the dimension thereof in the axial direction;  
a stationary shaft extending coaxially through the stator in the vertical direction and providing support for said stator;  
a rotor housing mounted for rotation on said shaft at locations thereon spaced axially above and below said stator, said housing being attached to said rotor for rotation thereby on the vertical axis;  
a plurality of axial flow blades mounted on and extending radially outwardly from said housing, each blade having its longitudinal dimension substantially greater than its transverse dimension;  
stationary illumination means; and  
means mounting said stationary illumination means in radial

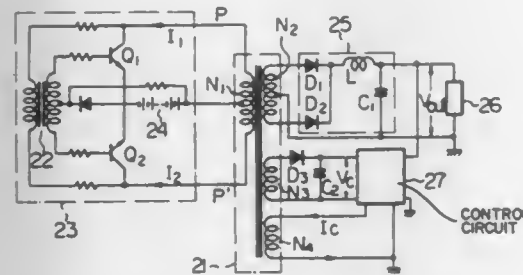
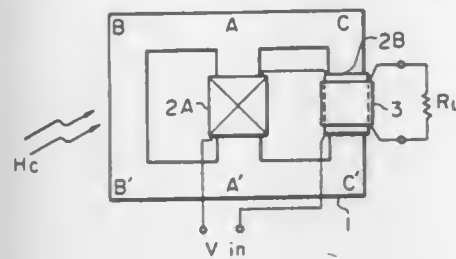
1. A lamp housing assembly for detachably supporting an associated bulb socket assembly and containing at least a portion of a bulb operatively connected to and carried by said associated bulb socket assembly, said lamp housing assembly comprising generally tubular housing body means comprised of plastic material, deflectable means integrally formed with and carried by said housing body means for detachably securing said housing body means within aperture means of associated support structure, said housing body means comprising first and second opposite ends, a first opening formed in said first end and a second opening formed in said second end, passage means formed through said housing body means and interconnecting said first and second openings, said first opening being effective for detachably receiving therein a portion of said associated bulb socket assembly, said passage means being effective to receive at least a portion of said bulb carried by said associated bulb socket assembly, lens means situated in juxtaposed relationship to said second opening of said housing body means, said housing body means further comprising an enlarged body portion at least near said second end, and lens retainer means, said lens retainer means being juxtaposed to said lens as to contain said lens between said retainer means and said second end of said housing body means, said retainer means slidably receiving said enlarged body portion and being secured thereto.

**4,342,075**  
**SWITCHED MODE DC TO DC CONVERTER USING VARIABLE LEAKAGE TRANSFORMER**  
Hirayama Hiromitsu, Funabashi, Japan, assignor to TDK Electronics, Tokyo, Japan  
Division of Ser. No. 884,953, Mar. 9, 1978, Pat. No. 4,213,084.  
This application Mar. 26, 1980, Ser. No. 134,113  
Claims priority, application Japan, May 20, 1977, 52/57749; May 26, 1977, 52/66946[U]; Jun. 30, 1977, 52/85426[U]  
The portion of the term of this patent subsequent to Jul. 15, 1997, has been disclaimed.  
Int. Cl.<sup>3</sup> H02P 13/22 3 Claims

U.S. Cl. 363—23 3 Claims  
1. A switched mode power supply circuit, comprising:  
(A) A switching means connected to a direct current power supply terminal to switch said direct current power to provide a rectangular waveform output;  
(B) A variable leakage transformer having a primary wind-



ing for receiving said rectangular waveform output of said switching means to provide a controlled rectangular waveform output voltage across a secondary winding thereof, said variable leakage transformer comprising a core with a closed main magnetic path and a closed sub-magnetic path, the main magnetic path having at least a common path with the sub-magnetic path; said primary winding having a first primary winding portion and a second primary winding portion connected in a series with each other, the first primary winding portion being wound on the common magnetic path, the second primary winding portion being closely coupled magnetically with the secondary winding,



said secondary winding being wound on the main magnetic path of the core, and a control winding wound on the sub-magnetic path for controlling the magnetic flux in the sub-magnetic path to control the pulse width of the output voltage of said secondary winding;

- (C) Rectifying means connected to the output of said secondary winding for providing a stabilized DC voltage; and
- (D) Control means for adjusting the direct current in said control winding to provide a desired stabilized output voltage from said rectifying means.

4,342,076

**TRANSISTOR TURN OFF CURRENT SENSING CIRCUIT**  
Mark A. Rosswurm, Ada, and Joseph M. Urish, Shawnee Township, Allen County, both of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

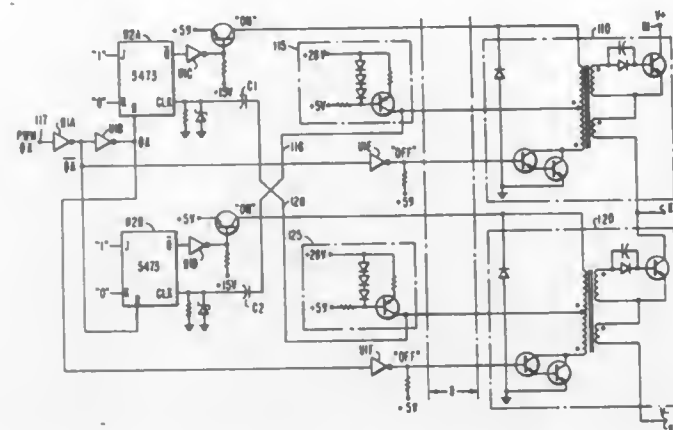
Filed Feb. 12, 1981, Ser. No. 233,722  
Int. Cl.<sup>3</sup> H02M 7/537

U.S. Cl. 363-56

5 Claims

1. Power transistor circuitry with current sensing comprising:
- a first output transistor connected to control conduction between an input terminal and an output terminal;
  - means for selective application and removal of base drive current to said output transistor, said means comprising a current controlled feedback transformer, said current controlled feedback transformer having a secondary winding with a tap connected to a current source;
  - means for monitoring the voltage of said secondary winding as an indication of the current conducted by said output transistor, said voltage exhibiting a change from a first low

level to a second higher level upon the completion of the turn-off period of said output transistor;



and means for initiating a turn-on base signal for a second output transistor in response to said change in voltage of said output voltage of said current source.

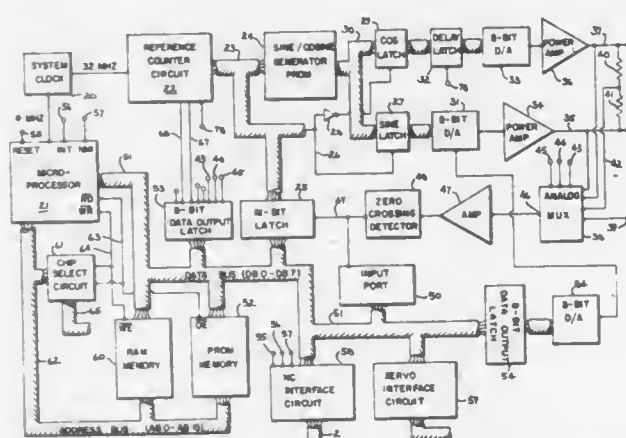
4,342,077

**NUMERICAL CONTROL SERVO DRIVE CIRCUIT**  
Douglas A. Passey, Cleveland Heights, and Ronald E. Jerva, Mentor On The Lake, both of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Jul. 17, 1980, Ser. No. 169,814  
Int. Cl.<sup>3</sup> G05B 19/18

U.S. Cl. 364-183

9 Claims



1. A servo drive circuit which employs a resolver-type position feedback transducer, the combination comprising:
- reference generation means for generating data indicative of the phase of a periodic wave form;
  - first wave form generation means coupled to the reference generation means and operable to generate a first periodic wave form which is applied to the resolver-type position feedback transducer which has a first preselected phase relationship with said generated data;
  - second wave form generation means coupled to the reference generation means and operable to generate a second periodic wave form which is applied to the resolver-type position feedback transducer which has a second preselected phase relationship with said generated data;
  - phase detection means coupled to one of said wave form generation means and being operable to generate data indicative of the phase of said one periodic wave form;
  - phase altering means coupled to one of said wave form generation means for altering the phase of its generated periodic wave form in response to phase correction data; and
  - processor means coupled to said phase detection means to receive its generated data, coupled to said reference generation means to receive its generated data, and coupled to generate phase correction data to said phase altering means, said processor means being operable to periodically measure the phase of one of said periodic wave

forms and determine its phase relationship with respect to said reference generation means data, and being operable to generate correction data to said phase altering means for maintaining a preselected phase relationship between said first and second periodic wave forms.

4,342,078

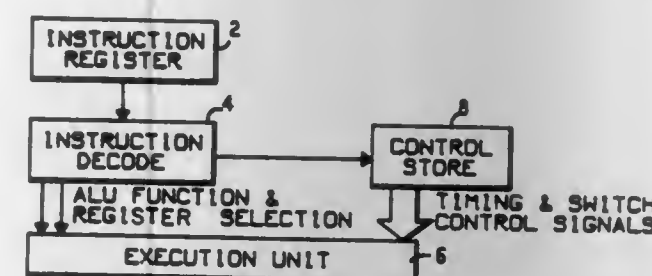
**INSTRUCTION REGISTER SEQUENCE DECODER FOR MICROPROGRAMMED DATA PROCESSOR AND METHOD**

Harry L. Tredennick, and Thomas G. Gunter, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 21, 1979, Ser. No. 41,202  
Int. Cl.<sup>3</sup> G06F 9/26

U.S. Cl. 364-200

11 Claims



1. A data processor using microprogrammed control to execute a plurality of macroinstructions, the data processor comprising:

- a. first means for storing a macroinstruction;
- b. control means for storing a plurality of microinstruction routines, each of the microinstruction routines including one or more microinstructions for controlling operations performed by the data processor, and each of the microinstruction routines being associated with a corresponding starting address; and
- c. decoding means coupled to the first means and to the control means, the decoding means being responsive to a field of the macroinstruction stored by the first means for providing simultaneously a plurality of possible starting addresses associated with the execution of the stored macroinstruction, said decoding means being effective to selectively and sequentially present each of the plurality of starting addresses to the control means to cause each of the microinstruction routines associated with addresses provided by the decoding means to be executed in order to execute the stored macroinstruction.

4,342,079

**DUPLICATED MEMORY SYSTEM HAVING STATUS INDICATION**

Charles G. Stewart, Hazeldean, and Prem L. Sood, Richmond, both of Canada, assignors to Northern Telecom Limited, Montreal, Quebec, Canada

Filed Jun. 6, 1979, Ser. No. 46,101

Claims priority, application Canada, May 15, 1979, 327,649  
Int. Cl.<sup>3</sup> G06F 13/00

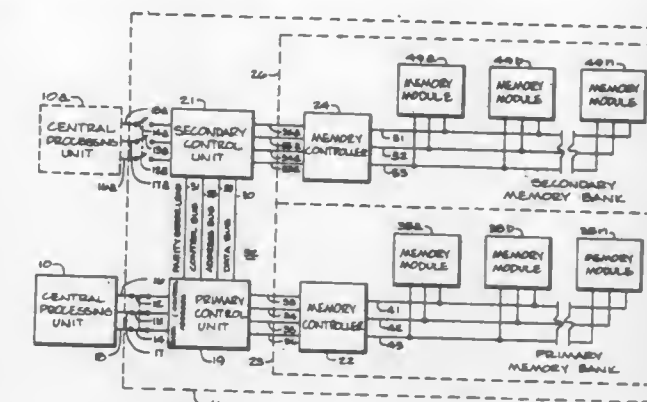
U.S. Cl. 364-200

14 Claims

1. A duplicated memory system for use with a central processing unit (CPU) wherein said memory system comprises:
- first and second memory banks, each memory bank system comprising a plurality of memory modules for storing a plurality of binary words in distinct addressable storage locations, with a unique address code defining both one distinct addressable storage location in a memory module in said first memory bank and one distinct addressable storage location in a memory module in said second memory bank;
  - status storage means, for storing an indication of the read status of each memory module in both said first and second memory banks;
  - control means, responsive both to said CPU and to said status storage means, for selectively accessing the distinct

addressable storage locations in said first and second memory banks; and

said control means updating the indication, stored in said



4,342,080

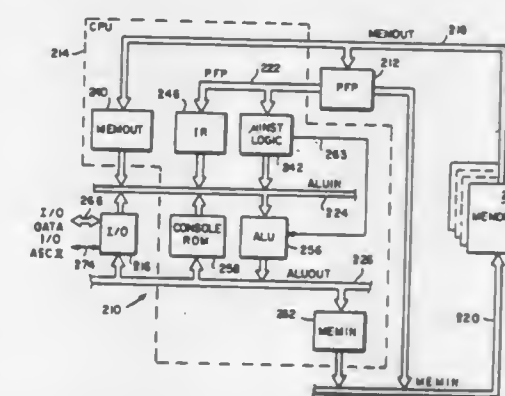
**COMPUTER WITH MICROCODE GENERATOR SYSTEM**  
David Grondalski, Hopkinton, Mass., assignor to Data General Corporation, Woburn, Mass.

Continuation-in-part of Ser. No. 959,038, Nov. 8, 1978, Pat. No. 4,316,244. This application Nov. 5, 1979, Ser. No. 91,347

Int. Cl.<sup>3</sup> G06F 9/22

U.S. Cl. 364-200

4 Claims



1. A computer system comprising a main memory, means for providing an LDA macrocode instruction, and a CPU having a plurality of accumulators and microinstruction logic for generating a microcode control word for causing the transfer of a word in main memory to an accumulator of the CPU, said microinstruction logic generating one of a plurality of address words from portions of said LDA macrocode instructions, said logic having a microcode control word generator comprising a plurality of banks of control memories, and said logic having means for applying portions of the bits of said address words to the input of said banks of said memories and said logic having means responsive to at least one bit of said generated address words for selectively enabling one bank of said plurality of banks of said memories to produce a microcode control word.

4,342,081

**TAPE DEVICE ADAPTER**

Joseph J. Dubuc, Yukon, Okla., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 12, 1979, Ser. No. 102,712

Int. Cl.<sup>3</sup> G06F 13/00, 3/00, 5/00

U.S. Cl. 364-200

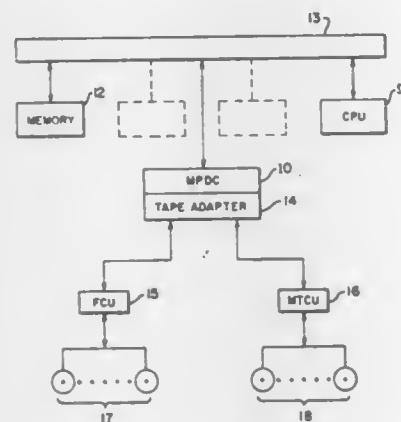
3 Claims

3. A logic control system in a tape device adapter having an input and an output intercoupled by logic paths for accommodating a transfer of binary information signal streams between



plural magnetic tape device control units providing logic control signals and controlling the operation of plural magnetic tape devices, and a peripheral device controller providing logic control signals and in electrical communication with a common communication bus of a data processing system having a central processing unit controlling the transfer of information between said peripheral device controller and a main memory, said logic control system which comprises:

- (a) device command register means in electrical communication with and responsive to said logic control signals from said peripheral device controller for providing device command signals to said device control units to read binary information signal streams from or write binary information signal streams into any of said magnetic tape devices;
- (b) adapter command register means in electrical communication with and responsive to said logic control signals from said peripheral device controller for issuing logic command signals identifying the source of said binary information signal streams received by said logic control system, and selecting ones of said logic paths for said binary information signal streams in transit for providing adapter command signals for effecting singularly or in any combination a data pack, a data depack and a code conversion of said binary information signal streams in the logic paths thus selected;
- (c) multiplexer register means in electrical communication with and responsive to said logic control signals from



those of said device control units interfacing with read only ones of said magnetic tape devices, and in electrical communication with and responsive to said logic control signals from said peripheral device controller for accommodating a transfer of said binary information signal streams read from said read only ones into said tape device adapter;

- (d) first tri-state multiplexer means responsive to said logic command signals issued by said adapter command register means and in electrical communication with said multiplexer register means and those of said device control units interfacing with read-write ones of said magnetic tape devices for directing said binary information signal streams to selected ones of said logic paths;
- (e) shift register control means responsive to said adapter command signals issued by said adapter command register means, said logic control signals from said peripheral device controller and said logic control signals from said device control units providing shift register control signals for controlling the rate of flow of said binary information signal streams through said logic paths during a data packing, a data depacking, a code conversion, and a reading of data from said magnetic tape devices;
- (f) logic data packing means responsive to said shift register control signals received from said shift register control means, said adapter command signals issued by said adapter command register means and said logic control signals from said peripheral device controller for effecting a packing or depacking of binary information streams;
- (g) code conversion means in electrical communication with

said logic data packing means and said peripheral device controller, and said logic responsive to said command logic signals issued by said adapter command register means and said logic control signals from said peripheral device controller for converting said binary information signal streams from a first data processor code to a second data processor code in accordance with a selectable conversion code; and

- (h) second tri-state multiplexer means in electrical communication with said logic data packing means and said code conversion means, and responsive to said logic control signals received from said peripheral device controller and said logic command signals issued by said adapter command register means for supplying said binary information signal streams to said peripheral device controller.

4,342,082

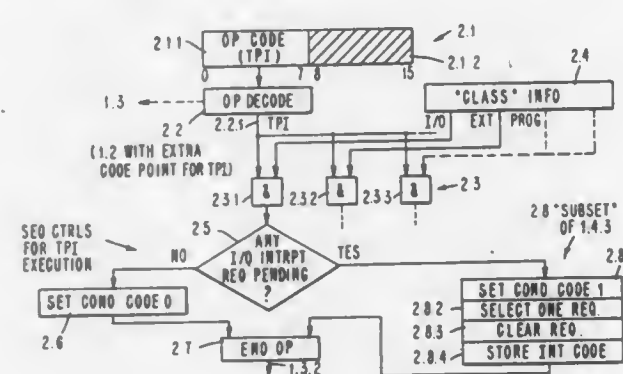
#### PROGRAM INSTRUCTION MECHANISM FOR SHORTENED RECURSIVE HANDLING OF INTERRUPTIONS

Paul J. Brown, Poughkeepsie; Robert J. Dugan, Hyde Park; Richard R. Guyette, Hopewell Junction, all of N.Y., and David L. Strong, San Jose, Calif., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 759,164, Jan. 13, 1977. This application Dec. 18, 1979, Ser. No. 104,930  
Int. Cl.<sup>3</sup> G06F 9/46, 9/00

U.S. Cl. 364—200

3 Claims



1. In a data processing system including program instruction retrieving and executing apparatus and system sequence controls having interruption request accepting means operating only between the termination of one instruction and the retrieving of the next instruction for conditionally performing interruption accepting operations (1.4) independent of said executing apparatus, each said accepting operation consisting of at least a first operation (1.4.3.2) to clear a selected active request, a second operation (part of 1.4.3.4) to store status information associated with an old program of instructions currently being performed, a third operation (part of 1.4.3.4) to store status information associated with a first level and subsequently a second level supervisory interruption handling program to be executed by said executing apparatus, the status information of the interruption handling program having means for disabling said accepting means from accepting a further interruption until the status is modified, and a fourth operation to begin the execution of the first level supervisory interruption handling program by said executing apparatus, wherein the improvement comprises apparatus (FIG. 2) associated exclusively with said executing apparatus for facilitating the recursive performance of said interruption handling program routine by said executing apparatus, comprising:

- means responsive to and operated only during execution of a predetermined instruction (TPI) by said executing apparatus in said second level supervisory interruption handling program, said instruction having means uniquely identifying said interruption class, including,
- means responsive to interruption requests for determining (2.3, 2.5) if any interruption requests of the same class are active;

means responsive to a determination by said determining means that at least one interruption request of the same class is active for clearing (2.8.3) a selected one of said active requests; and means responsive to operation of said clearing means for storing an interruption code (2.8.4) associated with the selected request and setting a condition code for use by said executing apparatus to subsequently retrieve and execute a predetermined next instruction (branch on condition) in the second level interruption handling program currently being executed; said facilitating apparatus being susceptible of recursively accepting another interruption request while said accepting means is disabled.

4,342,083

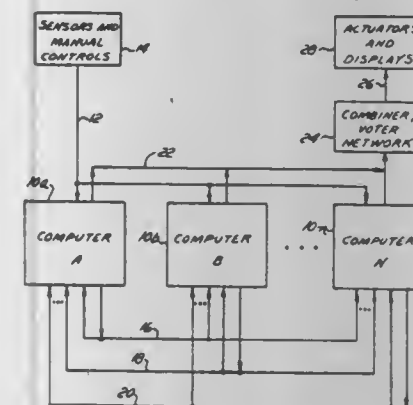
#### COMMUNICATION SYSTEM FOR A MULTIPLE-COMPUTER SYSTEM

Morris D. Freedman, Southfield, and Arliss E. Whiteside, Royal Oak, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 5, 1980, Ser. No. 118,694  
Int. Cl.<sup>3</sup> G06F 3/00

U.S. Cl. 364—200

5 Claims



1. In a multiple-computer or distributed computing system having a plurality of computers responsive to input signals from external sources for executing a predetermined set of task to produce an output signal controlling at least one external device, wherein each computer is capable of selecting and executing a subset of said predetermined set of tasks in a coordinated manner with all of the other computers in said multiple-computer system, an inter-computer communication network for transmitting multiple bit messages identifying the tasks selected by the individual computers and multiple-bit messages containing the data resulting from the execution of the tasks selected and executed by the computers comprising:

- a plurality of transmitters, one in each computer for transmitting, in a serial format, the messages identifying the tasks selected and the messages containing the data generated by its associated computer;
- a plurality of receivers in each computer, equal in number to the number of computers in the system, each receiver in each computer associated with a different computer in the system including a receiver associated with its own computer, and wherein each receiver includes means for converting the received messages from a serial format to a parallel format for utilization in the associated computer, and means for adding to each received message coded information identifying the computer with which said receiver is associated;
- a plurality of communication links, one associated with each of said computers, each of said plurality of communication links interconnecting the transmitter of the associated computer with each associated receiver in the other computers and the receiver associated with its own computer, each communication link comprising a pair of wires.

4,342,084

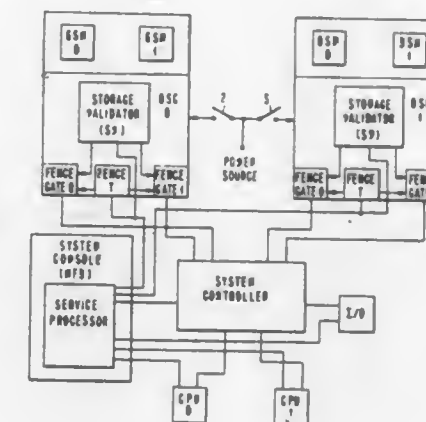
#### MAIN STORAGE VALIDATION MEANS

Gordon S. Sager, Salt Point, and Arthur J. Sutton, Cold Spring, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 11, 1980, Ser. No. 176,827  
Int. Cl.<sup>3</sup> G06F 11/10; G11C 29/00

U.S. Cl. 364—200

22 Claims



1. A main storage validation means for a data processing system having at least one central processor (CPU), a main storage having a plurality of basic system modules (BSMs) arranged in sets with at least one BSM being in each set, and a console having a service processor, comprising a plurality of fencing means connected to the CPU interfaces of the respective BSM sets for operationally disconnecting any BSM set from the CPU without affecting the operation of the CPU with any other BSM set in the system; a plurality of BSM validation means, each BSM validation means being associated with a respective BSM set for testing any BSM in the respective BSM set, means connecting the service processor to the fencing means of each BSM set to permit the service processor to isolate any BSM set operationally from the CPU; and means for receiving commands from the service processor with each BSM validation means to control a test of a BSM in the selected set; and whereby the service processor can control a test of any BSM isolated by the fencing means without disrupting the operation of the data processing system.

4,342,085

#### STEM PROCESSING FOR DATA REDUCTION IN A DICTIONARY STORAGE FILE

David Glickman, Frederick, Md.; Evon C. Greanias, Chappaqua, N.Y.; James T. Repass, Gaithersburg, and Walter S. Rosenbaum, Bethesda, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 5, 1979, Ser. No. 1,123  
Int. Cl.<sup>3</sup> G06F 5/00, 11/00

U.S. Cl. 364—300

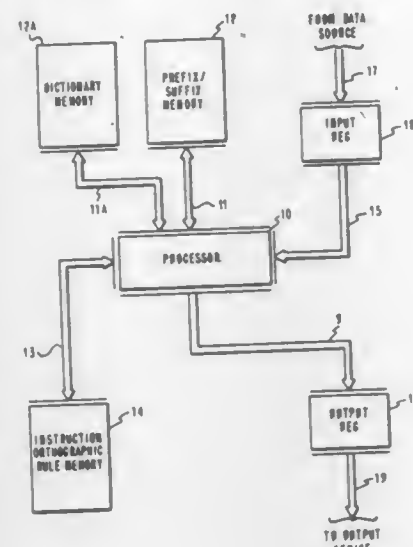
11 Claims

1. A method for minimizing the number of data segments in a dictionary storage file comprising the steps of:

- (a) defining a set of prefix data segments;
- (b) defining a set of suffix data segments;
- (c) defining a minimum length for input data segments;
- (d) receiving an input data segment;
- (e) testing said input data segment for minimum length plus suffix length;
- (f) comparing the low order characters of said input data segment to each suffix data segment in said set of suffix data segments when said input data segment length is at least equal to the minimum length plus the suffix length;
- (g) truncating said input data segment to remove said low order characters that compare equal to one of said suffix data segments;
- (h) testing said input data segment for minimum length plus prefix length;



- (i) comparing the high order characters of said input data segment to each prefix data segment in said set of prefix data segments when said input data segment length is at least equal to the minimum length plus the prefix length;
- (j) truncating said input data segment to remove said high



- order characters that compare equal to one of said prefix data segments;
- (k) comparing the truncated input data segments to the contents of said dictionary storage file; and
  - (l) storing said truncated input data segment in said dictionary storage file when said compare is unequal.

4,342,086

#### COMPENSATING SYSTEM FOR KINESIOGRAPH MANDIBULAR TRACKER

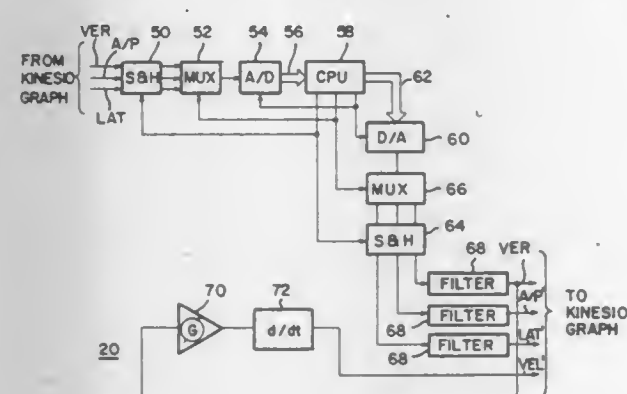
Freydoon Adib, Seattle, Wash., assignor to Myo-Tronics, Inc., Seattle, Wash.

Filed Jul. 3, 1980, Ser. No. 165,795

Int. Cl.<sup>3</sup> A61B 5/05

U.S. Cl. 364-415

12 Claims



1. In a kinesiograph mandibular tracker for measuring mandibular movements in at least one plane, said kinesiograph mandibular tracker including an array of sensors each of which generates an output signal representing the distance between a reference point on a patient's mandible and that sensor, said kinesiograph mandibular tracker generating from said sensor output signals, position signals which correspond to the approximate position coordinates of said reference point in said plane, a system for compensating for geometric distortions inherent in said kinesiograph mandibular tracker, comprising: first sample-and-hold means for periodically sampling said position signals and storing signals representative thereof; second means for calculating from said storage samples, position coordinates corresponding to the actual position of said reference point within said plane using the same coordinate system as said approximate position coordinates; and third means for generating respective corrected position signals which correspond to said actual position coordi-

nates so that said corrected position signals may be applied to said kinesiograph mandibular tracker in the same manner that corresponding position signals are applied to said kinesiograph mandibular tracker, whereby said kinesiograph mandibular tracker can display the actual position of said reference point without significant internal modification.

4,342,087

#### INDICATOR HAVING BELTS, INTENDED IN PARTICULAR FOR A RADIO ALTIMETER

Guy F. M. Marin, Boulogne, and Michel M. R. Riffiod, Paris, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

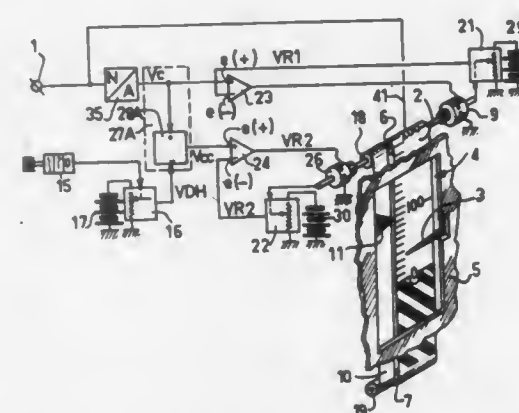
Filed May 8, 1980, Ser. No. 147,886

Claims priority, application France, May 9, 1979, 79 11747

Int. Cl.<sup>3</sup> G01S 1/02; G06F 15/48

U.S. Cl. 364-433

20 Claims



1. An apparatus for indicating altitudes, comprising:
  - (a) means for receiving an electrical signal representative of a first altitude;
  - (b) a movable first belt bearing indicia representative of specific altitudes;
  - (c) an indicator for indicating an altitude on the first belt;
  - (d) means for positioning the first belt relative to the indicator to effect indication of the first altitude;
  - (e) means for providing an electrical signal representative of a second altitude;
  - (f) a movable second belt bearing a reference mark;
  - (g) means for positioning the second belt relative to the first belt to effect indication by the reference mark of the second altitude on the first belt;
 characterized in that said means for positioning the first and second belts comprise, respectively:
  - (h) a first control including:
    1. a first converter coupled to the first belt for producing an electrical signal representative of the position of the belt;
    2. a first comparator having respective inputs for receiving a first control signal and the electrical signal representative of the position of the first belt, and having an output at which is provided an output signal representative of a difference between these received signals; and
    3. a first driving means coupled to the first belt and electrically-connected to the output of the first comparator; and
  - (i) a second control including:
    1. a second converter coupled to the second belt for producing an electrical signal representative of the position of the belt;
    2. a second comparator having respective inputs for receiving a second control signal and the electrical signal representative of the position of the second belt, and having an output at which is provided an output signal representative of a difference between these received signals; and
    3. a second driving means coupled to the second belt and

electrically-connected to the output of the second comparator;

- (j) an arithmetic unit including first and second inputs for receiving the electrical signals representative of the first and second altitudes, respectively, and at least one output, for providing the first and second control signals to the first and second comparators, said arithmetic unit comprising:
  1. means for producing the first control signal, said first control signal representing the first altitude; and
  2. means for producing the second control signal, said second control signal representing the difference between the first and the second altitudes.

4,342,089

#### METHOD OF AND APPARATUS FOR AUTOMATIC MEASUREMENT OF CIRCUIT PARAMETERS WITH MICROPROCESSOR CALCULATION TECHNIQUES

Henry P. Hall, Concord, Mass., assignor to GenRad, Inc., Concord, Mass.

Division of Ser. No. 719,810, Sep. 2, 1976, Pat. No. 4,196,475.

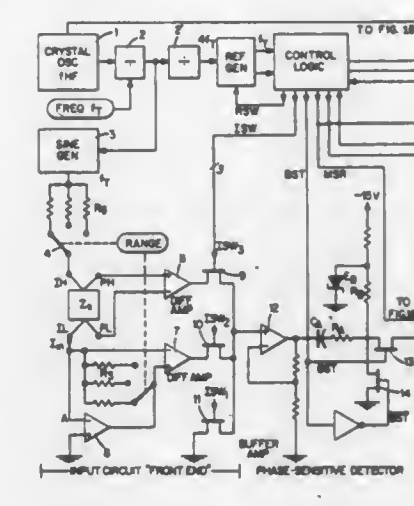
This application Dec. 19, 1979, Ser. No. 105,269

The portion of the term of this patent subsequent to Apr. 1, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> G06F 15/20

U.S. Cl. 364-481

22 Claims



4,342,088

#### MULTIFARIOUS BORING DEVICE

Hiroshi Sato, Fujisawa, Japan, assignor to Daiichi Electric Co. Ltd., Kanagawa, Japan

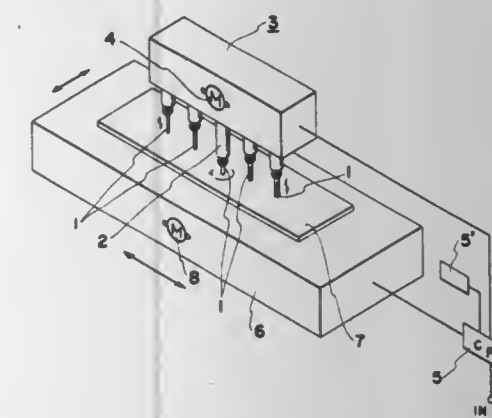
Filed Mar. 20, 1980, Ser. No. 132,164

Claims priority, application Japan, Mar. 27, 1979, 54-35106

Int. Cl.<sup>3</sup> G06F 15/20; B23B 39/16, 39/24

U.S. Cl. 364-474

10 Claims



1. A multifarious boring device comprising:
  - a head having mounted in a face thereof a plurality of machining tools including a base tool, each said tool being mounted on said head at a respective separate position thereof, and each said tool being operable at the said respective separate position thereof;
  - a work table spaced from said head and adapted to fixedly support a workpiece;
  - computer means, including at least one memory, for computing a first distance and relative direction between a particular said tool and said base tool and a second distance and direction between said base tool and a desired working point on the workpiece;
  - shifting means, operable connected to one of said head or said work table and controlled by said computer means, for shifting, in response to said first and second distances and directions, said one of said head or said work table relative to the other of said head or said work table, and thereby for aligning precisely said desired working point with said particular tool; and
  - power means, operably connected to said tools and controlled by said computer means, for operating said particular tool at said respective separate position thereof, and without relative shifting of said respective positions of said tools with respect to said head, and thereby for performing a machining operation on the workpiece at said desired working point.

4,342,090

#### BATCH CHIP PLACEMENT SYSTEM

George A. Caccoma, Poughkeepsie; Joseph H. Koestner, Hopewell Junction; Brian C. O'Neill, Millbrook, all of N.Y., and Frank M. Tappen, Plantation, Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 27, 1980, Ser. No. 163,671

Int. Cl.<sup>3</sup> G06F 15/46

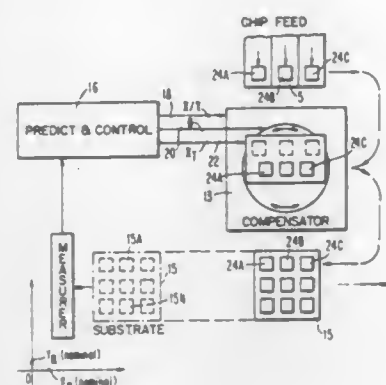
U.S. Cl. 364-491

33 Claims

26. A batch component placement system for positioning components at sites on a substrate where the sites vary in position from substrate to substrate, comprising:
  - substrate means having sites thereon including component sites;
  - automatic means for locating the position of said sites on said substrate means;



a plurality of component locator means positionable with respect to one another; and



means to individually position with respect to one another said plurality of component locator means in accordance with the located position of said sites.

4,342,091

# METHOD OF DETERMINING THE COORDINATES OF THE CENTER OF CURVATURE OF THE CURVED SURFACE OF A WORKPIECE

David J. Whitehouse, Melton Mowbray, and Harish C. Sharma, Leicester, both of England, assignors to The Rank Organisation Limited, London, England

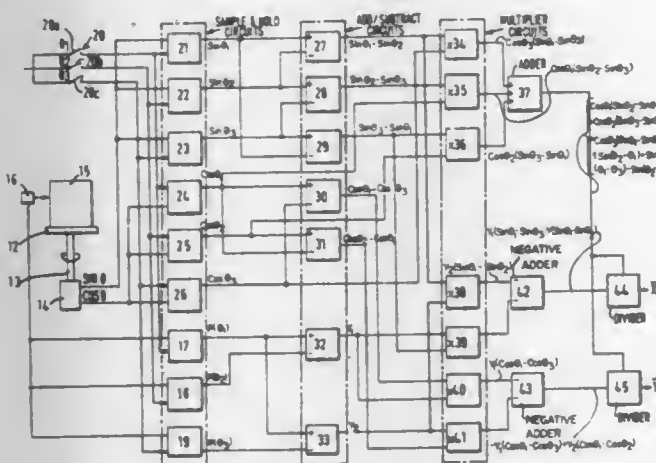
Filed Jan. 3, 1980, Ser. No. 109,305

Claims priority, application United Kingdom, Jan. 4, 1979, 7900230

Int. Cl.<sup>3</sup> G06F 15/20; G01B 7/28

U.S. Cl. 364—506

3 Claims



1. A method of centering a workpiece having a curved surface with respect to an axis of relative rotation between said workpiece and a surface measurement instrument of the type comprising:

a table,  
means for mounting said workpiece on said table,  
a sensor,

means mounting said sensor so that relative rotation between said sensor and said table can take place about an axis of relative rotation, said sensor being drawn in contact with the surface of said workpiece upon said relative rotation, comprising the steps of:

deriving signals representing the coordinates of the centre of curvature of said curved surface of said workpiece by traversing said sensor over the surface of said workpiece, electrically deriving from the output of said sensor three signals representing the value of said sensor signal at three points of said traverse of the sensor,  
generating signals representing the angular position of said three points,  
electrically determining the difference  $Y_1$  between the values of said sensor signals at said first and second points,

determining the difference  $Y_2$  between the values of said sensor signals at said first and third points, and electrically generating from said signals representing the values of said sensor signals at said three points of said transverse of said sensor, and from said signals representing the angular position of said three points, two output signals representing the expressions:

$$\bar{x} = \frac{Y_1 (\sin \theta_1 - \sin \theta_3) - Y_2 (\sin \theta_1 - \sin \theta_2)}{\sin(\theta_1 - \theta_3) + \sin(\theta_2 - \theta_1) - \sin(\theta_2 - \theta_3)}$$

and

$$\bar{y} = \frac{-Y_1 (\cos \theta_1 - \cos \theta_3) + Y_2 (\cos \theta_1 - \cos \theta_2)}{\sin(\theta_1 - \theta_3) + \sin(\theta_2 - \theta_1) - \sin(\theta_2 - \theta_3)}$$

where  $\bar{x}$  and  $\bar{y}$  respectively represent the coordinates of the centre of the workpiece parallel to and perpendicular to one axis of said predetermined frame of reference, and  $\theta_1$ ,  $\theta_2$  and  $\theta_3$  represent the angular position of said three points along said traverse of said sensor, with respect to said one axis of said predetermined frame of reference, and displacing said workpiece with respect to said surface measurement instrument by a distance represented by said output signals thus produced, and repeating said process iteratively a plurality of times.

4,342,092

# INTEGRATED CIRCUIT DEVICE FOR CLOCK

Shigeki Kumagi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

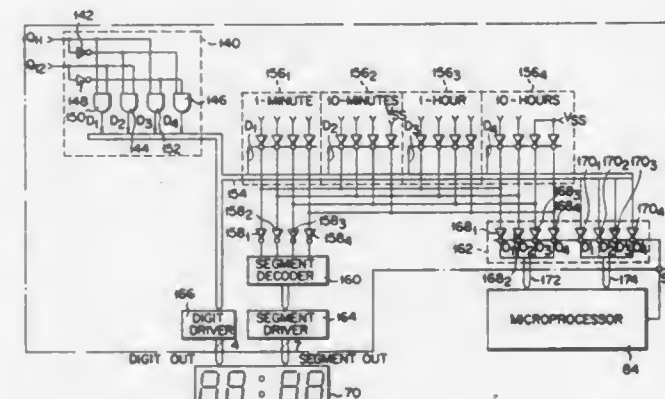
Filed Feb. 25, 1980, Ser. No. 124,600

Claims priority, application Japan, Feb. 27, 1979, 54-22202; Feb. 27, 1979, 54-22203; Feb. 27, 1979, 54-22204

Int. Cl.<sup>3</sup> G06F 15/20

U.S. Cl. 364—569

4 Claims



1. A clock integrated circuit device comprising in a single-chip structure:

an internal bus;

a pulse generating means for producing a clock pulse signal;

a program memory means for storing microprograms;

a time counting means connected to said internal bus for counting time-of-day data through data processing with said clock pulse signal in accordance with a series of microprograms supplied from said program memory means;

a time-of-day data memory means connected to the internal bus for storing data corresponding to said time-of-day data;

an information input/output means connected to said internal bus and having register means for storing hour, minute, and second data received from said time-of-day data memory means for outputting said data in response to an external data transfer command; and

a display control circuit, including display means, connected to said internal bus for producing a control signal for displaying on said display means time count data obtained from said time counting means;

said information input/output means including:

a terminal for receiving external control data instructing a data input operation;

a terminal for receiving external control data instructing a data output operation;

input/output terminals for receiving data from a central processing unit and supplying data to said central processing unit;

shift registers each consisting of a plurality of bits for storing data from said central processing unit or data supplied to said clock integrated circuit device;

one-bit registers each connected to the output side of each of said shift registers for storing leading bit data from the associated shift register;

first clocked logic circuits held closed to inhibit output of data from said shift registers to said input/output terminals at the time of the data input operation and held open to permit output of data from said shift registers to said input/output terminals at the time of the data output operation;

second clocked logic circuits held open to permit writing of data coupled to said input/output terminals into said shift registers at the time of the data input operation and held closed to inhibit writing of data coupled to said input/output terminals into said shift registers at the time of the data output operation;

first clocked inverters connected to the output side of said shift registers for coupling data outputted from said shift registers to a bus line under the control of a load signal;

second clocked inverters connected between said bus lines and the input side of said shift registers for coupling data on said bus line to said shift registers under the control of a store signal;

third clocked inverters connected between said second clocked inverters and said second logic circuits for coupling a control signal to said second clocked logic circuits to inhibit data outputted from said second clocked logic circuits so that data supplied to said input/output terminals should not be coupled to said shift registers at the time when data on said bus line are being stored in said shift registers;

a first logic circuit for permitting selective passage therethrough of said external control data instructing a data output operation as well as said load signal and store signal;

a second logic circuit for permitting passage therethrough of the output of said first logic circuit in synchronism to a basic clock signal from said central processing unit;

a flip-flop for coupling a control data to said first and second clocked logic circuits and also supplying said control data through said bus line to said central processing unit under the control of an input instruction at the time of the data input operation and coupling an input instruction received from said central processing unit through said bus line to said first and second logic circuits at the time of the data output operation;

a fourth clocked inverter connected between said bus line and said flip-flop for coupling an output instruction received from said central processing unit to said flip-flop under the control of a store signal; and

a fifth clocked inverter connected between said bus line and said flip-flop for coupling an input instruction from said flip-flop to said bus line under the control of a load signal.

4,342,093

# METHOD OF DIGITAL LOGIC SIMULATION

Masayuki Miyoshi, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 13, 1980, Ser. No. 149,547

Claims priority, application Japan, May 15, 1979, 54-59354

Int. Cl.<sup>3</sup> G06F 15/20

U.S. Cl. 364—578

2 Claims

1. A method of logic simulation comprising the steps of:

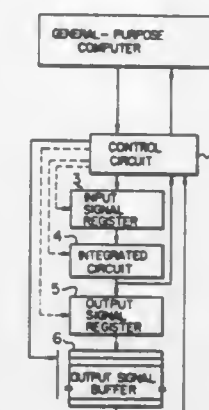
(a) providing a real circuit among a logic circuit to be simulated as a part thereof;

(b) forming a simulation model including said real circuit and a simulation circuit;

(c) operating said real circuit at predetermined cycles, and

buffering an output signal of said real circuit during said predetermined cycles in accordance with a time when the output signal changes;

(d) subsequently executing the logic simulation of said simulation circuit over the same cycles as said predetermined cycles by using the output signal buffered in said step (c) as a stimulus to an input node of said simulation circuit, and



(e) subsequently executing said step (c) in response to an input signal applied to said real circuit representing the condition of an output node of said simulation circuit which is obtained by the execution of said step (d) so that said real circuit operation and said simulation circuit operation alternate with one another.

4,342,094

# DISPLAY METHOD FOR VARIABLE FUNCTION PROGRAMMED SYSTEM

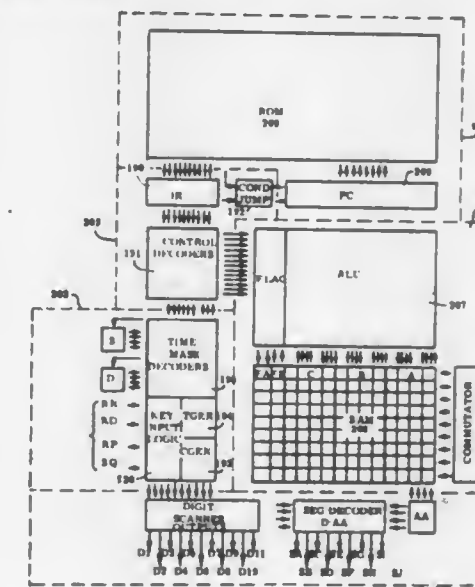
Gary W. Boone, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 856,932, Dec. 2, 1977, Pat. No. 4,242,675, which is a continuation of Ser. No. 420,999, Dec. 3, 1973, abandoned, which is a continuation of Ser. No. 163,565, Jul. 19, 1971, abandoned. This application Jan. 12, 1979, Ser. No. 2,811

Int. Cl.<sup>3</sup> G06F 3/14, 13/00

U.S. Cl. 364—900

7 Claims



1. An electronic system having output means for repetitively outputting a sequence of data words to electronic display utilization means from a large-scale-integrated semiconductor unit, the output means comprising: data memory means included in the unit in the form of an array of memory cells for storing said sequence of data words in bit-parallel in a first coded format, with means included in the unit and coupled to the data memory means for repetitively transferring in bit-parallel said sequence of data words one word at a time to an intermediate storage location, a logic array included in the unit



having parallel inputs for receiving said data words in the first coded format from the intermediate storage location and having parallel outputs for outputting to said display utilization means representations of said data words repetitively in said sequence in a second coded format, the logic array being mask-programmable in manufacture to provide one of a variety of different representations in the second coded format for a given data word of the first coded format.

4,342,095

## COMPUTER TERMINAL

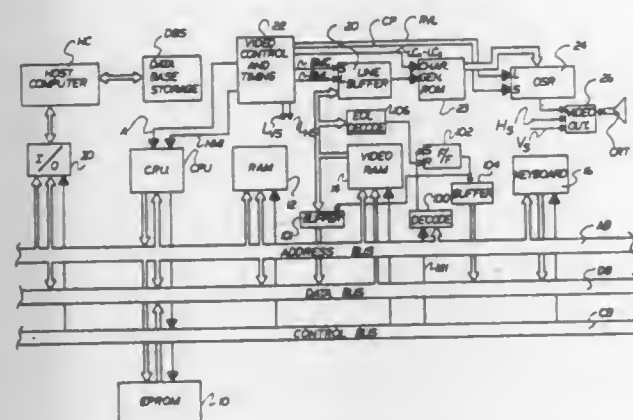
Richard W. Goodman, Ann Arbor, Mich., assignor to Harris Corporation, Melbourne, Fla.

Filed Apr. 2, 1979, Ser. No. 26,026

Int. Cl.<sup>3</sup> G06F 9/32, 3/153

U.S. Cl. 364—900

17 Claims



## 1. Apparatus comprising:

data processing means for manipulating data in response to instructions supplied thereto and having program counter means periodically incremented in response to each said instruction for providing addresses for normally addressing locations in a memory means to obtain said instructions;

memory means responsive to said addresses for providing said instructions and other data, said memory means having a first group of addressable storage locations for supplying said instructions and a second group of addressable storage locations for supplying other data;

means for utilizing said other data when obtained from said memory means;

said data processing means includes means for setting said program counter to a selected count representative of a particular address so that a count may be set representative of a starting address within said second group of storage locations; and

control means for controlling supply of said other data to said utilization means and including means for supplying a coded data word representative of a selected said instruction to said data processing means for incrementing said program counter so long as said program counter provides addresses corresponding with said second group of addressable storage locations whereby said program counter will be providing addresses to obtain said other data instead of said instructions.

4,342,096

## VARIABLE PITCH CHARACTER GENERATOR FOR DOT MATRIX PRINTER

Bernard J. McDevitt, Norristown, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 15, 1980, Ser. No. 121,845

Int. Cl.<sup>3</sup> G06F 3/12

U.S. Cl. 364—900

2 Claims

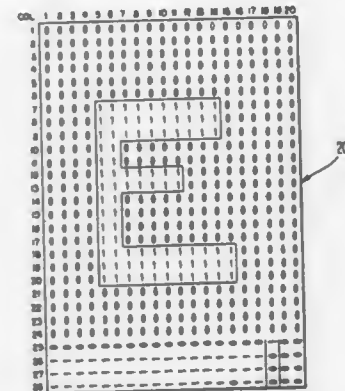
1. A dot matrix printing apparatus for printing a series of character shapes with proportional spacing and having a character generator memory for storing each of a plurality of character shapes as a pattern of binary ones and zeros in a character matrix, each of said character matrices comprising a

plurality of multiple bit columns wherein the first one said columns is associated with a character starting address, each of said columns comprising at least one parity check bit, said apparatus comprising:

selection means for selecting a character matrix for printing;

transmitting means connected to said selection means for transmitting sequentially said columns of said selected character matrices;

end of character means connected to said selection means and said transmitting means for generating an EOC indication signal to stop transmission of said selected character matrix at one of said sequentially transmitted columns and to signal said selection means for selecting a new character matrix for printing, said end of character means comprising:



N EOC flag bits within each of said columns where N is an integer greater than or equal to 2, said N EOC flag bits capable of forming  $2^N$  bit patterns;

decoding circuitry for decoding a portion of said  $2^N$  bit patterns as valid and invalid EOC indication signals and the remaining portion of said  $2^N$  bit patterns as valid and invalid NOT EOC indication signals; and

wherein said apparatus further comprises:

parity checking means connected to said character generator memory for checking the parity of said transmitted columns; and

stop printing means connected to said parity checking means and said decoding circuitry to stop printing of said dot matrix printer when said parity checking means indicates no error and said decoding circuitry transmits an invalid indication signal whereby said printing is stopped when it is believed that said EOC bits are in error.

4,342,097

## MEMORY BUFFER

Morris Herman, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Feb. 28, 1980, Ser. No. 125,721

Int. Cl.<sup>3</sup> G06F 3/04, 7/00

U.S. Cl. 364—900

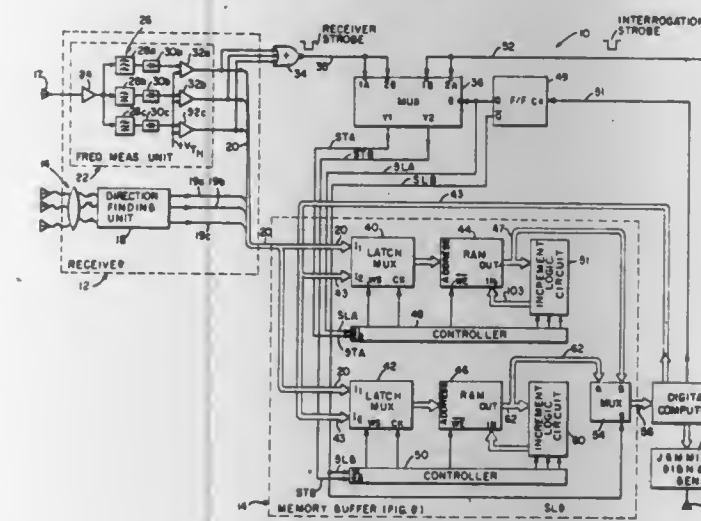
3 Claims

1. A memory buffer for providing an indication of the number of times signals having a unique characteristic have been produced by an input system and for supplying such indication to an output system, such memory buffer comprising:

- (a) a pair of addressable memories;
- (b) means for producing timing pulses independently of the signals produced by the input system, such timing pulses indicating a first predetermined period of time and a second, subsequent, predetermined period of time;
- (c) a plurality of switching means, each one having a pair of input terminals, a first one thereof being fed by the input system and a second one thereof being fed by the output system and responsive to the timing pulses for coupling, during the first predetermined period of time, digital words produced by the input system to identify the characteristics produced by the input signal to address terminals of a first one of said pair of addressable memories the

locations of each one of the memories being associated with the unique characteristic of the produced signals, and for coupling during the first period of time, digital words produced by the output system to identify characteristics of the signals produced by the input system to a second one of the pair of addressable memories and for coupling, during the second predetermined period of time, the digital words produced by the input system to address terminals of the second one of the pair of addressable memories and the digital words produced by the output system to the first one of the pair of memories;

(d) means, responsive to data stored in the locations of the first one of the pair of memories addressed by the input system during the first period of time for incrementing the data in such addressed location and for transferring such



incremented data for storage in such first one of the addressable memories at the addressed location, such stored data providing an indication of the number of times signals have been produced by the input system with the unique characteristic associated with the location addressed by the input system;

(e) output switching means having a pair of input terminals coupled to the pair of addressable memories and responsive to the timing pulses for coupling the data stored in the location of the first one of the pair of memories addressed by the output system during the second period of time to such output system to provide such output system with an indication of the number of times signals having the unique characteristic associated with the location addressed by the output system have been produced by the input system during the first predetermined period of time.

4,342,098

## ASYMMETRIC SAWTOOTH CONTIGUOUS DISK PROPAGATION PATTERN

Hung L. Hu, Sunnyvale, and Kochan Ju, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,714

Int. Cl.<sup>3</sup> G11C 19/08

U.S. Cl. 365—36

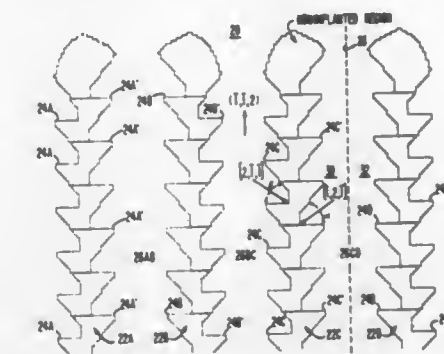
5 Claims

1. A contiguous disk propagation pattern having a plurality of parallel periodic propagation tracks comprising:

a first propagation track having cusps on first and second sides, said cusps on said second side shifted by about half of a period relative to said cusps on said first side; and

a second propagation track having cusps on first and second

sides, said cusps on said second side shifted by about half of a period relative to the cusps on said first side, said



second track is shifted longitudinally about half of a period relative to said first track.

4,342,099

## ELECTRICALLY ERASABLE PROGRAMMABLE MNOS READ ONLY MEMORY

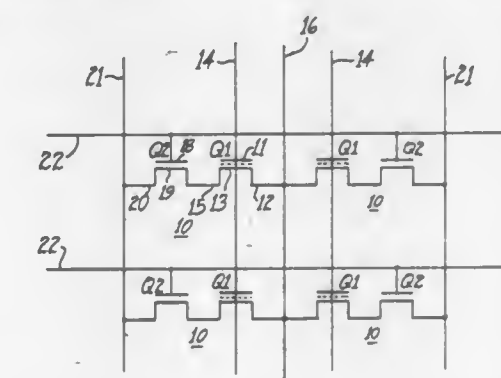
Chang-Kiang Kuo, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 18, 1979, Ser. No. 49,526

Int. Cl.<sup>3</sup> G11C 11/40

U.S. Cl. 365—104

14 Claims



1. A method of operating a semiconductor device of the type having a plurality of insulated gate field effect transistor cells in a face of a semiconductor body, each of the transistor cells having an MNOS transistor and an MOS transistor, each transistor having a source-drain path and a gate, the transistor cells being in a regular pattern to provide a memory array; the source-drain paths of the MNOS transistor and the MOS transistor being connected in series in each cell; said method comprising the steps of: programming the array of memory cells by applying voltage to the gates of both transistors in selected cells; and reading the array by applying voltage to the gate of only the MOS transistor in a selected cell; wherein the source-drain paths of the MNOS transistor and MOS transistor in each cell are formed between heavily-doped semiconductor regions which define the ground and output lines for the array.

4,342,100

## IMPLANT PROGRAMMABLE METAL GATE MOS READ ONLY MEMORY

Chang-Kiang Kuo, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 1,571, Jan. 8, 1979, Pat. No. 4,294,001. This application Jan. 19, 1981, Ser. No. 225,873

Int. Cl.<sup>3</sup> G11C 17/00, 11/40

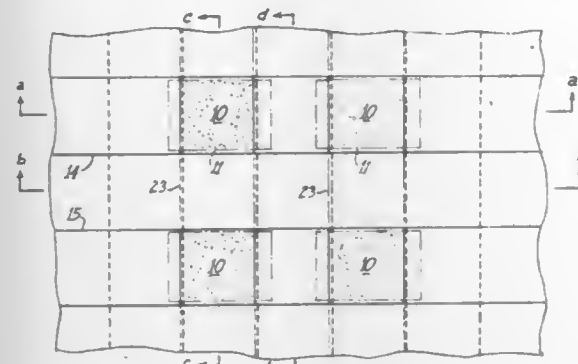
U.S. Cl. 365—104

2 Claims

1. A read only memory array comprising: a plurality of memory cells formed at a face of a silicon body in an array of rows and columns; each memory cell including an insulated gate field effect transistor having a source, a drain and a gate, the gate being insulated from the silicon by a thin gate insulator for each transistor; a thick silicon oxide insulating coating on



said face covering the rows and columns of field effect transistors except above the gates; a plurality of parallel polysilicon strips on the face defining the rows and forming the gates; interconnections formed by a metal layer on top of all of said polysilicon strips except immediately above all of the gates so



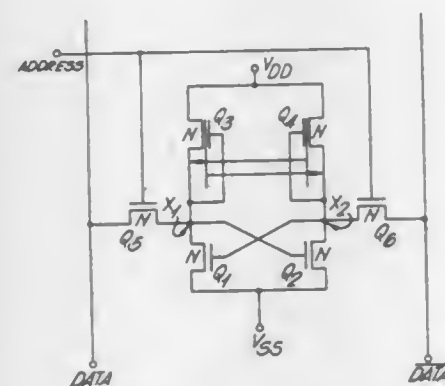
that the polysilicon of each gate is not covered by metal; and impurity implanted regions underlying the gate and gate insulator for selected ones but not all of the memory cells to alter substantially the threshold of the transistors of such selected ones of the cells compared to the transistors of memory cells other than the selected ones.

#### 4,342,101 NONVOLATILE SEMICONDUCTOR MEMORY CIRCUITS

Colin W. Edwards, Chalfont St. Peters, England, assignor to Hughes Microelectronics Limited, Glenrothes, Scotland  
Filed Oct. 31, 1980, Ser. No. 202,519  
Claims priority, application United Kingdom, Nov. 12, 1979, 7939044

Int. Cl.<sup>3</sup> G11C 13/00  
U.S. Cl. 365—154

5 Claims



1. A non-volatile bistable semiconductor latch having a pair of cross-coupled branches connectable across a common supply voltage, each branch including an NMOS transistor driver and an NMOS depletion load transistor connected in series at a respective node, at least one of said load transistors having a threshold voltage which may be varied by increasing the potential of a control gate of said transistor above a predetermined level relative to the potential on one of its other electrodes, whereby volatile information held by the latch is rendered non-volatile by raising said control gate potential above said predetermined level.

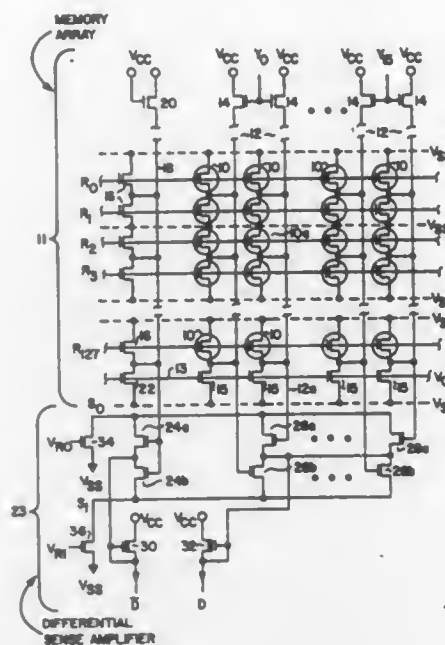
#### 4,342,102 SEMICONDUCTOR MEMORY ARRAY

Deepraj S. Puar, Sunnyvale, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Jun. 18, 1980, Ser. No. 160,725  
Int. Cl.<sup>3</sup> G11C 7/00

U.S. Cl. 365—207

7 Claims



1. In a semiconductor memory array including a plurality of memory cell transistors arranged in rows and columns and a plurality of main bit lines extending parallel to said columns, each main bit line coupled to a separate column of said memory cell transistors, the combination comprising:

- a column of reference cell transistors and a reference bit line extending parallel to said memory cell transistor columns and located within the same area of the memory array as said memory cell transistors;
- a plurality of word lines extending parallel to said rows of memory cell transistors and coupled respectively to the gates of the memory cell transistors and to the gate of the reference cell transistor lying in a given row;
- pull-up load transistor means coupled to each of said main bit lines and to said reference bit line;
- pull-down transistor means coupled to each of said main bit lines and to said reference bit line; and
- means coupled between said reference bit line and each of said main bit lines to sense the presence or absence, effectively, of a memory cell transistor at an address determined by selecting a given word line and a given main bit line, characterized in that said pull-up load transistor means, said pull-down transistor means, said memory cell transistors, and said reference cell transistors are so related in size and gain that with operating voltages applied to said reference bit line and said main bit lines through said pull-up load transistor means, a difference in current through respective pull-up and pull-down transistor means of the reference bit line and main bit line will cause the selected main bit line to assume either a high potential level above the potential of said reference bit line to indicate the absence of a memory cell transistor at the selected memory cell address or a low potential level below the potential of said reference bit line to indicate the presence of a memory cell transistor at the selected memory address.

#### 4,342,103 ADDRESS BUFFER CIRCUIT

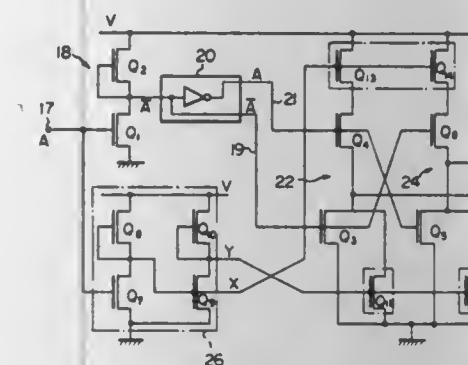
Mitsuo Higuchi, Tokyo, and Kiyoshi Miyasaka, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 23, 1980, Ser. No. 171,272  
Claims priority, application Japan, Jul. 27, 1979, 54-95836

U.S. Cl. 365—230

Int. Cl.<sup>3</sup> G11C 8/00

17 Claims



10. An address buffer circuit receiving an input address signal having first, second and third logic levels, and providing an output address signal and an inverted output address signal to an address decoder, said address buffer circuit comprising: input means for receiving the input address signal and for generating first and second output signals; an input buffer circuit for receiving the input address signal and for providing, as an output, a switching signal when the third level of the input address signal is received; a positive output buffer circuit, operatively connected to said input means, for receiving said first output signal and for providing said output address signal to the address decoder; a negative output buffer circuit, operatively connected to said input means, for receiving said second output signal and for providing said inverted output address signal to the address decoder; clamping means, operatively connected to said positive and negative output buffer circuits and to said input buffer circuit, for clamping both said output address signal and said inverted output address signal to a predetermined logic level when said switching signal is received from said input buffer circuit.

#### 4,342,104 HELIUM-SPEECH COMMUNICATION

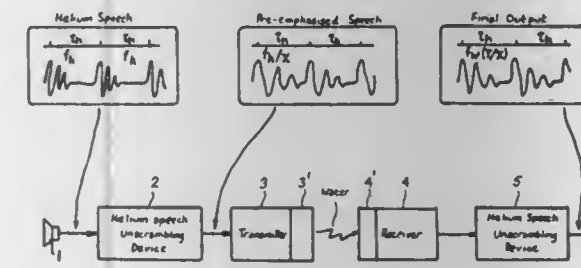
Mervyn A. Jack, Penicuik, Scotland, assignor to University Court of the University of Edinburgh, Edinburgh, Scotland

Filed Oct. 30, 1980, Ser. No. 202,300  
Claims priority, application United Kingdom, Nov. 2, 1979, 7937994

U.S. Cl. 367—132

Int. Cl.<sup>3</sup> H04B 11/00

9 Claims



6. Apparatus for through-water transmission of helium-speech voiced by a diver comprising transmitting equipment for the diver comprising a microphone, an analogue speech unscrambling device to subject a leading part of each pitch period of the diver's speech received from the microphone to waveform time expansion and thereby to reduce the bandwidth of the helium-speech signals, and means to transmit the reduced bandwidth signals to a listener location, the transmit-

ting means comprising a through-water communications transmitter to receive the reduced bandwidth signals and a transducer to feed the output from the transmitter directly into the water to the listener location, and at the listener location a receiving transducer, a further analogue helium-speech unscrambling device of variable expansion ratio, which is adjustable by a listener at said listener location, and a sound generator, for said listener, receiving output signals from the said further unscrambling device.

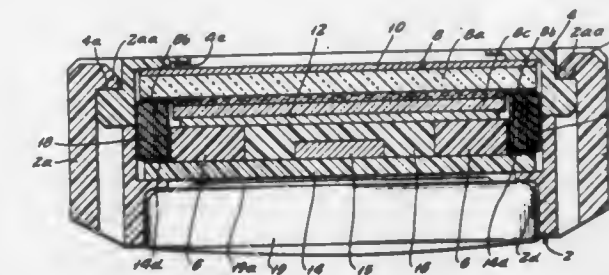
#### 4,342,105 TIMEPIECE MODULE FRAME AND ASSEMBLY

Leonard Dorfman, Santa Clara, Calif., assignor to Timex Corporation, Waterbury, Conn.

Filed Jun. 23, 1980, Ser. No. 161,807  
Int. Cl.<sup>3</sup> G04C 23/02

U.S. Cl. 368—88

9 Claims

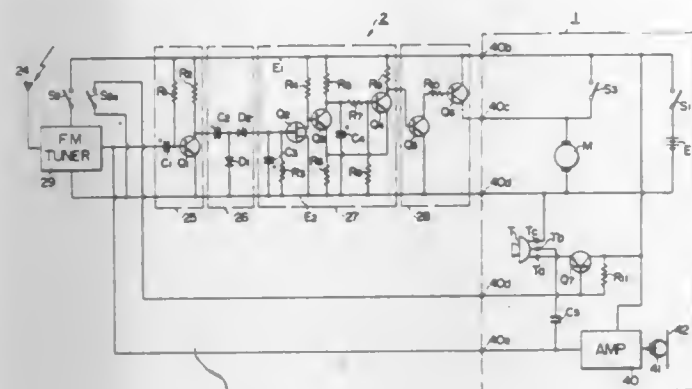


1. A snap-together module frame for packaging an electrooptic display, printed circuit board carrying electronic components and a battery for an electronic timepiece comprising:

- a first plastic pod member having a first recess to receive the electrooptical display and an aperture configured to provide a window for viewing the display;
- a second plastic pod member having a second recess shaped to receive the battery and having first alignment means;
- an intermediate plastic pod member adapted to carry the printed circuit board, said intermediate pod member being disposed between said first and second pod members and having second alignment means to cooperatively engage the first alignment means of said second pod member to locate the printed circuit board and electronic components thereon in preselected relation to said display and battery, and wherein the intermediate pod member further includes an outer wall defining edge slots to receive conductive connectors for electrically coupling the electronic components on said printed circuit board to said display, second pod member further having a pair of resilient gripping arms extending toward said first pod member along opposite sides and said first pod member having a pair of gripped surfaces on opposite sides against which the resilient arms are snap-fitted.



**4,342,106**  
**REMOTELY CONTROLLABLE VOICE-OPERATED STARTER FOR TAPE RECORDER**  
 Masanobu Sato, and Norio Fukuoka, both of Hachioji, Japan, assignors to Olympus Optical Company, Ltd., Tokyo, Japan  
 Filed May 21, 1979, Ser. No. 40,582  
 Claims priority, application Japan, Jul. 20, 1978, 53-89005  
 Int. Cl.<sup>3</sup> G11B 31/00, 19/20  
 U.S. Cl. 369—7 6 Claims



1. A voice operated starter for a tape recorder which includes an internally housed microphone, a tape driver motor and a power source and using an external wireless microphone assembly, the starter comprising a voice-operated starter circuit which responds to a voice signal by providing a switching operation which enables a tape recorder to be automatically rendered operative by connecting the motor with the power source, and an FM tuner circuit electrically connected as a preceding stage to the starter circuit and responsive to an FM wave from an external wireless microphone assembly to demodulate said FM wave and to activate the starter circuit, said FM tuner circuit and said starter circuit being electrically connected to and powered by the power source of said tape recorder, and including means for disabling said internally housed microphone when said starter is operative.

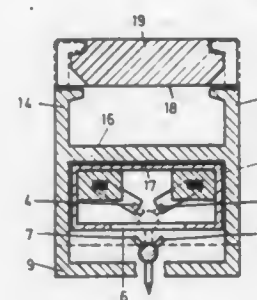
2. An external signal operated starter for use with a tape recorder and a wireless microphone assembly, said tape recorder having a tape drive motor and a power source and an internally housed microphone, said starter comprising a starter circuit and receiver means for receiving a radio wave from said wireless microphone assembly, said radio wave being modulated with an external signal and for providing said external signal in demodulated form, said receiver means electrically connected as a preceding stage to said starter circuit, said receiver means and said starter circuit being electrically connected to and powered by the power source of said tape recorder, said starter circuit operating as means for coupling said tape drive motor to said power source upon receiving said demodulated external signal, said coupling means comprising a rectifier connected to said receiver means, a level detector circuit connected to said rectifier for detecting the level of the signal received from said rectifier, and a switching circuit connected to said level detector circuit and adapted to couple said tape drive motor and said power source of said tape recorder upon receiving said demodulated external signal from said receiver means to automatically operate said tape recorder, and including means for disabling said internally housed microphone whenever said starter is operative.

**4,342,107**  
**PICK-UP NEEDLE**  
 Heinrich Zimmermann, Joh. Seb. Bach. Str. 14, and Jörg Schamberger, Schwarzwaldstr. 8, both of 7742 St. Georgen, Fed. Rep. of Germany  
 Filed Sep. 26, 1980, Ser. No. 191,464  
 Int. Cl.<sup>3</sup> G11B 3/02 3 Claims

U.S. Cl. 369—172

1. A replaceable pick-up needle for a pick-up for the tracking

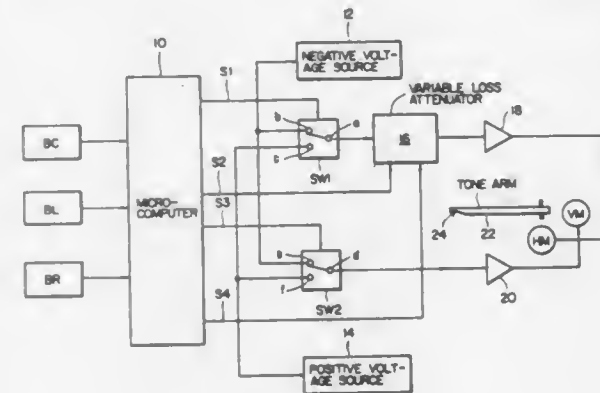
of records, the pick-up containing an electro-mechanical transducer, comprising  
 a cartridge (1, 25),  
 a cantilever (10, 24) being substantially disposed in the longitudinal direction of the cartridge,  
 a stylus point (39) disposed at an end of said cantilever (10, 24),  
 connection means to the cantilever (10, 24) for transmitting the tracking movement of the cantilever (10, 24) to the electro-mechanical transducer in the pick-up,  
 an elastic bearing means (11) for holding said cantilever (10, 24) swingable in all directions at a point which is spaced from said stylus point (39),  
 means comprising a holding part (9, 30) for receiving said elastic bearing means (11) of the cantilever (10, 24),  
 a clamp fastening means for detachably holding said holding



part (9, 30) in an operating position on said cartridge (1, 25),  
 longitudinal guide means (3, 19, 9; 26, 28, 27, 29) for guiding said holding part in a direction of feed movement of said holding part (9, 30) relative to said cartridge (1, 25) in a direction substantially parallel to a longitudinal axis of the cartridge,  
 stop means (20) for limiting said feed movement of the holding part (9, 30) and defining an abutment end position thereof,  
 transverse guide means (21, 12, 22, 13; 33, 37, 34, 35, 38) for guiding said holding part in a feeding movement of said holding part (9, 30) into said operating position on said cartridge (1, 25) in a direction which is substantially transverse to said longitudinal axis of said cartridge beginning at the abutment end position of the feed movement of the holding part in the longitudinal direction of the cartridge.

**4,342,108**  
**VARIABLE SPEED TONE ARM CONTROL SYSTEM**  
 Masatsugu Kitamura, Tsuyoshi Ono, and Hideo Onoye, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan  
 Filed Oct. 3, 1980, Ser. No. 193,812  
 Claims priority, application Japan, Oct. 6, 1979, 54-129176  
 Int. Cl.<sup>3</sup> G11B 3/08 11 Claims

U.S. Cl. 369—216

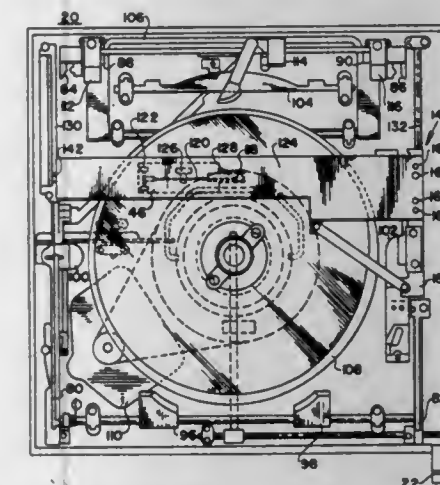


1. A tone arm control system comprising:

first and second manually operated keys;  
 vertical moving means including means for moving said tone arm to an upward position in response to operation of either of said first and second keys;  
 horizontal moving means including means for moving said tone arm in a specified horizontal direction in response to operation of a specific one of said first and second keys after said tone arm is moved to the upward position,  
 said horizontal moving means further including means for moving said tone arm at a first low speed for a predetermined interval after the movement to the upward position, and at a second higher speed subsequent to said predetermined interval.

**4,342,109**  
**CARRIAGE ALIGNMENT APPARATUS FOR VIDEO DISC PLAYER**  
 Myron C. Stewart, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.  
 Filed Jun. 6, 1980, Ser. No. 156,999  
 Int. Cl.<sup>3</sup> G11B 3/10 3 Claims

U.S. Cl. 369—249

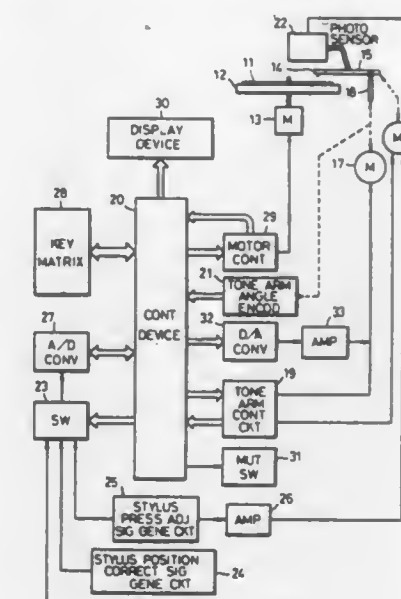


1. An alignment apparatus comprising:  
 (A) a translatable pickup carriage having a pair of end walls; one of said end walls having an aperture disposed therein;  
 (B) a carriage guide roller having a peripheral guiding surface and a coaxially-disposed hole;  
 (C) an elongated element having a first portion, an eccentrically-disposed middle portion, and a further portion; said guide roller being rotatably disposed on said eccentric portion; said first portion being rotatably received in said aperture in said carriage wall; said first portion being turned in said aperture such that said peripheral guiding surface of said roller mounted on said eccentric portion occupies a desired spatial relationship with respect to said carriage; and  
 (D) means for fixedly mounting said elongated element carrying said guide roller on said eccentric portion thereof to said translatable carriage at said one end thereof; said further portion of said elongated element serving to retain said guide roller on said eccentric portion.

**4,342,110**  
**RECORD DISC PLAYING APPARATUS WITH AUTOMATIC CANCELLATION OF INSIDE FORCE ON TONE ARM**

Masatsugu Kitamura, Atsugi; Hideo Onoye, Yamato; Fumiaki Ohno, Fujisawa; Tsuyoshi Ono, Yamato; Yukihiko Kishima, Fujisawa, and Yutaka Morita, Yokohama, all of Japan, assignors to Victor Company of Japan Ltd., Yokohama, Japan  
 Filed Jul. 2, 1980, Ser. No. 165,372  
 Claims priority, application Japan, Jul. 6, 1979, 54/85573  
 Int. Cl.<sup>3</sup> G11B 17/06 7 Claims

U.S. Cl. 369—252



1. A record disc playing apparatus comprising:  
 a horizontal drive motor for imparting a horizontal rotational force to a tone arm;  
 address signal generating means for generating an address signal corresponding to a horizontal rotational angle position of the tone arm; and  
 a control device including a memory device for storing the magnitude of an inside force introduced with respect to the tone arm correspondingly with the horizontal rotational angle position of the tone arm,  
 said address signal generating means supplying the generated address signal to the control device,  
 said control device reading out the magnitude of the inside force from the memory device corresponding to the supplied address signal, and producing a signal for cancelling the inside force at the rotational angle position of the tone arm corresponding to the read out magnitude of the inside force and supplying the same to the horizontal drive motor.

**4,342,111**  
**DIGITAL BRIDGING APPARATUS FOR TELEPHONE CONFERENCE SYSTEM**

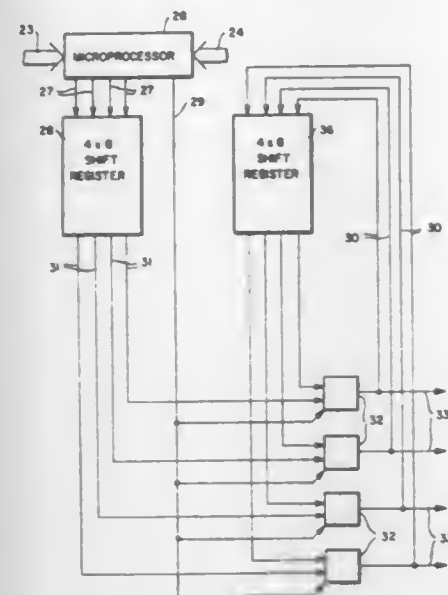
Donald G. Busson, New Windsor, Md., assignor to The United States of America as represented by the Director, National Security Agency, U.S. Government, Washington, D.C.  
 Filed Nov. 18, 1980, Ser. No. 208,107  
 Int. Cl.<sup>3</sup> H04M 3/56 3 Claims

U.S. Cl. 370—62

1. In a digital conferencing apparatus wherein a multiplexer receives a plurality of input signals and provides a single serial data stream, and a demultiplexer receives said serial stream and subsequently provides a plurality of output signals, controlling means, comprising:  
 a microprocessor;  
 a first shift register which sequentially receives from said

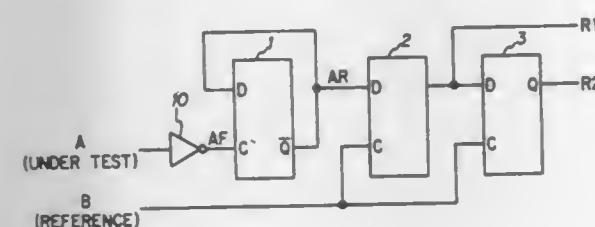


microprocessor signals indicative of the input signal to be routed into said serial data stream;  
a second shift register, and



switching means connecting the outputs of said first and second shift registers to said multiplexer and also connecting said first shift register to said second shift register.

**4,342,112**  
**ERROR CHECKING CIRCUIT**  
Kevin C. Stodola, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.  
Filed Sep. 8, 1980, Ser. No. 185,119  
Int. Cl.<sup>3</sup> G06F 11/16  
U.S. Cl. 371—68 13 Claims

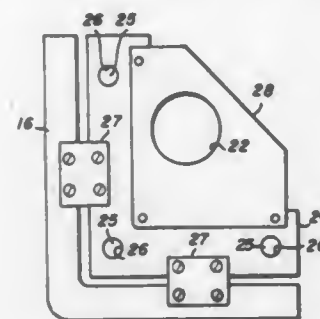


1. In a digital transmission system having a dual, redundant, bus structure with buses A and B, an error checking circuit comprising means responsive to one bus as a tested signal source and to the other bus as a reference signal source and generating a two rail logic output having complementary states in the absence of an error and having non-complementary states in response to an error, said error checking circuit additionally comprising first switch means gated by bus A, and second switch means responsive to said first switch means and gated by bus B, said second switch means generating said two rail output, wherein a failure in either of said first and second switch means is transmitted to said two rail output as a non-complementary state, indicating an error, whereby to afford a self-checking circuit which detects internal failures.

**4,342,113**  
**LASER APPARATUS**  
Akiyoshi Iwata, Sunnyvale, Calif., assignor to Quanta Ray Inc., Mountain View, Calif.  
Division of Ser. No. 841,019, Oct. 11, 1977, Pat. No. 4,232,276.  
This application Apr. 28, 1980, Ser. No. 144,054  
Int. Cl.<sup>3</sup> H01S 3/02  
U.S. Cl. 372—33 2 Claims

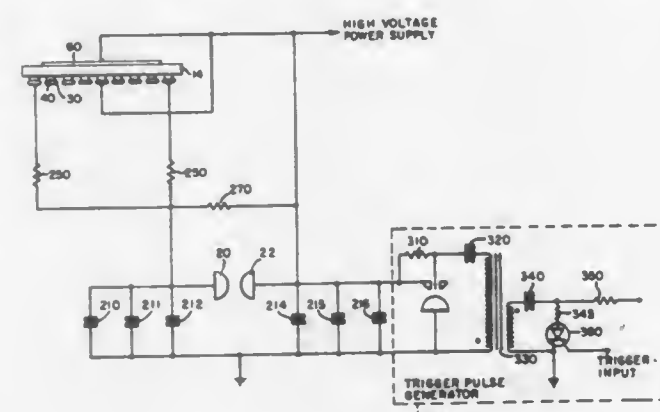
1. In a laser:  
laser gain medium means for excitation with optical pump energy for inverting the population densities of certain predetermined energy levels of said gain medium which

are capable of supporting laser transitions of a predetermined wavelength;  
optical resonator means for reflecting optical radiation at said predetermined laser transition wavelengths to and from through said laser gain medium means;  
pump means for supplying optical pump energy to said laser gain medium;  
elongated support means for physically supporting said laser gain medium means and said optical resonator means, said support means including an elongated beam member having a portion of generally L-shaped cross section, said L-shaped beam member portion being made of aluminum or copper, a plurality of rods made of a material having a coefficient of thermal expansion less than that of steel



extending longitudinally of said L-shaped member portion, means for supporting said rods from said L-shaped member portion, and means for supporting said resonator means from said rods;  
said means for supporting said rods from said L-shaped member portion including, leaf spring means connected between said rods and said L-shaped member portion, said leaf spring means having an axis of maximum compliance extending generally parallel to the longitudinal axes of said rods, whereby said rods are rigidly supported from said L-shaped member portion in a direction orthogonal to said longitudinal axes of said rods and flexibly supported from said L-shaped member portion in a direction parallel to the longitudinal axes of said rods.

**4,342,114**  
**TEA LASER CONFIGURATION**  
Clarence F. Luck, Waltham, Mass., assignor to Raytheon Company, Lexington, Mass.  
Filed Feb. 4, 1980, Ser. No. 118,128  
Int. Cl.<sup>3</sup> H01S 3/09  
U.S. Cl. 372—87 12 Claims



1. In a transverse excitation pulsed laser having two main electrodes defining a main discharge region and including an elongated envelope containing a gain medium, the improvement comprising:  
an insulating plate disposed longitudinally adjacent said main discharge region and having a first surface facing said discharge region;

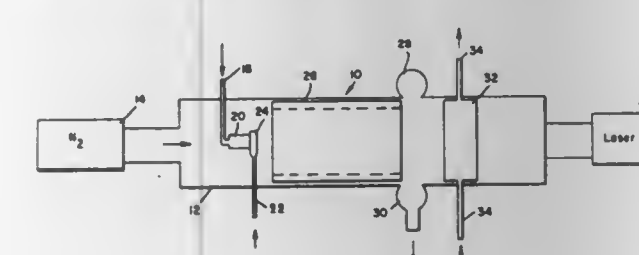
a plurality of subsidiary electrodes disposed on said insulating plate, each of said subsidiary electrodes comprising a short metallic supporting element having a first end connected to said first surface of said insulating plate and a flange of a high melting point material disposed on a second end of said supporting element; and  
means for producing a discharge between adjacent ones of said flanges prior to the main discharge.

**4,342,115**  
**LASER DISCHARGE ELECTRODE CONFIGURATION**  
Jack W. Davis, East Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.  
Filed Oct. 6, 1980, Ser. No. 194,189  
Int. Cl.<sup>3</sup> H01S 3/09  
U.S. Cl. 372—87 8 Claims



1. A laser electrode array for use in an electrically excited gas laser apparatus comprising:  
(a) a plurality of electrodes disposed in a plane on one side of an excitation region through which said lasing gas flows along a flow axis substantially parallel to said plane;  
(b) a single row of preionization electrodes having an emitting surface of substantial area and being disposed in said excitation region substantially parallel to said plane and substantially transverse to said flow axis;  
(c) at least two power electrodes disposed in said excitation region, oriented parallel to said single row of preionization electrodes, the furthest upstream of said power electrodes being spaced downstream from said single row of preionization electrodes by a first distance and the remainder of said power electrodes being uniformly spaced apart by a second distance.

**4,342,116**  
**DRY EXCITED SINGLET DELTA OXYGEN GENERATOR**  
Allen K. MacKnight, Rolling Hills Estates, and A. Colin Stancliffe, Palos Verdes Estates, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.  
Filed Mar. 11, 1980, Ser. No. 129,544  
Int. Cl.<sup>3</sup> C01B 13/00; H01S 3/00  
U.S. Cl. 372—89 12 Claims



1. A method of producing coherent energy, said method comprising the steps of:  
providing a flow of inert gas;  
injecting a liquid mixture of hydrogen peroxide and potassium hydroxide into the flow of said inert gas;  
interposing a flow of chlorine gas in the path of the liquid flow such that the chlorine, hydrogen peroxide and potassium hydroxide react to produce excited oxygen; and  
combining the excited oxygen with atomic iodine such that the oxygen acts as an energy transfer agent to pump the  $2P_{1/2}$  spin orbit transition of said atomic iodine.  
11. A method of generating excited oxygen, comprising the steps of:

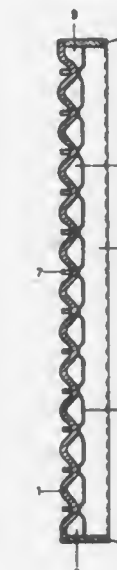
producing a jet of chlorine gas; and  
spraying a liquid mixture of hydrogen peroxide and potassium hydroxide against the jet of chlorine gas to produce a spray of liquid droplets substantially surrounded by the chlorine gas, such that the chlorine, hydrogen peroxide and potassium hydroxide react to produce excited oxygen.

**4,342,117**  
**MIRROR MOUNTING ARRANGEMENT FOR A LASER**  
Peter A. Singleton, London, England, assignor to Elliott Brothers Limited, Chelmsford, England  
Filed Mar. 13, 1980, Ser. No. 130,049  
Claims priority, application United Kingdom, Mar. 26, 1979, 7910546  
Int. Cl.<sup>3</sup> H01S 3/02  
U.S. Cl. 372—107 3 Claims



1. In a laser having a longitudinal laser body, an axial discharge channel in said laser body and a reflecting or refracting optical member disposed at each end of said channel, that improvement constituting: a seating for each said optical member, each said seating comprising a flanged frame in which a said optical member is mounted, a second flange fixed and sealed to the laser body, the flanges being pre-stressed and fixed together by welding to bias the optical member against the end of the laser body and pre-set its attitude to the axis of the discharge channel.

**4,342,118**  
**PANEL FOR ELECTRIC FURNACE**  
Xavier Tinchant, Villars, France, assignor to Clesid S.A., Saint-Chamond, France  
PCT No. PCT/FR80/00003, § 371 Date Sep. 2, 1980, § 102(e) Date Sep. 2, 1980  
PCT Filed Jan. 4, 1980, Ser. No. 219,309  
Claims priority, application France, Jan. 4, 1979, 79 00131  
Int. Cl.<sup>3</sup> F27D 1/12  
U.S. Cl. 373—76 5 Claims



1. A panel cooled by the circulation of liquid, adapted to constitute at least part of a wall of an electric furnace, comprising, at the interior of the furnace, a thick, corrugated wall, a thinner wall welded to said thick wall at the exterior of said furnace, said thick and thinner walls defining between them passages for the circulation of said cooling liquid.



4,342,119

## MULTI-TONE JAMMER

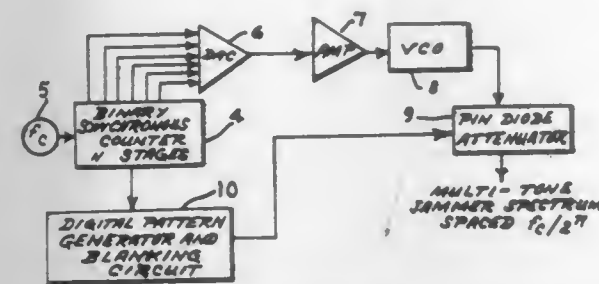
Loren R. Seidl, Irvine, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 27, 1980, Ser. No. 181,940

Int. Cl.<sup>3</sup> H04K 3/00; H04B 1/04

U.S. Cl. 455—1

9 Claims



1. A multi-tone jammer comprising
  - an n stage binary synchronous counter, n being an integer,
  - a signal source providing a reference frequency signal  $f_c$  driving said binary synchronous counter,
  - a digital/analog converter receiving outputs from said binary synchronous counter and generating a ramp waveform output signal therefrom,
  - a voltage controlled oscillator having an output, said voltage controlled oscillator being controlled by the output of said digital/analog converter, and
  - modulator means receiving and modulating the output of said voltage controlled oscillator and outputting a multi-tone jamming signal in response thereto, said modulator means comprising
    - attenuator means connected to control the output of said voltage controlled oscillator,
    - a digital pattern generator receiving a synchronizing signal from said binary synchronous counter and generating voltage controlled oscillator modulation signals, and
    - blanking circuit means controlling said attenuator means in response to said voltage controlled oscillator modulation signals.

4,342,120

## SQUELCH SYSTEM FOR USE IN A MULTIPLE CARRIER AM COMMUNICATIONS SYSTEMS RECEIVER

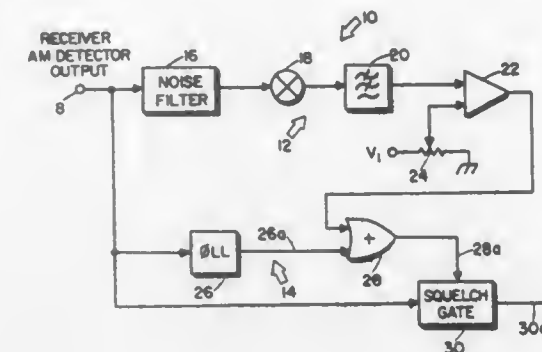
David J. Settemire, Pompano Beach; John D. Ide, Margate, and Mario C. Novo, Miami, all of Fla., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 10, 1980, Ser. No. 205,395

Int. Cl.<sup>3</sup> H04B 1/10

U.S. Cl. 455—222

6 Claims



1. A squelch system for use in a multiple carrier AM receiver having an output line and responsive to receiver detected AM signals comprising:
  - a noise squelch circuit operative in a first frequency band, which can include carrier difference frequencies, responsive to said receiver detected AM signals for generating a first squelch signal in the presence of noise and said carrier difference frequencies;
  - a phase locked loop means having a capture range encompassing said first frequency band and responsive to said receiver detected AM signals for generating a second squelch signal in the absence of said carrier difference frequencies; and,
  - a squelch gate means responsive to said first and second squelch signals for passing said receiver detected AM signal to said output line when in a first state and for interrupting said receiver detected AM signals when in a second state.

## DESIGN PATENTS

GRANTED JUL. 27, 1982

## ERRATA

For CLASS	See PATENT NO.
D32-074 .....	265,541
D34-011 .....	265,542
D32-049 .....	265,601
D34-028 .....	265,602
D34-028 .....	265,603



# DESIGNS

JULY 27, 1982

265,520

## YOUTH HOCKEY HELMET

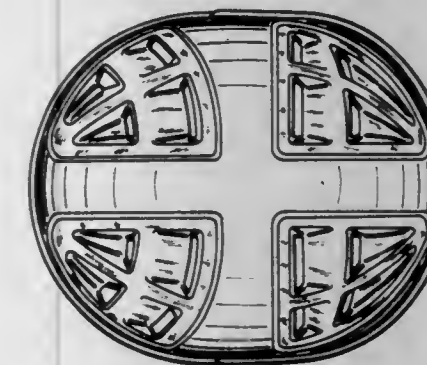
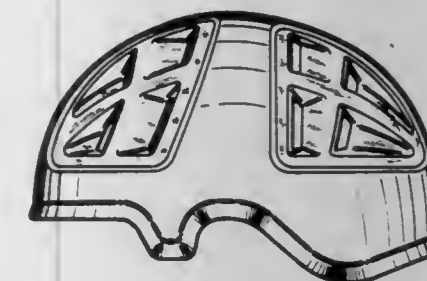
Elwyn R. Gooding, Ann Arbor, Mich., assignor to Regents of the University of Michigan, Ann Arbor, Mich.

Filed Sep. 30, 1980, Ser. No. 192,457

Term of patent 14 years

Int. Cl. D02-03

U.S. Cl. D2-231



265,522

## MOUNTING FOR A TOOL HOLDER

Roy V. Bladen, 74B Brigantine Dr., Birkenhead, Auckland, New Zealand

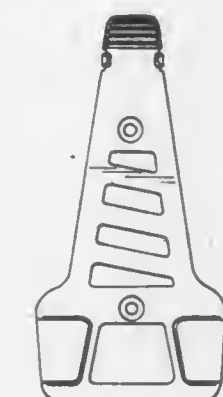
Filed Mar. 25, 1980, Ser. No. 133,680

Claims priority, application New Zealand, Oct. 5, 1979, 16282

Term of patent 14 years

Int. Cl. D2-99

U.S. Cl. D2-400



265,521

## SHOE

Christian Vermonet, Cholet, France, assignor to Societe Technisynthese (S.A.R.L.), Saint Pierre Montlimart, France

Filed May 6, 1980, Ser. No. 147,326

Term of patent 3 1/2 years

Int. Cl. D2-04

U.S. Cl. D2-309



265,523

## JOGGER'S POUCH

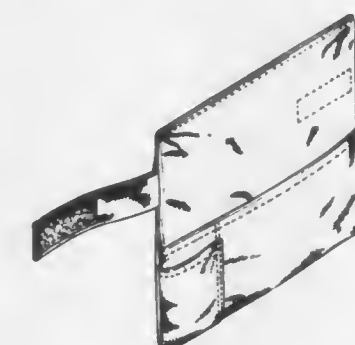
Howard Mermer, Yonkers, N.Y., assignor to Romer Industries, Inc., Yonkers, N.Y.

Filed Jul. 28, 1980, Ser. No. 173,043

Term of patent 14 years

Int. Cl. D2-07

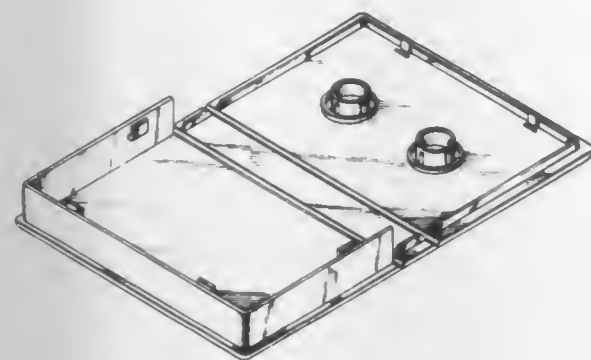
U.S. Cl. D2-402





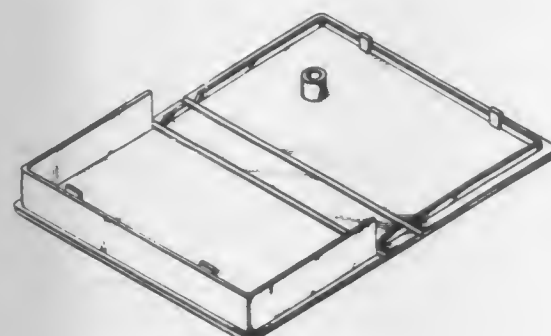
**265,524**  
**VIDEO CASSETTE STORAGE CONTAINER**  
 Robert A. Basili, Waldwick, and William B. Wilson, Middlesex, both of N.J., assignors to Plastic Reel Corp. of America, Wood Ridge, N.J.  
 Filed Aug. 28, 1980, Ser. No. 182,063  
 Term of patent 14 years  
 Int. Cl. D3—02

U.S. Cl. D3—35



**265,525**  
**CASSETTE STORAGE CONTAINER**  
 Robert A. Basili, Waldwick, N.J., and Gerald Weinstein, Brooklyn, N.Y., assignors to Plastic Reel Corporation of America, Wood Ridge, N.J.  
 Filed Dec. 11, 1980, Ser. No. 215,236  
 Term of patent 14 years  
 Int. Cl. D3—02

U.S. Cl. D3—35



**265,526**  
**TOOTHBRUSH**  
 Richard M. Hyman, Iowa City, Iowa, assignor to Cooper Laboratories, Inc., Palo Alto, Calif.  
 Filed Oct. 27, 1980, Ser. No. 200,907  
 Term of patent 14 years  
 Int. Cl. D4—02

U.S. Cl. D4—25



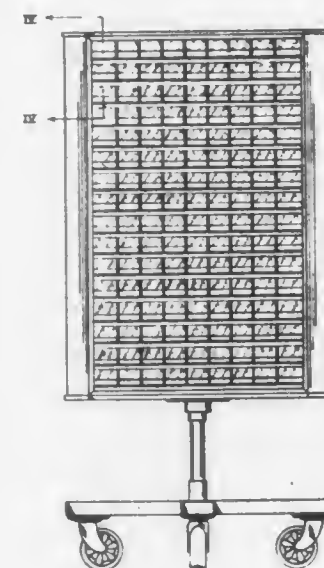
**265,527**  
**TOOTHBRUSH**  
 Kenneth C. Macaluso, 130 Glencoe, San Antonio, Tex. 78212  
 Filed Apr. 6, 1981, Ser. No. 251,135  
 Term of patent 14 years  
 Int. Cl. D4—02

U.S. Cl. D4—25



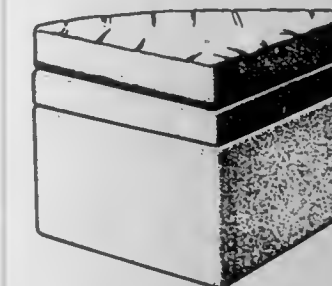
**265,528**  
**POSTAL BAG TAG RACK**  
 Wally H. Gregory, 1309 W. Hunt, Paragould, Ark. 72450  
 Filed Aug. 8, 1979, Ser. No. 64,878  
 Term of patent 14 years  
 Int. Cl. D6—04

U.S. Cl. D6—24



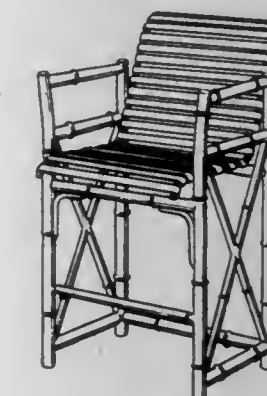
**265,529**  
**OTTOMAN**  
 John Mascheroni, 200 E. 64th St., New York, N.Y. 10021  
 Filed Aug. 29, 1979, Ser. No. 70,780  
 Term of patent 14 years  
 Int. Cl. D6—01

U.S. Cl. D6—36



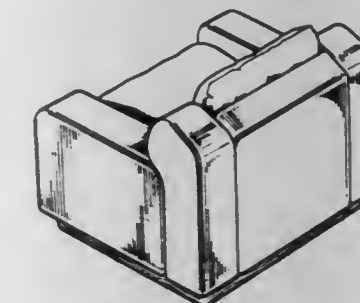
**265,530**  
**STOOL**  
 Gregory D. Bergquist, Mountain Brook, and John A. Jones, Trussville, both of Ala., assignors to Simmons Universal Corp., New York, N.Y.  
 Filed Sep. 22, 1980, Ser. No. 189,456  
 Term of patent 14 years  
 Int. Cl. D6—01

U.S. Cl. D6—57



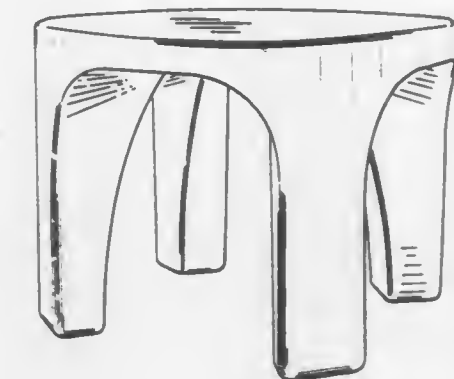
**265,531**  
**SEAT**  
 Barry Bruhoff, 201 Valley Rd., Sausalito, Calif. 94965  
 Filed Jun. 9, 1980, Ser. No. 157,557  
 Term of patent 14 years  
 Int. Cl. D6—01

U.S. Cl. D6—71



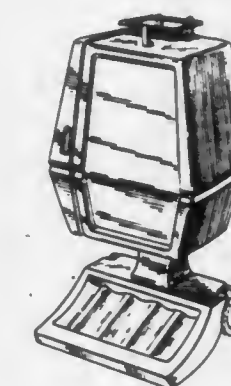
**265,532**  
**TABLE**  
 Richard Baker, and Steven Baker, both of 880 Dillingham Rd., Pickering, Ontario, Canada L1W 1Z6  
 Filed Dec. 10, 1979, Ser. No. 101,898  
 Term of patent 14 years  
 Int. Cl. D6—03

U.S. Cl. D6—146



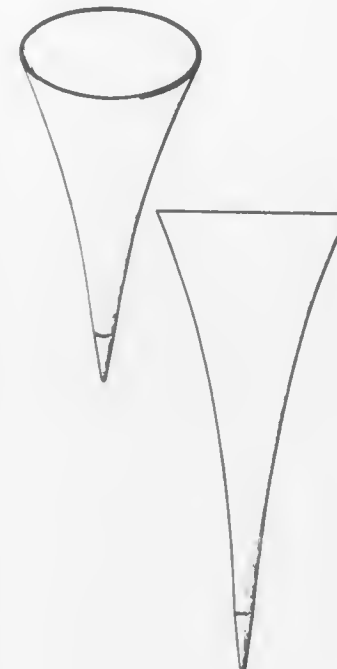
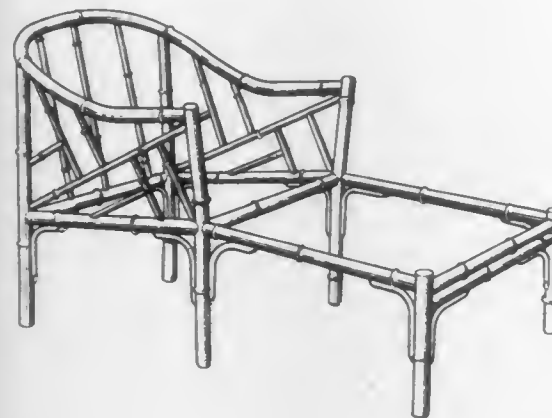
**265,533**  
**WINDSHIELD WIPER PRODUCTS CABINET**  
 Marvin L. Adenau, Hoffman Estates, Ill., assignor to AMD Industries, Inc., Chicago, Ill.  
 Filed Nov. 26, 1979, Ser. No. 97,728  
 Term of patent 14 years  
 Int. Cl. D6—04; D23—02

U.S. Cl. D6—174

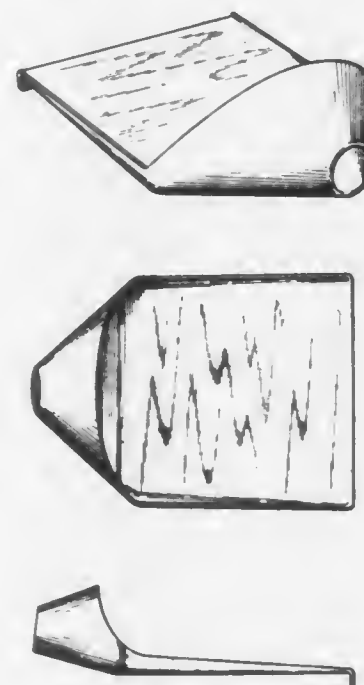
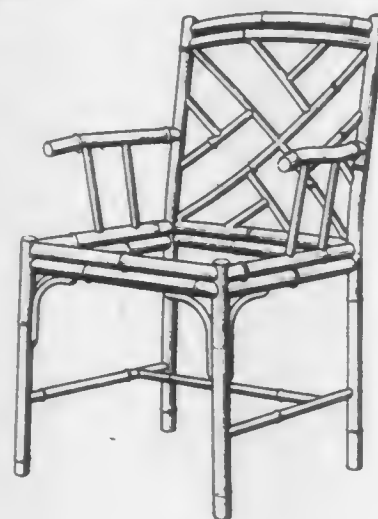




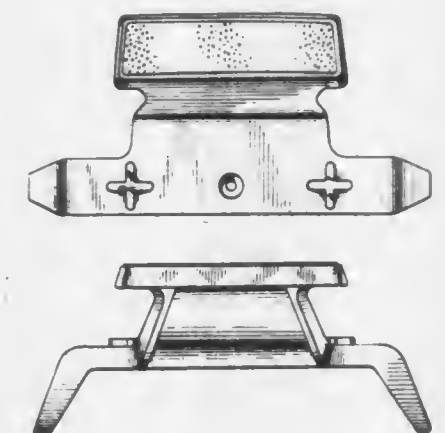
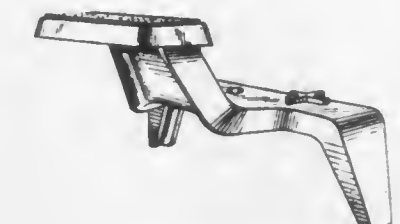
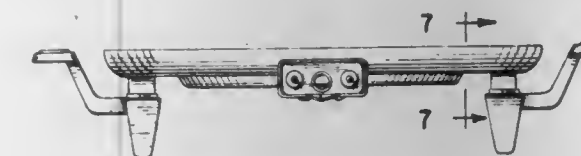
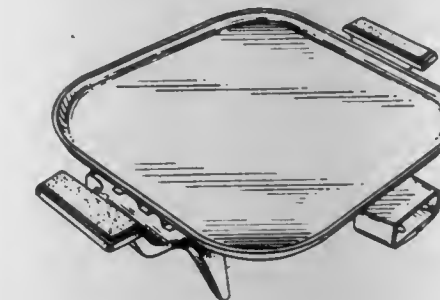
- 265,534  
CHAISE FRAME  
Gregory D. Bergquist, Mountain Brook, and John A. Jones, Trussville, both of Ala., assignors to Simmons Universal Corp., New York, N.Y.  
Filed Sep. 22, 1980, Ser. No. 189,443  
Term of patent 14 years  
Int. Cl. D6—06  
U.S. Cl. D6—191
- 265,536  
DRINKING GLASS  
Sidney J. E. Turcotte, Jr., 115 Main St. E., Hamilton, Ontario, Canada L8N 1G5  
Filed Jul. 30, 1979, Ser. No. 62,184  
Term of patent 14 years  
Int. Cl. D07—01  
U.S. Cl. D7—6



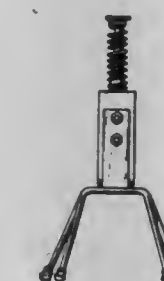
- 265,535  
CHAIR FRAME  
Gregory D. Bergquist, Mountain Brook, and John A. Jones, Trussville, both of Ala., assignors to Simmons Universal Corp., New York, N.Y.  
Filed Sep. 24, 1980, Ser. No. 189,885  
Term of patent 14 years  
Int. Cl. D6—06  
U.S. Cl. D6—191
- 265,537  
CUTTING BOARD AND FUNNEL UNIT  
Robert S. Stockdale, P.O. Box 100, Nashota, Wis. 53058  
Filed Sep. 19, 1980; Ser. No. 189,381  
Term of patent 14 years  
Int. Cl. D07—04, 99  
U.S. Cl. D7—46



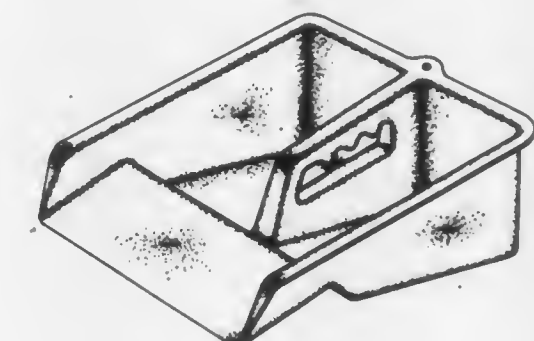
- 265,538  
ELECTRIC GRIDDLE OR SIMILAR ARTICLE  
Robert R. Nauheimer, LaGrange; William L. Lockett, Downers Grove, and George D. Meyer, Berkeley, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.  
Filed May 30, 1980, Ser. No. 155,037  
Term of patent 14 years  
Int. Cl. D07—02  
U.S. Cl. D7—87
- 265,540  
HANDLE FOR A COOKING OR HEATING UTENSIL  
Steven R. Groner, Glen Ellyn, Ill., assignor to Sunbeam Corporation, Chicago, Ill.  
Filed May 30, 1980, Ser. No. 155,805  
Term of patent 14 years  
Int. Cl. D7—02  
U.S. Cl. D7—132



- 265,539  
CHERRY PITTING MACHINE  
Clement C. Pavelka, 376 Orange Dr., Oxnard, Calif. 93030  
Filed Aug. 15, 1980, Ser. No. 178,025  
Term of patent 14 years  
Int. Cl. D7—04  
U.S. Cl. D7—106



- 265,541  
DEBRIS RECEPTACLE  
Ronald L. Messenger, Auburn, and Gary M. Dodds, Grass Valley, both of Calif., assignors to Lucille W. Daniel, San Leandro, Calif.  
Filed Mar. 4, 1980, Ser. No. 127,215  
Term of patent 14 years  
Int. Cl. D7—05  
U.S. Cl. D32—74





265,542

## TRASH RECEPTACLE

Clive R. Hanson, Menlo Park, and Paul T. Hanson, Santa Cruz, both of Calif., assignors to Hanson Concrete Products, Inc., Milpitas, Calif.

Filed Apr. 7, 1978, Ser. No. 894,647

Term of patent 14 years

Int. Cl. D7—07

U.S. Cl. D34—11



265,543

## GLASS CUTTING TOOL

Peter Connolly, Parsippany, N.J., assignor to Red Devil Inc., Union, N.J.

Filed Sep. 19, 1980, Ser. No. 188,692

Term of patent 14 years

Int. Cl. D8—03

U.S. Cl. D8—51



265,544

## SCREWDRIVER

Gary C. Nelson, 8766 Cloud Leap Ct., Apt. #22, Columbia, Md. 21045

Filed Apr. 23, 1980, Ser. No. 143,018

Term of patent 14 years

Int. Cl. D8—04

U.S. Cl. D8—82



265,545

## ELONGATE SANDING BLOCK

John T. Rueb, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 20, 1980, Ser. No. 161,395

Term of patent 14 years

Int. Cl. D8—05

U.S. Cl. D8—94



265,546

## COLLECTION BAG FOR AN INSECT TRAP

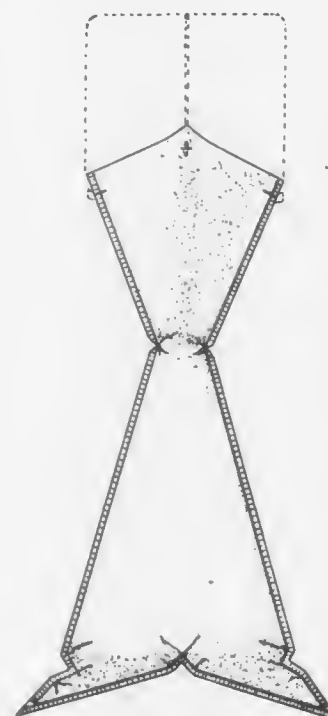
James W. Seidenberger, Royersford, Pa., assignor to J. T. Baker Chemical Co., Phillipsburg, N.J.

Filed Mar. 5, 1979, Ser. No. 17,183

Term of patent 14 years

Int. Cl. D9—05

U.S. Cl. D9—305



265,547

## BOTTLE OR SIMILAR ARTICLE

Norwin H. Vogel, Rte. 4, Box 127A, Seguin, Tex. 78155

Filed Aug. 8, 1980, Ser. No. 176,396

Term of patent 14 years

Int. Cl. D9—01

U.S. Cl. D9—322



265,549

## SHIPPING ENCLOSURE FOR CONNECTORIZED CABLE

Ronald C. Houts, Vadnais Heights, and William J. Seim, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jul. 21, 1980, Ser. No. 170,832

Term of patent 14 years

Int. Cl. D9—03

U.S. Cl. D9—371



265,548

## PACKAGING DRUM FOR FOOD

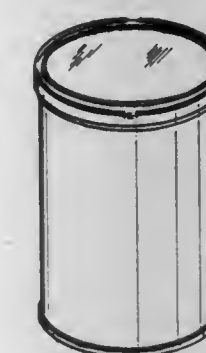
Daniel G. Brundige, and Donald F. Freund, both of Macon, Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed May 27, 1980, Ser. No. 153,395

Term of patent 14 years

Int. Cl. D9—03

U.S. Cl. D9—352



265,550

## BOTTLE

Richard C. Young, San Rafael, Calif., and Heather K. Parson, Mystic, Conn., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Apr. 21, 1980, Ser. No. 142,296

Term of patent 14 years

Int. Cl. D9—01

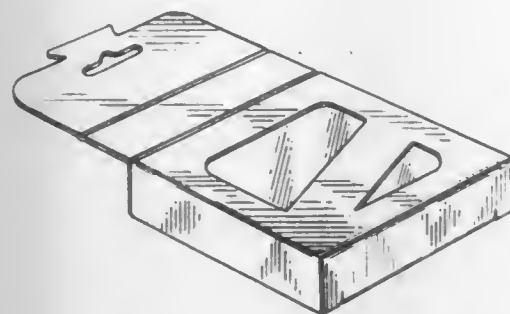
U.S. Cl. D9—377





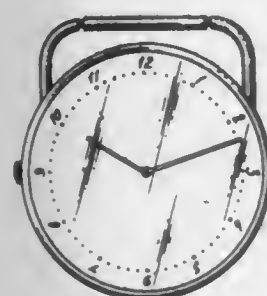
**265,551**  
**COMBINED DISPLAY AND PACKAGING CONTAINER**  
 Debra Colby, Northbrook, and Nora Crane, Chicago, both of Ill., assignors to Amcam International, Inc., Northbrook, Ill.  
 Filed Aug. 11, 1980, Ser. No. 176,650  
 Term of patent 14 years  
 Int. Cl. D9—03

U.S. Cl. D9—415



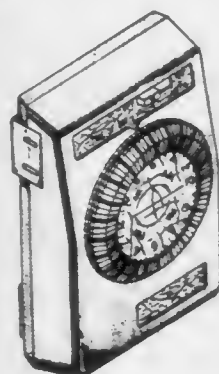
**265,552**  
**WATCH**  
 Jean-Louis F. Dumas-Hermes, Paris, France, assignor to La Dumas Hermes S.A., Bienne, Switzerland  
 Filed Apr. 2, 1979, Ser. No. 26,433  
 Claims priority, application France, Oct. 4, 1978, 78 31813  
 Term of patent 14 years  
 Int. Cl. D10—02

U.S. Cl. D10—39



**265,553**  
**TIMING DEVICE**  
 Michael S. Joss, Chicago, and Steven P. Belletire, Oak Park, both of Ill., assignors to AMF Incorporated, White Plains, N.Y.  
 Filed Apr. 4, 1980, Ser. No. 137,208  
 Term of patent 14 years  
 Int. Cl. D10—03

U.S. Cl. D10—40



**265,554**  
**LAPEL PIN DOLL**  
 Ann Lorion, 9005 Oak St., Pittsburgh, Pa. 15239  
 Filed Nov. 28, 1979, Ser. No. 98,367  
 Term of patent 14 years  
 Int. Cl. D11—01

U.S. Cl. D11—53



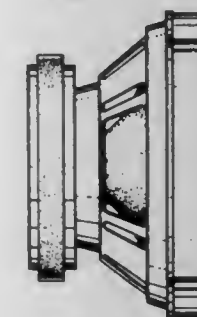
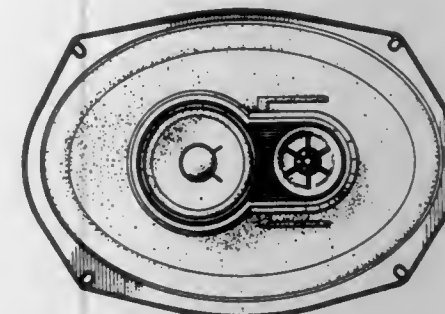
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**MEDALLION**  
 Donald L. Donaldson, 7527 SW. 8th Ct., North Lauderdale, Fla. 33068  
 Filed May 12, 1980, Ser. No. 148,965  
 Term of patent 14 years  
 Int. Cl. D11—03

U.S. Cl. D11—110



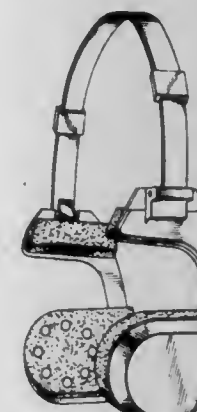
**265,556**  
**LOUDSPEAKER**  
 Takekazu Iijima, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan  
 Filed Sep. 5, 1980, Ser. No. 184,233  
 Claims priority, application Japan, Apr. 21, 1980, 55-15713  
 Term of patent 14 years  
 Int. Cl. D14—01

U.S. Cl. D14—30



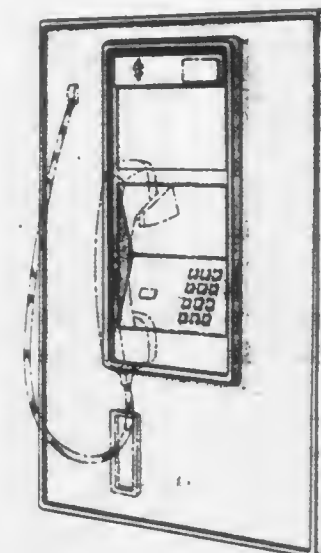
**265,557**  
**STEREO HEADPHONE**  
 Joseph C. Besasie, Shorewood, Wis., assignor to Koss Corporation, Milwaukee, Wis.  
 Filed Dec. 12, 1980, Ser. No. 215,807  
 Term of patent 14 years  
 Int. Cl. D14—03

U.S. Cl. D14—36



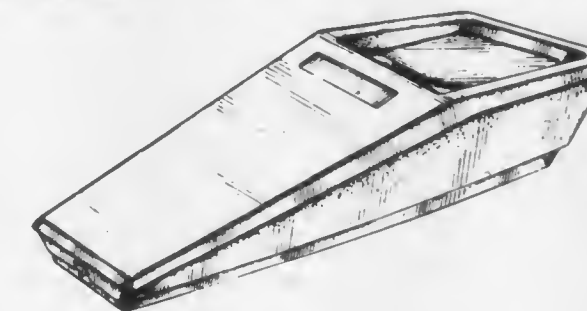
**265,558**  
**COIN TELEPHONE SET PANEL ENCLOSURE**  
 George R. Fox, Holmdel; Herbert C. Illium, Jr., Asbury Park; Kenneth L. Korby, Red Bank, all of N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
 Filed Dec. 22, 1980, Ser. No. 219,353  
 Term of patent 14 years  
 Int. Cl. D14—03

U.S. Cl. D14—55



**265,559**  
**TELEPHONE INSTRUMENT BASE**  
 George M. Janda, Wheaton, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.  
 Filed Dec. 29, 1980, Ser. No. 220,334  
 Term of patent 14 years  
 Int. Cl. D14—03

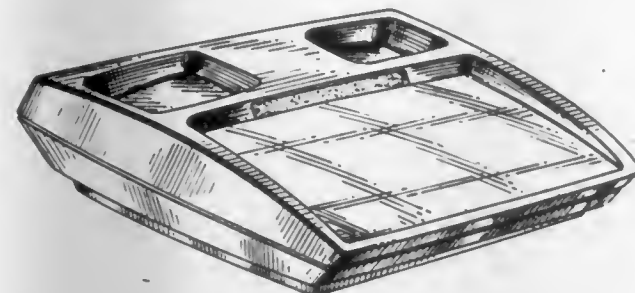
U.S. Cl. D14—60





265,560  
**TELEPHONE STAND**  
 George M. Janda, Wheaton, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.  
 Filed Dec. 29, 1980, Ser. No. 220,340  
 Term of patent 14 years  
 Int. Cl. D14—03

U.S. Cl. D14—60



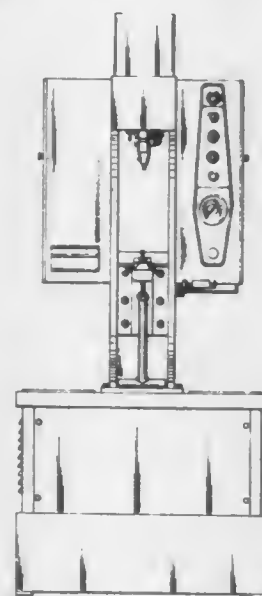
265,561  
**COMPUTER TERMINAL COVER**  
 Samuel S. Cottrell, 5406 Roblee Dr., Upper Marlboro, Md. 20870  
 Filed Nov. 26, 1979, Ser. No. 97,217  
 Term of patent 3½ years  
 Int. Cl. D14—02

U.S. Cl. D14—114



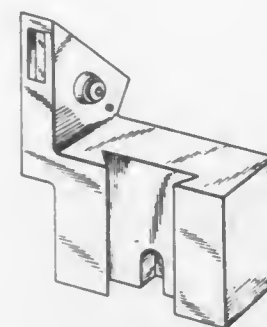
265,562  
**COMBINED HARDWARE PRESS AND PUNCH MACHINE**  
 Virgil J. Haeger, 3081 Melchester Dr., San Jose, Calif. 95132  
 Filed Jun. 30, 1980, Ser. No. 164,075  
 Term of patent 14 years  
 Int. Cl. D15—09

U.S. Cl. D15—128



265,563  
**LATHE TOOL HOLDER**  
 Howard A. Treloar, P.O. Box 86, Clarence Gardens, South Australia, Australia 5039  
 Filed Oct. 17, 1979, Ser. No. 85,515  
 Claims priority, application Australia, Apr. 23, 1979, 77676  
 Term of patent 14 years  
 Int. Cl. D15—09

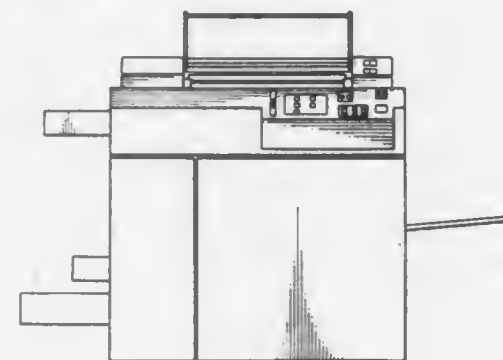
U.S. Cl. D15—140



265,564  
**CONTINUOUS FORM FEEDING AND COPYING APPARATUS**  
 R. Clark DuBois, Fairfield, and John C. Hamma, Milford, both of Conn., assignors to Gradco/Dendoki, Inc., Santa Ana, Calif.

Filed Sep. 22, 1980, Ser. No. 189,682  
 Term of patent 14 years  
 Int. Cl. D16—03

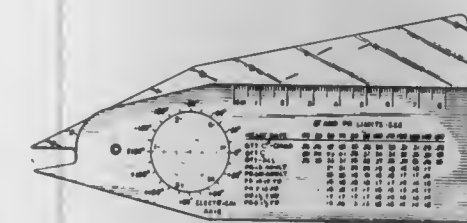
U.S. Cl. D16—30



265,565  
**ELECTROCARDIOGRAM ANALYZER**  
 Frank W. Jackson, II, Twillingate, R.D. 3, Mechanicsburg, Pa. 17055

Filed Jun. 23, 1980, Ser. No. 161,698  
 Term of patent 14 years  
 Int. Cl. D18—01

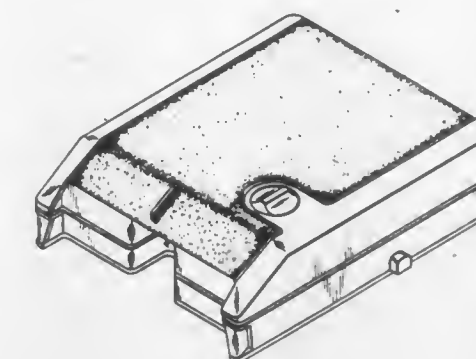
U.S. Cl. D18—9



265,567  
**RIBBON CARTRIDGE**  
 Cornelius W. Christie, Fulton, and Samuel D. Cappotto, Syracuse, both of N.Y., assignors to SCM Corporation, New York, N.Y.

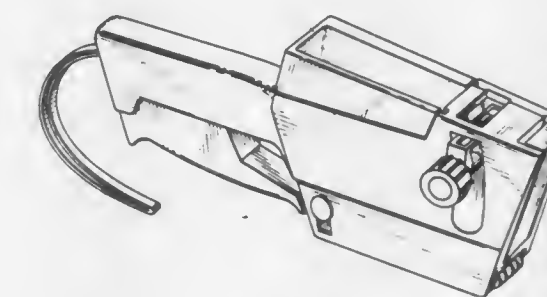
Filed Sep. 29, 1980, Ser. No. 191,608  
 Term of patent 14 years  
 Int. Cl. D18—01

U.S. Cl. D18—12



265,568  
**LABEL DISPENSER**  
 Roger Kalifa, Toulouse, France, assignor to Erika International, S.A., Toulouse, France  
 Filed Jul. 25, 1980, Ser. No. 172,456  
 Claims priority, application France, Feb. 5, 1980, 800226  
 Term of patent 14 years  
 Int. Cl. D18—02

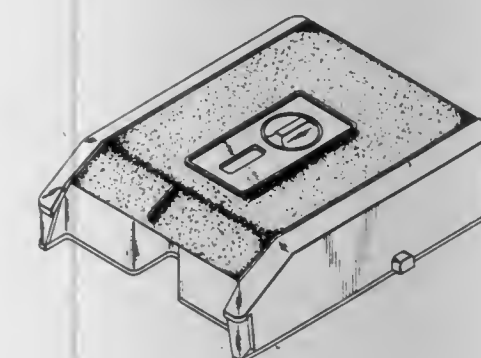
U.S. Cl. D18—19



265,566  
**RIBBON CARTRIDGE**  
 Cornelius W. Christie, Fulton, and Samuel D. Cappotto, Syracuse, both of N.Y., assignors to SCM Corporation, New York, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,607  
 Term of patent 14 years  
 Int. Cl. D18—01

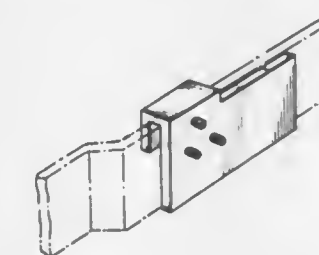
U.S. Cl. D18—12



265,569  
**PAPER FEED CONTROL ADAPTER FOR A PRINTING PRESS**  
 Ernest J. Prisbe, 12015-A Slauson Ave., Santa Fe Springs, Calif. 90670

Filed Oct. 6, 1980, Ser. No. 194,578  
 Term of patent 14 years  
 Int. Cl. D18—99

U.S. Cl. D18—22





265,570

## TRACING BOX

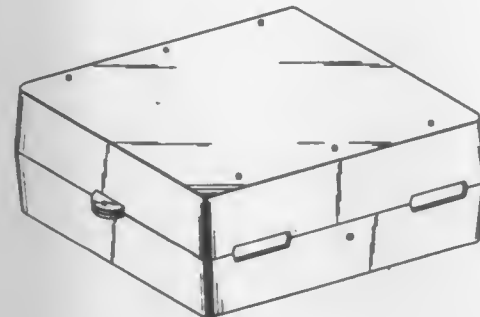
Maurice M. Moreau, 7215 Barnet Hwy., North Burnaby, British Columbia, Canada V5A 1E3

Filed Jul. 28, 1980, Ser. No. 172,872

Term of patent 14 years

Int. Cl. D19-06

U.S. Cl. D19-52



265,573

## CLUTCH TOY

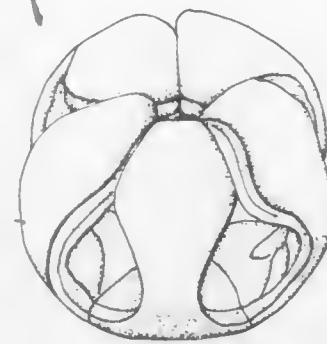
Ann P. Clarke, Keene, N.H., assignor to Douglas Company, Inc., Keene, N.H.

Filed Jun. 9, 1980, Ser. No. 157,972

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-65



265,571

## ELECTRONIC GAME HOUSING

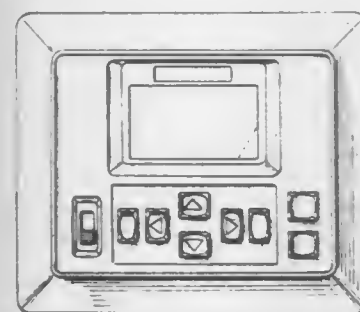
Dietmar Nagel, Chester, N.J., assignor to Nagel/Kennedy & Associates, New York, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,714

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-13



265,574

## TOY AIRPLANE

Larry R. Nagode, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Jan. 12, 1981, Ser. No. 224,618

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-90



265,572

## DRAWING INSTRUMENT

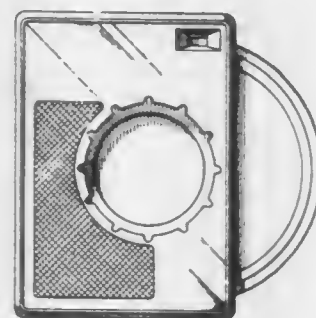
David Bredemeier, Rehoboth; William P. Richardson, South Easton, both of Mass., and Andre Cassagnes, Vitry sur Seine, France, assignors to Hasbro Industries, Inc., Pawtucket, R.I.

Filed Apr. 28, 1980, Ser. No. 144,996

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-59



265,575

## FRAME FOR PHYSICAL EXERCISE

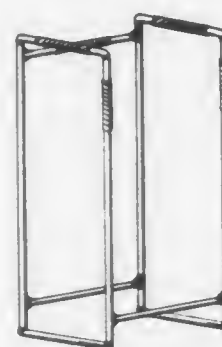
Doneathia Lunford, 8831 5th Ave., Jacksonville, Fla. 32208

Filed Aug. 28, 1980, Ser. No. 182,032

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-191



265,576

## GOLF CLUB GRIP

Robert E. Lamkin, 5300 Lee St., Downers Grove, Ill. 60515, and Joseph P. Lamkin, 701 Acorn Hill La., Oakbrook, Ill. 60521

Filed Jul. 7, 1980, Ser. No. 166,614

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-222



265,578

## CHILDREN'S PLAY SPRINKLER

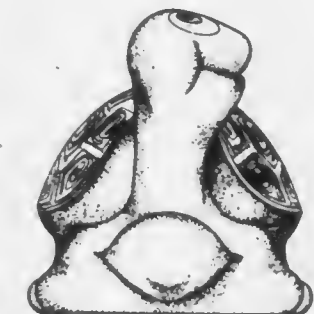
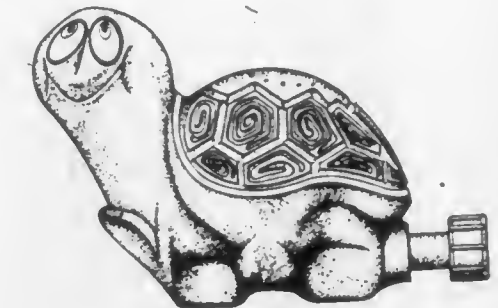
Richard L. Gillespie, San Gabriel; Douglas A. Geller, Monrovia, and David C. McElroy, South Pasadena, all of Calif., assignors to Wham-o Mfg. Co., San Gabriel, Calif.

Filed Apr. 20, 1981, Ser. No. 255,684

Term of patent 14 years

Int. Cl. D23-01

U.S. Cl. D23-9



265,577

## TWISTING NOVELTY TOY

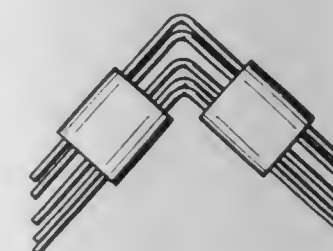
Donald L. Harmon, 308 Loma Vista, #6, El Segundo, Calif. 90245

Filed Oct. 10, 1980, Ser. No. 196,101

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-240



265,579

## COMBINED SPOUT AND WATER CONTROL HANDLES

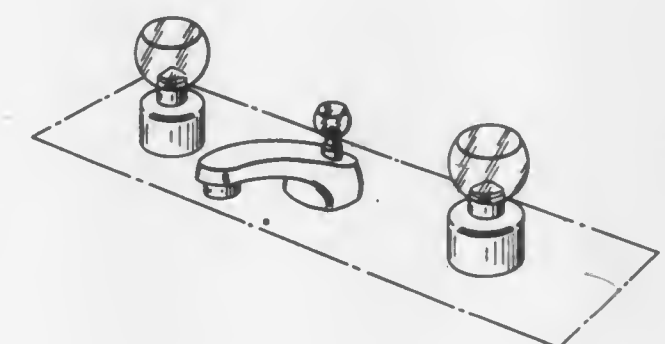
Stanley M. Paul, Rye, N.Y., assignor to American Standard Inc., New York, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,389

Term of patent 14 years

Int. Cl. D23-01

U.S. Cl. D23-25



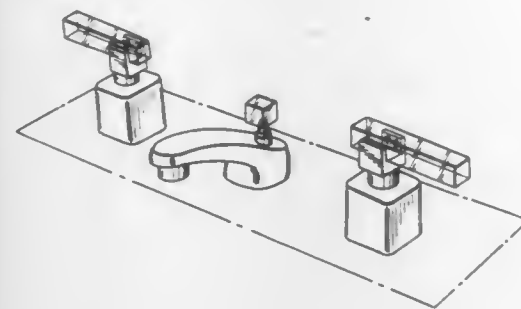


265,580

COMBINED SPOUT AND WATER CONTROL HANDLES  
Stanley M. Paul, Rye, N.Y., assignor to American Standard Inc.,  
New York, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,387  
Term of patent 14 years  
Int. Cl. D23-01

U.S. Cl. D23-25



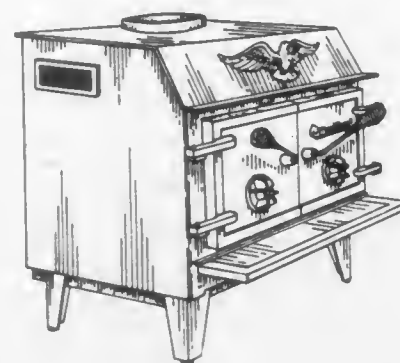
265,583

WOOD BURNING STOVE

Edmund P. Bullard, Sr., R.D. 2, Canastota, N.Y. 13032, and  
Gary A. Togni, 402 Palmer Dr., North Syracuse, N.Y. 13212

Filed Aug. 22, 1980, Ser. No. 180,499  
Term of patent 14 years  
Int. Cl. D23-03

U.S. Cl. D23-97



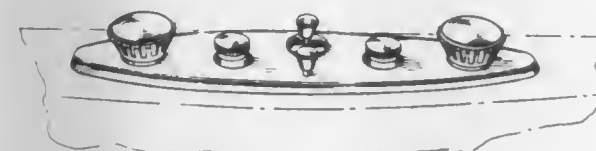
265,581

TUB CONTROL FITTING

Herbert V. Kohler, Jr., Kohler, Wis., assignor to Kohler Co.,  
Kohler, Wis.

Filed Mar. 25, 1981, Ser. No. 247,517  
Term of patent 14 years  
Int. Cl. D23-01

U.S. Cl. D23-31



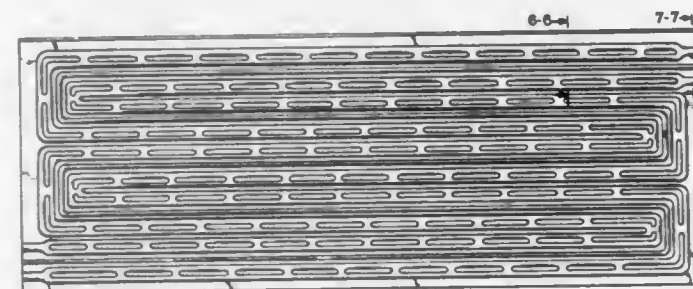
265,584

THREE TUBE HEAT EXCHANGER PANEL

Sheldon H. Butt, and Charles A. Kleine, both of Godfrey, Ill.,  
assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 18, 1980, Ser. No. 113,365  
Term of patent 14 years  
Int. Cl. D23-03

U.S. Cl. D23-136



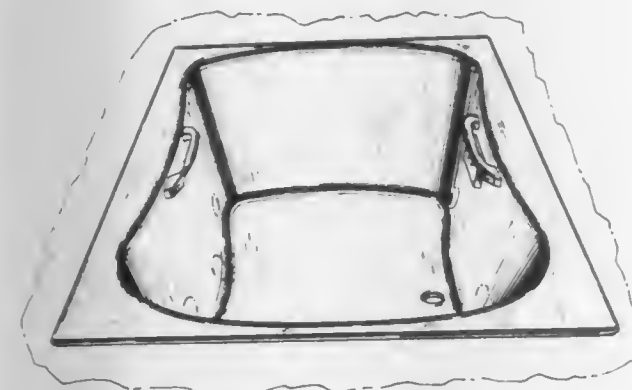
265,582

BATH TUB

Herbert V. Kohler, Jr., Kohler, Wis., assignor to Kohler Co.,  
Kohler, Wis.

Filed Mar. 25, 1981, Ser. No. 247,509  
Term of patent 14 years  
Int. Cl. D23-02

U.S. Cl. D23-55



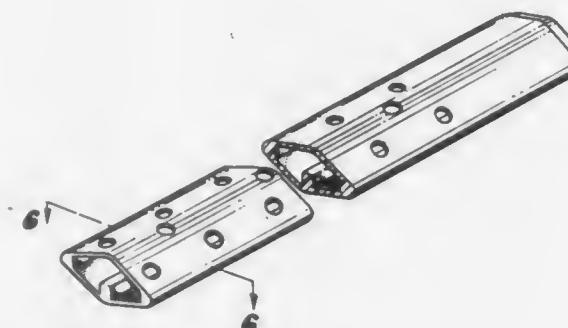
265,585

SURGICAL DRAIN

Gary P. East, and Rudolf R. Schulte, both of Santa Barbara,  
Calif., assignors to Pudenz Schulte Medical Research Corp.,  
Santa Barbara, Calif.

Filed Jul. 28, 1980, Ser. No. 172,708  
Term of patent 14 years  
Int. Cl. D24-04

U.S. Cl. D24-51



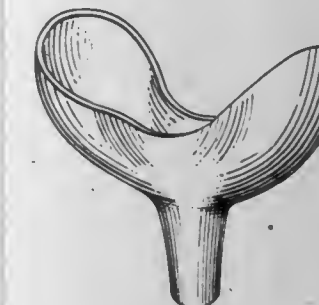
265,586

FUNNEL FOR COLLECTING URINE

Noah H. Sloan, 9801 Gross Point Rd., Skokie, Ill. 60076  
Filed Jun. 19, 1980, Ser. No. 161,013

Term of patent 14 years  
Int. Cl. D24-04

U.S. Cl. D24-54

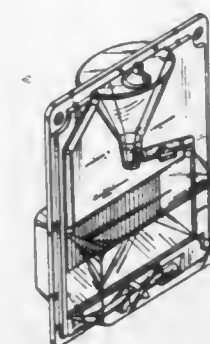


265,589

COMBINED URINE MONITOR AND COLLECTOR  
Charles A. Lahay, Fayette, Ala., assignor to Dart Industries  
Inc., Northbrook, Ill.

Filed Mar. 19, 1980, Ser. No. 131,604  
Term of patent 14 years  
Int. Cl. D24-02

U.S. Cl. D24-59



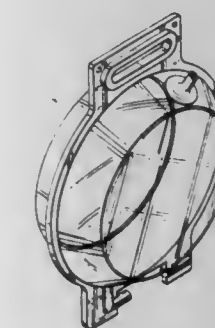
265,587

URINE COLLECTION DEVICE OR THE LIKE

Charles A. Lahay, Fayette, Ala., assignor to Dart Industries  
Inc., Northbrook, Ill.

Filed Mar. 19, 1980, Ser. No. 131,601  
Term of patent 14 years  
Int. Cl. D24-02

U.S. Cl. D24-59



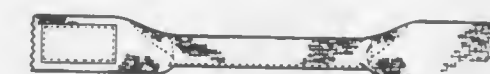
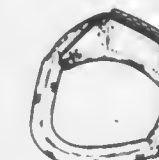
265,590

KNEE BRACE

George R. Gauvry, Hainesport, N.J., assignor to Cho-Pat, Inc.,  
Hainesport, N.J.

Filed Jul. 21, 1980, Ser. No. 170,710  
Term of patent 14 years  
Int. Cl. D24-04

U.S. Cl. D24-64



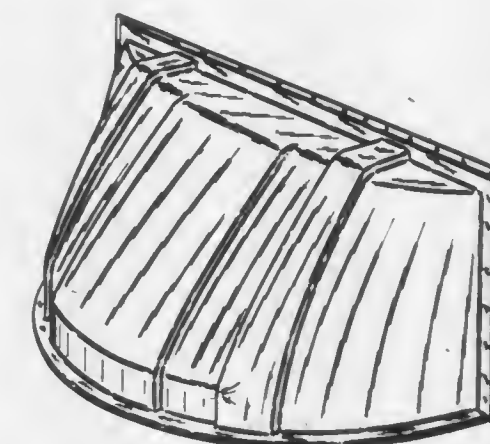
265,591

WINDOW WELL COVER

Thomas L. Kearnes, Akron, Ohio, assignor to Questor Corpora-  
tion, Toledo, Ohio

Filed Sep. 29, 1980, Ser. No. 192,052  
Term of patent 14 years  
Int. Cl. D25-02

U.S. Cl. D25-54



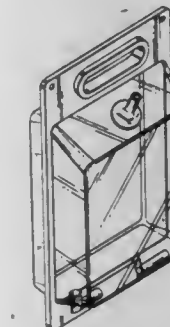
265,588

URINE COLLECTION DEVICE OR THE LIKE

Charles A. Lahay, Fayette, Ala., assignor to Dart Industries  
Inc., Northbrook, Ill.

Filed Mar. 19, 1980, Ser. No. 131,602  
Term of patent 14 years  
Int. Cl. D24-02

U.S. Cl. D24-59





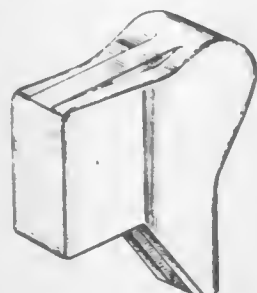
265,592

## PROTECTIVE LADDER PAD

John H. Perkins, 101 Walden St., West Hartford, Conn. 06107  
 Filed Jun. 17, 1980, Ser. No. 160,379

Term of patent 14 years  
 Int. Cl. D25—99

U.S. Cl. D25—68

265,595  
PIPE

Todd Galanter, 2729 N. Frederick Ave., Milwaukee, Wis. 53211  
 Filed Aug. 1, 1980, Ser. No. 174,702

Term of patent 14 years  
 Int. Cl. D27—02

U.S. Cl. D27—03



265,593

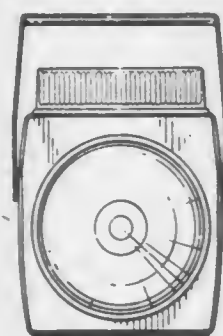
## BATTERY OPERATED LANTERN

Kittson Mann, Kowloon, Hong Kong, assignor to Chung Mei  
 Metal and Plastic Factory, Ltd., Kowloon, Hong Kong  
 Filed Mar. 6, 1980, Ser. No. 127,893

Claims priority, application United Kingdom, Feb. 25, 1980,  
 993241

Term of patent 7 years  
 Int. Cl. D26—02

U.S. Cl. D26—37



265,594

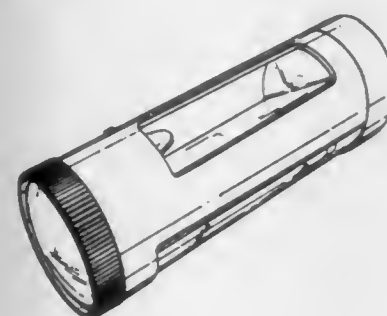
## BATTERY OPERATED LANTERN

Kittson Mann, Kowloon, Hong Kong, assignor to Chung Mei  
 Metal and Plastic Factory, Ltd., Kowloon, Hong Kong  
 Filed Mar. 24, 1980, Ser. No. 133,543

Claims priority, application United Kingdom, Feb. 22, 1980,  
 993749

Term of patent 7 years  
 Int. Cl. D26—02

U.S. Cl. D26—37



265,596

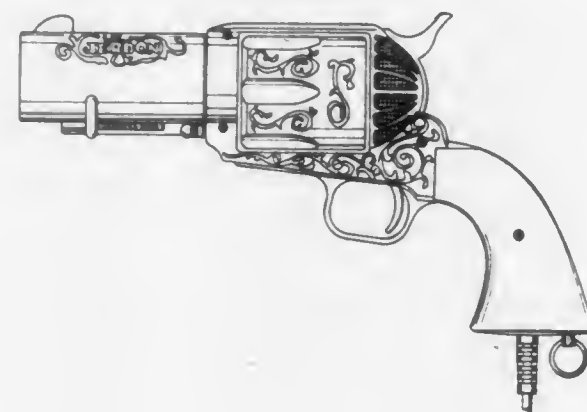
## HAIR DRYER

Jerald D. Garman, Dallas, Tex., assignor to Jerdon Industries,  
 Inc., Richardson, Tex.

Filed Sep. 26, 1980, Ser. No. 191,162

Term of patent 14 years  
 Int. Cl. D28—03

U.S. Cl. D28—13



265,597

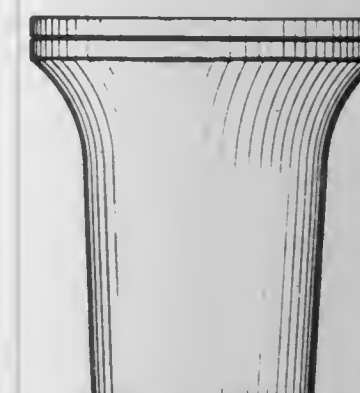
## HAIR DRYER ATTACHMENT

John R. Forsberg, Arlington Heights, Ill., assignor to Helene  
 Curtis Industries, Inc., Chicago, Ill.

Filed Feb. 21, 1979, Ser. No. 13,261

Term of patent 14 years  
 Int. Cl. D28—03

U.S. Cl. D28—18



265,598

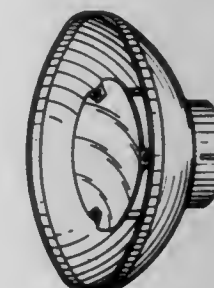
## DIFFUSER FOR A HAIR DRYER

Dennis E. Radatz, La Grange Park, Ill., assignor to Sunbeam  
 Corporation, Chicago, Ill.

Filed Jan. 11, 1980, Ser. No. 111,415

Term of patent 14 years  
 Int. Cl. D28—03

U.S. Cl. D28—18



265,599

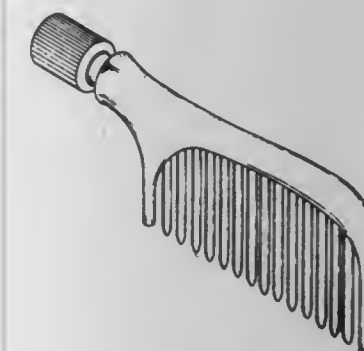
## LIQUID DISPENSING COMB

Edmond J. Fitzpatrick, 1040 Lincoln Ave., Apt. D, Burbank,  
 Calif. 91506

Filed Mar. 19, 1979, Ser. No. 22,070

Term of patent 3 1/2 years  
 Int. Cl. D28—03

U.S. Cl. D28—25



265,600

## LIPSTICK CASE

Pierre Ballereaud, 4 bis, route d'Ormay, 28360 Dammarie,  
 France

Filed Jun. 27, 1980, Ser. No. 163,423

Claims priority, application Switzerland, Dec. 31, 1979, 69763

Term of patent 14 years  
 Int. Cl. D28—02

U.S. Cl. D28—88



265,601

COMBINED PAINT PADDLE AND SCRAPER TOOL  
 Sven O. Olsson, 7951 Chicago Ave. South, Minneapolis, Minn.  
 55420

Filed Mar. 14, 1980, Ser. No. 130,544

Term of patent 14 years  
 Int. Cl. D7—05

U.S. Cl. D32—49

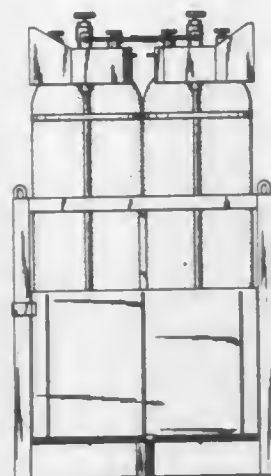




265,602  
COMBINED GAS CYLINDERS AND SUPPORT FRAME  
FOR TRANSPORT AND HANDLING THEREOF  
Bengt G. Winqvist, Esbo, Finland, assignor to AGA Aktiebolag,  
Lidingo, Sweden

Filed May 20, 1980, Ser. No. 151,751  
Claims priority, application Sweden, Feb. 13, 1980, 80-0308  
Term of patent 14 years  
Int. Cl. D9—08

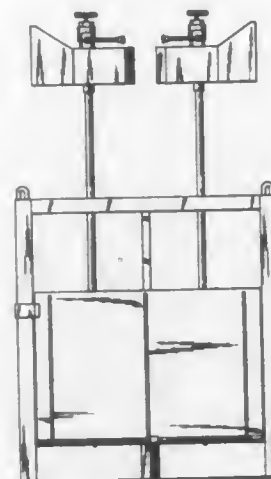
U.S. Cl. D34—28



265,603  
SUPPORT FRAME FOR TRANSPORT AND HANDLING  
OF GAS CYLINDERS  
Bengt G. Winqvist, Esbo, Finland, assignor to AGA Aktiebolag,  
Lidingo, Sweden

Filed May 20, 1980, Ser. No. 151,752  
Claims priority, application Sweden, Feb. 13, 1980, 80-0308  
Term of patent 14 years  
Int. Cl. D9—08

U.S. Cl. D34—28



265,604  
LAMINATE SHEET  
Ichiro Saito, Tokyo, Japan, assignor to Formica Corporation,  
Wayne, N.J.

Filed Feb. 9, 1979, Ser. No. 11,016  
Term of patent 14 years  
Int. Cl. D5—06

U.S. Cl. D92—25



## LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF JULY, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name  
(in accordance with city and telephone directory practice).

- A. Nattermann & Cie. GmbH: See—  
Betzing, Hans; Biedermann, Jürgen; Materne, Carsten; and Neuser, Volker, 4,341,790, Cl. 424-274.000.  
A.R.D. Anstalt: See—  
Gahr, Saad Z. M., 4,342,002, Cl. 330-65.000.  
AB Leo: See—  
Sundstrom, Staffan; and Herlestam, Tore, 4,341,948, Cl. 219-521.000.  
Abate, Leo: See—  
Schaller, Maurice; Debs, Victor; Abate, Leo; Dodich, James; Rodriguez, Regino; and Anderle, Joseph A., 4,341,254, Cl. 160-172.000.  
Abbes, Claude; de Villepoix, Raymond; and Rouaud, Christian, to Commissariat a l'Energie Atomique. Pipe coupling comprising a chain collar, 4,341,406, Cl. 285-408.000.  
Abbott Laboratories: See—  
Voss, Houston F., 4,341,865, Cl. 435-7.000.  
Abe, Haruhiko: See—  
Nagatomo, Masao; Abe, Haruhiko; and Mizuguchi, Kazuo, 4,341,616, Cl. 204-298.000.  
Abe, Masanori: See—  
Morimura, Hiroaki; and Abe, Masanori, 4,341,397, Cl. 280-688.000.  
Abel, Heinz, to Ciba-Geigy Corporation. Foam inhibitors and their use for defoaming aqueous systems, 4,341,656, Cl. 252-321.000.  
Abo, Toshimi; and Kanegae, Hidetoshi, to Nissan Motor Company, Limited. Fuel control system for a gas turbine, 4,341,071, Cl. 60-39.14R.  
Absenger, Erich, to Motorenfabrik Hatz GmbH & Co. KG. Seal for internal combustion engine having a noise-deadening shroud, 4,341,187, Cl. 123-198.00E.  
Acevedo, Ignacio. Freely-reversible torque-applying handle assembly with direction of torque-application selection, 4,341,292, Cl. 192-43.000.  
Acevedo, Ignacio. Torque-applying, freely-reversible tool and drive-handle coupling with direction of torque-application selection, 4,341,293, Cl. 192-43.000.  
ACF Industries, Incorporated: See—  
Meyer, Danny S., 4,341,369, Cl. 251-168.000.  
Adachi, Hiroyuki: See—  
Nakahata, Kimio; Tanigawa, Koichi; and Adachi, Hiroyuki, 4,341,457, Cl. 355-3.0CH.  
Adachi, Toshio; and Hiratake, Susumu, to Daidotokushuko Kabushikikaisha. Apparatus for filling of container with radioactive solid wastes, 4,341,915, Cl. 373-22.000.  
Adamoli, Contardo: See—  
Bernardis, Francesco; Adamoli, Contardo; and Cretaz, Franco, 4,341,478, Cl. 400-124.000.  
Adams, Arthur C.; and Levinstein, Hyman J., to Bell Telephone Laboratories, Incorporated. Method for producing silicon dioxide/poly-crystalline silicon interfaces, 4,341,818, Cl. 427-85.000.  
Adamson, Joseph W.; and Corr, Clifford W., to Fiat-Allis Construction Machinery, Inc. Perforated hood with air scoop, 4,341,277, Cl. 180-54.00A.  
Adib, Freydoon, to Myo-Tronics, Inc. Compensating system for kinesiograph mandibular tracker, 4,342,086, Cl. 364-415.000.  
Advanced Micro Devices, Inc.: See—  
Kim, Kyoung, 4,342,045, Cl. 357-41.000.  
Aga, Takashi: See—  
Hirano, Takashi; and Aga, Takashi, 4,341,274, Cl. 177-25.000.  
Agence Nationale de Valorisation de la Recherche: See—  
Royer, Rene R.; and Buisson, Jean-Pierre, 4,341,794, Cl. 424-285.000.  
Agency of Industrial Science & Technology: See—  
Okuo, Takayasu; Masaki, Takaki; and Kobayashi, Keisuke, 4,341,965, Cl. 310-11.000.  
Agfa-Gevaert Aktiengesellschaft: See—  
Koepeke, Gunther; Frenken, Hans; and Friedsam, Josef, 4,341,642, Cl. 210-767.000.  
Agfa-Gevaert, N.V.: See—  
Vandewalle, Jan J.; Monbaliu, Marcel J.; and Van Poucke, Raphael K., 4,341,864, Cl. 430-505.000.  
Agrotechnika, narodny podnik: See—  
Mackrie, Svatopluk; and Novotny, Milos, 4,341,630, Cl. 210-221.000.  
Agyagos, Ferenc I. Multipurpose exerciser device, 4,341,378, Cl. 272-62.000.  
Ahlbeck, Richard A., to N-Viro Energy Systems, Ltd. Lightweight aggregate, 4,341,562, Cl. 106-97.000.  
Ahmed, Myrna M.: See—  
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- Betts, Max W.; Burrow, Thomas R.; Robinson, Frank; and White, Patrick A., to Courtaulds Limited. Composite structure in the form of a disc of knitted carbon fibers. 4,341,830, Cl. 428-65.000.
- Betzinger, Hans; Biedermann, Jurgen; Materne, Carsten; and Neuser, Volker, to A. Nattermann & Cie. GmbH. Pyrrolidinylalkylcarboxylic acid amide derivatives, their preparation and pharmaceutical compositions containing them. 4,341,790, Cl. 424-274.000.
- Bexford Limited: See—  
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- Biber, Conrad H., to Polaroid Corporation. Infrared camera ranging system. 4,341,447, Cl. 354-25.000.
- Biedermann, Jurgen: See—  
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- Bier, David A., to PPG Industries, Inc. Apparatus for spacing sheets and moving groups of spaced sheets. 4,341,334, Cl. 225-96.500.
- Bilstad, Arnold C.; and Wicnienski, Michael, to Baxter Travenol Laboratories, Inc. Liquid absence detector. 4,341,116, Cl. 73-290.00V.



- Bio-Energy Systems, Inc.: See—  
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- Biomedical Engineering Corp.: See—  
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- Bird, James M., to Industrial Vehicles International Inc. Carrier vehicle for seismic vibrational system. 4,341,282, Cl. 181-114.000.
- Bisschops, Yvan; Draguez Tripels de Hault, Emmanuel; Joffe, Aleksef; and Delaby, Alain, to Lilachim. Quaternary ammonium salt mixtures. 4,341,644, Cl. 252-8.800.
- Bixby, James A.: See—  
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- Black, Philip W.: See—  
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- Blair, Charles M., Jr., to Magna Corporation. Method of recovering petroleum from a subterranean reservoir incorporating a polyether polyol. 4,341,265, Cl. 166-274.000.
- Blair, Richard F.; and Beazley, Ralph, to Tylan Corporation. Calibratable system for measuring fluid flow. 4,341,107, Cl. 73-3.000.
- Blair, Timothy T.: See—  
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- Blattel, Steven R.; and Hilscher, Larry W., to NL Industries, Inc. Aqueous drilling and packer fluids. 4,341,645, Cl. 252-8.50C.
- Blevins, Paul. Tamperproof dead bolt device. 4,341,408, Cl. 292-150.000.
- Bloch, Moshe R.; Sasson, Joel; Ginzburg, Margaret E.; Goldman, Zvi; Ginzburg, Ben Z.; Garti, Nissim; and Porath, Asher. Oil products from algae. 4,341,038, Cl. 47-1.400.
- Block, Philip M. Percolation testing method and apparatus. 4,341,110, Cl. 73-38.000.
- Bloomfield, Dennis G., to Steetley Engineering Limited. Explosion relief means. 4,341,041, Cl. 49-141.000.
- Bloos, Johannes: See—  
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- Blount, Inc.: See—  
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- Blossom, Dan E. Solar energy collector. 4,341,203, Cl. 126-440.000.
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- Boa, Walter; and Grondon, Peter M., to National Research Development Corporation. Block handling apparatus. 4,341,333, Cl. 225-96.000.
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- Boden, Richard M., to International Flavors & Fragrances Inc. 1-Ethoxy-1-ethanol acetate and uses thereof for augmenting or enhancing the aroma of taste of consumable materials. 4,341,646, Cl. 252-8.900.
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- Bogentoft, Conny B.; and Appelgren, Curt H., to Aktiebolaget Hassle. Granule having controlled release properties. 4,341,759, Cl. 424-21.000.
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- Bohm, Wolfgang; Wolmer, Roger; Szulczyk, Andreas; and Malikowski, Willi, to Degussa - Aktiengesellschaft. Material for electrical contacts. 4,341,556, Cl. 75-173.00A.
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- Borden, Raymond W.; and DeBard, James E., to Bendix Corporation. The Support means for high-temperature generator stators. 4,341,968, Cl. 310-91.000.
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- Borrows, Kenneth P., to Magnaflux Corporation. Magnetic particle inspection process useable with simultaneous illumination by ultraviolet and white light. 4,341,997, Cl. 324-215.000.
- Bortfeld, David P.: See—  
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- Bosch-Siemens Hausgerate GmbH: See—  
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- Bowser, Donald M., to Truswal Systems Corp. Splicing and truss assembly apparatus and methods. 4,341,153, Cl. 100-35.000.
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- Braeger, Horst, to Nordischer Maschinenbau Rud. Baader GmbH and Co Kg. Apparatus for skinning fish. 4,340,995, Cl. 17-62.000.
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- Braksmayer, Diza P.; and Hussain, Syed N., to FMC Corporation. Tris-(3-hydroxyalkyl) phosphine oxide flame retardant compositions. 4,341,696, Cl. 524-139.000.
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- Braun, Dieter; and Hubner, Peter-Michael, to Westfalia-Werke Franz Knobel & Sohne KG. Vehicle having at least two rows of tandem seats. 4,341,415, Cl. 296-65.00R.
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- Brennan, John J.: See—  
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- Bright, Edward J.; Engle, Glenn A.; and Scheingold, William S., to AMP Incorporated. Electrical connector. 4,341,429, Cl. 339-74.00R.
- Brison, Robert J.; and Webber, Michael E., to Stauffer Chemical Company. Soda ash production. 4,341,744, Cl. 423-206.00T.
- Bristol-Myers Company: See—  
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- Britt, John P., to Pinna Corporation. Frangible strip of clips. 4,341,303, Cl. 206-343.000.
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- Brodoff, Bernard. Settling tanks for waste disposal. 4,341,643, Cl. 210-803.000.

- Brokke, Mervin E.: See—  
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- Brown, Paul J.; Dugan, Robert J.; Guyette, Richard R.; and Strong, David L., to International Business Machines Corp. Program instruction mechanism for shortened recursive handling of interruptions. 4,342,082, Cl. 364-200.000.
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- BSD Corporation: See—  
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- Buchwalter, Stephen L.: See—  
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- Burke Mills, Inc.: See—  
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- Burns, Lyle D., to Phillips Petroleum Company. Motor fuel. 4,341,529, Cl. 44-63.000.
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- Buxbaum, Lothar, to Ciba-Geigy Corporation. Oligomeric epoxide resins and their use as flameproofing agents. 4,341,693, Cl. 524-93.000.
- Byrd, Carlisle O., Jr.; and Housnel, Mack A., to Manville Service Corporation. Electric furnace insulation module. 4,341,916, Cl. 373-128.000.
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- Calandritti, Rosario; and Calandritti, Biagio. Security system including a revolving door. 4,341,165, Cl. 109-8.000.
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- Cassidy, Frederick; and Wootton, Gordon, to Beecham Group Limited. Cycloaliphatic prostaglandin analogues. 4,341,789, Cl. 424-274.000.
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- Dezelan, Joseph E., 4,341,149, Cl. 91-526.000.  
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Mei, Viung C.; Lavan, Zalman; and Chaturvedi, Sushil K., 4,341,088, Cl. 62-239.000.  
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Chi, Chad S.; and Craig, John W., to Sperry Corporation. Precision time duration detector, 4,341,964, Cl. 307-517.000.  
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Coffman, Kenneth L., to United States of America, Navy. Speed measuring apparatus for indicating percentage of nominal full speed, acceleration and deceleration, 4,341,996, Cl. 324-162.000.  
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- DeMarinis, Robert M.; and Shah, Dinubhai H., to SmithKline Corporation. Pharmaceutical compositions and method of producing central alpha; agonist activity utilizing octahydrobenzo[f]quinoline compounds. 4,341,786, Cl. 424-258.000.
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- Dezelan, Joseph E., to Caterpillar Tractor Co. Variable displacement front wheel drive system. 4,341,280, Cl. 180-243.000.
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- Doi, Hideaki: See—  
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- Dolco Packaging Corporation: See—  
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- Dorfman, Leonard, to Timex Corporation. Timepiece module frame and assembly. 4,342,105, Cl. 368-88.000.
- Doria, Gianfederico; Romeo, Ciriaco; Sberze, Piero; Tibolla, Marcelino; and Corno, Maria L., to Farmitalia Carlo Erba S.p.A. Substituted pyrido [1,2-a] pyrimidines useful as anti-allergic, anti-ulcer and anti-diabetic agents. 4,341,780, Cl. 424-248.550.
- Doring, Erich. Shelving for pallets. 4,341,313, Cl. 211-151.000.
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- Douglass, John C., Jr. Building utility core. 4,341,052, Cl. 52-742.000.
- Douthett, Joseph A.; and Tanczyn, Harry, to Armo Inc. High strength austenitic stainless steel exhibiting freedom from embrittlement. 4,341,555, Cl. 75-128.00A.
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- Drustar, Inc.: See—  
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- Du Pont Canada Inc.: See—  
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- E. R. Squibb & Sons, Inc.: See—  
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- Eastman Kodak Company: See—  
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- Lu, Wei C., 4,341,854, Cl. 430-124.000.
- Marsh, Harold P., 4,341,690, Cl. 524-451.000.
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- Morrison, Edward D.; Krall, Harry J.; Carr, David L.; and Lu, Chen-i, 4,341,855, Cl. 430-140.000.
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- Eberle, William J., to General Battery Corporation. Method and apparatus for forming battery straps and intercell connections. 4,341,256, Cl. 164-109.000.
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- Edminster, Robert E., to Motorola Inc. Retard sensing double release safe separation munition timer. 4,341,159, Cl. 102-228.000.
- Edwards, Colin W., to Hughes Microelectronics Limited. Nonvolatile semiconductor memory circuits. 4,342,101, Cl. 365-154.000.
- Edwards, Welby C. Hay bale mover. 4,341,411, Cl. 294-74.000.
- Ego Lures Company: See—  
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- Eli Lilly and Company: See—  
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- Ellis, Darwin L., to Aluminum Company of America. Method and apparatus for blanking, folding and inserting membrane into container covercap. 4,341,498, Cl. 413-3.000.
- Ellis, John D.; Crichton, George; Godwin, Millard C.; and Morris, George C., to Leathers Chemical Company, Limited. Phosphoric acid ammoniation apparatus. 4,341,739, Cl. 422-207.000.
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- Escallon, Eduardo C.; and Marsh, Paul S., to Ball Corporation. Spinner flange for beverage containers. 4,341,103, Cl. 72-70.000.
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- Evans, John D., Jr., to Eastman Kodak Company. Method and apparatus for determining cigarette filter rod pressure drop. 4,341,109, Cl. 73-37.000.
- Evans, William J., to Emhart Industries, Inc. Anchoring apparatus for an electrical device. 4,342,070, Cl. 361-433.000.
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- Exxon Research & Engineering Co.: See—  
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- Fitzgerald, Cornelius G., 4,341,621, Cl. 208-45.000.
- Flory, John F.; and Woehleke, Steven P., 4,341,291, Cl. 188-375.000.
- Palermitti, Frank M.; and Schley, Ronald F., 4,342,043, Cl. 346-163.000.
- Sarsten, Jan A.; Heinzelmann, Fred J.; and Cataneo, Ferdinand C., 4,341,746, Cl. 423-228.000.
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- Eyerle, Anton. Cover arrangement for servicing holes. 4,341,253, Cl. 160-133.000.
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- Fachini, Robert M.; Covington, Michael J.; and Orsborn, Jesse H., to International Harvester Co. Basket lift apparatus. 4,341,423, Cl. 298-18.000.
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- Falater, Scott L.; and Breit, Wayne E., to Zenith Radio Corporation. Automatic CRT tracking circuit. 4,342,048, Cl. 358-242.000.
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- Gregor, Karl; and Feldhaus, Karl, to Gewerkschaft Schalker Eisenhütte. Element for cleaning coking-oven doors and doorjamb, 4,340,987, Cl. 15-93.00A.
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- Haast, William E. Use of snake venoms for treatment of neurological and related disorders, 4,341,762, Cl. 424-88.000.
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- Hackett, Kenneth P., to Gleason Works. Apparatus for controlling the movement of a reciprocating hydraulically driven element of a metal forming machine, 4,341,106, Cl. 72-453.070.
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- Hall, Henry P., to GenRad, Inc. Method of and apparatus for automatic measurement of circuit parameters with microprocessor calculation techniques, 4,342,089, Cl. 364-481.000.
- Halpern, Yuval, to Borg-Warner Corporation. Intumescent flame retardant compositions, 4,341,694, Cl. 252-606.000.
- Ham, George E.: See—  
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- Hamatani, Fumikazu: See—  
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- Hamilton, Frank G.; and Kelyman, John, Jr., to Rader Companies, Inc. Method and apparatus for recovering fuel and other resources from refuse utilizing disk screens, 4,341,353, Cl. 241-24.000.
- Hammer, Jeffrey M.; Ullestad, David C.; and Wesoloski, Stephen J., to Honeywell Inc. Method and apparatus for power load shedding, 4,341,345, Cl. 236-46.00R.
- Hammerschlag, Peter G. Locking tab for hook-in type shelving, 4,341,486, Cl. 403-252.000.
- Hammond, Donald J.: See—  
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- Hand, Calvin H., Jr.; Hand, David J.; and Careatti, John A., to Hand, Calvin H., Jr.; Hand, David J.; Careatti, John A.; and Mulqueen, Herbert J., Jr. Bio-mass burner with grate therefor and method of operation, 4,341,199, Cl. 126-163.00A.
- Hand, David J.: See—  
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- Hanlet, Jacques M., to Alpha-Omega Development, Inc. Display system, 4,341,976, Cl. 313-210.000.
- Hann, Simon A., to Versatile Cornat Corporation. Wing back implement, 4,341,269, Cl. 172-311.000.
- Hanson, Lawrence G., to Burroughs Corporation. Number conversion apparatus, 4,342,026, Cl. 340-347.0DD.
- Hanson, Lawrence G., to Burroughs Corporation. Radix conversion system, 4,342,027, Cl. 340-347.0DD.
- Hara, Minoru, to Kabushiki Kaisha Kubota Seisakusho. Centrifuge, 4,341,342, Cl. 233-1.00A.
- Harada, Yusuke: See—  
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,341,776, Cl. 424-246.000.
- Harari, Eliyahou: See—  
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- Harbert, Charles A.: See—  
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- Harder, Ursula M.; Kaswinkel, Karl D.; Gould, James W.; West, Jon K.; and Wynn, Michael J., to General Electric Company. Treatment of wastewater, 4,341,636, Cl. 210-662.000.
- Hardman, Harley F.: See—  
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- Harford, Jack R., to RCA Corporation. Television intermediate frequency amplifier with feedback stabilization, 4,342,005, Cl. 330-254.000.
- Hargitay, Bartholomew, to Union Carbide Corporation. Ultrafiltration and reverse osmosis device comprising plural carbon tubes bonded together, 4,341,631, Cl. 210-323.200.
- Harlow, Norman R., to Carlisle Corporation. Crosshead extrusion die, 4,341,509, Cl. 425-114.000.
- Harris Corporation: See—  
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- Harrison, Christopher R. B.; and Pittaway, Alan K., to Wilkinson Sword Limited. Hand tools, 4,341,016, Cl. 30-262.000.
- Harsh, Maurice D.: See—  
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- Harshaw Chemical Company, The: See—  
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- Swinhart, Carl F., 4,341,654, Cl. 252-301.40H.
- Hart, Deborah L.: See—  
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- Hart, James F.; and Hart, Deborah L. Hydrotherapy bath or spa, 4,340,982, Cl. 4-541.000.
- Hartemann, Pierre: See—  
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- Hartig, Martval J., to Du Pont de Nemours, E. I., and Company. Water evaporation process, 4,341,601, Cl. 203-11.000.
- Hartmut, Riesel, to Maschinenfabrik Koppert GmbH & Co. KG. Apparatus for the damping of bulk material, 4,341,349, Cl. 239-222.170.
- Harvard College: See—  
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- Harvey, William A.: See—  
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- Hasegawa, Gary K.: See—  
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- Haslanger, Martin F., to E. R. Squibb & Sons, Inc. Intermediates for 10,10-difluoroprostaglandins, 4,341,710, Cl. 549-214.000.
- Hassall, Cedric H.; and Moody, Christopher J., to Hoffmann-La Roche Inc. Pyridazopyridazine derivatives, 4,341,781, Cl. 424-250.000.
- Hatano, Masakatsu: See—  
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- Hatch, David A.; and White, Paul J., to Pintek, Inc. Interconnection system for shielded electrical cable, 4,341,428, Cl. 339-14.00R.
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- Hattori, Ryuichi: See—  
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- Hattori, Tadashi: See—  
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- Hattori, Yoshihumi: See—  
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- Hauber, Rudiger; and Guse, Gunter, to Beiersdorf Aktiengesellschaft. Water-soluble, pressure sensitive, self-adhesive, composition, method of manufacture thereof, and tapes produced therewith, 4,341,680, Cl. 525-329.000.
- Hauck Manufacturing Company: See—  
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- Haumberger, Hans, Jr.: See—  
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- Haumberger, Hans, Sr.: See—  
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- Hauser, Arnold: See—  
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- Hayashi, Kohtaro; Morihara, Ko; and Nakamura, Kohji, to Chisso Corporation. Method and apparatus for making biaxially stretched tubular films, 4,341,729, Cl. 264-566.000.
- Heard, Robert A. H. Mounting for offset signs, 4,341,029, Cl. 40-607.000.
- Hedges, Rhey W.: See—  
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- Heidborn, Ernst, to Balco Filtertechnik GmbH. Process for manufacturing screens for centrifugals, particularly working screens for continuously operating sugar centrifugals, 4,341,603, Cl. 204-11.000.
- Heide, Helmut, to Joh. Moritz Rump. Circular knitting needle, 4,341,094, Cl. 66-117.000.
- Heilhecker, Joe K., to Brandt Company, The. Screen separator, 4,341,627, Cl. 209-409.000.
- Heimerl, Wilfried C., to Deutsche Gesellschaft für Wiederaufarbeitung. Apparatus for enclosing highly radioactive waste material in a glass melt, 4,341,547, Cl. 65-165.000.
- Heinke, Horst, to ITW Ateco GmbH. Filling connection for vehicles driven by internal combustion engines, 4,341,322, Cl. 220-210.000.
- Heinzelmann, Fred J.: See—  
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Hennick, Robert P., to American Optical Corporation. Velocity profile analyzer, 4,341,995, Cl. 324-161.000.  
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Hignutt, Kenneth W.: See—  
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Ibrahim, Faye F., to Tyler Refrigeration Corporation. Open top refrigerated display case having ambient air defrost, 4,341,082, Cl. 62-82.000.  
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- Kelman, Charles D. Intraocular lens. 4,340,979, Cl. 3-13.000.
- Kelsey-Hayes Company: See—
- Lizenby, James R., 4,341,557, Cl. 75-223.000.
- Kelyman, John, Jr.: See—
- Hamilton, Frank G.; and Kelyman, John, Jr., 4,341,353, Cl. 241-24.000.
- Kemmler, Gerhard; Wieczorek, Herbert; and Plessing, Jürgen, to Kernforschungszentrum Karlsruhe Gesellschaft mit beschränkter Haftung. Decomposition and oxidation system. 4,341,738, Cl. 422-184.000.
- Kempf & Co. AG Forder- und Lagertechnik: See—
- Rohner, Karl, 4,341,027, Cl. 37-197.000.
- Kemski, Michael B., to Minnesota Mining and Manufacturing Company. Fog-resistant, heat-sealable film. 4,341,825, Cl. 428-35.000.
- Kendall Co., The: See—
- Cohen, Lawrence B., 4,341,213, Cl. 128-284.000.
- Leong, Koon-Wah, 4,341,844, Cl. 428-492.000.
- Schaar, Charles H., 4,341,209, Cl. 128-156.000.
- Kerby, Jacques C., to Mobil Oil Corporation. Seal for floating roof tanks. 4,341,323, Cl. 220-224.000.
- Keritis, Gus D.; and Lowitz, David A., to Philip Morris Incorporated. Method for employing tobacco dust in a paper-making type preparation of reconstituted tobacco and the smoking material produced thereby. 4,341,228, Cl. 131-354.000.
- Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung: See—
- Haas, Herbert, 4,341,733, Cl. 376-226.000.
- Kernforschungszentrum Karlsruhe Gesellschaft mit beschränkter Haftung: See—
- Kemmler, Gerhard; Wieczorek, Herbert; and Plessing, Jürgen, 4,341,738, Cl. 422-184.000.
- Kerr, John H. Spiral type one-way clutch assembly. 4,341,294, Cl. 192-45.000.



Keyboard Company, The: See—  
Muller, Michael, 4,341,934, Cl. 200-159.00A.

Khoudokormoff, Basile: See—  
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Kiessling, John B.: See—  
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Kiikka, Oliver A.; and Connors, Keith A., to Standard Oil Company, The. Reducing carboxy reactivity in coke. 4,341,751, Cl. 423-461.000.

Kikuchi, Noribumi; Suzuki, Yasuo; Sugizawa, Taijiro; and Washizu, Fumio, to Mitsubishi Kinzoku Kabushiki Kaisha. Coated super-hard alloy articles. 4,341,834, Cl. 428-216.000.

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Kim, Kyoung, to Advanced Micro Devices, Inc. Input protection device for integrated circuits. 4,342,045, Cl. 357-41.000.

Kimberly-Clark Corporation: See—  
Fries, Donald M.; and Ring, David F., 4,341,214, Cl. 128-285.000.

Kimble, James B.: See—  
Parlman, Robert M.; and Kimble, James B., 4,341,715, Cl. 260-455.00B.

Kimura, Takao: See—  
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,341,776, Cl. 424-246.000.

King, Arthur S. Liquid treater having electrical charge injection means. 4,341,617, Cl. 204-302.000.

King Instrument Corporation: See—  
Neathery, David O.; and Riggs, Edward J., 4,341,362, Cl. 242-183.000.

Kingsdown Medical Consultants Limited: See—  
Steer, Peter L.; and Mathews, Howard, 4,341,207, Cl. 128-155.000.

Kinoshita, Harumi: See—  
Suzuki, Sadao; Kinoshita, Harumi; Takada, Takuzo; and Negishi, Fumio, 4,341,317, Cl. 215-31.000.

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Sakai, Shinji; Shinoda, Nobuhiko; Kinoshita, Takao; Kawabata, Takashi; Kitagishi, Nozomu; Hosoe, Kazuya; and Ito, Tadashi, 4,341,953, Cl. 250-204.000.

Kirst, Herbert A.; and Ose, Earl E., to Eli Lilly and Company. Method of controlling Pasteurella infections. 4,341,771, Cl. 424-181.000.

Kirst, Herbert A.: See—  
Ose, Earl E.; and Kirst, Herbert A., 4,341,770, Cl. 424-181.000.

Kishima, Yukihiro: See—  
Kitamura, Masatsugu; Onoye, Hideo; Ohno, Fumiaki; Ono, Tsuyoshi; Kishima, Yukihiro; and Morita, Yutaka, 4,342,110, Cl. 369-252.000.

Kistler Instrumente AG: See—  
Calderara, Reto, 4,341,974, Cl. 310-360.000.

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Kitamura, Masatsugu; Ono, Tsuyoshi; and Onoye, Hideo, to Victor Company of Japan, Limited. Variable speed tone arm control system. 4,342,108, Cl. 369-216.000.

Kitamura, Masatsugu; Onoye, Hideo; Ohno, Fumiaki; Ono, Tsuyoshi; Kishima, Yukihiro; and Morita, Yutaka, to Victor Company of Japan Ltd. Record disc playing apparatus with automatic cancellation of inside force on tone arm. 4,342,110, Cl. 369-252.000.

Kitano, Hisao: See—  
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, 4,341,665, Cl. 252-522.00R.

Klein, Rudiger, to Gutehoffnungshutte Sterkrade A.G. Apparatus for the generation of compressed air. 4,341,506, Cl. 417-362.000.

Kleiss, Joachim, to Fulgerwerke Seelze und Eichriede in Luthe bei Hannover Adolf Oesterheld GmbH & Co. Kommanditgesellschaft. Shapes for windows or doors. 4,341,831, Cl. 428-188.000.

Klenk, Herbert: See—  
Hofen, Willi; Klenk, Herbert; Schreyer, Gerd; Weiberg, Otto; Waldmann, Helmut; Seifert, Hermann; Reissinger, Karl-Hermann; and Swodenk, Wolfgang, 4,341,709, Cl. 349-272.000.

Kleva, Jacob J. Game board apparatus having removable playing piece movement areas. 4,341,386, Cl. 273-239.000.

Kline, Larry H. Lubricating object applicator. 4,341,211, Cl. 128-261.000.

Kling, Jarrett B., to Teknational Industries Inc. Mounting assembly for semiconductor devices and particularly power transistors. 4,342,068, Cl. 361-386.000.

Knabel, Walter: See—  
Marker, Hannes; Knabel, Walter; and Eichweber, Gerhard, 4,341,121, Cl. 73-862.020.

Knapp, Heinrich; Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; Jaggle, Gunther; and Schelhas, Peter, to Robert Bosch GmbH. Fuel injection system. 4,341,192, Cl. 123-452.000.

Knight, Ernest, Jr.: See—  
Ganfield, David J.; Hunkapiller, Michael W.; Knight, Ernest, Jr.; and Korant, Bruce D., 4,341,761, Cl. 424-85.000.

Knowles, Jeremy R.: See—  
Fisher, Jed F.; and Knowles, Jeremy R., 4,341,766, Cl. 424-114.000.

Knowles, Larry F.: See—  
Knowles, William F.; Knowles, Larry F.; and Oliver, H. LeRoy, 4,341,420, Cl. 297-280.000.

Knowles, Timothy A.: See—  
Stevens, Don L., Jr.; Brown, Steven L.; Malone, John A.; Knowles, Timothy A.; and Webb, Thomas G., 4,341,174, Cl. 114-45.000.

Knowles, William F.; Knowles, Larry F.; and Oliver, H. LeRoy. Lounge chair. 4,341,420, Cl. 297-280.000.

Kobayashi, Fumio: See—  
Numata, Saburo; and Kobayashi, Fumio, 4,342,018, Cl. 335-270.000.

Kobayashi, Kazuho: See—  
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Kobayashi, Keisuke: See—  
Okuo, Takayasu; Masaki, Takaki; and Kobayashi, Keisuke, 4,341,965, Cl. 310-11.000.

Kobayashi, Kozo: See—  
Terui, Nobuo; and Kobayashi, Kozo, 4,342,054, Cl. 360-40.000.

Kobayashi, Masao: See—  
Ishii, Hiromichi; Matsuzawa, Hideo; Kobayashi, Masao; and Otani, Masato, 4,341,900, Cl. 562-532.000.

Kobayashi, Tamotu: See—  
Maruko, Yutaka; Sako, Susumu; and Kobayashi, Tamotu, 4,341,973, Cl. 310-268.000.

Kochi, Hiromu: See—  
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,341,775, Cl. 424-246.000.

Koenig-Electronic Friedrich W. Koenig: See—  
Raemisch, Reinhard; and Hoffmann, Arthur H., 4,341,123, Cl. 73-862.090.

Koepe, Gunther; Frenken, Hans; and Friedsam, Josef, to Agfa-Gevaert Aktiengesellschaft. Process and an apparatus for continuously filtering liquids. 4,341,642, Cl. 210-767.000.

Koestner, Joseph H.: See—  
Caccoma, George A.; Koestner, Joseph H.; O'Neill, Brian C.; and Tappen, Frank M., 4,342,090, Cl. 364-491.000.

Kohaut, John E. Insert device. 4,341,919, Cl. 174-48.000.

Kohlhage, Hermann, to Nixdorf Computer AG. Portable certificate magazine. 4,341,100, Cl. 70-63.000.

Kohman, Wayne E.; and Maleri, E. Joseph, to Perkin-Elmer Corporation. The Load-lock vacuum chamber. 4,341,582, Cl. 156-345.000.

Kohyama, Mitsuaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Electronic copying machine. 4,341,460, Cl. 355-13.000.

Kokusai Denshin Denwa Co., Ltd.: See—  
Seki, Norio; Yatsuzuka, Yohtarō; and Sakaguchi, Haruo, 4,341,438, Cl. 350-96.160.

Komatsu, Fumito; and Muramatsu, Kenzi, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Music box. 4,341,142, Cl. 84-95.00R.

Komatsu, Michiyasu: See—  
Nishida, Katsutoshi; Komatsu, Michiyasu; and Miyano, Tadashi, 4,341,874, Cl. 501-97.000.

Komiya, Kazumi: See—  
Mizushima, Yoshihiko; Takeda, Akitsu; Komiya, Kazumi; Sakaue, Masahiro; Ogino, Toshio; Itoh, Hideo; and Oka, Masayoshi, 4,341,954, Cl. 250-211.00J.

Kommanditgesellschaft "ALBERTA" Chemische Fabrik GmbH & Co.: See—  
Zopff, Hans; and Muller, Hans-Ekkehard, 4,341,745, Cl. 423-210.000.

Komoriya, Kiyoshi. Discrimination apparatus for extracting maximum-value output from a plurality of signals and indexing the relevant channel. 4,341,961, Cl. 307-355.000.

Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, to Mitsubishi Denki Kabushiki Kaisha. Glow discharge heating apparatus. 4,341,947, Cl. 219-383.000.

Kondo, Kanetaka; Morita, Takayuki; and Ushino, Masashi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Bobbin holding device in a doffing apparatus. 4,341,067, Cl. 57-275.000.

Konishi, Kazuo; and Matsuura, Kazuho, to Takeda Chemical Industries, Ltd. Pyrimidine derivatives and agricultural uses. 4,341,782, Cl. 424-251.000.

Konishi, Masataka; Miyaki, Takeo; Tsukiura, Hiroshi; and Kawaguchi, Hiroshi, to Bristol-Myers Company. Antibiotic compounds. 4,341,768, Cl. 424-177.000.

Kopena, David M., to Owens-Corning Fiberglas Corporation. Method and apparatus for separating rolls of web material. 4,341,003, Cl. 29-239.000.

Koppe, Herbert: See—  
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Hoeske, Wolfgang; and Pichler, Ludwig, 4,341,788, Cl. 424-273.00R.

Korant, Bruce D.: See—  
Ganfield, David J.; Hunkapiller, Michael W.; Knight, Ernest, Jr.; and Korant, Bruce D., 4,341,761, Cl. 424-85.000.

Korenberg, Jakob, to York-Shipley, Inc. High turndown ratio fluidized bed reactor and method of operating the reactor. 4,341,515, Cl. 432-15.000.

Korling, Torkel. Triaxial universal camera mount. 4,341,452, Cl. 354-293.000.

Koros, Peter J.; and Petrushka, Robert G., to Jones & Laughlin Steel Incorporated. Process for desulfurizing steel. 4,341,554, Cl. 75-58.000.

Kosarzecki, Constantine, to Modular Controls Corporation. Hydraulic sequencing valve. 4,341,148, Cl. 91-356.000.

Koshida, Daikichi; Sigisawa, Ko; Majima, Junji; and Hattori, Ryuiichi. Method for producing dry fruit chip. 4,341,803, Cl. 426-242.000.

Koshlyak, Leonid L.; Kareev, Jury P.; Romankov, Evgeny A.; Zotov, Sergei N.; Belopolsky, Marx S.; and Kalinovskiy, Vilen V. Method for the manufacture of ceramic products. 4,341,724, Cl. 264-27.000.

Koutonen, Pauli, to Oy Wartsila Ab. Arrangement for wrapper feeding to big paper rolls. 4,341,586, Cl. 156-518.000.

Kowalski, Daniel J.; and Mareydt, Ray G., to Four Star Corporation. Stanchion assembly. 4,341,332, Cl. 224-326.000.

Koyama, Masaharu: See—  
Matsuyama, Shigeru; Koyama, Masaharu; and Sato, Yukihiro, 4,341,445, Cl. 350-344.000.

Koyama, Toru: See—  
Kageyama, Yoichi; Hatano, Masakatsu; Koyama, Toru; Kaneko, Takao; Murayama, Masayoshi; and Oshima, Kazunori, 4,341,659, Cl. 252-435.000.

Kracklauer, John J.; and Sparkes, Charles J., to Syntex (U.S.A.) Inc. Flexible polyvinyl chloride plastics having improved flame retardancy and reduced smoke generating properties. 4,341,881, Cl. 524-176.000.

Krall, Harry J.: See—  
Morrison, Edward D.; Krall, Harry J.; Carr, David L.; and Lu, Chen-I, 4,341,855, Cl. 430-140.000.

Krantz, Karl W., to General Electric Company. Compositions and method for improving the properties of liquid media. 4,341,684, Cl. 523-175.000.

Kremer, Ross A.; and Mansueto, Leopoldo C., Jr., to Rhone-Poulenc Agromie. Vapor phase dechlorination process. 4,341,899, Cl. 560-103.000.

Kress, Paul J.: See—  
Marcantonio, Arnold F.; Kress, Paul J.; and Powers, John W., 4,341,878, Cl. 524-3.000.

Kreuer, Karl D.; and Schulte, Klaus, to Bayer Aktiengesellschaft. Process for the production of a foamable mixture from at least two fluid, foam forming reactants and aggregates. 4,341,876, Cl. 521-170.000.

Krickovich, Eli G. Emergency escape device. 4,341,285, Cl. 182-6.000.

Kronschabel, William J.: See—  
Chermak, Michael A.; Chudgar, Anil H.; and Kronschabel, William J., 4,341,578, Cl. 156-149.000.

Krueger, Roland; Proske, Joachim; Rosner, Ortwin; and Swarofsky, Walter, to Rollei-Werke Franke & Heidecke GmbH & Co. KG. Camera having depth of focus indicating means. 4,341,451, Cl. 354-289.000.

Kruger, Hans-Rudolf; Arndt, Friedrich; Baumert, Dietrich; and Rusch, Reinhart, to Schering AG. 1,2,3-Thiadiazole-5-carboxylic acid derivatives. 4,341,551, Cl. 71-90.000.

Kruzona, Edward G., to General Electric Company. Method of roller inserting filler material in crevices. 4,341,007, Cl. 29-451.000.

Ku, Chung C.; and Yeh, Ching H. Construction for a cylinder lock and key. 4,341,102, Cl. 70-358.000.

Kubo, Osamu; Ido, Tadashi; Nomura, Tutomu; and Inomata, Koichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing magnetic powder for high density magnetic recording. 4,341,648, Cl. 252-62.630.

Kubota, Ltd.: See—  
Bando, Niro, 4,341,129, Cl. 74-481.000.

Fujinami, Susumu; Miyamoto, Hiroaki; Morimine, Ryoichi; Fukuzawa, Toshiaki; Ueda, Toshihiko; Umakoshi, Shoji; and Tokunaga, Kiyohiko, 4,341,628, Cl. 210-101.000.

Kuehni, Rolf G.; and Cox, Thomas C., to Mobay Chemical Corporation. Levelling agent and process of levelling for the disperse dyeing of hydrophobic materials. 4,341,526, Cl. 8-610.000.

Kuemmerer, Helmut; Moser, Theo; and Genstorfer, Adolf, to Robert Bosch GmbH. Dispensing apparatus for aseptic measurement and filling of a fluid product. 4,341,329, Cl. 222-275.000.

Kuhn, Bernhard; and Bochtler, Eugen, to Kaltenbach & Voigt GmbH & Co. Dental angled vibration member. 4,341,519, Cl. 433-122.000.

Kuhne, Norbert; Leischner, Hasso; Rahse, Wilfried; and Wust, Willi, to Henkel Kommanditgesellschaft auf Aktien. Preparation of alkali cellulose having a low water content. 4,341,892, Cl. 536-101.000.

Kulper, Klaus. Electrical condenser with a dielectric of gas under pressure. 4,342,066, Cl. 361-278.000.

Kumagai, Shumi: See—  
Suzuki, Kazufumi; Kumagai, Shumi; Ochiai, Yuetsu; and Mizoguchi, Akira, 4,342,051, Cl. 358-283.000.

Kumagai, Teruo: See—  
Mori, Toshikatsu; Kumagai, Teruo; Matsuda, Shimpei; and Nakajima, Fumito, 4,341,753, Cl. 423-569.000.

Kumagi, Shigeki, to Tokyo Shibaura Denki Kabushiki Kaisha. Integrated circuit device for clock. 4,342,092, Cl. 364-569.000.

Kummer, Werner: See—  
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Hoeske, Wolfgang; and Pichler, Ludwig, 4,341,788, Cl. 424-273.00R.

Kuntz, David W.: See—  
Gardiner, Mark E.; and Kuntz, David W., 4,341,469, Cl. 356-239.000.

Kuo, Chang-Kiang, to Texas Instruments Incorporated. Electrically erasable programmable MNOS read only memory. 4,342,099, Cl. 365-104.000.

Kuo, Chang-Kiang, to Texas Instruments Incorporated. Implant programmable metal gate MOS read only memory. 4,342,100, Cl. 365-104.000.

Kurashiki Boseki Kabushiki Kaisha: See—  
Saito, Masumi; Hirai, Eiichi; Endo, Masao; and Nishino, Toru, 4,341,560, Cl. 106-87.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: See—  
Katsuto, Takayuki; Endo, Shunzo; Doi, Hideaki; and Murayama, Naohiro, 4,341,837, Cl. 428-336.000.

Kurihara, Kozo; Fukazawa, Toshio; Ichikawa, Izu; Ikegami, Yoshihiko; Fukiyama, Naohiko; and Ikeda, Masaru, to Sankyo Company Limited. Protective coating compositions. 4,341,563, Cl. 106-171.000.

Kurikaki, Tetuo; Horiike, Yasuhiro; and Yamazaki, Takashi, to Tokuda Seisakusho, Ltd.; and Tokyo Shibaura Denki Kabushiki Kaisha. Plasma etching method for aluminum-based films. 4,341,593, Cl. 156-643.000.

Kuwana, Kazutaka: See—  
Fushimi, Takehiko; Kawai, Shinji; and Kuwana, Kazutaka, 4,340,980, Cl. 4-448.000.

Kuznetz, Lawrence. Support brassiere. 4,341,219, Cl. 128-498.000.

Kuzunuki, Soshiro; Hirasawa, Kotaro; Imai, Masumi; Yuminaka, Takeo; Sakata, Kazuhiro; and Yoneda, Kanji, to Hitachi, Ltd. Elevator control apparatus. 4,341,287, Cl. 187-29.00R.

Kvaerner Brug A/S: See—  
Ambli, Nils, 4,341,959, Cl. 290-53.000.

Kyles, Ronald H.; and Woodard, Richard B., to NCR Corporation. Method and circuitry for synchronizing the read and update functions of a timer/counter circuit. 4,341,950, Cl. 235-92.0EA.

Kyo, Suizo: See—  
Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,341,841, Cl. 428-414.000.

Kyowa Hakkō Kogyo Co., Ltd.: See—  
Nakanishi, Toru; and Machida, Yozo, 4,341,868, Cl. 435-191.000.

LaBeau, Gary A.; and Bixby, James A., to Eastman Technology, Inc. Skew calculation using information recorded along a single timing track. 4,342,057, Cl. 360-76.000.

LaBenz, Gary F. Sewer manhole channel construction and method. 4,341,236, Cl. 137-363.000.

Laboratoire Roger Bellon: See—  
Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, 4,341,784, Cl. 424-256.000.

Laboratori Prophin S.p.A.: See—  
Reiner, Alberto, 4,341,798, Cl. 424-319.000.

Lacis-Werke AG: See—  
Croseck, Hans-Henning; and Jung, Rolf, 4,341,510, Cl. 425-149.000.

Lagasse, Guy. Chimney fire extinguisher. 4,341,267, Cl. 169-54.000.

Lahti, Abbott W.; and Russell, Stephen R., to Power Systems, Inc. Simultaneous independent control system for electric motors. 4,341,982, Cl. 318-51.000.

Laitinen, Heikki, to Oy Partek Ab. Loading equipment. 4,341,500, Cl. 414-498.000.

Laitram Corporation, The: See—  
Lapeyre, James M., 4,342,031, Cl. 340-756.000.

Lal, Joginder; and Walters, Sandra J., to Goodyear Tire & Rubber Company. The Composition and method of improving the vulcanized properties of blends containing reclaimed rubber. 4,341,667, Cl. 525-211.000.

Lampe, Warren R., to General Electric Company. Method of coating automotive parts with silicone compositions. 4,341,842, Cl. 428-450.000.

Land, Jerry E.: See—  
McMullan, James P.; Lindsay, Rudy E.; and Land, Jerry E., 4,340,983, Cl. 5-93.00R.

Landes, James L., to Texas Instruments Incorporated. Ultrasonic bond energy monitor. 4,341,574, Cl. 156-64.000.

Landis, Norris J., to Standard Oil Company. Urea hydrolysis. 4,341,640, Cl. 210-752.000.

Landreau, Jean; Delpech, Philippe; and Bouley, Jean-Claude. Process for producing an injection laser and laser obtained by this process. 4,341,570, Cl. 148-1.500.

Landrigan, William F.: See—  
Ferguson, Susan P.; and Landrigan, William F., 4,341,217, Cl. 128-290.00W.

Landness, Clifford A.; Rinker, William R.; Barnes, Thomas E.; and White, Maurice E., to B. F. Goodrich Company, The. Processing vinyl extrudate. 4,341,727, Cl. 264-145.000.

Lang, Walter; Muller, Ortwin; and Neidlinger, Alfons, to Carl Zeiss-Stiftung. Stereoscopic microscope for multiple observation. 4,341,435, Cl. 350-35.000.

Lang, Werner: See—  
Zander, Rolf; Lang, Werner; and Wolf, Hans U., 4,341,527, Cl. 23-230.00B.

Langejan, Arend; and Khoudokormoff, Basile, to Gist-Brocades N.V. Active dried baker's yeast. 4,341,871, Cl. 435-256.000.

Langer, Robert S., Jr.; Linhardt, Robert; Cooney, Charles L.; and Galliher, Parrish M., to Massachusetts Institute of Technology. Process for producing heparinase. 4,341,869, Cl. 435-232.000.

Lapeyre, James M., to Laitram Corporation, The. Liquid crystal and numerical display devices. 4,342,031, Cl. 340-756.000.

Large, George B.; and Buren, Lawrence L., to Stauffer Chemical Company. Phosphonium salts of N-phosphonomethylglycine and their use as herbicides and plant growth regulants. 4,341,549, Cl. 71-86.000.

Larrere, Yves: See—  
Daire, Marc; Larrere, Yves; and Mangin, Andre, 4,341,533, Cl. 51-309.000.

Larson, Daniel A.: See—  
Thornton, William A., Jr.; and Larson, Daniel A., 4,341,978, Cl. 313-487.000.

Larson, Robin R., to Tektronix, Inc. Protection circuit for a data driver. 4,342,065, Cl. 361-93.000.



- Lassle, Edwin: See—  
Steinle, Gunter; and Lassle, Edwin, 4,341,930, Cl. 179-115.50R.
- Lauener, Wilhelm F., to W. F. Lauener AG. Method for speed control of a continuous metal strip casting machine and rolling mill arrangement, and system controlled according to this method. 4,341,259, Cl. 164-454.000.
- Laurent, Jean; Monnet, Bernard; and Pertuis, Philippe, to Pont-a-Mousson. Device for automatic adjustment of an injection molding press. 4,341,511, Cl. 425-150.000.
- Lauterbach, Richard; and Keller, Hartmut, to Siemens Aktiengesellschaft. Method for attaching disc- or plate-shaped targets to cooling plates for sputtering systems. 4,341,816, Cl. 427-34.000.
- Lavan, Zalman: See—  
Gidaspow, Dimitri; Lavan, Zalman; and Onischak, Michael, 4,341,539, Cl. 55-278.000.
- Mei, Viung C.; Lavan, Zalman; and Chaturvedi, Sushil K., 4,341,088, Cl. 62-239.000.
- Lay, James R.: See—  
Iya, Sridhar K.; Van Slooten, Richard A.; Braaten, Mark E.; and Lay, James R., 4,341,749, Cl. 423-349.000.
- Leanna, Dale D.; Jorgensen, Allen R.; and Wittkopf, Eugene W., to Magna-Graphics Corporation. Machine for compression band packaging. 4,341,056, Cl. 53-529.000.
- Leathers Chemical Company, Limited: See—  
Ellis, John D.; Crichton, George; Godwin, Millard C.; and Morris, George C., 4,341,739, Cl. 422-207.000.
- Lebel, Joseph A.: See—  
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- Lee, Yoon C.; and Tremontozzi, Quirino A., to Monsanto Company. Rubber modified terpolymers with improved heat distortion resistance. 4,341,695, Cl. 524-342.000.
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- Leischner, Hasso: See—  
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- Lemelson, Jerome H. Weighing apparatus and method. 4,342,038, Cl. 346-9.000.
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- Lester, Dozier. Food for frogs. 4,341,800, Cl. 426-1.000.
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- Liang, Wei C., to Union Carbide Corporation. Asymmetrical bis-carbamate compounds. 4,341,795, Cl. 424-300.000.
- Liberge, Guy, to Joubert S.A. Hook for elastic cable. 4,340,998, Cl. 24-130.000.
- Libit, Sidney M. Tampering indicating bottle cap and bottle. 4,341,320, Cl. 215-341.000.
- Liebermann, Howard H.; Frischmann, Peter G.; and Rosenberry, George M., Jr., to General Electric Company. Helical metallic ribbon for continuous edge winding applications. 4,341,845, Cl. 428-592.000.
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- Lightsey, Martin F., to American Safety Razor Company. Disposable razor package. 4,341,306, Cl. 206-372.000.
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- Lindall, Arnold W., to Immuno Nuclear Corporation. Parathyroid radioimmunoassay. 4,341,755, Cl. 424-1.000.
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- Mackrie, Svatopluk; and Novotny, Milos, to Agrotechnika, narodny podnik. Arrangement for separation of a suspension or emulsion from liquids by flotation. 4,341,630, Cl. 210-221.200.
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- Mailer, Werner H., to General Electric Company. Feed mechanism for continuous and cut form paper. 4,341,480, Cl. 400-625.000.
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- Martin, Jeffrey E.; Vozella, Albert F.; Watts, Golden F.; and Luckman, Edwin R., to Ashland Oil, Inc. Aqueous composition containing aldehyde condensate and use thereof. 4,341,668, Cl. 524-297.000.
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- Maton, Maurice E. G., to Beaumont (U.K.) Limited. Tank cleaning apparatus. 4,341,232, Cl. 134-107.000.
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- McConnell, Alan S. Universal automotive vent. 4,341,150, Cl. 98-2.120.
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- McCoy, Stephen A., to Procter & Gamble Company. The Peanut butter stabilizer. 4,341,814, Cl. 426-607.000.
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- McMaster, Ronald A.: See—  
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- McMullan, James P.; Lindsay, Rudy E.; and Land, Jerry E., to McMullan, James P. Crib flotation bed. 4,340,983, Cl. 5-93.00R.
- McVeigh, Peter J.: See—  
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- Mead Corporation, The: See—  
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- Medtronic, Inc.: See—  
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Testerman, Roy L., 4,341,221, Cl. 128-642.000.
- Medwid, Albert. Serous fluid drain kit. 4,341,212, Cl. 128-276.000.
- Mei, Viung C.; Lavan, Zalman; and Chaturvedi, Sushil K. Highway vehicle exhaust gas refrigeration system. 4,341,088, Cl. 62-239.000.
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- Melcher, Franz-Josef: See—  
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- Mellish, Stuart F.: See—  
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- Melocik, Kurt B., to Caterpillar Tractor Co. Pressure reducing valve with floating stem for make-up vent. 4,341,243, Cl. 137-625.680.
- Melpolder, John B.: See—  
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- Melvin, Lawrence S., Jr.: See—  
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- Merck & Co., Inc.: See—  
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- Christensen, Burton G.; and Shih, David H., 4,341,706, Cl. 260-245.20T.
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- Shih, David H., 4,341,705, Cl. 260-245.20T.
- Merrill, LaVaun S., Jr., to Marathon Oil Company. Method and apparatus for processing oil shale in a rotary hearth. 4,341,620, Cl. 208-11.00R.
- Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: See—  
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- Metzler, Louis A. Veterinary apparatus. 4,341,183, Cl. 119-158.000.
- Meulenberg, Abraham J.: See—  
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- Meyer, Danny S., to ACF Industries, Incorporated. Expanding gate valve assembly. 4,341,369, Cl. 251-168.000.
- Meyer, Frank; and Romey, Ingo, to Bergwerksverband GmbH. Adhesive securing of anchors in borehole. 4,341,301, Cl. 206-219.000.
- Meyer, Hans H.: See—  
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- Meyer, Wilhelm. Wheelchair. 4,341,278, Cl. 180-79.100.
- Meywald, Klaus: See—  
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- Michaud, Raymond J.: See—  
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- Microdot Inc.: See—  
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- Mikhail, Ezzat A.: See—  
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- Mile High Equipment Company: See—  
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- Miller, Ann: See—  
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- Miller Brewing Company: See—  
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- Miller, Peter T.: See—  
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- Milligan, Barton; and Pinschmidt, Robert K., Jr., to Air Products and Chemicals, Inc. Synthesis of isocyanates from nitroalkanes. 4,341,898, Cl. 560-24.000.
- Milligan, Michael R. Spotting deck for a trampoline. 4,341,379, Cl. 272-65.000.
- Milliken Research Corporation: See—  
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- Southerlin, William F.; and Eschenbach, Paul W., 4,341,063, Cl. 57-6.000.

- Mills, Allen P., Jr., to Bell Telephone Laboratories, Incorporated. Apparatus for efficient generation of low-energy positrons. 4,341,731, Cl. 376-156.000.
- Milne, Paul A. Bridge structure for stringed instruments. 4,341,144, Cl. 84-307.000.
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- Mine Safety Appliances Company: See—  
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- Minegishi, Akira: See—  
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- Miner, Russell C. Remote-controlled key-depressing device. 4,341,143, Cl. 84-107.000.
- Minigrip, Inc.: See—  
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- Ministry of International Trade & Industry: See—  
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- Minnesota Mining and Manufacturing Company: See—  
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- Kemski, Michael B., 4,341,825, Cl. 428-35.000.
- Ruffing, Sharon L.; Burg, Wallace E.; and Mikhail, Ezzat A., 4,341,901, Cl. 564-99.000.
- Seabold, Thomas W.; Patterson, Richard A.; and de Neui, Richard P., 4,341,585, Cl. 156-443.000.
- Minolta Camera Kabushiki Kaisha: See—  
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- Minoura, Kazuo: See—  
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- Minter, Beryl. Container method and apparatus. 4,341,091, Cl. 62-372.000.
- Minter, Mearl J., to Rolscreen Company. Method and assembly for cladding a window frame. 4,341,048, Cl. 52-211.000.
- Miracle Recreation Equipment Company: See—  
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- Mistral Incorporated: See—  
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- Mitsubishi Chemical Industries, Limited: See—  
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- Mitsubishi Denki Kabushiki Kaisha: See—  
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- Komura, Hirotosugu; Ueguri, Shigeo; and Tabata, Youichiro, 4,341,947, Cl. 219-383.000.
- Nagatomo, Masao; Abe, Haruhiko; and Mizuguchi, Kazuo, 4,341,616, Cl. 204-298.000.
- Oishi, Norio; Okamoto, Kouichi; Furukado, Shoji; and Sakuyama, Masaki, 4,341,093, Cl. 62-505.000.
- Mitsubishi Gas Chemical Company, Inc.: See—  
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- Mitsubishi Kinzoku Kabushiki Kaisha: See—  
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- Mitsubishi Petrochemical Co. Ltd.: See—  
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- Mitsubishi Rayon Company, Limited: See—  
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- Mitsuhashi, Sadaaki: See—  
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- Miura, Hideichi: See—  
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- Miyake, Haruhisa; Sugaya, Yoshio; and Asawa, Tatsuro, to Asahi Glass Company, Ltd. Process for preparing organic dispersion of acid type fluorinated polymer. 4,341,685, Cl. 524-104.000.
- Miyaki, Takeo: See—  
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- Miyakoshi, Hideo: See—  
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- Miyano, Tadashi: See—  
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- Miyasaka, Kiyoshi: See—  
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- Miyazaki, Takeshi; and Ono, Hiromi, to Kawasaki Jukogyo Kaikan Kaisha. Small watercraft. 4,341,177, Cl. 114-125.000.
- Miyoshi, Masayuki, to Hitachi, Ltd. Method of digital logic simulation. 4,342,093, Cl. 364-578.000.
- Mizoguchi, Akira: See—  
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- Mizuguchi, Kazuo: See—  
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- Mizushima, Yoshihiko; Takeda, Akitoshi; Komiya, Kazumi; Sakaue, Masahiro; Ogino, Toshio; Itoh, Hideo; and Oka, Masayoshi, to Nippon Telegraph & Telephone Public Corp.; and Origin Electric Co., Ltd. Photo-electric converting apparatus. 4,341,954, Cl. 250-211.000.
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- Mobil Oil Corporation: See—  
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- Plank, Charles J.; Rosinski, Edward J.; and Rubin, Mac K., 4,341,748, Cl. 423-328.000.
- Tabak, Samuel A.; and Morrison, Roger A., 4,341,622, Cl. 208-66.000.
- Tobias, Michael A., 4,341,682, Cl. 523-409.000.
- Mock, Donald E., to Cetec Corporation. Storm window. 4,341,255, Cl. 160-369.000.
- Modular Controls Corporation: See—  
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- Molins Limited: See—  
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- Monnerat, Georgia A.; Ham, George E.; Hairston, Thomas J.; and Hatch, Melvin J., to Dow Chemical Co., The. Catalyst for reacting phenolic hydroxyl groups with epoxy groups. 4,341,658, Cl. 252-428.000.
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- Monsanto Company: See—  
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- Snelgrove, James A., 4,341,683, Cl. 524-503.000.
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- Montecchi, Lauretta: See—  
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- Montren, William: See—  
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- Moody, Christopher J.: See—  
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- Mooney, John B.; and Brodie, Ivor, to Savin Corporation. Electrophotographic photoconductor comprising CdS and ZnS. 4,341,851, Cl. 430-56.000.
- Moore, James W.; and Peterson, Rudolph A., Jr., to Deere & Company. Silencer means for internal combustion engines. 4,341,284, Cl. 181-272.000.
- Morgan, Leonard M. Ski rest for a ski pole. 4,341,400, Cl. 280-819.000.
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- Mori, Toshikatsu; Kumagai, Teruo; Matsuda, Shimpei; and Nakajima, Fumito, to Hitachi, Ltd.; and Babcock-Hitachi Kabushiki Kaisha. Method and apparatus for converting sulfur dioxide in gas to sulfur. 4,341,753, Cl. 423-569.000.
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- Morimura, Hiroaki; and Abe, Masanori, to Nissan Motor Co., Ltd. Stabilizing device for a suspension of an automotive vehicle. 4,341,397, Cl. 280-688.000.
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- Morita, Takayuki: See—  
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N-Viro Energy Systems, Ltd.: See—  
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Nabisco Brands, Inc.: See—  
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Nagatomo, Masao; Abe, Haruhiko; and Mizuguchi, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Dry etching device. 4,341,616, Cl. 204-298.000.

Nagy, Laszlo, to General Motors Corporation. Split axle drive mechanism. 4,341,281, Cl. 180-247.000.

Naiff, Kenneth L., to General Instrument Corporation. I<sup>2</sup>L Static shift register. 4,341,960, Cl. 307-221.00R.

Nail, James A., to Chicago Bridge & Iron Company. Freeze concentration apparatus and method. 4,341,085, Cl. 62-124.000.

Nakahata, Kimio; Tanigawa, Koichi; and Adachi, Hiroyuki, to Canon Kabushiki Kaisha. Electrophotographic apparatus including an electrostatic separation device. 4,341,457, Cl. 355-3.0CH.

Nakajima, Fumito: See—  
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Nakamura, Masahiko: See—  
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National Research Development Corporation: See—  
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National Research Institute for Metals: See—  
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Nazario, Francisco N.: See—  
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NCR Corporation: See—  
Kyles, Ronald H.; and Woodard, Richard B., 4,341,950, Cl. 235-92.0EA.

Neathery, David O.; and Riggs, Edward J., to King Instrument Corporation. Anticipating servo controller for controlling magnetic tape movement in a tape cassette loader. 4,341,362, Cl. 242-183.000.

Nebashi, Toshiyuki: See—  
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,341,776, Cl. 424-246.000.

Negishi, Fumio: See—  
Suzuki, Sadao; Kinoshita, Harumi; Takada, Takuzo; and Negishi, Fumio, 4,341,317, Cl. 215-31.000.

Negishi, Takao; and Tomiita, Kazuo, to Toray Industries, Incorporated. Method for producing an improved bundle of fibrous elements. 4,341,068, Cl. 57-288.000.

Neidlinger, Alfons: See—  
Lang, Walter; Muller, Ortwin; and Neidlinger, Alfons, 4,341,435, Cl. 350-35.000.

Nekado, Mitsunobu: See—  
Ozeki, Kenichi; Wada, Toyoji; Ito, Kunio; Tomimori, Teisuo; Takagi, Isao; and Nekado, Mitsunobu, 4,341,687, Cl. 524-500.000.

Nelson, Bruce G.: See—  
Weaver, Gerald Q.; and Nelson, Bruce G., 4,341,725, Cl. 264-28.000.

Nelson, Gary L.; and Harvey, William A., to Sperry Corporation. Single surface LPE crystal growth. 4,341,590, Cl. 156-624.000.

Nelson, Hoyt H.: See—  
Jackson, Bernie F.; and Nelson, Hoyt H., 4,341,119, Cl. 73-462.000.

Nelson, James F.; and Nelson, Robert W. Work length gauge attachment for chain saws. 4,341,018, Cl. 30-383.000.

Nelson, Robert W.: See—  
Nelson, James F.; and Nelson, Robert W., 4,341,018, Cl. 30-383.000.

Nemecek, Borivoj; Connector. 4,341,487, Cl. 403-297.000.

Nenner, Thomas; and Foraison, Dominique, to Rhone-Poulenc Industries. Extraction of uranium using electrolytic oxidation and reduction in bath compartments of a single cell. 4,341,602, Cl. 204-1.500.

Nerstrom, James S., to Outboard Marine Corporation. Two-cycle internal combustion engine including means for varying cylinder port timing. 4,341,188, Cl. 123-324.000.

Nestor, John J.; Jones, Gordon H.; and Vickery, Brian H., to Syntex Inc. Nonapeptide and decapeptide analogs of LHRH, useful as LHRH antagonists. 4,341,767, Cl. 424-177.000.

Neumann, Albert. Earth retaining system. 4,341,491, Cl. 405-258.000.

Neuser, Volker: See—  
Betzing, Hans; Biedermann, Jurgen; Materne, Carsten; and Neuser, Volker, 4,341,790, Cl. 424-274.000.

Newton, William A.: See—  
Brunsting, Albert; Hogg, Walter R.; and Newton, William A., 4,341,993, Cl. 324-71.0CP.

NGK Spark Plug Co., Ltd.: See—  
Nishio, Kanemitsu; and Suzuki, Takashi, 4,341,195, Cl. 123-598.000.

NHK Spring Co., Ltd.: See—  
Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,341,841, Cl. 428-414.000.

Nichol, Thomas, to Lucas Industries Limited. Warning lamp arrangements for vehicle battery charging systems. 4,342,022, Cl. 340-52.00R.

Nielsen, Arne, to SIG Societe Industrielle Suisse. Mobile machine for the treatment of railway tracks. 4,341,160, Cl. 104-7.00B.

Niemczyk, Stephen E.; and Hubbard, Richard G., Jr., to United Technologies Corporation. Color calibration accuracy in a color raster scanner. 4,342,047, Cl. 358-80.000.

Niese, Manfred: See—  
Putter, Rolf; Pfister, Theodor; Niese, Manfred; and Wenzl, Peter, 4,341,719, Cl. 260-509.000.

Nilsen, Carl J., to SWS Incorporated. Method of butt welding sheet metal. 4,341,943, Cl. 219-121.0LD.

Nippon Electric Co., Ltd.: See—  
Yokoo, Kiyotaka; Mitsuhashi, Sadayuki; and Wakamatsu, Kazutoshi, 4,342,016, Cl. 335-79.000.

Nippon Gakki Seizo Kabushiki Kaisha: See—  
Ishigaki, Yuzo, 4,342,006, Cl. 330-259.000.  
Ogita, Minoru, 4,342,000, Cl. 329-103.000.

Nippon Kogaku K.K.: See—  
Kanno, Hideo; and Suzuki, Yoshiki, 4,341,436, Cl. 350-65.000.  
Toyoda, Kenji; and Hirano, Haruo, 4,341,448, Cl. 354-59.000.

Nippon Kokan Kabushiki Kaisha: See—  
Matsubara, Hiroyoshi; Takeshige, Kenji; Osuka, Tatsumi; Nagamine, Takashi; Hirano, Osamu; Tanaka, Jinkichi; Watanabe, Itaru; and Suzuki, Motoaki, 4,341,938, Cl. 219-61.000.

Nippon Petrochemicals Co., Ltd.: See—  
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, 4,341,665, Cl. 252-522.00R.

Nippon Soken, Inc.: See—  
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,341,189, Cl. 123-425.000.

Nippon Telegraph & Telephone Public Corp.: See—  
Mizushima, Yoshihiko; Takeda, Akitsu; Komiya, Kazumi; Sakaue, Masahiro; Ogino, Toshio; Itoh, Hideo; and Oka, Masayoshi, 4,341,954, Cl. 250-211.00J.

Nippon Tsushin Kogyo K.K.: See—  
Shinoi, Tsuyoshi; and Hamatani, Fumikazu, 4,341,927, Cl. 179-2.0DP.

Nishida, Katsutoshi; Komatsu, Michiyasu; and Miyano, Tadashi, to Tokyo Shibaura Electric Co., Ltd. Si<sub>3</sub>N<sub>4</sub> Ceramic powder material and method for manufacturing the same. 4,341,874, Cl. 501-97.000.

Nishii, Yasuo: See—  
Aoki, Takao; Miyakoshi, Hideo; Hirasawa, Yoshihei; and Nishii, Yasuo, 4,341,774, Cl. 424-236.000.

Nishimura, Yoshiro: See—  
Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, 4,341,784, Cl. 424-256.000.

Nishino, Toru: See—  
Saito, Masumi; Hirai, Eiichi; Endo, Masao; and Nishino, Toru, 4,341,560, Cl. 106-87.000.

Nishio, Kanemitsu; and Suzuki, Takashi, to NGK Spark Plug Co., Ltd. Ignition system for spark plugs capable of removing carbon deposits. 4,341,195, Cl. 123-598.000.

Nissan Motor Company, Limited: See—  
Abo, Toshimi; and Kanegae, Hidetoshi, 4,341,071, Cl. 60-39.14R.  
Chiba, Tatsuya, 4,341,414, Cl. 296-56.000.  
Morimura, Hiroaki; and Abe, Masanori, 4,341,397, Cl. 280-688.000.  
Tsunoda, Masakazu; and Kawasaki, Teruo, 4,342,023, Cl. 340-52.00F.

Nitschke, Norman C.; and McMaster, Ronald A. Roll drive mechanism for glass sheet processing equipment. 4,341,546, Cl. 65-163.000.

Nixdorf Computer AG: See—  
Kohlhage, Hermann, 4,341,100, Cl. 70-63.000.

NL Industries, Inc.: See—  
Blattel, Steven R.; and Hilscher, Larry W., 4,341,645, Cl. 252-8.50C.

Noguchi, Mikio; Kobayashi, Kazuo; Takenaka, Shigeo; and Shimbo, Masaru, to Tokyo Shibaura Denki Kabushiki Kaisha. Flat display device. 4,341,980, Cl. 315-169.100.

Nomura, Suguru: See—  
Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,341,841, Cl. 428-414.000.

Nomura, Tutomu: See—  
Kubo, Osamu; Ido, Tadashi; Nomura, Tutomu; and Inomata, Koichiro, 4,341,648, Cl. 252-62.630.

Noonan, Charles M.: See—  
Schreffler, Dean A.; and Noonan, Charles M., 4,341,819, Cl. 427-195.000.

Norberg, Kenneth H. Invalid walker. 4,341,381, Cl. 272-70.400.

Norca Corporation: See—  
Fedele, Franco, 4,341,494, Cl. 410-45.000.

Nord, Rune, to Nord, Torbjorn. Device for connecting a pressure fluid source to a fluid motor. 4,341,235, Cl. 137-312.000.

Nord, Torbjorn: See—  
Nord, Rune, 4,341,235, Cl. 137-312.000.

Nordischer Maschinenbau Rud. Baader GmbH and Co Kg: See—  
Braeger, Horst, 4,340,995, Cl. 17-62.000.

Norsk Hydro a.s.: See—  
Groenhof, Hendrik C., 4,341,752, Cl. 423-497.000.

North American Philips Consumer Electronics Corp.: See—  
Dickinson, William A., 4,342,049, Cl. 358-246.000.

Northern Telecom Limited: See—  
Stanson, Mark V.; and Riley, Garth I., 4,341,928, Cl. 179-51.0AA.

Stewart, Charles G.; and Sood, Prem L., 4,342,079, Cl. 364-200.000.

Nortron Corporation: See—  
Jackson, Bernie F.; and Nelson, Hoyt H., 4,341,119, Cl. 73-462.000.

Noto, Takao: See—  
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,341,776, Cl. 424-246.000.

Novak, Frederick C., to TII Corporation. Process for treating cyanide and cyanate containing wastewaters. 4,341,641, Cl. 210-752.000.

Novo, Mario C.: See—  
Settemire, David J.; Ide, John D.; and Novo, Mario C., 4,342,120, Cl. 455-222.000.

Novotny, Milos: See—  
Mackrie, Svatopluk; and Novotny, Milos, 4,341,630, Cl. 210-221.200.

Numata, Saburo; and Kobayashi, Fumio, to Fuji Photo Optical Co., Inc. Magnet control device for cameras. 4,342,018, Cl. 335-270.000.

Nutrition 21: See—  
Spallholz, Julian E., 4,341,757, Cl. 424-8.000.

Nutz, Ludwig: See—  
Utner, Ferdinand; Vetter, Harald; and Nutz, Ludwig, 4,342,020, Cl. 338-314.000.

N.V. Optische Industrie "De Oude Delft": See—  
Mulder, Hendrik; and Houtkamp, Johannes J., 4,341,955, Cl. 250-213.0VT.

Obata, Haruyuki: See—  
Ishikawa, Norikatsu; Obata, Haruyuki; Onaka, Hidemi; Tate, Takao; Tanahashi, Toshio; and Hagino, Isamu, 4,341,190, Cl. 123-439.000.

Obenour, Mary C., to Procter & Gamble Company, The. Breathable backsheet for disposable diapers. 4,341,216, Cl. 128-287.000.

Occidental Petroleum Corporation: See—  
Woinsky, Samuel G., 4,341,077, Cl. 60-641.300.

Occidental Research Corporation: See—  
Green, Norman W., 4,341,598, Cl. 202-99.000.

Oce-Nederland B.V.: See—  
Vola, Mathias J. J. M., 4,341,464, Cl. 355-16.000.

Ochiai, Yuetsu: See—  
Suzuki, Kazufumi; Kumagai, Shumi; Ochiai, Yuetsu; and Mizoguchi, Akira, 4,342,051, Cl. 358-283.000.

Oda, Akira: See—  
Chino, Koichi; Yusa, Hideo; Oda, Akira; Miura, Hideichi; Horiuchi, Susumu; and Takamura, Yoshiyuki, 4,341,595, Cl. 159-6.00W.

Oda, Yoshio; Morimoto, Takeshi; and Suzuki, Kohji, to Asahi Glass Company, Limited. Electrolytic cell. 4,341,612, Cl. 204-253.000.

Ogasawara, Hirotake, to Yoshida Industry Co., Ltd. Virgin sealed inner closure cap. 4,341,319, Cl. 215-307.000.

Ogawa, Haruki: See—  
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,341,776, Cl. 424-246.000.

Ogawa, Masasi: See—  
Toyama, Tadao; Nakao, Sho; Shiba, Keisuke; Sera, Hidefumi; and Ogawa, Masasi, 4,341,856, Cl. 430-156.000.

Ogino, Toshio: See—  
Mizushima, Yoshihiko; Takeda, Akitsu; Komiya, Kazumi; Sakaue, Masahiro; Ogino, Toshio; Itoh, Hideo; and Oka, Masayoshi, 4,341,954, Cl. 250-211.00J.

Ogita, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. FM Detecting circuit. 4,342,000, Cl. 329-103.000.

Ogura, Haruo; and Takeda, Kazuyoshi, to Ogura, Haruo. Imido carbon-ate compound, production thereof and uses thereof as reagent for forming active ester of amino acids. 4,341,707, Cl. 260-326.00C.

Ogura, Masaaki, to Ricoh Company, Ltd. Copying machine with collating apparatus. 4,341,462, Cl. 355-14.0SH.

O'Hara, John J.: See—  
Wojcieszon, Raymond J.; Fuhrman, Fred L.; and O'Hara, John J., 4,341,512, Cl. 431-284.000.



- Ohba, Yozo: See—  
Toyota, Takashi; Ohba, Yozo; and Yamanaka, Masaaki, 4,341,880, Cl. 524-101.000.
- Ohloff, Gunther: See—  
Schulte-Elte, Karl-Heinrich; Hauser, Arnold; and Ohloff, Gunther, 4,341,897, Cl. 549-355.000.
- Skorianetz, Werner; and Ohloff, Gunther, 4,341,666, Cl. 252-522.00R.
- Ohnmacht, Helmut; and Meywald, Klaus, to Fritz Eichenauer GmbH & Co. KG. Electrical resistance heating element, 4,341,946, Cl. 219-375.000.
- Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, to NHK Spring Co., Ltd.; and Yokohama Kiko Co., Ltd. Multi-layer coating protective film form, 4,341,841, Cl. 428-414.000.
- Ohno, Fumiaki: See—  
Kitamura, Masatsugu; Onoye, Hideo; Ohno, Fumiaki; Ono, Tsuyoshi; Kishima, Yukihiro; and Morita, Yutaka, 4,342,110, Cl. 369-252.000.
- Ohsawa, Shuji. Yarn-break/yarn-stop detecting device, 4,341,958, Cl. 250-561.000.
- Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, to Chugai Seiyaku Kabushiki Kaisha. Cephalosporin derivatives, 4,341,776, Cl. 424-246.000.
- Oide, Kunimasa, to Daichiku Co., Ltd. Laminated rotary grinder and method of fabrication, 4,341,532, Cl. 51-297.000.
- Oishi, Kengo, to Fuji Photo Film Co., Ltd. Video tape cassette, 4,341,365, Cl. 242-199.000.
- Oishi, Norio; Okamoto, Kouichi; Furukado, Shoji; and Sakuyama, Masaki, to Mitsubishi Denki Kabushiki Kaisha. Device for leading cooling liquid out of rotary electric machine with liquid cooled rotor, 4,341,093, Cl. 62-505.000.
- Oji Yuka Goseishi Kabushiki Kaisha: See—  
Toyota, Takashi; Ohba, Yozo; and Yamanaka, Masaaki, 4,341,880, Cl. 524-101.000.
- Oka, Masayoshi: See—  
Mizushima, Yoshihiko; Takeda, Akitsu; Komiya, Kazumi; Sakaue, Masahiro; Ogino, Toshio; Itoh, Hideo; and Oka, Masayoshi, 4,341,954, Cl. 250-211.00J.
- Okabe, Masao: See—  
Sugio, Akitoshi; Masu, Masanobu; Okabe, Masao; Matunaga, Masatugu; and Ishiyama, Kozo, 4,341,879, Cl. 524-91.000.
- Okamoto, Kouichi: See—  
Oishi, Norio; Okamoto, Kouichi; Furukado, Shoji; and Sakuyama, Masaki, 4,341,093, Cl. 62-505.000.
- Okano, Sadao; and Homma, Hideo, to Hitachi, Ltd. Method of manufacturing semiconductor device, 4,341,011, Cl. 29-590.000.
- Okazaki, Hiroshi: See—  
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,341,776, Cl. 424-246.000.
- Okuo, Takayasu; Masaki, Takaki; and Kobayashi, Keisuke, to Agency of Industrial Science & Technology; Ministry of International Trade & Industry; and Toray Industries, Inc. Composite electrode and insulating wall elements for magnetohydrodynamic power generating channels characterized by fibers in a matrix, 4,341,965, Cl. 310-11.000.
- Oliif, James R., to Mead Corporation, The. Wrap-around carrier, 4,341,309, Cl. 206-429.000.
- Olin Corporation: See—  
Visger, Robert L.; and Plano, Mark A., 4,341,875, Cl. 521-164.000.
- Oliver, H. LeRoy: See—  
Knowles, William F.; Knowles, Larry F.; and Oliver, H. LeRoy, 4,341,420, Cl. 297-280.000.
- Olson, Theodore V. Pronounced flexure coupling devices for elongate irrigation pipes, 4,341,405, Cl. 285-5.000.
- Olszewski, Daniel P., to Ego Lures Company. Fishing lure with inherent orienting ballast, 4,341,032, Cl. 43-42.450.
- Olympic Fishing Tackles Co., Ltd.: See—  
Kawada, Minoru, 4,341,366, Cl. 242-220.000.
- Olympus Optical Co., Ltd.: See—  
Hosono, Saburo; and Miyamoto, Yoshihiko, 4,341,205, Cl. 128-6.000.
- Osana, Akira, 4,341,981, Cl. 318-6.000.
- Osana, Akira, 4,342,055, Cl. 360-69.000.
- Osana, Akira, 4,342,058, Cl. 360-96.500.
- Sato, Masanobu; and Fukuoka, Norio, 4,342,106, Cl. 369-7.000.
- Omura, Takashi: See—  
Tezuka, Yasuo; Sunami, Masaki; Omura, Takashi; and Kayane, Yutaka, 4,341,699, Cl. 260-153.000.
- Onaka, Hidemi: See—  
Ishikawa, Norikatsu; Obata, Haruyuki; Onaka, Hidemi; Tate, Takao; Tanahashi, Toshio; and Hagino, Isamu, 4,341,190, Cl. 123-439.000.
- O'Neill, Brian C.: See—  
Caccoma, George A.; Koestner, Joseph H.; O'Neill, Brian C.; and Tappen, Frank M., 4,342,090, Cl. 364-491.000.
- Onischak, Michael: See—  
Gidaspow, Dimitri; Lavan, Zalman; and Onischak, Michael, 4,341,539, Cl. 55-278.000.
- Ono, Hiromi: See—  
Miyazaki, Takeshi; and Ono, Hiromi, 4,341,177, Cl. 114-125.000.
- Ono, Tsuyoshi: See—  
Kitamura, Masatsugu; Ono, Tsuyoshi; and Onoye, Hideo, 4,342,108, Cl. 369-216.000.
- Kitamura, Masatsugu; Onoye, Hideo; Ohno, Fumiaki; Ono, Tsuyoshi; Kishima, Yukihiro; and Morita, Yutaka, 4,342,110, Cl. 369-252.000.
- Onoye, Hideo: See—  
Kitamura, Masatsugu; Ono, Tsuyoshi; and Onoye, Hideo, 4,342,108, Cl. 369-216.000.
- Kitamura, Masatsugu; Onoye, Hideo; Ohno, Fumiaki; Ono, Tsuyoshi; Kishima, Yukihiro; and Morita, Yutaka, 4,342,110, Cl. 369-252.000.
- Ootsuka, Yoshinori: See—  
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,341,189, Cl. 123-425.000.
- Origin Electric Co., Ltd.: See—  
Mizushima, Yoshihiko; Takeda, Akitsu; Komiya, Kazumi; Sakaue, Masahiro; Ogino, Toshio; Itoh, Hideo; and Oka, Masayoshi, 4,341,954, Cl. 250-211.00J.
- Orlowski, Gerald J.; and Dugle, Thomas E., to Armour and Company. Cage for compressing food articles, 4,341,154, Cl. 100-194.000.
- Oronzio de Nora Impianti Elettrochimici S.p.A.: See—  
DeNora, Oronzio; and Spaziente, Placido M., 4,341,604, Cl. 204-98.000.
- Orrison, William W. Air foil with reversible camber, 4,341,176, Cl. 114-102.000.
- Orsborn, Jesse H.: See—  
Fachini, Robert M.; Covington, Michael J.; and Orsborn, Jesse H., 4,341,423, Cl. 298-18.000.
- Osana, Akira, to Olympus Optical Co., Ltd. Rotary direction reversing apparatus for a motor of a microcassette tape transport, 4,341,981, Cl. 318-6.000.
- Osana, Akira, to Olympus Optical Co., Ltd. Automatic reverse tape recorder, 4,342,055, Cl. 360-69.000.
- Osana, Akira, to Olympus Optical Co., Ltd. Apparatus for running magnetic tapes, 4,342,058, Cl. 360-96.500.
- Oscarson, Rolf A., to Strimbeck, Davis & Soloway, a part interest. Manufacture of hollow fiber fluid fractionating cells, 4,341,005, Cl. 29-411.000.
- Ose, Earl E.; and Kirst, Herbert A., to Eli Lilly and Company. Method of controlling ureaplasma infections, 4,341,770, Cl. 424-181.000.
- Ose, Earl E.: See—  
Kirst, Herbert A.; and Ose, Earl E., 4,341,771, Cl. 424-181.000.
- Oshima, Kazunori: See—  
Kageyama, Yoichi; Hatano, Masakatsu; Koyama, Toru; Kaneko, Takao; Murayama, Masayosi; and Oshima, Kazunori, 4,341,659, Cl. 252-435.000.
- Osuka, Tatsumi: See—  
Matsubara, Hiroyoshi; Takeshige, Kenji; Osuka, Tatsumi; Nagamine, Takashi; Hirano, Osamu; Tanaka, Jinkichi; Watanabe, Itaru; and Suzuki, Motoaki, 4,341,938, Cl. 219-61.000.
- Otake, Kisaburo: See—  
Uchida, Tomio; and Otake, Kisaburo, 4,341,026, Cl. 37-117.500.
- Otani, Masato: See—  
Ishii, Hiromichi; Matsuzawa, Hideo; Kobayashi, Masao; and Otani, Masato, 4,341,900, Cl. 562-532.000.
- Otter Controls Limited: See—  
Foster, Terance J. C., 4,341,932, Cl. 200-74.000.
- Otting, Billy J., to Otting Machine Company, Inc. Jet pattern dyeing of material, particularly carpet, 4,341,098, Cl. 68-205.00R.
- Otting Machine Company, Inc.: See—  
Otting, Billy J., 4,341,098, Cl. 68-205.00R.
- Outboard Marine Corporation: See—  
Nerstrom, James S., 4,341,188, Cl. 123-324.000.
- Ovshinsky, Stanford R.; and Izu, Masatsugu, to Energy Conversion Devices, Inc. Method for optimizing photoresponsive amorphous alloys and devices, 4,342,044, Cl. 357-2.000.
- Owens-Corning Fiberglas Corporation: See—  
Kopena, David M., 4,341,003, Cl. 29-239.000.
- Vermillion, Donn R.; and Hammond, Donald J., 4,341,674, Cl. 524-156.000.
- Owens-Illinois, Inc.: See—  
Arnold, Emmons S., deceased, 4,341,338, Cl. 229-23.0BT.
- Smalley, Ned J., 4,341,318, Cl. 215-225.000.
- Taylor, Lynn J.; and Grier, John D., 4,341,820, Cl. 427-226.000.
- Oy Partek Ab: See—  
Laitinen, Heikki, 4,341,500, Cl. 414-498.000.
- OY, Tampella AB: See—  
Anttila, Antero, 4,341,271, Cl. 175-24.000.
- Oy Wartsila Ab: See—  
Koutonen, Pauli, 4,341,586, Cl. 156-518.000.
- Ozeki, Kenichi; Wada, Toyoji; Ito, Kunio; Tomimori, Tetsuo; Takagi, Isao; and Nekado, Mitsunobu, to Tokyo Shibaura Denki Kabushiki Kaisha. Peelable film-forming urethane/isocyanate paints, 4,341,687, Cl. 524-500.000.
- Pack River Management Company: See—  
Critchell, Kenneth G.; and Brown, James M., Jr., 4,341,248, Cl. 144-378.000.
- Paerels, Gerard B.: See—  
van Gilse, Jaap; and Paerels, Gerard B., 4,341,548, Cl. 71-67.000.
- Pako Corporation: See—  
Rubin, Barry P., 4,341,453, Cl. 354-298.000.
- Stewart, James F., 4,341,465, Cl. 355-36.000.
- Palermi, Frank M.; and Schley, Ronald F., to Exxon Research & Engineering Co. Sheet feeding for a facsimile system with anti-static electricity additive, 4,342,043, Cl. 346-163.000.

- Pallos, Ferenc M.; Brokke, Mervin E.; and Arneklev, Duane R., to Stauffer Chemical Company. Herbicide compositions, 4,341,550, Cl. 71-88.000.
- Palmer, John R.; and Rowlands, Kenneth C., to Remington Arms Company, Inc. Percussion firing mechanism for industrial guns, 4,341,031, Cl. 42-23.000.
- Palmer, Walter E.: See—  
Gallant, Stuart L.; Woods, Samuel; and Palmer, Walter E., 4,341,225, Cl. 128-710.000.
- Pampalone, Thomas R., to RCA Corporation. Aqueous developable poly(olefin sulfone) terpolymers, 4,341,861, Cl. 430-296.000.
- Pangburn, William W., to General Electric Co. Laminated dynamoelectric machine rotor having cast conductors and radial coolant ducts and method of making same, 4,341,966, Cl. 310-61.000.
- Pappas, Michael J.: See—  
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- Kuemmerer, Helmut; Moser, Theo; and Genstorfer, Adolf, 4,341,329, Cl. 222-275.000.
- Plapp, Gunther, 4,341,114, Cl. 73-118.000.
- Robertson, Dale N.; and Braun, John, to Population Council, Inc., The. Method for making an IUD with shrinking of a medicated attachment onto a support. 4,341,728, Cl. 264-161.000.
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- Robinson, Frank: See—  
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- Robinson, Jerrold, to Dimension Weld International Corp., The. Light reflective safety device. 4,341,443, Cl. 350-98.000.
- Robinson, Morton; Pastor, Ricardo C.; and Braunstein, Morris, to Hughes Aircraft Company. Fluorozirconate, glass and the process for making the same. 4,341,873, Cl. 501-40.000.
- Roccaforte, Harry I., to Champion International Corporation. Take out carton and blank for forming same. 4,341,341, Cl. 229-39.00R.
- Rockwell International Corporation: See—  
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- Stodola, Kevin C., 4,342,112, Cl. 371-68.000.
- Rockwool AB: See—  
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- Rodgers, Douglas N.; Siegler, Manfred; and Shen, David Y. H., to General Electric Company. Automatic sampling apparatus. 4,341,124, Cl. 73-863.010.
- Rodgers, Larry C., to Honeywell Inc. Shorting and test mechanism for electrostatic air cleaner. 4,341,537, Cl. 55-139.000.
- Rodriguez, Regino: See—  
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- Rodriguez, Rodolfo R.: See—  
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- Roehl, Ernest O., to Rho-Chem Corporation. Method of vapor degreasing. 4,341,567, Cl. 134-11.000.
- Roesch, Hansjoerg; and Eberle, Helmut, to Siemens Aktiengesellschaft. Device for the detection of and defense against masked helicopters. 4,342,032, Cl. 343-6.0ND.
- Roggeveen, Robert P.: See—  
Hinze, Adrien G.; Roggeveen, Robert P.; and Meulenberg, Abraham J., 4,341,670, Cl. 528-338.000.
- Rohner, Karl, to Kempf & Co. AG. Forder- und Lagertechnik. Snow treatment apparatus for grooming skiing slopes, trails or the like and a method of operating same. 4,341,027, Cl. 37-197.000.
- Rojeay, Alexandre; and Cohen, Georges, to Institut Francais du Petrole. Cold and/or heat production involving an absorption cycle and its use for heating buildings. 4,341,084, Cl. 62-101.000.
- Rolle-Werke Franke & Heidecke GmbH & Co. KG: See—  
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- Roosa, Vernon D.; and Roosa, Peter V. Flushing means. 4,341,238, Cl. 137-414.000.
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- Rosenbaum, Walter S.: See—  
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- Rosenberry, George M., Jr.: See—  
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- Rosenhauch, Irwin: See—  
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- Rosinski, Edward J.: See—  
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- Rosner, Ortwin: See—  
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- Rossi, Giovanni, to R.B.M. S.r.l. Vehicle burglar alarm apparatus with electronic memory and digital disabling combination. 4,342,024, Cl. 340-64.000.
- Rosswurm, Mark A.; and Urish, Joseph M., to Westinghouse Electric Corp. Transistor turn off current sensing circuit. 4,342,076, Cl. 363-56.000.
- Rotella, Thomas B. Car ramp and supporting device. 4,341,371, Cl. 254-88.000.



- Roth, Carl W.: See—  
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- Rotondi, Frank A.; and Salley, Howard W. Cleaning system for chimneys. 4,340,989, Cl. 15-249.000.
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Abbes, Claude; de Villepoix, Raymond; and Rouaud, Christian, 4,341,406, Cl. 285-408.000.
- Rovnyak, George C., to E. R. Squibb & Sons, Inc. Bis-(amidine phenyl)cyclohexanecarboxylic acid ketones, compositions containing same and method of use. 4,341,797, Cl. 424-319.000.
- Rowlands, Kenneth C.: See—  
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- Rowley, Kathryn E., to Braun, Barbara J. Child restraining article. 4,341,421, Cl. 297-465.000.
- Roy, Armand W., to Royal Hinge & Die Co., Inc. Article holder and method of manufacture thereof. 4,341,300, Cl. 206-45.140.
- Royal Hinge & Die Co., Inc.: See—  
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- Royer, Rene R.; and Buisson, Jean-Pierre, to Agence Nationale de Valorisation de la Recherche. 2-Nitronaphtofuran derivatives and use as cell growth regulators. 4,341,794, Cl. 424-285.000.
- Rubin, Barry P., to Pako Corporation. Photographic film type sensor. 4,341,453, Cl. 354-298.000.
- Rubin, Mac K.: See—  
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- Ruble, Charles H.: See—  
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- Rudish, Ronald M.; and McVeigh, Peter J., to Eaton Corporation. High accuracy phase shift control system. 4,341,999, Cl. 328-155.000.
- Ruffing, Sharon L.; Burg, Wallace E.; and Mikhail, Ezzat A., to Minnesota Mining and Manufacturing Co. 4-Alkylthio-2-trifluoromethylalkanesulfonamides and derivatives thereof. 4,341,901, Cl. 564-99.000.
- Ruhenstroth-Bauer, Gerhard; Goldberg, Michel; Silz, Siegfried; and Strecker, Wolfgang, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften E.V. Drug for enhancing liver growth and method of preparing same. 4,341,765, Cl. 424-101.000.
- Rule, Charles E., to SCM Corporation. Fluid non-dairy creamer. 4,341,811, Cl. 426-602.000.
- Rusch, Reinhart: See—  
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- Russell, Stephen R.: See—  
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- Rustin, Francis; and Keller, Morris C. Animal watering apparatus. 4,341,182, Cl. 119-75.000.
- Ryan, John E., to Autopost International, Inc. Guidepost for parking vehicles. 4,341,488, Cl. 404-10.000.
- S-B Manufacturing Co., Ltd.: See—  
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- S. C. Johnson & Son, Inc.: See—  
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- Saari, Veikko R., to Bell Telephone Laboratories, Incorporated. Operational amplifier with increased settling speed. 4,342,003, Cl. 330-253.000.
- Safrit, Sam C.; Farrell, Roscoe M.; and Shields, Harper, to Kayser-Roth Hosiery, Inc. Sock with triple layer fabric in foot and method. 4,341,096, Cl. 66-185.000.
- Safrit, Sam C.: See—  
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- St. Denis, Joseph F. Method for grinding thread cutting tools. 4,341,047, Cl. 51-288.000.
- St. John, Eric P. Energy conserving heating and cooling system for printing plant. 4,341,167, Cl. 110-235.000.
- St. John, Michael R., to Institute of Gas Technology. Hydrogen production by biomass product depolarized water electrolysis. 4,341,608, Cl. 204-129.000.
- Saito, Masumi; Hirai, Eiichi; Endo, Masao; and Nishino, Toru, to Kurashiki Boseki Kabushiki Kaisha. Waterproof gypsum molded product. 4,341,560, Cl. 106-87.000.
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- Sakai, Shinji; Shinoda, Nobuhiko; Kinoshita, Takao; Kawabata, Takashi; Kitagishi, Nozomu; Hosoe, Kazuya; and Ito, Tadashi, to Canon Kabushiki Kaisha. Focus detecting system. 4,341,953, Cl. 250-204.000.
- Sakakibara, Kyoichi; Manita, Hideaki; Gondo, Masaki; and Yamashita, Haruo, to Teikoku Hormone Mfg. Co., Ltd. Immunochemical assay reagent for the determination of haptens, and assay method thereof. 4,341,758, Cl. 424-12.000.
- Sakamoto, Kunji, to Matsushita Seiko Co., Ltd. Electric fan. 4,341,151, Cl. 98-94.00R.
- Sakamoto, Masaaki, to Kabushiki Kaisha Komatsu Seisakusho. Control system for a hydraulically driven vehicle. 4,341,133, Cl. 74-733.000.
- Sakata, Kazuhiro: See—  
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- Sakuyama, Masaki: See—  
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- Saladin, Josef, to Burgel AG. Apparatus for driving a rigid body for the purposes of producing a tumbling movement during rotation of the body. 4,341,475, Cl. 366-211.000.
- Salladay, James O. Log-splitting attachment device. 4,341,246, Cl. 144-193.00A.
- Salley, Howard W.: See—  
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- Saltz, Ivan K.: See—  
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- Sammells, Anthony F., to Institute of Gas Technology. Electrochemical zinc-oxygen cell. 4,341,847, Cl. 429-27.000.
- Sanada, Kokichi, to Fuji Seiko Kabushiki Kaisha. Typewriter ribbon cartridge actuating device for portable typewriter. 4,341,479, Cl. 400-208.000.
- Sand and Sea Industries, Inc.: See—  
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- Sandberg, Karen R.: See—  
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- Sandberg, Torvald; and Forsberg, Stig, to Elmekano i Lulea AB. Device for phase compensation and excitation of an asynchronous machine operating as a generator. 4,341,989, Cl. 322-95.000.
- Sandoz Ltd.: See—  
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- Sanford Research Company: See—  
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Wollensak, Daniel W., 4,341,482, Cl. 401-251.000.
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- Santora, Scott A., to Waste Conversion Technology, Inc. Wastewater treatment. 4,341,639, Cl. 210-673.000.
- Santoro, Arnold D. Detachable zero-set scope mount for hand guns and other firearms. 4,341,022, Cl. 33-245.000.
- Sarsten, Jan A.; Heinzlmann, Fred J.; and Cataneo, Ferdinand C., to Exxon Research & Engineering Co. Removal of degradation product from gas treating solution. 4,341,746, Cl. 423-228.000.
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- Sassiver, Martin L.; and Boothe, James H., to American Cyanamid Company. 6-[D- $\alpha$ -(Coumarin-3-carboxamido)arylacetamido]-penicillanic acids or salts. 4,341,703, Cl. 260-239.100.
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- Inukai, Takashi; Furukawa, Kenji; Sugimori, Shigeru; and Sato, Hideo, 4,341,653, Cl. 252-299.630.
- Sato, Hiroshi, to Daiichi Electric Co. Ltd. Multifarious boring device. 4,342,088, Cl. 364-474.000.
- Sato, Kozo: See—  
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- Sato, Masanobu; and Fukuoka, Norio, to Olympus Optical Company, Ltd. Remotely controllable voice-operated starter for tape recorder. 4,342,106, Cl. 369-7.000.

- Sato, Yukihiro: See—  
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- Sauder, Walter J. Body cell therapeutic device. 4,341,380, Cl. 272-65.000.
- Sauer, Donald J., to RCA Corporation. Differential amplifier having a low-pass characteristic. 4,342,001, Cl. 330-9.000.
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- Savin Corporation: See—  
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- Sberze, Piero: See—  
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- Scarella, Robert A.: See—  
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- Schaar, Charles H., to Kendall Company. The Adhesive bandage with foam backing. 4,341,209, Cl. 128-156.000.
- Schaefer, James R.; and Radtke, Leland J., to United Technologies Corporation. Flow divider for liquid coolant or lubricant. 4,341,296, Cl. 192-113.00B.
- Schaffer, Helmut; and Unger, Manfred, to Hoechst Aktiengesellschaft. Forgery-resistant film. 4,341,833, Cl. 428-212.000.
- Schaller, Maurice; Debs, Victor; Abate, Leo; Dodich, James; Rodriguez, Regino; and Anderle, Joseph A., to Levolor Lorentzen, Inc. Frame for a venetian blind. 4,341,254, Cl. 160-172.000.
- Schaller, Ronald W., to Seltrust Engineering Limited. Position or movement sensor, e.g. for conveyances such as lifts. 4,342,021, Cl. 340-38.00L.
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- Scheckel, Sara E.: See—  
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- Scheingold, William S.: See—  
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- Scherian, Gabriel B.; Scheingold, William S.; and Youngfleish, Frank C., 4,341,433, Cl. 339-176.0MP.
- Schellas, Peter: See—  
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- Schenk, Doris. Decorative canopy means for toilet tissue roll mounting. 4,341,252, Cl. 160-45.000.
- Schepers, Herman A. J., to Stamicarbon, B.V. Polymer composition. 4,341,884, Cl. 525-211.000.
- Schepers, Herman A. J., to Stamicarbon, B.V. Polymer composition. 4,341,885, Cl. 525-211.000.
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- Scheurecker, Werner; Wirth, Josef; and Angerer, Reinhold, to Voest-Alpine Aktiengesellschaft. Arrangement for locating rollers with an increased rotatory resistance in a roller way. 4,341,257, Cl. 164-150.000.
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- Schley, Ronald F.: See—  
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- Schmid, Franz J., to Sistig Corporation. Method and apparatus for controlling tension in a moving material. 4,341,335, Cl. 226-195.000.
- Schmidt, Paul J.; and Hung, William M. W., to Sterling Drug Inc. Systems employing indole color formers. 4,341,402, Cl. 282-27.500.
- Schneider, Gottfried; Wagner, Kuno; and Muller, Hanns P., to Bayer Aktiengesellschaft. Preparation of low molecular weight polyhydroxyl compounds. 4,341,909, Cl. 568-863.000.
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- Schneider, Timothy L.: See—  
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- Schobl, Howard T., to Schobl Enterprises. Temperature verification apparatus. 4,341,118, Cl. 116-221.000.
- Scholer, Arno. Holder for small instruments such as dental instruments. 4,341,312, Cl. 211-60.00T.
- Scholz, John A.; and English, George J., to GTE Products Corporation. Subminiature photoflash lamp having light-emitting pyrotechnic charge. 4,341,513, Cl. 431-362.000.
- Schreffler, Dean A.; and Noonan, Charles M., to Polymer Corporation. The Epoxy coating powders with wrinkle finishes. 4,341,819, Cl. 427-195.000.
- Schreyer, Gerd: See—  
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- Schroeder, James C., to Manitowoc Company, Inc., The. Cable drum rotation indicator. 4,342,028, Cl. 340-407.000.
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- Schulte-Elte, Karl-Heinrich; Hauser, Arnold; and Ohloff, Gunther, to Firmenich SA. Pyranic derivatives for use in the preparation of muscone. 4,341,897, Cl. 549-355.000.
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- Schultz, Erhard, to Tondeo-Werk GmbH. Container for storing shaving blade units. 4,341,305, Cl. 206-350.000.
- Schulz, Donald A., to S-B Manufacturing Co., Ltd. Sliding door spacer. 4,341,042, Cl. 49-404.000.
- Schumacher, John C. Energy efficient process for continuous production of thin semiconductor films on metallic substrates. 4,341,610, Cl. 204-206.000.
- Schurmeyer, Paul: See—  
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- Schwarz, Karl E. Garment bag bottom sealing machine for the garment manufacturing and dry cleaning industries. 4,341,583, Cl. 156-359.000.
- SCM Corporation: See—  
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- Scott, William G.; and Luh, Howard H., to Ford Aerospace & Communications Corporation. Multiple frequency band, multiple beam microwave antenna system. 4,342,036, Cl. 343-836.000.
- Scotten, Lawrence N.: See—  
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- Scudder, Roy, to FMC Corporation. Coffee harvester. 4,341,062, Cl. 56-330.000.
- Seabold, Thomas W.; Patterson, Richard A.; and de Neui, Richard P., to Minnesota Mining and Manufacturing Company. Devices for imparting curl to tapes. 4,341,585, Cl. 156-443.000.
- Sebel, Harry. Stackable chair with arm rests. 4,341,419, Cl. 297-239.000.
- Seeling, John A., to Anderson Engineers, Inc. Water table with low profile conveyor system. 4,341,374, Cl. 266-49.000.
- Seidl, Jiri: See—  
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- Seidl, Loren R., to United States of America, Air Force. Multi-tone jammer. 4,342,119, Cl. 455-1.000.
- Seifert, Hermann: See—  
Hofen, Willi; Klenk, Herbert; Schreyer, Gerd; Weiberg, Otto; Waldmann, Helmut; Seifert, Hermann; Reissinger, Karl-Hermann; and Swodenk, Wolfgang, 4,341,709, Cl. 549-272.000.
- Seifried, Paul E., to American Cyanamid Company. Sample carrier material handling apparatus. 4,341,735, Cl. 422-66.000.
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- Sekmakas, Kazys; Shah, Raj; and Parenti, Aurelio J., to De Soto, Inc. Mannich base copolymers. 4,341,681, Cl. 524-555.000.
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- Senaha, Susumu: See—  
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- Senior, Robert B.: See—  
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- Sera, Hidefumi: See—  
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- Settemire, David J.; Ide, John D.; and Novo, Mario C., to Bendix Corporation. The Squelch system for use in a multiple carrier AM communications systems receiver. 4,342,120, Cl. 455-222.000.
- Sexton, Richard W.; and Goddard, David M., to Material Concepts, Inc. Method of fabricating a fiber reinforced metal composite. 4,341,823, Cl. 427-404.000.
- Seynhaeve, Andre G., to Societe Delsey. Object intended to be held in the hand, in particular a suitcase handle, and a process for manufacturing same. 4,340,990, Cl. 16-126.000.
- Shaffer, John W.: See—  
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- Shah, Dinubhai H.: See—  
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- Shames, Harold: See—  
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- Shank, Joseph L., to Dynagel Incorporated. Gelled gelatin food product prepared from non-gelled aqueous gelatin compositions. 4,341,810, Cl. 426-576.000.
- Shanks, Douglas G. Standoff for two component lining and method of installation. 4,341,514, Cl. 432-3.000.
- Shanks, Ian A., to National Research Development Corporation. Analogue displays for electronic timepieces or meters. 4,342,030, Cl. 340-753.000.
- Sharbaugh, John E.; and Kazan, Joseph M., to Westinghouse Electric Corp. Nuclear reactor dip seal. 4,341,732, Cl. 376-206.000.
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- Shaw, Robert G., to Commonwealth Industrial Gases Limited, The. Method for refrigeration. 4,341,080, Cl. 62-64.000.
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Barnett, Gary A.; and Shealy, James P., Jr., 4,341,832, Cl. 428-196.000.
- Shell Oil Company: See—  
Walker, Bruce H.; and Feenstra, Robijn, 4,341,273, Cl. 175-339.000.
- Shen, David Y. H.: See—  
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- Shepard, Joseph F.: See—  
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- Shepherd, Michael; and Bremer, Robert C., Jr., to Wallace Murray Corporation. Dust and oil slinger. 4,341,130, Cl. 74-574.000.
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- Shimanuki, Masanobu: See—  
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- Shimbo, Masaru: See—  
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- Shimomura, Susumu: See—  
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- Shindo, Minoru: See—  
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- Shinn, Thomas W.: See—  
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- Shinoi, Tsuyoshi; and Hamatani, Fumikazu, to TIE/Communications, Inc.; and Nippon Tsushin Kogyo K.K. Data transmission apparatus. 4,341,927, Cl. 179-2.0DP.
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- Shionozaki, Yoshio: See—  
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- Shirai, Masanari: See—  
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- Shoji, Shigemasa, to TDK Electronics Co., Ltd. Hub for magnetic tape. 4,341,358, Cl. 242-74.100.
- Shortes, Samuel R.; and Penn, Thomas C., to Texas Instruments Incorporated. Method for removing photoresist layer from substrate by ozone treatment. 4,341,592, Cl. 156-643.000.
- Shyers, Richard H. Container having interlocking base and closure. 4,341,307, Cl. 206-387.000.
- Siahou, Joseph. Sound-producing toothbrush assembly. 4,341,230, Cl. 132-84.00B.
- Sidler, Kurt, to Gottlieb Johner. Band saw. 4,341,138, Cl. 83-820.000.
- Siebert, Louie P. System for applying ammonia to the ground. 4,341,168, Cl. 111-7.000.
- Siegel, David B. Releasing and resetting mechanism for use in a rat trap. 4,341,033, Cl. 43-81.000.
- Siegler, Manfred: See—  
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- Siemens Aktiengesellschaft: See—  
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- Grabmaier, Josef, 4,341,589, Cl. 156-606.000.
- Haidinger, Erich, 4,341,013, Cl. 29-854.000.
- Lauterbach, Richard; and Keller, Hartmut, 4,341,816, Cl. 427-34.000.
- Roesch, Hansjoerg; and Eberle, Helmut, 4,342,032, Cl. 343-6.0ND.
- Schedele, Helmut, 4,342,019, Cl. 337-274.000.
- Utner, Ferdinand; Vetter, Harald; and Nutz, Ludwig, 4,342,020, Cl. 338-314.000.
- Waerve, Hans, 4,341,279, Cl. 180-19.00S.
- Siemens Medical Laboratories, Inc.: See—  
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- Sievert, Dale W., to Honeywell Inc. Direct current motor with improved pole piece that reduces cogging. 4,341,969, Cl. 310-154.000.
- SIG Societe Industrielle Suisse: See—  
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- Sigisawa, Ko: See—  
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- Signetics Corporation: See—  
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- Silz, Siegfried: See—  
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- Sim, William J.; and Marth, Ronald M. Building structure and process of beam assembly therein. 4,341,051, Cl. 52-702.000.
- Simeth, Claus, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Vibration-absorbing cylinder for printing presses. 4,341,157, Cl. 101-375.000.
- Simmons, Kate A.: See—  
Gadsby, Bruce; and Simmons, Kate A., 4,341,806, Cl. 426-511.000.
- Simpson, Damon G., to Raychem Corporation. Composite connector having heat shrinkable terminator. 4,341,921, Cl. 174-84.00R.
- Simpson, Victor J., to Alcan Aluminium (U.K.) Ltd. Radiators for use in hot water central heating systems. 4,341,346, Cl. 237-70.000.
- Singer Company, The: See—  
Beckerman, Howard L.; and Pepe, Russell J., 4,341,170, Cl. 112-158.00E.
- Johnson, Ralph E., 4,341,171, Cl. 112-250.000.
- Singer, Reginald D.; Holden, Brian J.; and Hughes, John H., to Dunlop Limited. Method of and apparatus for impregnating fabric reinforcement structures with a liquid impregnant. 4,341,822, Cl. 427-389.900.
- Singleton, Peter A., to Elliott Brothers Limited. Mirror mounting arrangement for a laser. 4,342,117, Cl. 372-107.000.
- Sistig Corporation: See—  
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- Skeist, S. Merrill: See—  
Gross, Leo; and Skeist, S. Merrill, 4,341,977, Cl. 313-485.000.
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- Skorianetz, Werner; and Ohloff, Gunther, to Firmenich SA. Perfuming with oxygen containing derivatives of tricyclo[6.2.1.0<sup>2,7</sup>]undecane. 4,341,666, Cl. 252-522.00R.
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- Small, James E., to Emhart Industries, Inc. Voltage level detector for battery charger control circuit. 4,341,988, Cl. 320-31.000.
- Smalley, Ned J., to Owens-Illinois, Inc. Closure with child-resistant tamper-proof band. 4,341,318, Cl. 215-225.000.
- Smart, J. David: See—  
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- Smead, Robert G.: See—  
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- Smith, Gareth J. Dimpler attachment and improved fastener driving tool. 4,341,336, Cl. 227-66.000.
- Smith, George W., to Lucas Industries Limited. Disc brakes. 4,341,289, Cl. 188-73.390.
- Smith Kline & French Laboratories Limited: See—  
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- Smith, Peter B. Removing and collecting oil. 4,341,637, Cl. 210-662.000.
- Smith, Ronald W. Cabinet. 4,341,040, Cl. 47-73.000.
- Smith, William C.: See—  
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- SmithKline Corporation: See—  
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- Snary, David, to Burroughs Wellcome Co. Antigenic material. 4,341,697, Cl. 260-112.00R.
- Snelgrove, James A., to Monsanto Company. Printing ink formulations. 4,341,683, Cl. 524-503.000.
- Snyder, Fred W.: See—  
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- Societe Anonyme dite: Delle-Alsthom: See—  
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- Societe Anonyme dite: Les Cables de Lyon: See—  
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- Societe d'Etudes de Machines Thermiques S.E.M.T.: See—  
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- Sockell, Edward J.: See—  
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- Sofrance S.A.: See—  
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- Solenberger, John C.; and Withers, Michael S., to Du Pont de Nemours, E. I., and Company. Process for cation permeable membrane with reinforcement fabric embedded therein and product thereof. 4,341,605, Cl. 204-98.000.
- Solenthaler, Karl, to Gebrueder Buehler AG. Contrivance for shelling a granular product. 4,341,152, Cl. 99-609.000.
- Sollich, Helmut, to SOLLICH KG Spezialmaschinenfabrik. Apparatus for treating materials containing cocoa butter. 4,341,476, Cl. 366-293.000.
- SOLLICH KG Spezialmaschinenfabrik: See—  
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- Solomon, Laura B. Psychotherapeutic device. 4,341,521, Cl. 434-236.000.
- Sony Corporation: See—  
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- Sorrells, Frank D., to Cole National Corporation. Adapter chuck for mounting lens blanks. 4,341,045, Cl. 51-216.0LP.
- Southerlin, William F.; and Eschenbach, Paul W., to Milliken Research Corporation. Air textured yarns. 4,341,063, Cl. 57-6.000.
- Sovak, Milos; and Ranganathan, Ramachandran, to University of California, The Regents of the. Novel amino-dioxepane intermediates for the synthesis of new non-ionic contrast media. 4,341,756, Cl. 424-5.000.
- Spallholz, Julian E., to Nutrition 21. Stable isotopic immunoassay method employing non-radioactive selenium label. 4,341,757, Cl. 424-8.000.
- Spalti, Max; and Vanek, Vladimir, to SSIG Equipment S.A. Arrangement for determining the position, especially the angular position, of a movable body. 4,342,025, Cl. 340-347.00P.
- Sparkes, Charles J.: See—  
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- Spaziente, Placido M.: See—  
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- Specht, Donald P.: See—  
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- Spencer, William R.; and Freberg, Dana D., to General Electric Company. Adjustable connecting apparatus. 4,341,483, Cl. 403-4.000.
- Sperry Corporation: See—  
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- McDevitt, Bernard J., 4,342,096, Cl. 364-900.000.
- Nelson, Gary L.; and Harvey, William A., 4,341,590, Cl. 156-624.000.
- Spivey, William J., Jr., to Caterpillar Tractor Co. Control circuit for variable displacement pumps with override valve. 4,341,073, Cl. 60-399.000.
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- Staats, James E., to General Electric Company. Microwave oven cooking progress indicator. 4,341,937, Cl. 219-10.55M.
- Stackpole Components Company: See—  
Joemans, Leo J. M., 4,341,935, Cl. 200-252.000.
- Stadler, Eberhard; and Melcher, Franz-Josef, to Sartorius GmbH. Measuring apparatus with electromagnetic force compensation and capacitive position sensor. 4,341,275, Cl. 177-212.000.
- Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Hoefke, Wolfgang; and Pichler, Ludwig, to C. H. Boehringer Sohn. 2-(2-Chloro-4-cyclo-
- propyl-phenyl-imino)-imidazolidine, and acid addition salts thereof as bradycardics. 4,341,788, Cl. 424-273.00R.
- Stamcarbon, B.V.: See—  
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- Schepers, Herman A. J., 4,341,885, Cl. 525-211.000.
- Stanadync, Inc.: See—  
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- Stanciliffe, A. Colin: See—  
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- Standard Oil Company, The: See—  
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- Eskamani, Abolghassem; and Derner, Helen D., 4,341,609, Cl. 204-132.000.
- Kiikka, Oliver A.; and Connors, Keith A., 4,341,751, Cl. 423-461.000.
- Landis, Norris J., 4,341,640, Cl. 210-752.000.
- Wu, Hsin-Chih; and Sockell, Edward J., 4,341,535, Cl. 55-85.000.
- Standard Oil Company (Indiana): See—  
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- Bertolacini, Ralph J.; and Forsythe, William L., Jr., 4,341,660, Cl. 252-455.00Z.
- Stanson, Mark V.; and Riley, Garth I., to Northern Telecom Limited. Ringing signal supply. 4,341,928, Cl. 179-51.0AA.
- Starace, Jeremia P., to Bell Telephone Laboratories, Incorporated. Adjustable cable clamp. 4,340,996, Cl. 24-20.00R.
- Staron, John C., to Bendix Corporation, The. Chuck assembly and collet. 4,341,006, Cl. 29-434.000.
- Stauffer Chemical Company: See—  
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- Jung, Alfred K.; Turczyk, Michael; and Weil, Edward D., 4,341,692, Cl. 524-263.000.
- Large, George B.; and Buren, Lawrence L., 4,341,549, Cl. 71-86.000.
- Pallos, Ferenc M.; Brokke, Mervin E.; and Arneklev, Duane R., 4,341,550, Cl. 71-88.000.
- Tilles, Harry, 4,341,702, Cl. 260-239.0BF.
- Stauffer, Howard V., to Valmont Industries, Inc. Apparatus and method for reducing the waste of welding gas. 4,341,237, Cl. 137-382.500.
- Steer, Peter L.; and Mathews, Howard, to Kingsdown Medical Consultants Limited. Wound dressing. 4,341,207, Cl. 128-155.000.
- Steeley Engineering Limited: See—  
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- Steffan, Guido: See—  
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- Steffes, Helmut, to ITT Industries, Inc. Hydraulic brake booster. 4,341,076, Cl. 60-547.00R.
- Steiner, Herbert; and Magg, Johann, to Bosch-Siemens Hausgerate GmbH. Electrical heating apparatus with a heating element of PTC material. 4,341,949, Cl. 219-553.000.
- Steinle, Gunter; and Lassie, Edwin, to Dual Gebrueder Steidinger GmbH & Co. Electrodynamic loudspeaker. 4,341,930, Cl. 179-115.50R.
- Stelma, Gerard N., to Keeler Corporation. Electrically operated remote control rearview mirror. 4,341,444, Cl. 350-289.000.
- Stephens, Charles E. Refinish painting apparatus. 4,341,828, Cl. 428-40.000.
- Stepniak, Marek: See—  
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- Sterling Drug Inc.: See—  
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- Schmidt, Paul J.; and Hung, William M. W., 4,341,402, Cl. 282-27.500.
- Sterling, Henley F., to ITT Industries, Inc. Semiconductor processing. 4,341,588, Cl. 156-601.000.
- Steika, Steven S.; and Nazario, Francisco N., to Exxon Research & Engineering Co. Process for the liquefaction of solid carbonaceous materials wherein nitrogen is separated from hydrogen via ammonia synthesis. 4,341,618, Cl. 208-8.0LE.
- Stevens, Don L., Jr.; Brown, Steven L.; Malone, John A.; Knowles, Timothy A.; and Webb, Thomas G., to United States of America, Navy. Bow dock. 4,341,174, Cl. 114-45.000.
- Stevens, Jerry D., to Gould Inc. Catheter flushing apparatus. 4,341,224, Cl. 128-675.000.
- Stewart, Charles G.; and Sood, Prem L.; to Northern Telecom Limited. Duplicated memory system having status indication. 4,342,079, Cl. 364-200.000.
- Stewart, James F., to Pako Corporation. Exposure control for subtractive photographic printer. 4,341,465, Cl. 355-36.000.
- Stewart, Myron C., to RCA Corporation. Carriage alignment apparatus for video disc player. 4,342,109, Cl. 369-249.000.
- Stocker, Walbert A. Power drive for tree transplanting spoons. 4,341,025, Cl. 37-2.00R.
- Stockman, Richard F., to Combustion Engineering, Inc. Method of charging heat pipe. 4,341,000, Cl. 29-157.30H.
- Stodola, Kevin C., to Rockwell International Corporation. Error checking circuit. 4,342,112, Cl. 371-68.000.
- Stodt, Enno, to Voith Getriebe KG. Multiple-speed transmission of countershaft construction which can be shifted under load. 4,341,127, Cl. 74-333.000.



- Stokes, Clarence O., Jr.: See—  
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- Stolp, Klaus-Dieter; and Stute, Rolf W., to CPC International Inc. Process for obtaining corn oil from corn germ. 4,341,713, Cl. 260-412.200.
- Strecker, Wolfgang: See—  
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- Strege, Paul E., to Dow Chemical Company, The. Inorganic halide salt catalysts for hydroxyalkylation of phenols or thiophenols. 4,341,905, Cl. 568-45.000.
- Streicher, Rudolf; and Pol, Manfred, to Vereinigte Metallwerke Ranshofen-Berndorf Aktiengesellschaft. Motor vehicle wheel. 4,341,425, Cl. 301-64.0SH.
- Streller, Ilse: See—  
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- Strimbeck, Davis & Soloway: See—  
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- Strong, David L.: See—  
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- Stull, Keefer S., Jr.: See—  
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- Sturkey, William C., to Gaston County Dyeing Machine Company. Method for wet processing of textile material in endless rope form. 4,340,986, Cl. 8-152.000.
- Sturm, Karl; and Muschaweck, Roman, to Hoechst Aktiengesellschaft. 2,4-Diamino-5-sulfamoylbenzene sulfonic acids and process for their manufacture. 4,341,773, Cl. 424-229.000.
- Stute, Rolf W.: See—  
Stolp, Klaus-Dieter; and Stute, Rolf W., 4,341,713, Cl. 260-412.200.
- Subera, Elmer J.: See—  
Ibrahim, Fayez F.; and Subera, Elmer J., 4,341,083, Cl. 62-82.000.
- Suburban Tool, Inc.: See—  
Bailey, Donald H., 4,341,020, Cl. 33-174.0TA.
- Sugaya, Yoshio: See—  
Miyake, Haruhisa; Sugaya, Yoshio; and Asawa, Tatsuro, 4,341,685, Cl. 524-104.000.
- Sugimori, Shigeru: See—  
Inukai, Takashi; Furukawa, Kenji; Sugimori, Shigeru; and Sato, Hideo, 4,341,653, Cl. 252-299.630.
- Sugio, Akitoshi; Masu, Masanobu; Okabe, Masao; Matunaga, Masatugu; and Ishiyama, Kozo, to Mitsubishi Gas Chemical Company, Inc. Polyphenylene ether resin composition having improved heat stability and impact strength. 4,341,879, Cl. 524-91.000.
- Sugioka, Masumi, to Asahi Malleable Iron Co. Ltd. Automatically meshing sheet winch. 4,341,372, Cl. 254-353.000.
- Sugiura, Muneharu; Minoura, Kazuo; and Minami, Setsuo, to Canon Kabushiki Kaisha. Scanning projection apparatus. 4,341,459, Cl. 355-8.000.
- Sugizawa, Taijiro: See—  
Kikuchi, Noribumi; Suzuki, Yasuo; Sugizawa, Taijiro; and Washizu, Fumio, 4,341,834, Cl. 428-216.000.
- Sullivan, Paul D. Wood burning stove. 4,341,198, Cl. 126-68.000.
- Sumitomo Chemical Company, Limited: See—  
Tezuka, Yasuo; Sunami, Masaki; Omura, Takashi; and Kayane, Yutaka, 4,341,699, Cl. 260-153.000.
- Summach, Harley R. W. Supporting frame for detachably holding a bag type receptacle. 4,341,410, Cl. 294-1.00B.
- Sunami, Masaki: See—  
Tezuka, Yasuo; Sunami, Masaki; Omura, Takashi; and Kayane, Yutaka, 4,341,699, Cl. 260-153.000.
- Sundstrand Corporation: See—  
Pollman, Frederic W., 4,341,131, Cl. 74-687.000.
- Sundstrom, Staffan; and Herlestam, Tore, to AB Leo. Apparatus with built-in heating device for disinfecting contact lenses. 4,341,948, Cl. 219-521.000.
- Sutter, Franz: See—  
Perrett, T. Robert; Sutter, Franz; and Gisin, Paul, 4,341,206, Cl. 128-92.0EB.
- Sutton, Arthur J.: See—  
Sager, Gordon S.; and Sutton, Arthur J., 4,342,084, Cl. 364-200.000.
- Suzuki, Kazufumi; Kumagai, Shumi; Ochiai, Yuetsu; and Mizoguchi, Akira, to Matsushita Electric Industrial Company, Limited. Method of and system for reproducing or transmitting half-tone images. 4,342,051, Cl. 358-283.000.
- Suzuki, Kohji: See—  
Oda, Yoshio; Morimoto, Takeshi; and Suzuki, Kohji, 4,341,612, Cl. 204-253.000.
- Suzuki, Motoaki: See—  
Matsubara, Hiroyoshi; Takeshige, Kenji; Osuka, Tatsumi; Nagamine, Takashi; Hirano, Osamu; Tanaka, Jinkichi; Watanabe, Itaru; and Suzuki, Motoaki, 4,341,938, Cl. 219-61.000.
- Suzuki, Sadao; Kinoshita, Harumi; Takada, Takuzo; and Negishi, Fumio, to Yoshino Kogyosha Co., Ltd. Biaxially oriented bottle of saturated polyester resin. 4,341,317, Cl. 215-31.000.
- Suzuki, Takashi: See—  
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- Suzuki, Yasuo: See—  
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- Suzuki, Yoshiki: See—  
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- Swarofsky, Walter: See—  
Krueger, Roland; Proske, Joachim; Rosner, Ortwin; and Swarofsky, Walter, 4,341,451, Cl. 354-289.000.
- Swartout, Bruce E., to U.S. Flywheels, Inc. Hub for use in flywheels for kinetic energy storage. 4,341,001, Cl. 29-159.300.
- Swinehart, Carl F., to Harshaw Chemical Company, The. Getter for melt-grown scintillator ingot. 4,341,654, Cl. 252-301.40H.
- Swiss Aluminium Ltd.: See—  
Ritzl, Antal, 4,341,163, Cl. 105-377.000.
- Swodenk, Wolfgang: See—  
Hofen, Willi; Klenk, Herbert; Schreyer, Gerd; Weiberg, Otto; Waldmann, Helmut; Seifert, Hermann; Reissinger, Karl-Hermann; and Swodenk, Wolfgang, 4,341,709, Cl. 549-272.000.
- SWS Incorporated: See—  
Nilsen, Carl J., 4,341,943, Cl. 219-121.0LD.
- Syntex Inc.: See—  
Nestor, John J.; Jones, Gordon H.; and Vickery, Brian H., 4,341,767, Cl. 424-177.000.
- Syntex (U.S.A.) Inc.: See—  
Kracklauer, John J.; and Sparkes, Charles J., 4,341,881, Cl. 524-176.000.
- Synthelabo: See—  
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- Synthes AG: See—  
Perrett, T. Robert; Sutter, Franz; and Gisin, Paul, 4,341,206, Cl. 128-92.0EB.
- Sysak, Peter K., to Du Pont de Nemours, E. I., and Company. Photoinitiating compositions containing substituted cyclohexadienone compounds. 4,341,860, Cl. 430-277.000.
- Syva Company: See—  
Yoshida, Robert A., 4,341,866, Cl. 435-7.000.
- Szulczyk, Andreas: See—  
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- Tabak, Samuel A.; and Morrison, Roger A., to Mobil Oil Corporation. Manufacture of benzene, toluene and xylene. 4,341,622, Cl. 208-66.000.
- Tabata, Youichiro: See—  
Komura, Hirotosugu; Ueguri, Shigeo; and Tabata, Youichiro, 4,341,947, Cl. 219-383.000.
- Tachikawa, Kyoji; Togano, Kazumasa; and Takeuchi, Takao, to National Research Institute for Metals. Method for producing Nb<sub>3</sub>Sn superconductors. 4,341,572, Cl. 148-11.50F.
- Tada, Yoshimitsu: See—  
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- Takada, Takuzo: See—  
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- Takagi, Isao: See—  
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- Takahashi, Kunimasa; Imanari, Makoto; and Watanabe, Yoshihisa, to Mitsubishi Petrochemical Co. Ltd. Process for producing alkenyl-substituted aromatic compounds and catalyst therefor. 4,341,912, Cl. 585-443.000.
- Takahashi, Noriyoshi: See—  
Tohara, Kazuo; Yamashita, Seizi; Matsui, Takayuki; Motegi, Shoji; and Takahashi, Noriyoshi, 4,341,971, Cl. 310-195.000.
- Takamura, Yoshiyuki: See—  
Chino, Koichi; Yusa, Hideo; Oda, Akira; Miura, Hideichi; Horiuchi, Susumu; and Takamura, Yoshiyuki, 4,341,595, Cl. 159-6.00W.
- Takase, Yoshiyuki: See—  
Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshio, 4,341,784, Cl. 424-256.000.
- Takasugi, Hisashi: See—  
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,341,775, Cl. 424-246.000.
- Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,341,775, Cl. 424-246.000.
- Takeda, Akitsu: See—  
Mizushima, Yoshihiko; Takeda, Akitsu; Komiya, Kazumi; Sakaue, Masahiro; Ogino, Toshio; Itoh, Hideo; and Oka, Masayoshi, 4,341,954, Cl. 250-211.00J.
- Takeda Chemical Industries, Ltd.: See—  
Konishi, Kazuo; and Matsuura, Kazuo, 4,341,782, Cl. 424-251.000.
- Marumoto, Ryuji; Shima, Shunsuke; and Tanabe, Masao, 4,341,769, Cl. 424-180.000.
- Takeda, Kazuyoshi: See—  
Ogura, Haruo; and Takeda, Kazuyoshi, 4,341,707, Cl. 260-326.00C.
- Takeda, Keiso; Inouye, Shozo; and Kashiwakura, Toshimi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel injection type carburetor. 4,341,191, Cl. 123-445.000.
- Takei, Katsumori; Kanbe, Sadao; and Shionozaki, Yoshio, to Kabushiki Kaisha Suwa Seikosha. Ester compounds, liquid crystal composition including same and method of production. 4,341,652, Cl. 252-299.500.
- Takenaka, Shigeo: See—  
Noguchi, Mikio; Kobayashi, Kazuo; Takenaka, Shigeo; and Shimbo, Masaru, 4,341,980, Cl. 315-169.100.

- Takeshige, Kenji: See—  
Matsubara, Hiroyoshi; Takeshige, Kenji; Osuka, Tatsumi; Nagamine, Takashi; Hirano, Osamu; Tanaka, Jinkichi; Watanabe, Itaru; and Suzuki, Motoaki, 4,341,938, Cl. 219-61.000.
- Takeuchi, Takao: See—  
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- Talleres de Escoriaza S.A.: See—  
Garro, Jose P., 4,341,099, Cl. 70-25.000.
- Tamm, Paul W., to Chevron Research Company. Method for preparing a catalyst carrier, a catalyst containing the carrier, and a hydrocarbon hydrodesulfurization process using the catalyst. 4,341,625, Cl. 208-216.0PP.
- Tamosauskas, Albert E., to PPG Industries, Inc. Antioxidants and reinforced polymers and oil-in-water emulsions of antioxidants. 4,341,677, Cl. 523-421.000.
- Tampax Incorporated: See—  
Eldridge, William T., 4,341,215, Cl. 128-285.000.
- Tamutus, Donald J., to RCA Corporation. Method of fabricating a color-selection structure for a CRT. 4,341,591, Cl. 156-630.000.
- Tanabe, Masao: See—  
Marumoto, Ryuji; Shima, Shunsuke; and Tanabe, Masao, 4,341,769, Cl. 424-180.000.
- Tanahashi, Toshio: See—  
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- Tanaka, Jinkichi: See—  
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- Tanczyn, Harry: See—  
Douthett, Joseph A.; and Tanczyn, Harry, 4,341,555, Cl. 75-128.00A.
- Tanigawa, Koichi: See—  
Nakahata, Kimio; Tanigawa, Koichi; and Adachi, Hiroyuki, 4,341,457, Cl. 355-3.0CH.
- Tanimoto, Fumio: See—  
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, 4,341,665, Cl. 252-522.00R.
- Tappen, Frank M.: See—  
Caccoma, George A.; Koestner, Joseph H.; O'Neill, Brian C.; and Tappen, Frank M., 4,342,090, Cl. 364-491.000.
- Tarchominski Zaklady Farmaceutyczne: See—  
Cieslak, Jerzy; Busko-Oszczapowicz, Irena; and Stepniak, Marek, 4,341,779, Cl. 424-248.510.
- Tardy, Roger, to Sofrance S.A. Devices for extracting a sample of fluid from a hydraulic circuit. 4,341,125, Cl. 73-863.250.
- Tate, Takao: See—  
Ishikawa, Norikatsu; Obata, Haruyuki; Onaka, Hidemi; Tate, Takao; Tanahashi, Toshio; and Hagino, Isamu, 4,341,190, Cl. 123-439.000.
- Tateno, Haruo, to Rikagaku Kenkyusho. Method of operating a plasma generating apparatus. 4,341,941, Cl. 219-121.0PU.
- Taylor, Lynn J.; and Grier, John D., to Owens-Illinois, Inc. Composition of matter. 4,341,820, Cl. 427-226.000.
- TDK Electronics: See—  
Hiromitsu, Hirayama, 4,342,075, Cl. 363-23.000.
- TDK Electronics Co., Ltd.: See—  
Shoji, Shigemasa, 4,341,358, Cl. 242-74.100.
- Tebbe, Frederick N., to Du Pont de Nemours, E. I., and Company. Simultaneous oxidation and extraction of vanadium from wet-process phosphoric acid. 4,341,743, Cl. 423-63.000.
- Technicare Corporation: See—  
Gardiner, Bayard G.; and Herings, James A., 4,341,222, Cl. 128-660.000.
- Teikoku Hormone Mfg. Co., Ltd.: See—  
Sakakibara, Kyoichi; Manita, Hideaki; Gondo, Masaaki; and Yamashita, Haruo, 4,341,758, Cl. 424-12.000.
- Teknalar Industries Inc.: See—  
Kling, Jarrett B., 4,342,068, Cl. 361-386.000.
- Tektronix, Inc.: See—  
Larson, Robin R., 4,342,065, Cl. 361-93.000.
- Temmerman, Maria. Method and device avoiding the pollution of the atmosphere by noxious gases. 4,341,184, Cl. 123-25.00F.
- Terasawa, Koji: See—  
Kasugayama, Yukio; Terasawa, Koji; and Hattori, Yoshihumi, 4,342,041, Cl. 346-140.00R.
- Terui, Nobuo; and Kobayashi, Kozo, to Nakamichi Corporation. Information read device. 4,342,054, Cl. 360-40.000.
- Testerman, Roy L., to Medtronic, Inc. Shielded recording electrode system. 4,341,221, Cl. 128-642.000.
- Texaco Development Corp.: See—  
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- Texaco Inc.: See—  
Canup, Robert E.; and Alperstein, Martin, 4,341,196, Cl. 123-643.000.
- Duranleau, Roger G.; and Gates, Walter C., Jr., 4,341,531, Cl. 48-197.00R.
- Texas Alkyls, Inc.: See—  
Malpass, Dennis B.; and Yeargin, G. Scott, 4,341,910, Cl. 568-878.000.
- Texas Instruments Incorporated: See—  
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- Kuo, Chang-Kiang, 4,342,099, Cl. 365-104.000.
- Kuo, Chang-Kiang, 4,342,100, Cl. 365-104.000.
- Landes, James L., 4,341,574, Cl. 156-64.000.
- Shortes, Samuel R.; and Penn, Thomas C., 4,341,592, Cl. 156-643.000.
- Tezuka, Yasuo; Sunami, Masaki; Omura, Takashi; and Kayane, Yutaka, to Sumitomo Chemical Company, Limited. Reactive red dye having both monochlorotriazinyl- and vinylsulfone-type reactive groups. 4,341,699, Cl. 260-153.000.
- Thackrey, James D. Golf swing diagnostic apparatus. 4,341,384, Cl. 273-186.00A.
- Theil, Kenneth W.: See—  
Wyatt, Richard G.; James, Walter D.; Bohl, Edward H.; Theil, Kenneth W.; Saif, Linda J.; Kalica, Anthony R.; Greenberg, Harry B.; Kapikian, Albert Z.; and Chanock, Robert M., 4,341,870, Cl. 435-237.000.
- Theilen, Rolf, to Triumph-Adler A.G. fur Büro-und Informationstechnik. Paper handling assembly for typewriters or like machines. 4,341,477, Cl. 400-56.000.
- Thiem, Karl W.; and Vanderpool, Daniel P., to Mobay Chemical Corporation. Process for the production of 5-nitro-acet-2,4-xylydine. 4,341,902, Cl. 564-218.000.
- Thiessen, Robert J.: See—  
Shaw, Michael J.; and Thiessen, Robert J., 4,341,839, Cl. 428-342.000.
- Thomas, Hubert E. Variable amplitude vibratory apparatus. 4,341,126, Cl. 74-61.000.
- Thomas, Rudy V., to Allied Corporation. Passive seat belt system. 4,341,399, Cl. 280-802.000.
- Thomis, Wendt: See—  
Doyle, Holly T.; Doyle, Robert O.; and Thomis, Wendt, 4,341,385, Cl. 273-237.000.
- Thompson, Donald R.; and White, John R., to Goodyear Tire & Rubber Company, The. Mold. 4,341,368, Cl. 249-142.000.
- Thompson, Elmer R. Sewing machine conversion apparatus. 4,341,172, Cl. 112-310.000.
- Thompson, Richard C.: See—  
Wigdahl, Arthur G., 4,341,258, Cl. 164-337.000.
- Thomson-CSF: See—  
Castera, Jean P.; and Hartemann, Pierre, 4,341,998, Cl. 324-244.000.
- Thomson, Robert; and Emmett, John R., to Canadian Patents & Dev. Ltd. Method of casting elongated members of reactive metals and reactive metal alloys. 4,341,261, Cl. 164-475.000.
- Thornell, Lennart, to ASEA Aktiebolag. Memory circuit in a relay protection device. 4,342,063, Cl. 361-79.000.
- Thornton, William A., Jr.; and Larson, Daniel A., to Westinghouse Electric Corp. High-intensity-discharge lamp with improved color rendition of illuminated objects. 4,341,978, Cl. 313-487.000.
- Thurles, Edmund; and Masson, Jean-Paul, to Societe Anonyme dite: Delle-Alsthom. Electric power substation for use at very high voltages. 4,342,067, Cl. 361-333.000.
- Tibolla, Marcellino: See—  
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- TIE/Communications, Inc.: See—  
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- TII Corporation: See—  
Novak, Frederick C., 4,341,641, Cl. 210-752.000.
- Tijburg, Rudolf P.; and van Dongen, Teunis, to U.S. Philips Corporation. Fabrication of electroluminescent semiconductor device utilizing selective etching and epitaxial deposition. 4,341,010, Cl. 29-580.000.
- Tilles, Harry, to Stauffer Chemical Company. Herbicidal active sulfoxide and sulfone compounds. 4,341,702, Cl. 260-239.0BF.
- Times Fiber Communications, Inc.: See—  
Dabby, Franklin W.; and Chesler, Ronald B., 4,341,541, Cl. 65-3.120.
- Timex Corporation: See—  
Dorfman, Leonard, 4,342,105, Cl. 368-88.000.
- Timken Company, The: See—  
Clapp, James R., 4,341,426, Cl. 308-187.100.
- Tinchant, Xavier, to Clesid S.A. Panel for electric furnace. 4,342,118, Cl. 373-76.000.
- Tison, Raymond R., to E.F. Technology, Inc. Solar power system requiring no active control device. 4,341,607, Cl. 204-129.000.
- Titus Tool Company Limited: See—  
Appleby, Robert H.; and Cove, Peter L., 4,341,485, Cl. 403-231.000.
- Tobias, Michael A., to Mobil Oil Corporation. Composition comprising ester of epoxy, carbonyl containing polybutadiene polymer and acid containing addition polymer, and aqueous coating compositions prepared therefrom. 4,341,682, Cl. 523-409.000.
- Toda, Hiromichi: See—  
Kawasaki, Tetsuro; and Toda, Hiromichi, 4,341,994, Cl. 324-132.000.
- Toda, Kimio; and Tokushima, Yasuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of applying water-base paint. 4,341,821, Cl. 427-299.000.
- Toda, Takao: See—  
Kashiwagi, Kazuo; Arai, Toshio; Toda, Takao; Shirai, Masanari; and Yanagi, Masaaki, 4,341,463, Cl. 355-14.0CH.
- Togano, Kazumasa: See—  
Tachikawa, Kyoji; Togano, Kazumasa; and Takeuchi, Takao, 4,341,572, Cl. 148-11.50F.
- Tohara, Kazuo; Yamashita, Seizi; Matsui, Takayuki; Motegi, Shoji; and Takahashi, Noriyoshi, to Hitachi, Ltd. Armature of electric rotating machine. 4,341,971, Cl. 310-195.000.



Tokuda Seisakusyo, Ltd.: See—  
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Tokushima, Yasuo: See—  
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Tokutomi, Takashi: See—  
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Tokyo Shibaura Denki Kabushiki Kaisha: See—  
Iida, Tetsuya; and Sakae, Tatsuo, 4,342,004, Cl. 330-253.000.

Ishii, Shouichi; Shimanuki, Masanobu; and Morizono, Akira, 4,342,056, Cl. 360-72.100.

Kohyama, Mitsuaki, 4,341,460, Cl. 355-13.000.

Kubo, Osamu; Ido, Tadashi; Nomura, Tutomu; and Inomata, Koichi, 4,341,648, Cl. 252-62.630.

Kumagi, Shigeki, 4,342,092, Cl. 364-569.000.

Kurisaki, Tetuo; Horiike, Yasuhiro; and Yamazaki, Takashi, 4,341,593, Cl. 156-643.000.

Noguchi, Mikio; Kobayashi, Kazuo; Takenaka, Shigeo; and Shimbo, Masaru, 4,341,980, Cl. 315-169.100.

Ozeki, Kenichi; Wada, Toyoyji; Ito, Kunio; Tomimori, Tetsuo; Takagi, Isao; and Nekado, Mitsunobu, 4,341,687, Cl. 524-500.000.

Tokyo Shibaura Electric Co., Ltd.: See—  
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Tomasetti, Charles M.; Harsh, Maurice D.; and McDonie, Arthur F., to RCA Corporation. Method for stabilizing the anode sensitivity of a photomultiplier tube, 4,341,427, Cl. 316-1.000.

Tomiita, Kazuo: See—  
Negishi, Takao; and Tomiita, Kazuo, 4,341,068, Cl. 57-288.000.

Tomimori, Tetsuo: See—  
Ozeki, Kenichi; Wada, Toyoyji; Ito, Kunio; Tomimori, Tetsuo; Takagi, Isao; and Nekado, Mitsunobu, 4,341,687, Cl. 524-500.000.

Tondeo-Werk GmbH: See—  
Schultz, Erhard, 4,341,305, Cl. 206-350.000.

Toray Industries, Incorporated: See—  
Negishi, Takao; and Tomiita, Kazuo, 4,341,068, Cl. 57-288.000.

Okuo, Takayasu; Masaki, Takaki; and Kobayashi, Keisuke, 4,341,965, Cl. 310-11.000.

Toray Silicone Company, Ltd.: See—  
Nakamura, Akito, 4,341,675, Cl. 524-266.000.

Toyama, Tadao; Nakao, Sho; Shiba, Keisuke; Sera, Hidefumi; and Ogawa, Masasi, to Fuji Photo Film Co., Ltd. Photosensitive lithographic printing plate precursors, 4,341,856, Cl. 430-156.000.

Toyo Soda Manufacturing Co., Ltd.: See—  
Matsushita, Susumu; Tada, Yoshimitsu; and Ikushige, Tetsuo, 4,341,634, Cl. 210-656.000.

Toyoda, Kenji; and Hirano, Haruo, to Nippon Kogaku K.K. Light receiving element assembly in a camera, 4,341,448, Cl. 354-59.000.

Toyoda, Takashi; Ohba, Yozo; and Yamanaka, Masaaki, to Oji Yuka Goseishi Kabushiki Kaisha. Resin compositions of improved hue, 4,341,880, Cl. 524-101.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: See—  
Ishikawa, Norikatsu; Obata, Haruyuki; Onaka, Hidemi; Tate, Takao; Tanahashi, Toshio; and Hagino, Isamu, 4,341,190, Cl. 123-439.000.

Takeda, Keiso; Inoue, Shozo; and Kashiwakura, Toshimi, 4,341,191, Cl. 123-445.000.

Toda, Kimio; and Tokushima, Yasuo, 4,341,821, Cl. 427-299.000.

Tozier, John E.; and Shaffer, John W., to GTE Products Corporation. Flashlamp containment coating, 4,341,817, Cl. 427-54.100.

Traino, James C., to Xerox Corporation. Beam intensity measurement system for raster scanners, 4,342,050, Cl. 358-256.000.

Tredennick, Harry L.; and Gunter, Thomas G., to Motorola, Inc. Instruction register sequence decoder for microprogrammed data processor and method, 4,342,078, Cl. 364-200.000.

Tremontozzi, Quirino A.: See—  
Lee, Yoon C.; and Tremontozzi, Quirino A., 4,341,695, Cl. 524-342.000.

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- Westinghouse Electric Corp.: See—  
Bass, Jerry D., 4,341,288, Cl. 187-29.00R.
- Jensen, Arthur S.; and Stull, Keefer S., Jr., 4,341,963, Cl. 307-497.000.
- Rosswurm, Mark A.; and Urish, Joseph M., 4,342,076, Cl. 363-56.000.
- Sharbaugh, John E.; and Kazan, Joseph M., 4,341,732, Cl. 376-206.000.
- Thornton, William A., Jr.; and Larson, Daniel A., 4,341,978, Cl. 313-487.000.
- Wheeler, Donald R.: See—  
Brainard, William A.; and Wheeler, Donald R., 4,341,843, Cl. 428-457.000.
- Wheeler, Norton C., Jr.; and Rahim, Waseem. Extruder screw. 4,341,474, Cl. 366-88.000.
- White, Geoffrey T.: See—  
Burns, Edward J.; and White, Geoffrey T., 4,341,649, Cl. 252-70.000.
- White, Herbert J., to Glaxo Group Limited. Cephalosporin antibiotic. 4,341,777, Cl. 424-246.000.
- White, John R.: See—  
Thompson, Donald R.; and White, John R., 4,341,368, Cl. 249-142.000.
- White, Maurice E.: See—  
Landsness, Clifford A.; Rinker, William R.; Barnes, Thomas E.; and White, Maurice E., 4,341,727, Cl. 264-145.000.
- White, Patrick A.: See—  
Betts, Max W.; Burrow, Thomas R.; Robinson, Frank; and White, Patrick A., 4,341,830, Cl. 428-65.000.
- White, Paul J.: See—  
Hatch, David A.; and White, Paul J., 4,341,428, Cl. 339-14.00R.
- Whitehouse, David J.; and Sharma, Harish C., to Rank Organisation Limited, The. Method of determining the coordinates of the center of curvature of the curved surface of a workpiece. 4,342,091, Cl. 364-506.000.
- Whitehurst, Marshall L.: See—  
Prusak, John J.; and Whitehurst, Marshall L., 4,341,613, Cl. 204-281.000.
- Whiteside, Arliss E.: See—  
Freedman, Morris D.; and Whiteside, Arliss E., 4,342,083, Cl. 364-200.000.
- Whitman, Arthur J.: See—  
Borrelli, Nicholas F.; Whitman, Arthur J.; and Young, Peter L., 4,341,863, Cl. 430-346.000.
- Whitman Medical Corporation: See—  
Gordon, Marvin, 4,341,208, Cl. 128-156.000.
- Wicnienski, Michael: See—  
Bilstad, Arnold C.; and Wicnienski, Michael, 4,341,116, Cl. 73-290.00V.

- Wieczorek, Herbert: See—  
Kemmler, Gerhard; Wieczorek, Herbert; and Plessing, Jurgen, 4,341,738, Cl. 422-184.000.
- Wieder, Irwin, to Analytical Radiation Corporation. Fluorescent antibody composition for immunofluorometric assay. 4,341,957, Cl. 250-461.200.
- Wieland, Lee M. Roof mounted wire support. 4,341,367, Cl. 248-68.00R.
- Wigdahl, Arthur G., to Thompson, Richard C. Solder reclaiming apparatus. 4,341,258, Cl. 164-337.000.
- Wilcox, Arnold G., Jr.; and Plumley, Roger D., to Fairchild Incorporated. Mobile dual auger continuous mining machine with multiple movement capabilities. 4,341,424, Cl. 299-57.000.
- Wildmoser, Alfred: See—  
Gregor, Carl-Heinz; Reimann, Hans; and Wildmoser, Alfred, 4,341,632, Cl. 210-608.000.
- Wilkes, William W., to Fiber Industries, Inc. Process for producing melt-spun filaments. 4,341,726, Cl. 264-130.000.
- Wilkinson, Stanley B., to General Electric Company. Static distance relays with improved polarizing signal. 4,342,064, Cl. 361-80.000.
- Wilkinson Sword Limited: See—  
Harrison, Christopher R. B.; and Pittaway, Alan K., 4,341,016, Cl. 30-262.000.
- Williams, Donald F.; and Phy, Charles L. Method for forming paper boxes and the like. 4,341,055, Cl. 53-462.000.
- Willis, Brian J.; Christenson, Philip A.; and Mack, Robert A., to Fritzsche Dodge & Olcott Inc. Ambrinol and its homologues. 4,341,908, Cl. 568-819.000.
- Wilson, Joseph P.: See—  
Clark, Robert H.; and Wilson, Joseph P., 4,341,742, Cl. 423-39.000.
- Wirth, Eugene A.: See—  
Pelda, Frederick J.; and Wirth, Eugene A., 4,341,945, Cl. 219-216.000.
- Wirth, Josef: See—  
Schneurecker, Werner; Wirth, Josef; and Angerer, Reinhold, 4,341,257, Cl. 164-150.000.
- Wissmann, Michael: See—  
Knapp, Heinrich; Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; Jaggle, Gunther; and Schelhas, Peter, 4,341,192, Cl. 123-452.000.
- Withers, Michael S.: See—  
Solenberger, John C.; and Withers, Michael S., 4,341,605, Cl. 204-98.000.
- Witkin, Philip M. Tube dryer assembly. 4,341,024, Cl. 34-155.000.
- Wittke, James P.: See—  
Gorog, Istvan; Leedom, Marvin A.; and Wittke, James P., 4,341,472, Cl. 356-399.000.
- Wittkopf, Eugene W., to Magna-Graphics Corporation. Adjustable mounting for cooperating die cylinders. 4,341,525, Cl. 493-370.000.
- Wittkopf, Eugene W.: See—  
Leanna, Dale D.; Jorgensen, Allen R.; and Wittkopf, Eugene W., 4,341,056, Cl. 53-529.000.
- Witucki, Edward F.: See—  
Frankel, Milton B.; and Witucki, Edward F., 4,341,712, Cl. 260-349.000.
- Woehleke, Steven P.: See—  
Flory, John F.; and Woehleke, Steven P., 4,341,291, Cl. 188-375.000.
- Woinsky, Samuel G., to Occidental Petroleum Corporation. Process and system for recovery of energy from geothermal brines and other hot water sources. 4,341,077, Cl. 60-641.300.
- Wojcieszon, Raymond J.; Fuhrman, Fred L.; and O'Hara, John J., to Hauck Manufacturing Company. Burner. 4,341,512, Cl. 431-284.000.
- Wolf, Hans U.: See—  
Zander, Rolf; Lang, Werner; and Wolf, Hans U., 4,341,527, Cl. 23-230.00B.
- Wollensak, Daniel W., to Sanford Research Company. Writing instrument with barrel and ferrule assembly. 4,341,481, Cl. 401-251.000.
- Wollensak, Daniel W., to Sanford Research Company. Housing assembly for fluid marking device. 4,341,482, Cl. 401-251.000.
- Wollensak, John C.; Ihrman, Kryn G.; and Jarema, Chester P., to Ethyl Corporation. Process for rearrangement of alkyl groups on aromatic amines. 4,341,903, Cl. 564-409.000.
- Wolmer, Roger: See—  
Bohm, Wolfgang; Wolmer, Roger; Szulczyk, Andreas; and Malinkowski, Willi, 4,341,556, Cl. 75-173.00A.
- Wolters, Gerhard; and Bergmann, Horst, to Daimler-Benz Aktiengesellschaft. Internal combustion engine, especially for trucks driven with gas-stored in liquid condition in a fuel tank. 4,341,194, Cl. 123-557.000.
- Woodard, Richard B.: See—  
Kyles, Ronald H.; and Woodard, Richard B., 4,341,950, Cl. 235-92.00A.
- Woods, Kenneth P. R., to Coachwork Conversions Limited. Vehicle body. 4,341,413, Cl. 296-50.000.
- Woods, Samuel: See—  
Gallant, Stuart L.; Woods, Samuel; and Palmer, Walter E., 4,341,225, Cl. 128-710.000.
- Woodward, Milton H.: See—  
Rackley, Darwin P.; Schneider, Timothy L.; and Woodward, Milton H., 4,342,052, Cl. 358-287.000.
- Wootton, Gordon: See—  
Cassidy, Frederick; and Wootton, Gordon, 4,341,789, Cl. 424-274.000.
- Woratyla, John A., to AMP Incorporated. Strain relief. 4,341,431, Cl. 339-103.00M.
- Wray, William R., to Polaroid Corporation. Electronic gain and noise control for recording of analog information. 4,342,059, Cl. 360-123.000.
- Wright, Jerry D., to Wright Leather Goods Manufacturing Co. Filing belt and process. 4,340,976, Cl. 2-338.000.
- Wright Leather Goods Manufacturing Co.: See—  
Wright, Jerry D., 4,340,976, Cl. 2-338.000.
- Wright, Robert G.: See—  
Cortigene, Louis R.; and Wright, Robert G., 4,341,180, Cl. 119-1.000.
- Wu, Hsin-Chih; and Sockell, Edward J., to Standard Oil Co., The. Ammonium sulfate recovery process. 4,341,535, Cl. 55-85.000.
- Wust, Willi: See—  
Kuhne, Norbert; Leischner, Hasso; Rahse, Wilfried; and Wust, Willi, 4,341,892, Cl. 536-101.000.
- Wyatt, Richard G.; James, Walter D.; Bohl, Edward H.; Theil, Kenneth W.; Saif, Linda J.; Kalica, Anthony R.; Greenberg, Harry B.; Kapikian, Albert Z.; and Chanock, Robert M., to United States of America, Health & Human Services. Cultivable human rotavirus type 2. 4,341,870, Cl. 435-237.000.
- Wynn, Michael J.: See—  
Harder, Ursula M.; Kaswinkel, Karl D.; Gould, James W.; West, Jon K.; and Wynn, Michael J., 4,341,636, Cl. 210-662.000.
- Xerox Corporation: See—  
Fantozzi, Louis J., 4,341,461, Cl. 355-14.00D.
- Iyer, Venkat K.; Borostyan, Stephen; and Blair, Timothy T., 4,341,456, Cl. 355-3.0TR.
- Traino, James C., 4,342,050, Cl. 358-256.000.
- Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, to Nippon Soken, Inc. Knock detecting apparatus for combustion engines. 4,341,189, Cl. 123-425.000.
- Yamamoto, Yukio; and Uehara, Takeo, to Yoshida Kogyo K.K. Weather-tight sliding sash window assembly. 4,341,043, Cl. 49-449.000.
- Yamanaka, Masaaki: See—  
Toyoda, Takashi; Ohba, Yozo; and Yamanaka, Masaaki, 4,341,880, Cl. 524-101.000.
- Yamashita, Haruo: See—  
Sakakibara, Kyoichi; Manita, Hideaki; Gondo, Masaaki; and Yamashita, Haruo, 4,341,758, Cl. 424-12.000.
- Yamashita, Seizi: See—  
Tohara, Kazuo; Yamashita, Seizi; Matsui, Takayuki; Motegi, Shoji; and Takahashi, Noriyoshi, 4,341,971, Cl. 310-195.000.
- Yamato Scale Company, Ltd.: See—  
Hirano, Takashi; and Aga, Takashi, 4,341,274, Cl. 177-25.000.
- Yamazaki, Shigeo; and Nakamura, Masahiko, to MCC Corporation. Tool for stripping insulating covering. 4,341,134, Cl. 81-9.50A.
- Yamazaki, Takashi: See—  
Kurisaki, Tetuo; Horiike, Yasuhiro; and Yamazaki, Takashi, 4,341,593, Cl. 156-643.000.
- Yanagi, Masaaki: See—  
Kashiwagi, Kazuo; Arai, Toshio; Toda, Takao; Shirai, Masanari; and Yanagi, Masaaki, 4,341,463, Cl. 355-14.0CH.
- Yaron, Giora; Harari, Eliyahou; Wang, Samuel T.; and Hess, LaVerne D., to Hughes Aircraft Company. Semiconductor on insulator laser process. 4,341,569, Cl. 148-1.500.
- Yashiro, Kuniji; and Moriya, Yoshio, to Hooker Chemicals & Plastics Corp. Metal surface coating agent. 4,341,558, Cl. 106-14.120.
- Yatsuzuka, Yohtarō: See—  
Seki, Norio; Yatsuzuka, Yohtarō; and Sakaguchi, Haruo, 4,341,438, Cl. 350-96.160.
- Yeargin, G. Scott: See—  
Malpass, Dennis B.; and Yeargin, G. Scott, 4,341,910, Cl. 568-878.000.
- Yeh, Ching H.: See—  
Ku, Chung C.; and Yeh, Ching H., 4,341,102, Cl. 70-358.000.
- Yerman, Alexander J.: See—  
Carlson, Richard O.; and Yerman, Alexander J., 4,341,594, Cl. 156-643.000.
- Yeu, Nam J. Stuffed toy. 4,341,036, Cl. 46-151.000.
- Yokohama Kiko Co., Ltd.: See—  
Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,341,841, Cl. 428-414.000.
- Yokoo, Kiyotaka; Mitsuhashi, Sadayuki; and Wakamatsu, Kazutoshi, to Nippon Electric Co., Ltd. Transfer-type electromagnetic relay comprising a coil around a housing of the relay and an armature carrying movable contacts at both ends. 4,342,016, Cl. 335-79.000.
- Yokozeki, Shinichi: See—  
Imai, Kunio; Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,341,838, Cl. 428-338.000.
- Yoneda, Kanji: See—  
Kuzunuki, Soshiro; Hirasawa, Kotaro; Imai, Masumi; Yuminaka, Takeo; Sakata, Kazuhiro; and Yoneda, Kanji, 4,341,287, Cl. 187-29.00R.
- Yonezawa, Keitaro: See—  
Daicho, Norio; and Yonezawa, Keitaro, 4,341,245, Cl. 141-18.000.
- York-ShIPLEY, Inc.: See—  
Korenberg, Jakob, 4,341,515, Cl. 432-15.000.
- Yoshida Industry Co., Ltd.: See—  
Ogasawara, Hirotake, 4,341,319, Cl. 215-307.000.
- Yoshida Kogyo K.K.: See—  
Yamamoto, Yukio; and Uehara, Takeo, 4,341,043, Cl. 49-449.000.
- Yoshida, Robert A., to Syva Company. Antienzyme termination in enzyme immunoassays. 4,341,866, Cl. 435-7.000.



- Yoshino Kogyosho Co., Ltd.: *See—*  
Suzuki, Sadao; Kinoshita, Harumi; Takada, Takuzo; and Negishi, Fumio, 4,341,317, Cl. 215-31.000.
- Yoshino, Toshikazu: *See—*  
Imai, Kunio; Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,341,838, Cl. 428-338.000.
- Yoshizawa, Tamotu: *See—*  
Murakoshi, Makoto; and Yoshizawa, Tamotu, 4,341,128, Cl. 74-479.000.
- Young, Patrick. Nail clipper assembly. 4,341,015, Cl. 30-28.000.
- Young, Peter L.: *See—*  
Borrelli, Nicholas F.; Whitman, Arthur J.; and Young, Peter L., 4,341,863, Cl. 430-346.000.
- Young, Robert N.: *See—*  
Belanger, Patrice C.; and Young, Robert N., 4,341,904, Cl. 564-427.000.
- Youngfleish, Frank C.: *See—*  
Cherian, Gabriel B.; Scheingold, William S.; and Youngfleish, Frank C., 4,341,433, Cl. 339-176.0MP.
- Yuen, Sing C. J.: *See—*  
Tsui, Kwok W.; and Yuen, Sing C. J., 4,341,034, Cl. 46-14.000.
- Yuminaka, Takeo: *See—*  
Kusunuki, Soshiro; Hirasawa, Kotaro; Imai, Masumi; Yuminaka, Takeo; Sakata, Kazuhiro; and Yoneda, Kanji, 4,341,287, Cl. 187-29.00R.
- Yusa, Hideo: *See—*  
Chino, Koichi; Yusa, Hideo; Oda, Akira; Miura, Hideichi; Horiuchi, Susumu; and Takamura, Yoshiyuki, 4,341,595, Cl. 159-6.00W.
- Zahnradfabrik Friedrichshafen A.G.: *See—*  
Freitag, Manfred, 4,341,295, Cl. 192-53.00E.
- Zander, Rolf; Lang, Werner; and Wolf, Hans U. Process and reagent for determination of the hemoglobin content of blood. 4,341,527, Cl. 23-230.00B.
- Zankich, Frank A., to Rexnord Inc. Adjustable retention latch assembly. 4,341,407, Cl. 292-111.000.
- Zeitz, Vernon. Digital proportional metering pumping system. 4,341,327, Cl. 222-63.000.
- Zelex, Inc.: *See—*  
Alexander, Richard D.; Christofferson, John L.; and Ward, William H., Jr., 4,341,929, Cl. 179-90.00B.
- Zellweger Uster Ltd.: *See—*  
Baumgartner, August; and Plaschy, Martin, 4,341,065, Cl. 57-22.000.
- Baumgartner, August, 4,341,066, Cl. 57-22.000.
- Zelonka, Ronald A., to Du Pont Canada Inc. Catalytic oxidation of cycloparaffins. 4,341,907, Cl. 568-360.000.
- Zenith Radio Corporation: *See—*  
Falater, Scott L.; and Bretl, Wayne E., 4,342,048, Cl. 358-242.000.
- Zraggen, Martin A.: *See—*  
Penn, William B.; and Zraggen, Martin A., 4,341,972, Cl. 310-233.000.
- Ziemann, Ronald W. Solar energy collecting and utilization system. 4,341,201, Cl. 126-422.000.
- Zimmer, Inc.: *See—*  
Anuta, David A., 4,341,691, Cl. 523-116.000.
- Zimmermann, Heinrich; and Schamberger, Jorg. Pick-up needle. 4,342,107, Cl. 369-172.000.
- Zinke, Horst, to Ciba-Geigy Corporation. 2-Thiono-(2H) [1,3,2] dioxaphosphorinanes (phospholanes). 4,341,722, Cl. 260-937.000.
- Zopf, Richard F.: *See—*  
Keane, John J.; and Zopf, Richard F., 4,341,859, Cl. 430-270.000.
- Zopff, Hans; and Muller, Hans-Ekkehard, to Kommanditgesellschaft "ALBERTA" Chemische Fabrik GmbH & Co. Process for eliminating acidic components from waste gases. 4,341,745, Cl. 423-210.000.
- Zore, Frank E., to Container Corporation of America. Hollow wall tray and cover closure lock arrangement. 4,341,339, Cl. 229-34.0HW.
- Zotov, Sergei N.: *See—*  
Koshlyak, Leonid L.; Kareev, Jury P.; Romankov, Evgeny A.; Zotov, Sergei N.; Belopolsky, Marx S.; and Kalinovskiy, Villen V., 4,341,724, Cl. 264-27.000.
- Zygraich, Nathan, to SmithKline-Rit. Methods of vaccinating humans against rotavirus infection. 4,341,763, Cl. 424-89.000.

## LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF JULY, 1982

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Applied Power: *See—*  
LeGrand, Pierre N.; and van Dalen, Dirk J., Re. 31,000, Cl. 33-180.0AT.
- ARC Sales, Inc.: *See—*  
Lemons, Thomas M., Re. 31,003, Cl. 362-287.000.
- Ciba-Geigy Corporation: *See—*  
Lind, Hanns, Re. 31,002, Cl. 544-221.000.
- LeGrand, Pierre N.; and van Dalen, Dirk J., to Applied Power. Method and apparatus for reforming and straightening vehicles. Re. 31,000, Cl. 33-180.0AT.
- Lemons, Thomas M., to ARC Sales, Inc. High intensity spotlight. Re. 31,003, Cl. 362-287.000.
- Lind, Hanns, to Ciba-Geigy Corporation. N-(3-Hydroxyaryl-propyl)-imides. Re. 31,002, Cl. 544-221.000.
- Nippon Gakki Seizo Kabushiki Kaisha: *See—*  
Takahashi, Hiroyoshi, Re. 31,001, Cl. 84-255.000.
- Takahashi, Hiroyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Damper assembly of pianos. Re. 31,001, Cl. 84-255.000.
- van Dalen, Dirk J.: *See—*  
LeGrand, Pierre N.; and van Dalen, Dirk J., Re. 31,000, Cl. 33-180.0AT.

## LIST OF DESIGN PATENTEEES

- Adenau, Marvin L., to AMD Industries, Inc. Windshield wiper products cabinet. 265,533, 7-27-82, Cl. D6-174.000.
- AGA Aktiebolag: *See—*  
Winqvist, Bengt G., 265,602, Cl. D34-28.000.
- Winqvist, Bengt G., 265,603, Cl. D34-28.000.
- Amcam International, Inc.: *See—*  
Colby, Debra; and Crane, Nora, 265,551, Cl. D9-415.000.
- AMD Industries, Inc.: *See—*  
Adenau, Marvin L., 265,533, Cl. D6-174.000.
- American Standard Inc.: *See—*  
Paul, Stanley M., 265,579, Cl. D23-25.000.
- Paul, Stanley M., 265,580, Cl. D23-25.000.
- AMF Incorporated: *See—*  
Joss, Michael S.; and Belletire, Steven P., 265,553, Cl. D10-40.000.
- Baker, Richard; and Baker, Steven. Table. 265,532, 7-27-82, Cl. D6-146.000.
- Baker, Steven: *See—*  
Baker, Richard; and Baker, Steven, 265,532, Cl. D6-146.000.
- Ballereaud, Pierre. Lipstick case. 265,600, 7-27-82, Cl. D28-88.000.
- Basili, Robert A.; and Wilson, William B., to Plastic Reel Corp. of America. Video cassette storage container. 265,524, 7-27-82, Cl. D3-35.000.
- Basili, Robert A.; and Weinstein, Gerald, to Plastic Reel Corporation of America. Cassette storage container. 265,525, 7-27-82, Cl. D3-35.000.
- Bell Telephone Laboratories, Incorporated: *See—*  
Fox, George R.; Illium, Herbert C., Jr.; Korby, Kenneth L.; and McGarvey, John N., 265,558, Cl. D14-55.000.
- Belletire, Steven P.: *See—*  
Joss, Michael S.; and Belletire, Steven P., 265,553, Cl. D10-40.000.
- Bergquist, Gregory D.; and Jones, John A., to Simmons Universal Corp. Stool. 265,530, 7-27-82, Cl. D6-57.000.
- Bergquist, Gregory D.; and Jones, John A., to Simmons Universal Corp. Chaise frame. 265,534, 7-27-82, Cl. D6-191.000.
- Bergquist, Gregory D.; and Jones, John A., to Simmons Universal Corp. Chair frame. 265,535, 7-27-82, Cl. D6-191.000.
- Besacie, Joseph C., to Koss Corporation. Stereo headphone. 265,557, 7-27-82, Cl. D14-36.000.
- Bladen, Roy V. Mounting for a tool holder. 265,522, 7-27-82, Cl. D2-400.000.
- Bredemeier, David; Richardson, William P.; and Cassagnes, Andre, to Hasbro Industries, Inc. Drawing instrument. 265,572, 7-27-82, Cl. D21-59.000.
- Bruckoff, Barry. Seat. 265,531, 7-27-82, Cl. D6-71.000.
- Brundige, Daniel G.; and Freund, Donald F., to Mead Corporation. The Packaging drum for food. 265,548, 7-27-82, Cl. D9-352.000.
- Bullard, Edmund P., Sr.; and Togni, Gary A. Wood burning stove. 265,583, 7-27-82, Cl. D23-97.000.
- Butt, Sheldon H.; and Kleine, Charles A., to Olin Corporation. Three tube heat exchanger panel. 265,584, 7-27-82, Cl. D23-136.000.
- Cappotto, Samuel D.: *See—*  
Christie, Cornelius W.; and Cappotto, Samuel D., 265,566, Cl. D18-12.000.
- Christie, Cornelius W.; and Cappotto, Samuel D., 265,567, Cl. D18-12.000.
- Lemons, Thomas M., to ARC Sales, Inc. High intensity spotlight. Re. 31,003, Cl. 362-287.000.
- Lind, Hanns, to Ciba-Geigy Corporation. N-(3-Hydroxyaryl-propyl)-imides. Re. 31,002, Cl. 544-221.000.
- Nippon Gakki Seizo Kabushiki Kaisha: *See—*  
Takahashi, Hiroyoshi, Re. 31,001, Cl. 84-255.000.
- Takahashi, Hiroyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Damper assembly of pianos. Re. 31,001, Cl. 84-255.000.
- van Dalen, Dirk J.: *See—*  
LeGrand, Pierre N.; and van Dalen, Dirk J., Re. 31,000, Cl. 33-180.0AT.
- Cassagnes, Andre: *See—*  
Bredemeier, David; Richardson, William P.; and Cassagnes, Andre, 265,572, Cl. D21-59.000.
- Cho-Pat, Inc.: *See—*  
Gauvry, George R., 265,590, Cl. D24-64.000.
- Christie, Cornelius W.; and Cappotto, Samuel D., to SCM Corporation. Ribbon cartridge. 265,566, 7-27-82, Cl. D18-12.000.
- Christie, Cornelius W.; and Cappotto, Samuel D., to SCM Corporation. Ribbon cartridge. 265,567, 7-27-82, Cl. D18-12.000.
- Chung Mei Metal and Plastic Factory, Ltd.: *See—*  
Mann, Kittson, 265,593, Cl. D26-37.000.
- Mann, Kittson, 265,594, Cl. D26-37.000.
- Clarke, Ann P., to Douglas Company, Inc. Clutch toy. 265,573, 7-27-82, Cl. D21-65.000.
- Colby, Debra; and Crane, Nora, to Amcam International, Inc. Combined display and packaging container. 265,551, 7-27-82, Cl. D9-415.000.
- Connolly, Peter, to Red Devil Inc. Glass cutting tool. 265,543, 7-27-82, Cl. D8-51.000.
- Cooper Laboratories, Inc.: *See—*  
Hyman, Richard M., 265,526, Cl. D4-25.000.
- Cottrell, Samuel S. Computer terminal cover. 265,561, 7-27-82, Cl. D14-114.000.
- Crane, Nora: *See—*  
Colby, Debra; and Crane, Nora, 265,551, Cl. D9-415.000.
- Daniel, Lucille W.: *See—*  
Messenger, Ronald L.; and Dodds, Gary M., 265,541, Cl. D32-74.000.
- Dart Industries Inc.: *See—*  
Lahay, Charles A., 265,587, Cl. D24-59.000.
- Lahay, Charles A., 265,588, Cl. D24-59.000.
- Lahay, Charles A., 265,589, Cl. D24-59.000.
- Dodds, Gary M.: *See—*  
Messenger, Ronald L.; and Dodds, Gary M., 265,541, Cl. D32-74.000.
- Donaldson, Donald L. Medallion. 265,555, 7-27-82, Cl. D11-110.000.
- Douglas Company, Inc.: *See—*  
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- DuBois, R. Clark; and Hamma, John C., to Gradco/Dendoki, Inc. Continuous form feeding and copying apparatus. 265,564, 7-27-82, Cl. D16-30.000.
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Bergquist, Gregory D.; and Jones, John A., 265,535, Cl. D6-191.000.
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- Paul, Stanley M., to American Standard Inc. Combined spout and water control handles. 265,580, 7-27-82, Cl. D23-25.000.
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- Winqvist, Bengt G., to AGA Aktiebolag. Support frame for transport and handling of gas cylinders. 265,603, 7-27-82, Cl. D34-28.000.
- Young, Richard C.; and Parson, Heather K., to S. C. Johnson & Son, Inc. Bottle. 265,550, 7-27-82, Cl. D9-377.000.

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- Boyd, J. Austin, to Boyd Brothers Company, The. White Flowering Dogwood—World's Fair variety. 4,869, 7-27-82, Cl. 51.000.
- Gesellschaftsvertrag uber die Erfindergemeinschaft "OPTIMARA": See—  
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- Holtkamp, Reinhold, to Gesellschaftsvertrag uber die Erfindergemeinschaft "OPTIMARA". African violet plant. 4,870, 7-27-82, Cl. 69.000.



# CLASSIFICATION OF PATENTS

ISSUED JULY 27, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

338	CLASS 2	81	4,341,033	246	4,341,089	307	4,341,144	439	4,341,190	357 A	4,341,251
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1.5	4,340,977			475	4,341,092			472	4,341,193	64	4,341,574
1.911	4,340,978	14	4,341,034	505	4,341,093	7	4,341,147	557	4,341,194	66	4,341,575
13	4,340,979	135 R	4,341,035					598	4,341,195	106	4,341,576
		151	4,341,036	CLASS 65				643	4,341,196	121	4,341,577
		178	4,341,037	3.12	4,341,541	CLASS 89				149	4,341,578
448	4,340,980			17	4,341,542	CLASS 91				166	4,341,579
536	4,340,981			30.14	4,341,543	356	4,341,148	39 BA	4,341,197	190	4,341,580
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		1.4	4,341,038	163	4,341,545			163 A	4,341,199	345	4,341,582
93 R	4,340,983	2	4,341,039	165	4,341,546	2.12	4,341,150	417	4,341,200	359	4,341,583
296	4,340,984	73	4,341,040			94 R	4,341,151	422	4,341,201	412	4,341,584
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				177	4,341,095				4,341,204	523	4,341,587
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		309	4,341,533	67	4,341,548	CLASS 104		290 W	4,341,216	133	4,341,253
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		421	4,341,049	105	4,341,552	199 C	4,341,162	642	4,341,220	CLASS 162	
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580	4,341,010	15.8	4,341,059	862.09	4,341,123	7	4,341,168	CLASS 137		311	4,341,269
590	4,341,011	17.5	4,341,060	863.01	4,341,124	CLASS 112		72	4,341,233	CLASS 173	
620	4,341,012	192	4,341,061	863.25	4,341,125	121.12	4,341,169	110	4,341,234	151	4,341,270
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28	4,341,015	6	4,341,063	481	4,341,129	CLASS 114		414	4,341,238	66	4,341,920
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		288	4,341,067			102	4,341,176	625.68	4,341,243	CLASS 175	
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245	4,341,022	531	4,341,075	547 R	4,341,076	658	4,341,179			25	4,341,274
363 K	4,341,023	641.3	4,341,077			CLASS 119		11.5	4,341,569	212	4,341,275
				CLASS 62				11.5 F	4,341,570	CLASS 178	
155	4,341,024	48	4,341,078	23	4,341,135	1	4,341,180		4,341,571	22.17	4,341,925
		55.5	4,341,079	158	4,341,136	20	4,341,181	CLASS 140			
117.5	4,341,025	64	4,341,080	639	4,341,137	158	4,341,182	193 A	4,341,246	CLASS 179	
197	4,341,027	82	4,341,081	820	4,341,138	25 F	4,341,184	287	4,341,247	2 C	4,341,926
				886	4,341,139	41.85	4,341,185	378	4,341,248	2 DP	4,341,927
534	4,341,028	101	4,341,082	CLASS 84						51 AA	4,341,928
607	4,341,029	124	4,341,083	1.03	4,341,140	52 M	4,341,186	CLASS 149		90 B	4,341,929
		225	4,341,084	1.24	4,341,141	198 E	4,341,187	42	4,341,573	115.5 R	4,341,930
1 F	4,341,030	233	4,341,085	95 R	4,341,142	324	4,341,188	CLASS 152			
23	4,341,031	239	4,341,086	107	4,341,143	425	4,341,189	330 RF	4,341,249	9.48	4,341,276
42.45	4,341,032			255	Re.31.001			354 R	4,341,250	19 S	4,341,279



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54 A	4,341,277	752	4,341,640	189	4,341,363	85 G	4,341,383	CLASS 316	CLASS 350
79.1	4,341,278		4,341,641	191	4,341,364	186 A	4,341,384	1	4,341,427
243	4,341,280	767	4,341,642	199	4,341,365	237	4,341,385	35	4,341,435
247	4,341,281	803	4,341,643	220	4,341,366	239	4,341,386	81	4,341,437
						240	4,341,387	96.16	4,341,438
CLASS 181						265	4,341,389	96.22	4,341,439
114	4,341,282	60 T	4,341,312	130.4	4,341,361	422	4,341,390	96.23	4,341,440
223	4,341,283	151	4,341,313				4,341,391	96.30	4,341,441
272	4,341,284	184	4,341,314	68 R	4,341,367	CLASS 275		98	4,341,442
						248	4,341,388	289	4,341,443
CLASS 182						774	4,341,387	344	4,341,444
6	4,341,285	193	4,341,315	142	4,341,368	CLASS 277			4,341,445
10	4,341,286					207 A	4,341,392	77	4,341,446
CLASS 187						CLASS 320		CLASS 353	
29 R	4,341,287	13 R	4,341,316	204	4,341,953	CLASS 322		CLASS 354	
	4,341,288	31	4,341,317	211 J	4,341,954	95	4,341,989	25	4,341,447
CLASS 188		225	4,341,318	213 VT	4,341,955	CLASS 323		59	4,341,448
73.39	4,341,289	307	4,341,319	214 C	4,341,956	303	4,341,990	126	4,341,449
165	4,341,290	341	4,341,320	461.2	4,341,957	311	4,341,991	273	4,341,450
375	4,341,291			561	4,341,958	CLASS 324		289	4,341,451
CLASS 192						65 R	4,341,992	293	4,341,452
43	4,341,292	10.51	4,341,936	168	4,341,369	71 CP	4,341,993	298	4,341,453
	4,341,293	10.55 M	4,341,937	282	4,341,370	132	4,341,994	304	4,341,454
45	4,341,294	61	4,341,938	CLASS 252		161	4,341,995	CLASS 355	
53 E	4,341,295	69 W	4,341,939	8.5 C	4,341,645	162	4,341,996	3 CH	4,341,457
113 B	4,341,296	117.1	4,341,940	8.5 D	4,341,647	215	4,341,997	3 FU	4,341,458
		121 LD	4,341,943	8	4,341,648	244	4,341,998	3 TR	4,341,459
CLASS 198				8.9	4,341,646	CLASS 281		8	4,341,459
408	4,341,297	123	4,341,944	62.63	4,341,650	CLASS 282		13	4,341,460
419	4,341,298	216	4,341,945	182	4,341,651	CLASS 283		14 CH	4,341,463
434	4,341,299	375	4,341,946	299.5	4,341,652	CLASS 285		14 D	4,341,461
		383	4,341,947	299.63	4,341,653	CLASS 289		14 SH	4,341,462
CLASS 200		521	4,341,948	301.4 H	4,341,654	103	4,342,000	16	4,341,464
		553	4,341,949	311 R	4,341,655	CLASS 290		36	4,341,465
30 A	4,341,931	66	4,341,321	321	4,341,656	CLASS 292		61	4,341,467
74	4,341,932	210	4,341,322	428	4,341,658	CLASS 294		CLASS 356	
148 R	4,341,933	224	4,341,323	435	4,341,659	CLASS 297		155	4,341,468
159 A	4,341,934	306	4,341,324	455 Z	4,341,660	CLASS 299		239	4,341,469
252	4,341,935			462	4,341,661	CLASS 301		307	4,341,470
CLASS 202				463	4,341,662	CLASS 302		343	4,341,471
99	4,341,598	211	4,341,325	466 PT	4,341,664	CLASS 303		399	4,341,472
176	4,341,599			522 R	4,341,666	CLASS 304		446	4,341,473
CLASS 203				606	4,341,694	CLASS 305		CLASS 357	
9	4,341,600	32	4,341,326	CLASS 254		CLASS 306		2	4,342,044
11	4,341,601	63	4,341,327	88	4,341,371	CLASS 307		41	4,342,045
CLASS 204		83.5	4,341,328	353	4,341,372	CLASS 308		75	4,342,046
1.5	4,341,602	275	4,341,329	386	4,341,373	CLASS 309		80	4,342,047
11	4,341,603	401	4,341,330	CLASS 260		CLASS 310		242	4,342,048
98	4,341,604			112 R	4,341,697	CLASS 311		256	4,342,049
CLASS 224				112.5 R	4,341,698	CLASS 312		283	4,342,050
129	4,341,605	219	4,341,331	153	4,341,699	CLASS 313		287	4,342,051
	4,341,606	326	4,341,332	157	4,341,700	CLASS 314		CLASS 358	
CLASS 225				161	4,341,701	CLASS 315		10	4,342,053
132	4,341,607	96	4,341,333	239 BF	4,341,702	CLASS 316		40	4,342,054
206	4,341,608	96.5	4,341,334	243.3	4,341,703	CLASS 317		69	4,342,055
243 R	4,341,611	195	4,341,335	245.2 T	4,341,704	CLASS 318		72.1	4,342,056
253	4,341,612			488	4,341,705	CLASS 319		76	4,342,057
281	4,341,613	66	4,341,336	CLASS 298		CLASS 320		96.5	4,342,058
296	4,341,614			CLASS 299		CLASS 321		123	4,342,059
298	4,341,615	23 BT	4,341,337	CLASS 300		CLASS 322		CLASS 359	
302	4,341,616	34 HW	4,341,338	CLASS 301		CLASS 323		14 R	4,342,060
CLASS 206		37 R	4,341,339	CLASS 302		CLASS 324		74 R	4,342,061
45.14	4,341,300	39 R	4,341,340	CLASS 303		CLASS 325		99 R	4,342,062
219	4,341,301			CLASS 304		CLASS 326		103 M	4,342,063
343	4,341,302	26	4,341,343	CLASS 305		CLASS 327		112 L	4,342,064
349	4,341,303			CLASS 306		CLASS 328		176 MP	4,342,065
350	4,341,304	1 A	4,341,342	CLASS 307		CLASS 329		256 R	4,342,066
372	4,341,305			CLASS 308		CLASS 330		38 L	4,342,067
387	4,341,306	92 EA	4,341,950	CLASS 309		CLASS 331		52 F	4,342,068
427	4,341,307	379	4,341,951	CLASS 310		CLASS 332		52 R	4,342,069
429	4,341,309	487	4,341,952	CLASS 311		CLASS 333		64	4,342,070
				CLASS 312		CLASS 334		347 DD	4,342,071
8 LE	4,341,618			CLASS 313		CLASS 335		347 P	4,342,072
11 LE	4,341,619			CLASS 314		CLASS 336		407	4,342,073
11 R	4,341,620	45	4,341,344	CLASS 315		CLASS 337		703	4,342,074
45	4,341,621	46 R	4,341,345	CLASS 316		CLASS 338		753	
66	4,341,622			CLASS 317		CLASS 339		756	
113	4,341,623	70	4,341,346	CLASS 318		CLASS 340		CLASS 340	
120	4,341,624			CLASS 319		CLASS 341		347 P	4,342,071
216 PP	4,341,625			CLASS 320		CLASS 342		407	4,342,072
				CLASS 321		CLASS 343		703	4,342,073
166	4,341,626	3	4,341,347	CLASS 322		CLASS 344		753	4,342,074
409	4,341,627	34	4,341,348	CLASS 323		CLASS 345		154	
638	4,341,628	222.17	4,341,349	CLASS 324		CLASS 346		184	
644	4,341,629	312	4,341,350	CLASS 325		CLASS 347		195	
	4,341,630	453	4,341,351	CLASS 326		CLASS 348		233	
CLASS 210				CLASS 327		CLASS 349		268	
101	4,341,631	21	4,341,352	CLASS 328		CLASS 350		360	
128	4,341,632	24	4,341,353	CLASS 329		CLASS 351		CLASS 310	
221.2	4,341,633	101.7	4,341,354	CLASS 330		CLASS 352		11	4,341,965
323.2	4,341,634	102	4,341,355	CLASS 331		CLASS 353		61	4,341,966
608	4,341,635	169.2	4,341,356	CLASS 332		CLASS 354		88	4,341,967
614	4,341,636			CLASS 333		CLASS 355		91	4,341,968
656	4,341,637	68.5	4,341,357	CLASS 334		CLASS 356		14	4,341,969
	4,341,638	74.1	4,341,358	CLASS 335		CLASS 357		184	4,341,970
662	4,341,639	107	4,341,359	CLASS 336		CLASS 358		195	4,341,971
666	4,341,640	107.4 A	4,341,360	CLASS 337		CLASS 359		233	4,341,972
673	4,341,641	183	4,341,362	CLASS 338		CLASS 360		268	4,341,973
				CLASS 339		CLASS 361		360	4,341,974
				CLASS 340		CLASS 362		CLASS 313	
				CLASS 341		CLASS 363		25	4,341,975
				CLASS 342		CLASS 364		210	4,341,976
				CLASS 343		CLASS 365		485	4,341,977
				CLASS 344		CLASS 366		487	4,341,978
				CLASS 345		CLASS 367		CLASS 315	
				CLASS 346		CLASS 368		57	4,341,979
				CLASS 347		CLASS 369		169.1	4,341,980
				CLASS 348		CLASS 370		163	4,342,043
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01 : 4,341,611	4,341,550	4,341,416	4,341,035	4,341,613	4,341,300
02 : 4,341,091	4,341,565	4,341,474	4,341,070	4,341,623	4,341,376
4,341,587	4,341,567	4,341,541	4,341,073	4,341,660	4,341,385
04 : 4,341,004	4,341,569	4,341,580	4,341,085	4,341,691	4,341,428
4,341,154	4,341,598	4,341,582	4,341,116	4,341,770	4,341,447
4,341,159	4,341,599	4,341,626	4,341,145	4,341,771	4,341,454
4,341,432	4,341,610	4,341,721	4,341,148	4,341,878	4,341,499
4,341,742	4,341,625	4,341,801	4,341,149	4,341,890	4,341,513
4,341,990	4,341,629	4,341,826	4,341,188	4,341,952	4,341,683
06 : 4,340,983	4,341,661	4,341,840	4,341,209	4,341,987	4,341,695
4,340,984	4,341,702	4,341,875	4,341,210	4,341,988	4,341,725
4,340,993	4,341,712	4,341,906	4,341,243	4,341,996	4,341,766
4,341,001	4,341,739	4,342,042	4,341,246	4,342,070	4,341,869
4,341,002	4,341,756	4,342,047	4,341,277	4,342,109	4,341,964
4,341,015	4,341,764	4,342,115	4,341,280	4,341,982	4,341,982
4,341,020	4,341,767	4,341,439	4,341,320	4,341,995	4,341,995
4,341,033	4,341,851	4,341,452	4,341,330	4,342,059	4,342,059
4,341,052	4,341,866	4,341,601	4,341,341	4,342,080	4,342,080
4,341,055	4,341,873	4,341,673	4,341,347	4,342,089	4,342,089
4,341,077	4,341,921	4,341,743	4,341,362	4,342,114	4,342,114
4,341,107	4,341,929	4,341,772	4,341,379	4,341,501	4,341,501
4,341,119	4,341,934	4,341,809	4,341,390	4,342,112	4,341,020
4,341,120	4,341,957	4,341,860	4,341,423	4,341,617	4,341,023
4,341,124	4,342,008	4,341,982	4,341,481	4,341,805	4,341,046
4,341,132	4,342,026	4,341,032	4,341,482	4,341,824	4,341,047
4,341,141	4,342,027	4,341,039	4,341,814	4,341,814	4,341,072
4,341,173	4,342,034	4,341,057	4,341,937	4,341,081	4,341,081
4,341,212	4,342,036	4,341,296	4,341,605	4,341,082	4,341,082
4,341,218	4,342,045	4,341,455	4,341,608	4,341,083	4,341,083
4,341,224	4,342,057	4,341,471	4,341,664	4,341,089	4,341,089
4,341,255	4,342,060	4,341,514	4,341,681	4,341,180	4,341,180
4,341,262	4,342,097	4,341,540	4,341,689	4,342,031	4,341,193
4,341,265	4,342,098	4,341,579	4,341,694	4,342,031	4,341,223
4,341,270	4,342,102	4,341,636	4,341,740	4,342,031	4,341,236
4,341,283	4,342,105	4,341,638	4,341,810	4,342,031	4,341,281
4,341,288	4,342,113	4,341,736	4,341,815	4,342,031	4,341,332
4,341,308	4,342,116	4,341,762	4,341,844	4,342,031	4,341,340
4,341,323	4,342,119	4,341,926	4,341,847	4,342,031	4,341,360
4,341,324	4,341,087	4,341,976	4,341,865	4,342,031	4,341,382
4,341,326	4,341,201	4,341,984	4,341,911	4,342,031	4,341,399
4,341,331	4,341,321	4,341,986	4,341,914	4,342,031	4,341,412
4,341,336	4,341,620	4,341,993	4,341,920	4,342,031	4,341,444
4,341,344	4,341,744	4,342,043	4,341,969	4,342,031	4,341,493
4,341,381	4,341,881	4,342,072	4,341,997	4,342,031	4,341,497
4,341,383	4,341,990	4,342,120	4,342,014	4,342,031	4,341,538
4,341,384	4,342,052	4,341,050	4,342,048	4,342,031	4,341,557
4,341,398	4,341,110	4,341,098	4,341,008	4,342,031	4,341,606
4,341,407	4,341,215	4,341,309	4,341,103	4,342,031	4,341,607
4,341,420	4,341,238	4,341,561	4,341,104	4,342,031	4,341,820
4,341,469	4,341,267	4,341,923	4,341,130	4,342,031	4,341,828
4,341,488	4,341,310	4,341,049	4,341,197	4,342,031	4,341,839
4,341,522	4,341,351	4,341,248	4,341,252	4,342,031	4,341,903
4,341,549	4,341,357	4,341,006	4,341,498	4,342,031	4,341,905

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4,342,017	4,341,639	4,341,631	4,341,292	4,341,515	4,341,411
4,342,044	4,341,646	4,341,633	4,341,293	4,341,518	4,341,508
4,342,074	4,341,662	4,341,641	4,341,297	4,341,520	4,341,531
4,342,083	4,341,682	4,341,643	4,341,304	4,341,545	4,341,574
4,342,095	4,341,688	4,341,678	4,341,318	4,341,554	4,341,592
4,341,025	4,341,696	4,341,684	4,341,338	4,341,564	4,341,600
4,341,136	4,341,705	4,341,692	4,341,339	4,341,566	4,341,619
4,341,221	4,341,706	4,341,703	4,341,367	4,341,576	4,341,627
4,341,247	4,341,710	4,341,714	4,341,368	4,341,618	4,341,635
4,341,314	4,341,728	4,341,730	4,341,375	4,341,621	4,341,645
4,341,345	4,341,731	4,341,735	4,341,402	4,341,676	4,341,677
4,341,453	4,341,737	4,341,749	4,341,426	4,341,677	4,341,677
4,341,465	4,341,741	4,341,796	4,341,483	4,341,683	4,341,683
4,341,507	4,341,746	4,341,804	4,341,489	4,341,732	4,341,757
4,341,537	4,341,747	4,341,824	4,341,535	4,341,783	4,341,910
4,341,585	4,341,748	4,341,829	4,341,546	4,341,786	4,341,916
4,341,590	4,341,761	4,341,835	4,341,555	4,341,817	4,341,925
4,341,755	4,341,791	4,341,842	4,341,562	4,341,819	4,342,069
4,341,825	4,341,797	4,341,845	4,341,609	4,341,827	4,342,078
4,341,901	4,341,799	4,341,849	4,341,640	4,341,846	4,342,094
4,341,922	4,341,807	4,341,850	4,341,654	4,341,848	4,342,099
4,341,037	4,341,818	4,341,852	4,341,655	4,341,877	4,342,100
4,341,044	4,341,861	4,341,854	4,341,667	4,341,877	4,340,994
4,341,182	4,341,899	4,341,855	4,341,668	4,341,898	4,341,227
4,341,468	4,341,908	4,341,858	4,341,674	4,341,972	4,341,273
4,341,657	4,341,919	4,341,859	4,341,698	4,342,062	4,341,418
4,341,887	4,341,943	4,341,863	4,341,717	4,342,064	4,341,327
4,341,395	4,341,968	4,341,872	4,341,727	4,342,096	4,341,012
4,341,168	4,341,978	4,341,882	4,341,751	4,341,751	4,341,028
4,341,405	4,342,001	4,341,888	4,341,808	4,341,808	4,341,060
4,341,516	4,342,003	4,341,889	4,341,811	4,341,811	4,341,088
4,341,649	4,342,005	4,341,894	4,341,823	4,341,823	4,341,113
4,341,651	4,342,009	4,341,895	4,341,843	4,341,843	4,341,174
4,341,202	4,342,010	4,341,936	4,341,918	4,341,918	4,341,199
4,340,978	4,342,038	4,341,942	4,341,975	4,341,975	4,341,228
4,340,985	4,341,945	4,341,960	4,341,983	4,341,983	4,341,306
4,340,996	4,341,966	4,341,966	4,342,049	4,341,969	4,341,328
4,341,022	4,341,979	4,341,977	4,342,076	4,341,726	4,341,408
4,341,059	4,341,991	4,341,991	4,342,077	4,341,832	4,341,466
4,341,069	4,341,000	4,341,979	4,342,082	4,341,902	4,341,480
4,341,101	4,341,007	4,341,992	4,341,999	4,341,902	4,341,490
4,341,146	4,341,009	4,341,999	4,342,013	4,341,181	4,341,935
4,341,170	4,341,018	4,342,013	4,341,715	4,341,045	4,341,951
4,341,171	4,341,031	4,342,029	4,341,750	4,341,106	4,341,951
4,341,183	4,341,117	4,342,039	4,341,802	4,341,109	4,341,058
4,341,208	4,341,143	4,342,050	4,341,802	4,341,353	4,341,370
4,341,222	4,341,167	4,342,058	4,342,061	4,341,690	4,341,486
4,341,241	4,341,196	4,342,068	4,342,081	4,341,754	4,341,568
4,341,254	4,341,231	4,342,082	4,342,081	4,341,962	4,341,924
4,341,291	4,341,240	4,342,084	4,341,118	4,341,962	4,342,037
4,341,307	4,341,286	4,342,090	4,341,139	4,341,040	4,342,086
4,341,325	4,341,348	4,340,986	4,341,200	4,341,064	4,341,424
4,341,337	4,341,348	4,341,095	4,341,206	4,341,090	4,341,530
4,341,343	4,341,404	4,341,096	4,341,256	4,341,126	4,341,795
4,341,371	4,341,442	4,341,097	4,341,334	4,341,164	4,341,042
4,341,391	4,341,443	4,341,097	4,341,355	4,341,172	4,341,056
4,341,391	4,341,456	4,341,496	4,341,374	4,341,176	4,341,214
4,341,437	4,341,461	4,341,461	4,341,387	4,341,203	4,341,258
4,341,441	4,341,467	4,341,079	4,341,421	4,341,219	4,341,263
4,341,472	4,341,495	4,341,105	4,341,427	4,341,219	4,341,284
4,341,504	4,341,509	4,341,137	4,341,429	4,341,233	4,341,400
4,341,526	4,341,521	4,341,155	4,341,430	4,341,242	4,341,446
4,341,581	4,341,543	4,341,216	4,341,431	4,341,264	4,341,525
4,341,591	4,341,544	4,341,217	4,341,433	4,341,266	4,341,578
4,341,596	4,341,583	4,341,239	4,341,492	4,341,369	4,342,028

## DESIGN PATENTS

01 :	265,530		265,562		265,538	24 :	265,544		265,571	42 :	265,546
	265,534		265,569		265,540		265,561		265,590		265,554
	265,535		265,577		265,551	25 :	265,572	36 :	265,592		265,565
	265,587		265,578		265,553	26 :	265,520		265,529	48 :	265,527
	265,588		265,585		265,559	27 :	265,545		265,566		265,547
	265,589		265,599		265,560		265,549		265,567		265,596
05 :	265,528	09 :	265,564		265,576		265,601		265,573	55 :	265,537
06 :	265,531		265,592		265,584	33 :	265,524		265,574		265,531
	265,539	12 :	265,555		265,586	34 :	265,525		265,579		265,557
	265,541		265,575		265,597		265,525		265,580		265,581
	265,542	13 :	265,548		265,598		265,543		265,583		265,582
	265,550	17 :	265,533	19 :	265,526		265,558	39 :	265,591		265,595



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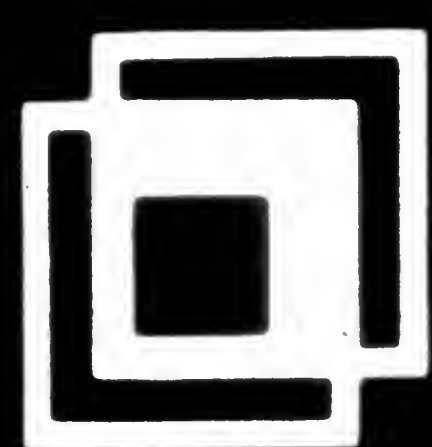
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